Title_en	Description_en
[Hiatella]-bored vertical sublittoral limestone rock	Moderately exposed vertical and overhanging soft rock (typically chalk), subject to moderately strong to weak tidal streams, bored by the rock-boring mollusc [Hiatella arctica]. As with other biotopes in the soft rock complex, it is found in areas of high turbidity, where there is poor light penetration. There may be isolated clumps of the hydroid [Nemertesia antennina] and a sparse bryozoan turf formed by various crisiids, [Bugula plumosa] and [Bugula flabellate] (often being grazed on by the nudibranch [Janolus cristatus]), [Alcyonidium diaphanum], [Flustra foliacea] and [Cellapora pumicosa]. A patchy 'carpet' of the brittlestar [Ophiothrix fragilis] is often recorded along with other echinoderms such as [Asterias rubens] and [Henricia sanguinolenta]. Other species present include the colonial ascidians [Polyclinum aurantium], [Botrylloides leachi], [Clavelina lepadiformis], [Aplidium punctatum] and [Botryllus schlosseri], dead mans fingers [Alcyonium digitatum] and the crab [Cancer pagurus]. Sponges present include the boring sponge [Cliona
Sponges and anemones on vertical circalittoral bedrock	This biotope is found on exposed to moderately wave exposed , vertical and overhanging, circalittoral bedrock, subject to strong through to weak tidal streams. This biotope is characterised by a mixed faunal turf of hydroids ([Nemertesis antennina], [Tubularia indivisa] and [Halecium halecium]) and bryozoans ([Alcyonidium diaphanum] and crisiid turf). There is frequently a diverse range of sponges recorded, including [Cliona celata], [Pachymatisma johnstonia], [Dysidea fragilis] and [Hemimycale columella]. There may be dense aggregation of dead mans fingers [Alcyonium digitatum] along with clumps of the cup coral [Caryophyllia smithii], and the anthozoans [Corynactis viridis], [Actinothoe sphyrodeta], [Sagartia elegans] and [Metridium senile]. Other species present include the echinoderms [Echinus esculentus], [Asterias rubens], [Marthasterias glacialis], [Henricia oculata], [Holothuria forskali] and [Antedon bifida], clumps of the lightbulb tunicate [Clavelina lepadiformis] and the top shell [Calliostoma zizyphinum]. Three regional variations of this biotope have been recorded. The first variant is characterised by a [B
[Alcyonium digitatum] and faunal crust communities on vertical circalittoral bedrock	This biotope typically occurs on the vertical faces and overhangs of exposed to moderately exposed lower infralittoral and upper circalittoral bedrock subject to moderately strong to weak tidal streams. Due to the large numbers of the urchin [Echinus esculentus] often recorded, this biotope tends to have a grazed appearance, and the bedrock is often encrusted with pink coralline algae, encrusting bryozoans such as [Parasmittina trispinosa] and the calcareous tubeworm [Pomatoceros triqueter]. Dense aggregations of dead mans fingers [Alcyonium digitatum] may be present along with the cup coral [Caryophyllia smithii]. Other species present include the echinoderms [Asterias rubens], [Ophiothrix fragilis] and [Antedon bifida], the ascidians [Clavelina lepadiformis], [Ciona intestinalis] and [Ascidia mentula], the anthozoans [Urticina feline], [Cortynactis viridis], [Metridium senile] and [Sagartia elegans], the gastropod [Calliostoma zizyphinum] and the crustacean [Cancer pagurus]. Three regional variations of this biotope have been recorded. One variant found typically off the north-east coast of Scotland a

[Caryophyllia smithii] and sponges with [Pentapora foliacea], [Porella compressa] and crustose communities on wave-exposed circalittoral rock	This variant is typically found on the upper faces and vertical sides of wave-exposed bedrock or boulders subject to moderately strong to weak tidal streams. The fauna is often sparse with the frequently observed [Echinus esculentus] giving it a grazed appearance, but the community may also be affected by violent storm action working into deep water during winter storms. Despite this spartan appearance, the community is relatively diverse and contains a wide range of sponges, hydroids, bryozoans and echinoderms. This variant is found on open coasts or offshore, and is characterised by the cup-coral [Caryophyllia smithii], [Alcyonium digitatum], the sea urchin [Echinus esculentus], large specimens of the sponge [Cliona celata], encrusting bryozoans and encrusting red algae. Although this variant tends to occur in deep water (depth range of 20-30m), a high degree of water clarity allows some red algae to grow at these depths. Other species recorded include large specimens of [Haliclona viscosa], the bryozoans [Parasmittina trispinosa], [Porella compressa] and [Pentapora foliacea], the sea cucumb
Mixed [Laminaria hyperborea] and [Laminaria ochroleuca] forest on moderately exposed or sheltered infralittoral rock	Mixed [Laminaria hyperborea] and [Laminaria ochroleuca] forest on upper infralittoral moderately exposed or sheltered rock is restricted to the coast of Cornwall and the Isles of Scilly. Unlike [L. hyperborea], however, [L. ochroleuca] has a smooth stipe and it lacks the epiphytic growth of seaweeds. The bryozoan [Membranipora membranacea] may encrust the very lower part of the stipe but the rest of the stipe is characteristically bare. The fronds too are generally free of encrusting hydroids, bryozoans and grazing gastropods as compared to [L. hyperborea]. [L. ochroleuca] holdfasts, however, are often encrusted with sponges and colonial ascidians. A large variety of foliose and filamentous red seaweeds are often present underneath the canopy. These include [Callophyllis laciniata], [Plocamium cartilagineum], [Cryptopleura ramosa], [Delesseria sanguinea], [Dilsea carnosa Bonnemaisonia asparagoides, Erythroglossum laciniatum, Sphaerococcus coronopifolius, Polyneura bonnemaisonii] and [Corallina officinalis]. The foliose brown seaweed [Dictyota dichotoma] is frequently found in this bio
Grazed, mixed [Laminaria hyperborea] and [Laminaria saccharina] on sheltered infralittoral rock	Silted infralittoral rock with mixed [Laminaria hyperborea] and [Laminaria saccharina] kelp forest, intensively grazed by the echinoderm [Echinus esculentus] and the gastropods [Gibbula cineraria] and [Calliostoma zizyphinum]. Although both kelp species can occur in equal abundance (Common), [L. hyperborea] usually dominates. The grazing-resistant brown seaweed [Desmarestia aculeata] and [Cutleria multifida] may be present. A similar variety of red seaweeds to those found in the ungrazed kelp forest (LhypLsac.Ft) may occur beneath the kelp canopy, but in much lower abundance. As grazing intensity increases the seaweed cover decreases - and some sites are reduced to the bare appearance of encrusting brown and coralline algae beneath the kelp canopy. The [L. hyperborea] stipes generally support more seaweeds than the rock beneath, including [Cryptopleura ramosa], [Delesseria sanguinea], [Phycodrys rubens] and [Bonnemaisonia hamifera]. The stipes may also support sometimes dense ascidians [Clavelina lepadiformis] and [Ciona intestinalis] and the echinoderm [Antedon bifida]. The kelp fronds are ofte

Silted cape-form Laminaria hyperborea on very sheltered infralittoral rock	Cape-form of the kelp [Laminaria hyperborea] on very silted rock, particularly in extremely sheltered sealochs of western Scotland. Below the huge kelp fronds (which often trail onto the seabed) foliose seaweeds form a silted understorey on the rock including [Phycodrys rubens, Delesseria sanguinea, Cryptopleura ramosa] and [Plocamium cartilagineum] as well as coralline crusts. At some sites the filamentous red seaweed [Bonnemaisonia hamifera, Heterosiphonia plumosa] and [Brongniartella byssoides] may carpet the seabed. Ascidians, particularly [Ascidiella aspersa], [Ascidia mentula, Ciona intestinalis] and [Clavelina lepadiformis] thrive well in these conditions. The echinoderms [Antedon bifida, Echinus esculentus] and [Asterias rubens] are often present along with the gastropod [Gibbula cineraria]. An abundant growth of the hydroid [Obelia geniculata] can cover the silted kelp fronds along with the bryozoan [Membranipora membranacea]. The anthozoan [Caryophyllia smithii] can be present among the kelp holdfasts. The tube-building polychaete [Pomatoceros triqueter] can be present on the rock surface alo
[Sargassum muticum] on shallow slightly tide-swept infralittoral mixed substrata	Mixed substrata from the sublittoral fringe to 5m below chart datum dominated by the brown seaweed [Sargassum muticum]. This invasive non-native brown seaweed can form a dense canopy on areas of mixed substrata (typically 0-10% bedrock on 90-100% sandy sediment). The substrate on which this [S. muticum]-dominated community is able to develop is highly variable, but particularly prevalent on broken rock and pebbles anchored in sandy sediment. The pebbles, cobbles and broken bedrock provide a substrate for alga such as the kelp [Laminaria saccharina]. During the spring, [S. muticum] has large quantities of epiphytic ectocarpales and may also support some epifauna e.g. the hydroid [Obelia geniculata] commonly found on kelp. The brown seaweed [Chorda filum], which thrives well on these mixed substrata, is also commonly found with [S. muticum] during the summer months. In Strangford Lough, where this biotope occurs, the amphipod [Dexamine spinosa] has been recorded to dominate the epiphytic fauna (this is known to be commonly found in [Zostera] spp. beds). [S. muticum] is
Rock stacks and islets above splash zone	No description available.
Mosaics of mobile and non-mobile substrata in the littoral zone	Littoral mosaics of mobile and non-mobile substrates comprising intimate mixtures of units from A1 and A2.
Mosaics of mobile and non-mobile substrata in the infralittoral zone	Infralittoral mosaics of mobile and non-mobile substrates comprising intimate mixtures of units from A3 and A5.
Mosaics of mobile and non-mobile substrata in the circalittoral zone	Circalittoral mosaics of mobile and non-mobile substrates comprising intimate mixtures of units from A4 and A5.

Ephemeral green or red seaweeds (freshwater or sand-influenced) on non-mobile substrata	Ephemeral seaweeds on disturbed littoral rock in the lower to upper shore. Dominant green seaweeds include [Enteromorpha intestinalis], [Ulva lactuca] and the red seaweeds [Rhodothamniella floridula] and [Porphyra purpurea]. Winkles such as [Littorina littorea] and [Littorina saxatilis], the limpet [Patella vulgata] and the barnacles [Semibalanus balanoides] can occur, though usually in low abundance. The crab [Carcinus maenas] can be found where boulders are present, while the barnacle [Elminius modestus] is usually present on sites subject to variable salinity. On moderately exposed shores, the biotope is [Enteromorpha] spp. on freshwater-influenced or unstable upper shore rock (A1.451) or [P. purpurea] and/or [Enteromorpha] spp. on sand-scoured mid to lower eulittoral rock (A1.452). These are biotopes with a low species diversity and the relatively high number of species in the characterising species list are due to a variation in the species composition from site to site, not to high species richness on individual
Species-poor mixed sediment shores	Eulittoral mixed substrata where the substratum is too mobile or disturbed to support a seaweed community (A2.431). This is a biotope with a low species diversity and the relatively high number of species in the characterising species list are due to a variation in the species composition from site to site, not to high species richness on individual sites. Note: Connor et al (2004) classify this habitat type together with A1.45 and A2.82 as LR.ELR.Eph.
Deep-sea [Lophelia pertusa] reefs	Lophelia pertusa, a cold water, reef-forming coral, has a wide geographic distribution ranging from 55°S to 70°N, where water temperatures typically remain between 4-8°C. These reefs are generally subject to moderate current velocities (0.5 knots). The majority of records occur in the north-east Atlantic. The extent of L. pertusa reefs vary, with examples off Norway several km long and more than 20m high. These reefs occur within a depth range of 200->2000m on the continental slope, and in shallower waters in Norwegian fjords and Swedish west coast. In Norwegian waters, L. pertusa reefs occur on the shelf and shelf break off the western and northern parts on local elevations of the sea floor and on the edges of escarpments. The biological diversity of the reef community is approximately three times as high as the surrounding soft sediment (ICES, 2003), suggesting that these cold-water coral reefs may be biodiversity hotspots. Characteristic species include other hard corals, such as Madrepora oculata and Solenosmilia variabilis, the redfish Sebastes viviparous and the squat lobster Munida sarsi. L. pertusa reefs c
Baltic exposed infralittoral rock	Rock habitats in the Baltic infralittoral zone which are exposed to wave action, currents or ice scouring. The exposure status is that impacting on the area concerned at the relevant scale. Thus there may be enclaves of different exposure status caused by localised variation in relief (e.g. steeper rock in more moderately exposed or even sheltered areas). Note that it has been proposed that 'exposed' has an effective fetch of greater than 25 km: this requires verification across the Baltic.

Baltic moderately exposed infralittoral rock	Rock habitats in the Baltic infralittoral zone which are moderately exposed to wave action, currents or ice scouring. The exposure status is that impacting on the area concerned at the relevant scale. Thus there may be enclaves of different exposure status caused by localised variation in relief (e.g. steeper rock in sheltered areas). Note that it has been proposed that 'exposed' has an effective fetch of 5 – 25 km: this requires verification across the Baltic.
Baltic sheltered infralittoral rock	Rock habitats in the Baltic infralittoral zone which are sheltered from wave action, currents or ice scouring. The exposure status is that impacting on the area concerned at the relevant scale. Thus there may be enclaves of different exposure status caused by localised variation in relief (e.g. sheltered areas within exposed or moderately exposed areas). Note that it has been proposed that 'exposed' has an effective fetch less than 5 km: this requires verification across the Baltic.
Baltic exposed circalittoral rock	Rock habitats in the Baltic infralittoral zone which are exposed to wave action, currents or ice scouring. The exposure status is that impacting on the area concerned at the relevant scale. Thus there may be enclaves of different exposure status caused by localised variation in relief (e.g. steeper rock in more moderately exposed or even sheltered areas). Note that it has been proposed that 'exposed' has an effective fetch of greater than 25 km: this requires verification across the Baltic.
Baltic moderately exposed circalittoral rock	Rock habitats in the Baltic infralittoral zone which are moderately exposed to wave action, currents or ice scouring. The exposure status is that impacting on the area concerned at the relevant scale. Thus there may be enclaves of different exposure status caused by localised variation in relief (e.g. steeper rock in sheltered areas). Note that it has been proposed that 'exposed' has an effective fetch of 5 – 25 km: this requires verification across the Baltic.
Baltic sheltered circalittoral rock	Rock habitats in the Baltic infralittoral zone which are sheltered from wave action, currents or ice scouring. The exposure status is that impacting on the area concerned at the relevant scale. Thus there may be enclaves of different exposure status caused by localised variation in relief (e.g. sheltered areas within exposed or moderately exposed areas). Note that it has been proposed that 'exposed' has an effective fetch less than 5 km: this requires verification across the Baltic.
Vegetation of brackish waters dominated by [Scirpus lacustris] or [Scirpus tabernaemontani]	No description available.
[Zostera] beds in reduced salinity infralittoral sediments	No description available.

Lakes of gypsum karst	Small permanent lakes that have developed in springs or spring complexes of active gypsum karst areas. These water bodies are characterised by large fluctuations of water level (up to 2.5 m) which is related with the level of the underlying water table and amount of precipitation. Maximum depth of the pools does not exceed 7 m, but the stratification is well-expressed. Intensive gypsum solution leads to high saturation of Ca++ and SO4-- ions in water. The unusual conditions allow unique colonies and mats of green and purple sulphurous bacteria to develop in the lakes. Communities of [Charetea], [Lemnetea] and [Potamogetonion] are the dominant elements of the water vegetation. Plant text: [Lemna trisulca], [Chara globularis], [Chara contraria], [Warnstorfia exannulata], [Ceratophyllum demersum], [Potamogeton pectinatus], [Potamogeton lucens], [Schoenoplectus lacustris], [Sparganium erectum] Associated habitats: These lakes are similar in some respects to 3180 Turloughs but that habitat is found in limestone not gypsum areas and does not support mats of green and purple
Transylvanian hot-spring lotus beds	Formations of [Nymphaea lotus] of geothermal waters (unit 66.94) of Petea Lake, western Romania. Plant text: [Nymphaea lotus].
Subcontinental peri-Pannonic scrub	Low deciduous scrub with continental and sub mediterranean affinities of the Pannonic basin and neighbouring regions including the eastern Alpine periphery, the southern periphery of the Northwestern Carpathians, the Transylvanian plateau and the adjacent foothills and valleys of the Eastern and Southern Carpathians and the Apuseni mountains, the southern periphery of the Pannonic basin, with irradiations to the lower Danubian plain, to the Moravian plateau, to the Dobrogea and to the hills and valleys of the northern Balkan peninsula. Occurs on both calcareous and siliceous substrates forming mosaic-like vegetation with steppe grassland (6210) and forest-steppe elements or plants of the rupicolous Pannonic grasslands (6190) often along the fringes of woodlands. Includes the following syntaxa: [Prunetum fruticosae] Dziubaltovski 1926 (syn.: [Crataego-Prunetum fruticosae] de Sóo 1951) [Prunetum tenellae] Soó 1947 (syn.: [Amygdaletum nanae] Soó 1951). [Coronillo-Prunetum mahaleb] Gallandat 1972 (syn. [Cerasetum mahaleb] Oberdorfer and Th. Müller 1979) [Waldsteino-
Rupicolous pannonic grasslands (Stipo-Festucetalia pallentis)	Open, pioneer rock sward associations occurring on steep, dry xeric slopes in medium altitude mountains of the Pannonic basin and adjacent regions at 150-900 m a.sl. The base rock is limestone, dolomite or calcareous volcanic rock (basalt, andesite, gabbro) and the soils are shallow rendzinas. Sub types: Pal. 34.351 - Calci-orophile pale fescue grasslands ([Diantho lumnitzeri-Seslerion albicantis], [Seslerion rigidae]) Central European calcicolous subcontinental rock-ledge grasslands of orogenous affinities, montane or submontane with a strong representation of species characteristic of higher-altitude communities, often occupying stations with a comparatively cool microclimate. Pal. 34.3522 - Circum-Pannonic calcicline pale fescue grasslands ([Bromo pannonici-Festucion pallentis]) Species-rich xero-thermophile subcontinental rock-ledge grasslands of the western and southern periphery of the Carpathian arc, developed on rendzinas over limestones or dolomite on south-facing steep slopes with extreme conditions of insolation, temperature variation and evaporation. Pal. 34.353 - Acidocline

Eastern sub-mediteranean dry grasslands (Scorzoneratalia villosae)	Xeric grasslands of the sub-Mediterranean zones of Trieste, Istria and the Balkan peninsula, where they coexist with steppic grasslands of the [Festucetalia valesiacae] (6210), developing in areas of lesser continentality than the latter and incorporating a greater Mediterranean element. Includes the following communities; - [Carici humilis-Centaureetum rupestris], [Genisto holopetalae-Caricetum mucronatae], [Chrysopogono-Centaureetum cristatae] & [Danthonio- Scorzoneretum villosae]. Plant text: [Carex humilis], [Bromus erectus], [Centeurea rupestris], [Leucanthemum liburnicum], [Plantago argentea], [Jurinea mollis], [Iris cengialti], [Pulsatilla vulgaris ssp. grandis], [Genista holopetala]#, [Hladnikia pastinacifolia], [Euphrasia marchesettii]#, [Pedicularis friderici-augusti], [Sesleria juncifolia], [Gentiana lutea]#, [Gentiana clusii], [Trinia glauca], [Arctostaphylos uva-ursi], [Euphorbia triflora].
Serpentinophilous grassland of Cyprus	Perennial herb communities restricted to ultramafic areas of Cyprus such as the Troodos mountains and the Akamas peninsula. The vegetation consists of small patches of sparse plant cover on rocky outcrops and stony places with a specialised flora, including several endemic species. Occurs at 700 to 1950 m in the central Troodos range although the most representative communities occur above 1700m. There are also similar communities at lower altitudes (350 –450m) on Akamas (western Troodos). The substrates are ultramafic rocks such as serpentine, dunite, werhlite & hurzburgite. Plant text: High altitude form [Acinos troodi], [Alyssum cypricum], [Alyssum troodi], [Anthemis plutonia], [Corydalis rutifolia], [Cynoglossum troodi], [Dianthus strictus ssp. troodi], [Euphorbia cassia ssp. rigoi], [Hypericum confertum ssp. stenobotrys], [Lindbergella sintenissii], [Onosma troodi], [Ranunculus cadmicus var. cypricus]. Low altitude form [Alyssum chondrogynum], [Alyssum akamasicum], [Centaurea cyprensis], [Hyacinthella millingeni], [Minuartia pichleri], [Thymus integer].
Peat grasslands of Troodos	[Calamagrostis epigejos] tall (c. 1m) meadows developing at an altitude of around 1650 m on seasonally inundated depressions, on serpentinised substrate with basic pH. The meadows are inundated from October-November until June-July, depending on the rainfall but even in summer the soil is wet and muddy. The vegetation cover is thick and the dominant graminoids [C. epipejeos] and [Juncus littoralis] and other herbs form a continuous mat on the soil. The floristic structure is characterised by species which occur only or mainly at this habitat in Cyprus, such as [Calamagrostis epigejos] and [Poa pratensis], and by a few endemic species occurring only at the high altitude damp places in the Troodos mountains. Plant text: [Calamagrostis epigejos], [Juncus littoralis], [Poa pratensis], [Polypogon semiverticillatus], [Ornithogalum chionopilum], [Pteridium aquilinum], [Viola siechiana], [Alyssum cypricum], [Brachypodium firmifolium], [Hypericum perforatum], [Scirpus holoschoenus], [Crocus cyprius] (proposed for Annex II and IV), [Schoenus nigrigans], [Carex divulsa], [Carex distans], [Taraxacum holmb

Illyrian Fagus sylvatica forests (Aremonio-Fagion)	[Fagus sylvatica] forests of the Dinarides and of associated ranges and hills, with outliers and irradiations in the southeastern Alps and in the mid-Pannonic hills. In these areas they are in contact with, or interspersed among, medio-European beech forests such as 9130, 9140 and 9150. Species diversity is greater than in the Central European beech woods and the [Aremonio-Fagion] constitutes an important centre of species diversity. Plant text: [Fagus sylvatica], [Fagus moesiaca], [Acer obtusatum], [Ostrya carpinifolia], [Abies alba], [Quercus cerris], [Sorbus graeca], [Tilia tomentosa], [Anemone trifolia], [Aremonia agrimonoides], [Calamintha grandiflora], [Cardamine trifolia], [Cardamine waldsteinii], [Corylus colurna], [Cotoneaster tomentosus], [Cyclamen purpurascens], [Dentaria enneaphyllos], [Dentaria enneaphyllos], [Dentaria trifolia], [Doronicum austriacum], [Epimedium alpinum], [Euphorbia carniolica], [Hacquetia epipactis], [Helleborus niger ssp. niger], [Helleborus odorus], [Knautia drymeia], [Lamium orvala], [Lonicera nigra], [Omphalodes verna], [Pancicia serbica], [Primula vulgaris], [Ruscus hypoglossum], [Rus
Illyrian oak-hornbeam forests (Erythronio-carpinion)	Forests of [Quercus robur] or [Quercus petraea], sometimes [Quercus cerris], and [Carpinus betulus] on both calcareous and siliceous bedrocks, mostly on deep neutral to slightly acidic brown forest soils, with mild humus in the SE-Alpine-Dinaric region, West- and Central Balkans extending northwards to Lake Balaton mostly in hilly and submontane regions, river valleys and the plains of the Drava and Sava. The climate is more continental than in sub-Mediterranean regions and warmer than in middle Europe; these forests are intermediate between oak-hornbeam woods (e.g. 9170) of central Europe and those of the Balkans and merge northwards into the Pannonic oak woods (91G0). They have a much higher species richness than the Central European oak woods. Outliers of these forests also occur in Frioul and the northern Apennines. Plant text: [Quercus robur], [Quercus petraea], [Quercus cerris], [Carpinus betulus], [Acer tataricum], [Tilia tomentosa], [Castanea sativa], [Fraxinus angustifolia ssp. pannonica], [Euonymus verrucosus], [Lonicera caprifolium], [Adoxa moschatellina], [Cyclamen purpurascens], [Dentaria p
Pannonian-Balkanic turkey oak –sessile oak forests	Sub-continental thermo-xerophile [Quercus cerris], [Quercus petraea] or [Quercus frainetto] forests of the Pannonic and northern Balkanic hilly regions and in lower mountains with the continental [Acer tataricum] and lacking typically sub-Mediterranean species such as [Carpinus orientalis] and [Ruscus aculeatus]. Distributed generally between 250 and 600 (800) m above sea level and developed on varied substrates: limestones, andesites, basalt, loess, clay, sand, etc., on slightly acidic, usually deep brown soils. Plant text: [Quercus petraea], [Quercus dalechampii], [Quercus polycarpa], [Quercus cerris], [Quercus frainetto], [Acer tataricum], [Ligustrum vulgare], [Euonymus europaeus], [Festuca heterophylla], [Carex montana], [Poa nemoralis], [Potentilla alba], [Potentilla micrantha], [Tanacetum corymbosum], [Campanula persicifolia], [Digitalis grandiflora], [Vicia cassubica], [Viscaria vulgaris], [Lychnis coronaria], [Achillea distans], [Achillea nobilis], [Silene nutans], [Silene viridiflora], [Hieracium racemosum], [Hieracium sabaudum],

Pannonic inland sand dune thicket (Junipero-Populetum albae)	Xerophilous mosaic of open scrub or open woodlands with [Juniperus communis] and [Populus] species and open or closed sand steppe grasslands of sands, particularly sand dunes, of the Danube-Tisza confluence of the Pannonic plain. Woodland herbaceous species are lacking and the habitat in general more closely resembles semi-desert scrub than steppe woodland. Plant text: [Populus alba], [Populus canescens], [Populus nigra], [Juniperus communis], [Ligustrum vulgare], [Rhamnus catharticus], [Crataegus monogyna], [Prunus spinosa], [Prunus mahaleb], [Rubus caesius], [Euonymus verrucosus], [Berberis vulgaris], [Festuca vaginata], [Syntrichia] spp., [Fumana procumbens], [Euphorbia seguierana], [Polygonatum odoratum], [Poa angustifolia], [Koeleria glauca], [Stipa joannis], [Bromus tectorum], [Epipactis bugacensis], [Epipactis atrorubens], [Cephalanthera rubra].
Holy Cross fir forest (Abietetum polonicum)	Upland fir, or fir-dominated fir-spruce or fir-pine-oak forests developed on mesotrophic acid soils of Little-Poland, in particular of the Holy Cross mountains and of sub-Carpathic hills. They are rich in ferns, bryophytes and lowland forest species shared with deciduous forests of the [Tilio-Carpinetum]. Plant text: [Abies alba], [Fagus sylvatica], [Quercus robur], [Quercus sessilis], [Pinus sylvestris], [Betula verrucosa], [Populus tremula], [Picea excelsa], [Alnus glutinosa], [Sambucus racemosa], [Rubus idaeus], [Dryopteris austriaca], [Athyrium filix-femina], [Phegopteris dryopteris], [Phegopteris polypodioides], [Lycopodium annotinum], [Hylocomium splendens], [Polytrichum formosum], [Maianthemum bifolium], [Rubus hirsutus], [Galeobdolon luteum], [Oxalis acetosella], [Luzula pilosa].
Western Carpathian calcicolous Pinus sylvestris forests	Isolated, calcicolous [Pinus sylvestris] forests of the western Carpathians limited to a few small enclaves in the Strazov mountains, the Velka Fatra, the Pienini, the inner-Carpathian basins and the Erzgebirge. [Erica herbacea] and [Polygala chamaebuxus] are absent and the undergrowth includes a number of species of continental distribution and xerothermic affinities including western Carpathian endemics. Plant text: [Pinus sylvestris], [Linum flavum], [Carex humilis], [Carex alba], [Calamagrostis varia], [Pulsatilla slavica], [Thymus carpathicus], [Primula auricula ssp. hungarica], [Globularia aphyllanthes], [Campanula carpatica], [Festuca tatrae], [Dianthus nitidus], [Dianthus praecox], [Festuca tatrae], [Cyanus triumfettii ssp. dominii], [Minuartia langii], [Soldanella carpatica], [Campanula carpatica], [Campanula serrata], [Gentianella fatrae], [Gentianella lutescens ssp. carpatica], [Koeleria tristis], [Thymus pulcherrimus ssp. sudeticus], [Iris aphylla ssp. hungarica].
Dinaric dolomite Scots pine forests (Genisto januensis-Pinetum)	[Pinus sylvestris] woods of dolomites and dolomite rendzinas of the Dinarides. They are developed within the Illyrian beech forest zone (91K0) and often occupy somewhat higher elevations than the similar dolomite [Pinus nigra] woods of unit Pal. 42.6214. Plant text: [Pinus sylvestris], [Erica herbacea], [Erica carnea], [Galium lucidum], [Genista januensis], [Aquilegia vulgaris], [Buphthalmum salicifolium], [Teucrium chamaedrys], [Carex humilis], [Anthericum ramosum], [Cyclamen purpurascens], [Polygala chamaebuxus], [Hepatica nobilis], [Geranium sanguineum], [Helleborus niger ssp. macranthus], [Epipactis atrorubens], [Carex alba].

Central European lichen scots pine forests	Natural lichen-rich acidophilous [Pinus sylvestris] forests belonging to the alliance [Dicrano-Pinion] occurring on inland nutrient poor sands of the northeastern plains and hills of Central Europe and of the nemoral belt of the middle and southern Sarmatic region. The trees are low growing as the soils are nutrient deficient and subject to drought stress. Plant text: [Pinus sylvestris], [Juniperus communis], [Cladonia furcata], [Cladonia gracilis], [Cladonia silvatica], [Ptilidium ciliare]. Associated habitats: These forests are often a characteristic stage of natural succession on inland dunes (61.15), stands of plantation origin should not be included. Similar woodlands on coastal sand dunes should be regarded as '2180 Wooded dunes of the Atlantic, Continental and Boreal region'.
Sarmatic steppe pine forest	Xerophilous Scots pine woods of the Sarmatic region of western Eurasia and of areas with an extremely continental micro climate in northeastern Central and Eastern Europe. Towards its western limit this habitat is restricted to well drained habitats such as inland dunes and cliffs. There are many relict species of continental origin. Syntaxa included are the [Anemono-Picetum sylvestris], [Peucedano-Pinetum], [Koelerio glaucae-Pinetum sylvestris], [Caragano-Pinetum], [Pyrolo-Pinetum sylvestris] (p.) & [Corynephoro-Pinetum sylvestris]. Plant text: [Pinus sylvestris], [Vaccinium myrtillus], [Pyrola minor], [Orthilia minor], [Chimaphila umbellata], [Ophrys insectifera], [Coronilla vaginalis], [Globularia punctata], [Brachypodium pinnatum]. Corresponding categories: Czech classification: L8.2 Lesostepní bory
Dacian Beech forests (Symphyto-Fagion)	[Fagus sylvatica], or, locally, [Fagus orientalis], [Fagus moesiaca] or [Fagus taurica] forests of the Romanian, Ukrainian and eastern Serbian Carpathians, east of the Uz and the Stry, and of the west Ukrainian pre-Carpathic hills and plateaux. Plant text: [Symphytum cordatum], [Cardamine glanduligera] (syn [Dentaria glandulosa]), [Hepatica transsilvanica], [Pulmonaria rubra], [Leucanthemum waldsteinii], [Silene heuffelii], [Ranunculus carpaticus], [Euphorbia carniolica], [Aconitum moldavicum], [Saxifraga rotundifolia ssp. heuffelii], [Primula elatior ssp. leucophylla], [Hieracium rotundatum], [Galium kitaibelianum], [Moehringia pendula], [Festuca drymeja].
Scrub and low forest vegetation with Quercus alnifolia	Arborescent [Quercus alnifolia]-dominated formations on basic eruptive substrates of the Troodos range, together with mattorals derived from these forests (Pal. 32.1146). Plant text: [Quercus alnifolia], [Acer sempervirens], [Teucrium kotschyanum], [Salvia cypria], [Crepis fraasii], [Sedum cyprium].

Woodlands with Quercus infectoria (Anagyro foetidae-Quercetum infectoriae)	[Quercus infectoria] woods constitute the potential natural vegetation growing on limestones and chiefly marly limestone substrata of the Troodos Mountains between 600 – 700 to 1000 –1100 m. Degraded stages of these communities are associated with [Quercetalia ilicis] maquis ([Quercus coccifera ssp. pseudococcifera]) or with [Cistus creticus] phrygana. Plant text: [Quercus infectoria], [Quercus brachyphylla], [Quercus coccifera ssp. calliprinos], [Arbutus andrachne], [Acer syriacum], [Fontanesia phillиraeoides], [Aristolochia altissima], [Cyclamen persicum], [Eryngium falcatum], [Anagyris foetida], [Styrax officinalis], [Agropyron panormitanum], [Glaucosciadium cordifolium], [Crepis micrantha], [Crataegus azarolus], [Pinus brutia], [Pistacia terebinthus], [Pistacia lentiscus], [Arbutus andrachne], [Calicotome villosa], [Cistus creticus], [Ptilostemon chamaepeuce var. cypris], [Allium neapolitanum], [Ferula communis], [Geranium tuberosum], [Scaligeria cretica], [Scutellaria cypria var. cypria], [Serratula cerinthifolia]. Associated habitats: The [Anagyro foetidae- Quercetum infectoriae] assoc
Cedrus brevifolia forests (Cedrosetum brevifoliae)	Forests of [Cedrus brevifolia], endemic to the western summits of the Troodos range. Plant text: [Cedrus brevifolia], [Quercus alnifolia], [Arrhenatherum album], [Cephalorrhynchus cypricus], [Galium peplidifolium], [Stellaria media], [Lindbergella sintensii].
Cretan chasmophyte communities	Cliff and chasm communities of Crete, with [Petromarula pinnata], [Galium fruticosum], [Centaurea argentea], [Ebenus cretica], [Verbascum arcturus] ([Celsia arcturus]), [Inula candida], [Eryngium ternatum], [Asperula incana], [Dianthus juniperinus], [Aster canus], [Campanula pelviformis], [Campanula saxatilis].
Western Cretan chasmophyte communities	Relatively widespread cliff and chasm communities of the lowlands and hills of western and central Crete.
Eastern Cretan chasmophyte communities	Cliff and chasm communities of the arid lowlands and hills of eastern Crete.
High-altitude Cretan chasmophyte communities	Cliff and chasm communities of the high altitudes of Crete.
Karpathos chasmophyte communities	Cliff and rock communities of Karpathos, with [Teucrium heliotropifolium], [Silene fruticosa], [Galium incurvum], [Inula heterolepis].
Eastern Aegean chasmophyte communities	Cliff and rock communities of Rhodes, Samos, Ikaria, Lesbos with [Campanula hagielia], [Lactuca leburnea], [Dianthus rhodensis], [Inula heterolepis], [Rosularia serrata], [Sedum creticum].
Cyclades chasmophyte communities	Cliff and rock communities of the Cyclades, with [Fibigia lunarioides], [Eryngium amorginum], [Amaracus tournefortii], [Campanula amorgina], [Campanula heterophylla], [Helichrysum amorginum].
Northern Sporades chasmophyte communities	Cliff and rock communities of the Sporades, with [Inula sophiae], [Capparis spinosa], [Dianthus arboreus], [Amaracus tournefortii].
Cyprian chasmophyte communities	Limestone and ophiolite cliff and rock communities of Cyprus, in particular, limestone and ophiolite cliffs and gorges of the Troodos range, limestone cliffs and pinnacles of the Kyrenia range, flysch, sandstone and conglomerate rock-slopes of the Kythrean formation.

Kyrenia chasmophyte communities	Limestone cliff and rock communities of the Kyrenia range. Endemic plants include [Delphinium caseyi], [Brassica hilarionis] and [Arabis cypria] of the Kythrean formation.
Troodos limestone chasmophyte communities	Limestone cliff and rock communities of the Troodos range.
Troodos serpentine chasmophyte communities	Ophiolite cliff and rock communities of the Troodos range and the Akamas peninsula. Endemic plants include [Alyssum troodi], [Alyssum akamasicum], [Alyssum chondrogynum].
Kythrean chasmophyte communities	Calciphile cliff and rock crevice communities of the Kythrean formation, with several local endemics, including [Hedysarum cyprium] and [Salvia veneris].
Dinaric serpentine Scots pine forests	[Pinus sylvestris] woods of serpentines of the Dinarides of Bosnia-Herzegovina and western and southern Serbia, with [Daphne blagayana], [Rosa pendulina], [Erica herbacea] ([Erica carnea]), [Galium lucidum], [Laserpitium krapfii], [Vicia villosa], [Symphytum tuberosum], [Erythronium dens-canis], [Pteridium aquilinum] and the serpentine plants [Asplenium cuneifolium ssp. serpentini], [Campanula cervicaria], [Crocus veluchensis], [Stachys scardica]. They are developed within the Illyrian and Moesian beech forest zones and generally occupy higher elevations and deeper soils than the serpentine [Pinus nigra] woods of unit 42.6212.
Dinaric dolomite Scots pine forests	[Pinus sylvestris] woods of dolomites and dolomite rendzinas of the Dinarides of Bosnia-Herzegovina, Croatia and Slovenia, with [Erica herbacea] ([Erica carnea]), [Galium lucidum], [Genista januensis], [Aquilegia vulgaris], [Buphthalmum salicifolium], [Teucrium chamaedrys], [Carex humilis], [Anthericum ramosum], [Cyclamen purpurascens], [Polygala chamaebuxus], [Hepatica nobilis], [Geranium sanguineum], [Helleborus niger ssp. macranthus], [Epipactis atrorubens], [Carex alba]. They are developed within the Illyrian beech forest zone and often occupy somewhat higher elevations than the similar dolomite [Pinus nigra] woods of unit 42.6214.
Cedar of Lebanon forests	Forests of [Cedrus libani] of the Taurus system, of Paphlagonia and of the Levant.
Lycian Taurus cedar of Lebanon forests	Forests of [Cedrus libani] of the western Taurus, pure or mixed with [Acer sempervirens], [Acer platanoides], [Ulmus montana], [Populus tremula], developed at between 1500 and 2000 metres on limestones and rendzinas under a cold and snowy climate. The undergrowth includes [Alliaria officinalis], [Oryzopsis holciformis] and the endemics [Paeonia turcica], [Pentapera bocquetii], [Ebenus boissieri], [Campanula michauxioides].
Central Taurus cedar of Lebanon forests	Forests of [Cedrus libani] of the Pisidian, Isaurian and Cilician Taurus, of the western Anti-Taurus and of the Amanus.
Paphlagonian cedar of Lebanon forests	Very local sub-Pontic forests of [Cedrus libani] of northeastern Anatolia.
Cyprus cedar forests	Forests of [Cedrus brevifolia], endemic to Cyprus where they are limited to the western summits of the Troodos range, in the 900-1400 metre range.

Solitary ascidians, including [Ascidia mentula] and [Ciona intestinalis], with [Antedon] spp. on wave-sheltered circalittoral rock	This variant occurs on circalittoral bedrock or boulder slopes in generally wave-sheltered conditions (often in sea lochs) with little tidal flow. It is frequently found on vertical or steeply-sloping rock. Apart from the large ascidians, [Ascidia mentula] and [Ciona intestinalis], the rock surface usually has a rather sparse appearance. Scyphistomae larvae are often present on any vertical surfaces. Grazing by the sea urchin [Echinus esculentus] leaves only encrusting red algae (giving the bedrock/boulder substratum a pink appearance), cup corals [Caryophyllia smithii] and the keelworm [Pomatoceros triqueter]. There may be a few hydroid species present, such as [Nemertesia] spp. and [Kirchenpaueria pinnata], occasional [Alcyonium digitatum] and occasional [Metridium senile]. Barnacles [Balanus] spp. and the colonial ascidian [Clavelina lepadiformis] also occasionally occur. At some sites, echinoderms such as the crinoid [Antedon] spp., the starfish [Crossaster papposus] and [Asterias rubens] and the brittlestar [Ophiothrix fragilis] (in low densities) may be found. The squat lobster [Munida rugosa] is likely to be found in c
Mediterranean tall humid grassland of lowlands	These meadows can be eutrophic and have hygro-nitrophilous vegetation dominated by [Lolium multiflorum] and [Rumex conglomeratus].
Mediterranean tall humid grassland of mountains	No description available.
Peat grasslands of Troodos	No description available.
Freshwater seeps in infralittoral rock	No description available.
Oil seeps in infralittoral rock	No description available.
Vents in infralittoral rock	No description available.
Freshwater seeps in circalittoral rock	No description available.
Oil seeps in circalittoral rock	No description available.
Vents in circalittoral rock	No description available.
Machair complexes	Machair complexes are characterised by the effects of wind-blown calcareous sand with a predominance of shell fragments, a low proportion of sand-binding vegetation and a long history of agricultural use. Machair in its strict sense (B1.9) refers to short-turf grassland on relatively flat and low-lying sand plains formed by dry or wet (seasonally waterlogged) sandy soil above peat or impermeable bedrock. Machair complexes (X27) correspond to machair in the broad sense, including the beach zone (B1.2), mobile and semi-fixed foredunes (B1.3), dune-slack pools (C1.16), fens (D4.1), lochs (C1), some of them brackish, and saltmarsh (A2.5), as well as machair grassland (B1.9) and land cultivated on a strip rotation (I1).
Blanket bog complexes	Blanket bogs are ombrotrophic, strongly acidic peatlands, formed on flat or gently sloping ground with poor surface drainage, in oceanic climates with high rainfall. Blanket bog complexes include dystrophic pools (C1.4) and acidic flushes (D2.2), as well as the main mire surface (D1.2).

Mixed [Laminaria hyperborea] and [Laminaria ochroleuca] forest on exposed infralittoral rock	Mixed [Laminaria hyperborea] and [Laminaria ochroleuca] forests on upper infralittoral exposed rock with a dense community of foliose red seaweeds such as [Cryptopleura ramosa], and [Plocamium cartilagineum] as well as small filamentous red seaweeds including [Bonnemaisonia asparagoides, Heterosiphonia plumosa, Pterosiphonia parasitica] and [Brongniartella byssoides]. [L. hyperborea] has a rough stipe which allow dense assemblages of epiphytic red seaweeds to form including the foliose [Callophyllis laciniata], [Delesseria sanguinea] and [Hypoglossum hypoglossoides]. Unlike [L. hyperborea], however, [L. ochroleuca] has a smooth stipe and so it lacks dense assemblages of epiphytic seaweeds [L. ochroleuca] has a smooth stipe. Encrusting coralline algae often cover much of the rock surface along with a few brown seaweeds including [Dictyota dichotoma], [Dictyopteris polypodioides] and [Desmarestia aculeata] present as well. In mixed kelp forest [L. ochroleuca] may predominate with [L. hyperborea] more common at shallower depths. Whilst foliose red seaweeds dominate the
Crustose sponges and colonial ascidians with [Dendrodoa grossularia] or barnacles on wave-surged infralittoral rock	Vertical and overhanging, exposed to moderately exposed bedrock gullies, tunnels and cave entrances subject to wave surge, and dominated by the crustose sponges [Halichondria panicea], [Myxilla incrustans], [Clathrina coriacea], [Leucosolenia botryoides], [Esperiopsis fucorum] and [Grantia compressa]. There may also be dense aggregations of the anthozoan [Sagartia elegans], dwarf [Metridium senile], [Alcyonium digitatum], and [Urticina felina], and a dense covering of the barnacle [Balanus crenatus] on the bare rock face. Dense aggregations of the robust hydroid [Tubularia indivisa] may be recorded, growing through the sponge crust. Colonial ascidians such as [Polyclinum aurantium], [Botryllus schlosseri], [Botrylloides leachi], [Aplidium nordmanni] and the solitary ascidian [Dendrodoa grossularia] may all be recorded. The echinoderms [Asterias rubens], [Echinus esculentus], [Henricia] sp., the crab [Cancer pagurus] and the calcareous tubeworm [Pomatoceros triqueter] may also be present on the rock face, along with encrusting coralline algae.
All Annex I habitats	
All habitats	
Coastal habitats	Coastal habitats are those above spring high tide limit (or above mean water level in non-tidal waters) occupying coastal features and characterised by their proximity to the sea, including coastal dunes and wooded coastal dunes, beaches and cliffs. Includes free-draining supralittoral habitats adjacent to marine habitats which are normally only affected by spray or splash, strandlines characterised by terrestrial invertebrates and moist and wet coastal dune slacks and dune-slack pools. Excludes supralittoral rock pools and habitats adjacent to the sea which are not characterised by salt spray, wave or sea-ice erosion.
Coastal dunes and sandy shores	Sand-covered shorelines of the oceans, their connected seas and associated coastal lagoons, fashioned by the action of wind or waves. They include gently sloping beaches and beach-ridges, formed by sands brought by waves, longshore drift and storm waves, as well as dunes, formed by aeolian deposits, though sometimes re-fashioned by waves.

Sand beach driftlines	The lowest level of the supralittoral, just above the normal tide limit, where drift material accumulates and the sand may be rich in nitrogenous organic matter. Vegetation, if present at all, is very open and composed of annuals, e.g. [Atriplex] spp., [Cakile] spp., [Salsola kali], [Polygonum] spp.
Boreo-Arctic sand beach annual communities	Annual communities of sand beaches of the low Arctic and high Arctic oceanic zones of the Palaearctic Atlantic, Pacific and Arctic oceans, with [Cakile edentula ssp. islandica] ([Cakile arctica]), [Atriplex lapponica].
Middle European sand beach annual communities	Annual halo-nitrophilous communities of the sand beaches of the temperate North Atlantic, the North Sea, the English Channel, the Irish Sea and the Baltic, with [Suaeda maritima], [Bassia hirsuta], [Cakile maritima], [Salsola kali], [Beta maritima], [Atriplex] spp., [Glaucium flavum], [Polygonum] spp., [Mertensia maritima].
Baltic sand beach annual communities	Annual driftline communities of central and southern Baltic sand beaches, with [Cakile maritima ssp. baltica], [Atriplex littoralis], [Atriplex calotheca], [Atriplex hastata], [Salsola kali], [Polygonum aviculare], [Polygonum oxyspermum], [Senecio vulgaris], [Matricaria perforata], [Matricaria maritima].
Tethyan sand beach driftline communities	Annual communities of sand beaches of the Mediterranean, Black Sea and Mediterraneo-Atlantic coasts. [Zosterion marinae] and [Cymodoceion nodosae] communities with e.g. [Caulerpa prolifera], [Zostera noltii], [Cymodocea nodosa].
Western Tethyan sand beach annual communities	Annual communities of sand beaches of the Mediterranean and the subtropical Atlantic, between Portugal and the southern limit of the Mediterraneo-Saharan transition zone at 27øN.
Pontic sand beach annual communities	Annual halo-nitrophilous communities of sand beaches of the Black Sea, with [Cakile maritima ssp. euxina], [Salsola kali ssp. ruthenica], [Salsola kali ssp. tragus], [Atriplex hastata], [Polygonum maritimum], [Euphorbia peplis], [Euphorbia paralias], [Glaucium flavum], [Xanthium strumarium ssp. italicum], [Convolvulus lineatus], [Convolvulus persicus].
Pontic sand beach perennial communities	Halo-nitrophilous communities of Black Sea sand beaches dominated by perennial herbs, including [Crambe maritima ssp. pontica], [Argusia sibirica], [Lactuca tatarica], [Petasites spurius] or [Trachomitum venetum].
Sand beaches above the driftline	Gently sloping sand-covered shorelines fashioned by wind action along coasts and beside associated coastal lagoons.
Unvegetated sand beaches above the driftline	Sandy beaches of oceans, their connected seas and associated coastal lagoons, devoid of phanerogamic vegetation.
Baltic unvegetated spits and bars above the driftline	No description available.
Baltic unvegetated sandy beaches above the driftline	No description available.
Biocenosis of supralittoral sands	No description available.
Facies of depressions with residual humidity	No description available.

Facies of quickly-drying wracks	No description available.
Facies of tree trunks which have been washed ashore	No description available.
Facies of phanerogams which have been washed ashore (upper part)	No description available.
Boreo-arctic sand beach perennial communities	Perennial halo-nitrophilous communities of sand, gravelly sand and gravel cordons of upper beaches of the arctic and boreal sea coasts of Eurasia formed by [Leymus arenarius] ([Elymus arenarius]), [Ammophila arenaria], [Honkenya peploides], [Elymus farctus], [Elymus repens], [Mertensia maritima], accompanied by [Atriplex] spp. ([Atriplex prostrata], [Atriplex longipes ssp. praecox], [Atriplex glabriuscula]), [Polygonum aviculare], [Cakile maritima], [Cakile arctica], [Petasites spurius], [Potentilla anserina]. Representatives of these communities occur very locally within the nemoral zone.
North Sea sand beach perennial communities	[Leymus arenarius]-dominated perennial halo-nitrophilous communities of upper beaches of North Sea coasts of southern Norway, Jutland, Schleswig-Holstein, Lower Saxony, the Netherlands, England, Scotland and Orkney, and of the Danish coast of the Kattegat.
Baltic sand beach perennial communities	[Leymus arenarius]-dominated perennial halo-nitrophilous communities of southern and central Baltic upper beaches, often with [Petasites spurius].
Boreo-Bothnian sand beach perennial communities	Perennial halo-nitrophilous communities of the upper beaches of the Gulf of Bothnia dominated by [Leymus arenarius] and [Festuca rubra ssp. arenaria].
Icelandic sand beach perennial communities	Perennial halo-nitrophilous communities of upper beaches of Iceland dominated by [Leymus arenarius] or [Mertensia maritima].
Beach ridges consisting of algal or other plant material	No description available.
Sandy beach ridges with no or low vegetation	Sandy beach ridges may be bare or may host pioneer communities of the class [Ammophiletea] consisting mainly of geophytes and hemicryptophytes, e.g. the association [Agropyrion juncei]-[Sporoboletum pungentis]. They may sporadically be inundated by sea water during storms. The vegetation may be ammonitrophilous, of the class [Cakiletea maritimae], enriched by many [Ammophiletea] species like [Echinophora spinosa], [Elymus farctus], [Eryngium maritimum].
Sandy beach ridges dominated by shrubs or trees	No description available.
Shifting coastal dunes	Mobile sands of the coasts of the boreal, nemoral, steppe, Mediterranean and warm-temperate humid zones, unvegetated or occupied by open grasslands; they may form tall dune ridges or, particularly along the Mediterranean and the Black Sea, be limited to a fairly flat upper beach, still subject in part to inundation.

Embryonic shifting dunes	Formations of the coasts of nemoral, steppe, Mediterranean and warm-temperate humid zones, representing the first stages of dune construction, constituted by ripples or raised sand surfaces of the upper beach or by a seaward fringe at the foot of the tall dunes. Typically [Elymus farctus], [Otanthus maritimus], [Sporobolus pungens], [Pancratium maritimum], [Medicago marina] or [Anthemis tomentosa] may be present. The vegetation may belong to the class [Ammophiletea] with communities of [Otanthus maritimus], [Agropyro juncei-Sporoboletum pungentis], [Cypero mucronati-Agropyretum juncei], [Elymetum sabulosi], [Medicagini marinae-Ammophiletum australis] and species [Elytrigia bessarabica], [Glycyrrhiza glabra], [Limonium graecum], [Limonium sinuatum], [Zygophyllum album], [Inula crithmoides], [Scirpus holoschoenus], [Paronychia argentea] and [Centaurea spinosa].
Atlantic embryonic dunes	Embryonic dunes of the Atlantic, south to southern Iberia, of the North Sea and of the Baltic coasts of Denmark, Germany, southern Sweden, Poland, the Baltic States, Russia and southwestern Finland, with [Elymus farctus] ([Agropyron junceum]) accompanied by [Leymus arenarius] in the north, by [Euphorbia paralias] on middle and southern Atlantic shores.
Western Tethyan embryonic dunes	Embryonic dunes of the Mediterranean coasts, on which [Elymus farctus] is accompanied by [Sporobolus pungens], [Euphorbia peplis], [Otanthus maritimus], [Medicago marina], [Anthemis maritima], [Anthemis tomentosa], [Eryngium maritimum], [Pancratium maritimum].
Pontic embryonic dunes	Formations of Black Sea coasts, transitional between Pontic white dune and driftline communities, characterized by the adjunction to [Elymion gigantei] species assemblies of [Cakile maritima ssp. euxina], [Salsola kali ssp. ruthenica], [Euphorbia peplis] and other sand beach annual species.
Large migrating dunes with no or low vegetation	No description available.
White dunes	Mobile dunes forming the seaward cordon or cordons of dune systems of the coasts of nemoral, steppe, Mediterranean and warm-temperate humid zones. Communities of [Ammophilion arenariae], [Ammophilion borealis], [Zygophyllion fontanesii] and several indicator species: [Ammophila arenaria], [Eryngium maritimum], [Euphorbia paralias], [Otanthus maritimus]. White dunes are further subdivided by region: Atlantic, Western Tethyan, Canario-Saharan and Pontic.
Atlantic white dunes	White dunes of the Atlantic, south to Aquitaine, of the North Sea and of the Baltic coasts of Denmark, southern Sweden, Germany, Poland, the Baltic States and Russia, dominated, when vegetated, by marram grass ([Ammophila arenaria]) accompanied by, among others, [Eryngium maritimum], [Euphorbia paralias], [Calystegia soldanella].
Coastal dunes: white dunes (sensu strictu)	No description available.
Coastal dunes: green dunes	No description available.

Western Tethyan white dunes	White dunes of the Mediterranean coasts and of the subtropical Atlantic coasts of Iberia and mediterranean North Africa, south to Safi at 32øN, dominated, when vegetated, by the marram grass [Ammophila arenaria ssp. arundinacea] ([Ammophila australis]), accompanied by, among others, [Otanthus maritimus], [Echinophora spinosa], [Eryngium maritimum], [Euphorbia paralias], [Cutandia maritima], [Medicago marina], [Anthemis maritima].
Canario-Saharan white dunes	Mobile dunes of the Canary Islands and of the mediterraneo-Saharan coasts of Atlantic North Africa, with [Traganum moquini], [Euphorbia paralias], [Polycarpaea nivea], [Cyperus capitatus], [Ononis natrix], [Convolvulus caput-medusae], [Polygonum maritimum], [Lotus] spp. and the threatened Lanzarote endemic lily [Androcymbium psammophilum].
Pontic white dunes	Mobile dunes of the Black Sea coasts, with [Leymus racemosus ssp. sabulosus] ([Elymus giganteus]), [Elymus farctus ssp. bessarabicus], [Elymus pycnanthus], [Artemisia tschernieviana], [Eryngium maritimum], [Convolvulus persicus], [Petasites spurius], [Corispermum marschallii], [Lactuca tatarica], [Crambe maritima var. pontica], [Cynanchum acutum], [Centaurea arenaria ssp. odessana], [Argusia sibirica] ([Tournefortia arguzia]) and, in western formations, [Ammophila arenaria ssp. arundinacea], [Euphorbia paralias], [Calystegia soldanella].
Young boreo-arctic dunes	Young dunes of arctic and boreal latitudes colonised by halo-nitrophilous perennial vegetation similar to that of unit B1.23, including [Leymus arenarius] ([Elymus arenarius]), [Ammophila arenaria], [Honkenya peploides], [Elymus farctus] ([Elytrigia juncea]), [Elymus repens], [Mertensia maritima].
Coastal stable dune grassland (grey dunes)	Fixed or semifixed dunes of the coasts of the boreal, nemoral, steppe, mediterranean and warm-temperate humid zones, with the perennial grasslands, chamaephyte-dotted grasslands, forblands, subshrub or succulent communities that stabilise them and the therophyte communities that may occupy the grassland clearings.
Northern fixed grey dunes	Grasslands of Baltic, North Sea, English Channel and northern Atlantic fixed dunes, including those of the British Isles, the Faeroes, southern Norway, the North Sea and Baltic coasts, the Channel coasts of France.
Crested-hairgrass dune communities	Calciphile communities of fixed dunes of the North Sea, the English Channel, the north Atlantic and, locally, of the southwestern Baltic, with [Koeleria albescens], ([Koeleria glauca], [Koeleria arenaria]), [Galium verum var. maritimum], [Viola curtisii], [Ononis repens], [Festuca rubra], [Festuca polesica], [Anthyllis vulneraria ssp. maritima] and moss (e.g. [Tortula ruraliformis]) and lichen carpets.
Grey-hairgrass dune communities	Communities of less calcareous or decalcified dunes of the North Atlantic, the English Channel, the North Sea and the Baltic north to southern Norway, northern Jutland, southern Sweden, the Kalinin district and the Gulf of Riga, often rich in [Corynephorus canescens] and [Viola canina].
Mouse-ear dune communities	Short-lived, warmth-loving communities of the dunes of the North Atlantic and its connected seas north to extreme southern Sweden, with [Cerastium diffusum ssp. diffusum], [Cerastium diffusum ssp. subtetrandrum], [Cerastium semidecandrum], [Erodium lebelii], [Phleum arenarium], [Silene conica].

Biscay fixed grey dunes	Fixed dune grasslands infiltrated by dwarf bushes of French Brittany and the coasts of the Bay of Biscay, with [Helichrysum stoechas], [Artemisia campestris], [Ephedra distachya].
Mediterraneo-Atlantic fixed grey dunes	Fixed dunes of the western and central Mediterranean and of the thermo-Atlantic coasts of Portugal, southwestern Spain and North Africa, colonised by communities mostly composed of fruticose species, with [Crucianella maritima], [Artemisia crithmifolia], [Armeria pungens], [Armeria welwitschi], [Helichrysum decumbens], [Helichrysum italicum], [Teucrium] spp., [Ephedra distachya], [Pancratium maritimum] and [Ononis natrix ssp. ramosissima]. Communities of [Crucianellion maritimae] and [Ononidion ramosissimae].
East Mediterranean fixed grey dunes	Coastal dune communities of the Adriatic, the Ionian, the Aegean and the eastern Mediterranean, dominated by dwarf shrubs and subshrubs of genera [Ephedra], [Ononis], [Artemisia], and, very locally, [Crucianella] or others, by tall canes or by succulents; they may be rich in species of genus [Silene], together with [Euphorbia terracina] among others. Vegetation of the alliances [Crucianellion maritimae], [Medicagini marinae-Triplachnion nitensis], [Ammophilion arenariae].
Atlantic dune [Mesobromion] grassland	Dunal grasslands, in particular of northern Brittany, rich in species characteristic of dry calcareous grasslands (c.f. unit E1.26).
Atlantic dune thermophile fringes	[Geranium sanguineum]-rich forb and grass communities, related to hem formations of unit E5.2, developed within grey dune systems of western Ireland, southwestern England, Wales, Brittany and southwestern Norway.
Dune fine-grass annual communities	Sparse pioneer formations of fine grasses rich in spring-blooming therophytes characteristic of oligotrophic, superficial soils in grey dune systems of the Atlantic and the Mediterranean. They are closely related to grasslands of units E1.8 and E1.9.
Tethyan dune deep sand therophyte communities	Therophyte communities of the coasts of the Mediterranean basin and the subtropical Atlantic colonizing deep sands in clearings of perennial communities of fixed or semi-fixed dune systems, and sometimes deflation depressions of white dunes with e.g. several [Malcolmia] spp.
Dune Mediterranean xeric grassland	Therophyte communities of shallow, calcareous fixed sands of the coastal dune systems of the Mediterranean basin. These are coastal dune representatives of unit E1.3.
Thermo-Atlantic succulent and semi-fixed dunes	Fixed or semi-fixed dunes of the Canary Islands and of the Saharo-mediterranean zone of the Atlantic coasts of North Africa, between Essaouira and Tan-Tan, dominated by the tall shrubby chenopod [Traganum moquinii] or by dwarf shrubs or subshrubs.
Pontic fixed dunes	Fixed dunes of the coasts of the Black Sea.
Western Pontic fixed dunes	Fixed dunes of the western coasts of the Black Sea, north of the Bosphorus and west of the Dniester.
Southwestern Pontic fixed dunes	Fixed dunes of the southwestern coasts of the Black Sea, between the Bosphorus and Cape Caliacra, harbouring the psammophytes [Cionura erecta], [Peucedanum arenarium], [Jurinea albicaulis ssp. kilaea], [Silene thymifolia], [Medicago marina], [Secale sylvestre], [Pancratium maritimum], [Convolvulus persicus], [Scabiosa argentea] ([Scabiosa ucranica]), [Euphorbia seguierana] and the Balkan endemic [Lepidotrichum uechtritzianum].

Northwestern Pontic fixed dunes	Dunes of the northwestern Black Sea coast, in particular, those associated with the mouth of the Danube.
Eastern Pontic fixed dunes	Fixed dunes of the northern and eastern Black Sea coasts, east of the Dniester, southeastwards to the Kuban basin.
Southern Pontic fixed dunes	Fixed dunes of the southern and southeastern coasts of the Black Sea.
Boreo-arctic grey dunes	Communities of fixed dunes of the boreal and arctic coasts of Atlantic Eurasia, characterized by the dominance of species of the [Honkenyo-Elymetea] and the presence of arcto-alpine species.
Coastal dune heaths	Stable dunes with a leached surface and vegetation dominated by [Calluna vulgaris], [Empetrum nigrum] or [Erica] spp.
Crowberry brown dunes	[Empetrum nigrum] or [Empetrum hermaphroditum] colonizing dunes of the Arctic Ocean, the North Atlantic, the North Sea and the southern Baltic.
Heather brown dunes	[Erica], [Calluna] and [Ulex] heaths colonizing decalcified dunes of France, Iberia, Britain, the Baltic coast, and Scandinavia.
East Anglian ling coastal dune heaths	[Calluna vulgaris]-[Carex arenaria] heaths of inner coastal dunes of East Anglia.
French ling coastal dune heaths	[Calluna vulgaris]-[Carex trinervis] heaths of northern French inner coastal dunes.
British bell heather coastal dune heaths	[Erica cinerea]-[Carex arenaria] heaths of decalcified coastal dunes of the western British Isles, mostly dominated by [Erica cinerea], sometimes by [Calluna vulgaris].
French bell heather coastal dune heaths	[Erica cinerea]-[Festuca vasconcensis] heaths of dry coastal dunes of southwestern France.
French Dorset heath coastal dune heaths	[Erica ciliaris]-[Pseudarrhenatherum longifolium] ([Arrhenatherum thorei]) heaths of more humid coastal dunes of southwestern France.
Iberian green heather coastal dune heaths	[Erica scoparia]-[Ulex parviflorus ssp. eriocladus] ([Ulex australis]) heaths of southwestern Iberian coastal dunes, dunal fraction of the thermo-Mediterranean heaths of unit 32.2C1.
Iberian Dorset heath coastal dune heaths	[Erica ciliaris]-[Ulex parviflorus ssp. eriocladus] heaths of more humid southwestern Iberian coastal dunes.
Northern ling coastal dune heaths	Open heathlands of inner coastal dunes of Denmark, of the southern and southeastern Baltic coast, of southern Scania, the Kattegat coast of Sweden, Åland, Gotland and the Öland-Archipelago Sea dominated by [Calluna vulgaris], with [Empetrum nigrum], [Carex arenaria], [Deschampsia flexuosa], [Hieracium umbellatum], [Lotus corniculatus], [Polypodium vulgare], [Salix repens], and a ground layer constituted mostly by [Dicranum scoparium] and [Pleurozium schreberi].
Coastal dune scrub	Stable dunes with scrub, e.g. [Hippophae rhamnoides], [Salix repens] in the north, or [Juniperus] spp. or sclerophyllous shrubs in the south.
Coastal dune thickets	Dense formations of large, mostly deciduous, shrubs of nemoral affinities of the coastal dunes and dune-slacks of the boreal, nemoral, steppe, mediterranean and warm-temperate humid zones of the Palaearctic region; they include sea-buckthorn, privet, elder, willow, gorse or broom, often festooned with creepers such as honeysuckle or white bryony ([Bryonia cretica]).

Sea-buckthorn dune thickets	Thickets dominated by [Hippophae rhamnoides ssp. rhamnoides] colonizing dry or humid dune depressions of the coasts of the North Sea, the eastern English Channel and the southern Baltic, mostly in Denmark, Germany, Poland, the Kalinin district, the Netherlands, Belgium, Northern France and southeastern and eastern England and southeastern Scotland.
Western nemoral mixed dune thickets	Dunal pre-forest thickets of nemoral affinities of the coastal dunes of the western Palaearctic region formed of species of genera [Ulex], [Sarothamnus], [Rubus], [Ligustrum], [Daphne], [Sambucus]. Codes of subdivisions of unit 31.8 can be used, in addition to unit 16.252, to specify the habitat. Listed elsewhere are dunal formations of heaths (units 16.23, 16.24), sea-buckthorn ([Hippophae rhamnoides], unit 16.251) or creeping willow ([Salix arenaria], unit 16.26).
Creeping-willow mats	Mats of [Salix arenaria] colonizing dry or humid dune depressions of Atlantic, North Sea, English Channel, Irish Sea and Baltic coasts of western and northwestern Europe.
Dune juniper thickets	Juniper heaths and thickets formed by [Juniperus phoenicea], [Juniperus lycia] s.l., [Juniperus macrocarpa], [Juniperus transtagana], [Juniperus communis] in dune slacks and on dune slopes of the coasts of the boreal, nemoral, steppe, mediterranean or warm-temperate humid zones of the Palaearctic region.
Dune prickly juniper thickets	[Juniperus oxycedrus ssp. macrocarpa] thickets and low woods of the outer belt of the juniper woods of fixed Mediterranean and Mediterraneo-Atlantic dunes. Well-developed woods and forests are placed in unit 16.29, with the habitat specified by unit 42.A92 (16.29 x 42.A92).
Lycian juniper thickets	[Juniperus phoenicea ssp. lycia] thickets of the inner belt of the juniper woods of fixed Mediterranean and Mediterraneo-Atlantic dunes. Well-developed woods and forests are placed in unit 16.29, with the habitat specified by unit 42.AA12 (16.29 x 42.AA12).
Rufescent juniper thickets	Scrubs of the fastigiate [Juniperus oxycedrus ssp. transtagana] of the dunes of southwestern Portugal.
Common juniper dune thickets	[Juniperus communis] scrubs of the calcareous dunes of northwest Jutland.
Dune sclerophyllous scrubs and thickets	Sclerophyllous, lauriphyllous or drought-deciduous scrubs, thickets and brushes established on dunes of mediterranean or warm-temperate humid regions. They are partially represented by classes of [Ononido-Rosmarinetea], [Quercetea ilicis], [Cisto-Lavanduletea], [Retametea raetami], [Cisto-Micromerietea] and [Ammophiletea].
Coastal dune woods	Coastal dunes colonised by woodland which are directly influenced by proximity to the sea.
Coastal dunes: (brown) dunes covered with natural or almost natural coniferous forest, e.g. pines	No description available.
Coastal dunes: (brown) dunes covered with deciduous forest (beech, birch, oak)	No description available.

Moist and wet dune slacks	Moist or wet depressions in coastal dune systems, sometimes with permanent water but more often only seasonally moist or flooded by fresh water. Dune-slacks are extremely rich and specialised habitats, very threatened by the lowering of water tables.
Dune-slack pioneer swards	Pioneer formations of humid sands and dune pool fringes on soils with low salinity. Component habitats may be found in unit C3, in particular unit C3.4132 and unit C3.512.
Dune-slack fens	Calcareous and, occasionally, acidic fen formations of coastal dune-slacks (cf. units D2.2, D4.1, in particular units D2.29, D4.11, D4.1H), often invaded by creeping willow, occupying the wettest parts of dune-slacks.
Dune-slack grassland and heaths	Humid grasslands and rushbeds (units E3.1, E3.411F, E3.418, E3.51 i.a., wet heaths and swamp-heaths (unit F4.11 i.a.) of dune-slacks, also often with creeping willows ([Salix rosmarinifolia], [Salix arenaria]).
Dune-slack reedbeds, sedgebeds and canebeds	Reedbeds, tall-sedge communities and canebeds (cf. units C3.2, C3.3, D5.2) of dune-slacks. Communities of [Phragmition], [Magnocaricion], [Potamogetonion], [Juncetalia].
Coastal dunes: wet dune slacks: dominated by shrubs or trees	No description available.
Machair	Short-turf grasslands formed on dry and seasonally waterlogged, relatively flat and low-lying sand plains, where windblown calcareous sand overlies peat or impermeable bedrock. Machair grasslands are machair in the strict sense, and form part of the machair complex (X27), characteristic of the Outer Hebrides and western Ireland, with dunes (B1.3, B1.4), shallow lochs (C1) and land cultivated on a strip rotation (I1). They support a flower-rich, and correspondingly insect-rich, dune grassland studded with shallow lochs and cultivated on a strip rotation. The grassland is dominated by [Poa pratensis] and [Festuca rubra], accompanied by [Thalictrum minus ssp. arenarium], [Thymus praecox ssp. arcticus] ([Thymus drucei]), [Bellis perennis], [Prunella vulgaris], [Erodium cicutarium], [Trifolium] spp., [Euphrasia] spp. and many orchids, among which [Dactylorhiza fuchsii ssp. hebridensis], [Dactylorhiza purpurella], [Gymnadenia conopsea], [Coeloglossum viride], [Platanthera chlorantha] and [Orchis mascula] are the most prominent. This grassland harbours a plant community of very restricted d
Coastal shingle	Beaches of the oceans, of their connected seas and of their associated coastal lagoons, covered by pebbles, or sometimes boulders, usually formed by wave action.
Shingle beach driftlines	The lowest level of the supralittoral, just above the normal tide limit, where drift material accumulates and the shingle may be rich in nitrogenous organic matter. Vegetation, if present at all, is very open and composed of annuals or, particularly by the Mediterranean, especially the east Mediterranean, of annuals and perennials, occupying accumulations of drift material and gravels rich in nitrogenous organic matter; characteristic are [Cakile maritima], [Salsola kali], [Atriplex] spp., [Polygonum] spp., [Euphorbia peplis], [Mertensia maritima], and, particularly in Mediterranean formations, [Glaucium flavum], [Matthiola sinuata], [Matthiola tricuspidata], [Euphorbia paralias], [Eryngium maritimum].

Boreo-arctic gravel beach annual communities	Beach and upper beach formations, mostly of annuals of the low Arctic and high Arctic oceanic zones of the Palaearctic Atlantic, Pacific and Arctic oceans, occupying accumulations of drift material and gravels rich in nitrogenous organic matter; characteristic are [Cakile edentula], [Polygonum norvegicum] ([Polygonum oxyspermum ssp. raii]), [Atriplex longipes] s.l., [Atriplex glabriuscula], [Mertensia maritima].
Atlantic and Baltic shingle beach drift lines	Formations, predominantly of annuals, occupying accumulations of drift material and gravels rich in nitrogenous organic matter on nemoral and boreonemoral beaches of the Atlantic, the North Sea and the Baltic; characteristic are [Cakile maritima ssp. maritima], [Cakile maritima ssp. baltica], [Salsola kali], [Atriplex] spp. (particularly [Atriplex glabriuscula]), [Polygonum] spp., [Euphorbia peplis], [Mertensia maritima], [Glaucium flavum].
Gravel beach communities of the mediterranean region	Very open, low formations of annuals and perennials of Mediterranean, thermo-Atlantic and Black Sea gravel and shingle beaches, occupying accumulations of drift material, sandy gravels and gravels rich in nitrogenous organic matter; characteristic are [Cakile maritima ssp. aegyptiaca], [Cakile maritima ssp. euxina], [Enarthrocarpus arcuatus], [Matthiola sinuata], [Matthiola tricuspidata], [Salsola kali], [Atriplex] spp., [Polygonum] spp., [Euphorbia peplis], [Euphorbia paralias], [Glaucium flavum], [Eryngium maritimum].
Biocenosis of slowly drying wracks	No description available.
Unvegetated mobile shingle beaches above the driftline	Shingle beaches lacking vegetation.
Upper shingle beaches with open vegetation	The upper beach of large shingle bars, with open pioneer communities or perennial vegetation mostly formed by [Crambe maritima], [Honkenya peploides], [Lathyrus japonicus] and a few other specialised species. Mainly in northwest Europe, from the Atlantic to the Baltic.
Baltic sea kale communities	Perennial communities of the shingle beaches and bars of the southern Baltic, east to Mecklenburg, where they are represented by fragmentary, endangered formations, of the Swedish, Finnish and Estonian coasts and islands of the Öland-Gotland basin, of the coasts of the Kattegat, the Oresund and the Baelts, dominated by [Crambe maritima], with [Leymus arenarius] ([Elymus arenarius]), [Euphorbia palustris], [Honkenya peploides], [Angelica archangelica ssp. litoralis], [Atriplex] spp., [Beta vulgaris ssp. maritima], [Elymus repens], [Geranium robertiana ssp. rubricaule], [Glaucium flavum], [Isatis tinctoria], [Ligusticum scoticum], [Mertensia maritima], [Silene vulgaris ssp. maritima] ([Silene uniflora]), [Tripleurospermum maritimum], [Valeriana salina].
Channel sea kale communities	Perennial communities of the shingle beaches and bars of the southern North Sea and Channel coasts of southeastern England and, very locally, the Channel coast of France, dominated by [Crambe maritima], with [Lathyrus japonicus] and [Honkenya peploides].

Atlantic sea kale communities	Perennial communities of the shingle beaches and bars of Brittany, the Cotentin peninsula and Anglesey, dominated by [Crambe maritima], with [Crithmum maritimum] and a sparse representation of other nitrophiles, in particular, [Beta vulgaris ssp. maritima], [Matricaria maritima], [Rumex crispus], [Glaucium flavum], [Solanum dulcamara var. maritima], [Sonchus oleraceus], [Galium aparine].
Fixed shingle beaches, with herbaceous vegetation	Vegetated landward expanses of large coastal shingle banks, dominated by grasses or with other herbaceous vegetation.
Euro-Siberian gravel bank grasslands	Dense perennial grasslands of boreal and nemoral coastal gravel banks of the Palaearctic region, in particular, swards of [Arrhenatherum elatius] of large Channel gravel banks.
Shingle and gravel beaches with scrub	Coastal gravel banks with scrub. Included are dense thermo-mediterranean brushes on gravel banks beside the Mediterranean and heaths on shingle in the nemoral zone.
Euro-Siberian gravel bank heaths	Low heaths of boreal and nemoral coastal gravel banks of the Palaearctic region, in particular, prostrate [Cytisus scoparius] formations of large Channel gravel banks.
Shingle and gravel beach woodland	Coastal gravel banks, colonised by woodland or riparian thickets, in particular, Mediterranean gravel banks colonized by [Quercus ilex] low woods, by [Tamarix africana] or [Vitex agnus-castus].
Rock cliffs, ledges and shores, including the supralittoral	Rock exposures adjacent to the oceans, their connected seas and associated coastal lagoons, or separated from them by a narrow shoreline. The faces, ledges and caves of sea-cliffs and the expanses of rocky shore are important as reproduction, resting and feeding sites for seabirds, sea-mammals and a few groups of terrestrial birds. Sea-cliffs may also harbour highly distinctive, specialised salt-tolerant vegetation with associated terrestrial fauna.
Supralittoral rock (lichen or splash zone)	Cliffs and rocks of the supralittoral spray zone, mostly occupied by lichens such as [Caloplaca] spp. and [Verrucaria] spp.
Lichens or small green algae on supralittoral and littoral fringe rock	Lichen communities typically form a distinct zone or band in a 'splash' zone on most rocky shores. This splash zone occurs above the main intertidal zone (i.e. that subject to regular covering by the tide) and blends into angiosperm-dominated communities of coastal (terrestrial) habitats at its upper limits. The width of the splash zone varies considerably, depending on the degree of exposure of the shore to wave action. On very exposed coasts the zone is very wide, extending 10s of meters up cliffs, whilst in very sheltered sites it may be only a metre or so high. Several biotopes have been identified. Yellow and grey lichens such as [Xanthoria parietina], [Caloplaca marina], [Caloplaca thallincola] or [Ramalina] sp. dominate the supralittoral rock (YG) with the distinctive black band of [Verrucaria maura] occurring below in the littoral fringe (Ver.Ver; Ver.B). Small green seaweeds can sometimes be found in this splash zone, where localised conditions allow growth in what would otherwise be inhospitable conditions for seaweeds. Such an example is

Yellow and grey lichens on supralittoral rock	Vertical to gently sloping bedrock and stable boulders in the supralittoral (or splash zone) of the majority of rocky shores are typically characterised by a diverse maritime community of yellow and grey lichens, such as [Xanthoria parietina], [Caloplaca marina], [Lecanora atra] and [Ramalina] spp. The black lichen [Verrucaria maura] is also present, but usually in lower abundance than in the littoral fringe zone. In wave exposed conditions, where the effects of sea-spray extend further up the shore, the lichens generally form a wide and distinct band. This band then becomes less distinct as wave exposure decreases, and in sheltered locations, cobbles and pebbles may also support the biotope. Pools, damp pits and crevices in the rock are occasionally occupied by winkles such as [Littorina saxatilis] and halacarid mites may also be present. Situation: This biotope is usually found at the top of the shore, immediately above a zone of the black lichen [V. maura] (Ver.Ver; Ver.B). Above the band of YG, and occasionally in crevices in the rock alongside the lichens, terrestrial plants such as the thrift [Armeria maritima
[Prasiola stipitata] on nitrate-enriched supralittoral or littoral fringe rock	Exposed to moderately exposed bedrock and large boulders in the supralittoral and littoral fringe that receives nitrate enrichment from nearby roosting sea birds and is characterised by a band or patches of the ephemeral tufty green seaweed [Prasiola stipitata] or [Prasiola] spp. This typically grows over the black lichen [Verrucaria maura] in the littoral fringe or yellow and grey lichens in the supralittoral zone. In damp pits and crevices, species such as the winkle [Littorina saxatilis], amphipods and halacarid mites are occasionally found. Pra often covers a smaller area than 5m x 5m and care should be taken to notice/record this biotope. The biotope can be associated with artificial substrata such as septic tanks, and in supralittoral areas influenced by sewage seeps or agricultural run-off. Situation: This biotope is found at the top of rocky shores in the splash zone below colonies of nesting or roosting birds growing. Pra may also be found at the entrances to and on the ceilings of littoral caves or in patches on large boulders, where birds may be
[Verrucaria maura] on littoral fringe rock	Bedrock or stable boulders and cobbles in the littoral fringe which is covered by the black lichen [Verrucaria maura]. This lichen typically covers the entire rock surface giving a distinct black band in the upper littoral fringe. The winkle [Littorina saxatilis] is usually present. Two variants are defined which both occur in a wide range of wave exposures. On exposed shores [V. maura] may occur with sparse barnacles such as [Chthamalus] spp. or [Semibalanus balanoides] and may be covered by a band of ephemeral seaweeds such as [Porphyra umbilicalis] or [Enteromorpha] spp. (Ver.B). Above Ver.B or on more sheltered shores is a species poor community consisting mainly of [V. maura] and [L. saxatilis] (Ver.Ver). Situation: This biotope occurs below the yellow and grey lichen zone (YG) and above eulittoral communities of barnacles and fuciod algae. Temporal variation: Distinct band of red or green ephemeral algae may obscure the black lichen band at certain times of the year.

[Verrucaria maura] and sparse barnacles on exposed littoral fringe rock	The littoral fringe of very exposed to moderately exposed rocky shores with a sparse covering of the barnacles [Semibalanus balanoides] and/or [Chthamalus montagui] over the black lichen [Verrucaria maura]. Winkles [Littorina saxatilis] and [Melarhaphe neritoides] are usually present although [M. neritoides] tends to be found on more exposed shores. The limpet [Patella vulgata] is often present though at a low abundance (Occasional). This biotope can be dominated by ephemeral seaweeds including the red seaweed [Porphyra umbilicalis], the green seaweeds [Enteromorpha] spp. or, particulary in the north, microscopic blue-green algae (Cyanophyceae), which overgrow [V. maura]. The wrack [Pelvetia canaliculata] (Rare) may also be present, becoming increasingly more common with greater shelter (see PelB). Geographical variation: On northern and eastern shores the barnacle is usually [S. balanoides], which is normally restricted to the lower littoral fringe, with a band of [V. maura] only in the upper littoral fringe. On south-west and western shores the barnacle is usually [C. montagui] which may extend over the w
[Verrucaria maura] on very exposed to very sheltered upper littoral fringe rock	Upper littoral fringe bedrock, boulders and stable cobbles on very exposed to very sheltered shores which have a blanket covering of the black lichen [Verrucaria maura]. The winkle [Littorina saxatilis] is often present. Due to the nature of this biotope it is species poor, but occasionally a range of species may be present in low abundance. These species include the yellow lichen [Caloplaca marina] and the winkle [Melarhaphe neritoides], the barnacles [Chthamalus montagui] and [Semibalanus balanoides] or the ephemeral seaweeds [Porphyra umbilicalis] and [Enteromorpha] spp. can be present in low abundance (see Ver.B). If one or more of these species is present compare with Ver.B. On northern shores [Littorina saxatilis var. rudis] can dominate along with the occasional presence of the lichens [Verrucaria mucosa] and [Xanthoria parietina]. V. maura can be found overlying stable mud in N. Ireland sea loughs. Situation: The black lichen zone is normally found below the yellow and grey lichen zone (YG). In very sheltered areas there is not always a clear transition from one zone to the next and a mixed zon
[Blidingia] spp. on vertical littoral fringe chalk	Vertical soft rock in the littoral fringe may be characterised by a band of the green seaweeds [Blidingia minima] and [Blidingia marginata]. Unbranched filamentous green seaweeds, including [Ulothrix flacca] and [Urospora wormskioldii], are found amongst the [Blidingia] spp. The siphonous Xanthophyceae [Vaucheria] spp. can also occur in high abundance in this biotope, where they can form dense mats. During low tide terrestrial fauna such as red mites, insects and centipedes migrate into this zone. More information is needed to improve this description. Situation: Bli is found below the [Verrucaria maura] zone (Ver.Ver) and above a band of the similar looking green algae [Enteromorpha] spp. (Ent and EntPor), where these occur in habitats not influenced by freshwater.

[Ulothrix flacca] and [Urospora] spp. on freshwater-influenced vertical littoral fringe soft rock	An assemblage of the small un-branched filamentous green seaweeds [Ulothrix flacca], [Urospora penicilliformis] and [Urospora wormskioldii] at High Water Spring Tide level on steep and vertical rock often influenced by freshwater. The community is also present in areas with freshwater seepage. It is visually recognised as a closely adherent, often shiny, green mat of filamentous growth. Associated species include the green seaweeds [Blidingia minima] and [Enteromorpha prolifera], the barnacle [Semibalanus balanoides] and the limpet [Patella vulgata], but these species are not common. Although this biotope does occur on rock other than chalk, this description has been derived from chalk coast sites. More information is needed to improve this description. Situation: On chalk coasts this community can include [Enteromorpha] spp. and the transition from UloUro to Ent is often indistinct and a mixed zone of UloUro and Ent can occur. Temporal variation: This biotope is more easily identifiable from autumn to spring as both [Urospora] spp. and [Bangia atropurpurea] may dry out and disappear during the summer. In la
Association with [Entophysalis deusta] and [Verrucaria amphibia]	No description available.
Rock stacks and islets above high tide level in splash zone	No description available.
Unvegetated rock cliffs, ledges, shores and islets	Hard-rock sea-cliffs, their faces, ledges and associated caves, rocky shores and isolated seaside rocks, their associated seabird, sea mammal, wader and, in a few cases, terrestrial passerine, communities. Vascular plant cover is by definition very low or absent, but lichens are normally present.
High Arctic sea-cliffs and rocky shores	Sea-cliffs and their associated features, rocky shores and isolated seaside rocks of the High Arctic seas bordering middle and northern Greenland, Spitzbergen, Franz Josef Land, Novaya Zemlya, Severnaya Zemlya, the New Siberian Islands, Wrangel Island and the northern Siberian mainland from the north coast of the Yamal peninsula eastwards. Together with floating ice (unit A8.1), they constitute the main hauling-out places for [Odobenus rosmarus]. [Fulmarus glacialis], [Larus glaucoides], [Larus hyperboreus], [Cepphus grylle], [Plautus alle], [Uria lomvia], [Branta bernicla] are among characteristic bird species.
Atlantic low Arctic sea-cliffs and rocky shores	Sea-cliffs, cliff-faces, ledges and caves, rocky shores and isolated seaside rocks of the Low Arctic region of the North Atlantic and the Arctic Ocean, in southern Greenland, Iceland, Jan Mayen, Bear Island, northern Scandinavia, northwestern mainland Russia, southern and middle Novaya Zemlya. They constitute the principal breeding, resting or feeding areas of multitudes of seabirds and sea-mammals during at least part of the year.

Temperate Atlantic sea-cliffs and rocky shores	Sea-cliffs, their faces, ledges and associated caves, rocky shores and isolated seaside rocks of the Atlantic temperate region, including the North Sea, the English Channel, the Irish Sea and the Bay of Biscay, along the coasts of Scandinavia south of the Arctic Circle, of the Faeroes, of the British Isles and their outlying archipelagoes, of mainland Europe south to Galicia. They are the breeding, resting or feeding places of great numbers of seabirds and sea-mammals, of which [Halichoerus grypus], [Sula bassana], [Uria aalge], [Alca torda], [Rissa tridactyla], [Phalacrocorax aristotelis aristotelis] are characteristic.
Unvegetated Baltic rocky shores and cliffs	Sea-cliffs, their faces and ledges, rocky shores and isolated seaside rocks of the Baltic Sea.
Baltic boulder beaches	No description available.
Baltic unvegetated gently sloping limestone rocky shores	No description available.
Baltic unvegetated gently sloping sandstone rocky shores	No description available.
Baltic unvegetated gently sloping crystalline bedrock shores	No description available.
Baltic unvegetated coastal limestone cliffs and caves	No description available.
Baltic unvegetated coastal sandstone cliffs and caves	No description available.
Baltic unvegetated coastal crystalline bedrock cliffs and caves	No description available.
Subtropical Atlantic sea-cliffs and rocky shores	Sea-cliffs, their faces, ledges and associated caves, rocky shores and isolated seaside rocks of the subtropical zone of the Atlantic, including the Canary Islands, Madeira, the Azores, the Mediterraneo-Atlantic coasts of Iberia, the Mediterraneo-Atlantic and Saharo-Atlantic coasts of Africa, south to Cap Blanc. A major zone of upwelling developed along the north African coast and the Canary Islands enhances their value as important breeding and resting places for marine birds and mammals. Their caves harbour the two remaining Atlantic subpopulations of the gravely endangered Monk Seal [Monachus monachus], endemic to this region and the next, those of Madeira and of the Cap Blanc coasts. [Calonectris diomedea borealis], [Larus cachinnans atlantis], [Phalacrocorax carbo maroccanus], [Phalacrocorax aristotelis riggenbachi] are seabirds endemic to the region for which cliffs and rocky shores provide an important breeding habitat.

Mediterraneo-Pontic sea-cliffs and rocky shores	Sea-cliffs, their associated faces, ledges and caves, rocky shores and isolated rocks of the Mediterranean Sea and the Black Sea. The endangered [Monachus monachus] depends on their caves for reproduction. [Calonectris diomedea diomedea], [Puffinus yelkouan mauretanicus], [Puffinus yelkouan yelkouan], [Phalacrocorax aristotelis desmarestii], [Falco eleonorae], [Larus audouinii] are characteristic breeders. Their vascular aerohaline communities, as well as the rock communities of unit H3 that colonize their less salt-influenced reaches, are particularly diverse and rich in endemics.
Rock cliffs, ledges and shores, with angiosperms	Sea-cliffs, or parts of sea-cliffs, and rocky shores colonized by disjunct assemblages of salt-tolerant crevice plants (chasmophytes) or by more or less closed salt-tolerant grasslands with associated terrestrial invertebrate and vertebrate faunal communities.
Atlantic sea-cliff communities	Vegetated cliffs of the northern Atlantic, the English Channel, the Irish Sea, the North Sea, the Baltic Sea, the Arctic Ocean and its seas, the northwest Pacific and its seas.
Vegetated Baltic gently sloping rocky shores and cliffs	Vegetated cliffs of the Baltic Sea, with [Silene vulgaris ssp. maritima], [Silene uniflora], [Ligusticum scoticum], [Armeria maritima], [Odontites litoralis ssp. litoralis], [Odontites litoralis ssp. fennica], [Matricaria maritima], [Senecio viscosus].
Baltic gently sloping limestone rocky shores with low vegetation	No description available.
Baltic gently sloping limestone rocky shores dominated by shrubs or trees	No description available.
Baltic gently sloping sandstone rocky shores with low vegetation	No description available.
Baltic gently sloping sandstone rocky shores dominated by shrubs or trees	No description available.
Baltic gently sloping crystalline bedrock shores with low vegetation	No description available.
Baltic gently sloping crystalline bedrock shores dominated by shrubs or trees	No description available.
Baltic coastal limestone cliffs and caves with low vegetation	No description available.
Baltic coastal limestone cliffs and caves dominated by shrubs or trees	No description available.

Baltic coastal sandstone cliffs and caves with low vegetation	No description available.
Baltic coastal sandstone cliffs and caves dominated by shrubs or trees	No description available.
Baltic coastal crystalline bedrock cliffs and caves with low vegetation	No description available.
Baltic coastal crystalline bedrock cliffs and caves dominated by shrubs or trees	No description available.
Tethyan sea-cliff communities	Vegetated cliffs and rocky shores of the Mediterranean, of the Black Sea and of the subtropical eastern Atlantic with endemic [Limonium] spp. and e.g. [Silene sedoides], [Frankenia hirsuta], [Frankenia pulverulenta], [Crithmum maritimum], [Lotus cytisoides] of the [Crithmo-Staticetea] and the species of the [Saginetea]: [Anthemis rigida], [Bellium minutum], [Catapodium marinum], [Mesembryanthemum nodiflorum], [Parapholis incurva], [Phleum crypsoides], [Phleum exaratum], [Plantago weldenii], [Psilurus incurvus], [Sagina maritima], [Sedum litoreum], [Valantia muralis].
Western Tethyan sea-cliff communities	Aerohaline communities of the cliffs and rocky shores of the Mediterranean, as well as of the southwestern Iberian and northwestern African Atlantic, with [Crithmum maritimum], [Plantago subulata], [Silene sedoides], [Sedum litoreum], [Limonium] spp., [Armeria] spp., [Euphorbia] spp., [Daucus] spp., [Asteriscus maritimus]. Mediterranean sea-cliffs harbour numerous endemics of of extremely local occurrence, in particular, of genus [Limonium], which comprises at least 43 and probably closer to 120-150 Mediterranean cliff species species, many of them restricted to a few stations, and several threatened, such as, for instance, [Limonium remotispiculum] of southern Italy and [Limonium strictissimum] of Corsica and Caprera.
Pontic sea-cliff communities	Communities of the cliffs of the Black Sea, the Sea of Azov and the Sea of Marmara.
Western Pontic herbaceous sea-cliff communities	Herbaceous aerohaline communities of the sea-cliffs of the maritime façade of the Stranja and of the Cape Kaliakra area of Bulgaria, with [Limonium gmelinii], [Goniolimon collinum], [Crithmum maritimum], [Elymus pycnanthus], [Cichorium intybus], [Atriplex hastata], [Kochia prostrata], [Melilotus officinalis], [Convolvulus lineatus] and the local endemic [Silene caliacrae].
Western Pontic sea-cliff [Ficus] thickets	Thickets of [Ficus carica] and [Ulmus minor] of the cliffs of the western Black Sea coast.

Western Pontic low cliff communities	Low cliffs and neighbouring sands of the southern Romanian Black Sea coast (between Constanta and Vama Veche), harbouring communities dominated by [Scolymus hispanicus] and [Ecbalium elaterium], with [Atriplex tatarica], [Xanthium spinosum], [Lactuca saligna], [Lolium perenne] and [Polygonum aviculare].
Eastern Pontic sea-cliff communities	Aerohaline communities of the cliffs of the northern Black Sea and the Sea of Azov, with [Crithmum maritimum], [Kochia prostrata], [Elymus farctus ssp. bessarabicus], [Holosteum umbellatum], [Puccinellia distans], [Limonium meyeri].
Southern Pontic sea-cliff communities	Aerohaline communities of the cliffs of the southern coasts of the Black Sea.
Canary Island and Madeiran sea-cliff communities	Aerohaline communities of the sea-cliffs of the Canaries and Madeira, with [Crithmum maritimum], [Astydamia latifolia], [Schizogyne sericea], [Andryala glutinosa], [Plantago coronopus], [Tolpis fruticosa], [Aizoon canariense], [Campylanthus salsoloides], [Limonium pectinatum], [Frankenia ericifolia], [Reichardia ligulata], [Argyranthemum frutescens], [Lotus] spp., [Asplenium marinum].
Azorean sea-cliff communities	Communities of the sea-cliffs of the Azores dominated by the endemic [Festuca petraea].
Coastal lagoon cliff communities	Communities of vascular chasmophytes and animals colonizing the cliffs of coastal saline or hypersaline bodies of water, which differ very significantly from the cliff communities of units B3.31-B3.35.
Pantellerian lagoon cliff communities	Endemic [Limonium secundirameum]-dominated formations of the cliffs overlooking Bagno dell' Acqua, Pantelleria.
Pontic saline lagoon cliffs	Halocalcareous cliff communities of coastal lagoons of the Black Sea at Cape Dolosman (Romania), dominated by [Artemisia santonicum], [Limonium gmelinii], [Halimione verrucifera] ([Obione verrucifera]) and [Lepidium cartilagineum], with Irano-Turanian species such as [Camphorosma annua], [Halocnemum strobilaceum], [Leuzea salina] and [Taraxacum bessarabicum].
Soft sea-cliffs, often vegetated	Sea-cliffs composed of relatively soft, unconsolidated or uncompacted mineral particle deposits, carved by wind and wave action. They may support scrub similar to that on dunes (B1.6), with [Hippophae rhamnoides], [Salix repens], [Sorbus aucuparia].
Baltic chalk and moraine cliffs	No description available.
Baltic unvegetated coastal chalk cliffs and caves	No description available.
Baltic coastal chalk cliffs and caves with low vegetation	No description available.
Baltic coastal chalk cliffs and caves dominated by shrubs or trees	No description available.
Baltic unvegetated coastal moraine cliffs and caves	No description available.

Baltic unvegetated coastal moraine cliffs and caves with low vegetation	No description available.
Baltic unvegetated coastal moraine cliffs and caves dominated by shrubs or trees	No description available.
Inland surface waters	Inland surface waters are non-coastal above-ground open fresh or brackish waterbodies (e.g. rivers, streams, lakes and pools, springs), including their littoral zones. Includes constructed inland freshwater, brackish or saline waterbodies (such as canals, ponds, etc) which support a semi-natural community of both plants and animals; seasonal waterbodies which may dry out for part of the year (temporary or intermittent rivers and lakes and their littoral zones). Freshwater littoral zones include those parts of banks or shores that are sufficiently frequently inundated to prevent the formation of closed terrestrial vegetation. Excludes permanent snow and ice. Note that habitats that intimately combine waterlogged mires and vegetation rafts with pools of open water are considered as complexes.
Surface standing waters	Lakes, ponds and pools of natural origin containing fresh (i.e. nonsaline), brackish or salt water. Manmade freshwater bodies, including artificially created lakes, reservoirs and canals, provided that they contain seminatural aquatic communities.
Permanent oligotrophic lakes, ponds and pools	Waterbodies with a low nutrient (nitrogen and phosphorus) content, mostly acid (pH 4-6). Includes oligotrophic waters of medium or high pH, e.g. calcareous and basic unpolluted nutrient-poor lakes and pools, which are rare in much of Europe and noted as a habitat of charophytes (C1.14). Excludes peaty, dystrophic waters (C1.4). Because of the low nutrient status, beds of vascular plants, including [Callitriche] spp., [Potamogeton] spp. and isoetids [Isoeto-Nanojuncetea] are often sparse and open.
Benthic communities of oligotrophic waterbodies	Lake-bottom animal, green algal or lower algal communities.
Rooted submerged vegetation of oligotrophic waterbodies	Formations of Palaearctic water bodies constituted by submerged, rooted, perennial phanerogams with often emerging flower spikes, in particular entirely immersed pondweeds of genus [Potamogeton].
Rooted floating vegetation of oligotrophic waterbodies	Formations of Palaearctic oligotrophic waters dominated by rooted vascular aquatic plants (macrophytes) with floating leaves. Species of the genus [Potamogeton] and [Sparganium] represent usual dominants.
Oligotrophic pondweed communities	Sparse formations of narrow-leaved floating pondweeds, in particular, [Potamogeton polygonifolius] ([Potamogeton oblongus]), [Potamogeton gramineus], [Potamogeton alpinus], with [Callitriche] spp., [Ranunculus ololeucos], [Ranunculus omiophyllus], [Ranunculus tripartitus], [Luronium natans], [Sparganium minimum], [Apium inundatum] of shallow, oligotrophic, clean, fluctuating, but usually permanent, often small, waterbodies of the Palaearctic region. Communities of this unit often form in close proximity to those of unit C3.413 and evolve into them with regular or prolonged desiccation.

Submerged carpets of stoneworts in oligotrophic waterbodies	Charophyte (genera [Chara], [Nitella], [Tolypella], [Nitellopsis], [Lamprothamnium], [Lychnothamnus]) algal carpets of the bottom of unpolluted, oligotrophic to mesotrophic lakes and pools. Very wide syntaxonomic background: alliances [Nitellion syncarpae-tenuissimae], [Charion fragilis], [Nitellion flexilis] and [Charion canescentis].
[Chara] carpets	Charophyte carpets developed on the bottom of basic, lime-rich, unpolluted, oligotrophic to mesotrophic, lakes and pools of the Palaearctic region, formed mostly by species of genus [Chara].
[Nitella] carpets	Charophyte carpets developed on the bottom of unpolluted acid, neutral or slightly basic, lime-poor, oligotrophic to mesotrophic, lakes of the Palaearctic region, mostly formed by species of genus [Nitella].
Peatmoss and bladderwort communities of oligotrophic waterbodies	Floating, in part infra-aquatic, formations of [Sphagnum] spp., [Scorpidium scorpioides], [Utricularia minor], [Utricularia intermedia], [Utricularia ochroleuca], [Utricularia bremii], [Sparganium minimum], of dystrophic, oligotrophic or sometimes mesotrophic, bog pools, fen pools, heath pools, woodland ponds of the Palaearctic region.
Dune-slack pools	Freshwater aquatic communities (cf. units C1.22-C1.26, C1.32-C1.34, C1.42-C1.45, C1.69) of permanent dune-slack water bodies.
Permanent mesotrophic lakes, ponds and pools	Lakes and pools with waters fairly rich in nutrients (nitrogen and phosphorus) and dissolved bases (pH often 6-7). Communities e.g. of [Littorelletea uniflorae] and [Isoeto-Nanojuncetea]. Many unpolluted lowland lakes and ponds are naturally mesotrophic, and support dense beds of macrophytes, which are absent in polluted waters. Beds of charophytes can occur in mesotrophic (C1.25) as well as in oligotrophic (C1.14) waters.
Benthic communities of mesotrophic waterbodies	Lake-bottom animal, green algal or lower algal communities.
Free-floating vegetation of mesotrophic waterbodies	Free-floating surface communities of more or less nutrient-rich waters. The habitat is typically formed by species of duckweed ([Lemna], [Spirodela], [Wolffia]), small ferns ([Azolla]), liverworts ([Riccia], [Ricciocarpus]) or vascular plants, e.g. [Hydrocharis morsus-ranae].
Duckweed covers	Free-floating surface communities of duckweed ([Lemna], [Spirodela], [Wolffia]), small ferns ([Azolla]) or liverworts ([Riccia], [Ricciocarpus]) of Palaearctic waters.
Floating frogbit rafts	Free-floating surface communities of Palaearctic waters rich in [Hydrocharis morsus-ranae].
Floating water-soldier rafts	Free-floating communities of Palaearctic waters dominated by [Stratiotes aloides].
Floating bladderwort colonies	Free-floating communities of more or less nutrient-rich Palaearctic waters dominated by bladderworts ([Utricularia australis], [Utricularia vulgaris]).
Floating [Salvinia natans] mats	Free-floating communities of Central and Eastern Europe dominated by the free-floating non-indigenous fern [Salvinia natans], often forming dense and extensive mats.
Floating [Aldrovanda vesiculosa] communities	Rare aquatic formations of Central and Eastern Europe, dispersed from southern Brandenburg and Lake Constance east to the Ukraine, with a former outpost in eastern Lithuania, harbouring the carnivorous, free-floating Droseraceae [Aldrovanda vesiculosa].

Rooted submerged vegetation of mesotrophic waterbodies	'Formations of water bodies constituted by submerged, rooted, perennial phanerogams with often emerging flower spikes, in particular entirely immersed pondweeds of genus [Potamogeton]. Some habitats of this unit can be dominated by other species, such as [Zannichellia palustris], [Elodea canadensis], [Elodea nuttallii], [Ceratophyllum submersum], [Myriophyllum spicatum] and [Najas marina].
Large pondweed beds	Associations of large pondweeds ([Potamogeton lucens], [Potamogeton praelongus], [Potamogeton zizii], [Potamogeton perfoliatus]) characteristic of deep, open Palaearctic waters.
Small pondweed communities	Formations of smaller pondweeds, in particular, [Potamogeton crispus], [Potamogeton filiformis], [Potamogeton pusillus], [Potamogeton obtusifolius], [Potamogeton berchtoldii], [Potamogeton trichoides], [Potamogeton acutifolius], [Potamogeton pectinatus], [Potamogeton nitens], [Potamogeton friesii] ([Potamogeton mucronatus]), [Groenlandia densa], waterthymes and waterweeds ([Elodea] spp., [Hydrilla] spp., [Ottelia] spp.), horned pondweeds ([Zannichellia palustris] s.l.), naiads ([Najas] spp.), tapegrass ([Vallisneria spiralis]), water crowfoots ([Ranunculus circinatus]) that colonize shallower, more sheltered Palaearctic waters. Eurasian formations dominated by usually free-floating hornworts of genus [Ceratophyllum], in particular by [Ceratophyllum demersum], are included because of closer ecological and physiognomic similarity with communities of this unit than with those of unit 22.41.
Rooted floating vegetation of mesotrophic waterbodies	Formations of waters dominated by rooted aquatic plants with floating leaves. Usually species-poor habitats with dominance of one or several species. Ttypical species are [Nymphaea alba], [Nuphar lutea], [Nymphoides peltata], [Trapa natans], [Potamogeton natans], [Callitriche palustris], [Polygonum amphibium] and [Ranunculus] sp. (=[Batrachium]).
Floating broad-leaved carpets	Formations of Palaearctic waters dominated by rooted aquatic plants with large floating leaves, often with a stratum of submerged species ([Ceratophyllum], [Myriophyllum], [Potamogeton]) and occasionally free-floating [Utricularia] spp., characteristic of large, permanent water bodies.
Waterlily beds	Floating-leaved formations of Palaearctic waters dominated by magnonymphaeids of family Nymphaeaceae, in particular of genera [Nymphaea], [Nuphar], [Euryale].
[Nuphar] beds	Floating-leaved formations of Palaearctic waters dominated by magnonymphaeids of genus [Nuphar], in particular [Nuphar pumila] and [Nuphar lutea], characteristic of temperate and cold regions.
Northern [Nymphaea] beds	Floating-leaved formations of boreal, temperate and Mediterranean Palaearctic waters dominated by magnonymphaeids of genus [Nymphaea], in particular [Nymphaea alba], [Nymphaea candida], [Nymphaea tetragona], [Nymphaea pygmaea].
Transylvanian hot-spring lotus beds	Formations of [Nymphaea lotus] of geothermal waters (unit 66.94) of Petea Lake, western Romania.
Water chestnut carpets	Floating-leaved formations of Palaearctic waters dominated by the trapid [Trapa natans].
Fringed waterlily carpets	Floating-leaved formations of Palaearctic waters dominated by magnonymphaeids of genus [Nymphoides], in particular by [Nymphoides peltata] or [Nymphoides indica].

Broad-leaved pondweed carpets	Floating-leaved formations of Palaearctic waters dominated by the parvonymphaeid [Potamogeton natans].
Amphibious bistort carpets	Floating-leaved formations of Palaearctic waters dominated by the parvonymphaeid [Polygonum amphibium].
Sacred lotus beds	Formations of [Nelumbo nucifera], occurring in the Volga delta and from the south Caspian lowlands to the Far East, with a naturalised population in Romania.
Submerged carpets of stoneworts in mesotrophic waterbodies	Charophyte (genera [Chara], [Nitella], [Tolypella], [Nitellopsis], [Lamprothamnium], [Lychnothamnus]) algal carpets of the bottom of unpolluted, oligotrophic to mesotrophic lakes and pools of the Palaearctic region.
Peatmoss and bladderwort communities of mesotrophic waterbodies	Floating, in part infra-aquatic, formations of [Sphagnum] spp., [Scorpidium scorpioides], [Utricularia minor], [Utricularia intermedia], [Utricularia ochroleuca], [Utricularia bremii], [Sparganium minimum], of dystrophic, oligotrophic or sometimes mesotrophic, bog pools, fen pools, heath pools, woodland ponds of the Palaearctic region.
Permanent eutrophic lakes, ponds and pools	Lakes and pools with mostly dirty grey to blue-green, more or less turbid, waters, particularly rich in nutrients (nitrogen and phosphorus) and dissolved bases (pH usually > 7). Moderately eutrophic waters can support dense beds of macrophytes, but these disappear when pollution causes nutrient levels to rise further.
Benthic communities of eutrophic waterbodies	Lake-bottom animal, green algal or lower algal communities of eutrophic waters. Because of the seasonal dynamics of the ecological factors, siliceous algae [Bacillariophyta] dominate in late autumn and winter and blue-green ([Cyanobacteriophyta]) and green ([Chlorophyta]) algae during summer and autumn.
Free-floating vegetation of eutrophic waterbodies	Free-floating surface communities of more or less nutrient-rich waters, with for example [Lemna minor], [Spirodela polyrhiza], [Wolffia arrhiza], [Salvinia natans], [Ceratophyllum submersum], [Stratiotes aloides], and communities of [Hydrocharition], [Utricularion vulgaris], [Lemnion gibbae] and [Lemnion minoris].
Rooted submerged vegetation of eutrophic waterbodies	Formations of water bodies constituted by submerged, rooted, perennial phanerogams with often emerging flower spikes, in particular entirely immersed pondweeds of genus [Potamogeton]. Alliances [Potamion lucentis] and [Potamion pusilli]. Other frequent species are [Myriophyllum spicatum], [Myriophyllum verticillatum], [Najas marina] and [Najas minor].
Rooted floating vegetation of eutrophic waterbodies	Formations of waters dominated by rooted aquatic plants with floating leaves. The most typical species are [Nuphar lutea], [Nymphaea alba], [Nymphoides peltata], [Trapa natans] and [Persicaria amphibia], of the alliance [Nymphaeion albae]. A second layer is often formed by [Ceratophyllum demersum], [Myriophyllum spicatum] and [Lemna trisulca].
Shallow-water floating communities	Communities of Palaearctic waters dominated by water starworts ([Callitriche]), water crowfoots ([Ranunculus] spp., subgenus [Batrachium]) or water violet ([Hottonia palustris]), characteristic mostly of shallow waters with fluctuating water levels, susceptible to occasional drying.

Water crowfoot communities in shallow water	Communities dominated by water crowfoots, [Ranunculus peltatus], [Ranunculus aquatilis], [Ranunculus trichophyllus] ([Ranunculus confervoides], [Ranunculus aquatilis var. diffusus]), [Ranunculus baudotii], [Ranunculus hederaceus], [Ranunculus rionii], [Ranunculus ololeucos], [Ranunculus omiophyllus] ([Ranunculus lenormandi]), [Ranunculus tripartitus], with both submerged and floating leaves, characteristic mostly of shallow Palaearctic waters with fluctuating water levels, susceptible to occasional drying. Crowfoot- dominated communities of unit 22.433 are included.
Water starwort communities	Communities of shallow stagnant Palaearctic waters with fluctuating water levels, susceptible to drying, dominated by [Callitriche] spp.
Water violet beds in shallow water	Communities of shallow Palaearctic waters dominated by [Hottonia palustris].
Permanent dystrophic lakes, ponds and pools	Lakes and pools with acidic waters of high humus content and often brown tinted (pH often 3-5).
Benthic communities of dystrophic waterbodies	Lake-bottom animal, green algal or lower algal communities.
Rooted submerged vegetation of dystrophic waterbodies	Formations of Palaearctic water bodies constituted by submerged, rooted, perennial phanerogams with often emerging flower spikes, in particular entirely immersed pondweeds of genus [Potamogeton].
Rooted floating vegetation of dystrophic waterbodies	Formations of Palaearctic waters dominated by rooted aquatic plants with floating leaves.
Submerged carpets of stoneworts in dystrophic waterbodies	Charophyte (genera [Chara], [Nitella], [Tolypella], [Nitellopsis], [Lamprothamnium], [Lychnothamnus]) algal carpets of the bottom of unpolluted, oligotrophic to mesotrophic lakes and pools of the Palaearctic region.
Peatmoss and bladderwort communities of dystrophic waterbodies	Floating, in part infra-aquatic, formations of [Sphagnum] spp., [Scorpidium scorpioides], [Utricularia] spp., [Campylium stellatum], [Sparganium minimum] and [Sparganium natans] of dystrophic bog pools, fen pools, heath pools and woodland ponds. Alliances are [Sphagno-Utricularion] and [Scorpidio-Utricularion minoris].
Raised bog pools	Larger, deep, permanently filled depressions, usually dystrophic, occurring near the centre of raised bogs or along tension lines. Their planctonic communities are original. Floating plant communities may sometimes develop, in particular those comprising [Sparganium minimum] and [Utricularia] spp. (units C1.15, C1.26 and C1.45) and, sometimes, beds of [Nymphaea] spp. (unit C1.2411).
Bog eye (kolk)	Large pools or lakes occurring near the centre of central European raised bogs, often with relatively firm, steep banks colonized by trees or scrub forming a ring of woodland.
Lesser bog pools	Relatively large, deep, permanently filled depressions occurring along tension lines of raised bogs.

Lagg	A ring of water surrounding raised bogs, often colonised by intermediate mire or acid fen communities of units D2.2 or D2.3, sometimes accompanied by more basicline species typical of neighbouring fens: [Eriophorum angustifolium], [Eriophorum vaginatum], [Scirpus hudsonianus], [Carex rostrata], [Carex flava] and [Parnassia palustris] are frequent components.
Permanent inland saline and brackish lakes, ponds and pools	Non-coastal brackish, saline or hypersaline lakes, ponds or pools and their pelagic vertebrates and plankton.
Inland saline lakes	Athalassic (inland), permanent or temporary, brackish, saline or hypersaline waterbodies and their associated animal, charophyte, green algal or lower algal pelagic and benthic communities. The macrophytic, euhydrophytic based communities that colonize them are separately listed (unit C1.52), the macrophytic amphibious communities and the terrestrial communities that may develop during dry phases or in drying and dried portions as units of D6.1or E6, fringing belts or island rafts of rooted or floating tall emergent vegetation as units C3.2112 or D6.2.
Salt basins and salt basin pelagic communities	Athalassic brackish, saline or hypersaline lakes, ponds or pools and their pelagic animal, green algal or lower algal communities, including marine mammal, bird and pelagic fish communities of the large inland seas of central Eurasia and of the big brackish lakes of the boreal zone.
Boreal, nemoral and arctic salt lakes	Athalassic brackish, saline or hypersaline lakes, ponds or pools of the boreal, nemoral and arctic zones, including, in particular, the great brackish lakes of northern Europe (Ladoga), the ponds and pools associated with the inland salt communities of unit 15.4 and the waterbodies adjacent to the Yakutian salt steppes of unit 15.A7.
Mediterranean salt lakes	Athalassic brackish, saline or hypersaline lakes, ponds or pools of the Mediterranean zone, with major waterbodies limited to northern-central and southern Iberia, Sicily and Mediterranean North Africa.
Ponto-Pannonic salt lakes	Athalassic brackish, saline or hypersaline lakes, ponds or pools of the Pannonic and Ponto-Sarmatic regions, associated with the salt steppes and salt marshes of 15.A1 and 15.A2.
Submerged carpets of stoneworts in inland saline or hypersaline waterbodies	Charophyte (mostly [Chara] spp.) formations of athalassic brackish, saline or hypersaline lakes, ponds or pools.
Salt basin benthic communities	Benthic animal, green algal or lower algal communities of permanent athalassic brackish, saline or hypersaline lakes, ponds or pools; benthic communities developed in the wet phase of the cycle of temporary brackish, saline or hypersaline athalassic waterbodies.
Inland saline euhydrophyte communities	Communities of athalassic brackish or saline lakes, ponds, pools or basins, formed by submerged, floating-leaved, or slightly emergent macrophytes and their associated zoocoenoses.
Submerged macrophyte communities of inland saline and brackish waters	Communities of athalassic brackish or saline lakes, ponds, pools or basins, formed by submerged macrophytes and their associated zoocoenoses.

Athalassic tasselweed communities	[Ruppia maritima], [Zannichellia] spp. and [Najas] spp. beds, with associated [Potamogeton pectinatus], [Potamogeton crispus] and other submerged macrophytes, of athalassic brackish or saline lakes, ponds, pools or basins.
Athalassic seagrass communities	[Zostera noltii] formations of the Caspian Sea.
Brackish water floating vegetation	Communities of brackish lakes, ponds and pools, formed by free-floating or floating-leaved rooted macrophytes, in particular, brackish [Lemna] and [Wolffia] carpets, brackish [Callitriche] communities and formations of inland lakes and basins of very low salinity dominated by water crowfoots such as [Ranunculus baudotii] or [Ranunculus rionii].
Temporary lakes, ponds and pools	Freshwater lakes, ponds, pools, or parts of such freshwater bodies that become periodically dry, with their associated animal and algal pelagic and benthic communities. Habitats of the dry phase are listed under C3.5, C3.6 and 3.7.
Lime-deficient oligotrophic temporary waters	Temporary lakes and pools with greenish to brownish clear waters, poor in dissolved bases (pH often 5-6).
Mesotrophic temporary waters	Temporary lakes and pools with waters fairly rich in dissolved bases (pH often 6-7).
Eutrophic temporary waters	Temporary lakes and pools with mostly dirty grey to blue-green, more or less turbid, waters, particularly rich in dissolved bases (pH usually > 7).
Dystrophic temporary waters	Temporary lakes and pools with acidic waters of high humus content and often brown tinted (pH often 3-5).
Lime-rich oligo-mesotrophic temporary waters	Temporary lakes and pools with mostly blue to greenish, very clear, waters, poor (to moderate) in nutrients, base-rich (pH often > 7.5).
Temporary inland saline and brackish waters	Shallow temporary saline and brackish waters, in which communities may develop which often form two layers. The main species are [Ranunculus trichophyllus], [Najas minor], [Najas marina] and [Ceratophyllum demersum].
Turlough and lake-bottom meadows	Terrestrial communities colonizing the bottom of waterbodies that are completely and recurrently emptied of water for part of the time, such as Irish turloughs. Habitats characteristic of each stage of the cycle may be units of C1, C3.41-C3.43, C3.51-C3.52, C3.64-C3.65 and, if appropriate, those of units D2-D5 or E2-E3.
Benthic communities of temporary waters	Benthic communities developed in the wet phase of the cycle of temporary lakes and pools.
Rooted floating vegetation of temporary waterbodies	Formations of Palaearctic waters dominated by rooted aquatic plants with floating leaves.
Permanent lake ice	Permanent or almost permanent ice formations of lakes, constituting continuous ice sheets that may cover the entire surface for all of the year or recede to part of the lake during summer and be accompanied or replaced by floating ice blocks, rafts and hummocks. They may, locally, seasonally or permanently, extend to the whole depth of the lake. They are characteristic of high latitude and high altitude lakes.
Surface running waters	Running waters, including springs, streams and temporary water courses.

Springs, spring brooks and geysers	Springs and resurgences, together with animal and plant communities dependent on the peculiar microclimatic and hydrological situation created by them. Excludes vegetated spring mires (D2.2, D4.1), where springs emerge through a (usually small) expanse of vegetation with little or no open water.
Soft water springs	Springs with cold, acid to neutral, oligotrophic waters, dominated either by mosses or vascular plants, depending on light conditions and altitude. Species-poor communities, especially in lower altitudes. Alliance [Caricion remotae] including several associations, with characteristic species [Caltha palustris ssp. laeta], [Cardamine amara ssp. amara], [Carex remota], [Chrysosplenium alternifolium], [Veronica beccabunga], [Bryum pseudotriquetrum] and [Conocephalum conicum].
Fennoscandian mineral-rich springs and springfens	No description available.
Hard water springs	Springs rich in calcium, typically due to calcareous tufa formation. Species-rich habitats with high moss cover, high dominance of moss [Cratoneuron commutatum] is typical. The stands belong to alliances [Cratoneurion commutati] and [Lycopodo-Cratoneurion commutati] with typical species [Arabis soyeri], [Saxifraga aizoides], [Viola biflora], [Cochlearia pyrenaica], [Bryum pseudotriquetrum], [Conocephalum conicum], [Eucladium verticillatum] and [Palustriella commutata].
Petrifying springs with tufa or travertine formations	Communities of calcareous, petrifying springs of the Alps, the pre-Alpine regions and of the middle European Hercynian ranges and their periphery, forming and colonizing large tufa deposits. When active, tufa springs comprise a hydrosere in which the [Cratoneurion] plants, and in particular, [Cratoneuron] spp., are accompanied by fen species such as [Carex lepidocarpa] and [Sesleria caerulea]; the latter may physiognomically dominate both the hydrosere and the adjacent xerosere, developed on fossil tufa deposits, in which it is accompanied by [Brometalia] plants.
Geysers	Springs from which heated water and steam is ejected, sometimes violently, at periodic intervals, in active or recently active volcanic regions. Major geysers are rare, known from only four areas in the world, and within the Palaearctic region, as here defined, only from Iceland and the northwestern Pacific rim. The proximal zone of geysers may host distinctive communities of lower plants and invertebrates.
Thermal springs	Acid or alkaline springs heated by geothermal energy, located in regions of present or past volcanic activity, producing a continuous flow of water at temperatures significantly above the air temperature. Springs and tepid pools at temperatures below 50º C may host a few species of specialised animals, those at temperatures between 50º C and 75º C harbour bluegreen algae that may form conspicuous mats, those at temperatures above 75º C are inhabited only by heterotrophic bacteria; the margins of the springs and the water-saturated substrates may host distinctive biotic communities, including higher plants.
Mediterranean thermal springs	Hot springs related to active volcanism of the islands, coasts and hinterland of the Mediterranean basins.

Macaronesian thermal springs	Hot springs related to active volcanism of the southern north Atlantic, on the mid-Atlantic ridge islands of the Azores and on the Canary Islands, Madeira and the Cape Verde Islands.
Icelandic thermal springs	Hot springs related to active volcanism of the northern North Atlantic, on the mid-Atlantic ridge islands, Iceland and Jan Mayen.
Peri-Alpine thermal springs	Hot springs related to late Tertiary volcanism of the western Alpine system, its periphery, its satellite mountain complexes and its interior basins, including the Baetic mountains, the Rif, the Tell, the Atlas, the Pyreneo-Cantabrian range, the Alps, the Carpathians, the mountains of the Balkan peninsula, the Jura, the Hercynian ranges of Iberia, the Central Massif, the northern Hercynian arc. They include, in particular, Romanian geothermal waters harbouring formations of [Nymphaea lotus] (unit 22.43113).
Peri-Caucasian hot springs	Hot springs related to late Tertiary volcanism of the central Alpine system, its periphery, its satellite mountain complexes and its interior basins, including the Caucasus, the Pontic range, the Anatolian plateau, the Taurus, the Zagros, the Elburz.
Saline springs	No description available.
Crenal streams (spring brooks)	Gushing springs (rheocrenes), spring basins (limnocrenes), seepages (helocrenes) and crenal streams, rivulets formed in and near the source area of streams, characterised by high stability of temperature, near the annual average of the ground water, best developed in montane situations. Specialised habitats associated with the spring include those of units D2.2C and D4.1N.
Thermal spring brooks	No description available.
Acid oligotrophic vegetation of spring brooks	Euhydrophyte communities of Palaearctic streams poor in nutrients and in lime, with, in particular, [Myriophyllum alterniflorum], [Potamogeton polygonifolius], [Callitriche hamulata], [Littorella uniflora], [Juncus bulbosus], [Scirpus fluitans] or acidophilous mosses and algae. In Iceland, [Montia fontana], [Potamogeton filiformis], [Ranunculus trichophyllus] ([Ranunculus confervoides], [Ranunculus aquatilis var. diffusus]) and [Fontinalis antipyretica] characterize the community in clear, slowly flowing waters.
Lime-rich oligotrophic vegetation of spring brooks	Euhydrophyte communities of Palaearctic streams poor in nutrients but rich in lime, characterized in particular by [Potamogeton coloratus] and [Chara hispida] or by tufa-forming mosses and algae.
Mesotrophic vegetation of spring brooks	Euhydrophyte communities of Palaearctic streams moderately rich in nutrients, characterized in particular by [Berula erecta] ([Sium erectum]), [Mentha aquatica f. submersa], [Potamogeton perfoliatus], [Potamogeton natans], [Groenlandia densa], [Ranunculus peltatus], [Ranunculus penicillatus], [Ranunculus trichophyllus], [Ranunculus fluitans], [Ranunculus aquatilis], [Callitriche truncata], [Callitriche stagnalis], [Nymphaea alba], [Myriophyllum spicatum].
Eutrophic vegetation of spring brooks	Euhydrophyte communities of Palaearctic streams rich in nutrients, characterized in particular by [Ranunculus fluitans], [Ranunculus circinatus], [Zannichellia palustris f. fluviatilis], [Potamogeton nodosus], [Potamogeton lucens], [Potamogeton pectinatus], [Potamogeton crispus], [Sparganium emersum], [Sagittaria sagittifolia], [Callitriche obtusangula], [Nuphar lutea] and the moss [Fontinalis antipyretica].

Permanent non-tidal, fast, turbulent watercourses	Permanent water courses with fast-flowing turbulent water and their associated animal and microscopic algal pelagic and benthic communities. Rivers, streams, brooks, rivulets, rills, torrents, waterfalls, cascades and rapids are included. The bed is typically composed of rocks, stones or gravel with only occasional sandy and silty patches. Features of the river bed, uncovered by low water or permanently emerging, such as gravel or rock islands and bars are treated as the littoral zone (C3). Includes high, mid and low-altitude, usually small to medium-sized streams as defined by the Water Framework Directive.
Epirhithral and metarhithral streams	Upper and middle reaches of montane and upland streams, characterised by turbulent, irregular flow, by diurnal and annual temperature variations higher than in the crenon (unit C2.16), and by aquatic biocoenoses largely dominated by [Turbellaria], [Ephemeroptera], [Plecoptera], [Trichoptera], [Diptera], by [Bryophyta] and epilithic [Bacillariophyta], [Cyanophycaea], [Rhodophyta] and [Chlorophyta] algae, with few, specialised, emergent macrophytes (units C2.25-C2.28). The unit corresponds to the "Trout zone" or "Salmonid zone" of western European ichthyological classifications.
Hyporhithral streams	Lower reaches of montane and upland streams, often representing the middle course of rivers. The unit corresponds to the "Grayling zone" of western European ichthyological classifications.
Glacial meltwaters	Streams immediately below glaciers, often creating shallow lakes, dominated by communities of silicaceous and green algae.
Waterfalls	More or less vertical descent of a water course over irregularities of the streambed.
Acid oligotrophic vegetation of fast-flowing streams	Euhydrophyte communities of Palaearctic streams poor in nutrients and in lime, with, in particular, [Myriophyllum alterniflorum], [Potamogeton polygonifolius], [Callitriche hamulata], [Littorella uniflora], [Juncus bulbosus], [Scirpus fluitans] or acidophilous mosses and algae. In Iceland, [Montia fontana], [Potamogeton filiformis], [Ranunculus trichophyllus] ([Ranunculus confervoides], [Ranunculus aquatilis var. diffusus]) and [Fontinalis antipyretica] characterize the community in clear, slowly flowing waters.
Lime-rich oligotrophic vegetation of fast-flowing streams	Euhydrophyte communities of Palaearctic streams poor in nutrients but rich in lime, characterized in particular by [Potamogeton coloratus] and [Chara hispida] or by tufa-forming mosses and algae.
Mesotrophic vegetation of fast-flowing streams	Euhydrophyte communities of Palaearctic streams moderately rich in nutrients, characterized in particular by [Berula erecta] ([Sium erectum]), [Mentha aquatica f. submersa], [Potamogeton perfoliatus], [Potamogeton natans], [Groenlandia densa], [Ranunculus peltatus], [Ranunculus penicillatus], [Ranunculus trichophyllus], [Ranunculus fluitans], [Ranunculus aquatilis], [Callitriche truncata], [Callitriche stagnalis], [Nymphaea alba], [Myriophyllum spicatum].
Eutrophic vegetation of fast-flowing streams	Euhydrophyte communities of Palaearctic streams rich in nutrients, characterized in particular by [Ranunculus fluitans], [Ranunculus circinatus], [Zannichellia palustris f. fluviatilis], [Potamogeton nodosus], [Potamogeton lucens], [Potamogeton pectinatus], [Potamogeton crispus], [Sparganium emersum], [Sagittaria sagittifolia], [Callitriche obtusangula], [Nuphar lutea] and the moss [Fontinalis antipyretica].

Permanent non-tidal, smooth-flowing watercourses	Permanent water courses with non-turbulent water and their associated animal and microscopic algal pelagic and benthic communities. Slow-flowing rivers, streams, brooks, rivulets and rills; also fast-flowing rivers with laminar flow. The bed is typically composed of sand or mud. Features of the river bed, uncovered by low water or permanently emerging, such as sand or mud islands and bars are treated as the littoral zone (C3). Includes mid and low-altitude streams as defined by the Water Framework Directive.
Epipotamal streams	Upper reaches of lowland streams, characterised by calmer flow, higher annual temperature variation and aquatic biocoenoses comprising more standing water species, among them emergent macrophytes (units C2.33-C2.34). The unit corresponds to the "Barbel zone" of western European ichthyological classifications.
Metapotamal and hypopotamal streams	Middle and lower reaches of Palaearctic lowland streams ("Niederungsbach", "lowland" and "plain" streams), with aquatic biocoenoses very similar to those of standing water. The unit corresponds to the "Bream zone" of western European ichthyological classifications.
Mesotrophic vegetation of slow-flowing rivers	Euhydrophyte communities of Palaearctic streams moderately rich in nutrients, characterized in particular by [Berula erecta] ([Sium erectum]), [Mentha aquatica f. submersa], [Potamogeton perfoliatus], [Potamogeton natans], [Groenlandia densa], [Ranunculus peltatus], [Ranunculus penicillatus], [Ranunculus trichophyllus], [Ranunculus fluitans], [Ranunculus aquatilis], [Callitriche truncata], [Callitriche stagnalis], [Nymphaea alba], [Myriophyllum spicatum].
Eutrophic vegetation of slow-flowing rivers	Euhydrophyte communities of Palaearctic streams rich in nutrients, characterized in particular by [Ranunculus fluitans], [Ranunculus circinatus], [Zannichellia palustris f. fluviatilis], [Potamogeton nodosus], [Potamogeton lucens], [Potamogeton pectinatus], [Potamogeton crispus], [Sparganium emersum], [Sagittaria sagittifolia], [Callitriche obtusangula], [Nuphar lutea] and the moss [Fontinalis antipyretica].
Tidal rivers, upstream from the estuary	Portions of rivers subject to the tide, upstream from the estuary.
Brackish water tidal rivers	Brackish portions of rivers subject to the tide, upstream from the estuary.
Freshwater tidal rivers	Freshwater sections of rivers subject to the tide.
Mesotrophic vegetation of tidal rivers	Euhydrophyte communities of Palaearctic streams moderately rich in nutrients, characterized in particular by [Berula erecta] ([Sium erectum]), [Mentha aquatica f. submersa], [Potamogeton perfoliatus], [Potamogeton natans], [Groenlandia densa], [Ranunculus peltatus], [Ranunculus penicillatus], [Ranunculus trichophyllus], [Ranunculus fluitans], [Ranunculus aquatilis], [Callitriche truncata], [Callitriche stagnalis], [Nymphaea alba], [Myriophyllum spicatum].
Eutrophic vegetation of tidal rivers	Euhydrophyte communities of Palaearctic streams rich in nutrients, characterized in particular by [Ranunculus fluitans], [Ranunculus circinatus], [Zannichellia palustris f. fluviatilis], [Potamogeton nodosus], [Potamogeton lucens], [Potamogeton pectinatus], [Potamogeton crispus], [Sparganium emersum], [Sagittaria sagittifolia], [Callitriche obtusangula], [Nuphar lutea] and the moss [Fontinalis antipyretica].

Temporary running waters	Watercourses that cease to flow for part of the year, leaving a dry bed or pools. Habitats of the dry phase are treated under C3.5, C3.6 and C3.7. Vegetation communities may be of [Paspalo-Agrostidion], [Parvopotamion] or [Sparganio-Glycerion fluitantis].
Films of water flowing over rocky watercourse margins	Flowing water that is not contained within a channel but oozes over rocks.
Littoral zone of inland surface waterbodies	Reedbeds and other water-fringing vegetation by lakes, rivers and streams; exposed bottoms of dried up rivers and lakes; rocks, gravel, sand and mud beside or in the bed of rivers and lakes.
Species-rich helophyte beds	Water-fringing stands of vegetation by lakes, rivers and streams, with mixed species composition.
Beds of small helophytes of fast-flowing waters	Formations of small helophytes, [Glyceria fluitans], [Glyceria plicata], [Glyceria nemoralis], [Glyceria declinata], [Leersia oryzoides], [Catabrosa aquatica], [Sparganium neglectum], [Sparganium microcarpum], [Nasturtium officinale], [Nasturtium microphyllum], [Veronica beccabunga], [Veronica anagallis-aquatica], [Apium nodiflorum], [Sium erectum] and [Apium repens], occupying the banks of small rivers, brooks, brooklets or springs on alluvial or peaty soils from the Euro-Siberian region, through the Mediterranean basin, to desert oases. Vegetation is typically from alliance [Glycerio-Sparganion].
Water-fringing reedbeds and tall helophytes other than canes	Water-fringing stands of tall vegetation by lakes (including brackish lakes), rivers and brooks, usually species-poor and often dominated by one species. Includes stands of [Carex] spp., [Cladium mariscus], [Equisetum fluviatile], [Glyceria maxima], [Hippuris vulgaris], [Phragmites australis], [Sagittaria sagittifolia], [Schoenoplectus] spp., [Sparganium] spp. and [Typha] spp. Excludes terrestrialized reed and sedge beds which are not at the water's edge (D5.1, D5.2).
Common reed ([Phragmites]) beds	Communities of the margins of Palaearctic lakes, inland seas and sea inlets, rivers and brooks, eutrophic marshes and swamps dominated by [Phragmites australis].
Flooded [Phragmites] beds	[Phragmites australis] beds of the margins of Palaearctic lakes, inland seas and sea inlets, rivers and brooks inundated permanently or for prolonged annual periods.
Freshwater [Phragmites] beds	[Phragmites australis] beds of the Palaearctic region permanently or usually inundated by fresh water lakes, ponds and watercourses.
Common clubrush ([Scirpus]) beds	Communities of the margins of Palaearctic lakes, rivers and brooks dominated by [Scirpus lacustris], intolerant of drying, tolerant of water circulation, and thus forming the outer belts of reedbeds.
Reedmace ([Typha]) beds	Communities of the margins of lakes, rivers and brooks dominated by [Typha latifolia], [Typha angustifolia], [Typha domingensis], [Typha laxmannii], [Typha elephantina] formations, usually extremely species-poor and sometimes almost pure, tolerant of extended periods of dryness, varying conditions of salinity, and of pollution. Although [Typha] species are dominant, other common species such as [Acorus calamus], [Equisetum fluviatile], [Phragmites australis], [Glyceria maxima] and [Schoenoplectus lacustris] and alliance [Phragmition communis] may also occur.
Great reedmace beds	Communities of the margins of Palaearctic lakes, rivers and brooks dominated by [Typha latifolia], of widespread occurrence.

Lesser reedmace beds	Communities of the margins of Palaearctic lakes, rivers and brooks dominated by [Typha angustifolia], like unit 53.131, of wide distribution.
Medium-tall non-graminoid waterside communities	Communities of the margins of shallow lakes, rivers and brooks dominated by shorter, mostly non-graminoid helophytes emerging from mesotrophic or eutrophic, stagnant or slow-moving, shallow water, and constituting fringes or patches within or alongside reedbeds. Habitat structure is determined by one or two dominant species, e.g. [Alisma] spp., [Oenanthe aquatica], [Rorippa amphibia], [Sparganium] spp., [Sagittaria sagittifolia], [Equisetum fluviatile], [Acorus calamus] and [Hippuris vulgaris] (see subdivisions).
Arrowhead communities	Formations of [Sagittaria sagittifolia] and [Sparganium emersum] of slowly flowing, and sometimes standing, meso-eutrophic waters of western Eurasia; formations of [Sagittaria sagittifolia], [Sagittaria natans] and [Caltha membranacea] of similar eastern Asian waterbodies.
Neglected bur-reed communities	Communities of the margins of Palaearctic lakes, rivers and brooks dominated by [Sparganium neglectum], characteristic of standing or slowly flowing waters on mineral-rich, lime-poor muddy substrates.
Erect bur-reed communities	Communities of the margins of Palaearctic lakes, rivers and brooks dominated by or rich in [Sparganium erectum], characteristic of riparian reedbeds along standing waters on lime-rich, mineral-rich muddy substrates.
Sweet flag communities	Communities of the margins of Palaearctic lakes, rivers and brooks dominated by the long-introduced thermophile [Acorus calamus].
Flowering rush communities	Usually open communities of the margins of Palaearctic lakes, rivers and brooks dominated by, or rich in, [Butomus umbellatus], characteristic of strongly fluctuating still or slow-flowing base- and mineral-rich waters.
Water dropwort-great yellowcress communities	Communities of the margins of Palaearctic lakes, rivers and brooks, often situated at the edges of reedbeds, rich in [Oenanthe aquatica] or [Rorippa amphibia].
Water horsetail beds	Low, often extensive, homogeneous, usually inundated communities of the margins of Palaearctic lakes, rivers and brooks dominated by [Equisetum fluviatile].
Water parsnip communities	Communities of the margins of Palaearctic lakes, rivers and brooks dominated by or rich in the tall umbellifer [Sium latifolium].
Marestail beds	Communities of the margins of Palaearctic lakes, rivers and brooks, usually of clear, cold to temperate nutrient-rich water, dominated by [Hippuris vulgaris].
Common spikerush beds	Low, often extensive and very homogeneous formations of Palaearctic lakeshores, pools and ditches with strongly fluctuating water regime, dominated by [Eleocharis palustris].
Iris beds	Homogeneous [Iris pseudacorus] formations of the margins of Palaearctic lakes, rivers and brooks.
Water-fringe medium-tall grass beds	Communities of the margins of Palaearctic lakes, inland seas and sea inlets, rivers and brooks, eutrophic marshes, swamps and ditches dominated by medium or medium-tall helophyte Poaceae of genera [Glyceria], [Leersia], [Socolochloa] or [Calamagrostis]. The further division of this unit is based on dominance by species of these genera.

Sweetgrass beds	Communities of eutrophic Palaearctic waters, often with variable level, dominated by fairly tall, robust grasses of genus [Glyceria] (section [Hydropoa]).
Eurasian [Leersia] beds	Communities of the terrestrialisation zone of Palaearctic lakes, ponds, rivers, brooks and canals, mostly with turbid water, dominated by [Leersia oryzoides].
Eurasian [Scolochloa] beds	Communities of the margins of muddy shores of lakes and slow-flowing rivers of the Palaearctic domaine, from eastern Fennoscandia, eastern Germany, Lithuania and the Ukraine eastwards, including central Yakutia, dominated by [Scolochloa festucacea].
Water-fringe [Calamagrostis] beds	Communities of the margins of Palaearctic mesotrophic acidocline lakes, rivers and swamps dominated by [Calamagrostis canescens].
Reed canary-grass ([Phalaris]) beds	Communities of the margins of lakes, rivers, brooks and swamps dominated by [Phalaris arundinacea], pure or mixed with [Phragmites australis], [Carex acutiformis], [Carex elata], [Carex paniculata], [Calamagrostis canescens], [Mentha aquatica], very tolerant of drying, pollution and perturbance, susceptible of forming the landward belt of reedbeds and often characteristic of degraded systems. Vegetation of alliance [Magnocaricion elatae], suballiances [Caricenion rostratae] and [Caricenion gracilis].
Halophile [Scirpus], [Bolboschoenus] and [Schoenoplectus] beds	Formations of clubrushes ([Scirpus] spp.), often accompanied by rushes ([Juncus] spp.), fringing, to a depth of 1.5 metres, brackish, saline, or sometimes fresh, waters of coastal saltmarshes, coastal lagoons, athalassic saline waterbodies, springs, salt meadows, fens and tidal rivers. [Scirpus tabernaemontani] ([Schoenoplectus tabernaemontani]), [Scirpus maritimus] ([Bolboschoenus maritimus]), [Scirpus triqueter], [Scirpus litoralis], [Scirpus pungens], with, in particular, [Juncus gerardi] and [Juncus maritimus], are typical components.
Riparian great fen sedge beds	Species-poor [Cladium mariscus] formations of Palaearctic riversides or lakesides, with a [Phragmition] cortège, mostly characteristic of Mediterranean regions, including North Africa, where they are, however, uncommon.
Water-fringing beds of tall canes	Mediterranean beds of tall canes lining permanent or temporary water courses and water bodies. Included are beds of [Arundo donax] (C3.32) and [Saccharum ravennae] (C3.31).
Ravenna cane ([Saccharum ravennae]) communities	Mediterranean and, locally, southern and southwestern Pontic, tall cane beds formed by [Imperata cylindrica], [Saccharum ravennae] ([Erianthus ravennae]), [Saccharum strictum], [Saccharum spontaneum] ([Saccharum aegyptiacum]), [Arundo plinii], [Hemarthria altissima], mostly lining temporary water courses, but also developing in damp depressions, in particular dune slacks.
Provence cane ([Arundo donax]) beds	Very tall thickets of [Arundo donax] lining water courses of the Middle East and Central Asia; similar formations of the Mediterranean basin, where the species is an old introduction, are included.
Species-poor beds of low-growing water-fringing or amphibious vegetation	Includes isoetids of the shores of oligotrophic lakes, [Nasturtium aquaticum] by streams, mediterranean dwarf [Scirpus] swards, and other species-poor but dissimilar types of vegetation.

Euro-Siberian perennial amphibious communities	Carpets of perennial vegetation submerged for a considerable part of the year in oligotrophic or mesotrophic lakes, ponds and pools of the boreal and nemoral zones of the Palaearctic and of mountains of the southern Palaearctic.
Shoreweed lawns, lobelia ponds, quillwort swards	[Littorella uniflora], [Lobelia dortmanna] and [Isoetes] spp. formations of oligotrophic waters of the boreal and nemoral zones of the Palaearctic and of mountains of the southern Palaearctic.
Shoreweed lawns	Dense, almost monospecific [Littorella uniflora] lawns of lake shores subject to great annual variations of the water level and long emergence, and other [Littorella]-dominated associations.
Lobelia ponds	[Lobelia dortmanna] colonies of shallow oligotrophic, moderately acid ponds.
Euro-Siberian quillwort swards	Clear-water quillwort swards formed by the northern European and montane [Isoetes lacustris] and [Isoetes echinospora] or by the very local endemics [Isoetes tenuissima] of central western France and [Isoetes brochonii] of the eastern Pyrenees. Associated species may include [Lobelia dortmanna], [Sparganium angustifolium], [Littorella uniflora], [Hippuris vulgaris].
Floating bur-reed communities	[Sparganium angustifolium]-dominated formations of small oligotrophic ponds, characteristic, in particular, of the upper montane and subalpine levels of the Alps and of the greater Hercynian ranges, locally recorded from sub-Atlantic heath regions of the Germano-Baltic plain, also capable of occurring, within the extensive Fennoscandian range of the species, and in coastal areas of Iceland, as a facies of the [Isoetes] communities of unit 22.3119.
Boreo-Arctic lake mud communities	Amphibious communities dominated by [Ranunculus reptans] and [Subularia aquatica] colonizing, sometimes on large surfaces, the bottom of water bodies of Fennoscandia, Iceland and the Faeroe Islands, mostly in situations characterized by relatively large fluctuations of the water level.
[Myriophyllum alterniflorum] communities	Oligotrophic pool and pool fringe communities of the northern Palaearctic dominated by [Myriophyllum alterniflorum], characteristic of weakly acid clear waters on limestone-free substrates, sometimes with [Ranunculus reptans], [Littorella uniflora].
Spike-rush shallow-water swards	[Eleocharis acicularis] beds of the Palaearctic, characteristic of more organic soils and mesotrophic waters than the communities of unit 22.311.
Acid pool fringe shallow-water swards	[Eleocharis multicaulis], [Scirpus fluitans], [Juncus bulbosus], [Hypericum elodes], [Pilularia globulifera], [Deschampsia setacea], [Ranunculus flammula], [Littorella uniflora] communities of shallow acid pools of the Palaearctic and their margins susceptible to short periods of emersion.
[Eleocharis multicaulis] communities	Oligotrophic pool fringe communities of the western Palaearctic dominated by [Eleocharis multicaulis], [Deschampsia setacea].
Dune slack shoreweed swards	Communities of humid sands and pool fringes in oligotrophic dunes of the Atlantic, the North Sea and the southern Baltic, with [Samolus valerandi] and [Littorella uniflora].
[Pilularia] swards	Oligotrophic pool fringe communities of western and central Europe, north to Denmark and southern Fennoscandia, east to Poland, the Czech Republic and the Balkan peninsula, dominated by the fern [Pilularia globulifera].

[Juncus bulbosus] communities	Oligotrophic pool fringe communities of sub-Atlantic Europe dominated by [Juncus bulbosus], often accompanied by [Ranunculus flammula], [Agrostis canina], [Glyceria fluitans].
[Scirpus fluitans] communities	Pool fringe communities dominated by [Scirpus fluitans] ([Eleogiton fluitans], [Isolepis fluitans]), characteristic of mesotrophic to dystrophic heath pools on sands or muds, particularly within the [Quercion] domaine, with periods of drying usually short, sometimes permanently inundated.
[Apium inundatum] communities	Pool fringe communities of western and central Europe dominated by [Apium inundatum], characteristic of oligotrophic to mesotrophic fluctuating pools, in particular, dune slack pools and forest pools.
[Arenicola marina] in infralittoral fine sand or muddy sand	In shallow fine sand or non-cohesive muddy sand in fully marine conditions (or occasionally in variable salinity) a community characterised by the polychaete [Arenicola marina] may occur. This biotope appears quite faunally sparse. Those other taxa present however, include scavenging crustacea such as [Pagurus bernhardus] and [Liocarcinus depurator], terebellid polychaetes such as [Lanice conchilega] and the burrowing anemone [Cerianthus lloydii]. Occasional [Sabella pavonina] and frequent [Ensis] spp. may also be observed in some areas. The majority of records for this biotope are derived from epifaunal surveys and consequently there is little information available for the associated infaunal species. It is possible that this biotope, like EcorEns (to which it is broadly similar) is an epibiotic overlay on other biotopes from the SSA complex. Temporal variation: At certain times of the year a diatom film may be present on the sediment surface.
[Echinocyamus pusillus], [Ophelia borealis] and [Abra prismatica] in circalittoral fine sand	Circalittoral and offshore medium to fine sand (from 40m to 140m) characterised by the pea urchin [Echinocyamus pusillus], the polychaete [Ophelia borealis] and the bivalve [Abra prismatica]. Other species may include the polychaetes [Spiophanes bombyx], [Pholoe] sp., [Exogone] spp., [Sphaerosyllis bulbosa], [Goniada maculata], [Chaetozone setosa], [Owenia fusiformis], [Glycera lapidum], [Lumbrineris latreilli] and [Aricidea cerrutii] and the bivalves [Thracia phaseolina] and [Moerella pygmaea] and to a lesser extent [Spisula elliptica] and [Timoclea ovata]. This biotope has been found in the central and northern North Sea.
[Abra prismatica], [Bathyporeia elegans] and polychaetes in circalittoral fine sand	In circalittoral and offshore medium to fine sands between 25m and 100m a community characterised by the bivalve [Abra prismatica], the amphipod [Bathyporeia elegans] and polychaetes such as [Scoloplos armiger], [Spiophanes bombyx], [Aonides paucibranchiata], [Chaetozone setosa], [Ophelia borealis] and [Nephtys longosetosa] may be found. Crustacea such as the cumacean [Eudorellopsis deformis] and the opheliid polychaetes such as [Ophelia borealis], [Travisia forbesii] or [Ophelina neglecta] are often present in this biotope and the brittlestar [Amphiura filiformis] may also be common at some sites. This biotope has been reported in the central and northern North Sea (Basford and Eleftheriou, 1989; Künitzer et al., 1992).

[Amphiura brachiata] with [Astropecten irregularis] and other echinoderms in circalittoral muddy sand	In shallow, circalittoral non-cohesive muddy sand (typically less than 20% silt/clay) abundant populations of the brittlestar [Amphiura brachiata] may occur with other echinoderms such as [Astropecten irregularis], [Asterias rubens], [Ophiura ophiura] and [Echinocardium cordatum]. Other infaunal species typically include [Mysella bidentata, Lanice conchilega] and [Magelona filiformis]. This biotope is likely to form part of the non-cohesive/cohesive muddy sand communities, which make up the 'off-shore muddy sand association' described by other workers (Jones 1951; Mackie 1990). It is possible that in some areas this biotope forms an epifaunal overlay which may cover a range of biotopes in years of good recruitment but does not develop into a settled or established community.
Maldanid polychaetes and [Eudorellopsis deformis] in deep circalittoral sand or muddy sand	In deep offshore sand or non-cohesive muddy sand dense populations of maldanid polychaetes such as [Maldane sarsi] and the cumacean [Eudorellopsis deformis] may be found. Accompanying these species are abundant ophiuroids including [Amphiura filiformis], polychaetes such as Terebellidae sp., [Chaetozone setosa], [Levinsenia gracilis], [Scoloplos armiger], the amphipod [Harpinia antennaria] and the bivalves [Nuculoma tenuis] and [Parvicardium minimum]. This biotope is similar to the [Maldane sarsi]-[Ophiura sarsi] community defined by Glemarec (1973).
[Sagartiogeton undatus] and [Ascidiella aspersa] on infralittoral sandy mud	Sheltered sublittoral mud or sandy mud in shallow water with relatively few conspicuous species may be characterised by the anemone [Sagartiogeton undatus] in low numbers and the tunicate [Ascidiella] [aspersa]. Other taxa may include [Carcinus maenas], [Pagurus bernhardus] and terebellid polychaetes. The burrowing anemones [Cerianthus lloydii] may also be found occasionally. The status of this biotope is uncertain at present as it is not known whether it is an impoverished, disturbed or epifaunal variant of other sheltered, shallow mud biotopes such as PhiVir or if the areas in which it has been recorded have been incompletely surveyed.
[Mysella bidentata] and [Abra] spp. in infralittoral sandy mud	Cohesive sandy mud, sometimes with a small quantity of shell in shallow water may contain the bivalves [Mysella bidentata] and [Abra] spp. (typically [A. alba] and [A. nitida]). Other characteristic taxa may include [Scoloplos armiger], [Mya] sp., and [Thyasira flexuosa]. Tube building amphipods are also characteristic of this biotope in particular [Ampelisca] spp. and Aoridae such as [Microprotopus maculatus]. Situation: This biotope is generally found in sheltered marine inlets or sealochs such as Strangford Lough.
[Cerastoderma edule] with [Abra nitida] in infralittoral mud	Sheltered shallow sublittoral muds and gravelly muds in marine embayments, inlets or harbours may contain populations of the edible cockle [Cerastoderma edule] with [Abra nitida]. Other taxa may include the gastropod [Hydrobia ulvae], cirraltulid polychaetes such as [Caulleriella] spp. and other polychaetes including [Hediste diversicolor] and [Aphelochaeta marioni]. Available data for this biotope are limited to parts of Southampton Water, Chichester Harbour and also in the Wash. The species list given here may therefore be far from complete. It is not known at this stage whether this biotope is a sublittoral extension of intertidal cockle beds (e.g. LSA.CerPo) or whether it exists independently of intertidal populations of [C. edule].

[Thyasira] spp. and [Nuculoma tenuis] in circalittoral sandy mud	Circalittoral cohesive sandy muds with small quantities of gravel, off sheltered or moderately exposed coasts may support populations characterised by [Thyasira] spp. and in particular [Thyasira flexuosa]. Other characteristic taxa may include [Nuculoma tenuis], [Goniada maculate] and in some areas [Rhodine gracilior]. [Mysella bidentata], [Abra alba], [Harpinia antennaria] and [Amphiura filiformis] may be abundant in some examples of this biotope. Whilst moderately diverse, animal abundances are often low and it is possible that the biotope is the result of sedimentary disturbance e.g. from trawling and is possibly an impoverished version of AfilNten. Collectively the biotopes ThyNten, AfilMysAnit, AfilNten and OfusAfil, may form the [Amphiura] dominated components of the 'off-shore muddy sand association' described by other workers (Jones 1951; Thorson 1957; Mackie 1990) and the infralittoral etage described by Glemarec (1973).
[Lagis koreni] and [Phaxas pellucidus] in circalittoral sandy mud	In stable circalittoral sandy mud dense populations of the tube building polychaete [Lagis koreni] may occur. Other species found in this habitat typically include bivalves such as [Phaxas pellucidus], [Mysella bidentata] and [Abra alba] and polychaetes such as [Mediomastus fragilis], [Spiophanes bombyx], [Owenia fusiformis] and [Scalibregma inflatum]. At the sediment surface easily visible fauna include [Lagis koreni] and [Ophiura ophiura]. [Lagis koreni] is an important source of food for commercially important demersal fish, especially dab and plaice (Macer, 1967; Lockwood, 1980 and Basimi & Grove, 1985). Temporal variation: In some areas e.g. Liverpool Bay, AalbNuc and LkorPpel have exhibited cyclical behaviour with the community periodically switching from one biotope to another - possibly in relation to dredge spoil disposal (Rees [et al]. 1992) along with other environmental and biological factors. Both [Lagis koreni] and [Phaxas pellucidus], are capable of tolerating sudden increases in the deposition of sediment and often dominate such areas following such an event. Indeed it is likely that the two biotopes are merely
Burrowing megafauna and [Maxmuelleria lankesteri] in circalittoral mud	In circalittoral stable mud distinctive populations of megafauna may be found. These typically include [Nephrops norvegicus], [Calocaris macandreae] and [Callianassa subterranea]. Large mounds formed by the echiuran [Maxmuelleria lankesteri] are also frequent in this biotope. The seapen [Virgularia mirabilis] may occur occasionally in this biotope but not in the same abundance as SpnMeg to which MegMax is closely allied. Infaunal species may include [Nephtys hystricis], [Chaetozone setosa, Amphiura chiajei] and [Abra alba].
[Capitella capitata] and [Thyasira] spp. in organically-enriched offshore circalittoral mud and sandy mud	In circalittoral and deep offshore mud and sandy mud adjacent to oil or gas platforms, organic enrichment from drill cuttings leads to the development of communities dominated by the [Capitella capitata], an opportunist especially associated with organically enriched and polluted sediments as described for Cap (Warren 1977; Pearson & Rosenberg 1978). The bivalves [Thyasira flexuosa] or [Thyasira sarsi] may also be found in moderate numbers at some sites. Other taxa may be present in low numbers in areas of less severe enrichment including [Pholoe inornata], [Lagis koreni], [Philine scabra], [Anaitides groenlandica], [Mediomastus fragilis] and [Paramphinome jeffreysii].

[Capitella capitata], [Thyasira] spp. and [Ophryotrocha dubia] inorganically-enriched offshore circalittoral mud or sandy mud	In deep offshore sandy mud adjacent to oil or gas platforms, organic enrichment from drill cuttings leads to the development of communities dominated by the pollution tolerant opportunist [Capitella capitata] and the polychaete [Ophryotrocha dubia] (or other species of [Ophryotrocha]). These species are generally found in extremely high abundances and accompanied by [Thyasira] spp., [Raricirrus beryli], [Paramphinome jeffreysii] and [Chaetozone setosa]. Other taxa including [Exogone verugera], [Pholoe inornata] and [Idasola simpsoni] may also be present.
[Levinsenia gracilis] and [Heteromastus filifirmis] in offshore circalittoral mud and sandy mud	In deep offshore mud and sandy mud a community characterised by the polychaetes [Levinsenia gracilis] and [Heteromastus filiformis] may occur. Other important taxa may include [Paramphinome jeffreysii], [Nephtys hystricis] and [N. incisa], [Spiophanes kroyeri], [Orbinia norvegica], [Terebellides stroemi], [Thyasira gouldi] and [Thyasira equalis]. Burrowing megafauna such as [Calocaris macandreae] may also be found in this biotope. This biotope has been found in the central and northern North Sea. A similar community, dominated by [L. gracilis] but accompanied by [Glycera] spp. (particularly [Glycera rouxii]) and [Monticellina dorsobranchialis], has also been reported from the Irish Sea. This Irish community also contains [Calocaris macandreae], [Mediomastus fragilis], [Tubificoides amplivasatus], [Nephtys incisa], [Ancistrosyllis groenlandica], [Nucula sulcata], [Litocorsa stremma] and [Minuspio] sp. and it is not known at present whether this represents a separate biotope or whether it is a geographic variant of a wider [Levinsenia] biotope. Situation: This biotope has been found in the central
[Paramphinome jeffreysii], [Thyasira] spp. and [Amphiura filiformis] in offshore circalittoral sandy mud	Deep, offshore cohesive sandy mud communities characterised by the polychaete [Paramphinome jeffreysii], bivalves such as [Thyasira equalis] and [Thyasira gouldi] and the brittlestar [Amphiura filiformis]. Other taxa may include Laonice cirrata, the sea cucumber Labidoplax buski and the polychaetes [Goniada maculata], [Spiophanes kroyeri] and [Aricidea catherinae]. [Amphiura chiajei] may be occasional in this biotope as may [Philine scabra], [Levinsenia gracilis] and [Pholoe inornata]. This biotope along with SMU.ThyNten, SMU.AfilMysAnit, SMU.AfilNten and SSA.OfusAfil, may comprise the [Amphiura] dominated components of the 'off-shore muddy sand association' (Jones 1951; Mackie 1990) and the infralittoral etage described by Glemarec (1973).
[Myrtea spinifera] and polychaetes in offshore circalittoral sandy mud	Deep, offshore habitats with cohesive sandy mud (>20% mud) may support communities characterised by infaunal polychaetes and the bivalve [Myrtea spinifera]. Polychaetes typically include [Chaetozone setosa], [Paramphinome jeffreysii], [Levinsenia gracilis], [Aricidea catherinae] and [Prionospio malmgreni]. The bivalves [Thyasira] spp. and [Abra nitida] may also be found as may seapens, such as [Pennatula phosphorea]. Some examples of the biotope AfilNten contain [Myrtea spinifera] (Mackie 1990) in lower numbers but these habitats are generally sandier than those in MyrPo. Situation: This biotope has been recorded in the northern North Sea but may also exist in the Irish Sea.

[Crepidula fornicata] with ascidians and anemones on infralittoral coarse mixed sediment	Medium-coarse sands with gravel, shells, pebbles and cobbles on moderately exposed coasts may support populations of the slipper limpet [Crepidula fornicata] with ascidians and anemones. [C. fornicata] is common in this biotope though not as abundant as in the muddier estuarine biotope CreMed to which this is related. Anemones such as [Urticina felina] and [Alcyonium digitatum] and ascidians such as [Styela clava] are typically found in this biotope. Bryozoans such as [Flustra foliacea] are also found along with polychaetes such as [Lanice conchilega]. Little information is available with regard the infauna of this biotope but given the nature of the sediment the infaunal communities are liable to resemble those in biotopes from the SCS habitat complex. As with FluHyd this biotope could be considered a superficial or epibiotic overlay but more data is required to support this.
[Sabella pavonina] with sponges and anemones on infralittoral mixed sediment	Muddy gravelly sand with pebbles off shallow, sheltered or moderately exposed coasts or embayments may support dense populations of the peacock worm [Sabella pavonina]. This community may also support populations of sponges such as [Esperiopsis fucorum], [Haliclona oculata] and [Halichondria panicea] and anemones such as [Sagartia elegans], [Cerianthus lloydii] and [Urticina felina]. Hydroids such as [Hydrallmania falcata] and the encrusting polychaete [Pomatoceros triqueter] are also important. This biotope may have an extremely diverse epifaunal community. Less is known about its infaunal component, although it is likely to include polychaetes such as Nephtys spp., [Harmothoe] spp., [Glycera] spp., syllid and cirratulid polychaetes, bivalves such as [Abra] spp., Aoridae amphipods and brittlestars such as [Amphipholis squamata].
[Cerianthus lloydii] with [Nemertesia] spp. and other hydroids in circalittoral muddy mixed sediment	In sheltered muddy sandy gravel with appreciable quantities of surficial cobbles, pebbles and shells a community similar to CllloMx may develop with frequent [Cerianthus lloydii] and other burrowing anemones. However, the pebbles and cobbles embedded in the sediment are colonised by hydroids and in particular [Nemertesia antennina] and [N. ramosa]. Other hydroids may include [Kirchenpaueria pinnata] and [Halecium halecinum] whilst ascidians such as [Ascidiella aspersa] or [Corella parallelogramma] may also be present locally. [Pecten maximus] and [Pomatoceros triqueter] may also be frequent in certain areas.
[Mysella bidentata] and [Thyasira] spp. in circalittoral muddy mixed sediment	In moderately exposed or sheltered, circalittoral muddy sands and gravels a community characterised by the bivalves [Thyasira] spp. (often [Thyasira flexuosa]), [Mysella bidentata] and [Prionospio fallax] may develop. Infaunal polychaetes such as [Lumbrineris gracilis], [Chaetozone setosa] and [Scoloplos armiger] are also common in this community whilst amphipods such as [Ampelisca] spp. and the cumacean [Eudorella truncatula] may also be found in some areas. The brittlestar [Amphiura filiformis] may also be abundant at some sites. Conspicuous epifauna may include encrusting bryozoans [Escharella] spp. particularly [Escharella immersa] and, in shallower waters, maerl ([Phymatolithon calcareum]), although at very low abundances and not forming maerl beds.

[Ophiothrix fragilis] and/or [Ophiocomina nigra] brittlestar beds on sublittoral mixed sediment	Circalittoral sediment dominated by brittlestars (hundreds or thousands m-2) forming dense beds, living epifaunally on boulder, gravel or sedimentary substrata. [Ophiothrix fragilis] and [Ophiocomina nigra] are the main bed-forming species, with rare examples formed by [Ophiopholis aculeate]. Brittlestar beds vary in size, with the largest extending over hundreds of square metres of sea floor and containing millions of individuals. They usually have a patchy internal structure, with localized concentrations of higher animal density. [Ophiothrix fragilis] or [Ophiocomina nigra] may dominate separately or there may be mixed populations of the two species. [Ophiothrix] beds may consist of large adults and tiny, newly-settled juveniles, with animals of intermediate size living in nearby rock habitats or among sessile epifauna. Unlike brittlestar beds on rock, the sediment based beds may contain a rich associated epifauna (Warner, 1971; Allain, 1974; Davoult & Gounin, 1995). Large suspension feeders such as the octocoral [Alcyonium digitatum], the anemone [Metridium senile] and the hydroid [Nemertesia antennina] are p
Kelp and seaweed communities in tide-swept sheltered conditions	Sheltered infralittoral rock exposed to strong tidal streams. In the sublittoral fringe dense [Laminaria digitata] is found together with erect seaweeds, sponges, ascidians and bryozoans (A3.221). Below this, on bedrock and stable boulders a canopy of mixed kelp (primarily [Laminaria hyperborea] and [Laminaria saccharina]) occurs with foliose red seaweeds, sponges and ascidians (A3.222). This biotope is typically found in the sheltered narrows and sills of Scottish sealochs. Mixed substrata of boulders, cobbles, pebbles and gravel, that also occurs in the tidal rapids of Scottish sealochs, supports a reduced kelp canopy ([L. hyperborea] and [L. saccharina]; typically Frequent), with a rich red seaweed component and maerl at some sites (A3.223). In south-west Britain, sheltered, tide-swept rock is restricted to estuarine conditions where variable salinity and increased turbidity of the water have a significant effect on the biota, limiting the infralittoral zone to very shallow depths. Unlike the tide-swept channels in sealochs, the rock in these estuaries is characterised by a relatively low abundance of [L. saccharina]
[Laminaria hyperborea] on tide-swept, infralittoral rock	Wave exposed to moderately wave exposed, tide-swept bedrock and boulders with [Laminaria hyperborea], characterised by a rich under-storey and stipe flora of foliose seaweeds including the brown seaweed [Dictyota dichotoma]. The kelp stipes support epiphytes such as [Cryptopleura ramosa] and [Phycodrys rubens]. At some sites, instead of being covered by red seaweeds, the kelp stipes are heavily encrusted by the ascidian [Botryllus schlosseri]. Epilithic seaweeds [Delesseria sanguinea], [Plocamium cartilagineum] [Heterosiphonia plumosa, Hypoglossum hypoglossoides], [Callophyllis laciniata], [Kallymenia reniformis], [Brongniartella byssoides] and crustose seaweeds commonly occur beneath the kelp. The kelp fronds are often covered with growth of the hydroid [Obelia geniculata] or the bryozoan [Membranipora membranacea]. On the rock surface, a rich fauna comprising the bryozoan [Electra pilosa], the sponge [Pachymatisma johnstonia], anthozoans such as [Alcyonium digitatum], [Sagartia elegans] and [Urticina felina], colonial ascidians such as [Clavelina lepadiformis], the

[Laminaria hyperborea] on tide-swept infralittoral mixed substrata	Wave-exposed through to wave-sheltered, tide-swept infralittoral mixed substrata with [Laminaria hyperborea] forest/park and other kelp species such as [Laminaria saccharina]. The rich under-storey and stipe flora is characterised by foliose seaweeds including the brown algae [Dictyota dichotoma]. The kelp stipes support epiphytes such as [Cryptopleura ramosa], [Callophyllis laciniata] and [Phycodrys rubens]. At some sites, instead of being covered by red seaweeds, the kelp stipes are heavily encrusted by the ascidians [Botryllus schlosseri] and the bryozoan [Alcyonidium diaphanum]. Epilithic seaweeds such as [Desmerestia aculeata], [Odonthalia dentate], [Delesseria sanguinea], [Plocamium cartilagineum], [Callophyllis laciniata], and crustose seaweeds commonly occur beneath the kelp. The kelp fronds are often covered with growths of the hydroid [Obelia geniculata] or the bryozoan [Membranipora membranacea]. On the rock surface, a rich fauna comprising anthozoans such as [Alcyonium digitatum] and [Urticina felina], colonial ascidians such as [Clavelina lepadiformis] and the calcareous tubeworm [Pomatoce
[Laminaria hyperborea] forest and foliose red seaweeds on tide-swept upper infralittoral mixed substrata	Moderately wave-exposed to wave sheltered, tide-swept mixed substrata, with dense [Laminaria hyperborea] forest and sparser [Laminaria saccharina], characterised by an under-storey and stipe flora of foliose seaweeds. The kelp stipes support epiphytes such as [Palmaria palmata] [Callophyllis laciniata], [Cryptopleura ramosa], [Membranoptera alata], and [Phycodrys rubens]. At some sites, instead of being covered by red seaweeds, the kelp stipes are heavily encrusted by the ascidians [Botryllus schlosseri] and in the south-west [Distomus variolosus]. Epilithic seaweeds ([Delesseria sanguinea, Plocamium cartilagineum, Odonthalia dentata, Dictyota dichotoma] and [Desmarestia aculeata]) and crustose seaweeds commonly occur beneath the kelp. The kelp fronds are often covered with growth of the hydroid [Obelia geniculata] or the bryozoan [Membranipora membranacea]. Although these species are also found in most kelp forests, in this biotope they are particularly dense. On the rock surface, a rich fauna comprising anthozoans such as [Urticina felina], the barnacle [Balanus crenatus], the
[Laminaria hyperborea] park and foliose red seaweeds on tide-swept lower infralittoral mixed substrata	Exposed to moderately wave-exposed, tide-swept, Infralittoral mixed substrata with [Laminaria hyperborea] park characterised by an under-storey and stipe flora of foliose seaweeds such as [Phycodrys rubens], [Plocamium cartilagineum], [Hypoglossum hypoglossoides, Kallymenia reniformis], [Cryptopleura ramosa] and [Delesseria sanguinea]. Epilithic seaweeds ([Bonnemaisonia asparagoides], [Callophyllis laciniata], [Lomentaria orcadensis] and [Brongniartella byssoides]) and crustose seaweeds commonly occur beneath the kelp. The foliose brown seaweed [Dictyota dichotoma] is often present as well. Amongst the red seaweeds is a fairly diverse fauna comprising sponges ([Scypha ciliate]), anthozoans ([Alcyonium digitatum], [Urticina felina] and [Caryophyllia smithii]), hydroids ([Tubularia indivisa], [Halecium halecinum], [Sertularia argentea] and [Nemertesia antennina]), colonial ascidians ([Botryllus schlosseri]) and bryozoans such as [Alcyonium diaphanum]. On the rock surface, the calcareous tubeworm [Pomatoceros triqueter], the crab [Cancer pagurus] and the gastropods [Gibbula cineraria] and [Calliostoma

[Laminaria hyperborea] on moderately exposed vertical rock	LhypVt is found on moderately exposed coasts in moderately strong to weak tidal streams generally in 0-20m water depth. It is characterised by the kelp [Laminaria hyperborea], the soft coral [Alcyonium digitatum] and crinoid [Antedon bifida]. This biotope is relatively species poor when compared to similar biotopes in more exposed environments e.g. LhypRVt. The urchin [Echinus esculentus] may be frequently observed grazing the vertical rock face. This biotope may have 2 sub-biotopes. One is characterised by the frequent occurrence of the sea squirt [Clavelina lepadiformis] and the red seaweeds [Phycodrys rubens] and [Cryptopleura ramosa]. The brown seaweed [Dictyota dichotoma] may also be frequent in this sub-biotope. The second sub-biotope is more species poor than the previous one and is characterised by the common occurrence of [Alcyonium digitatum], which is only occasional in the other variant. Situation: Open rocky coasts in northern Britain, particularly North Sea coasts.
Dense foliose red seaweeds on silty moderately exposed infralittoral rock	Upward-facing surfaces of shallow, infralittoral bedrock and boulders in areas of turbid water dominated by dense red seaweeds, with the notable absence of kelp. The stable rock, which can be cobbles or boulders but is more typically bedrock, is usually silted. Individual species of foliose red seaweeds such as [Plocamium cartilagineum] or [Calliblepharis ciliata] often dominate. Other red seaweeds likely to be present include [Phyllophora crispa], [Rhodymenia holmesii], [Halurus flosculosus], [Cryptopleura ramosa], [Hypoglossum hypoglossoides], [Heterosiphonia plumosa] and coralline crusts. The brown seaweed [Dictyota dichotoma] is sometimes present, although never abundant. This biotope does not generally occur below kelp park but rather occurs on shallow, silted rock on which kelp would normally grow in less turbid conditions. The fauna can be variable but is generally typified by the presence of silt-tolerant animals such as encrusting sponges, particularly [Dysidea fragilis] and [Halichondria panicea], the hydroid [Tubularia indivisa], bryozoan crusts and scattered [Sabellaria spinulosa] and [Balanus crenatus]. In the summ
[Hiatella arctica] and seaweeds on vertical limestone / chalk	This biotope is found in the infralittoral zone on moderately exposed vertical limestone/chalk surfaces in weak tidal streams, and has been recorded most frequently between 0-10m. This biotope is characterised by abundant [Hiatella arctica] and a rich sponge community including [Cliona celata], [Dysidea fragilis] and [Pachymatisma johnstonia]. Other species that may be frequent in this biotope are the crab [Necora puber], the sea squirt [Clavelina lepadiformis], and the top shell [Calliostoma zizyphinum], although these species are found in other vertical rock biotopes, however in lesser abundance. Situation: Shallow rocky coasts with vertical limestone faces.

[Laminaria hyperborea] and red seaweeds on exposed vertical rock	On exposed coasts with moderately strong to weak tidal currents generally at depths of 0-10m, vertical rock communities dominated by frequent [Laminaria hyperborea] and its commonly associated red seaweeds [Delesseria sanguinea], [Cryptopleura ramosa] and [Plocamium cartilagineum] can be found. Within this biotope the jewel anemone [Corynactis viridis] is frequently found in dense aggregations attached to the vertical rock surface. This biotope contains 5 sub-biotopes, distinguished by their biogeography. On the west coast of Scotland, the Northern Isles and the Isle of Man on extremely exposed coasts a variant of this biotope characterised by frequent [Metridium senile] and occasional [Sagartia elegans] can be found. Further south on the west coast of Ireland, southern Scotland, Wales, and south west England a second variant characterised by frequent [Alcyonium digitatum] and occasional [Cliona celata] can be distinguished. A third variant has been recorded from Northern Ireland characterised by the red seaweeds [Lithophyllum] and [Ptilota gunneri], the sea squirt [Dendrodoa
Dense [Desmarestia] spp. with filamentous red seaweeds on exposed infralittoral cobbles, pebbles and bedrock	Wave-exposed seasonally mobile substrata (pebbles, cobbles) dominated by dense stands of the brown seaweed [Desmarestia aculeata] and/or [Desmarestia ligulata]. Infralittoral pebbles and cobbles that are scoured through mobility during storms, but become stable in the summer allowing the growth of such algae as [Desmarestia] spp. Filamentous red seaweeds such [as Bonnemaisonia asparagoides] and [Brongniartella byssoides] are usually present. Stunted individuals of the kelp such as [Laminaria hyperborea] and [Laminaria saccharina] may be present where bedrock is available. A variety of foliose red seaweeds such as [Cryptopleura ramosa, Chondrus crispus], [Plocamium cartilagineum, Hypoglossum hypoglossoides] and [Nitophyllum punctatum] may on occasion be present underneath the kelp canopy. Other red algae including [Corallina officinalis], [Rhodomela confervoides] and coralline crusts including [Lithothamnion] spp. may be present as well as well as the foliose brown seaweed [Dictyota dichotoma] and the green [Enteromorpha intestinalis]. Due to the nature of this biotope the faunal component is very impoverished though the gas
Mixed kelp with foliose red seaweeds, sponges and ascidians on sheltered tide-swept infralittoral rock	Stable, tide-swept rock characterised by dense kelp [Laminaria hyperborea] and/or [Laminaria saccharina] forest on scoured, coralline-encrusted rock. This biotope occurs in the sheltered narrows and sills of Scottish sealochs, where there is an increase in tidal flow. Although [L. hyperborea] (typically Common) generally occurs in greater abundance than [L. saccharina] (Frequent), either kelp may dominate, sometimes to the exclusion of the other. (This biotope should not be confused with sheltered, but silted LhypLsac). Large stands of the brown seaweed [Halidrys siliquosa] may also occur amongst the kelp along with [Dictyota dichotoma] on bedrock and boulders. In contrast to the scoured rock surface the kelp stipes themselves often support prolific growths of foliose red seaweeds such as [Phycodrys rubens, Membranoptera alata, Delesseria sanguinea] and [Plocamium cartilagineum]. Other foliose seaweeds may be present among the kelp holdfasts include [Chondrus crispus] [and Dilsea carnosa]. The scoured rock surface is characterised by encrusting coralline algae, barnacles [Balanus crenatus] and the tube-b

Mixed kelp and red seaweeds on infralittoral boulders, cobbles and gravel in tidal rapids	Mixed substrata of boulders, cobbles, pebbles and gravel, typically found in tidal rapids with kelp [Laminaria saccharina] and [Laminaria hyperborea] and red seaweeds. [L. saccharina] usually dominates this habitat although [L. hyperborea] may occur in equal abundance at some sites. The kelp in these tidal rapids does not form the same dense canopies associated with stable tide-swept bedrock, but generally occurs at lower abundance (Frequent). Other brown seaweeds occur in significant amounts in these tidal rapids including [Dictyota dichotoma], [Halidrys siliquosa] and [Chorda filum]. These mixed substrata support a greater diversity of species than scoured bedrock narrows (XKT). In particular, there is an increase in red algal species such as [Corallina officinalis, Bonnemaisonia hamifera] and [Ceramium nodulosum], although none occur in any great abundance. Red seaweeds common to both XKT and this biotope include [Chondrus crispus], [Delesseria sanguinea], [Plocamium cartilagineum] and [Phycodrys rubens]. Good examples of this biotope often have maerl gravel ([Lithothamnion] sp.) or
[Chthamalus] spp. on exposed upper eulittoral rock	Very exposed to moderately exposed upper and mid eulittoral bedrock and boulders characterised by a dense community of barnacles, including [Chthamalus montagui], [Chthamalus stellatus] and [Semibalanus balanoides], and the limpet [Patella vulgata]. Damp cracks and crevices in the rock provide a refuge for small individuals of the mussel [Mytilus edulis] and the winkles [Melarhaphe neritoides] and [Littorina saxatilis]. These crevices can also be occupied by encrusting coralline algae and the anemone [Actinia equina]. Black patches of the lichen [Verrucaria maura] may be found in this zone. There is much regional variation in the distribution and zonation of [Chthamalus] spp. On the west coast [Chthamalus] spp. dominate the upper eulittoral, often forming a distinct white band above a darker band of [S. balanoides] in the mid eulittoral zone. [C. montagui] is better adapted to resist desiccation and, therefore, extends further up the shore. On some shores, particularly in the south-west, [Chthamalus] spp. is the dominant barnacle throughout the eulittoral zone (Cht.Cht). On other shores, particu
[Semibalanus balanoides] on exposed to moderately exposed or vertical sheltered eulittoral rock	Exposed to moderately exposed mid to upper eulittoral bedrock and large boulders characterised by dense barnacles [Semibalanus balanoides] and the limpet [Patella vulgata]. The community has a relatively low diversity of species though occasional cracks and crevices in the rock can provide a refuge for small individuals of the mussel [Mytilus edulis], the winkle [Littorina saxatilis] and the whelk [Nucella lapillus]. Seaweeds are usually not found in high numbers though fissures and crevices in the bedrock can hold a sparse algal community including the green seaweed [Enteromorpha intestinalis]. On some shores the olive green lichen [Verrucaria mucosa] can be present in some abundance (Frequent). Three variants have been described: A [S. balanoides] and [P. vulgata] dominated community on bedrock (Sem.Sem); [S. balanoides] and sparse [Fucus vesioculosus] and red seaweeds (Sem.FvesR); and barnacles and [L. littorea] eulittoral boulders and cobbles (Sem.LlitX). Situation: On very exposed to exposed shores [Chthamalus] spp. (see Cht for geographical variation)

[Chthamalus montagui] and [Chthamalus stellatus] on exposed upper eulittoral rock	Very exposed to moderately exposed upper and mid eulittoral bedrock and boulders characterised by a dense community of barnacles, including [Chthamalus montagui], [Chthamalus stellatus] and [Semibalanus balanoides], and the limpet [Patella vulgata]. Damp cracks and crevices in the rock provide a refuge for small individuals of the mussel [Mytilus edulis], and the winkles [Melarhaphe neritoides] and [Littorina saxatilis]. These crevices can also be occupied by encrusting coralline algae and the anemone [Actinia equina]. Patches of the black lichen [Verrucaria maura] and the green seaweed [Enteromorpha intestinalis] may be present, though in low abundance (Occasional). Shaded vertical littoral fringe and upper eulittoral bedrock may be characterised by the shade-tolerant red seaweeds [Catenella caespitosa], [Bostrychia scorpioides] and/or [Lomentaria articulata]. Where the turf of [C. caespitosa] is well established, barnacles are rare. Geographical variation: There is much regional variation in the distribution and zonation of [Chthamalus] spp. On the west coast
[Semibalanus balanoides] and [Littorina] spp. on exposed to moderately exposed eulittoral boulders and cobbles	Large patches of boulders, cobbles and pebbles in the eulittoral zone on exposed to moderately exposed shores colonised by the barnacle [Semibalanus balanoides] and, on larger rocks, the limpet [Patella vulgata]. The winkles [Littorina littorea] and [Littorina saxatilis] and the whelk [Nucella lapillus] are typically found in high numbers on and around cobbles and smaller boulders, while the anemone [Actinia equina] occurs in damp areas between and underneath larger boulders. Between the cobbles and pebbles, the mussel [Mytilus edulis] occasionally occurs, but always at low abundance, as do the crab [Carcinus maenas] and gammarid amphipods. Ephemeral green seaweeds such as [Enteromorpha intestinalis] may cover cobbles and boulders. The foliose red seaweeds [Chondrus crispus, Mastocarpus stellatus] and [Osmundea pinnatifida] as well as the wrack [Fucus vesiculosus] may also occur in low abundance on cobbles and boulders. The top shells [Gibbula cineraria] and [Gibbula umbilicalis] can, on more sheltered shores, be found among the seaweeds or underneath the boulders. The
[Corallina officinalis] and [Mastocarpus stellatus] on exposed to moderately exposed lower eulittoral rock	Exposed lower eulittoral rock or moderately exposed lower eulittoral vertical rock that supports a dense turf of the red seaweed [Corallina officinalis], often on wave surged rocky slopes. There is usually a low abundance of other turf-forming red seaweeds such as [Lomentaria articulata], [Mastocarpus stellatus], [Palmaria palmata] and [Osmundea pinnatifida]. Other seaweeds that occur in low abundance includes the wrack [Himanthalia elongata] and the kelp [Laminaria digitata], while the brown seaweed [Leathesia difformis] can be found growing on and around the other seaweeds. Green seaweeds such as [Enteromorpha intestinalis], [Ulva lactuca] and [Cladophora rupestris] are also present. The coralline turf creates a micro-habitat for small animals such as the colonial tube building polychaete [Pomatoceros] sp. and the barnacle [Semibalanus balanoides]. The mussel [Mytilus edulis] is often found in small cracks and crevices while the sponges [Halichondria panicea] and [Hymeniacidon perleve] can be found in shaded areas or on overhangs. The limpets [Patella ulyssiponensis] and [Patella vulgata] can be found on

[Corallina officinalis], [Himanthalia elongata] and [Patella ulyssiponensis] on very exposed lower eulittoral rock	Very exposed to exposed lower eulittoral bedrock shores in the south-west can support a dense turf of the red seaweed [Corallina officinalis] found underneath the long erect fronds of the wrack [Himanthalia elongata]. The rock surface is pitted with the limpet [Patella ulyssiponensis]. Also found on the bedrock is the barnacle [Chthamalus stellatus] or the limpet [Patella vulgata], while numerous cracks and crevices provide shelter for anemones such as [Actinia equina] or the mussel [Mytilus edulis]. Other turf-forming red seaweeds include [Lomentaria articulata], [Mastocarpus stellatus], [Palmaria palmata, Gastroclonium ovatum, Ceramium] spp. and [Osmundea] [pinnatifida] which can be found along with the kelp [Laminaria digitata]. Foliose green seaweeds such as [Enteromorpha intestinalis] and [Ulva lactuca] may also be present along with siphonous [Codium] spp. Sponges such [as Grantia compressa], [Halichondria panicea] and [Hymeniacidon perleve] may be present in shaded areas. The brown seaweed [Bifurcaria bifurcata] and the barnacle [Balanus perforatus] may occur in
Faunal and algal crusts on exposed to moderately wave-exposed circalittoral rock	This biotope typically occurs on the vertical and upper faces of wave-exposed and moderately wave-exposed circalittoral bedrock or boulders subject to mostly moderate to weak tidal streams (a variant of this biotope containing brittlestar is found on bedrock, boulders and cobbles). The biotope is dominated by faunal (e.g. [Parasmittina trispinosa]) and algal (Corallinaceae) crusts, and tends to have a grazed appearance; this may be partially attributable to the abundance of [Echinus esculentus] found in this biotope. Occasionally, the rock may appear pink from a distance, due to the expanses of encrusting red algae on the rock surface. [Alcyonium digitatum] is one of the few species to stand erect from the encrusted rock surface and are frequently encountered, on the tops of rocky outcrops and boulders. Hydroids do not form a prominent feature of this biotope, with only robust species such as [Abietinaria abietina] frequently recorded. Sponges and [Caryophyllia smithii] are rarely present while erect bryozoans and ascidians are scarce (although there are exceptions, see variants). The [E. esculentus] grazed substratur
Brittlestars on faunal and algal encrusted exposed to moderately wave-exposed circalittoral rock	This variant is typically found on the upper faces of exposed and moderately wave-exposed circalittoral bedrock, boulders and cobbles subject to moderately strong to weak tidal streams. It is characterised by high densities of brittlestars (predominantly [Ophiothrix fragilis], [Ophiocomina nigra] and [Ophiura albida]). In fact, they may form such dense beds that the seabed underneath may not be visible. The rocky substratum is usually colonised by species such as encrusting red algae and the white, calcareous tubes of the polychaete [Pomatoceros triqueter]. Only robust hydroids such as [Abietinaria abietina], [Alcyonium digitatum] and bryozoan crusts such as [Parasmittina trispinosa] are able to tolerate the significant smothering effect from the dense mat of brittlestars. Other species typically seen include [Echinus esculentus], [Asterias rubens], [Pagurus bernhardus], [Anapagurus hyndmanni], [Gibbula cineraria], [Urticina felina], [Pododesmus patelliformis] and [Ciona intestinalis]. Situation: Shallower than the FaAlCr.Bri variant, kelp park and forest may be found with species such as [Laminaria saccharina

[Caryophyllia smithii] with faunal and algal crusts on moderately wave-exposed circalittoral rock	This variant is typically found on the upper and vertical faces of exposed and moderately wave-exposed circalittoral rock, subject to very little water movement. Where this variant is found on slightly more wave-exposed sites, it tends to be found towards the bottom of its depth range. The rocky substratum has a grazed appearance, with encrusting red algae. Diversity of species is very low, possibly due to grazing pressure from the sea urchin [Echinus esculentus]. From afar, there is little evident epifauna attached to the rocks apart from the white, calcareous tubes of the polychaete [Pomatoceros triqueter] and the cup-coral [Caryophyllia smithii]. In addition, bryozoan crusts such as [Parasmittina trispinosa] are frequently seen. Under closer inspection, a few more species become apparent but few are typically characterising of this particular variant. The echinoderms [Antedon bifida], [Asterias rubens], [Ophiothrix fragilis], [Marthasterias glacialis], [Ophiocomina nigra] and [Crossaster papposus] are occasionally present. Sparse clumps of hydroids such as [Halecium
[Neocrania anomala] and [Protanthea simplex] on very wave-sheltered circalittoral rock	This variant typically occurs on deep, lower circalittoral bedrock or boulder slopes (often-vertical walls) in the landward, very sheltered basins of fjordic sealochs. In these very sheltered conditions, there are frequently dense populations of the anemone [Protanthea simplex] growing on the silty boulder or rock slope, and on the tubes of the parchment worm [Chaetopterus variopedatus]. The underlying rock surfaces are usually covered with encrusting red algae, the polychaete [Pomatoceros triqueter], the brachiopod [Neocrania anomala], the saddle oyster [Pododesmus patelliformis] and the conspicuous fan worm [Sabella pavonina]. Scattered colonies of [Alcyonium digitatum] are occasionally present along with the hydroid [Bougainvillia ramosa]. The barnacle [Balanus balanus] and the hermit crab [Pagurus bernhardus] is occasionally seen on boulder or rock surface, whilst underneath in crevices, the squat lobster [Munida rugosa] may be present. A diverse range of solitary ascidians, typically found in sheltered conditions, are often present including [Ciona intestinalis], [Corella parallelogramma], [Po
Cushion sponges and hydroids on turbid tide-swept variable salinity sheltered circalittoral rock	This sub-biotope typically occurs in turbid, variable salinity water, on wave-sheltered bedrock in estuaries subject to strong tidal regimes where circalittoral communities occur in relatively shallow water (typically 5m to 8m water depth). Cushion sponges, hydroids and ascidians dominate the biotope. Large growths (often up to 50cm across) of the sponges [Halichondria panicea] mixed with [Halichondria bowerbanki] almost entirely cover the bedrock, appearing in places like a continuous cushion. [Haliclona oculata], [Suberites ficus], [Leucosolenia botryoides], various hydroids such as [Plumularia setacea], [Nemertesia antennina], [Nemertesia ramosa] and various bryozoans such as [Bugula plumosa], [Bugula turbinata] and [Bowerbankia pustulosa] protude through the [Halichondria] spp. sponge growth. Colonial ascidians such as the lightbulb ascidian [Clavelina lepadiformis] and [Morchellium argus] may also be observed. Other more ubiquitous species include [Balanus crenatus], [Carcinus maenas], [Asterias rubens], [Metridium senile], [Sagartia elegans] and [Ophiothrix fragilis].

[Fucus spiralis] on full salinity sheltered upper eulittoral rock	Sheltered upper eulittoral bedrock characterised by a band of the spiral wrack [Fucus spiralis] overlying the black lichen [Verrucaria maura] and the olive green lichen [Verrucaria mucosa]. Underneath the fronds of [F. spiralis] is a community consisting of the limpet [Patella vulgata], the winkles [Littorina saxatilis] and [Littorina littorea] and sparse individuals of the barnacle [Semibalanus balanoides] while the mussel [Mytilus edulis] can be found attached in cracks and crevices. A variety of red algae including [Hildenbrandia rubra] may be present underneath the fronds. During the summer months ephemeral green seaweeds such as [Enteromorpha intestinalis] can be common. Situation: This zone usually lies below a zone dominated by the wrack [Pelvetia canaliculata] (PelB; Pel), but occasional clumps of [P. canaliculata] may be present (usually less than common) amongst the [F. spiralis]. In areas of extreme shelter, such as in Scottish sea lochs, the [P. canaliculata] and [F. spiralis] zones often merge together forming a very narrow band. Fspi occurs above the wracks [Ascophyllum nodosum] (Asc) and/or [Fucus vesiculosus] (Fves) z
[Fucus spiralis] on full salinity upper eulittoral mixed substrata	Moderately exposed to sheltered full salinity upper eulittoral mixed substrata characterised by a band of the wrack [Fucus spiralis]. Occasional clumps of the wrack [Pelvetia canaliculata] can be overgrowing the black lichen [Verrucaria maura] and the olive green lichen [Verrucaria mucosa]. On the more stable boulders underneath the fronds the red crust [Hildenbrandia rubra] can be found along with the barnacle [Semibalanus balanoides] and the limpet [Patella vulgata]. The winkles [Littorina littorea] and [Littorina saxatilis] can be found on and among the boulders and cobbles, while amphipods and the crab [Carcinus maenas] can be present either underneath the boulders or among the brown seaweeds. The green seaweed [Enteromorpha intestinalis] can occur in some abundance especially during the summer. Situation: This zone usually lies below a zone dominated by the wrack [P. canaliculata] (PelB; Pel). Vertical surfaces in this zone, especially on moderately exposed shores, often lack the fucoids and are characterised by a barnacle-limpet dominated community (Sem).In areas of extreme sh
[Fucus vesiculosus] on full salinity moderately exposed to sheltered mid eulittoral rock	Moderately exposed to sheltered mid eulittoral bedrock and large boulders characterised by a dense canopy of the wrack [Fucus vesiculosus] (Abundant to Superabundant). Beneath the seaweed canopy the rock surface has a sparse covering of the barnacle [Semibalanus balanoides] and the limpet [Patella vulgata]. The mussel [Mytilus edulis] is confined to pits and crevices. A variety of winkles including [Littorina littorea, Littorina saxatilis] and the whelk [Nucella lapillus] are found beneath the seaweeds, whilst [Littorina obtusata/mariae] graze on the fucoid fronds. The calcareous tube-forming polychaete [Spirorbis spirorbis] may also occur epiphytically on the fronds. In areas of localised shelter the wrack [Ascophyllum nodosum] may occur, though never at high abundance. Damp cracks and crevices often contain patches of the red seaweed [Mastocarpus stellatus] and even the wrack [Fucus serratus] may be present. The crab [Carcinus maenas] may be present in pools or among the boulders. Situation: This biotope usually occurs between the wrack [Fucus spiralis]

Oligochaetes in littoral mobile sand	A species-poor community of oligochaetes occurring in estuarine conditions where sands and gravel are associated with the lower shore river channel in estuaries. The sediment is relatively coarse and mobile due to strong river flow and subject to variable salinity. The biotope also occurs in fully marine conditions on open shores with mobile, medium to fine, usually clean, sand. Oligochaetes, including enchytraeid oligochaetes, constitute the infaunal assemblage. This biotope has been split into two sub-biotopes, based on the physical environment (a full-salinity and a variable salinity type). Situation: Ol often occurs in variable salinity conditions, in channels of very fast flowing river mouths at the bottom of otherwise sheltered estuarine shores. In this situation, biotopes under the MEST and UEST biotope complexes may be present above the river channel. Ol also occurs on open, fully marine shores. Where it is situated on the mid shore, BarSh and/or BarSa may be present on the upper shore, and lower down on the shore, AmSco.Sco and AmSco.Pon may be found. Ol may also occur on the upper shore, with AmSco.Eur pre
Oligochaetes in full salinity littoral mobile sand	A species-poor community of oligochaetes occurring in fully marine conditions on open shores with mobile, medium to fine, usually clean, sand. Oligochaetes, including enchytraeid oligochaetes, constitute the infaunal assemblage. On rare occasions individuals of polychaete or crustacean species may be encountered (e.g. [Nephtys] spp., [Eurydice pulchra], [Bathyporeia] spp.), though these are not characterising for the biotope and if present in any significant abundance, the area should be classed as AmSco. Situation: Where Ol.FS is situated on the mid shore, BarSh and/or BarSa may be present on the upper shore, and lower down on the shore, AmSco.Sco and AmSco.Pon may be found. Ol may also occur on the upper shore, with AmSco.Eur present on the mid shore, and Po.Pful or Po.Aten on the lower shore. Tal may be found on the upper shore where driftlines of decomposing seaweed and other debris accumulate. Temporal variation: Wave exposure may be higher on some beaches during winter than during the summer months, leading to the disappearance of infaunal species in winter. Where this happens, the biot
[Scolelepis] spp. in littoral mobile sand	Exposed and moderately exposed shores of fully marine mobile clean sand, with particle sizes ranging from coarse to very fine. The sediment is not always well sorted, and may contain a subsurface layer of gravel or shell debris. Usually no anoxic layer is present. The mobility of the sediment leads to a species-poor community, dominated by the polychaetes [Scolelepis squamata] and [S. foliosa]. The amphipod [Bathyporeia pilosa] may be present. Further species that may be present in this sub-biotope include the amphipods [B. pelagica] and [Haustorius arenarius], and the isopod [Eurydice pulchra]. The lugworm [Arenicola marina] may also occur. Situation: Situated mainly on the mid and lower shore, sometimes upper shore, of exposed to moderately exposed beaches. Under more exposed conditions, it may occur below AmSco.Eur, BarSa, or BarSh, and on the same shores as AmSco.Pon. Under more sheltered conditions, it may occur above the Po communities. Tal may be present on the same shores, where driftlines of wrack and other debris occur on the upper shore. Temporal variation:

Polychaetes, including Paraonis fulgens, in littoral fine sand	This biotope occurs mainly on the mid and lower shore of moderately wave-exposed coasts, with medium and fine clean sand which remains damp throughout the tidal cycle and contains little organic matter. The sediment is often rippled and typically lacks an anoxic sub-surface layer. Polychaetes make up the greater part of the community, and are dominated by [Paraonis fulgens], [Capitella capitata], [Pygospio elegans], [Ophelia rathkei] and [Eteone longa]. The presence of polychaetes may be seen as coloured burrows running down from the surface of the sediment. Nemerteans may also be present. The amphipods [Bathyporeia pilosa] and [B. sarsi] are often present. Situation: Po.Pful may be present higher up on the shore than Po.Aten, or lower down than the AmSco communities or Ol.FS. The strandline community Tal may be present on the same shore where driftlines of decomposing seaweed and other debris occur on the upper shore. Temporal variation: The infauna of this biotope may be reduced during winter, as increased storminess and wave action increases sediment mobility and may lead to
Polychaetes and [Angulus tenuis] in littoral fine sand	This biotope occurs on the mid and lower shore on moderately wave-exposed and sheltered coasts, with predominantly fine sand which remains damp throughout the tidal cycle. The sediment is often rippled, and an anoxic layer may occasionally occur below a depth of 10 cm, though it is often patchy. The infaunal community is dominated by the abundant bivalve [Angulus tenuis] together with a range of polychaetes. The presence of polychaetes may be seen as coloured burrows running down from the surface of the sediment. Polychaetes that are characterising for this biotope include [Nephtys cirrosa], [Paraonis fulgens] and [Spio filicornis]. Burrowing amphipods [Bathyporeia] spp. may occur in some samples of this biotope. Situation: Where it occurs under moderately exposed conditions, AmSco.Eur, Po.Pful or Ol.FS may be present higher up on the shore than Po.Aten. Where it occurs under more sheltered conditions, Po.Aten may occur below or alongside muddy sand biotopes such as CerPo and BatCare. Temporal variation: The infauna of this biotope may be reduced during winter, as increased stormi
[Nephtys cirrosa]-dominated littoral fine sand	This biotope occurs mainly on the mid and lower shore on moderately wave-exposed and sheltered coasts, with medium to fine clean sand which remains damp throughout the tidal cycle and contains little organic matter. The sediment is not usually well sorted and may contain a fraction of coarse sand. It is often rippled and typically lacks an anoxic sub-surface layer. The polychaete infauna is dominated by [Nephtys cirrosa], [Magelona mirabilis], [Spio martinensis], [Spiophanes bombyx] and [Paraonis fulgens]. The presence of polychaetes may be seen as coloured burrows running down from the surface of the sediment. Nemertean worms may be present. The amphipods [Pontocrates] spp. and [Bathyporeia] spp., as well as [Cumopsis goodsiri] and the shrimp [Crangon crangon] are typically present. The bivalve [Angulus tenuis] is scarce or absent. Situation: Po.Ncir may be present higher up on the shore than Po.Aten, or lower down than AmSco.Eur or Ol.FS. Temporal variation: The infaunal community of this biotope may change seasonally, as increased storminess during winter months may reduce sediment stab

[Hediste diversicolor], [Macoma balthica] and [Eteone longa] in littoral muddy sand	Fine to very fine muddy sand on the mid shore at the lower extreme of estuaries, and in moderately exposed and sheltered bays and marine inlets, sometimes subject to variable salinity. The infauna is characterised by the polychaetes [Eteone longa], [Hediste diversicolor] (ragworm) and [Pygospio elegans], oligochaetes (mostly [Tubificoides benedii] and [T. pseudogaster]), the crustaceans [Corophium volutator] and [Crangon crangon], the spire shell [Hydrobia ulvae] and the baltic tellin [Macoma balthica]. The cockle [Cerastoderma edule] may be abundant, and the sand gaper [Mya arenaria] may be superabundant, though these species are not always present, or may be missed in core samples due to their large size. The polychaetes [Arenicola marina], [Polydora cornuta] and [Capitella capitata], the shrimp [Crangon crangon], and the Mussel [Mytilus edulis] are sometimes present. Situation: HedMacEte can occur on the mid shore of sheltered, lower estuaries, with the MEST communities in muddier sediments on the lower shore. Under moderately exposed conditions in lower estuaries
[Nephtys hombergii], [Macoma balthica] and [Streblospio shrubsolii] in littoral sandy mud	Soft mud with a fine sand fraction, in variable salinity conditions, typically close to the head of estuaries. The infauna is dominated by the polychaete worm [Streblospio shrubsolii], the polychaete [Nephtys hombergii], oligochaetes of the genus [Tubificoides], and the Baltic tellin [Macoma balthica]. The ragworm [Hediste diversicolor] and the spire shell [Hydrobia ulvae] are often common or abundant. Situation: NhomMacStr occurs in mid estuary conditions, usually on the low shore. Tben and Hed.Ol may occur higher up the shore, as well as further towards the upper estuary. Temporal variation: [Enteromorpha] spp. and [Ulva lactuca] may form mats on the surface of the mud during the summer months, particularly in areas of nutrient enrichment.
[Hediste diversicolor] and [Streblospio shrubsolii] in littoral sandy mud	Mud and sandy mud shores in sheltered marine inlets and estuaries subject to variable or reduced salinity. The biotope is typically found on the mid and lower shores and is often associated with shallow layers of cobbles and pebbles in the sediment in the upper and mid estuary. The sediment is anoxic close to the surface and remains water saturated during low tide. The infaunal polychaete community is dominated by dense [Hediste diversicolor], as well as species with a limited salinity range tolerance such as [Streblospio shrubsolii] and [Manayunkia aestuarina]. Oligochaetes, including [Heterochaeta costata] and [Tubificoides benedii] are often abundant, and the amphipod [Corophium volutator] is often common. Situation: Hed.Str may occur on the same shores as HedMacScr, HedMac, NhomAph or Hed.Cvol. Higher up on the shore, and/or further towards the head of the estuary, Hed.Ol may occur, changing to Tben at the upper extreme of the estuary. Temporal variation: [Enteromorpha] spp. or [Ulva lactuca] may form mats on the surface of the sediment during the summer months, particularly in areas o

[Nephtys hombergii] and [Streblospio shrubsolii] in littoral mud	Soft wet mud with a fine sand fraction, on the mid and lower shore of sheltered estuaries, usually with an anoxic layer present within the first 5 cm of the sediment. The infauna is relatively poor, dominated by the polychaetes [Nephtys hombergii], [Streblospio shrubsolii], and [Aphelochaeta marioni]. The oligochaete [Tubificoides benedii] is also characterising for this biotope, and [Hediste diversicolor] may be common. Situation: NhomStr may occur on the same shores as the MEST biotopes, Hed.Cvol or Hed.Str. Higher up on the shore, and/or further towards the head of the estuary, Hed.Ol may occur, changing to Tben at the upper extreme of the estuary. Temporal variation: [Enteromorpha] spp. and [Ulva lactuca] may form mats on the surface of the mud during the summer months, particularly in areas of nutrient enrichment.
[Hediste diversicolor] in littoral mud	Mud and sandy mud shores in sheltered marine inlets and estuaries subject to variable or reduced salinity. The biotope is typically found on the mid and lower shores in the upper and mid estuary. If present on the upper shore, the sediment may become firm and compacted as water drains out, though usually the biotope occurs lower on the shore and the sediment remains water saturated during low tide. An anoxic layer occurs within the upper 5 cm of the sediment. The infauna is dominated by abundant or superabundant ragworms [Hediste diversicolor]. Other species that occur in a significant number of samples include oligochaetes such as [Heterochaeta costata] and [Tubificoides] spp., polychaetes such as [Streblospio shrubsolii] and [Manayunkia aestuarina], the mud shrimp [Corophium volutator], and the spire shell [Hydrobia ulvae]. Situation: Hed may occur on the same shores as HedMac, HedMacScr, or NhomAph. Higher up on the shore, and/or further towards the upper extreme of the estuary, Tben may occur. Temporal variation: [Enteromorpha] spp. and [Ulva lactuca] may form
[Hediste diversicolor] and [Corophium volutator] in littoral mud	Sheltered estuarine shores of sandy mud, which may become firm and compacted if present in the upper shore where there is more time for drainage between high tides. An anoxic layer is usually present within the first 5 cm of the sediment. The infauna is very sparse, usually only the ragworm [Hediste diversicolor] and the amphipod [Corophium volutator] are present in any abundance. Occasionally, oligochaetes or the spire shell [Hydrobia ulvae] may be present. [Corophium multisetosum] may also be found. There may be organic pollution of the sediment. Situation: Hed.Cvol may occur on the same shores as HedMacScr, HedMac, NhomAph, and Hed.Str. Higher up on the shore, and/or further towards the head of the estuary, Hed.Ol may occur, changing to Tben at the upper extreme of the estuary. Temporal variation: [Enteromorpha] spp. or [Ulva lactuca] may form mats on the surface of the sediment during the summer months, particularly in areas of freshwater influence and/or where there is nutrient enrichment.

[Tubificoides benedii] and other oligochaetes in littoral mud	Extreme upper estuarine fine sandy mud, sometimes with a fine sand fraction, in very sheltered conditions and subject to reduced salinity. An anoxic layer is usually present within the upper 3 cm of the sediment. The infaunal community is extremely poor, consisting almost exclusively of oligochaetes, including [Tubificoides benedii] and, more rarely, [Heterochaeta costata]. The only polychaete species that may occur is [Capitella capitata], which may be common. The sediment may form steep banks in upper parts of macro-tidal estuaries or along saltmarsh creeks. [Vaucheria] species may form a film on the sediment surface along such creeks, and juvenile shore crabs [Carcinus maenas] may be common. At the very upper end of estuaries, the oligochaetes [Limnodrilus] spp. and [Tubifex tubifex] may be found. Situation: There are three oligochaete dominated upper estuarine mud biotopes. Tben is the most extreme upper estuarine biotope, occurring at the head of estuaries where there is no strong river flow and hence conditions are very sheltered, and there is a very strong freshwater influence. Further tov
[Hediste diversicolor] and oligochaetes in littoral mud	A species-poor community found in mud or slightly sandy mud in low salinity conditions, typically at the head of estuaries. The infauna is dominated by the ragworm [Hediste diversicolor] which is typically superabundant. Oligochaetes, including tubificids and [Heterochaeta costata], can be abundant, as well as spionids. The peppery furrow shell [Scrobicularia plana] may be present in low abundances. The mud is often very soft and fluid, with a 'wet' surface appearance, or it may be compacted and form steep banks in the upper parts of macro-tidal estuaries and along saltmarsh creeks. Situation: There are three oligochaete dominated upper estuarine mud biotopes. Tben is the most extreme upper estuarine biotope, occurring at the head of estuaries where there is a very strong freshwater influence. Further towards the mid estuary, this biotope may occur at the top of the shore, with Hed.Ol further down. NhomStr occurs furthest towards the mid estuary, or on the lower shore with Hed.Ol and Tben higher up. Temporal variation: [Enteromorpha] spp. or [Ulva lactuca] may form mats on the surface of th
[Hediste diversicolor] in littoral gravelly muddy sand and gravelly sandy mud	Sheltered gravelly sandy mud, subject to reduced salinity, mainly on the mid and lower shore. The infaunal community is dominated by abundant ragworms [Hediste diversicolor]. Other species of the infauna vary for the sub-biotopes described. They include polychaetes such as [Pygospio elegans], [Streblospio shrubsolii], and [Manayunkia aestuarina], oligochaetes such as [Heterochaeta costata] and [Tubificoides] spp., the mud shrimp [Corophium volutator], the spire shell [Hydrobia ulvae], the baltic tellin [Macoma balthica] and the peppery furrow shell [Scrobicularia plana]. Sub-biotopes described in HedMx have equivalent communities in soft muddy sediments, but the sediment here is much firmer due to the gravel component. There are relatively few records in each sub-type, leading to uncertainty over the precise nature of the habitat, particularly regarding sediment type and salinity regime. Situation: It is probable that there are broad transition areas between the sub-biotopes of HedMx, and the corresponding muddy sediment biotopes. The boundaries may be very indistinct, with the HedMx groups present in patches of gravelly m

[Hediste diversicolor] and [Macoma balthica] in littoral gravelly mud	Sheltered gravelly mud shores, subject to reduced salinity. The infaunal community consists of the ragworm [Hediste diversicolor], as well as the spire shell [Hydrobia ulvae] and the baltic tellin [Macoma balthica]. The presence of the gravel in the sediment is unlikely to have a large influence on the infaunal composition, which is driven mainly by the estuarine sandy mud conditions. Coarse material on the sediment surface may however enrich the biota with additional epifaunal species such as barnacles and algae. Given the low sample numbers for this biotope, more records are needed to confirm the characterising species list. Situation: It is probable that there are broad transition areas between this biotope, and the corresponding muddy sediment biotope HedMac. The boundaries may be very indistinct, with HedMx.Mac present in patches of gravelly mud on areas of mudflat, where the main biotope is HedMac. This biotope has been found alongside its mud equivalent in the Stour estuary.
[Hediste diversicolor] and [Scrobicularia plana] in littoral gravelly mud	Extremely sheltered gravelly mud on the mid and lower shore, containing little sand with occasional cobbles. The infaunal community includes the ragworm [Hediste diversicolor] and the peppery furrow shell [Scrobicularia plana], as well as a range of polychaetes, oligochaetes, and molluscs. Given the low sample numbers for this biotope, more records are needed to confirm the characterising species list. Situation: It is probable that there are broad transition areas between HedMx.Scr and the corresponding muddy sediment biotope HedMacScr. The boundaries may be very indistinct, with HedMx.Scr present in patches of gravelly mud on areas of mudflat, where the main biotope is HedMacScr.
[Hediste diversicolor] and [Streblospio shrubsolii] in littoral gravelly sandy mud	Extremely sheltered gravelly sandy mud, subject to variable salinity, on the mid and lower shore. The infaunal community consists of the ragworm [Hediste diversicolor], [Pygospio elegans], [Streblospio shrubsolii], and [Ampharete grubei], as well as oligochaetes and [Corophium volutator]. There are often low densities of [Scrobicularia plana]. Given the low sample numbers for this biotope, more records are needed to confirm the characterising species list. Situation: It is probable that there are broad transition areas between this biotope and the corresponding muddy sediment biotope Hed.Str. The boundaries may be very indistinct, with HedMx.Str present in patches of gravelly mud on areas of mudflat, where the main biotope is Hed.Str. This biotope has been found along edges of tidal channels in the upper Stour estuary, below its equivalent mud biotope.
[Hediste diversicolor], cirratulids and [Tubificoides] spp. in littoral gravelly sandy mud	Sheltered gravelly sandy mud, subject to variable salinity. The infaunal community consists of the ragworm [Hediste diversicolor], [Pygospio elegans], [Streblospio shrubsolii], and cirratulid polychaetes such as [Tharyx killariensis]. Nematodes and oligochaetes occur, as well as the bivalve [Macoma balthica]. Given the low sample numbers for this biotope, more records are needed to confirm the characterising species list. Situation: It is probable that there are broad transition areas between this biotope and the corresponding muddy sediment biotope HedMac. The boundaries may be very indistinct, with HedMx.Cir present in patches of gravelly mud on areas of mudflat, where the main biotope is HedMac.

[Hediste diversicolor] and [Corophium volutator] in littoral gravelly sandy mud	Extremely sheltered gravelly sandy mud, subject to variable or reduced salinity. The infaunal community consists of the ragworm [Hediste diversicolor], [Streblospio shrubsolii], [Capitella capitata] and [Manayunkia aestuarina]. Oligochaetes and [Corophium volutator] are abundant. Given the low sample numbers for this biotope, more records are needed to confirm the characterising species list. Situation: It is probable that there are broad transition areas between this biotope and the corresponding muddy sediment biotope Hed.Cvol. The boundaries may be very indistinct, with HedMx.Cvol present in patches of gravelly mud on areas of mudflat, where the main biotope is Hed.Cvol.
Cirratulids and [Cerastoderma edule] in littoral mixed sediment	Sheltered mixed sediments, usually subject to variable salinity conditions. Banks of shell may be present. The infauna is very diverse, dominated by a range of polychaetes including [Exogone naidina], [Sphaerosyllis taylori], [Pygospio elegans], [Chaetozone gibber], [Cirriformia tentaculata], [Aphelochaeta marioni], [Capitella capitata], [Mediomastus fragilis], and [Melinna palmata]. The oligochaetes [Tubificoides benedii] and [T. pseudogaster] are abundant, as is the cockle [Cerastoderma edule]. A large range of amphipods may occur, including [Melita palmata], [Microprotopus maculatus], [Aora gracilis] and [Corophium volutator]. The bivalves [Abra alba] and [A. nitida] may occur. The barnacle [Elminius modestus] can be abundant where the sediment has stones on the surface. Epifaunal algae may occur attached to stable cobbles on the sediment surface. Situation: Mid shore, lower shore, as extension of shallow sublittoral biotope.
Mussel beds on littoral mixed substrata	Mid and lower shore mixed substrata (mainly cobbles and pebbles on fine sediments) in a wide range of exposure conditions and with aggregations of the mussel [Mytilus edulis] colonising mainly the sediment between cobbles, though they can extend onto the cobbles themselves. The mussel aggregations can be very dense and support various age classes. In high densities the mussels bind the substratum and provide a habitat for many infaunal and epifaunal species. The wrack [Fucus vesiculosus] is often found attached to either the mussels or the cobbles and it can occur at high abundance. The mussels are also usually encrusted with the barnacles [Semibalanus balanoides], [Elminius modestus] or [Chtamalus] spp., especially in areas of reduced salinity. The winkles [Littorina littorea] and [L. saxatilis] and small individuals of the crab [Carcinus maenas] are common amongst the mussels, whilst areas of sediment may contain the lugworm [Arenicola marina], the sand mason [Lanice conchilega] and other infaunal species. Pools are often found within the mussel beds that support algae such as [Chondrus crispu

Mussel beds on littoral sand	This sub-biotope occurs on mid to lower shore sand and muddy sand. Mussels [Mytilus edulis] grow attached to shell debris and live cockles [Cerastoderma edule], forming patches of mussels on consolidated shell material, and often growing into extensive beds. The mussel valves are usually encrusted with barnacles such as [Elminius modestus] and [Semibalanus balanoides], and the mussel bed provides a habitat for a range of species including [Littorina littorea]. The sediment infaunal community is usually rich and very similar to that of cockle beds (CerPo), including cockles [Cerastoderma edule], the baltic tellin [Macoma balthica], and a range of burrowing crustaceans and polychaetes typical for CerPo. Further species may be present are the sand mason [Lanice conchilega], the sand gaper [Mya arenaria], the peppery furrow shell [Scrobicularia plana], [Nephtys] spp., and the ragworm [Hediste diversicolor]. Scattered fronds of eelgrass [Zostera noltii] may occur. Situation: This biotope often occurs in large sandy estuaries, or on enclosed shores, alongside other sand and muddy sand biotopes, most n
Mussel beds on littoral mud	Dense mussel beds found in sheltered conditions on mud. There is a build up of pseudofaeces that results in a bed that is very soft to walk on, and sediment which is anoxic to the surface. Pools are often present in the mussel bed but they tend to contain few species. The sediment infauna is very poor as a result of anoxic conditions. The mussel valves are usually clean, without epifaunal growth. Where this biotope occurs naturally, all age classes are found within the mussel bed. This biotope also includes commercially laid mussel beds on soft sediments, which tend to be of uniform age structure. The species diversity of this sub-biotope is a lot lower than that of the other Myt sub-biotopes. Situation: Occurs on sheltered mudflats, or areas that were previously rocky or cobble fields, but where pseudofaeces have accumulated, leading to the presence of a thick layer of mud. Temporal variation: Mussels may settle on areas of cobble or mixed sediment (Myt.Mx), and lead to the build-up of a thick layer of pseudofaeces, changing the biotope to Myt.Mu over
Cushion sponges, hydroids and ascidians on turbid tide-swept sheltered circalittoral rock	This sub-biotope typically occurs in a mixture of turbid, full and variable salinity water, on wave-sheltered and moderately exposed bedrock or boulders. Tidal streams are typically moderately strong but may vary considerably. This sub-biotope occurs in relatively shallow water (typically 5m to 11m water depth) and is dominated by cushion sponges, hydroids and ascidians. On the silty, rocky substrata, large growths of sponge are usually associated with this biotope ([Suberites ficus], [Hymeniacidon perleve], [Cliona celata], [Halichondria panicea], [Raspailia ramosa]). The tasselled form of [Esperiopsis fucorum] is also notably present. Other epifauna present includes silty hydroids such as [Nemertesia antennina], [Nemertesia ramosa], [Plumularia setacea], [Hydrallmania falcata] and [Halecium halecinum]. Individual colonies of dead mans fingers [Alcyonium digitatum] and plumose anemones [Metridium senile] may be seen attached to the tops of boulders and ridges. At some sites, whole sides of rocks may be colonised by the anemones [Sagartia elegans], [Sagartia troglodytes] and [Actinothoe sphyrodeta]. Within crevices in the

Mixed turf of hydroids and large ascidians with [Swiftia pallida] and [Caryophyllia smithii] on weakly tide-swept circalittoral rock	This biotope typically occurs from exposed through to sheltered circalittoral bedrock or boulders subject to moderately strong to weak tidal streams. It is found in water depths ranging from 4m to 37m. This biotope is distinguished by frequently occurring [Swiftia pallida], abundant [Caryophilia smithii] and a diverse range of ascidians including [Clavelina lepadiformis], [Ascidia mentula], [Polycarpa pomaria], [Diazona violacea] and [Corella parallelogramma]. A sparse, yet diverse hydroid turf is often apparent, with species such as [Aglaophenia tubulifera], [Nemertesia antennina], [Polyplumaria frutescens], [Halecium halecinum], [Abietinaria abietina], [Nemertesia ramosa] and [Halopteris catharina] often recorded. Spaces amongst the turf are usually colonised by the polychaete [Pomatoceros triqueter] and encrusting red algae. Crinoids such as [Antedon petasus], [Antedon bifida] and [Leptometra celtica] may be seen filter feeding on the tops of outcrops and boulders, along with the soft coral [Alcyonium digitatum]. Other echinoderms such as [Echinus esculentus], [Crossaster papposus] and [Asterias rubens] may also be rec
Marine sedge beds	Dominants are [Eleocharis acicularis], [Eleocharis parvula].
Mediterranean submerged fucoids, green or red seaweeds on full salinity infralittoral rock	This community is characterised by the presence of many photophilic algae covering hard bottoms in exposed areas with normal or high salinity.
Mussel and/or barnacle communities	Communities on very exposed to moderately exposed upper and mid eulittoral bedrock and boulders dominated by the mussel [Mytilus edulis] (A1.111), barnacles [Chthamalus] spp. and/or [Semibalanus balanoides] and limpets [Patella] spp. (A1.112, A1.113). Several variants are identified. Some shores are characterised by dense bands of the barnacle [Semibalanus balanoides] and the limpet [Patella vulgata] (A1.113). The barnacles may be covered by [Porphyra umbilicalis] on the upper shore of exposed sites. Cracks and crevices in the rock provide a refuge for small individuals of the mussel [M. edulis], winkles [Littorina saxatilis] and the whelk [Nucella lapillus]. Red seaweeds also frequently occupy damp crevices, particularly [Ceramium shuttleworthianum], [Corallina officinalis], [Osmundea pinnatifida] and encrusting coralline algae, but the non-vesiculate form of the wrack [Fucus vesiculosus] might be present (A1.1132). Large numbers of the winkle [Littorina littorea] often dominate fields of large boulders or shores with a more mixed substratum (A1.1133). There is much regional variation affecting th

Robust fucoid and/or red seaweed communities	This habitat type encompasses those seaweeds that are able to tolerate the extreme conditions of very exposed to moderately exposed rocky shores. The physical stresses caused by wave action often results in dwarf forms of the individual seaweeds. The strong holdfasts and short tufts structure of the wracks [Fucus distichus] and [Fucus spiralis f. nana] allow these fucoids to survive on extremely exposed shores in the north and north-west (A1.121). Another seaweed able to tolerate the wave-wash is the red seaweed [Corallina officinalis], which can form a dense turf on the mid to lower shore (A1.122). The wrack [Himanthalia elongata] occurs on the lower shore and can extend on to moderately exposed shores (A1.123). The red seaweed [Mastocarpus stellatus] is common on both exposed and moderately exposed shores, where it may form a dense turf (particularly on vertical or overhanging rock faces, A1.125). Very exposed to moderately exposed lower eulittoral rock can support a pure stand of the red seaweed [Palmaria palmata]. It is found either as a dense band or in large patches above the main sublittoral fring
Fucoids in tide-swept conditions	Fucoid seaweeds in tide-swept conditions on sheltered to extremely sheltered mid eulittoral to lower eulittoral rocky shores, such as narrow channels in sea lochs. The middle shore can be dominated by the wrack [Ascophyllum nodosum] (A1.151), while [Fucus serratus] is dominating the lower shore (A1.152, A1.153). The high levels of water movement encourages a rich associated fauna including several filter-feeding groups. These include the sponges [Grantia compressa, Halichondria panicea] and [Hymeniacidon perleve] which frequently occur on steep and overhanging faces of boulders and bedrock. It also includes the sea squirts [Dendrodoa grossularia] and [Ascidiella scabra], which occur on steep surfaces and beneath boulders. Hydroids such as the pink [Clava multicornis] can form colonies on [A. nodosum] while [Dynamena pumila] is more often found on [Fucus vesiculosus] or [F. serratus]. Underneath the canopy formed by the brown seaweeds is a diverse community of the red seaweeds [Gelidium pusillum], [Chondrus crispus], [Lomentaria articulata], [Membranoptera alata] and coralline crusts, but the green seav
Fucoids on sheltered marine shores	Dense blankets of fucoid seaweeds dominating sheltered to extremely sheltered rocky shores and/or in locally sheltered patches on exposed to moderately exposed rocky shores. Typically, the wrack [Pelvetia canaliculata] (A1.311) occurs on the upper shore, with the wrack [Fucus spiralis] (A1.312) below. The middle shore is dominated by vast areas of the wrack [Ascophyllum nodosum] or the wrack [Fucus vesiculosus] (A1.313, A1.314) or a mixture of both. The wrack [Fucus serratus] covers lower shore bedrock and boulders (A1.315). Sheltered to very sheltered mixed substrata (pebbles and cobbles overlying muddy sand and gravel) shores can support fucoid communities (A1.3122; A1.3132; A1.3142; A1.3152). Situation: Sheltered shores (i.e. estuaries and sea lochs) below the lichen dominated zone and above the kelp dominated zone in the sublittoral or sheltered patches on more wave exposed shores.

Fucoids in variable salinity	Blankets of fucoid seaweeds dominating sheltered to extremely sheltered rocky shores with variable salinity. The wrack [Pelvetia canaliculata] (A1.321) occurs on the upper shore, with the wrack [Fucus spiralis] (A1.322) below. The middle shore is dominated by vast areas of the wrack [Ascophyllum nodosum] or the wrack [Fucus vesiculosus] (A1.323, A1.324) or a mixture of both. The wrack [Fucus serratus] covers lower shore bedrock and boulders (A1.326). Fucus ceranoides can be found on extremly sheltered shores with variable or low salinity (A1.327). The variable salinity communities are species impoverished compared to fucoids in full salinity or in tide-swept conditions as red seaweeds and sponges are usually absent. Underneath the canopy are a few green seaweeds including [Enteromorpha intestinalis] and [Cladophora] spp., while the red seaweed [Polysiphonia lanosa] can be found as an epiphyte on [A. nodosum]. On the rock and among the boulders are the winkles [Littorina littorea] and [Littorina saxatilis], the crab [Carcinus maenas], the barnacles [Semibalanus balanoides] and [Elminius modestus] and even th
Features of littoral rock	Littoral rock features include rockpools (A1.41, A1.42), ephemeral algae (A1.45) and caves (A1.44) in the intertidal zone (the area of the shore between high and low tides). These features are present throughout the littoral rock zone from the upper limit at the top of of the lichen zone and the lower limit by the top of the laminarian kelp zone. These features can be found on most rocky shores regardless of wave exposure. Lichens can be found in the supralittoral zone on shores with suitable substratum. The lichen band is wider and more distinct on more exposed shores. Rockpools occur where the topography of the shore allows seawater to be retained within depressions in the bedrock producing 'pools' on the retreat of the tide. As these rockpool communities are permanently submerged they are not directly affected by height on the shore and normal rocky shore zonation patterns do not apply allowing species from the sublittoral to survive. Ephemeral seaweeds occur on disturbed littoral rock in the lower to upper shore. The shaded nature of caves and overhangs diminishes the amount of desiccation suffered by biota during
Shingle (pebble) and gravel shores	Shores of shingle (mobile cobbles and pebbles) or coarse gravel, typically deposited as a result of onshore wave action and long-shore drift. The particle size tends to increase along the shore in the direction of the long-shore drift. As the sediment is very coarse and often quite mobile, it typically supports little marine life, other than opportunist amphipods and oligochaete worms. Summer growths of ephemeral green algae ([Enteromorpha] spp.) may develop.

Barren or amphipod-dominated mobile sand shores	Shores consisting of clean mobile sands (coarse, medium and some fine-grained), with little very fine sand, and no mud present. Shells and stones may occasionally be present on the surface. The sand may be duned or rippled as a result of wave action or tidal currents. The sands are non-cohesive, with low water retention, and thus subject to drying out between tides, especially on the upper shore and where the shore profile is steep. Most of these shores support a limited range of species, ranging from barren, highly mobile sands to more stable clean sands supporting communities of isopods, amphipods and a limited range of polychaetes. Species which can characterise mobile sand communities include [Scolelepis squamata], [Pontocrates arenarius], [Bathyporeia pelagica], [B. pilosa], [Haustorius arenarius] and [Eurydice pulchra]. Situation: Mobile sand shores are typically situated along open stretches of coastline, with a relatively high degree of wave exposure. Bands of gravel and shingle may be present on the upper shore of exposed beaches. Where the wave exposure is less, and the shore profile more sh
Polychaete/amphipod-dominated fine sand shores	Shores of clean, medium to fine and very fine sand, with no coarse sand, gravel or mud present. Shells and stones may occasionally be present on the surface. The sand may be duned or rippled as a result of wave action or tidal currents. The degree of drying between tides is limited, and the sediment usually remains damp throughout the tidal cycle. Typically, no anoxic layer is present. Fine sand shores support a range of species including amphipods and polychaetes. On the lower shore, and where sediments are stable, bivalves such as [Angulus tenuis] may be present in large numbers. An exceptionally rich fine sand community has been recorded from very sheltered reduced salinity shores in Poole Harbour. Species recorded include [Anaitides maculata], [Hediste diversicolor], [Scoloplos armiger], [Pygospio elegans], [Tharyx killariensis], oligochaetes, [Gammarus locusta], [Hydrobia ulvae], [Cerastoderma edule] and [Mya truncata]. Situation: Fine sand communities may be present throughout the intertidal zone on moderately exposed beaches, or they may be present on the lower parts of the shore with mobile sand c
Marine mud shores	Proposed new level 4 habitat to account for fully marine habitats in the Waddensea and elsewhere.
Ragworm dominated gravelly sandy mud shores	Sheltered gravelly sandy mud, subject to reduced salinity, mainly on the mid and lower shore. The infaunal community is dominated by abundant ragworms [Hediste diversicolor]. Other species of the infauna vary for the sub-biotopes described. They include polychaetes such as [Pygospio elegans], [Streblospio shrubsolii], and [Manayunkia aestuarina], oligochaetes such as [Heterochaeta costata] and [Tubificoides] spp., the mud shrimp [Corophium volutator], the spire shell [Hydrobia ulvae], the baltic tellin [Macoma balthica] and the peppery furrow shell [Scrobicularia plana]. Sub-biotopes described in A2.411 have equivalent communities in soft muddy sediments, but the sediment here is much firmer due to the gravel component. There are relatively few records in each sub-type, leading to uncertainty over the precise nature of the habitat, particularly regarding sediment type and salinity regime. Situation: It is probable that there are broad transition areas between the sub-biotopes of A2.411, and the corresponding muddy sediment biotopes. The boundaries may be very indistinct, with the A2.411 groups present in patches of gravelly m

Species-rich mixed sediment shores	Sheltered mixed sediments, usually subject to variable salinity conditions. The infauna is very diverse, dominated by a range of polychaetes including [Exogone naidina], [Sphaerosyllis taylori], [Pygospio elegans], [Chaetozone gibber], [Cirriformia tentaculata], [Aphelochaeta marioni], [Capitella capitata], [Mediomastus fragilis], and [Melinna palmata]. The oligochaete worms [Tubificoides benedii] and [T. pseudogaster] are abundant, as is the cockle [Cerastoderma edule]. A large range of amphipods may occur, including [Melita palmata], [Microprotopus maculatus], [Aora gracilis] and [Corophium volutator]. The bivalves [Abra alba] and [A. nitida] may occur. The barnacle [Elminius modestus] may be abundant where the sediment has stones on the surface. Situation: Mid shore, lower shore, as extension of shallow sublittoral biotope.
Seagrass beds on littoral sediments	Dominants are [Zostera] spp.
Littoral mussel beds on sediment	Sediment shores characterised by beds of adult mussels [Mytilus edulis] occur principally on mid and lower eulittoral mixed substrata (mainly cobbles and pebbles on muddy sediments) in a wide range of exposure conditions. In high densities the mussels bind the substratum and provide a habitat for many infaunal and epifaunal species. This biotope is also found in lower shore tide-swept areas, such as in the tidal narrows of Scottish sealochs. A fauna of dense juvenile mussels may be found in sheltered firths, attached to algae on shores of pebbles, gravel, sand, mud and shell debris with a strandline of fucoid algae. Situation: High densities of juvenile mussels attached to seaweed have been recorded from sheltered shores of the Dornoch Firth and Moray Firth. Adult mussel beds can be found below a band of ephemeral green seaweeds (A2.821) on more exposed, predominantly rocky shores. On sheltered, predominantly rocky shores either a [Fucus vesiculosus] dominated biotope or a biotope dominated by the wrack [Ascophyllum nodosum] (A1.3132; A1.3142) can be found above, or the barnacle dominated biotop
Features of littoral sediment	Features of littoral sediment include littoral habitats characterised by the presence of gases or liquids bubbling or seeping through sediments (A2.81); areas which are characterised by pioneer or ephemeral red and green algae because of variations in salinity and/or siltation (A2.82); and sedimentary shores of non-tidal, reduced salinity waters which are below the mean water level and normally water-covered, but which are regularly or occasionally exposed by the action of wind (hydrolittoral zone in the Baltic) (A2.83-A2.87).
Kelp and red seaweeds (moderate energy infralittoral rock)	Infralittoral rock subject to moderate wave exposure, or moderately strong tidal streams on more sheltered coasts. On bedrock and stable boulders there is typically a narrow band of kelp [Laminaria digitata] in the sublittoral fringe which lies above a [Laminaria hyperborea] forest and park. Associated with the kelp are communities of seaweeds, predominantly reds and including a greater variety of more delicate filamentous types than found on more exposed coasts (A3.11). The faunal component of the understorey is also less prominant than in A3.11.

Silted kelp on low energy infralittoral rock with full salinity	Infralittoral rock in wave and tide-sheltered conditions, supporting silty communities with [Laminaria hyperborea] and/or [Laminaria saccharina]. Associated seaweeds are typically silt-tolerant and include a high proportion of delicate filamentous types. Some areas, particularly in the lower infralittoral zone, are subject to intense grazing by urchins and chitons and may have poorly developed seaweed communities.
Estuarine coarse sediment shores	Shores of coarse sediments (shingle, gravels and coarse sand) in the upper reaches of estuaries and other inlets (e.g. sealochs) which are subject to variable and reduced salinity conditions. The outflow of riverine freshwater at the heads of the inlets results in the washing out of fine particulate matter, leaving coarse sediments. These are typically species-poor and characterised by oligochaete worms (cf. A2.222).
Kelp in variable salinity on low energy infralittoral rock	Very wave-sheltered bedrock, boulders and cobbles subject to only weak tidal streams in the sublittoral fringe and infralittoral zone, in areas of variable/reduced salinity. This habitat type is characterised by the kelp [Laminaria saccharina] and coralline crusts such as [Lithothamnion glaciale]. Grazers such as the urchins [Psammechinus miliaris] and [Echinus esculentus], and the gastropods [Gibbula cineraria] and [Buccinum undatum] may be present. The tube-dwelling polychaete [Pomatoceros triqueter], the ascidians [Ciona intestinalis], [Corella parallelogramma] and [Ascidiella scabra], the barnacle [Balanus crenatus], the starfish [Asterias rubens] and the brittlestar [Ophiothrix fragilis] may also be present. Red algal communities are composed primarily of [Phycodrys rubens]. The crabs [Carcinus maenas] and [Pagurus bernhardus], and the bivalve [Modiolus modiolus] may also be observed.
Features of infralittoral rock	Includes surge gulleys (A3.71), which are found throughout the infralittoral rock zone, and usually consist of vertical bedrock walls, occasionally with overhanging faces, and support communities, which reflect the degree of wave surge they are subject to and any scour from mobile substrata on the cave/gully floors. The larger cave and gully systems, such as found in Shetland, Orkney, the Western Isles and St Kilda, typically show a marked zonation from the entrance to the rear of the gully/cave as wave surge increases and light reduces. Also includes habitats in hard substrata in the infralittoral zone characterised by the presence of seeping or bubbling gases, oils or water (A3.73) and recently colonised artificial hard substrata in the infralittoral zone (A3.72).
Infralittoral fouling seaweed communities	Moderately exposed to wave-sheltered artificial substrata (such as steel wrecks/concrete pilings/cable debris etc) subject to moderately strong to weak tidal streams in the infralittoral zone. This habitat type is characterised by a dense covering of filamentous and foliose algae on vertical as well as the upper faces of the substrata. Although there are no biotopes currently defined under this biotope, due to the low number of records, it is suspected that this has been highly 'under-recorded', and that additional records will be added in the near future, leading to the definition of biotopes.
Vents and seeps in infralittoral rock	No description available.

Very tide-swept faunal communities on circalittoral rock	This habitat type occurs in wave-exposed, tide-swept narrows and straits on circalittoral bedrock and boulders. The biotopes within this complex are characterised by a high abundance of the robust hydroid [Tubularia indivisa]. The barnacle [Balanus crenatus] is characteristic of A4.111, the cushion sponges [Halichondria panicea] and [Myxilla incrustans] are characteristic of A4.1121 and [Alcyonium digitatum] is characteristic of A4.1122. The anemones [Sagartia elegans], [Actinothoe sphyrodeta], [Urticina felina], [Corynactis viridis] and [Metridium senile] are all found within this complex. Other species present in this high-energy complex are the sponges [Esperiopsis fucorum] and [Pachymatisma johnstonia], the bryozoans [Alcyonidium diaphanum] and [Flustra foliacea], [Cancer pagurus], [Sertularia argentea] and [Asterias rubens].
Sponge communities on deep circalittoral rock	This habitat type typically occurs on deep (commonly below 30m depth), wave-exposed circalittoral rock subject to negligible tidal streams. The sponge component of this biotope is the most striking feature, with similar species to the bryozoan and erect sponge habitat type (A4.131) although in this case, the sponges [Phakellia ventilabrum], [Axinella infundibuliformis], [Axinella dissimilis] and [Stelligera stuposa] dominate. Other sponge species frequently found on exposed rocky coasts are also present in low to moderate abundance. These include [Cliona celata], [Polymastia boletiformis], [Haliclona viscosa], [Pachymatisma johnstonia], [Dysidea fragilis], [Suberites carnosus], [Stelligera rigida], [Hemimycale columella] and [Tethya aurantium]. The cup coral [Caryophyllia smithii] and the anemone [Corynactis virdis] may be locally abundant in some areas, along with the holothurian [Holothuria forskali]. The soft corals [Alcyonium digitatum] and [Alcyonium glomeratum] are frequently observed. The bryozoans [Pentapora foliacea] and [Porella compressa] are also more frequently found in this deep-water habitat type
Mixed faunal turf communities on circalittoral rock	This habitat type occurs on wave-exposed circalittoral bedrock and boulders, subject to tidal streams ranging from strong to moderately strong. This complex is characterised by its diverse range of hydroids ([Halecium halecinum], [Nemertesia antennina] and [Nemertesia ramosa]), bryozoans ([Alcyonidium diaphanum], [Flustra foliacea], [Bugula flabellata] and [Bugula plumosa]) and sponges ([Scypha ciliata], [Pachymatisma johnstonia], [Cliona celeta], [Raspailia ramosa], [Esperiopsis fucorum], [Hemimycale columella] and [Dysidea fragilis]) forming an often dense, mixed faunal turf. Other species found within this complex are [Alcyonium digitatum], [Urticina felina], [Sagartia elegans], [Actinothoe sphyrodeta], [Caryophyllia smithii], [Pomatoceros triqueter], [Balanus crenatus], [Cancer pagurus], [Necora puber], [Asterias rubens], [Echinus esculentus] and [Clavelina lepadiformis].

Echinoderms and crustose communities on circalittoral rock	This habitat type occurs on wave-exposed, moderately strong to weakly tide-swept, circalittoral bedrock and boulders. Echinoderms, faunal ([Parasmittina trispinosa]) and algal crusts (red encrusting algae) dominate this biotope, giving a sparse appearance. Typical echinoderms present are the starfish [Asterias rubens], the brittlestar [Ophiothrix fragilis] and the sea urchin [Echinus esculentus]. There may be isolated clumps of the hydroids [Nemertesia antennina] and [Abietinaria abietina], [Alcyonium digitatum], the anemone [Urticina felina] and the cup coral [Caryophyllia smithii]. Other species present may include the polychaete [Pomatoceros triqueter] and the top shell [Calliostoma zizphinum].
Circalittoral faunal communities in variable salinity	This habitat type occurs on wave-sheltered, variable salinity bedrock and cobbles, subject to moderately strong to weak tidal streams. This complex contains a suite of sponges able to tolerate the variable salinity conditions like [Hymeniacidon perleve], [Suberites ficus], [Halichondria panicea], [Halichondria bowerbanki], [Cliona celata] and [Leucosolenia botryoides]. The barnacle [Balanus crenatus] is frequently recorded in this complex. A sparse hydroid/bryozoan turf composed primarily of [Nemertesia antennina], [Nemerteis ramosa], [Plumularia setacea], [Alcyonidium diaphanum] and [Bugula plumosa] is often recorded. Other species recorded are the ascidians [Clavelina lepadiformis], [Morchellium argus] and [Dendrodoa grossularia], the anemones [Metridium senile] and [Sagartia troglodytes], the starfish [Asterias rubens] and the crab [Carcinus maenas].
Features of circalittoral rock	Circalittoral rock features include circalittoral fouling communities (A4.72) and circalittoral caves and overhangs (A4.71). These features are present throughout the circalittoral zone in a variety of wave exposures and tidal streams. Two fouling subtypes have also been identified: A4.722 has been recorded from disused fishing nets and other artificial substrata, and is characterised by aggregations of [Ascidiella aspersa] whilst A4.721 has been recorded from steel wrecks, and is characterised by dense aggregations of [Alcyonium digitatum] and [Metridium senile]. Habitats in hard substrata in the circalittoral zone characterised by the presence of seeping or bubbling gases, oils or water are also included (A4.73).
Circalittoral fouling faunal communities	This habitat type contains two biotopes which, although have different physical habitat characteristics, share the fact that they colonise new areas of artificial substrata relatively quickly. The [Ascidiella aspersa] fouling biotope (A4.722) is found on wave-sheltered artificial substrata such as discarded fishing nets/mooring lines. A separate fouling biotope (A4.721) is described for open coast wrecks. This biotope has a characteristic faunal community of [Alcyonium digitatum] and the anemone [Metridium senile]. Other species recorded in this complex (primarily under the AdigMsen biotope) include the hydroid [Nemertesia antennina], the anemones [Actinothoe sphyrodeta] and [Sagartia elegans], the cup coral [Caryophyllia smithii], the bryozoans [Flustra foliacea] and [Bugula plumosa], the crabs [Necora puber], [Cancer pagurus] and [Maja squinado] and the lobster [Homarus gammarus].
Vents and seeps in circalittoral rock	No description available.

Infralittoral coarse sediment	Moderately exposed habitats with coarse sand, gravelly sand, shingle and gravel in the infralittoral, are subject to disturbance by tidal steams and wave action. Such habitats found on the open coast or in tide-swept marine inlets are characterised by a robust fauna of infaunal polychaetes such as [Chaetozone setosa] and [Lanice conchilega], cumacean crustacea such as [Iphinoe trispinosa] and [Diastylis bradyi], and venerid bivalves. Habitats with the lancelet [Branchiostoma lanceolatum] may also occur.
Deep circalittoral coarse sediment	Offshore (deep) circalittoral habitats with coarse sands and gravel or shell. This habitat may cover large areas of the offshore continental shelf although there is relatively little quantitative data available. Such habitats are quite diverse compared to shallower versions of this habitat and generally characterised by robust infaunal polychaete and bivalve species. Animal communities in this habitat are closely related to offshore mixed sediments and in some areas settlement of [Modiolus modiolus] larvae may occur and consequently these habitats may occasionally have large numbers of juvenile [M. modiolus]. In areas where the mussels reach maturity their byssus threads bind the sediment together, increasing stability and allowing an increased deposition of silt leading to the development of the biotope A5.622.
Sublittoral sand in low or reduced salinity	Shallow sand and muddy sand in areas of low or reduced, although relatively stable salinity (may vary annually), with largely ephemeral faunal communities. The species are often similar to that found in A5.31 and are characterised by [Arenicola marina] with other species, including mysids, tubificoid and enchytraeid oligochaetes, [Corophium volutator], [Hediste diversicolor], [Pygospio elegans], [Hydrobia ulvae] and [Cerastoderma glaucum], which commonly occur in lagoons. Filamentous green algae such as [Chaetomorpha linum] may also be present. In some examples of this biotope the polychaete [Fabricia sabella] may be super-abundant and the isopod [Sphaeroma hookeri] common.
Sublittoral sand in variable salinity (estuaries)	Clean sands that occur in the upper reaches of marine inlets, especially estuaries, where water movement is moderately strong, allowing the sedimentation of sand but not the finer silt fraction. The habitat typically lacks a significant seaweed component and is characterised by brackish-water tolerant fauna, particularly amphipods, polychaetes and mysid shrimps.
Infralittoral fine sand	Clean sands which occur in shallow water, either on the open coast or in tide-swept channels of marine inlets. The habitat typically lacks a significant seaweed component and is characterised by robust fauna, particularly amphipods ([Bathyporeia]) and robust polychaetes including [Nephtys cirrosa] and [Lanice conchilega].
Circalittoral fine sand	Clean fine sands with less than 5% silt/clay in deeper water, either on the open coast or in tide-swept channels of marine inlets in depths of over 15-20 m. The habitat may also extend offshore and is characterised by a wide range of echinoderms (in some areas including the pea urchin [Echinocyamus pusillus]), polychaetes and bivalves. This habitat is generally more stable than shallower, infralittoral sands and consequently supports a more diverse community.

Sublittoral mud in low or reduced salinity	Shallow, typically anoxic, muddy and sandy mud sediments in areas of low or reduced, although stable, salinity (may vary annually) with largely ephemeral faunal communities. Characterised by [Arenicola marina] and blue-green algae with other species, including mysids, [Carcinus maenas] and [Corophium volutator] which commonly occur in lagoons. Important infaunal species may include [Hediste diversicolor], [Heterochaeta costata] and chironomids; however infaunal records for this biotope are limited.
Sublittoral mud in variable salinity (estuaries)	Shallow sublittoral muds, extending from the extreme lower shore into the subtidal in variable salinity (estuarine) conditions. Such habitats typically support communities characterised by oligochaetes, and polychaetes such as [Aphelochaeta marioni]. In lowered salinity conditions the sediments may include a proportion of coarser material, where the silt content is sufficient to yield a similar community to that found in purer muds.
Infralittoral sandy mud	Infralittoral, cohesive sandy mud, typically with over 20% silt/clay, in depths of less than 15-20 m. This habitat is generally found in sheltered bays or marine inlets and along sheltered areas of open coast. Typical species include a rich variety of polychaetes including [Melinna palmate], tube building amphipods ([Ampelisca] spp.) and deposit feeding bivalves such as [Macoma balthica] and [Mysella bidentata]. Sea pens such as [Virgularia mirabilis] and brittlestars such as [Amphiura] spp. may be present but not in the same abundances as found in deeper circalittoral waters.
Infralittoral fine mud	Shallow sublittoral muds, extending from the extreme lower shore to about 15-20 m depth in fully marine or near marine conditions, predominantly in extremely sheltered areas with very weak tidal currents. Such habitats are found in sealochs and some rias and harbours. Populations of the lugworm [Arenicola marina] may be dense, with anemones, the opisthobranch [Philine aperta] and synaptid holothurians also characteristic in some areas. The extent of the oxidised layer may be shallow with some areas being periodically or permanently anoxic. In these areas bacterial mats may develop on the sediment surface. Infaunal records for this habitat type are limited encompassing only one biotope. They are therefore not representative of the full suite of infaunal species found in this biotope.
Circalittoral sandy mud	Circalittoral, cohesive sandy mud, typically with over 20% silt/clay, generally in water depths of over 10 m, with weak or very weak tidal streams. This habitat is generally found in deeper areas of bays and marine inlets or offshore from less wave exposed coasts. Sea pens such as [Virgularia mirabilis] and brittlestars such as [Amphiura] spp. are particularly characteristic of this habitat whilst infaunal species include the tube building polychaetes [Lagis koreni] and [Owenia fusiformis], and deposit feeding bivalves such as [Mysella bidentata] and [Abra] spp.
Circalittoral fine mud	Sublittoral muds, occurring below moderate depths of 15-20 m, either on the open coast or in marine inlets such as sealochs. The seapens [Virgularia mirabilis] and [Pennatula phosphorea] are characteristic of this habitat type together with the burrowing anemone [Cerianthus lloydii] and the ophiuroid [Amphiura] spp. The relatively stable conditions often lead to the establishment of communities of burrowing megafaunal species, such as [Nephrops norvegicus].

Sublittoral mixed sediment in low or reduced salinity	Shallow, muddy mixed sediments in areas of low or reduced, although stable, salinity (may vary annually) with largely ephemeral faunal communities. Characterised infaunally by oligochaetes, including [Heterochaeta costata] and members of the Enchytraeidae, polychaetes such as [Hediste diversicolor], [Polydora ciliata] and [Pygospio elegans],and bivalves such as [Mya arenaria] and the lagoon cockle [Cerastoderma glaucum]. These bivalve species may also form conspicuious members of the epifauna together with more ubiquitous species like the common goby [Pomatoschistus microps].
Sublittoral mixed sediment in variable salinity (estuaries)	Shallow sublittoral mixed sediments in estuarine conditions, often with surface shells or stones, enabling the development of diverse epifaunal communities, e.g. [Crepidula fornicata] (A5.422), as well as infaunal communities. This habitat type is therefore often quite species rich, compared with purer sediments.
Circalittoral mixed sediments	Mixed (heterogeneous) sediment habitats in the circalittoral zone (generally below 15-20 m) including well mixed muddy gravelly sands or very poorly sorted mosaics of shell, cobbles and pebbles embedded in or lying upon mud, sand or gravel. Due to the variable nature of the seabed a variety of communities can develop which are often very diverse. A wide range of infaunal polychaetes, bivalves, echinoderms and burrowing anemones such as Cerianthus lloydii are often present in such habitat and the presence of hard substrata (shells and stones) on the surface enables epifaunal species to become established, particularly hydroids such as [Nemertesia] spp and [Hydrallmania falcata]. The combination of epifauna and infauna can lead to species rich communities. Coarser mixed sediment communities may show a strong resemblance, in terms of infauna, to biotopes within the A5.1. However, infaunal data for this habitat type is limited to that described under the biotope A5.443, and so are not representative of the infaunal component of this habitat type.
Maerl beds	Beds of maerl in coarse clean sediments of gravels and clean sands, which occur either on the open coast or in tide-swept channels of marine inlets (the latter often stony). In fully marine conditions the dominant maerl is typically [Phymatolithon calcareum] (A5.511), whilst under variable salinity conditions in some sealochs beds of [Lithothamnion glaciale] (A5.512) may develop.
Sublittoral seagrass beds	Beds of submerged marine angiosperms in the genera [Cymodocea], [Halophila], [Posidonia], [Ruppia], [Thalassia], [Zostera].
Sublittoral polychaete worm reefs on sediment	Sublittoral reefs of polychaete worms in mixed sediments found in a variety of hydrographic conditions. Such habitats may range from extensive structures of considerable size to loose agglomerations of tubes. Such communities often play an important role in the structural composition or stability of the seabed and provide a wide range of niches for other species to inhabit. Consequently polychaete worm reefs often support a diverse flora and fauna.

Circalittoral coral reefs	The coral reef structures in UK waters are found in cold, largely aphotic waters, generally along the shelf edge and in offshore waters down to 2000 m. In the north east Atlantic, [Lophelia pertusa] is the dominant colonial coral and is the characterising species of the biotope described under this habitat type. [Lophelia] and its deep-water allies lack the symbiotic algae of their tropical relatives, so can live in the permanent darkness of the deep sea. These corals form colonies and can aggregate into patches and banks which may be described as reefs. These deep-sea corals can support and shelter hundreds of other species, including sponges, polychaete worms, echinoderms (starfish, sea urchins, brittle stars) and bryozoans (sea mats). Some 200-300 species can be found in one of these coral habitats, a number comparable to that found in other important deep-water habitats. Unlike tropical coral reef systems, they are dominated by only a few hard-coral species, and there are far fewer fish species.
Features of sublittoral sediments	Features of sublittoral sediments include sublittoral habitats characterised by the presence of gases or liquids bubbling or seeping through sediments (A5.71) and sublittoral sediments which are organically-enriched or permanently or periodically anoxic (A5.72).
Organically-enriched or anoxic sublittoral habitats	No description available.
Carbonate mounds	Carbonate mounds are very steep-sided mounds of variety of shapes, which may be up to 350 m high and 2 km wide at their base (Weering et al, 2003). They occur offshore in water depths of 500 m-1100 m with examples present in the Porcupine Seabight and Rockall Trough (Kenyon et al, 2003). Carbonate mounds may have a sediment veneer, typically composed of carbonate sands, muds and silts. The cold-water reef-building corals [Lophelia pertusa] and [Madrepora oculata], as well as echiuran worms are characteristic fauna of carbonate mounds. Where cold-water corals (such as [Lophelia]) are present on the mound summit, coral debris may form a significant component of the overlying substratum. There is currently speculation on the origin of carbonate mounds, with possible associations with fault-controlled methane seepage from deep hydrocarbon reservoirs, or gas-hydrate dissociation (Henriet et al, 1998) through to the debris from ‘cold-water’ coral colonies such as [Lophelia].

Dense brittlestars with sparse [Ascidia mentula] and [Ciona intestinali]s on sheltered circalittoral mixed substrata	This biotope is typically found on wave-sheltered sites (although it may be found in wave-exposed through to extremely wave-sheltered conditions), on circalittoral mixed substrata (Bedrock, boulders, cobbles, pebbles and gravel), subject to moderately strong to weak tidal streams. This biotope often has a silty appearance in parallel with AmenCio.Ant but is characterised by a dense carpet of brittlestars ([Ophiothrix fragilis], [Ophiocomina nigra] and to a lesser extent [Ophiura albida]) which virtually cover the seabed. Where the underlying substratum is visible, pink coralline crusts and the white calcareous tubes of the keelworm [Pomatoceros triqueter] are often observed. Hydroids and bryozoans are scarce, perhaps partly due to the smothering effect of the brittlestars and possibly due to the grazing pressure of the sea urchin [Echinus esculentus] which is occasionally recorded. Other echinoderms present include [Asterias rubens] and [Crossaster papposus]. The solitary ascidian [Ciona intestinalis] may be seen attached to isolated rocks and boulders, whilst on the tops and sides of larger boulders, dead man's fing
Strandline	The strandline is the shifting line of decomposing seaweed and debris which is typically left behind on sediment (and some rocky shores) at the upper extreme of the intertidal at each high tide. These ephemeral bands of seaweed often shelter communities of sandhoppers. A fauna of dense juvenile mussels may be found in sheltered firths, attached to algae on shores of pebbles, gravel, sand, mud and shell debris with a strandline of fucoid algae. Situation: Strandlines may occur in bands along the upper extreme of any sediment shore and some rocky shores. Temporal variation: Strandlines tend to be mobile, as they consist of driftlines of decomposing seaweed and other debris, which will decompose, and be shifted by the tide. The amount of debris washed up on strandlines, and hence the extent of the strandline, may vary significantly depending on factors such as recent storms or high tides.
Raised features of the deep-sea bed	Habitats on the deep-sea bed with significant elevation (typically >200m) in relation to their surroundings. Includes permanently submerged flanks of oceanic islands (A6.71), seamounts, knolls and banks (A6.72), oceanic ridges (A6.73), abyssal hills (A6.74) and carbonate mounds (A6.75).
Deep-sea trenches and canyons, channels, slope failures and slumps on the continental slope	Habitats on the deep-sea bed significantly below the deep-sea bed, including deep ocean trenches, often greater than 6000 m depth with an active margin reduction zone (A6.82), and downslope or along-slope channels on the deep-sea bed (A6.81).
Vents, seeps, hypoxic and anoxic habitats of the deep sea	Deep-sea habitats characterised by chemical conditions. Includes interface habitats on the deep-sea bed where reducing conditions exist (A6.91), not generally associated with drastically elevated temperatures, including the carcasses of large cetaceans (A6.913). These habitats are often indicated by the presence of seeping or bubbling gases or liquids, hypoxic and/or anoxic conditions in the water column above. Also includes vents in the deep-sea bed (A6.94).

[Pelvetia canaliculata] on sheltered variable salinity littoral fringe rock	Lower littoral fringe bedrock or stable boulders and mixed substrata on very sheltered to extremely sheltered variable salinity shores characterised by a dense cover of the wrack [Pelvetia canaliculata], which often overgrows a crust of black lichens [Verrucaria maura]. The wrack [Fucus spiralis] can be present among the [P. canaliculata]. This biotope lacks the density of barnacles found among the [P. canaliculata] on more exposed shores though the occasional [Semibalanus balanoides] or [Elminius modestus] can be found. The winkle [Littorina saxatilis] occurs, as do a variety of amphipods. The red alga [Catenella caespitosa] can be present in more shaded areas as well as the green seaweed [Enteromorpha intestinalis]. Situation: This biotope are found in the lower littoral fringe on sheltered shores below biotopes dominated by [V. maura] (Ver.Ver) and above biotopes dominated by [F. spiralis] (Fspi).
[Fucus spiralis] on full salinity exposed to moderately exposed upper eulittoral rock	Exposed to moderately exposed upper eulittoral bedrock characterised by a band of the spiral wrack [Fucus spiralis] overlying the black lichen [Verrucaria maura] and the olive green lichen [Verrucaria mucosa]. Underneath the fronds of [F. spiralis] is a community consisting of the limpet [Patella vulgata], the winkles [Littorina saxatilis] and [Littorina littorea], the mussel [Mytilus edulis] and the barnacle [Semibalanus balanoides]. The whelk [Nucella lapillus] can be found in cracks and crevices preying on the mussels and barnacles. During the summer months ephemeral green seaweeds such as [Enteromorpha intestinalis] can be common. The insect [Anurida maritima] can be present in this zone taking shelter in cracks and crevices when the tide comes in. Situation: This zone usually lies below a zone dominated by the wrack [Pelvetia canaliculata] (PelB), but occasional clumps of [P. canaliculata] may be present (usually less than common) amongst the [F. spiralis]. FspiB occurs above the wrack [Fucus vesiculosus] (FvesB) zones. Vertical surfaces in this zone, especially on moderately exposed shores, c
[Fucus spiralis] on sheltered variable salinity upper eulittoral rock	Sheltered to extremely sheltered upper eulittoral bedrock or mixed substrata (boulders, large cobbles or shells on mud) in variable salinity conditions characterised by a band of the spiral wrack [Fucus spiralis]. The ephemeral green seaweed [Enteromorpha intestinalis] is usually found in this species poor biotope. The barnacles [Semibalanus balanoides] and [Elminius modestus] can be found where suitable substrata are available, while gammarids can be found underneath the fronds of [F. spiralis] and/or underneath the boulders and cobbles. Also found underneath the fronds and among the boulders are the winkles [Littorina saxatilis] and [Littorina littorea] and the crab [Carcinus maenas]. Situation: This zone usually lies below a zone dominated by the wrack [Pelvetia canaliculata] (Pel) and occasional clumps of [P. canaliculata] may be present (usually less than common) amongst the [F. spiralis]. In areas of extreme shelter and variable salinity conditions (e.g. in Scottish sea lochs), the [P. canaliculata] and [F. spiralis] zones often merge together forming a very narrow band. Fspi.VS occurs above the wracks [A

[Fucus vesiculosus] on variable salinity mid eulittoral boulders and stable mixed substrata	Sheltered to extremely sheltered mid eulittoral pebbles and cobbles lying on sediment subject to variable salinity and characterised by the wrack [Fucus vesiculosus]. The wrack [Ascophyllum nodosum] can occasionally be found on larger boulders, while the barnacles [Semibalanus balanoides] and [Elminius modestus] and the mussel [Mytilus edulis] can be present on cobbles. Winkles, particularly [Littorina littorea], commonly graze on the seaweeds, while [Littorina saxatilis] can be found in crevices. Ephemeral seaweeds such as [Enteromorpha intestinalis] can occupy available space. Patches of sediment found between the hard substrata often contains the lugworm [Arenicola marina] or the sand mason [Lanice conchilega], while the crab [Carcinus maenas], gammarids and amphipods occur on and under cobbles. Situation: Fves.VS can be found below the biotope dominated by the wracks [Fucus spiralis] or [Fucus ceranoides] (Fspi.X; Fcer) or a community dominated by [S. balanoides], [P. vulgata] and [L. littorea] (BLitX). It is found above a community dominated by [M. edulis] (Myt.Myt) or the wrack
[Fucus serratus] on sheltered lower eulittoral rock	Sheltered to extremely sheltered lower eulittoral rock with [Fucus serratus] (for detailed description of the rich associated community please see Fserr.FS). Two variants of this biotope have been described. Fully marine conditions (Fserr.FS) and mixed substrata (Fserr.X). Please notice that three other biotopes with a [F. serratus] dominance have been described: Variable salinity (FserVS), tide-swept (FserT) and tide-swept on mixed substrata (FserXT). Situation: This biotope usually occurs immediately below a dense canopy of [Fucus vesiculosus] (Fves) on sheltered shores or an [Ascophyllum nodosum] zone (Asc.FS) on sheltered shores; consequently low densities of these species may occur in this biotope. The sublittoral fringe below is dominated by the kelps [Laminaria saccharina] and [Laminaria digitata] on sheltered shores (Lsac.Ldig; Lsac.Ft).
[Fucus ceranoides] on reduced salinity eulittoral rock	Very sheltered to extremely sheltered bedrock and stable boulders in the eulittoral zone that are subject to reduced salinity and characterised by the wrack [Fucus ceranoides]. Species richness is typically low in this biotope. The green seaweeds [Enteromorpha intestinalis] and [Ulva lactuca] may be present together with the crab [Carcinus maenas] and the occasional barnacle [Elminius modestus] and [Semibalanus balanoides]. Situation: As [F. ceranoides] is more tolerant of reduced salinity than the other fucoids, [F. ceranoides] tends to replace the wracks [Fucus spiralis], [Fucus vesiculosus] and [Ascophyllum nodosum] towards the upper reaches of estuaries and sea lochs or in areas with freshwater influence. This biotope may, however, still contain other fucoids, although [F. ceranoides] always dominates. This biotope is often found on artificial substrata such as sea defences or bridge supports.
Ephemeral green or red seaweeds (freshwater or sand-influenced) on mobile substrata	Eulittoral mixed substrata subject to variations in salinity and/or siltation characterised by dense blankets of ephemeral green and red seaweeds (A2.821). This is a biotope with a low species diversity and the relatively high number of species in the characterising species list are due to a variation in the species composition from site to site, not to high species richness on individual sites. Note: Connor et al (2004) classify this habitat type together with A1.45 and A2.43 as LR.ELR.Eph.

Coralline crusts and [Corallina officinalis] in shallow eulittoral rockpools	Shallow and smaller rockpools throughout the eulittoral zone in a wide range of wave exposures characterised by a covering of encrusting coralline algae on which [Corallina officinalis] often forms a dense turf. The bottom of these pools can be covered in coarse gravel and cobbles. These 'coralline' pools have a striking appearance as they are dominated by red seaweeds. Foliose red seaweeds found in these pools include [Mastocarpus stellatus, Chondrus crispus] and the filamentous [Ceramium nodulosum]. The ephemeral green seaweeds [Cladophora rupestris, Ulva lactuca] and [Enteromorpha] spp. can also occur in high abundance. The pools may hold large numbers of grazing molluscs, particularly the winkle [Littorina littorea] (which often occurs in exceptionally high densities in upper shore pools), the limpet [Patella vulgata] and top shell [Gibbula cineraria]. Gastropods may graze these pools to such an extent that they is devoid of any foliose red seaweeds, and the flora are reduced to encrusting coralline algae and large
Green algal films on upper and mid-shore cave walls and ceilings	The upper walls and ceilings of upper and mid-shore hard and soft rock (chalk) dominated by a band of green algal films (or 'stains'). Other encrusting algae including the non-calcified [Hildenbrandia rubra] may be present. In chalk caves, on the east and south-east coasts of England, a distinctive assemblage of species occurs, including the brown alga [Pilinia maritima] and the bright green algae [Pseudendoclonium submarinum] and [Entocladia perforans] that often covers the cave ceilings. Fauna is generally sparse and limited to limpets such as [Patella vulgata] and the winkle [Littorina saxatilis]. The species forming a green algal film that covers upper shore caves in Berwickshire were not identified. More information required to validate this biotope description. Situation: This biotope is situated above the AudCla or VmucHil zone, extending to cover the upper walls and ceilings of caves. GCv can be found at the entrances to caves and through to the darkest areas at the back and is often found above a zone of AudPil. In hard rock caves however, the green and brown algae (AudPil) or Haptophyceae (ChrHap)
[Audouinella purpurea] and [Pilinia maritima] crusts on upper and mid-shore cave walls and ceilings	Golden brown velvety growths of the brown algae [Pilinia maritima] occurring in mats with the red alga [Audouinella purpurea] forming on cave walls and upper littoral levels of cliffs. Fauna is sparse and limited to occasional individuals of the winkle [Littorina saxatilis] and spirorbid polychaetes. This assemblage is thought to be is widespread throughout Britain, although there are currently few records available. More information are needed to validate this description, which is based on information from the Thanet intertidal survey (Tittley & Spurrier 2001). Situation: This biotope is found at the entrances and the inner reaches of caves between a band of AudCla and the GCv zone above. Temporal variation: Some variation in the species composition of the individual caves must be expected depending on local conditions.

[Audouinella purpurea] and [Cladophora rupestris] on upper to mid-shore cave walls	Vertical and steeply-sloping upper walls at the entrances and inner reaches of upper to mid-shore caves that are partially sheltered from direct wave action characterised by a turf of the 'velvety' red seaweed [Audouinella purpurea]. Patches of green filamentous seaweed [Cladophora] [rupestris] can be present. The fauna is generally limited to limpets [Patella] spp., the winkle [Littorina saxatilis] and the barnacle [Semibalanus balanoides], while they usually occur in low abundance. Filamentous or crust forming brown seaweeds may occur mixed with [A. purpurea], often becoming a zone in its own right (AudPil) above the AudCrup biotope. Other shade-tolerant red seaweed such as [Catenella caespitosa] and [Lomentaria articulata] may occur (but at lower abundance), and where freshwater seepage occurs, [Enteromorpha intestinalis] can form patches. Some variation in the species composition of the individual caves must be expected depending on local conditions. [A. purpurea] can be the only seaweed present in caves on the Thanet coast in south-east England. This biotope is known to occur in hard rock c
[Verrucaria mucosa] and/or [Hildenbrandia rubra] on upper to mid shore cave walls	The upper walls and ceilings of the entrances and inner reaches of upper shore caves affected by direct wave action (and therefore moistened by sea spray), characterised by a mosaic of the olive green lichen [Verrucaria mucosa] and the non-calcified encrusting red alga [Hildenbrandia rubra]. The black lichen [Verrucaria maura] and red coralline algae can be present, though not dominating. The fauna in these upper shore caves is generally limited, due to problems of desiccation. However, where conditions remain sufficiently moist, and particularly in crevices and fissures, the barnacle [Semibalanus balanoides], the limpet [Patella vulgata] and winkles [Littorina saxatilis] may occur, particularly towards the rear of the cave. Although the characterising species of this biotope also occur on the shore, they do not generally occur in a distinct band other than in moist dark caves. The turf-forming red seaweed [Audouinella purpurea] may occasionally occur in low abundance (where [A. purpurea] covers an extensive area, generally on softer rock such as chalk, the biotope should be recorded as
[Baldellia] shore swards	Communities of the shores of shallow oligotrophic pools of the Atlantic domaine of Europe susceptible to prolonged summer desiccation, usually developed on peaty or parapeaty soils, dominated by, or rich in [Baldellia ranunculoides], with [Hydrocotyle vulgaris], [Hypericum helodes]. They are recorded, in particular, from the Paris Basin, Normandy, the New Forest, Cornwall, southern Scandinavia, and, on the shores of of limestone pools, in the Burren of western Ireland.
Shore hairgrass swards	[Deschampsia littoralis] agg. formations of peri-Alpine lakes.
Mediterraneo-Atlantic amphibious communities	Perennial and annual communities of mediterranean, thermo-Atlantic and Macaronesian temporary ponds, river banks and spring sides. Vegetation mainly from the class [Isoeto-Nanojuncetea].

Short Mediterranean amphibious communities	Formations of Mediterranean, thermo-Atlantic and Macaronesian entirely or partially summer-dry ponds, pools and ditches with [Isoetes] spp., [Marsilea quadrifolia], [Marsilea strigosa], [Pilularia globulifera], [Pilularia minuta], [Mentha pulegium], [Lythrum hyssopifolia] s.l., [Trifolium filiforme], [Peplis erecta], [Teucrium cravense], [Serapias lingua], [Juncus bufonius], [Juncus capitatus], [Juncus pygmaeus], [Juncus fasciculatus], [Scirpus savii], sometimes (rocky edges of fast rivulets), [Spiranthes aestivalis] and [Anagallis tenella].
Terrestrial quillwort communities	[Isoetes histrix], [Isoetes durieui] formations of Mediterranean ephemeral waters.
Mediterranean aquatic quillwort swards	Communities formed by [Isoetes boryana], [Isoetes delilei], [Isoetes heldreichii], [Isoetes velata], [Isoetes azorica] or [Isoetes malinverniana] in fluctuating waterbodies.
Azorean quillwort swards	Endemic [Isoetes azorica] communities of pools and small lakes of the Azores.
Mediterranean small galingale swards	Mediterranean and thermo-Atlantic formations dominated by [Cyperus fuscus], [Cyperus flavescens] or [Cyperus michelianus].
Mediterranean [Fimbristylis] swards	Formations dominated by [Fimbristylis bisumbellata], often with [Cyperus] spp., in particular, [Cyperus flavescens].
Mediterranean [Chaetopogon] swards	Formations dominated by [Chaetopogon fasciculatus].
Bog pimpernell-summer lady's tresses communities	Formations of the sandy, rocky edges of rivulets of the Mediterranean region.
Mediterranean amphibious small herb communities	Formations of Mediterranean temporarily inundated or wet terrain, including karstic pools, often highly ephemeral, dominated by annual small herbs, among which [Elatine] spp. ([Elatine macropoda], [Elatine gussonei], [Elatine pedunculata]), [Damasonium bourgaei], [Nananthea perpusilla], [Morisia monanthos], [Blackstonia perfoliata], [Samolus valerandi], [Radiola linoides], [Myosurus minimus], [Laurentia gasparrinii], [Laurentia tenella].
Mediterranean dwarf [Scirpus] swards	Formations of the Mediterranean basin occupying temporarily inundated or wet terrain, dominated by small club-rushes of section [Isolepis] ([Scirpus setaceus], [Scirpus pseudosetaceus], [Scirpus cernuus]).
Mediterranean [Eleocharis] swards	Formations of temporarily inundated or wet terrain, dominated by spike-rushes ([Eleocharis palustris]), accompanied by small annual herbs and grasses.
Tall Mediterranean amphibious communities	Formations of Mediterranean and thermo-Atlantic entirely or partially summer-dry ponds, pools, ditches and springs, developed on terrain covered by deep waters during long periods, composed of an admixture of small annuals and of tall perennials or annuals, in particular, of genera [Mentha] ([Mentha cervina], [Mentha longifolia]) and [Eryngium] ([Eryngium corniculatum]).
Mediterranean amphibious crypsis swards	Slighly halophile and nitrophile post-estival vegetation of temporarily inundated terrains, with [Crypsis schoenoides], [Crypsis aculeata], [Crypsis alopecuroides] and [Centaurium spicatum].

Central Eurasian amphibious communities	Annual dwarf sedges, rushes and [Elatine] spp. communities of recently emerged muds and sands, characteristic of the Pannonic plain, the Black Sea lowlands and adjacent areas of the Balkan peninsula, outside of the Mediterranean influence. Communities of units C3.511 and C3.513 occur locally in the same region.
Ponto-Pannonic riverbank dwarf sedge communities	Communities of nitrogen-rich muds and inundation zones of watercourses and lakes of the western central Eurasian steppe and pre-steppe zones, in particular of Pannonic and sub-Pannonic plains and hills, with [Cyperus fuscus], [Cyperus flavescens], [Cyperus michelianus] ([Dichostylis michelianus]), [Juncus bufonius], [Echinochloa crus-galli], [Filaginella uliginosa] ([Gnaphalium uliginosum]), [Elatine hungarica], [Ammannia verticillata].
Ponto-Pannonic rice-field dwarf sedge communities	Communities of rice field muds and of river and lake inundation zones of the western central Eurasian steppe and pre-steppe zones, distributed in particular in the Pannonic region, Russia, the Balkans and central Asia, with [Elatine hungarica], [Elatine triandra], [Eleocharis acicularis], [Scirpus supinus], [Lindernia procumbens], [Peplis portula], [Marsilea quadrifolia].
Ponto-Pannonic halo-nitrophile amphibious swards	Communities of the western central Eurasian steppe and pre-steppe zones, extending from Pannonic and sub-Pannonic plains and hills to the Caucasus, developed on clayey, nitrogen-rich saline or somewhat saline soils. Characteristic species include [Lythrum hyssopifolia], [Lythrum tribracteatum], [Lythrum linifolium], terrestrial forms of [Elatine alsinastrum], [Elatine triandra], [Elatine hydropiper], [Elatine hungarica], [Mentha aquatica], [Hippuris vulgaris] and crowfoots of subgenus [Batrachium].
Dwarf spike-rush ([Eleocharis]) beds of inland saline and brackish waters	Emergent [Eleocharis parvula] or [Eleocharis acicularis] formations of brackish lakes and inland seas, their inlets, estuaries, lagoons, mud or sand flats, and other inland brackish waterbodies.
Watercress beds	Inundated or inundatable fields used for the cultivation of forbs, in particular, watercress, [Nasturtium officinale] ([Rorippa nasturtium-aquaticum]). Low-growing communities, at maximum 20 cm tall, which may be open or closed.
Periodically inundated shores with pioneer and ephemeral vegetation	Muddy, sandy and gravelly shores and dried-up bottoms of lakes and rivers, with moderate cover of vascular plants. These include annuals (e.g. [Bidens] spp., [Cyperus] spp., [Persicaria] spp.), developing during the exposure phase as well as perennials tolerant of temporary total immersion.
Euro-Siberian dwarf annual amphibious swards	Dwarf oligo-mesotrophic annual communities of recently emerged muds and sands of the nemoral, boreonemoral and boreal regions. Terrestrial forms of amphibious species and annual species are frequent. A dynamic habitat, and several aspects can occur during the vegetation cycle. If the substrate is sufficiently wet, and also in advanced successional stages, the moss layer is abundant. Typical species are [Juncus bufonius], [Cyperus fuscus], [Cyperus flavescens] and other species from vegetation of class [Isoeto-Nanojuncetea].

Freshwater dwarf spike-rush communities	Rare communities colonising the fluid muds of drying ponds of nemoral, boreonemoral, boreal, and, locally, steppic, Palaearctic Eurasia, characterised by [Eleocharis ovata], [Eleocharis carniolica], [Carex bohemica], [Lindernia procumbens], [Scirpus supinus], [Limosella aquatica], [Cyperus fuscus], [Peplis portula], [Juncus tenageia], [Elatine hexandra], [Elatine hydropiper], and [Coleanthus subtilis]; the latter species has a highly disjunct distribution, principally in western France, the Czech Republic and adjacent southeastern Germany and northern Austria, the Lake Ladoga region of Russia and Amurland.
Dune-slack centaury swards	Pioneer formations of humid calcareous sands of Atlantic and sub-Atlantic Europe, recorded from the North Sea coasts of northern France, Belgium, the Netherlands, England, Germany and Denmark, and from the Baltic coast of Germany, with [Samolus valerandi], [Centaurium littorale], [Centaurium erythraea], [Centaurium pulchellum], [Gentianella amarella], [Blackstonia perfoliata], [Juncus bufonius], characteristic of humid dune slacks and dune pool fringes, on soils with low salinity.
Dwarf toad-rush communities	Associations, often very limited in extent, appearing in the drying phase of temporary pools, flooded ruts of forest paths, wet heath paths, humid forest cuts, seeping mowed lawns and other sufficiently lit temporarily inundated, most often acidic, soils of nemoral, boreonemoral, boreal, and, locally, steppic, Palaearctic Eurasia, characterised by [Juncus bufonius], [Scirpus setaceus], [Cyperus flavescens], [Centunculus minimus], [Spergularia segetalis], [Centaurium pulchellum], [Blackstonia perfoliata], [Samolus valerandi], [Cicendia filiformis], [Radiola linoides] and [Illecebrum verticillatum].
Toad-rush swards	Communities of temporary pools, flooded ruts of forest paths, and other sufficiently lit temporarily inundated or moist soils of nemoral, boreonemoral and boreal Palaearctic Eurasia dominated by [Juncus bufonius].
Small galingale swards	Medio-European communities dominated by the annual galingales [Cyperus flavescens], [Cyperus fuscus] and [Cyperus michelianus].
Wet ground dwarf herb communities	Varied communities, some very rare and threatened, of small annuals of wet ground of nemoral and boreonemoral Palaearctic Eurasia.
[Bidens] communities (of lake and pond shores)	Dense, taller annual communities (usually up to maximum height 100 cm) colonizing nitrogen-rich muds of dry ponds and lakes of the boreal and nemoral zones of the Palaearctic, and locally of the Eurasian steppe zone. Dominants are [Bidens] spp., [Rorippa palustris], [Rorippa islandica], [Chenopodium] spp., [Polygonum] spp., [Rumex maritimus], [Rumex palustris], [Ranunculus sceleratus], [Senecio congestus], [Catabrosa aquatica] and [Leersia oryzoides].
Euro-Siberian annual river mud communities	Pioneer formations of tall annuals colonizing nitrogen-rich muds of lowland rivers of boreal and nemoral zones, and locally of the Eurasian steppe zone, occurring also in Mediterranean region, with [Bidens] spp., [Rorippa] spp., [Chenopodium] spp., [Polygonum] spp. and [Xanthium] spp.
Boreo-arctic river mud communities	Communities colonizing fine material deposits of low arctic and northern boreal rivers and springs of the Palaearctic region.

Sparsely vegetated river gravel banks	Vascular plant communities occupying gravel deposits of rivers, including pioneer vegetation and subsequent stages in the colonization sequence. Early-stage communities of Alpide, boreal and Mediterranean watercourses are specialised, those of nemoral lowlands and hills are related to other formations, in particular those of unit E3. Vegetation communites of e.g. [Thlaspietea rotundifolii] – [Glaucion flavi] and [Salicion eleagno-daphnoidis], with the most typical species [Caltha palustris ssp. laeta], [Salix elaeagnos], [Salix purpurea] and [Poa trivialis].
Boreo-alpine stream gravel habitats	Open assemblies of herbaceous or suffrutescent pioneering plants, rich in alpine species, colonizing gravel beds of Palaearctic streams with an alpine, summer-high, flow regime, formed in northern boreal and lower arctic mountains, hills and sometimes lowlands, as well as in the alpine and subalpine zones of higher, glaciated, mountains of more southern regions, sometimes with abyssal stations at lower altitudes.
Montane river gravel habitats	Open or closed assemblies of herbaceous or suffrutescent pioneering plants, colonizing, within the montane or submontane levels, gravel beds of streams with an alpine, summer-high, flow regime, born in high mountains of the Alpine system.
River gravel chondrilla communities	Open and often unstable assemblies of herbaceous or suffrutescent pioneering plants, rich in casual immigrants from higher altitudes, colonizing gravel beds of the montane reaches of unregulated Alpine streams, with [Chondrilla chondrilloides], often accompanied by [Erucastrum nasturtiifolium], [Gypsophila repens], [Dryas octopetala], [Aethionema saxatile], [Epilobium dodonaei], [Erigeron acer], [Leontodon berinii], [Buphthalmum salicifolium], [Euphorbia cyparissias], [Fumana procumbens], [Agrostis gigantea], [Anthyllis vulneraria ssp. alpestris], [Campanula cochlearifolia], [Hieracium piloselloides], [Calamagrostis pseudophragmites], [Conyza canadensis], [Pritzelago alpina], and seedlings of [Salix elaeagnos], [Salix purpurea], [Salix daphnoides] and [Myricaria germanica]. Because of widespread interference with natural flow regimes, these formations are gravely endangered.
Small-reed river gravel communities	Closed or lacunar assemblies of often large herbaceous or suffrutescent pioneering plants colonizing montane and submontane gravel beds loaded with finer sands or silts of unregulated streams of the Alpine system and its vicinity. [Calamagrostis pseudophragmites] is usually dominant, seedlings of montane and dealpine willows, characteristic of 24.2221, often absent.
Carpatho-Alpine small-reed river gravel communities	[Calamagrostis pseudophragmites]-dominated communities of rivers originating in the Alpine and Carpathian arcs complex. Characteristic plants include [Epilobium dodonaei], [Agrostis gigantea], [Phalaris arundinacea], [Tussilago farfara]. Like those of unit 24.2221, these communities are gravely threatened by widespread watercourse alterations affecting natural flow regimes.
Pyreneo-Cantabric small-reed river gravel communities	Assemblies of herbaceous or suffrutescent pioneering plants colonizing gravel beds of streams with an alpine, summer-high, flow regime in the montane zone of the Pyrenees and the Cantabrian chain, with [Calamagrostis pseudophragmites] and [Erucastrum nasturtiifolium].

Figwort river gravel communities	Thermophile pioneer communities of river gravels, mostly characteristic of the upper Rhine, with [Scrophularia canina], [Epilobium dodonaei], [Hieracium piloselloides], [Silene prostrata], [Inula conyza], [Centaurea stoebe ssp. stoebe], [Arenaria serpyllifolia], [Echium vulgare], [Salix elaeagnos] seedlings.
Ponto-Caucasian river gravel communities	Open or closed assemblies of herbaceous or suffrutescent pioneering plants, colonizing, within the montane or submontane levels, gravel beds of streams with an alpine, summer-high, flow regime, born in the high Ponto-Caucasian mountains.
Mediterranean river gravel habitats	Communities colonizing gravel deposits of Palaearctic rivers with a Mediterranean, summer-low, flow regime, with, in particular, [Myricaria germanica], [Erucastrum nasturtiifolium], [Glaucium flavum], [Oenothera biennis].
Northern lowland river gravel communities	Communities, less specialised than those of high mountain, boreo-arctic and Mediterranean watercourses, colonizing river gravels of lowland and hill rivers of the Palaearctic nemoral, boreonemoral and adjacent zones. Precise formations can be indicated by use of codes from unit 3, in particular unit 37.1, and from unit 44.
Unvegetated or sparsely vegetated shores with soft or mobile sediments	Banks of sand, gravel and mud in or by rivers. Gravel by mountain streams. Mud bottoms of dried-up rivers and lakes, including saline lakes. Exposed sand, gravel and mud at the edge of lakes.
Unvegetated river sand banks	Unvegetated sand deposits of streams, occupying the edges of the stream, forming islands in the channel or supporting the arms and rivulets constituting the stream, together with their associated animal communities.
Unvegetated river gravel banks	Unvegetated deposit beds of streams formed of pebbles, gravels, boulders or a mixture of gravels and finer sediments, occupying the edges of the stream, forming islands in the channel or supporting the arms and rivulets constituting the stream, together with their associated animal communities. Corresponding habitats with pioneer or ephemeral vascular vegetation are included in unit C3.55 and their succession leads to willow woodland (G1.11).
Unvegetated river mud banks	Unvegetated silt or mud deposits of streams occupying the edges of the stream, forming islands in the channel or supporting the arms and rivulets constituting the stream, together with their associated animal communities. Later in the succession they are vegetated by species of [Bidens] and [Polygonum] (C3.52, C3.53) or wetland vegetation of unit C3.2 may be established.
Exposed unvegetated freshwater lake sands and shingles	Unvegetated lake-bottoms or lake-shores temporarily exposed by artificial or natural fluctuations of the water level, often important as feeding grounds for migrating waders. Unvegetated lacustrine beaches, formed by wind or wave action. Succession usually leads to habitats of periodically inundated shores with pioneer and ephemeral vegetation (C3.5).
Exposed unvegetated freshwater lake muds	Unvegetated lake-bottoms or lake-shores temporarily exposed by artificial or natural fluctuations of the water level, often important as feeding grounds for migrating waders. Unvegetated lacustrine beaches, formed by wind or wave action.

Exposed unvegetated beaches of inland saline and brackish waters with soft sediments	Unvegetated bottoms or shores of athalassic saline water bodies temporarily exposed by artificial or natural fluctuations of the water level, often covered with salt efflorescences.
Unvegetated or sparsely vegetated shores with non-mobile substrates	Periodically exposed rocks, pavements and blocks beside rivers and lakes, and in the draw-down zone of reservoirs.
Periodically exposed river-bed rocks, pavements and blocks	Hard rock features permanently emerging from, or temporarily uncovered by, Palaearctic water courses.
Periodically exposed lake-bed rocks, pavements and blocks	Hard rock features permanently emerging from, or temporarily uncovered by, Palaearctic lakes. Rocks are either without vegetation or very sparsely vegetated.
Draw-down zones of reservoirs with non-mobile substrates	Temporarily exposed rocky or stony margins of reservoirs. Ephemeral vegetation or temporary animal communities depend on the regime and dynamics of the water level in the reservoir.
Inland spray- and steam-dependent habitats	Spray-washed margins of pools below waterfalls. Steamy margins of geysers and hot springs.
Mires, bogs and fens	Wetlands, with the water table at or above ground level for at least half of the year, dominated by herbaceous or ericoid vegetation. Includes inland saltmarshes and waterlogged habitats where the groundwater is frozen. Excludes the water body and rock structure of springs (C2.1) and waterlogged habitats dominated by trees or large shrubs (F9.2, G1.4, G1.5, G3.D, G3.E). Note that habitats that intimately combine waterlogged mires and vegetation rafts with pools of open water are considered as complexes.
Raised and blanket bogs	Peatlands formed by ombrotrophic acid peat, which is (or was while actively growing) capable of growth fed by rainfall rather than by the inflow of water from higher ground in the vicinity.
Raised bogs	The mire surface and underlying peat of highly oligotrophic, strongly acidic peatlands with a raised centre from which water drains towards the edges. The peat is composed mainly of sphagnum remains. Raised bogs form on nearly flat ground and derive moisture and nutrients only from rainfall (ombrotrophic). Raised bog complexes (X04) include larger bog pools (C1.46) and a marginal lagg (C1.47), as well as the main mire surface (D1.1), which in actively-growing raised bogs typically comprises a complex of low hummocks, small pools and their associated vegetation. Raised bogs form only in cool climates with high rainfall. They are most widespread in the boreal zone and in the mountains and hills of the nemoral zone; they occur locally in the lowlands of the nemoral zone. They are characteristic of lowlands and hills of northwestern and northern Europe, the adjacent Hercynian ranges, the Jura, the Alps and the Carpathians. Bogs harbour, in addition to sphagna, which are often abundant, a small number of vascular plants such as [Eriophorum vaginatum], [Scirpus cespitosus] ([Trichophorum cespitosum]), [Carex pa

Active, relatively undamaged raised bogs	Undisturbed, or little disturbed, peat-forming bogs, often taking the shape of a convex lens. Such intact or nearly intact systems have become very rare or even exceptional. They are composed of a number of communities, which form and occupy the topological features of the bog. These communities are interrelated and function as a unit (part of complex X04), so that they cannot be regarded as separate subhabitats; their presence and combination, however, characterizes the various types of bogs. The subunits thus contribute to a description of individual bog systems. Vegetation of alliances [Oxycocco-Empetrion hermaphroditi], [Sphagnion medii] and [Sphagnion cuspidati]. Typical species in the herb layer [Eriophorum vaginatum], [Oxycoccus palustris], [Vaccinium] spp.; in the moss layer dominance of genus [Sphagnum] spp., e.g. [Sphagnum cuspidatum], [Sphagnum fallax], [Sphagnum palustre] and [Sphagnum magellanicum] among others.
Raised bog hummocks, ridges and lawns	Vegetation of the higher parts of the plateau of Palaearctic bogs and of its drier, marginal slope. Intact, typical, raised bogs of northern, lowland and low montane central and eastern Europe display an alternance of well-marked sphagnum hummocks, colonized or not, especially in their drier upper part, by small shrubs, lower, wetter, flat lawns and wet hollows or schlenken. Sphagnum hummocks with no, or few, shrubs are listed in unit 51.111, sphagnum hummocks, or parts of them, colonized by shrubs in unit 51.113, lawns in unit 51.112. In bogs under strong oceanic influence, in high-altitude bogs, in bogs subjected to minerotrophic influences or anthropogenic degradation, a sparse cover of shrubs or tussock-forming graminoids may become ubiquitous and the distinction between hummock and lawn, or even between hummock, lawn and hollow, blurred, in bogs that are often somewhat intermediate towards blanket bogs. Such communities are listed in units 51.114 to 51.116, as well as in 51.17 and in 51.2; in some of them sphagna may be scarce or replaced by bryopsid mosses. Well-defined sphagnum hummoc
Colourful sphagnum hummocks (bulten)	Cushiony domes or buttes of Palaearctic bogs, mainly made of red, yellow or brown sphagna, with other mosses, in particular, [Campylopus pyriformis] ([Campylopus fragilis var. pyriformis]), liverworts, including [Odontoschisma sphagni], [Mylia anomala], lichens ([Cladonia] spp., [Cladina] spp.), [Andromeda polifolia], [Vaccinium oxycoccos], [Drosera rotundifolia], and a small admixture of vascular plants characteristic of the lawn, such as [Eriophorum vaginatum], [Carex pauciflora], [Scirpus cespitosus], or of dwarf shrub hummocks, in particular, [Calluna vulgaris], [Ledum palustre], [Erica tetralix], communities which are, in any case, usually closely associated with these.
[Sphagnum magellanicum] hummocks	Bog hummocks formed by the swollen-leaved, brownish or greenish-red [Sphagnum magellanicum], characteristic of suboceanic bogs, notably of bogs of the Danish archipelago, of sub-Atlantic Scandinavia in southeastern Norway and western Sweden, of northern Central Europe, of the southeastern Baltic lowlands, of the middle European Hercynian ranges, from the Ardennes, the Central Massif, the Vosges, the Black Forest east to the Bohemian Quadrangle, of the northern pre-Alpine plateaux and the Alps south to the southern Alps, of Amurland, also reported from the subalpine level of the Altai.

[Sphagnum fuscum] hummocks	Shiny brown [Sphagnum fuscum] hummocks, dense, usually low and wide, characteristic of bogs of subcontinental boreal Europe from southeastern Norway, central and eastern Sweden eastwards, of continental boreal Europe and western Siberia, of Kamchatka, of Sakhalin, of nemoral Central Europe and of boreonemoral Eastern Europe, of the Alps and the Carpathians, occasionally prominent in more western, more Atlantic, bogs, in particular, in the British Isles, also occurring as ombrotrophic bog hummocks within acidic or neutrocline mires of the same regions.
[Sphagnum rubellum] hummock wreaths	Dark red [Sphagnum rubellum] ([Sphagnum capillifolium var. rubellum]) communities often encircling the bases of [Sphagnum magellanicum] or [Sphagnum fuscum] hummocks of nemoral European bogs.
[Sphagnum rubellum] hummocks	Hummocks of western Palaearctic bogs, mostly characteristic of Atlantic to sub-Atlantic nemoral bogs, recorded, in particular, from Jutland and southwestern Norway, the British Isles, the eastern Netherlands, eastern and southeastern Belgium, France, Germany and the Alps, dominated by [Sphagnum rubellum] ([Sphagnum capillifolium var. rubellum]).
[Sphagnum imbricatum] hummocks	Often tall, large, dense hummocks of European bogs formed by the large, orange-gold [Sphagnum imbricatum], limited to undisturbed bogs in areas of strong maritime influence, in particular, in the British Isles, southwestern Sweden, Hercynian Belgium, northwestern Germany, formerly common, today rare and increasingly so.
[Sphagnum papillosum] hummocks	Low hummocks of olive-brown or ocre [Sphagnum papillosum], formed mostly in bogs of western and northern Europe, in particular, of the British Isles, Denmark, northwestern Germany, the Netherlands, Belgium. Outside of bogs, [Sphagnum papillosum] hummocks may form in a variety of mires, particularly in Atlantic regions.
[Sphagnum capillifolium] hummocks	Hummocks of Palaearctic bogs formed by the reddish [Sphagnum capillifolium] ([Sphagnum capillifolium var. capillifolium]), known, in particular, from the southeastern Baltic coastal regions, from higher levels of the western and central European Hercynian ranges, from the Alps and from the Pyrenees.
[Sphagnum angustifolium] hummocks	Hummocks of Palaearctic bogs formed by [Sphagnum angustifolium], recorded, in particular, from northeastern Europe and France.
Bog cottonsedge-sphagnum lawns and green hummock bases	Communities dominated by [Eriophorum vaginatum] and sphagna, in particular, green or yellow [Sphagnum cuspidatum], [Sphagnum recurvum] ([Sphagnum apiculatum], [Sphagnum fallax]), [Sphagnum pulchrum], [Sphagnum papillosum], [Sphagnum balticum], [Sphagnum tenellum], also [Sphagnum magellanicum], [Sphagnum rubellum], [Sphagnum fuscum] and others, constituting extensive carpets or lawns, or, sometimes with a lesser prominence of [Eriophorum vaginatum], forming in the transition zone between hollows and hummocks of Palaearctic bogs; [Drosera rotundifolia], [Andromeda polifolia], [Vaccinium oxycoccos] are often common.

[Eriophorum-Sphagnum tenellum] lawns	Communities of bog lawns and of areas intermediate between hollows and hummocks in which often small loose cushions of [Sphagnum tenellum] dominate the ground layer, usually in association with [Sphagnum balticum], [Sphagnum rubellum], [Sphagnum papillosum], [Sphagnum subnitens], and with an emergent layer of [Eriophorum vaginatum], characteristic, in particular, of Finland, the southeastern Baltic coastlands, also recorded from Scandinavia, Britain and Ireland.
[Eriophorum-Sphagnum pulchrum] lawns	Hollow-side and lawn communities of Palaearctic bogs dominated by the bright orange [Sphagnum pulchrum] associated with [Eriophorum vaginatum], recorded, in particular, from northwestern Central Europe, Ireland and western Britain.
[Eriophorum-Sphagnum papillosum] lawns	Lawns and hummock-to-hollow transition communities of Palaearctic bogs dominated by [Sphagnum papillosum] associated with [Eriophorum vaginatum], most characteristic of maritime and submaritime regions of the western and eastern Palaearctic, often constituting the dominant lawn community in Atlantic and sub-Atlantic bogs of nemoral Europe. [Erica tetralix] is a usual member of the community in western regions; when its cover exceeds that of [Eriophorum vaginatum] the stands should be listed under unit 51.115. In boreal Europe [Sphagnum papillosum] carpets are more characteristic of minerotrophic acidic fens than of bogs.
[Eriophorum-Sphagnum capillifolium] lawns	Lawns of Palaearctic bogs dominated by [Eriophorum vaginatum] associated with [Sphagnum capillifolium] ([Sphagnum capillifolium var. capillifolium]).
[Eriophorum-Sphagnum recurvum] lawns	Lawns of Palaearctic bogs dominated by [Eriophorum vaginatum] associated with [Sphagnum recurvum], often highly prevalent in moderately wet bogs of nemoral Central Europe and Hercynian Western Europe. In boreal Europe, [Sphagnum recurvum] communities are mostly limited to fens.
[Eriophorum-Sphagnum fuscum] lawns	Lawns of Palaearctic bogs dominated by [Eriophorum vaginatum] associated with [Sphagnum fuscum] characteristic of subcontinental Fennoscandia, from eastern Sweden eastwards, of the eastern Baltic bog province of western Russia, of the Eastern Carpathians, of western Siberia.
[Eriophorum-Sphagnum rubellum] lawns	Lawns of Palaearctic bogs dominated by [Eriophorum vaginatum] associated with [Sphagnum rubellum] ([Sphagnum capillifolium var. rubellum]) characteristic of relatively maritime climates, recorded, in particular, from southeastern Norway, western Sweden and the Danish archipelago, where [Sphagnum balticum] is a frequent accompanier, and from the Central Massif of France, where [Sphagnum magellanicum] is an associate.
[Eriophorum-Sphagnum balticum] lawns	Lawns of Palaearctic bogs dominated by [Eriophorum vaginatum] associated with [Sphagnum balticum] characteristic of bogs of the nemoral region, in particular, of large areas of Sweden, of Finland, the Baltic States, Russia, western Siberia. Accompaniers include [Scirpus cespitosus], [Eriophorum russeolum], [Sphagnum rubellum], [Sphagnum tenellum], [Sphagnum lindbergii].

[Eriophorum-Sphagnum angustifolium] lawns	Lawns of Palaearctic bogs dominated by [Eriophorum vaginatum] associated with [Sphagnum angustifolium] characteristic of northeastern Europe and eastern Fennoscandia, mostly distributed in northern Karelia, the Lake and Bothnian gulf regions of Finland, rare in Sweden.
[Eriophorum-Sphagnum magellanicum] lawns	Lawns of Palaearctic bogs dominated by [Eriophorum vaginatum] associated with [Sphagnum magellanicum] and [Sphagnum rubellum], sometimes accompanied by [Sphagnum tenellum], [Sphagnum angustifolium], [Sphagnum papillosum], [Sphagnum recurvum], [Sphagnum fuscum] or [Sphagnum warnstorfii], characteristic, in particular, of the British Isles, southern Scandinavia, in Denmark, Norway and southern Sweden, of the northern and southern Alpine piedmont, of the Eastern Carpathians.
Dwarf shrub hummocks	Dwarf shrub communities, mostly ericaceous, forming on the top of drying hummocks of bogs of the nemoral, boreonemoral, lowland boreal and low montane boreal regions of the Palaearctic, often with the moss [Polytrichum strictum], sometimes colonizing sphagnum hummocks forming in fens of the same regions.
Ling dwarf shrub hummocks	[Calluna vulgaris]-dominated shrub hummocks, widespread in the nemoral and boreal zones of the western Palaearctic region, east to the Carpathians and western Siberia, south to the Alpine piedmont and the Pyrenees, most characteristic of Central European and sub-Atlantic Scandinavian bogs, in which [Calluna vulgaris] is often the only dominant hummock shrub.
Cross-leaved heather shrub hummocks	[Erica tetralix]-dominated communities characteristic of the shrub hummocks of Atlantic bogs.
Crowberry shrub hummocks	Shrub hummocks of lowland or low montane Northern Europe, of Western Europe, of lowland Central Europe, the Baltic region, the Hercynian ranges, the Alps, the Northern Carpathians dominated by [Empetrum nigrum] or, in boreal regions, in mountains and in eastern Central Europe, [Empetrum hermaphroditum], characteristic of suboceanic climates, of drier, taller hummocks or of slightly more mineral-influenced bogs of Europe.
[Vaccinium] shrub hummocks	Shrub hummocks of Atlantic and sub-Atlantic lowland or low montane boreal Europe, of the European Hercynian ranges, the Alps, the Pyrenees, the Carpathians, and their periphery, dominated by ericoid shrubs of genus [Vaccinium], mostly [Vaccinium uliginosum], also [Vaccinium vitis-idaea] or [Vaccinium myrtillus], locally, in particular, in Scandinavia and the Alps, associated with [Betula nana].
Labrador tea shrub hummocks	Shrub hummocks of boreonemoral, sub-boreal, lowland boreal and low montane boreal regions of the Palaearctic dominated by [Ledum palustre], most characteristic of subcontinental regions of the southeastern Baltic hinterland, from eastern Germany, Poland, the Baltic States to boreonemoral Russia, and of the southern boreal Far East of Kamchatcka and northern Sakhalin, often marking tall hummocks.
Bog myrtle hummocks	Shrub hummocks dominated by [Myrica gale], of local occurrence in nemoral Atlantic bogs, or by [Myrica tomentosa] in the southern boreal Pacific Far East.

Dwarf birch hummocks	Dwarf shrub hummock communities of nemoral Europe and of the lowland and hill bogs of boreal Europe, west to Fennoscandia and the Baltic States, dominated by, or rich in, [Betula nana]. In nemoral Europe they are limited to isolated enclaves on hills of the Germano-Baltic plains and to rare stations within the greater Hercynian ranges and the Alps, where they represent relict outposts of the communities of unit 51.17, with which they share, in particular, besides [Betula nana], [Vaccinium microcarpum], [Rubus chamaemorus], [Chamaedaphne calyculata].
Cloudberry hummocks	Dwarf shrub hummock communities of subcontinental and continental, lowland or low montane boreal and boreonemoral Europe dominated by, or rich in, [Rubus chamaemorus], associated with [Calluna vulgaris] or with [Empetrum hermaphroditum], [Ledum palustre], [Chamaedaphne calyculata], characteristic, in particular, of eastern Fennoscandia, the southeastern and eastern Baltic regions, Russia, with outposts in the eastern Hercynian ranges, in the Giant Mountains.
Leatherleaf hummocks	Shrub hummocks dominated by [Chamaedaphne calyculata], main shrub hummock type of the continental parts of the boreal and boreonemoral Palaearctic, in European Russia, Siberia, the Russian Far East, with outposts in Baltic regions and the eastern Hercynian ranges.
Bog deergrass communities	[Scirpus cespitosus]-dominated bogs or parts of bogs, mostly characteristic of the subalpine level of Hercynian, pre-Alpine and Alpine ranges.
Bog [Erica-Sphagnum] communities	Bogs or parts of bogs dominated by [Erica tetralix] and [Sphagnum papillosum], characteristic of raised bog systems of Atlantic regions, particularly the British Isles, the low countries, northwestern Germany.
Raised bog species-poor cottonsedge communities	Bogs or parts of bogs overwhelmingly dominated by [Eriophorum vaginatum], with a strongly impoverished species cortège, in particular, with very few sphagna, characteristic of degraded and, in particular, grazed, bog systems of Atlantic regions, notably of the Pennines.
Raised bog hollows (schlenken)	Temporarily or permanently rainwater-filled depressions of bogs, occupied by communities similar to those of larger intermediate mires of units 54.5 or 54.6.
Sphagnum schlenken	Constantly submerged hollows carpeted by floating or bottom-hugging mats of often bright green sphagna, in particular, [Sphagnum cuspidatum], [Sphagnum recurvum], [Sphagnum majus] ([Sphagnum dusenii]), [Sphagnum balticum], sometimes accompanied by bryopsid mosses, in particular, [Drepanocladus fluitans], [Lophozia inflata], and with a vascular cortège that may typically be dominated by [Rhynchospora alba], [Scheuchzeria palustris], [Eriophorum vaginatum], [Eriophorum angustifolium], [Menyanthes trifoliata] or [Carex limosa], and include [Carex paupercula], [Carex pauciflora], [Vaccinium oxycoccos], [Drosera rotundifolia], [Andromeda polifolia].
Mud-bottom schlenken	Temporarily inundated shallow hollows, usually dominated by an often sparse cover of [Rhynchospora alba], with [Rhynchospora fusca], [Scheuchzeria palustris], [Drosera intermedia], [Lycopodiella inundata], sometimes dominated by [Eriophorum angustifolium] or [Eriophorum vaginatum], with a ground cover almost devoid of sphagna and often reduced to algae, in particular, the conjugate [Zygogonium ericetorum].

Raised bog seeps and soaks	Paths of water runoff carving the marginal slope of the bog, carrying water from the centre to the lagg. They are in part colonized by intermediate mire or acid fen vegetation of units 54.5 or 54.4.
Bog asphodel seeps	[Narthecium ossifragum] colonies in seep rivulets, mostly characteristic of western bogs.
Bog myrtle soaks	[Myrica gale] thickets of Atlantic raised bog soaks.
Boreoalpine dwarf-shrub hummocks on raised bogs	Communities of the boreoalpine, subalpine, arctoalpine and northern lowland regions of Iceland, Fennoscandia, the Kola peninsula and the Urals formed by hummocks, banks or plateaux of sphagna or of bryopsid mosses associated with small shrubs, particularly [Betula nana], also [Empetrum hermaphroditum], [Ledum palustre], [Vaccinium uliginosum], [Rubus chamaemorus], accompanied by [Vaccinium oxycoccos], [Eriophorum vaginatum], [Eriophorum angustifolium], [Carex nigra]. They may associate with depressions occupied by lawn, hollow or mud bottom communities; they are prone to a rapid desiccation. They show affinities with blanket bogs of unit 52, in particular, with upland blanket bogs of unit 52.2 and northern boreal blanket bogs of unit 52.4.
Damaged, inactive bogs	Raised bogs subject to drying up or affected by mining (peat extraction), locally with very high anthropogenic pressure. Phragments of alliance [Sphagnion], with species composition similar to unit D1.11, but impoverished by lack of many characteristic species.
Damaged, inactive bogs, dominated by dense purple moorgrass (Molinia])	Drying, mowed or burned bogs invaded by [Molinia caerulea].
Drained raised bogs	No description available.
Ditched raised bogs	No description available.
Condensation mires	No description available.
Bog-myrtle scrub on raised bogs	[Myrica gale] thickets of fringes of fens, drying fens and nascent or regenerating bogs of middle Europe, mostly characteristic of the Atlantic sector and of northeastern Europe.
Wet bare peat and peat haggs on raised bogs	No description available.
Blanket bogs	The mire surface and underlying peat of ombrotrophic peatlands, formed on flat or gently sloping ground with poor surface drainage, in oceanic climates with high rainfall. The mire surface may on flatter ground be very similar to that of a raised bog, with a complex of small pools and terrestrial hummocks. In the strictest sense, blanket bogs are a habitat endemic to northwestern Europe, characteristic of the western and northern British Isles, the Faeroe Islands and the western seaboard of Scandinavia. They often cover extensive areas with local topographic features supporting distinct communities. Sphagna ([Sphagnum papillosum], [Sphagnum tenellum], [Sphagnum compactum], [Sphagnum magellanicum], [Sphagnum rubellum], [Sphagnum fuscum]) play an important role in all of them, accompanied by [Narthecium ossifragum], [Molinia caerulea], [Scirpus cespitosus], [Schoenus nigricans], [Eriophorum angustifolium], [Eriophorum vaginatum] and [Calluna vulgaris]. Blanket bog complexes (X28) include dystrophic pools (C1.4) and acidic flushes (D2.2) as well as the mire surface (D1.2).

Hyperoceanic low-altitude blanket bogs, typically with dominant cotton-grass	Hyper-Atlantic blanket bogs of the western coastlands of Ireland, western Scotland and its islands, Cumberland, northern Wales and Devon, developed under very high rainfall climates. The main vascular plants are [Molinia caerulea], [Eriophorum angustifolium], [Eriophorum vaginatum], [Scirpus cespitosus], [Schoenus nigricans], [Rhynchospora alba], [Narthecium ossifragum], [Carex panicea], [Calluna vulgaris], [Erica tetralix], [Myrica gale], [Pedicularis sylvatica], [Potentilla erecta], [Polygala serpyllifolia], [Pinguicula lusitanica], [Drosera rotundifolia]. The colourful mucinal layer comprises the black and crimson liverwort [Pleurozia purpurea], the black and gold moss [Campylopus atrovirens], the wooly fringe moss [Racomitrium lanuginosum]; it is often dominated by sphagna ([Sphagnum auriculatum], [Sphagnum magellanicum], [Sphagnum compactum], [Sphagnum papillosum], [Sphagnum nemoreum], [Sphagnum rubellum], [Sphagnum tenellum], [Sphagnum subnitens]), or, particularly in parts of western Ireland, mucilaginous algal deposits ([Zygogonium]).
Hiberno-Britannic lowland blanket bog plateaux	Deep-peat lawn and hummock communities of blanket bog expanses of western Ireland, western Scotland and its islands, the Lake District, northern Wales and Devon, composed of graminoids, ericoid shrubs and sphagna, forming extensive, relatively featureless, fairly flat or gently undulating, tracts with a fine-grained alternation of dominance among species or, on bogs with stronger surface undulations, better defined hummocks.
Hiberno-Britannic lowland blanket bog sphagnum carpets	Waterlogged pool edges and bog surfaces of Hiberno-Britannic lowland blanket bogs marked by a scarcity of graminoids and shrubs, and a resulting physiognomic prominence of the sphagna, [Sphagnum magellanicum] or [Sphagnum papillosum], [Sphagnum rubellum], [Sphagnum cuspidatum], [Sphagnum auriculatum], [Sphagnum palustre], at times, particularly in Ireland, with [Zygogonium] algae deposits, often with [Drosera anglica], [Drosera rotundifolia], [Menyanthes trifoliata].
Hiberno-Britannic lowland blanket bog deer-grass heaths	[Scirpus cespitosus]-[Erica tetralix] wet heaths of Hiberno-Britannic lowland blanket bog slopes or tops of slopes, developed on shallower peats, in better drained situations, in more minerotrophic conditions than the communities of unit 52.11. Sphagna are less prominent in the ground layer with, in particular, a lesser prominence of [Sphagnum papillosum].
Western Irish oblong-leaved sundew flush communities	Communities of western Irish lowland blanket bogs occupying slope areas submitted to surface water movement and shallow hollows, rich in [Drosera intermedia], with [Riccardia pinguis], [Rhynchospora fusca] or [Carex limosa].
Western Irish bulbous-rush flush communities	Communities of western Irish lowland blanket bogs occupying shallow drainage channels and shallow pools, rich in [Juncus bulbosus], [Eleocharis multicaulis] and [Carex panicea].
Hiberno-Britannic lowland blanket bog hollows and pools	Wet depressions and seeps of Hiberno-Britannic lowland blanket bogs colonized by hollow communities similar to those of raised bog hollows of unit 51.121 or by other communities of the [Scheuchzerietalia palustris] (units 54.5, 54.6), communities of the [Caricetalia fuscae] (unit 54.4), of the [Utricularietalia intermedio-minoris] (unit 22.45), of the [Littorelletalia] (unit 22.31) or of the [Potamogetonetalia] (unit 22.43).

Montane blanket bogs, heather and cotton-grass often dominant	Blanket bogs of high ground, hills and mountains in Scotland, Ireland, western England and Wales. Characteristic species are [Eriophorum vaginatum], [Calluna vulgaris], [Erica tetralix], [Rubus chamaemorus], [Narthecium ossifragum], [Scirpus cespitosus], [Drosera rotundifolia], [Racomitrium lanuginosum] and abundant sphagnum mosses. Some of their communities show affinities with the boreoalpine hummocks of unit D1.114.
Hiberno-Britannic cotton-grass-heather blanket bogs	Lawn and hummock communities of upland blanket bog expanses of Britain and Ireland, mostly distributed in the Scottish Highlands, the Southern Uplands, the Pennines, the Lake District, Wales, in Orkney, in northern, western, southwestern and upland eastern Ireland, dominated by an admixture of [Eriophorum vaginatum] and ericoid shrubs, with a varying amount of sphagna and hypnoid mosses.
Britannic cotton-grass blanket bogs	Species-poor upland blanket bog lawn communities of the Pennines overwhelmingly dominated by an open or closed canopy of low [Eriophorum vaginatum] tussocks, with few ericoid shrubs and a sparse and patchy ground cover in which sphagna are scarce; the most common vascular associates are usually [Eriophorum angustifolium] and [Deschampsia flexuosa]. They are characteristic of heavily grazed and burned expanses of blanket bog.
Hiberno-Britannic upland blanket bog sphagnum mats	[Sphagnum papillosum], [Sphagnum magellanicum], [Sphagnum rubellum], [Sphagnum imbricatum], [Sphagnum fuscum] carpets and hummocks of the cottonsedge-ling blanket bogs, most characteristic of the moorlands of the Scottish Borders.
Hiberno-Britannic dwarf shrub-cotton-grass upland bogs	Dwarf shrub-rich facies of Hiberno-Britannic upland cottongrass-ling blanket bogs, most characteristic of the eastern Scottish Highlands, with an abundance of [Empetrum hermaphroditum], [Empetrum nigrum], [Betula nana], [Vaccinium uliginosum], [Vaccinium myrtillus], [Arctostaphylos uva-ursi], [Arctostaphylos alpinus] and [Sphagnum fuscum], with particularly close affinities to the boreoalpine hummocks of unit 51.17.
Hiberno-Britannic woolly fringe moss upland bog hummocks	Lawn and hummock communities of Hiberno-Britannic upland blanket bogs dominated by [Racomitrium lanuginosum], mostly characteristic of eroded or dried surfaces.
Hiberno-Britannic upland blanket bog wet heaths	[Erica tetralix] or, at lower altitudes, [Scirpus cespitosus]-[Erica tetralix] wet heaths of Hiberno-Britannic upland blanket bog slopes or tops of slopes, developed on shallower peats, in better drained situations, in more minerotrophic conditions than the communities of unit 52.21. [Eriophorum vaginatum] is less prominent in the sward, and sphagna sparser in the ground cover, while shrubs, [Juncus squarrosus] and [Nardus stricta] are more vigorous or commoner.
Hiberno-Britannic upland blanket bog hollows and pools	Wet depressions and seeps of Hiberno-Britannic upland blanket bogs colonized by hollow communities similar to those of raised bog hollows of unit 51.121 or by other communities of the [Scheuchzerietalia palustris] (units 54.5, 54.6), communities of the [Caricetalia fuscae] (unit 54.4), of the [Utricularietalia intermedio-minoris] (unit 22.45), of the [Littorelletalia] (unit 22.31) or of the [Potamogetonetalia] (unit 22.43). Pools and hollows are less prominent in these blanket bogs than in the western blanket bogs of unit 52.1.

Boreo-Atlantic blanket bogs	Blanket bogs of oceanic southern boreal affinities distributed in maritime western Norway from Rogaland, in the south, north to the Arctic Circle, and in the Faeroe Islands, characterised by the dominance of [Calluna]-[Racomitrium] and [Calluna]-[Sphagnum rubellum] communities. Additionally, blanket bogs of oceanic northern boreal affinities distributed in maritime western Norway, from southern Nordland to central Troms, characterised by the dominance of [Calluna]-[Empetrum]-[Sphagnum fuscum] communities.
Southern boreo-Atlantic cottonsedge - ling bogs	Main bog-surface and hummock communities of southern boreal blanket bogs dominated by [Calluna vulgaris], [Eriophorum vaginatum] and [Sphagnum rubellum], with [Erica tetralix], [Rubus chamaemorus], [Andromeda polifolia], [Vaccinium oxycoccos], [Drosera rotundifolia], [Sphagnum magellanicum].
Southern boreo-Atlantic ling - woolly fringe moss bogs	Bog-surface and hummock communities characteristic of the southernmost southern boreal blanket bogs, in nemoral extreme southern Norway, oceanic southern boreal extreme western Norway, north to southern Tr”ndelag, and in the Faeroe Islands, dominated by [Calluna vulgaris], [Empetrum nigrum], [Racomitrium lanuginosum], with [Cornus suecica], [Rubus chamaemorus], [Vaccinium uliginosum], [Deschampsia flexuosa], [Dicranum elongatum], [Grimmia hypnoides], [Cladonia sylvatica].
Southern boreo-Atlantic blanket bog hollow communities	Hollow vegetation of southern boreal blanket bogs formed by [Sphagnum cuspidatum] and [Sphagnum tenellum], with [Rhynchospora alba], [Scheuchzeria palustris], [Drosera anglica], [Vaccinium oxycoccos], [Andromeda polifolia], [Carex limosa], [Eriophorum vaginatum].
Northern boreo-Atlantic ling - crowberry - [Sphagnum fuscum] blanket bogs	Bog-surface and hummock communities of the northern boreal blanket bogs dominated by [Calluna vulgaris], [Empetrum] spp., [Vaccinium uliginosum] and [Sphagnum fuscum] with [Andromeda polifolia], [Vaccinium microcarpum], [Drosera rotundifolia], [Betula nana], [Cladonia rangiferina], [Cladonia sylvatica].
Northern boreo-Atlantic blanket bog hollow communities	Hollow vegetation of northern boreal blanket bogs formed by [Sphagnum majus], with [Rhynchospora alba], [Scheuchzeria palustris], [Vaccinium oxycoccos], [Andromeda polifolia], [Carex limosa], [Scirpus cespitosus], [Drepanocladus fluitans].
Wet bare peat and peat haggs on blanket bogs	No description available.
Valley mires, poor fens and transition mires	Weakly to strongly acid peatlands, flushes and vegetated rafts formed in situations where they receive water from the surrounding landscape or are intermediate between land and water. Included are quaking bogs and vegetated non-calcareous springs. Excluded are calcareous fens (D4), and reedbeds (C3, D5).

Valley mires	Topogenous wetlands in which the peat-forming vegetation depends on water draining from the surrounding landscape. Most valley mires are habitat complexes including poor fens, transition mires and pools. Acid valley mires (D2.11) often have vegetation resembling that of bogs (D1), especially in those parts relatively distant from flowing water. Basic and neutral valley mires (D2.12) support mainly poor-fen vegetation (D2.2), but in large mire systems, this is accompanied by acid wet grassland (E3.5), large sedges (D5.2) and reeds (D5.1). Sphagnum hummocks form locally and transition mires (D2.3) or littoral (C3.2) and spring (D2.2C) communities colonize small depressions. Excluded are rich-fen valley mires (D4.1).
Acid valley mires	No description available.
Basic and neutral valley mires	No description available.
Poor fens and soft-water spring mires	Peatlands, flushes and vegetated springs with moderately acid ground water, within valley mires or on hillsides. As in the rich fens, the water level is at or near the surface of the substratum and peat formation depends on a permanently high watertable. Poor-fen vegetation is typically dominated by small sedges ([Carex canescens], [Carex echinata], [Carex nigra], [Eriophorum angustifolium], [Eriophorum scheuchzeri], [Trichophorum cespitosum]), with pleurocarpous mosses ([Calliergonella cuspidata], [Calliergon sarmentosum], [Calliergon stramineum], [Drepanocladus exannulatus], [Drepanocladus fluitans]) or sphagna ([Sphagnum cuspidatum], [Sphagnum papillosum], [Sphagnum recurvum agg]., [Sphagnum russowii], [Sphagnum subsecundum agg].). Other characteristic vascular plants are [Agrostis canina], [Cardamine pratensis], [Juncus filiformis], [Ranunculus flammula] and [Viola palustris]. Soft-water spring mires (D2.2C) are often dominated by [Montia fontana] or bryophytes ([Bryum] spp., [Philonotis] spp., [Pohlia] spp.). Excluded are the water body of soft-water springs (C2.1), and
White cotton grass fens	Swards of [Eriophorum scheuchzeri] of Palaearctic boreal fens and of acidic lake shores in the Alps and the eastern Carpathians.
Alpide cottonsedge lake girdles	Almost pure swards of [Eriophorum scheuchzeri] fringing small, cold, acidic lakes above the tree limit in the Alps and the Eastern Carpathians. They are related to both the boreal communities of unit 54.412 and to the arctoboreal marsh-fens of unit 54.71.
Boreal [Eriophorum scheuchzeri] fens	[Eriophorum scheuchzeri]-dominated fen swards of boreal regions of the Palaearctic domaine, in particular of subalpine to middle alpine levels of the boreoalpine and arctoalpine mountains of Fennoscandia, dominated by [Eriophorum scheuchzeri] associated with a continuous brown moss carpet mostly of [Drepanocladus exannulatus], with [Philonotis fontana], occupying often snow-patch covered, waterlogged substrates. [Carex lachenalii] is characteristic in Fennoscandia; the vascular plant cortège may also include [Calamagrostis stricta], [Cardamine pratensis], [Carex bigelowii], [Deschampsia cespitosa], [Equisetum arvense], [Eriophorum angustifolium], [Juncus biglumis], [Koenigia islandica], [Omalotheca supina] ([Gnaphalium supinum]), [Poa pratensis], [Ranunculus reptans], [Salix herbacea], [Saxifraga stellaris].

Black, white, and star sedge fens	Acidic fen communities of middle Europe, the Alpine system, the Pyrenees and northern Iberia, rich in [Carex nigra], [Carex canescens], [Carex echinata], often accompanied by [Eriophorum angustifolium] and [Juncus] spp., with a muscinal layer of brown mosses, sphagna or both.
Peri-Alpine black-white star and tall bog sedge fens	Acidophilous small sedge communities of the Alps, the Alpine periphery and the greater Hercynian ranges, including the Bohemian Quadrangle, the Black Forest, the Vosges and the Central Massif.
Subalpine black sedge fens	Acidophilous small sedge communities of the alpine and subalpine levels of the Alps and Alpine periphery, including the greater Hercynian ranges of the Bohemian Quadrangle, the Black Forest, the Vosges, the Central Massif, occupying wet gentle slopes and plateaux where melt water lingers or encircling small lakes on the landward, usually emerged, side of the [Eriophorum scheuchzeri] girdle. The sward is formed by [Carex nigra], [Carex canescens], [Carex echinata], [Juncus filiformis] variously accompanied by [Eriophorum angustifolium], [Carex magellanica], [Carex lachenalii], [Carex norvegica], [Carex panicea], [Carex demissa], [Phleum alpinum], [Agrostis canina], [Viola palustris], [Parnassia palustris], [Pedicularis palustris]; the moss layer is formed by [Scapania paludosa], [Paludella squarrosa], [Drepanocladus exannulatus], [Drepanocladus revolvens], [Drepanocladus intermedius], [Calliergon stramineum], [Calliergon sarmentosum], [Willemetia stipitata], [Sphagnum recurvum].
Central Alpine tall bog sedge fens	Acidophilous small sedge communities of the alpine and subalpine levels of the central Alps dominated by [Carex magellanica].
Sub-Atlantic black-white-star sedge fens	Acidic fen communities of lowland, collinar and montane areas of western and northern Central Europe, excluding the British Isles and the Iberian peninsula, extending eastward in the Baltic plain to Lithuania. [Carex nigra], [Carex canescens] and [Carex echinata] are always represented, often accompanied by dispersed [Carex rostrata]. Rushes, [Juncus filiformis], [Juncus articulatus], [Juncus acutiflorus], [Juncus effusus], may be numerous, often marking the transition towards humid grasslands of the [Molinietalia], the moss layer is formed by [Sphagnum apiculatum], [Sphagnum cuspidatum], [Sphagnum recurvum] and [Polytrichum commune] in the more oligotrophic, acidic sites, by brown mosses [Drepanocladus fluitans], [Calliergon stramineum], [Calliergon cuspidatum], in more mesotrophic situations. Other characteristic species include [Eriophorum angustifolium], [Eriophorum vaginatum], [Agrostis canina], [Molinia caerulea], [Pedicularis palustris], [Viola palustris], [Parnassia palustris], [Comarum palustre], [Drosera rotundifolia], [Menyanthes trifoliata], [Ranunculus flammula] and [Willemet
Sub-Atlantic [Carex] acidic fens	Sedge-dominated acidic fen formations in which [Carex canescens], accompanied by [Agrostis canina], is often the most abundant, with a brown moss layer that can sometimes be very partial; [Carex nigra], [Carex echinata] and [Carex magellanica] facies also occur.
Sub-Atlantic [Carex]-[Juncus] acidic fens	Acidic fen formations in which [Carex nigra], [Carex canescens], [Carex echinata] and sometimes [Carex rostrata] are accompanied by, and sometimes dominated by, abundant rushes, in particular [Juncus filiformis] and [Juncus acutiflorus], and with a pleurocarpic moss layer.

Sub-Atlantic [Carex]-[Sphagnum] fens	Sphagnum peatlands in which the herbaceous sward is formed by [Carex nigra], [Carex canescens], [Carex echinata] and [Carex rostrata], generally with [Eriophorum angustifolium] and [Eriophorum vaginatum]. These very wet formations are closely related to transition mires.
Sub-Atlantic [Carex]-[Juncus]-[Sphagnum] fens	Sphagnum peatlands in which the herbaceous sward is formed by [Carex nigra], [Carex canescens], [Carex echinata], [Carex rostrata] and abundant rushes, in particular [Juncus filiformis] and [Juncus acutiflorus], generally with [Eriophorum angustifolium] and [Eriophorum vaginatum]. These formations are often related to wet grasslands.
Sub-Atlantic [Agrostis]-[Sphagnum] fens	Sphagnum peatlands in which the herbaceous sward is formed by [Agrostis canina ssp. stolonifera], often with [Carex rostrata] or [Eriophorum angustifolium]; the muscinal layer being usually formed by [Sphagnum recurvum] with [Polytrichum commune].
British black-white-star sedge acidic fens	Acidic sphagnum fens of the British Isles in which the herbaceous sward is formed by [Carex echinata], [Carex canescens], [Carex nigra] or [Carex rostrata] and sometimes [Juncus effusus], [Juncus acutiflorus] or [Nardus stricta].
Pyrenean black sedge acidic fens	[Carex] acidic fens of the Pyrenees, mostly dominated by [Carex nigra], with [Carex echinata] or [Carex panicea], very similar to those of the Alps, in particular to the floristically rather impoverished southwestern Alpine communities, sometimes dominated by [Carex rostrata], with [Carex canescens] ([Carex curta]) or [Carex echinata] and [Agrostis canina].
Iberian black sedge acidic fens	[Carex nigra ssp. carpetana]-dominated communities of acid infra-aquatic peat mires of the montane and subalpine levels of the Cordillera Cantabrica and of the cryo-Mediterranean level of the Cordillera Central.
Peri-Danubian black-white-star sedge fens	Acidic fens of the mountains and hills forming the basin of the middle and lower Danube system, and of adjacent regions, in particular of the Carpathians, the Dinarides, the mountains of the southeastern Balkan peninsula, the Moravian hills, with an herbaceous sward formed by [Carex echinata], [Carex canescens], [Carex dacica] ([Carex nigra ssp. dacica]) or [Carex rostrata] and sometimes [Juncus effusus], [Juncus acutiflorus] or [Nardus stricta].
Carpathian black-white star sedge acidic fens	[Carex dacica] ([Carex nigra ssp. dacica]) formations developed in the eumesotrophic and acidic fens of the subalpine level of the Eastern and Southern Carpathians.
Dinaric black-star sedge acidic fens	Acidic fen communities of the high mountains of the Dinarides with [Carex nigra], [Carex echinata], [Eriophorum angustifolium], [Agrostis canina], [Molinia caerulea], [Nardus stricta], [Drosera rotundifolia].
Rhodopide black-star sedge acidic fens	Fens of the montane and subalpine levels of the Rhodopide system, including the western Rhodopes and Vitosha.
Peri-Pannonic black-white-star sedge fens	Acidic fens of Central European affinities of the mountains and hills of the Pannonic basin and its rim.
Balkanic black-star sedge fens	Fens of the montane and subalpine levels of the western and central Balkan Range, with [Carex nigra], [Carex stellulata], [Deschampsia cespitosa], [Pinguicula vulgaris], [Drosera rotundifolia], [Sphagnum rubellum], [Soldanella alpina], [Dactylorhiza cordigera], [Leucorchis albida].

Moeso-Macedonian black-star sedge fens	Fens of the montane and subalpine levels of the Moeso-Macedonian mountains, in particular, of the Waldbergen of west Serbia (Tara, Zeljin, Kopaonic) and of the Ostrozum and Vlasina of east Serbia.
Apennine acidic fens	Rare infra-aquatic acidic peat mire communities of the Apennines south to the Sila, with [Carex nigra], [Carex echinata] and [Carex panicea].
Intricated sedge pozzines (wet depressions surrounding glacial lakes)	Oro-Mediterranean [Carex intricata] ([Carex nigra ssp. intricata])-dominated formations of the Sierra Nevada, Corsica, the Nebrodi and North Africa.
Nevadan Borreguile fens	Formations occupying permanently waterlogged peaty soils of glacial depressions and edges of their small lakes, and also waterholes in [Nardus] grasslands, at the oro-Mediterranean level of the Sierra Nevada, dominated by [Carex intricata], with [Carex echinata], [Eleocharis uniglumis], [Viola palustris], [Cerastium cerastoides], [Veronica repens] and Sierra Nevadan endemics [Ranunculus alismoides], [Festuca frigida], [Pinguicula nevadensis], [Leontodon microcephalus].
Corsican intricated sedge pozzines	Peaty swards surrounding waterholes, in particular, glacial lakes, in the subalpine level of Corsica, dominated by [Carex intricata].
Nebrodi pozzines	Isolated [Carex intricata] stations of Mount San Fratello in the Nebrodi mountains of Sicily.
Deergrass and bog asphodel acidic fens	Acidic fen communities dominated by [Scirpus cespitosus] and/or [Narthecium ossifragum].
Perialpine deergrass acidic fens	[Scirpus cespitosus]-dominated communities of subalpine and alpine fens of the Alps, the Vosges, the Black Forest, the Bohemian Quadrangle, generally installed on somewhat drier ground than the [Caricetum fuscae] and providing the transition between it and the wetter fringe of the [Nardus] grasslands.
Pyrenean deergrass and bog asphodel acidic fens	[Scirpus cespitosus]-dominated formations of acidic fens of the Pyrenees, often, particularly in the west, rich in [Narthecium ossifragum], and with [Carex frigida].
Cantabrian deergrass and bog asphodel acidic fens	Subalpine formations of the Cordillera Cantabrica, and, very locally, of the Orensano-Sanabrian mountains and the Cordillera Central, dominated by [Scirpus cespitosus] and [Narthecium ossifragum], usually forming an outer fringe to the [Caricetum carpetani], on somewhat less wet ground. Among companion species are [Carex echinata], [Carex fusca], [Carex binervis], [Drosera rotundifolia], [Erica tetralix].
Middle European deergrass and bog asphodel acidic fens	Communities of lowland and collinar middle European eu-Atlantic or sub-Atlantic acidic fens dominated by [Scirpus cespitosus] or [Narthecium ossifragum].
Corsican deergrass fens	[Scirpus cespitosus]-dominated formations of subalpine pozzines of Corsica, mostly confined to the edge of rivulets.
Common cotton-grass fens	[Eriophorum angustifolium]-dominated swards of usually very wet sites within acidic fens of nemoral Europe, generally with a sphagnum carpet, formed, in particular, by [Sphagnum cuspidatum]; they are closely similar to, and may merge into, [Eriophorum]-[Sphagnum] floating carpets of unit D2.38. Several [Carex] species may be present.

Dunal sedge acidic fens	Formations of [Carex nigra], [Carex trinervis], [Carex x timmiana], [Juncus anceps], [Juncus subnodulosus] and introduced [Vaccinium macrocarpum], restricted to wet, peaty, acidified dune slacks of the North Sea coast of France and the Netherlands and of the Dutch and German North Sea islands. This unit is related to B1.83.
Illyrio-Moesian acidic fens	Acidic fen communities of the Illyrian region, the Dinarides, the Pelagonides, the Moeso-Macedonian mountains. Floristically relatively rich communities dominated by sedge [Carex nigra var. macedonica] (= [C. macedonica]). The Balkan tertiary-relict endemic species [Narthecium scardicum], [Calicocorsus stipitatus] (= [Willemetia stipitata]), [Pinguicula balcanica] and [Pseudorchis frivaldii] may also be present.
Pelagonide fens	Acidic fen communities of the Pelagonides of the F.Y.R. of Macedonia and northern Greece dominated by sedges or bog asphodels ([Narthecium]).
Pelagonide bog-asphodel fens	Acidic fen communities of the Sar-Planina and the Korab in the F.Y.R. of Macedonia with [Carex serotina], [Carex sempervirens], [Nardus stricta], [Parnassia palustris], [Pinguicula leptoceras].
Pelagonide Macedonian sedge fens	Acidic fen communities of the Jakupica and Bistra ranges of the F.Y.R. of Macedonia, and of the Varnous and Voras ranges of northern Greece, dominated by [Carex macedonica].
Montenegrine willemetia fens	Acidic fen communities of the Bjelasica in Montenegro with [Carex nigra], [Eriophorum angustifolium], [Willemetia stipitata f. balcanica], [Barbarea balcana].
Illyrian sedge-beak-sedge fens	Acidic fen communities of the Illyrian region with [Carex nigra], [Carex echinata], [Carex flava], [Eriophorum angustifolium], [Agrostis canina], [Rhynchospora alba], similar to Central European black-white-star sedge fen communities with an enrichment in [Rhynchospora alba].
Boreal acidic sphagnum fens	Oligotrophic or oligo-mesotrophic acidic and acidocline fen communities of the boreal, boreonemoral and boreoalpine regions of the western Palaearctic dominated by [Eriophorum vaginatum], [Eriophorum angustifolium], [Scirpus cespitosus], [Molinia caerulea], or various sedges, in particular, [Carex bigelowii] ([Carex rigida]), [Carex rotundata], [Carex magellanica], [Carex rariflora], [Carex rostrata], [Carex limosa], [Carex pauciflora], [Carex lasiocarpa], associated with sphagnum carpets formed by, in particular, [Sphagnum papillosum], [Sphagnum angustifolium], [Sphagnum compactum], [Sphagnum magellanicum], [Sphagnum balticum], [Sphagnum lindbergii].
Boreal [Eriophorum vaginatum] sphagnum fens	Species-poor poor fen lawn communities of the Palaearctic domaine, in particular, of northern and western Fennoscandia, dominated by [Eriophorum vaginatum], with a ground layer formed by sphagna, notably [Sphagnum magellanicum], [Sphagnum papillosum]. The very reduced species cortège may include [Andromeda polifolia], [Carex pauciflora], [Drosera rotundifolia], [Vaccinium oxycoccus].

[Eriophorum vaginatum-Carex pauciflora] sphagnum fens	Species-poor poor fen lawn communities of the Palaearctic domaine, in particular, of most of Fennoscandia, dominated by [Eriophorum vaginatum] and [Carex pauciflora], with a ground layer dominated by [Sphagnum magellanicum], [Sphagnum angustifolium], accompanied by [Sphagnum papillosum], and sometimes hummocks of [Sphagnum fuscum]; [Andromeda polifolia], [Drosera rotundifolia], [Vaccinium oxycoccos] or [Carex pauciflora] may be present.
[Eriophorum vaginatum]-deergrass-sphagnum fens	Species-poor poor fen lawn communities of the Palaearctic domaine, in particular, of northern and western Fennoscandia, dominated by [Scirpus cespitosus] ([Trichophorum cespitosum]) and [Eriophorum vaginatum], with a ground layer dominated by [Sphagnum papillosum], [Sphagnum compactum] or [Sphagnum balticum], with [Sphagnum magellanicum], [Sphagnum rubellum], [Sphagnum tenellum]; the species cortège includes [Andromeda polifolia], [Drosera rotundifolia], [Menyanthes trifoliata], [Myrica gale], [Vaccinium oxycoccos], [Carex pauciflora].
Boreal stiff sedge-sphagnum fens	Species-poor poor fen lawn communities of boreal mountains of the Palaearctic domaine, in particular, of the lower alpine zone of western and northern boreal Fennoscandia, dominated by [Carex bigelowii], with a lawn formed of an often continuous sphagnum-dominated carpet of [Sphagnum compactum], [Sphagnum balticum] and [Calliergon sarmentosum]; the scanty species cortège includes [Salix herbacea], sometimes also [Betula nana], [Empetrum hermaphroditum], [Rubus chamaemorus], [Eriophorum angustifolium]. These communities usually cover small surfaces, notably of hollows, of nutrient deficient substrates, often encroaching on snow-patch communities.
Boreal purple moorgrass-deergrass fens	Fen lawn communities of the western Palaearctic dominated by [Molinia caerulea], [Scirpus cespitosus ssp. cespitosus] ([Trichophorum cespitosum]), with a continuous sphagnum-dominated ground layer.
Boreal purple moorgrass-deergrass-sphagnum fens	Fen lawn communities of the western Palaearctic, in particular, of the mountains of Fennoscandia, of central Finland, southern Sweden and Denmark, and of the Faeroe Islands, dominated by [Molinia caerulea], [Scirpus cespitosus ssp. cespitosus] ([Trichophorum cespitosum]), [Narthecium ossifragum] with [Myrica gale], with a sphagnum carpet mainly of [Sphagnum papillosum] and [Sphagnum compactum]; These communities occur on strings and, in mountainous areas, in mire margins and along soaks. The species cortège includes, among others, [Carex dioica], [Carex echinata], [Eriophorum vaginatum], [Selaginella selaginoides], [Viola palustris], [Calliergon stramineum], [Drepanocladus badius]. Communities of the Faeroe Islands lack [Sphagnum compactum] and [Myrica gale]; they may be dominated by [Eriophorum angustifolium].

Boreal purple moorgrass-deergrass-brown moss-sphagnum fens	Fen lawn communities of boreal regions of the Palaearctic domaine, in particular, of boreal Fennoscandia, dominated by [Scirpus cespitosus ssp. cespitosus] ([Trichophorum cespitosum]), [Molinia caerulea], with [Myrica gale] and [Carex lasiocarpa], and a sphagnum and brown moss carpet mainly of [Sphagnum papillosum], accompanied by [Sphagnum angustifolium], [Sphagnum imbricatum], [Sphagnum plumulosum], [Sphagnum subfulvum], [Sphagnum subsecundum], [Sphagnum teres], [Sphagnum warnstorfii], [Calliergon sarmentosum], [Campylium stellatum], [Drepanocladus badius]. The species cortège, which typically comprises some rich fen species, may include [Andromeda polifolia], [Carex chordorrhiza], [Carex dioica], [Menyanthes trifoliata], [Parnassia palustris], [Pinguicula vulgaris], [Selaginella selaginoides], [Tofieldia pusilla], [Eriophorum vaginatum], [Phragmites australis], [Scirpus hudsonianus] ([Trichophorum alpinum]).
Boreoalpine [Sphagnum lindbergii] mires	Mire communities of boreal regions of the Palaearctic domaine with a sphagnum ground layer dominated by [Sphagnum lindbergii] and a field layer dominated by sedges of [Carex] spp., [Scirpus cespitosus] or [Eriophorum] spp.
Sedge and cottongrass boreoalpine [Sphagnum lindbergii] mires	Mire communities of boreal regions of the Palaearctic domaine, in particular of the subalpine and lower alpine levels of Fennoscandian mountains, with a sphagnum ground layer dominated by [Sphagnum lindbergii] and/or [Sphagnum majus] with a field layer dominated by any of several Cyperaceae, [Carex lasiocarpa], [Carex limosa], [Carex pauciflora], [Carex rariflora], [Carex rostrata], [Carex rotundata], [Carex magellanica] or [Eriophorum angustifolium], occupying sites in slightly inclined or flat fens with nutrient deficient, low pH stagnant waters. Vascular accompanying species may include [Andromeda polifolia], [Rubus chamaemorus], [Carex aquatilis]; the bryophyte cortège includes [Caliergon stramineum], [Drepanocladus exannulatus], [Gymnocolea inflata], [Sphagnum annulatum], [Sphagnum compactum], [Sphagnum cuspidatum], [Sphagnum magellanicum], [Sphagnum papillosum], [Sphagnum riparium], [Sphagnum tenellum].
Deergrass boreoalpine [Sphagnum lindbergii] mires	Mire communities of boreal regions of the Palaearctic domaine, in particular of the subalpine and lower alpine levels of Fennoscandian mountains, with a sphagnum ground layer dominated by [Sphagnum lindbergii] and a field layer dominated by [Scirpus cespitosus], occupying sites within a wide nutrient range, the deergrass being especially abundant in rich fen situations. Accompanying species that may occur with varying frequency include sedges, [Carex limosa], [Carex pauciflora], [Carex rariflora], [Carex rotundata], [Eriophorum vaginatum], which may dominate or codominate, and dicots, [Andromeda polifolia], [Betula nana], [Drosera rotundifolia], [Empetrum hermaphroditum], [Rubus chamaemorus], [Vaccinium microcarpum]; the bryophyte cortège includes [Caliergon stramineum], [Drepanocladus badius], [Drepanocladus exannulatus], [Sphagnum compactum], [Sphagnum tenellum].
Bog-myrtle scrub on poor fens	[Myrica gale] thickets of fringes of fens, drying fens and nascent or regenerating bogs of middle Europe, mostly characteristic of the Atlantic sector and of northeastern Europe.

Caucasian acidic fens	[Carex dacica] ([Carex nigra ssp. dacica]) acidic fens of the northwestern Caucasus, with [Primula auriculata].
Soft water spring mires	Spring mires of acid or neutral, oligotrophic to eutrophic non-calcareous springs. The specialised spring communities belong to the various associations of the [Montio-Cardaminetea]. The associated swamp communities belong to the [Caricetalia fuscae] and may be found in unit D2.22. The hydrophilous mosses [Bryum schleicheri], [Philonotis fontana], [Pellia epiphylla], [Brachythecium rivulare] and vascular plants [Cardamine amara], [Cardamine acris], [Rumex balcanicus], [Saxifraga stellaris], [Montia rivularis] among others are the dominant species.
Soft water bryophyte springs	Spring communities of lime-poor waters of the Palaearctic domaine dominated by bryophytes, mostly characteristic of northern upland and high montane, alpine or subalpine levels, also locally of well-lit lowland sites.
Montane soft water moss springs	Spring communities of montane, sometimes collinar, lowland or subalpine, well-lit, lime-poor waters of the Palaearctic domaine dominated by mosses, in particular, [Philonotis fontana], with [Epilobium nutans], [Epilobium obscurum], [Epilobium palustre], [Epilobium parviflorum], [Montia fontana], [Stellaria alsine], [Galium uliginosum], [Ranunculus repens], [Veronica beccabunga], [Equisetum fluviatile].
[Philonotis]-[Saxifraga stellaris] springs	Bryophyte dominated spring communities of alpine, subalpine, boreoalpine, arctoalpine, and sometimes upland, well-lit, lime-poor cold waters of the northern Palaearctic mountains and hills, of the Alpine system and of the great Hercynian ranges, mostly dominated by [Philonotis seriata], [Bryum schleicheri] or, in the north and west, [Philonotis fontana], with a vascular species cortège marked by arcto-alpine species, among which [Saxifraga stellaris] is usually prominent. Somewhat intermediate between the communities of unit 54.1111 and those of units 54.1113 and 54.1114, they extend to relatively low upland regions in northern Europe, in the British isles, and, as glacial relicts, in the Hercynian ranges and their periphery.
[Pohlia] springs	Bryophyte dominated spring communities of alpine, subalpine, boreoalpine or arctoalpine, well-lit, lime-poor cold waters of the Palaearctic domaine dominated by light green mosses of genus [Pohlia], in particular, [Pohlia wahlenbergii] ([Mniobryum albicans]), [Pohlia ludwigii], with a sparse, arctoalpine vascular species cortège.
Boreoalpine soft water hepatic springs	Bryophyte dominated spring communities of alpine, subalpine, boreoalpine or arctoalpine, sometimes montane, well-lit, lime-poor cold waters of the Palaearctic domaine, dominated by leafy hepatics of genera [Scapania], [Marsupella], [Jungermannia], [Nardia], with a vascular species cortège rich in arctoalpine species, characteristic of the higher altitudes of the Alpine system, of neighbouring high ranges and of northern mountains, descending locally to lower altitudes, in particular, in Hercynian regions and in northern Europe.
Britannic [Anthelia] springs	Spring communities of Atlantic montane or collinar well-lit, lime-poor, cold waters of the Palaearctic domaine dominated by [Anthelia julacea].

Boreal meadow springs	Bryophyte-rich communities of lime-poor cold springs of the subalpine and alpine zones of boreoalpine and arctoalpine mountains of Fennoscandia and of Iceland, characterized by a greater abundance of tall herbs than in the communities of units 54.1112 to 54.1115, in particular, of units 54.1112 and 54.1113, to which they are closely related, with a resulting lesser prominence of the moss carpet, dominated by [Pohlia wahlenbergii ssp. glacialis] ([Pohlia albicans f. glacialis]) or [Philonotis fontana]. The communities of this unit may grade into [Potentilla crantzii]-[Bistorta vivipara] communities of unit 36.12361 and moist [Dryas] heaths of unit 31.49323.
Soft water lichen springs	Bryophyte and encrusting lichen communities of lime-poor, often intermittent, springs of the high-alpine level of Palaearctic mountains of the Alpine system, formed by the lichen [Dermatocarpon rivulorum] and the mosses [Brachythecium glaciale], [Schistidium rivulare].
Permafrost seeps	Bryophyte and small herb communities of shallow depressions filled by thaw water in permafrost areas, in particular, of Spitzbergen, constituted by the mosses [Calliergon sarmentosum], [Drepanocladus exannulatus], [Drepanocladus uncinatus], [Aulacomnium palustre], [Philonotis tomentella], [Bryum pallens], [Oncophorus wahlenbergii], and by [Ranunculus hyperboreus], [Ranunculus sulphureus], [Saxifraga foliolosa], [Saxifraga rivularis], [Saxifraga cernua], [Cardamine nymanii], [Phippsia algida], [Alopecurus alpinus], [Luzula confusa], [Equisetum boreale].
Bittercress springs	Spring communities of mostly collinar and montane, shaded waters poor in lime of the Palaearctic domaine, with [Ranunculus hederaceus], [Cardamine amara], [Cardamine flexuosa], [Cardamine raphanifolia], [Chrysosplenium oppositifolium], [Chrysosplenium alternifolium], [Saxifraga clusii ssp. lepismigena], ranging southwest to the Cordillera Cantabrica.
Oro-Mediterranean soft water spring mires	Soft water spring and rivulet communities of the high altitudes of the mountains of the southern Palaearctic.
Transition mires and quaking bogs	Incompletely terrestrialized wetlands occupied by peat-forming vegetation with acid groundwater or (for vegetation rafts) acid underlying pool or lake water. Characteristic species are [Calla palustris], [Carex chordorrhiza], [Carex diandra], [Carex heleonastes], [Carex lasiocarpa], [Carex limosa], [Carex rostrata], [Menyanthes trifoliata], [Potentilla palustris], [Rhynchospora alba], [Scheuchzeria palustris]. Included are rafts of [Sphagnum] and [Eriophorum] (D2.38) and quaking rafts of [Molinia caerulea] (D2.3D). Excluded are stands of vegetation fringing water bodies (C3.2) unless the vegetation raft is sufficiently extensive to count as a habitat in its own right.
Slender-sedge ([Carex lasiocarpa]) swards	Transition mire communities of boreal and western nemoral regions dominated by the medium sized [Carex lasiocarpa], associated with either sphagna or pleurocarps and often accompanied by [Eriophorum gracile], [Menyanthes trifoliata], usually forming floating meadows. Vegetation of alliance [Caricetum lasiocarpae].
Brown moss slender-sedge swards	Basicline quaking mires and floating mats of the Palaearctic domaine dominated by [Carex lasiocarpa] associated with [Scorpidium scorpioides] and other pleurocarps, and with charophytes. Among characteristic accompanying species are [Pedicularis palustris] and [Liparis loeselii].

Sphagnum slender-sedge swards	Acidocline quaking mires and floating mats of the Palaearctic domaine dominated by [Carex lasiocarpa] associated with sphagna ([Sphagnum angustifolium], [Sphagnum recurvum], [Sphagnum lindbergii], [Sphagnum pulchrum], [Sphagnum balticum], [Sphagnum dusenii], [Sphagnum magellanicum], [Sphagnum papillosum], [Sphagnum subsecundum], [Sphagnum riparium], [Sphagnum subnitens], [Sphagnum cuspidatum], [Sphagnum flexuosum], [Sphagnum fimbriatum], [Sphagnum palustre], [Sphagnum auriculatum]) and [Polytrichum commune]. Characteristic accompanying species include [Carex rostrata], [Carex nigra], [Carex panicea], [Equisetum fluviatile], [Narthecium ossifragum], [Dactylorhiza sphagnicola], [Comarum palustre], [Vaccinium oxycoccos].
Brown moss-sphagnum slender-sedge swards	Mesotrophic quaking mires and floating mats of the Palaearctic domaine, mostly characteristic of the boreal region, dominated by [Carex lasiocarpa] associated with sphagna and brown mosses, in particular with the mesotrophic species [Sphagnum subsecundum], [Sphagnum contortum], [Drepanocladus revolvens].
Lesser tussock sedge ([Carex diandra]) quaking mires	Transition mire communities of boreal and western nemoral regions of the Palaearctic domaine dominated by [Carex diandra] in association with [Carex lasiocarpa], [Carex appropinquata], [Carex limosa], [Carex lepidocarpa], [Eriophorum gracile], [Eriophorum angustifolium], [Menyanthes trifoliata], [Comarum palustre], [Hydrocotyle vulgaris], [Pedicularis palustris] and an abundance of bryophytes, including the pleurocarps [Campylium stellatum], [Drepanocladus intermedius] and the liverwort [Riccardia pinguis], usually forming open swards. These mires are an important habitat for the threatened [Liparis loeselii].
Bottle sedge ([Carex rostrata]) quaking mires	Transition mire communities of boreal and western nemoral regions dominated by [Carex rostrata] or, in western Siberia, [Carex rotundata], on sphagnum or, sometimes, pleurocarp carpets, usually constituting sparse low formations. They extend south to the mountains of the Caucasus. Vegetation of alliance [Caricetum rostratae].
Acidocline bottle sedge quaking mires	Transition mire communities of boreal and western nemoral regions of the Palaearctic domaine constituted by mats of acidophilous sphagna with a usually low, open growth of [Carex rostrata], accompanied by [Carex nigra], [Carex canescens], [Carex limosa], [Vaccinium oxycoccos]; the main sphagna are [Sphagnum recurvum], [Sphagnum angustifolium], [Sphagnum auriculatum], [Sphagnum flexuosum], [Sphagnum riparium], [Sphagnum obtusum], [Sphagnum dusenii].
Basicline bottle sedge quaking mires	Transition mire communities of boreal and western nemoral regions of the Palaearctic domaine formed by [Carex rostrata] with basiphilous sphagna or pleurocarps.
Basicline sphagnum-bottle sedge quaking mires	Transition mire communities of boreal and western nemoral regions of the Palaearctic domaine dominated by [Carex rostrata] accompanied by basiphilous sphagna, [Sphagnum contortum], [Sphagnum teres], [Sphagnum warnstorfii], [Sphagnum squarrosum]. They are most characteristic of boreal regions, restricted at lower latitudes to the montane to subalpine belts.

Brown moss-bottle sedge quaking mires	Transition mire communities of boreal and western nemoral regions of the Palaearctic domaine formed by [Carex rostrata] with brown mosses, in particular, [Calliergon cuspidatum], [Calliergon giganteum], [Campylium stellatum], [Scorpidium scorpioides], [Drepanocladus revolvens].
Mud sedge ([Carex limosa]) swards	Transition mire communities of the Palaearctic domaine dominated by [Carex limosa], with brown mosses and sphagna, forming low floating or quaking swards.
Brown moss-mud sedge swards	Basicline [Carex limosa] swards and floating rafts of the Palaearctic domaine, with [Carex lasiocarpa], [Carex lepidocarpa], [Eriophorum gracile] and a rich bryophyte cortège formed by the mosses [Scorpidium scorpioides], [Drepanocladus revolvens], [Calliergon giganteum], [Calliergon trifarium], [Calliergon stramineum], [Campylium stellatum], [Bryum pseudotriquetrum], the liverwort [Riccardia pinguis], and occasionally sphagna. [Scheuchzeria palustris] or [Liparis loeselii] may be present. Outside of transition mires, elements of these communities occur in the depressions of rich fens.
Sphagnum-mud sedge swards	Acidocline [Carex limosa] swards and floating rafts of the Palaearctic domaine, with [Scheuchzeria palustris], [Drosera rotundifolia], [Drosera anglica], [Menyanthes trifoliata] and the sphagna [Sphagnum recurvum], [Sphagnum subsecundum], [Sphagnum imbricatum], [Sphagnum papillosum] and [Menyanthes trifoliata]. Outside of transition mires, elements of these communities, and notably [Scheuchzeria palustris], occur in deep hollows of bogs (unit 51.121), with [Rhynchospora alba] and [Carex pauciflora] and often without [Carex limosa].
Boreal mud sedge swards	Transition mire communities of the northern boreal regions of the Palaearctic domaine, characteristic, in particular, of northern Finland, forming in flarks and rimpis of aapa mires, composed of a sparse field layer dominated by [Carex limosa] and [Scheuchzeria palustris] and a continuous ground layer of [Sphagnum annulatum], [Sphagnum balticum], [Sphagnum lindbergii], [Sphagnum majus].
String sedge ([Carex chordorrhiza]) swards	Transition mire communities of the Palaearctic domaine dominated by [Carex chordorrhiza], forming short to medium-tall, usually inundated, swards, predominantly boreal, distributed in Fennoscandia, Lithuania, Russia, Belarus, Siberia and, very locally, in Scotland, with a disjunct area of occurrence in Central Europe, in pre-Alpine, eastern Hercynian and eastern Carpathian regions.
Peat sedge ([Carex heleonastes]) swards	Transition mire communities of the Palaearctic domaine dominated by [Carex heleonastes], often associated with [Meesia triquetra], forming short to medium-tall swards, of local distribution in transition mires and in bog hollows of peri-Alpine and northern European areas.
Beak-sedge ([Rhynchospora alba]) quaking bogs	[Rhynchospora alba]-rich formations of transition mires of the Palaearctic domaine, with [Drosera anglica], [Drosera intermedia], [Drosera rotundifolia], [Vaccinium oxycoccos], [Carex limosa], [Carex rostrata], [Sphagnum recurvum] and sometimes with [Eleocharis quinqueflora], [Eriophorum latifolium], [Andromeda polifolia] or [Scheuchzeria palustris].

Sphagnum and cottonsedge rafts	Transition mire communities formed by floating, sometimes drifting, carpets of sphagna, in particular, [Sphagnum cuspidatum], [Sphagnum recurvum], [Sphagnum auriculatum] ([Sphagnum obesum]) or of sphagna and [Eriophorum angustifolium]. They may constitute fairly large transition mire communities in permanent heath pools, periglacial palsas, large raised bog and blanket bog pools and in former peat extraction holes. They often succeed the communities of unit D2.39 in the colonization process. They have an appearance that ranges from low, barely emerging sphagnum mats to fairly dense cottonsedge beds. [Drosera rotundifolia] is often abundant. The sphagnum and common cottongrass communities are an important habitat for the threatened bog orchid [Hammarbya paludosa].
Bog bean and marsh cinquefoil rafts	Transition mire communities of the Palaearctic domaine constituted by the association of forbs, in particular [Menyanthes trifoliata], [Potentilla palustris] ([Comarum palustre]), [Hydrocotyle vulgaris], [Cicuta virosa], and sphagna or brown mosses, often in floating carpets, occupying wet areas in mire systems or the terrestrialisation zone at the edge of watercourses and waterbodies. The community is clearly structured into three layers. [Potentilla palustris] ([Comarum palustre]) dominates in the highest one, the second layer is dominated by [Carex rostrata] and [Menyanthes trifoliata], and the third layer is composed of [Sphagnum] spp.
Boreo-nemoral bog bean and marsh cinquefoil rafts	Pioneering floating carpets of the boreal Palaearctic and of the nemoral Atlantic, sub-Atlantic and sub-Continental Palaearctic, constituted by [Menyanthes trifoliata], [Potentilla palustris] ([Comarum palustre]), [Hydrocotyle vulgaris], often with [Equisetum fluviatile], [Carex rostrata], [Cicuta virosa], sphagna such as [Sphagnum fallax], [Sphagnum majus], [Sphagnum riparium], [Sphagnum squarrosum], or brown mosses, in particular, [Drepanocladus exannulatus], forming, in mire systems and the terrestrialisation zone at the edge of watercourses and waterbodies, a transition between aquatic or amphibious communities and mire communites. Initial stages have [Potamogeton polygonifolius] or [Potamogeton coloratus], late stages, [Carex nigra], [Juncus acutiflorus], [Molinia caerulea].
Oroboreal bog bean-sphagnum rafts	Oligotrophic transition mire communities of the subalpine level of the boreoalpine and arctoalpine mountains of Fennoscandia formed by [Menyanthes trifoliata], [Sphagnum lindbergii], [Sphagnum majus], with [Carex] spp., [Eriophorum angustifolium], [Eriophorum russeolum].
Boreoalpine dwarf willow quaking bogs	Transition mire communities of boreal regions of the Palaearctic domaine, in particular of the lower alpine levels of Fennoscandian mountains, characterized by a 0.5-1.5 m high shrub layer, a ground layer dominated by [Paludella squarrosa] and the presence of several snow patch species, occupying medium rich fens influenced by mineral waters. The species cortège includes [Carex aquatilis], [Carex bigelowii], [Carex lachenalii], [Carex rariflora], [Eriophorum angustifolium], [Ranunculus pygmaeus], [Salix herbacea], [Salix polaris], [Saxifraga foliolosa], [Saxifraga stellaris], [Solidago virgaurea], and the bryophytes [Calliergon sarmentosum], [Calliergon stramineum], [Campylium stellatum], [Drepanocladus badius], [Drepanocladus exannulatus], [Drepanocladus revolvens], [Drepanocladus uncinatus], [Sphagnumteres].

Boreal bogbean-brown moss carpets	Transition mire communities of northern boreal regions of the Palaearctic domaine, in particular of northern Finland, dominated by [Menyanthes trifoliata] or sedges, with a brown moss ground layer dominated by [Drepanocladus fluitans], [Drepanocladus exannulatus] or [Drepanocladus procerus]. [Sphagnum riparium] may be abundant and [Calliergon sarmentosum] present. The vascular species cortège includes [Carex chordorrhiza], [Carex limosa], [Carex rostrata], [Carex rotundata], [Eriophorum angustifolium], [Eriophorum gracile], [Eriophorum russeolum], [Andromeda polifolia], [Potentilla palustris], [Vaccinium oxycoccos].
Boreal cowbane-willowherb-[Calliergon] quaking bogs	Transition mire communities of northern boreal regions of the Palaearctic domaine dominated by grasses and forbs, in particular [Cicuta virosa], [Epilobium palustre], [Pedicularis palustris], with brown mosses, primarily [Calliergon richardsonii] and an absence of [Scorpidium scorpioides] and [Drepanocladus revolvens], in conditions of flowing surface water.
Fennoscandian [Paludella] spring bogs	Transition mire brown moss-forb-sedge communities of boreal regions of the Palaearctic domaine, in particular, of Fennoscandia, characteric of rich fens with moving surface water resulting from flooding or the proximity of springs. [Filipendula ulmaria] and [Paludella squarrosa] are typical of these communities. The highly variable vascular species cortège may include [Cirsium helenioides], [Crepis paludosa], [Epilobium] spp., [Geum rivale], [Menyanthes trifoliata], [Parnassia palustris], [Potentilla palustris], [Salix] spp., [Saussurea alpina], [Vaccinium oxycoccos], [Equisetum fluviatile], [Carex] spp., [Eriophorum latifolium]; the moss layer may include [Bryum] spp., [Calliergon] spp., [Cinclidium stygium], [Cratoneuron] spp., [Drepanocladus] spp., [Helodium blandowii], [Mnium] spp., [Philonotis] spp., [Scorpidium scorpioides], [Sphagnum teres], [Sphagnum warnstorfii], [Tomentypnum nitens].
Bog arum ([Calla palustris]) mires	Floating meadows, quaking bogs or sphagnum mats dominated by or rich in [Calla palustris], often with [Potentilla palustris] and [Menyanthes trifoliata].
Brown moss carpets	Transition mire communities of the Palaearctic domaine dominated by [Drepanocladus exannulatus], [Drepanocladus revolvens], [Scorpidium scorpioides], [Calliergon giganteum], [Calliergon cuspidatum], [Calliergon richardsonii], [Campylium stellatum], [Paludella squarrosa], associated with sparse [Carex limosa], [Carex rostrata], [Carex lasiocarpa], [Carex chordorrhiza], [Carex aquatilis], sometimes with [Potentilla palustris], [Equisetum fluviatile], [Sphagnum recurvum], [Sphagnum dusenii], [Sphagnum riparium], [Sphagnum squarrosum], [Sphagnum subsecundum] or [Sphagnum teres], [Sphagnum warnstorfii], [Sphagnum contortum], [Sphagnum auriculatum], [Sphagnum platyphyllum], characteristic of mesocline or basicline quaking bogs, often occurring in mosaic with [Carex lasiocarpa] or [Carex diandra] formations.
Harestail cottonsedge quaking bogs	Transition mire communities in which the grass layer is dominated by [Eriophorum vaginatum] on a thick mat of [Sphagnum recurvum], with [Polytrichum commune] often forming a second moss layer. Associated plants include [Carex nigra] and [Agrostis canina]. Typical raised bog plants are few, often limited to [Carex pauciflora] and [Vaccinium oxycoccos].

Purple moorgrass ([Molinia]) quaking bogs	Transition mire communities of the Palaearctic domaine dominated by [Molinia caerulea] with [Sphagnum cuspidatum], [Eleocharis palustris], [Rhynchospora alba], characteristic of low-lying areas in wet heaths and the periphery of fluctuating oligotrophic moor and heath pools.
Narrow small-reed ([Calamagrostis]) quaking bogs	Basicline transition mire communities of the Palaearctic domaine, dominated by, or rich in, [Calamagrostis stricta] ([Calamagrostis neglecta]), often associated with [Carex diandra], recorded, in particular, from northern Fennoscandia, northern, eastern and pre-Alpine Germany, Poland, Hungary. In middle Europe, [Calamagrostis stricta] is a very rare, decreasing, threatened glacial relict.
Alpine deer-sedge quaking bogs	Transition mire communities of the Palaearctic domaine dominated by [Scirpus hudsonianus]. It is in these that the species finds its principal habitat.
Iberian quaking bogs	Sphagnum communities of the collinar, and locally, montane, areas of northwestern Iberia, intermediate between transition mire and bog, with [Drosera rotundifolia], [Carex durieui], [Narthecium ossifragum], [Sphagnum tenellum], [Sphagnum subnitens], [Odontoschisma sphagni], [Aulacomnium palustre].
Wet, open, acid peat and sand, with beak-sedge and sundew	Sparse, bryophyte-poor, sedge and rush communities of bare, extremely wet peat muds of boreal mires, frequently inundated, remaining wet for a prolonged part of dry periods, together with pioneer communities of humid exposed peat or, sometimes, sand, forming on stripped areas of blanket bogs or raised bogs, as well as on naturally seep- or frost-eroded areas of wet heaths and bogs, in flushes and in the fluctuation zone of oligotrophic pools with sandy, slightly peaty substratum. Vegetation of alliance [Rhynchosporion albae], the most typical species are [Rhynchospora alba], [Hydrocotyle vulgaris], [Juncus bulbosus], [Lycopodiella inundata], [Sphagnum subsecundum], [Sphagnum denticulatum] and [Sphagnum inundatum].
Nemoral bare peat communities	Highly constant pioneer communities of humid exposed peat or, sometimes, sand, of nemoral Atlantic and sub-Atlantic regions of the Palaearctic domaine, with [Rhynchospora alba], [Rhynchospora fusca], [Drosera intermedia], [Drosera rotundifolia], [Lycopodiella inundata], forming on stripped areas of blanket bogs or raised bogs, but also on naturally seep- or frost-eroded areas of wet heaths and bogs, in flushes and in the fluctuation zone of oligotrophic pools with sandy, slightly peaty substratum. These communities are similar, and closely related, to those of shallow bog hollows (unit 51.122) and of transition mires (unit 54.57). They are often associated with wet heaths of unit 31.1 or [Myrica gale] scrubs of unit 44.93.

Boreal mud-bottom communities	Sparse, bryophyte-poor, sedge and rush communities of bare, extremely wet peat muds of boreal Palaearctic mires, frequently inundated, remaining wet for a prolonged part of dry periods. The elastic substrate expands and raises when saturated, shrinks in dry periods, forming polygonal networks of surface cracks; there is no peat formation. Mud-bottom communities comprise the same vascular plants as transition mires of unit 54.5, such as [Carex limosa], [Carex chordorrhiza], [Carex rariflora], [Carex rostrata], [Equisetum fluviatile], [Eriophorum angustifolium], [Eriophorum gracile], [Eriophorum russeolum], but they are more dispersed. [Juncus stygius] and [Utricularia intermedia] are, however, characteristic. Bryophytes are absent or scattered, although the small hepatics [Cladopodiella fluitans] and [Gymnocolea inflata] are sometimes abundant; a well-developed surface film is formed by microalgae, including filamentous algae such as [Zygogonium erieetorum], and numerous desmids and diatoms in fen mud-bottoms. In situations of ochre formation, iron bacteria are abundant. Mud-bottom con
Aapa, palsa and polygon mires	Patterned mire complexes of the arctic, subarctic and northern boreal zones.
Palsa mires	Mires of the subarctic and northern boreal regions formed by elevated frozen mounds or ridges (palsas), 0.5 to 8 m high and up to 50 m in diameter, interspersed wet hollows of similar area. Palsa mires are distributed in the discontinuous permafrost zone of Iceland, northern Fennoscandia and arctic Russia, in areas experiencing subzero temperatures for at least 200 days per year.
Palsa mounds	Raised features of the palsa mires of the Palaearctic domaine constructed of peat around a permafrost core of ice and peat, colonized by ombrotrophic communities of dwarf shrubs, mosses, sphagna and lichens. They may take the shape of relatively low and flat ridges, 0.50 to 1.5 or 2.0 metres high, or higher domes, up to 8 metres in height. The first may be more characteristic of the continuous permafrost zone, the second of discontinuous permafrost zone where permafrost disappears under the mostly minerotrophic intervening hollows.
Northern Fennoscandian palsa mounds	Palsa domes, ridges and plateaux of Fennoscandia, restricted to the low alpine, subalpine and sometimes upper conifer forest levels of the northern, arctoalpine, Fennoscandian mountains of Troms, Finnmark, Swedish and Finnish Lapland, with outposts on the Dovre plateau in the boreoalpine mountains of Norway, occupied by dwarf shrub communities composed mainly of [Betula nana], [Empetrum hermaphroditum], [Ledum palustre], [Rubus chamaemorus], [Vaccinium myrtillus], [Vaccinium vitis-idaea], with [Vaccinium microcarpum], the mosses [Dicranum elongatum], [Polytrichum alpestre], [Pleurozium schreberi] and lichens, in particular of genus [Cladonia].

Icelandic palsa mounds	Palsa mounds of the periglacial arctoalpine highlands of central Iceland, 0.5-2.5 metres high, 2-10 metres long, 1-7 metres broad, surrounded by a narrow lake-like lagg or a minerotrophic mud-bottom mire, generally of the Icelandic [Carex rostrata]-[Carex rariflora] type (unit 54.6242), occupied, on the tops, by shrub communities dominated by [Empetrum hermaphroditum], with [Dryas octopetala], [Salix herbacea], [Armeria maritima], [Silene acaulis], [Kobresia myosuroides], the mosses [Drepanocladus uncinatus], [Racomitrium canescens], the sphagnum [Sphagnum teres] and the lichen [Cetraria islandica], and on the lower slopes by communities dominated by [Salix glauca ssp. callicarpaea] ([Salix arctica]), [Salix herbacea] and [Calamagrostis neglecta].
[Sphagnum fuscum] pounikko hummocks	High hummocks of [Sphagnum fuscum] of palsa mires of the western palsa mire region of the Palaearctic domaine, often congregating in broad fields, resulting, like the palsa mounds, from frost action, but with a core in which the frost is only seasonal though long-lasting.
Palsa mire flarks	Pools, hollows and laggs of palsa mires of the subarctic and northern boreal zone, mostly inundated, minerotrophic or partly minerotrophic, acidocline to basicline. They are predominantly colonised by transition mire communities or mud-bottom communities of unit D2.3.
Aapa mires	Mire complexes of the central and northern boreal zones, often extensive, with a concave or flat, gently to very slightly sloping surface patterned by an alternation of slightly to substantially raised ridges and hummocks (strings), with minerotrophic or ombrotrophic characteristics, and of minerotrophic pools and hollows (flarks), arranged perpendicularly to the slope direction. In Europe, the main area of distribution is subatlantic and subcontinental Fennoscandia and subarctic and arctic Russia.
Aapa strings	Ridges and hummocks of aapa mires of the western boreal zone of the Palaearctic domaine, minerotrophic or partly ombrotrophic, generally long and narrow, lying perpendicular to the slope direction, alternating with elongated water-filled depressions. Low strings carry [Molinia]- or sedge-dominated communities, higher strings communities very similar to those of bog hummocks, unsually with small shrubs or pines.
[Sphagnum fuscum] aapa strings	Strings of aapa mires of the Palaearctic domaine, characteristic of the northern and central aapa mire regions, often tall or very tall, dominated by [Sphagnum fuscum], usually in conjunction with shrubs of unit 54.815.
Sedge-[Sphagnum papillosum] aapa strings	Strings of aapa mires of the Palaearctic domaine, characteristic of the southern aapa mire regions, often relatively low, dominated by sedges of genus [Carex], in particular, [Carex lasiocarpa], associated with sphagna, often [Sphagnum papillosum].
Cottonsedge aapa strings	Strings of aapa mires of the Palaearctic domaine, mostly of the southern aapa mire regions, dominated by cottonsedges of genus [Eriophorum].
Purple moorgrass aapa strings	Strings of aapa mires of the Palaearctic domaine, mostly of the southern aapa mire regions, usually low or very low, dominated by [Molinia caerulea].

Dwarf shrub aapa strings	Strings of aapa mires of the Palaearctic domaine dominated by dwarf shrubs, similar to those that occupy raised bog hummocks, in particular [Calluna vulgaris], [Empetrum] spp., [Vaccinium uliginosum], [Betula nana], [Rubus chamaemorus], [Ledum palustre], [Chamaedaphne calyculata], and in the Usa River basin of northeastern Europe, [Alnus fruticosa], associated mostly with [Sphagnum fuscum].
Aapa flarks	Pools and hollows of aapa mires of the western boreal zone, mostly inundated, minerotrophic, most often mesotrophic or eutrophic, mostly shallow, sometimes deep, usually elongated, arranged perpendicularly to the slope direction, alternating with damming ridges, but sometimes more extensive, covering large ridge-free surfaces. They are predominantly colonised by small sedge fen communities, most often mud-bottom communities of unit D2.3H2, sometimes transition mire communities of unit D2.3, rich fen communities of unit D4.1 or acidic fen communities of unit D2.2; they may also harbour tall sedge communities of unit D5.2.
Algae and hepatic flarks	Flarks or rimpis of aapa mires of the Palaearctic domaine with very reduced mud-bottom communities of unit 54.62, almost devoid of sedges and sphagna or mosses, limited to small hepatics, in particular, [Gymnocolea inflata], [Cephalosia] spp., [Cladopodiella fluitans] and algae, in particular, [Zygogonium ericetorum].
Sphagnum flarks	Flarks of aapa mires of the Palaearctic domaine with bottom communities limited to carpets of acidocline or basicline sphagna, in particular, [Sphagnum lindbergii], [Sphagnum balticum], [Sphagnum majus], [Sphagnum subsecundum], [Sphagnum jensenii], [Sphagnum riparium], [Sphagnum dusenii], [Sphagnum tenellum].
Brown moss flarks	Flarks of aapa mires of the Palaearctic domaine with bottom communities limited to carpets of brown mosses, in particular, [Drepanocladus exannulatus], [Scorpidium scorpioides].
Small sedge mud-bottom flarks	Flarks of aapa mires of the Palaearctic domaine colonized by mud-bottom sedge or rush communities of unit 54.62, mostly dominated by [Carex limosa], [Carex rostrata], [Carex chordorrhiza], [Carex lasiocarpa], [Carex livida], [Carex rotundata], [Carex aquatilis], [Eriophorum angustifolium] or [Juncus stygius], most frequent of the vascular flark communities.
Small-sedge rich fen flarks	Flarks of aapa mires of the Palaearctic domaine colonized by rich fen communities of unit 54.2.
Small-sedge acidic fen flarks	Flarks of aapa mires of the Palaearctic domaine colonized by acidic fen communities of unit 54.4.
Small-sedge transition mire flarks	Flarks of aapa mires of the Palaearctic domaine colonized by transition fen communities of unit 54.5.
Tall sedge flarks	Flarks of aapa mires of the Palaearctic domaine colonized by tall sedge beds of unit 53.2.
Polygon mires	Complex mires of the arctic and subarctic patterned by surface microrelief of large, 10 to 30 m in diameter, low-centre or high-centre polygons formed by the juxtaposition of dry, 0.3 to 0.5 m high, ridges covered by shrubs, hypnoid mosses and sphagna, and of wet hollows occupied by grasses, sedges, mosses and sphagna. Polygon mires occur mainly outside Europe, in tundra where the mean annual temperature is below -1°C.

Polygon mire ridges	Ridges and flat tops of polygons of polygon mires of the Arctic and subarctic zones of the Palaearctic domaine, covered by shrubs, hypnoid mosses and sphagna.
Polygon mire hollows	Hollows and cracks of polygon mires of the Arctic and subarctic zones of the Palaearctic domaine, occupied by the grasses [Arctophila fulva], [Dupontia fischeri], the sedges [Carex stans], [Carex chordorrhiza], [Carex rariflora], [Carex rotundata], the hypnoid mosses [Drepanocladus] spp., [Mnium] spp. and the sphagna [Sphagnum balticum], [Sphagnum majus].
Base-rich fens and calcareous spring mires	Peatlands, flushes and vegetated springs with calcareous or eutrophic ground water, within river valleys, alluvial plains, or on hillsides. As in poor fens, the water level is at or near the surface of the substratum and peat formation depends on a permanently high watertable. Excluded are reedbeds (C3, D5).
Rich fens, including eutrophic tall-herb fens and calcareous flushes and soaks	Wetlands and spring-mires, seasonally or permanently waterlogged, with a soligenous or topogenous base-rich, often calcareous water supply. Peat formation, when it occurs, depends on a permanently high watertable. Rich fens may be dominated by small or larger graminoids ([Carex] spp., [Eleocharis] spp., [Juncus] spp., [Molinia caerulea], [Phragmites australis], [Schoenus] spp., [Sesleria] spp.) or tall herbs (e.g. [Eupatorium cannabinum]). Where the water is base-rich but nutrient-poor, small sedges usually dominate the mire vegetation, together with a "brown moss" carpet. Hard-water spring mires (D4.1N) often contain tufa cones and other tufa deposits. Excluded is the water body of hard-water springs (C2.1); calcareous flushes of the alpine zone are a separate category (D4.2). Rich fens are exceptionally endowed with spectacular, specialised, strictly restricted species. They are among the habitats that have undergone the most serious decline. They are essentially extinct in several regions and gravely endangered in much of central and western Europe.
Black bogrush fens	[Schoenus nigricans]-dominated or -rich communities of rich fens of nemoral, Pannonic and Pontic Europe, of wide distribution, though less common in Alpine and peri-Alpine regions than the next unit, and confined to lower altitudes. Rushes, [Juncus subnodulosus] in British and western continental inland fens, [Juncus balticus] in dune-slack fens, are often abundant. Other accompanying species include [Carex lepidocarpa], [Carex hostiana], [Carex panicea], [Carex pulicaris], [Eriophorum latifolium], [Molinia caerulea], [Dactylorhiza incarnata], [Dactylorhiza praetermissa], [Dactylorhiza purpurella], [Dactylorhiza traunsteineri], [Dactylorhiza traunsteinerioides], [Epipactis palustris], [Parnassia palustris], [Pinguicula vulgaris], brown mosses and, locally, [Pinguicula lusitanica] and [Drosera anglica]. These communities have enormously regressed, particularly in northern and northwestern continental Europe, and are extinct in many regions.
Hiberno-Britannic black bogrush fens	[Schoenus nigricans]-dominated or -rich communities of rich fens of the British Isles.
Germano-Gallic black bogrush fens	[Schoenus nigricans]-dominated or -rich communities of rich fens of Atlantic continental Europe, from western France to Schleswig-Holstein.

Central European black bogrush fens	[Schoenus nigricans]-dominated communities of calcareous fens with strong water-level fluctuations of summer-warm Alpine and peri-Alpine regions of Germany, Switzerland, Austria, Italy, France, of the Bohemian Quadrangle, and of subcontinental Mecklenburg-Vorpommern, Poland and Lithuania.
Illyrian black bogrush fens	[Schoenus nigricans]-dominated or -rich communities of rich fens of the Illyrian region.
Pannonic black bogrush fens	[Schoenus nigricans]-dominated or -rich communities of rich fens of the Pannonic region.
Intra-Carpathian black bogrush fens	[Schoenus nigricans] fens of the southeastern Carpathian system, in the periphery of the Gilau Mountains, with [Peucedanum palustre] and [Lysimachia thyrsiflora].
Brown bogrush fens	[Schoenus ferrugineus]-dominated communities of rich fens of nemoral and boreonemoral Europe, mostly restricted to Alpine and peri-Alpine regions and to the Baltic periphery, with isolated outposts, in particular in eastern Scotland.
Peri-Alpine brown bogrush fens	[Schoenus ferrugineus]-dominated formations of Alpine and peri-Alpine regions, with a predominance of [Schoenus ferrugineus] among the gramineous growth which is often overwhelming, imparting to the fens a distinctive brown tone in summer. [Schoenus ferrugineus] may be accompanied by [Schoenus nigricans], [Eriophorum latifolium], [Carex hostiana], [Carex davalliana], [Carex panicea], [Carex flacca], [Carex lepidocarpa], [Carex demissa], [Carex dioica], [Eleocharis quinqueflora], [Molinia caerulea]; non-gramineous herbs include [Pinguicula vulgaris], [Gentiana utriculosa], [Drosera anglica], [Primula farinosa], [Parnassia palustris], [Dactylorhiza traunsteineri], [Dactylorhiza lapponica], [Tofieldia calyculata]; the rich moss layer is formed by [Drepanocladus intermedius], [Drepanocladus revolvens], [Campylium stellatum].
Scottish brown bogrush fens	[Schoenus ferrugineus] stands of base-rich Perthshire flushes, with [Eleocharis quinqueflora], [Carex hostiana], [Carex panicea], [Carex lepidocarpa], [Saxifraga aizoides], [Scirpus cespitosus], [Eriophorum latifolium], [Eriophorum angustifolium], [Tofieldia pusilla], [Pinguicula vulgaris], [Scorpidium scorpioides].
Northern brown bogrush fens	[Schoenus ferrugineus]-dominated fens of northeastern Jutland, the Danish archipelago, southern and central Fennoscandia, northeastern Germany, Poland, the Baltic States and northwestern Russia, with [Carex panicea], [Tofieldia pusilla], [Andromeda polifolia] and brown mosses.

Subcontinental Davall sedge fens	Diverse, often extensive, calcareous fen communities of Central Europe, with [Carex davalliana], [Carex hostiana], [Carex lepidocarpa], [Carex capillaris], [Carex panicea], [Carex nigra], [Carex demissa], [Carex flava], [Carex pulicaris], [Eriophorum latifolium], [Blysmus compressus], [Schoenus ferrugineus], [Eleocharis quinqueflora], [Juncus articulatus], [Juncus subnodulosus], [Scirpus cespitosus], [Molinia caerulea], [Tofieldia calyculata], [Allium schoenoprasum], [Potentilla erecta], [Swertia perennis], [Primula farinosa], [Parnassia palustris], [Pinguicula vulgaris] and a moss layer often dominated by brown mosses. They have their greatest species diversity in Alpine and peri-Alpine regions, and are represented by impoverished outlyers north to the middle European Hercynian system. Small sedges are usually abundant and dominance may be mixed or achieved by species of genus [Carex], in particular, [Carex davalliana], by [Eriophorum latifolium] or by [Scirpus cespitosus]. Vegetation of alliances [Caricion davallianae] and [Sphagno warnstorfiani-Tomenthypnion].
Peri-Alpine Davall sedge fens	Species-rich calcareous fens of the Alps, the Alpine piedmonts and peripheral plateaux, the Swiss plateau, the French, Swiss, Swabian, Franconian Jura and their periphery, often with a mixed dominance, usually with a particular prominence of [Carex davalliana], [Carex panicea], [Carex hostiana], [Carex nigra], [Carex flacca] or [Eriophorum latifolium], sometimes of [Carex microglochin], and with [Carex lepidocarpa], [Carex capillaris], [Carex nigra], [Carex demissa], [Carex flava], [Carex pulicaris], [Blysmus compressus], [Schoenus ferrugineus], [Eleocharis quinqueflora], [Juncus articulatus], [Scirpus cespitosus], [Molinia caerulea], [Tofieldia calyculata], [Allium schoenoprasum], [Potentilla erecta], [Swertia perennis], [Primula farinosa], [Parnassia palustris], [Pinguicula vulgaris] and a moss layer formed by [Drepanocladus intermedius], [Cratoneuron glaucum], [Campylium stellatum]. These extremely species-rich communities are still represented by a few large, very well preserved examples on the Bavarian plateau. These are a refuge for many rare species, including
Deergrass Davall sedge fens	Generally impoverished [Scirpus cespitosus]-dominated facies of Davall sedge fens. Common companions are [Carex davalliana], [Parnassia palustris], [Potentilla erecta] and the mosses [Campylium stellatum], [Drepanocladus intermedius].
Bohemio-Pannonic Davall sedge fens	[Carex davalliana] calcareous fens of the northern Bohemian basin, the southeastern Sudeten, the inner piedmont of the western and southwestern Bohemian quadrangle, the Morava basin and the Pannonic basin.
Carpathian Davall sedge fens	Basiphilous fen communities of the Western Carpathians, in particular, of the Pieniny and the Tatras, and of intramountain depressions at the 400-500 m level of the Eastern Carpathians, dominated by the small sedges [Carex davalliana], [Carex flava], [Carex distans], [Carex hostiana], [Carex panicea] and other fen species such as [Eriophorum latifolium], [Eriophorum angustifolium], [Primula farinosa], [Pinguicula vulgaris], [Pedicularis palustris], [Valeriana simplicifolia].
Northern Davall sedge fens	[Carex davalliana] calcareous fens of northern Central Europe, north of the Jura, the Bohemian Quadrangle and the Carpathians, recorded, in particular, from the central German Hercynian ranges and hills, Poland, Lithuania and Latvia.

Dinaric carnation-tawny sedge fens	Calcareous fens of the Dinarides, with [Carex panicea], [Carex hostiana], [Eriophorum latifolium], [Molinia caerulea].
Pyrenean Davall sedge fens	Uncommon calcareous fens of the Pyrenees, with [Eriophorum latifolium], [Carex davalliana], [Carex lepidocarpa], [Carex echinata], [Carex rostrata], [Carex flacca], [Carex panicea], [Carex paniculata], [Carex ovalis], [Eleocharis quinqueflora], [Juncus articulatus], [Juncus inflexus], [Tofieldia calyculata], [Epipactis palustris], [Crepis paludosa], [Parnassia palustris], [Succisa pratensis], [Pinguicula grandiflora].
Dioecious, flea, and yellow sedge fens	Diverse rich fen communities dominated by small sedges, among which [Carex dioica], [Carex pulicaris] or species of the [Carex flava] group, are usually prominent, but with little or no [Carex davalliana]. They have a distinctly western and northern distribution, occurring, in particular, in Fennoscandia, Baltic, the British Isles, the Causses, Iberia, with a disjunct area of prominence in the middle European Hercynian ranges and the Carpathians.
British dioecious-yellow sedge fens	Small [Carex] swards of calcareous, soligenous mires on peat or mineral gleys, with [Carex dioica], [Carex lepidocarpa], [Carex demissa], [Carex nigra], [Carex hostiana], [Carex flacca], [Carex panicea], [Eriophorum latifolium], [Eleocharis quinqueflora], [Blysmus compressus], [Scirpus setaceus], [Pinguicula vulgaris], [Primula farinosa], [Bartsia alpina], [Tofieldia pusilla] and sometimes, [Juncus articulatus], [Juncus alpinoarticulatus], [Molinia caerulea], [Equisetum variegatum], [Anagallis tenella], [Epipactis palustris] and the bryophytes [Campylium stellatum], [Bryum pseudotriquetrum], [Drepanocladus revolvens], [Riccardia pinguis], [Cratoneuron commutatum], [Fissidens adianthoides], characteristic mostly of northern England and Scotland.
Northern dioecious-yellow-tawny sedge fens	Short [Carex]-dominated fen communities of Fennoscandia and northeastern Europe, with [Carex flava] s.l., [Carex panicea], [Carex dioica], [Carex hostiana] ([Carex hornchuchiana]), [Eriophorum latifolium], [Tofieldia pusilla] and brown mosses.
Fennoscandian brown moss yellow sedge fens	Fen communities of Fennoscandia, concentrated in eutrophic districts, with a field layer of sedges, herbs and grasses that may include [Carex dioica], [Carex flava], [Carex lasiocarpa], [Carex panicea], [Carex rostrata], [Eriophorum latifolium], [Schoenus ferrugineus], [Scirpus hudsonianus] ([Trichophorum alpinum]), [Scirpus cespitosus ssp. cespitosus] ([Trichophorum cespitosum]), [Molinia caerulea], [Equisetum palustre], [Selaginella selaginoides], [Bartsia alpina], [Parnassia palustris], [Potentilla erecta], [Primula farinosa], [Saussurea alpina], [Tofieldia pusilla], sometimes with [Erica tetralix], [Andromeda polifolia], [Betula nana], [Vaccinium oxycoccos], and a brown-moss carpet dominated by [Campylium stellatum], [Paludella squarrosa], [Tomentypnum nitens], with [Drepanocladus intermedius], [Fissidens adianthoides], sometimes dominated by [Sphagnum warnstorfii].

Fennoscandian [Sphagnum warnstorfii] yellow sedge fens	Fen communities of subalpine and lower alpine zones of Fennoscandia, concentrated in eutrophic areas, with a field layer of sedges, herbs and grasses and sparse willows, notably [Salix glauca], [Salix lapponum]; [Anthriscus sylvestris], [Carex juncella], [Potentilla palustris] are characteristic as are the dominating bryophytes, [Tomentypnum nitens] and [Sphagnum warnstorfii]; the species cortège may include [Carex dioica], [Carex flava], [Carex lasiocarpa], [Eriophorum latifolium], [Scirpus hudsonianus] ([Trichophorum alpinum]), [Molinia caerulea], [Equisetum palustre], [Equisetum fluviatile], [Bartsia alpina], [Crepis paludosa], [Geranium sylvaticum], [Menyanthes trifoliata], [Parnassia palustris], [Saussurea alpina], [Andromeda polifolia], [Betula nana], [Salix myrsinites], [Vaccinium oxycoccos], [Paludella squarrosa], [Alacomnium palustre], [Sphagnum angustifolium]. [Sphagnum warnstorfii] sedge communities are drier than the brown moss fen communities of unit 54.2521 and often occupy fen hummocks.
Eastern Baltic tawny sedge fens	Calcareous lake fens of Lithuania and northwestern Russia dominated by [Carex hostiana], with [Primula farinosa], [Peucedanum palustre].
Middle European yellow sedge fens	Fen communities of middle latitudes of continental Western Europe and of Central Europe, recorded from the Netherlands, Belgium, western Germany, France, northern Italy including the Apuan Alps, Austria, the Czech Republic, Slovakia, Poland, Romania, with [Carex dioica], [Carex lepidocarpa], [Carex flava], [Carex demissa], [Carex serotina], [Carex panicea], [Eriophorum latifolium], [Juncus articulatus] and [Campylium stellatum].
Cantabrian yellow sedge fens	Rare exiguous alkaline spring and gully communities of the montane level of the Cordillera Cantabrica, with [Carex lepidocarpa], [Carex demissa], [Carex davalliana], [Carex echinata], [Carex nigra], [Carex panicea], [Eriophorum latifolium], [Eleocharis quinqueflora], [Juncus articulatus], [Juncus alpestris], [Equisetum variegatum], [Pinguicula grandiflora], [Parnassia palustris] and, in more eastern communities, [Tofieldia calyculata], [Primula farinosa], [Bartsia alpina].
Eastern Iberian rich fens	Calcareous fens of the southern Iberian Range (Sierra de Gudar, Sierra de Javalambre).
Flea sedge fens	Fen formations of nemoral Europe intermediate between the [Caricion davallianae] and the [Caricion fuscae], often developed in ecotonal situations, with [Carex pulicaris] and [Carex dioica], dispersed over a fairly wide range in continental middle Europe.
Black sedge ([Carex nigra]) alkaline fens	Rich fen communities of the Palaearctic domaine dominated by [Carex nigra], accompanied by basiphile species and brown mosses.

Middle European black sedge rich fens	Weakly alkaline, neutral or slightly acid fen communities of the montane to subalpine belt of the Alps and the greater Hercynian ranges, in particular, the Black Forest, the Vosges and the Bohemian Quadrangle, and of neighbouring hills, dominated by [Carex nigra], accompanied by calciphile species, brown mosses and basiphile sphagna. They are transitional between the rich fen communities of unit 54.2 and the acidic fen communities of unit 54.4, in particular, of unit 54.421, closely related to the dioecious-yellow-flea sedge communities of units 54.253 and 54.256, of which some of them constitute facies. Similar [Carex nigra]-dominated or -rich stands occur in more Atlantic regions, in particular, of the British Isles; they are probably best treated as part of the regionally more prevalent unit 54.25.
Boreal black sedge-brown moss fens	[Carex nigra]-dominated fen communities of the subalpine to lower alpine zones of the boreoalpine and arctoalpine mountains of Fennoscandia occupying low-lying areas affected by running water (pH 5.5-6.0), among low (0.20 m) willow brush of, notably, [Salix hastata], [Salix lanata], [Salix lapponum], [Salix phylicifolia], comprising poor fen margin vegetation with, in some parts, an admixture of medium rich fen elements, and with a ground layer mainly of brown mosses. The sedge-rich species cortège includes [Carex bigelowii], [Carex canescens], [Carex chordorrhiza], [Carex dioica], [Carex flava], [Carex limosa], [Carex magellanica], [Carex panicea], [Carex rostrata], [Carex rotundata], [Eriophorum angustifolium], [Scirpus cespitosus ssp. cespitosus] ([Trichophorum cespitosum]), [Phleum alpinum], [Poa pratensis] s.l., [Caltha palustris], [Cardamine pratensis], [Pedicularis palustris], [Pinguicula vulgaris], [Polygonum viviparum], [Potentilla erecta], [Potentilla palustris], [Viola palustris], [Salaginella salaginoides], [Thalictrum alpinum], and bryophytes [Aulacomnium palustre], [Calliergon sarmentosum], [Calliergon stramineu
Icelandic black sedge-brown moss fens	[Carex nigra]-dominated fen communities of the lowlands of Iceland with a variable species cortège that may include [Carex rariflora], [Carex lyngbyei], [Carex canescens], [Eriophorum angustifolium], [Scirpus cespitosus ssp. cespitosus] ([Trichophorum cespitosum]), [Juncus filiformis], [Calamagrostis stricta], [Potentilla palustris], [Menyanthes trifoliata], [Polygonum viviparum], [Pinguicula vulgaris], [Salix callicarpaea] ([Salix arctica]), [Equisetum palustre], [Selaginella selaginoides] and bryophytes [Drepanocladus revolvens], [Calliergonella cuspidata], [Polytrichum commune], [Aulacomnium palustre], [Calliergon sarmentosum], [Calliergon stramineum], [Calliergon giganteum], [Cinclidium stygium], [Cinclidium subrotundum], [Climacium dendroides], [Hypnum] spp., [Oncophorus wahlenbergii], [Sphagnum girgensohnii]. Hummocks with heath mosses and sphagna are common; these communities are modified by grazing, resulting, notably, in a reduced willow component.
Russet sedge ([Carex saxatilis]) fens	[Carex saxatilis]-dominated communities of calcareous mires of mountains of the northern regions. They are intermediate between other rich fen communities of unit D4.1 and arctoalpine communities of unit D4.2.

Ice sedge fens	Mostly subalpine formations dominated by [Carex frigida], colonizing seepages and flushes on stony slopes of the Alps, the Pyrenees and the Black Forest, with [Carex davalliana], [Carex demissa], [Carex panicea], [Carex nigra], [Juncus triglumis], [Juncus castaneus], [Blysmus compressus], [Tofieldia calyculata], [Parnassia palustris], [Pinguicula vulgaris], [Pinguicula grandiflora], [Primula farinosa], [Saxifraga aizoides], [Campylium stellatum].
British saxifrage - sedge flushes	[Carex demissa]-[Saxifraga aizoides] communities of submontane base-rich seeps in northern Wales, northern England, southern Scotland and, mostly, the Scottish Highlands, with [Juncus articulatus], [Carex panicea], [Eleocharis quinqueflora], [Selaginella selaginoides] and brown mosses. Montane saxifrage-sedge flushes with glacial relicts have been listed under unit D4.24.
Spike-rush ([Eleocharis quinqueflora]) fens	Rich fen communities of the Palaearctic domaine dominated by [Eleocharis quinqueflora] ([Eleocharis pauciflora]), for the most part species-poor pioneering formations, relatively widespread, though decreasing and threatened, in the boreal region, in the Baltic plain, in western Hercynian hills and in Alpine and peri-Alpine regions.
Mediterranean and Central Eurasian small sedge fens	Usually rare and isolated small sedge (e.g. [Carex flava], [Carex echinata]) rich fens of the high mountains of the eastern Mediterranean, the Euxinian periphery, Anatolia, central Eurasia, developed around springs, rivulets and seeps on limestones and ultra-basic rocks, in particular, ophiolites. Characteristic plants often include butterworts, sometimes of very restricted distribution, in particular, [Pinguicula hirtiflora], [Pinguicula balcanica], [Pinguicula crystallina].
Bottle sedge alkaline fens	Alkaline fen communities dominated by [Carex rostrata], accompanied by a carpet of brown mosses, sometimes with basicline sphagna, and few vascular plants other than sedges, occupying very wet sites in rich fen complexes; these communities, which grade into transition mire communities of unit D2.3, or into tall sedge communities of units D5.2141 or D5.2125, are best characterised in the Fennoscandian mountains, although they can be individualised in other fen systems, in particular, in upland Britain. Accompanying species include [Carex aquatilis], [Carex juncella], [Carex rotundata], [Eriophorum angustifolium], [Viola epipsila], and small willows, notably [Salix lapponum], [Salix glauca].
Alpine deer-sedge alkaline fens	Meso-eutrophic fen communities dominated by [Scirpus hudsonianus] ([Trichophorum alpinum]), with [Drepanocladus revolvens], [Scorpidium] spp., [Chrysohypnum stellatum], recorded from Scandinavia, from Germano-Baltic moraine land, from the subalpine and alpine levels of the Alps and the greater Hercynian ranges. They may constitute a [Scirpus hudsonianus] facies of the yellow-dioecious sedge fens of unit D4.153.
Deergrass alkaline fens	[Scirpus cespitosus]-dominated communities of alkaline fens, mainly characteristic of oceanic to subcontinental parts of the boreal region and of the alpine and subalpine levels of the Alps and the Pyrenees, at altitudes superior to those of the [Caricetum davallianae] communities of unit D4.13, including their deergrass-rich facies (unit D4.132).

Middle European flat sedge ([Blysmus compressus]) fens	[Blysmus compressus]-dominated stands of rich fens of northern and central Europe, south, in the Alpine system, to the montane Illyrian beech level of the central Dinarides, to the subalpine level of the Paeonian mountains, and to the montane and subalpine levels of the Apuseni Mountains and of the Southern and Eastern Carpathians.
Small herb alkaline fens	Simplified and pioneer fen communities of the western Palaearctic formed mostly by a few non-gramineous species, in particular, [Anagallis tenella]-[Parnassia palustris] communities and [Saxifraga mutata] communities.
Calcareous dunal rush - sedge fens	Fen communities of calcareous wet dune slacks of northern France, Belgium, the Netherlands and the North Sea coast of Germany dominated by sedges, in particular, [Carex trinervis], [Carex scandinavica], or by [Juncus anceps], with no or little [Schoenus nigricans] and with, among a number of characteristic accompaniers, [Juncus subnodulosus], [Parnassia palustris], [Gentianella amarella], [Herminium monorchis], [Epipactis palustris].
Tall herb fens	Fens invaded by [Peucedanum palustre], [Eupatorium cannabinum], [Cicuta virosa], [Symphytum officinale], [Lysimachia vulgaris], [Cladium mariscus], [Phragmites australis], [Glyceria maxima], [Calamagrostis canescens].
Icelandic stiff sedge fens	Rich fen [Carex bigelowii]-dominated communities of the lower alpine level of Iceland, descending, in the north, into the lowlands, occupying level substrates subjected to water movement and fluctuating moisture, with a consequently variable vegetation; mosses play a major role. The species cortège may include [Carex capillaris], [Carex dioica], [Carex nigra], [Carex rariflora], [Eriophorum angustifolium], [Calamagrostis stricta], [Festuca rubra] s.l., [Phleum alpinum], [Polygonum vivipara], [Saxifraga hirculus], [Salix callicarpaea] ([Salix arctica]), [Salix herbacea], [Vaccinium uliginosum], [Thalictrum alpinum], [Equisetum palustre], [Equisetum arvense], [Equisetum variegatum].
Blue moorgrass ([Sesleria caerulea]) fens	Western fen communities dominated by [Sesleria caerulea], recorded, in particular, from peri-Pannonic regions, from the Bohemian Quadrangle, from the eastern Germano-Baltic plain and from the Eastern Carpathians with an abundance of [Carex hostiana], [Carex panicea], [Phragmites australis], [Cirsium rivulare], [Equisetum palustre], [Sanguisorba officinalis], [Galium boreale], [Campylium stellatum].
Icelandic marsh horsetail fens	Rich fen communities of Iceland dominated by [Equisetum palustre], accompanied by a variety of grasses, sedges, in particular [Carex rariflora], and mosses, characteristic notably of badly drained solifluxion ledges on slopes.
Bog-myrtle scrub on rich fens	[Myrica gale] thickets of fringes of fens, drying fens and nascent or regenerating bogs of middle Europe, mostly characteristic of the Atlantic sector and of northeastern Europe.

Hard water spring mires	Spring mires of calcareous, often petrifying, springs. Their specialised communities, usually dominated by bryophytes, belong to the [Cratoneurion commutati]. Characteristic species are the mosses [Cratoneuron filicinum], [Cratoneuron commutatum], [Cratoneuron commutatum var. falcatum], [Catoscopium nigritum], [Eucladium verticillatum], [Gymnostomum recurvirostrae], with [Equisetum telmateia], [Equisetum variegatum] and flowering plants including [Cochlearia pyrenaica], [Arabis soyeri], [Pinguicula vulgaris], [Saxifraga aizoides]. The associated swamp communities belong to the [Caricetalia davallianae], see units D4.13-D4.15. Large petrifying springs form tufa cones that constitute singular habitats with several interacting plant and animal communities, which are described as subunits.
Middle European calcareous spring mires	Communities of calcareous springs, seeps and flushes of the nemoral and lowland boreal western Palaearctic domaine in which tufa formation is absent or limited to encrustation of the constituting mosses without building of large deposits. They are characteristic of high altitudes, maritime climates and semishaded stations, all situations unfavourable to tufa formation.
Hard water bryophyte springs	Communities of calcareous springs, flushes, seeps or parts of spring systems of nemoral and boreal Europe overwhelmingly dominated by bryophytes forming carpets, curtains or mounds with no or a modest amount of tufa deposition. Typical dominants are the mosses [Cratoneuron filicinum], [Cratoneuron commutatum], [Cratoneuron commutatum var. falcatum], [Cratoneuron decipiens], also the mosses [Philonotis calcarea], [Paludella squarrosa], [Hygrohypnum luridum], or the hepatic [Leiocolea bantriensis].
Great horsetail springs	Mires of spring or seep systems of nemoral Europe fed by lime-rich waters over clay soils physiognomically dominated by the presence, alongside [Cratoneurion commutati] communities, of colonies of the large horsetail [Equisetum telmateia], pure or accompanied by other species characteristic of lowland tall herb communities (unit 37.1); these colonies may be dense, extensive and up to three metres tall.
Variegated horsetail springs	Mires of spring or seep systems of boreal and nemoral Europe fed by lime-rich waters over sand or gravel soils physiognomically dominated by the presence, alongside [Cratoneurion commutati] formations, of communities belonging to or related to arcto-alpine riverine swards (unit 54.3) or subalpine willowherb stream communities (unit 24.22) comprising in particular stands of the perennial horsetail [Equisetum variegatum].
Small herb calcareous springs	Communities of calcareous springs, flushes, seeps or parts of spring systems of nemoral and boreal Europe in which, alongside an abundant representation of bryophytes, assemblages of small dicots or sedges contribute significantly to the formation's appearance. Mosses of genus [Cratoneuron] usually remain the main bryophyte component, and there may be a modest amount of tufa encrustation and deposition. Characteristic vascular species include, in particular, [Cochlearia pyrenaica], [Arabis soyeri], [Pinguicula vulgaris], [Saxifraga aizoides], and fen species belonging to the cortège of the [Caricetalia davallianae].

Polish scurvy-grass springs	Endemic [Cochlearia polonica] formations of cold springs and very clear fast-running brooks of fluvioglacial sand deposits over limestones of the Polish Jurassic region.
Carpathian oriental leopardsbane communities	Calcareous spring communities, usually dominated by [Saxifraga aizoides], [Silene pusilla], [Caltha laeta], [Cratoneuron commutatum], with regional species, such as [Doronicum carpaticum], [Chrysosplenium alpinum], [Achillea schurii].
Boreo-alpine calcareous spring mires	Calcareous tufa-forming spring communities of the subalpine and lower alpine levels of the boreonemoral and boreoalpine mountains of Fennoscandia, dominated by brown mosses, in particular by [Cratoneuron] species, with a relatively thin assembly of vascular species formed by elements of both fens and wet meadows, usually with a prominence of [Cystopteris montana] or [Saxifraga aizoides].
Illyro-Balkanic calcareous spring mires	Calcareous spring and seep communities, often strongly tufa forming, of southeastern Europe, in particular of the Illyrian karst region, of the Devetashko Plateau in northern Bulgaria, with [Phyllitis scolopendrium], of the Hellenides of the F.Y.R. of Macedonia and Greece.
Caucasian calcareous spring mires	Communities of alpine and subalpine calcareous springs of the Caucasus, with [Cardamine uliginosa], [Cardamine raphanifolia], [Primula auriculata], [Epilobium algidum], [Veronica beccabunga], [Carex orbicularis].
Anatolian calcareous spring mires	Calcareous spring and seep communities, often strongly tufa forming, of the Anatolian plateau.
Basic mountain flushes and streamsides, with a rich arctic-montane flora	Rare Alpine, peri-Alpine, northern British and periarctic pioneer communities colonizing gravelly, sandy, stony, sometimes somewhat argilous or peaty, calcareous sedimentary substrates soaked by cold water, in moraines and on the edge of springs, rivulets, glacial torrents of the alpine or subalpine levels, or on alluvial sands of pure, cold, slow-flowing rivers and calm backwaters. The highly characteristic constituents, with a boreoarctic or glacial relict distribution, are [Carex bicolor], [Carex microglochin], [Carex maritima], [Carex atrofusca], [Carex vaginata], [Kobresia simpliciuscula], [Scirpus pumilus], [Juncus arcticus], [Juncus alpinoarticulatus], [Juncus castaneus], [Juncus triglumis], [Typha minima], [Typha lugdunensis], [Typha shuttleworthii], [Tofieldia pusilla]; they are often accompanied by [Carex davalliana], [Carex dioica], [Carex capillaris], [Carex panicea], [Carex nigra], [Blysmus compressus], [Eleocharis quinqueflora], [Scirpus cespitosus], [Primula farinosa], [Equisetum variegatum], [Drepanocladus
Arctoalpine riverine false sedge and bristle sedge swards	Arctoalpine seep and wet gravel communities of the Alpine system and the Fennoscandian mountains dominated by [Kobresia simpliciuscula] or [Carex microglochin].
Alpine riverine curved sedge swards	Rare pioneer communities of the edges of glacier-fed streams and moraines of the subalpine and alpine levels of the central Alps, dominated by [Carex maritima] ([Carex juncifolia], [Carex incurva]), with [Carex bicolor], [Carex atrofusca], [Juncus arcticus].
Arctoalpine riverine horsetail, bullrush and rush swards	Communities of cold slow-flowing waters of the Alps and pre-Alpine regions, and of the mountains of Fennoscandia formed by [Typha minima], [Typha shuttleworthii], [Juncus alpinus] ([Juncus alpinoarticulatus]), [Juncus arcticus], [Juncus castaneus], [Equisetum variegatum].

British mica flushes	Rare communities of micaceous stony flushes of the Highlands of Scotland and of upper Teesdale, with [Carex atrofusca], [Carex microglochin], [Carex demissa], [Carex dioica], [Carex panicea], [Juncus triglumis], [Juncus biglumis], [Juncus castaneus], [Kobresia simpliciuscula], [Tofieldia pusilla], [Saxifraga aizoides], [Thalictrum alpinum], [Equisetum variegatum], [Equisetum hyemale] and the moss [Blindia acuta].
Boreal scorched sedge swards	Rich [Carex atrofusca]-dominated fen communities of the lower alpine level of boreoalpine and arctoalpine mountains of Fennoscandia, on calcareous substrates with near-surface ground water and relatively high pH; peat production is usually low and mineral earth can be bare. The species cortège typically includes [Carex vaginata], [Carex capillaris], [Carex parallela], [Carex dioica], [Carex bigelowii], [Juncus triglumis], [Juncus biglumis], [Polygonum viviparum] ([Bistorta vivipara]), [Saxifraga aizoides], [Thalictrum alpinum], [Tofieldia pusilla], [Salix reticulata], [Drepanocladus revolvens], [Campylium stellatum].
Boreal marsh-fens	Sedge or grass formations of arctic, subarctic, arctoalpine and boreoalpine regions of the Palaearctic, often almost monospecific, often with an insignificant bryophyte component, sometimes with substantial [Calliergon], [Bryum] or [Philonotis] moss cover, occupying fine-grained, often sandy, long-submerged but well aerated, alluvial deposits in the inundation zone of rivers, brooks, lakes or deltas, relatively nutrient-rich, in part through the contribution of regular flooding, and with a variable lime content.
Cottonsedge marsh-fens	[Eriophorum scheuchzeri]- or [Eriophorum angustifolium]-dominated marsh-fen communities of fine-grained long-submerged alluvial deposits of the inundation zone of rivers, brooks, lakes or deltas of the arctic, subarctic, arctoalpine and boreoalpine regions of the Palaearctic.
Grass and forb marsh-fens	Grass- or forb-dominated marsh-fen communities of fine-grained long-submerged alluvial deposits of the inundation zone of rivers, brooks, lakes or deltas of the arctic, subarctic, arctoalpine and boreoalpine regions of the Palaearctic.
Sedge marsh-fens	[Carex] spp.-dominated marsh-fen communities of fine-grained long-submerged alluvial deposits of the inundation zone of rivers, brooks, lakes or deltas of the arctic, subarctic, arctoalpine and boreoalpine regions of the Palaearctic.
Sedge and reedbeds, normally without free-standing water	Sedge and reedbeds forming terrestrial mire habitats, not closely associated with open water. Excluded are reedbeds and sedges where they form emergent or fringing vegetation beside water bodies (C3.2).
Reedbeds normally without free-standing water	Terrestrialized stands of tall helophyte [Poaceae], [Schoenoplectus] spp., [Typha] spp., horsetails or forbs, usually species-poor and often dominated by one species, growing on waterlogged ground. They are classified according to dominant species which give them a distinctive appearance. These species also grow as emergents and fringing vegetation beside water bodies (C3.2).
Common reed ([Phragmites]) beds normally without free-standing water	[Phragmites australis] beds of the Palaearctic region dry for at least a large part of the year, often invaded by other species.

Dry freshwater [Phragmites] beds	Non-inundated [Phragmites australis] beds of the Palaearctic region occupying mires, the landfilling zone of waterbodies, the edges of watercourses and other soils permeated by fresh water.
Common clubrush ([Scirpus]) beds normally without free-standing water	Communities of the margins of Palaearctic lakes, rivers and brooks dominated by [Scirpus lacustris], intolerant of drying, tolerant of water circulation, and thus forming the outer belts of reedbeds.
Reedmace ([Typha]) beds normally without free-standing water	Communities of the margins of Palaearctic lakes, rivers and brooks dominated by [Typha latifolia], [Typha angustifolia], [Typha domingensis], [Typha laxmannii], [Typha elephantina] formations, usually extremely species-poor and sometimes almost pure, tolerant of extended periods of dryness, varying conditions of salinity, and of pollution.
Beds of large sedges normally without free-standing water	Terrestrialized stands of tall [Carex], [Cladium] and [Cyperus], usually species-poor and often dominated by one species, growing on waterlogged ground. These species also grow as emergents and fringing vegetation beside water bodies (C3.2).
Beds of large [Carex] species	Communities of social sedges of genus [Carex], usually dominated by one species that can be either tussock-forming or bed-forming. They are arranged according to dominant species. Species [Carex acutiformis], [Carex appropinquata], [Carex elata], [Carex paniculata], [Carex lasiocarpa] are present. Vegetation of alliance [Magnocaricion elatae].
Brown sedge beds	Formations of [Carex disticha] of Palaearctic humid alluvial meadows on clay and of temporarily drying peatbogs; often in contact with grasslands of the [Calthion] and sometimes placed in that alliance; they tolerate fairly long desiccation and have a relatively rich accompanying flora.
Slender tufted sedge beds and related communities	Palaearctic formations of the terrestrialisation zone of marshes, ponds and lakes on mostly mineral, neutral, basic or weakly acid substrates, dominated by large bed-forming, rhizomatous, sedges, in particular, [Carex acuta], [Carex acutiformis] or their relatives.
Slender tufted sedge beds	Palaearctic formations of [Carex acuta] of wet, alkaline or slightly acid depressions with mineral soil; [Carex acuta] does not tolerate prolonged desiccation. The community is distributed, in particular, in northern France, the Low Countries, Central Europe south to the Sava and Drava valleys of Croatia, the northern Morava valley of Serbia and Romania, north to Poland, the Kaliningrad District, Lithuania and Latvia, in southern Scandinavia, in the Dnieper basin of northern Ukraine and southern Belarus, in the lower Volga Valley.
Lesser pond sedge beds	Palaearctic communities dominated by [Carex acutiformis], more tolerant of desiccation than [Carex acuta], forming beds on mesotrophic, base-rich, neutral to slightly acid, peaty or mineral soils. Large beds may form in fens, often with [Carex paniculata]; otherwise, they are widespread along watercourses on the landward side of [Carex acuta] or [Carex vesicaria] beds, in alluvial plains, ditches and depressions of humid meadow systems; they may occupy stations that almost totally escape periodical inundation.
Inn sedge beds	Formations of [Carex oenensis], restricted to oligotrophic, base-rich streamsides of the pre-Alpine Bavarian plateau.

Banat sedge beds	[Carex buekii] formations of mesotrophic sandy or clayey soils in Franconia, eastern Bavaria, Saxony, northern Italy, eastern central Europe, eastern Europe and western Asia.
Water sedge beds	Mesotrophic [Carex aquatilis] formations of northern Siberia and northern Europe, south to Lower Saxony, Friesland, Wales, Lakeland, Scotland, Ireland.
Brotero sedge beds	[Carex acuta ssp. broteriana] formations of Iberia, lining river courses on the inner side of alder galleries, or replacing them.
[Carex melanostachya] beds	Palaearctic swamp communities dominated by [Carex melanostachya] ([Carex nutans]), characteristic of slightly saline soils of the Pannonic region, habitat of the uncommon [Carex curvata].
[Carex hispida] beds	Formations of the terrestrialisation zone of Mediterranean marshes, ponds, lakes, ditches dominated by [Carex hispida].
Greater pond sedge beds	Formations of [Carex riparia], mostly characteristic of larger valleys and southern regions of the Palaearctic domaine, intolerant of desiccation. They form on mineral or thinly peaty substrates, often in areas almost permanently inundated by somewhat lime-rich water.
Bottle, bladder and slender sedge beds	Palaearctic terrestrialisation communities dominated by [Carex vesicaria], [Carex rostrata] or [Carex lasiocarpa], characteristic of moderately to strongly acid, fairly constantly inundated soils and poor fens.
Bottle sedge beds	Terrestrialisation sedge beds of the Palaearctic domaine, characteristic, in particular, of continental regions, dominated by [Carex rostrata], forming dense, vigorous, fertile beds on usually very wet, meso-oligotrophic substrates.
Bladder sedge beds	Palaearctic formations of [Carex vesicaria], usually characteristic of less oligotrophic situations than the previous ones. [Carex vesicaria], however, often accompanies [Carex rostrata], forming then the outer, drier edge of the sedge bed.
Slender sedge beds	Palaearctic terrestrialisation communities dominated by [Carex lasiocarpa], characteristic of dystrophic to mesotrophic waters with low to moderate level fluctuations, on weakly to moderately acid peaty substrates or gyttyas, most widespread in northern and continental Eurasia, with representatives in Atlantic Europe, in particular in Ireland, and, as rare glacial relicts, in Alpine lands.
Tufted sedge and sward sedge tussocks	Palaearctic formations dominated by the large, tussock-forming [Carex elata] or its relatives.
Tufted sedge tussocks	Formations of large, often crowded tussocks of [Carex elata], of alkaline or eutrophic, peaty or organic soils of the Palaearctic domaine. [Carex elata] is, in particular, one of the constituents of species-rich sedge communities in alkaline fens. It is also typical of the flood plain of large, slow-flowing rivers.
Sward sedge tussocks	Formations of [Carex cespitosa], characteristic of nutrient- and base-rich, neutral to acid peaty soils of Siberia, Central Asia, northern and central Europe, west to the Netherlands, Bohemia, Württemberg and northern Italy.
Greater tussock sedge tussocks	Formations of large, usually well-spaced tussocks of [Carex paniculata], of alkaline to acid, usually mesotrophic, often somewhat shady, habitually peaty stations of the Palaearctic domaine, including marshy woods. [Carex paniculata] is also a constituent of species-rich alkaline fen sedge communities.

Smaller tussock sedge tussocks	Terrestrialisation formations of Palaearctic lakes, ponds and swamps dominated by [Carex appropinquata] ([Carex paradoxa]) or [Carex diandra].
Cyperus sedge tussocks	Palaearctic sedge beds dominated by [Carex pseudocyperus], mostly characteristic of slightly acid peaty soils, in very wet situations.
Fox sedge tussocks	Palaearctic formations dominated by [Carex vulpina] or [Carex otrubae], of eutrophic humus-poor clay soils, inundated for part of the year.
True fox sedge tussocks	Palaearctic formations of the very large [Carex vulpina].
False fox sedge tussocks	Palaearctic formations of the often less robust [Carex otrubae].
Club sedge beds	Beds of [Carex buxbaumii] of wet grasslands, lake shore swamps and fens, on temporarily inundated relatively nutrient-rich, somewhat acid peaty sandy or clayey soils of eastern France, southern and eastern Germany, Poland, Lithuania, the southern Alps and the central Apennines.
Icelandic sedge beds	Sedge beds of Iceland dominated by [Carex lyngbyei], forming, thanks to strong runners, large stands on lakesides, poolsides, open mires and in ditches.
Tall galingale ([Cyperus]) beds	Palaearctic formations dominated by large perennial Cyperaceae of genus [Cyperus], other than [Cyperus papyrus].
Common galingale beds	[Cyperus longus] formations of Italy, southeastern Europe, North Africa and Asia Minor.
Papyrus swamps	Formations of [Cyperus papyrus] of the Near East, Egypt and Sicily.
Cyane papyrus swamp	[Cyperus papyrus ssp. siculus] gallery of the Cyane river in southeastern Sicily. Taxonomic and historical evidence strongly suggest that this unique station is of natural origin, an extraordinary relict of an extensive Tertiary distribution.
Fen beds of great fen sedge ([Cladium])	Species-rich, fairly open [Cladium mariscus] beds of alkaline and sometimes acid fens, accompanied by cortèges of the [Caricion davallianae] or of the [Caricion lasiocarpae]. These formations are in grave decline throughout their range. Typical species: [Molinia caerulea], [Schoenus nigricans], [Schoenus ferrugineus], [Eriophorum latifolium] etc. Closed stands are species-poor.
Valencia great fen sedge ([Cladium]) islands	Endangered endemic association of peaty islets of the Albufera de Valencia, with [Kosteletzkya pentacarpos].
Swamps and marshes dominated by soft rush or other large rushes	Stands of large [Juncus] spp. invading heavily grazed and trampled marshes or fens or (with [Juncus effusus]) eutrophicated poor fens and bogs, e.g. in the vicinity of bird colonies. Excludes stands of rushes in wet grassland (E3.4), where the ground is waterlogged for less than half the year.
Inland saline and brackish marshes and reedbeds	Saline wetlands, with closed or open vegetation, which are the non-coastal analogue of coastal saltmarshes and saline reedbeds (A2.5). Drier saline habitats are classified as inland salt steppe (E6) or saline scrubland (F6.8).

Inland saltmarshes	Salt meadows and swards of [Salicornia] and other [Chenopodiaceae] of inland salt basins of the nemoral zone. Inland saltmarshes of middle Europe are remarkable, extremely threatened communities occurring in a few isolated stations of Saxony and Lower Saxony, Schleswig-Holstein, Thuringia, Hesse, Lorraine, Auvergne, the Midlands and southeastern Poland (lower Nida valley).
Interior European reflexed saltmarsh-grass ([Puccinellia distans]) meadows	Meadows of [Puccinellia distans] and [Puccinellia limosa] occupying the lower levels of inland salt basins of the nemoral zone of western and central Europe, with fairly extended periods of inundation. As typical species we can consider here [Hordeum geniculatum], [Plantago tenuiflora], [Camphorosma annua] and [Juncus gerardi].
Interior European saltmarsh rush and couch beds	Formations dominated by [Juncus gerardi] or [Elymus repens], with [Triglochin maritima], [Glaux maritima], [Melilotus dentata], of the upper levels of inland salt basins of the nemoral zone of western and central Europe, on damp, less saline soils.
Interior European stalked orache (pedunculate sea-purslane) beds	Formations dominated by the threatened [Halimione pedunculata] restricted to saltmarshes east and south of the Harz.
Swards of Carpathian travertine concretions	Closed halo-hygrophile swards of [Scirpus pumilus], [Triglochin maritima], [Glaux maritima], [Centaurium littorale ssp. uliginosum], [Plantago maritima ssp. salsa] with [Pinguicula vulgaris], [Parnassia palustris], [Primula farinosa], endemic to the inner Carpathian Zipser valley of Slovakia, where they colonize travertine concretions permanently washed by mineralized spring waters. Most of localities were destroyed in the past.
Interior Iberian glasswort swards	Annual [Salicornia] spp. and [Microcnemum coralloides] formations of interior Iberian salt basins.
Iberian [Microcnemum] swards	Formations of the endemic [Microcnemum coralloides ssp. coralloides], associated or not with [Salicornia europaea] s.l., of interior salt basins of central and east-central Spain.
Iberian interior [Salicornia] swards	Formations of [Salicornia europaea] s.l. of interior salt basins of Iberia.
Interior central European and Anatolian glasswort swards	Annual glasswort ([Salicornia] spp., [Microcnemum coralloides]), seablite ([Suaeda] spp.) and saltwort ([Salsola] spp.) solonchak formations, colonizing periodically inundated muds of Black Sea coastal saltmarshes and of inland salt-basins of central Eurasian and Irano-Anatolian steppe and cold desert zones. Annual glasswort communities of salt steppes and saltmarshes of areas of extreme continentality within the boreal zone of Siberia.
Pannonic glasswort-seablite-saltwort swards	Annual glasswort ([Salicornia] spp.), seablite ([Suaeda] spp.) and saltwort ([Salsola soda]) formations colonizing periodically inundated muds of inland salt-basins associated with the salt steppes and saltmarshes of the Pannonic Plain (unit 15.A1) and its satellite basins. Similar communities restricted to isolated intermontane basins of the southwestern Balkan peninsula, related to both the Pannonic and western Pontic formations, are included in this unit, to parallel the treatment of the steppes and saltmarshes of unit 15.A1.
Pannonic glasswort swards	Formations dominated by the reddening [Salicornia prostrata] or [Salicornia simonkaiana] colonizing periodically inundated muds of salt-basins associated with the salt steppes and saltmarshes of the Pannonic Plain.

Pannonic seablite swards	Formations dominated by [Suaeda pannonica], [Suaeda maritima ssp. prostrata] or [Suaeda maritima ssp. salsa] colonizing periodically inundated muds of salt-basins associated with the salt steppes and saltmarshes of the Pannonic Plain.
Pannonic saltwort communities	Formations of [Salsola soda] colonizing periodically inundated silty, nitrogen-rich muds of the lower levels of salt-basins of the Pannonic Plain.
Pelagonian seablite swards	Annual formations colonizing periodically inundated muds of inland saltmarshes of isolated intermontane basins of the southwestern Balkan peninsula, in particular, of the middle Vardar trough, northwest of the Pelagonian mountains, with [Suaeda maritima].
Western Pontic glasswort-seablite-saltwort swards	Annual glasswort ([Salicornia] spp.), seablite ([Suaeda] spp.) and saltwort ([Salsola soda]) formations colonizing periodically inundated muds of the saltmarshes of the western Black Sea coast and adjacent inland waterbodies and of the inland salt-basins associated with the salt steppes and saltmarshes of the western Black Sea plain, west of the Dniestr, of the basin of the lower Danube, and, in very fragmentary form, of the northern Thracian basin of the middle Maritsa and the Tundzha. Typical species include [Salicornia prostrata], [Suaeda maritima], [Bassia hirsuta], [Limonium gmelinii].
Central Eurasian glasswort swards	Annual glasswort ([Salicornia] spp.), seablite ([Suaeda] spp.) and saltwort ([Salsola] spp.) formations colonizing periodically inundated muds of salt steppes and saltmarshes of the Transvolgan, Kazakh, Kourgan, Ichim, Koulounda, Baraba, Barnaul steppe regions and of saltmarshes of the Caspian Sea, the Aral Sea and other inland waterbodies of the northern Aralo-Caspian, Kura basin, western Kazakh, Dzungarian, Oust-ourt, Kyzyl Koum and Kara Koum middle Asiatic deserts and semideserts.
Western European continental glasswort beds	Glasswort formations of inland saltmarshes of nemoral middle Europe, in particular of Germany, Poland, France and England (unit D6.1).
Inland saline or brackish species-poor helophyte beds normally without free-standing water	Terrestrialized stands of tall salt-tolerant helophytes, notably [Phragmites australis] and [Cyperus laevigatus]. These species also grow as emergents and fringing vegetation beside saline water bodies (C3.27).
Dry halophile common reed ([Phragmites]) beds	Non-inundated [Phragmites australis] beds of the Palaearctic region forming on the shores of saltwater bodies or on other saline soils.
Slender galingale ([Cyperus]) beds	Formations dominated by, or rich in, [Cyperus laevigatus], characteristic, in particular, of saline depressions in the Canary Islands, of thermal waterbodies on Pantelleria, and of damp, often saline, sites, such as lake, marsh and swamp margins, of North Africa. These formations are apparently extinct in the Maltese Islands.
Interior Iberian salt pan meadows	Salt meadows peculiar to the lowest, wettest parts of interior Iberian depressions, dominated by [Puccinellia fasciculata] or [Aeluropus littoralis] in the very lowest areas, or, slightly higher, by [Juncus gerardi]. The higher, drier ground that surrounds them is occupied either by other salt meadow communities that are less differentiated from the coastal communities (units A2.522 and A2.532) or by salt scrubs (unit F6.83).

Grasslands and lands dominated by forbs, mosses or lichens	Non-coastal land which is dry or only seasonally wet (with the water table at or above ground level for less than half of the year) with greater than 30% vegetation cover. The vegetation is dominated by grasses and other non-woody plants, including mosses, macrolichens, ferns, sedges and herbs. Includes semiarid steppes with scattered [Artemisia] scrub. Includes successional weedy vegetation and managed grasslands such as recreation fields and lawns. Excludes regularly tilled habitats (I1) dominated by cultivated herbaceous vegetation such as arable fields.
Dry grasslands	Well-drained or dry lands dominated by grass or herbs, mostly not fertilized and with low productivity. Included are [Artemisia] steppes. Excluded are dry mediterranean lands with shrubs of other genera where the shrub cover exceeds 10%; these are listed as garrigue (F6).
Inland sand and rock with open vegetation	Open, thermophile vegetation of sands or rock debris in the nemoral zone and locally, in boreal or submediterranean lowland to montane areas of Europe. Included are open grasslands on strongly to slightly calcareous inland sands, and vegetation formed mostly by annuals and succulents or semisucculents on decomposed rock surfaces of edges, ledges or knolls, with calcareous or siliceous soils.
Euro-Siberian rock debris swards	Open lowland and hill rock debris swards of suboceanic, temperate, boreal or sub-Mediterranean, climates of Western Europe and of Central Europe, east, sporadically, to the Baltic countries and the Black Sea, formed mostly by annuals and succulents or semisucculents on decomposed rock surfaces of edges, ledges or knolls, with calcareous or siliceous soils frequently disturbed by erosion or rabbits. Vegetation communities are of [Alysso-Sedion albi] and [Seslerio-Festucion pallentis]. These swards comprise a great variety of distinct and often very local, isolated communities harbouring many characteristic species like [Erophila verna], [Jovibarba globifera ssp. glabrescens], [Poa bulbosa], [Sedum acre], [Sedum album], [Sedum sexangulare], among which are numerous rare forms including both relict and evolutionarily recent taxa. Together with more evolved grassland communities of unit E1.29, sometimes E1.21-E1.25, E1.27, or E1.281, very paucispecific communities of units H3.19 or H3.2B, and lacunar shrub formations of unit F3.1, they constitute the vascular vegetation of middle European inlar
Middle European stonecrop swards	Open lowland and hill rock debris swards of suboceanic, temperate or sub-Mediterranean, climates of Western Europe and Central Europe, dominated by, or rich in, succulent species of genus [Sedum].
Houseleek communities on rock debris	Open lowland and hill rock debris swards of suboceanic climates of Western Europe and western and northern Central Europe harbouring often rare and local lowland forms of [Sempervivum] spp. or [Jovibarba] spp.
Middle European grassy rock debris communities	Open lowland and hill rock debris swards of suboceanic climates of Western Europe and western and northern Central Europe, eastwards sporadically to the hills of the Pannonic plain, in which perennial grasses such as [Poa badensis], [Melica ciliata] and [Festuca] spp. play an important physiognomic role.
[Poa badensis] and garlic rock debris swards	Lowland and hill rock debris swards of northern Bavaria, Bohemia and Thuringe, dominated by [Poa badensis], by [Allium montanum] or by both species.

[Poa compressa] rock debris swards	Lowland and hill rock debris swards of the Rhenish Hercynian ranges, the Jura, the Bohemian Quadrangle and the eastern Alpine periphery, dominated by [Poa compressa] or [Poa angustifolia].
[Melica ciliata] rock debris swards	Open, sub-Mediterranean type, limestone rock grassland of the western part of the Hungarian Central Range, with [Asplenium ruta-muraria], [Melica ciliata] and harbouring the rare and protected [Ceterach javorkaenum], [Colchicum hungaricum], [Sedum neglectum ssp. sopianae].
Middle European rock debris small forb communities	Open lowland and hill rock debris swards of suboceanic, temperate or sub-Mediterranean, climates of Western Europe and Central Europe in which small annual or perennial forbs predominate over sparser crassulids or perennial grasses.
Fenno-Scandian pioneer rock swards	Pioneer communities colonizing thin debris soils and cracks of rocks, cliffs and rock pavements of xerothermic enclaves of the boreonemoral and southern boreal zones of Norway, Sweden and Finland, mostly limited to coastal regions, southern slopes and alvars. Some of the communities share physiognomic and ecological characteristics with the Central European communities of unit 34.35.
Euro-Siberian pioneer calcareous sand swards	Open grasslands of strongly to slightly calcareous inland sands of Western Europe and of middle, western and northern Central Europe, locally to Slovakia, the Baltic States and Belarus, with [Helichrysum arenarium], [Silene otites], [Silene chlorantha], [Dianthus deltoides], [Dianthus arenarius], [Bromus tectorum], [Cynodon dactylon], [Gypsophila fastigiata ssp. arenaria], [Astragalus arenarius], [Androsace septentrionalis], [Onosma arenaria], [Jurinea cyanoides], [Koeleria glauca], [Koeleria macrantha], [Festuca psammophila], [Festuca polesica], [Festuca duvalii], [Poa bulbosa], Pannonic endemic [Colchicum arenarium] and the Brandenburg endemic [Stipa borysthenica ssp. germanica], sometimes interspersed with annual formations with [Cerastium semidecandrum], [Vicia lathyroides], [Silene conica], [Phleum arenarium], [Petrorhagia prolifera], [Arenaria serpyllifolia], [Sedum acre]. Dunal equivalent formations are found in unit H5.
Perennial calcareous grassland and basic steppes	Perennial grasslands, often nutrient-poor and species-rich, on calcareous and other basic soils of the nemoral and steppe zones and of adjacent parts of the subboreal and submediterranean zones. Includes the calcareous grasslands of central and western Europe, alvar grasslands of the Baltic region, and basic grasslands of the steppe zone. Vegetation communities of [Festuco-Brometea].
Helleno-Balkanic savory steppes	Perennial, steppe-like low open grasslands on shallow stony soils of the sub-Mediterranean and sub-Pannonic [Quercion frainetto] and [Fagion moesiacum] zones of the Balkan peninsula, from Greece to Serbia and western Bulgaria. Typical species (among others): [Festuca valesiaca], [Festuca rupicola], [Koeleria gracilis], [Stipa] spp., [Bromus erectus], [Poa bulbosa], [Melica ciliata], [Carex humilis], [Carex caryophyllea], [Satureja montana], [Galium purpureum], [Teucrium montanum], [Vincetoxicum hirundinaria], [Artemisia alba], [Galium album], [Euphorbia cyparissias], [Teucrium chamaedrys].

Arid subcontinental steppic grassland	Open or closed arid, floristically rich steppe-like grasslands of sub-continental areas of Central Europe, typically with [Stipa] spp., [Festuca valesiaca], [Festuca rupicola] and [Festuca trachyphylla]. Vegetation of alliances such as [Festucion valesiacae] and [Seslerio-Festucion glaucae] with other species like [Festuca pallens], [Poa badensis], [Carex humilis], [Sesleria varia], [Teucrium montanum], [Ononis pusilla], [Helianthemum canum], [Iris aphylla], [Onosma tornensis], [Draba lasiocarpa], [Scorzonera austriaca] and [Fumana procumbens].
Sub-Pannonic steppes	Xerophile grasslands of Ponto-Pannonic affinities of the hills of the western, northern and southwestern periphery of the Pannonic basin and of the Hungarian Central Range, with irradiations into the Bohemian basin.
Pre-Noric sub-Pannonic steppes	Relatively wide-ranging xerophile grasslands of Ponto-Pannonic affinities of the hills of the western and northern, predominantly pre-Alpine or pre-Carpathian, periphery of the Pannonic basin in Austria, Moravia and Slovakia.
Pre-Bohemian sub-Pannonic steppes	Localized xerophile grasslands of Ponto-Pannonic affinities of the hills of the northwestern, pre-Bohemian, periphery of the Pannonic basin.
Central Hungarian sub-Pannonic steppes	Grasslands of dry slopes of the Hungarian Central Range and the Mecsek hills, harbouring many continental and regionally important species including the very rare [Ferula sadlerana], with [Festuca rupicola], [Stipa capillata], [Stipa crassiculmis ssp. euroanatolica], [Stipa dasyphylla], [Cleistogenes serotina] ([Diplachne serotina]), [Dracocephalum austriacum], [Lotus borbasii], [Adonis vernalis], [Iris pumila], [Pulsatilla nigricans], [Ranunculus illyricus], [Veronica austriaca], [Linum austriacum], [Convolvulus cantabrica].
Pre-Illyrian sub-Pannonic steppes	Xerophile grasslands of Ponto-Pannonic affinities of the hills of the southwestern periphery of the Pannonic basin.
Andropogonid sub-Pannonic steppes	Xerophile grasslands of Ponto-Pannonic affinities of the hills of the western and southwestern periphery of the Pannonic basin, dominated by [Dichanthium ischaemum].
Sub-Pannonic rock steppes	Xerophile grasslands of the Hungarian Central Range, intermediate between the rock swards of the [Festucetalia pallentis] and the steppes of the [Festucetalia valesiacae], and often in contact with both, developed on shallow rendzina soils over dolomites, rich in species of sub-Mediterranean and Illyrian affinities, in addition to a continental, in part Pontic, cortège, including in particular [Festuca pallens], [Carex humilis], [Helianthemum canum], [Jurinea mollis], [Scorzonera austriaca], [Teucrium montanum], [Euphorbia seguierana], [Erysimum diffusum], [Fumana vulgaris], [Minuartia setacea], [Onosma visianii], [Paronychia cephalotes], [Allium moschatum].
Moesio-Carpathian steppes	Xerophile grasslands of Ponto-Pannonic affinities of the foothills, lower slopes and associated plateaux of the eastern Carpathian system, of the Balkan Range and of the Dinarides, in areas enclaved between the Pannonic and Ponto-Sarmatic regions or within their influence.

Moesio-Carpathian feathergrass-fescue steppes	Xerophile grasslands of Ponto-Pannonic affinities of the foothills, lower slopes and associated plateaux of the eastern Carpathian system, of the Balkan Range and of the inner Dinarides, in areas enclaved between the Pannonic and Ponto-Sarmatic regions or within their influence, dominated by [Festuca] spp., in particular [Festuca valesiaca], [Festuca rupicola] or [Stipa] spp., in particular [Stipa capillata], [Stipa pulcherrima], and with [Achillea nobilis], [Achillea setacea], [Astragalus exscapus], [Euphrasia tatarica], [Carex supina].
Moesio-Carpathian andropogonid steppes	Xerophile grasslands of Ponto-Pannonic affinities of the foothills, lower slopes and associated plateaux of the eastern Carpathian system, of the Balkan Range and of the inner Dinarides, in areas enclaved between the Pannonic and Ponto-Sarmatic regions or within their influence, dominated by [Dichanthium ischaemum] ([Bothriochloa ischaemum], [Andropogon ischaemum]).
Meso-xerophile subcontinental meadow-steppes	Meso-xerophile grasslands of Central Europe with [Astragalus danicus], [Inula spiraeifolia], [Seseli annuum], [Linum] spp., [Carex michelii], [Carex praecox], [Carex flacca]. Varied plant communities of grasses and herbs mostly in basins and uplands. As a consequence of pasture, a mesophilous tendency often includes widespread [Juniperus communis]. Vegetation of alliance [Carduo-Brachypodion pinnati], common species are [Brachypodium pinnatum], [Festuca rupicola], [Cirsium pannonicum], [Linum flavum], [Potentilla alba], [Bromus erectus], [Coronilla varia], [Buphthalmum salicifolium] and [Campanula glomerata].
Sub-Pannonic meadow-steppes	Meso-xerophile grasslands of Ponto-Pannonic affinities of the hills of the western, northern and southwestern periphery of the Pannonic basin and of the Hungarian Central Range.
Sub-Pannonic wooded steppe meadows	Secondary xero-mesophile grasslands colonizing abandoned vineyards in the Hungarian Central Range rich in rare and fragile species, harbouring, in particular, [Stipa stenophylla] ([Stipa tirsa]), [Campanula macrostachya], [Helictotrichon compressum], [Danthonia alpina], [Stipa dasyphylla], [Seseli osseum], [Centaurea triumfett ssp. axillaris], [Iris pumila], [Peucedanum cervaria], [Carex humilis], [Inula hirta].
Dacio-Pannonic meadow-steppes	Meso-xerophile grasslands of the Transylvanian basin and the foothills of the Apuseni mountains, rich in species of Mediterranean or Mediterraneo-Atlantic affinities, with [Brachypodium pinnatum], [Dorycnium herbaceum], [Trifolium montanum], [Polygala major], [Fragaria viridis], [Plantago media], [Onobrychis viciifolia], [Filipendula vulgaris], [Ranunculus polyanthemos], [Melampyrum arvense], [Hieracium bauhinii], [Thesium linophyllon], [Hypochoeris maculata], [Drunella grandiflora], [Seseli annuum], [Anthericum ramosum], [Bupleurum falcatum], [Peucedanum cervaria], [Trifolium alpestre], [Gentiana cruciata], [Cirsium pannonicum], [Origanum vulgare], [Carex montana], [Bromus erectus], [Orchis militaris], [Orchis ustulata], [Himantoglossum caprinum], [Anacamptis pyramidalis], [Herminium monorchis], [Ophrys apifera], [Ophrys sphegodes], [Ophrys fuciflora], and the xerothermic steppe species [Salvia nutans], [Adonis vernalis], [Crambe tataria], [Seseli varium], [Salvia austriaca], [Hypericum elegans].

Moesio-Carpathian meadow-steppes	Meso-xerophile grasslands of Ponto-Pannonic or Illyrio-Pontic affinities of the foothills, lower slopes and associated plateaux of the eastern Carpathian system, of the Balkan Range and of the eastern Dinarides, in areas enclaved between the Pannonic and Ponto-Sarmatic regions or within their influence.
Central alpine arid grassland	Dry grasslands of the isolated, low-precipitation, high insolation, high summer temperature, inner Alpine valleys of the central, eastern and southwestern Alps.
Alvar steppes	Steppic grasslands of palaeozoic limestones of the Baltic islands of Åland and Gotland and of calcareous enclaves of southern Sweden, in Vestgotland, dominated by fescues with numerous species of continental affinities, many at the northern limit of their range, in particular, [Artemisia oelandica], [Artemisia saxicola], [Ranunculus illyricus], [Globularia vulgaris]. They are rich in endemic species and in orchids. Besides the steppe communities included in this unit, their environment includes pioneer rock swards included in unit E1.1 and lowland rock crack communities included in unit H3.
Sub-Atlantic semi-dry calcareous grassland	More or less mesophile, closed formations dominated by perennial, tuft-forming grasses, colonizing relatively deep, mostly calcareous soils. Generally species-rich, these communities may be overwhelmed by the highly social [Brachypodium pinnatum].Their range extends from the British Isles, Denmark, the Low Countries and northern Germany to the Cantabric range, the Pyrenees, Catalonia, the southern Alps and the Central Apennines, extending east to the Bohemian Quadrangle, beyond which they are replaced by the vicariant formations of the [Cirsio-Brachypodion], to the Wienerwald, Styria and Illyria. [Bromus erectus] and [Brachypodium pinnatum] often dominate, other grasses include [Koeleria pyramidata], [Festuca guestfalica], [Festuca rupicola], [Festuca lemanii], [Avenula pubescens], [Sesleria albicans], [Briza media], [Carex caryophyllea] and [Carex flacca]. Herbs: [Gentianella germanica], [Trifolium montanum], [Ononis repens], [Medicago lupulina], [Ranunculus bulbosus], [Cirsium acaule], [Euphrasia stricta], [Dianthus deltoides], [Potentilla neumanniana] ([Potentilla tabernaemontani], [Potentilla verna]).
Northwestern semidry calcareous grasslands	Sub-Atlantic dry calcareous grasslands of Denmark, southern Scandinavia and the British Isles.
Fenno-Scandian sub-Atlantic calcicolous grasslands	Dry or mesophile calcareous grasslands of sub-Mediterranean or sub-boreal affinities of Denmark, Sweden, Norway and Finland dominated by species of genus [Festuca] or [Avenula].
Hibernian dry calcicolous grasslands	Calcareous grasslands of central and central-western Ireland.
Scotian dry calcicolous grasslands	Very local, dry or mesophile grasslands occupying isolated limestone outcrops or deposits of Scotland, in particular on the Durness limestone of the northwest, the Dalradian limestones of Perthshire and basalt hills of the east, with [Koeleria macrantha], [Festuca ovina], [Festuca rubra], [Briza media], [Avenula pratensis], [Carex flacca], [Carex caryophyllea], [Carex capillaris], [Helianthemum nummularium], [Astragalus danicus], [Thymus drucei].

Britannic [Sesleria] dry calcicolous grasslands	Dry calcicolous grasslands of northern England, characteristic mostly of Carboniferous or Magnesian limestone substrates in the Pennines of Derbyshire, Yorkshire and Lancashire, the Lake District and Durham, including Teesdale, rich in [Sesleria albicans] and with many isolated populations of restricted or rare plants.
Vecto-Cambrian [Festuca]-[Carlina] grasslands	Dry calcicolous grasslands of Carboniferous Limestone outcrops of Wales and the Mendips, extending locally to hard Chalk formations of the Isle of Wight and of the neighbouring southern English mainland, with [Festuca ovina], [Koeleria macrantha], [Carex flacca], [Briza media], [Avenula pubescens], [Avenula pratensis], [Festuca rubra], [Carlina vulgaris], [Sanguisorba minor], [Thymus praecox], [Hieracium pilosella], [Lotus corniculatus], [Plantago lanceolata], [Helianthemum nummularium], [Helianthemum canum], [Scilla verna].
Southern Britannic dry calcicolous grasslands	Grasslands of the chalk downs and mainly Jurassic calcareous hills of southern Britain, mostly of southern and eastern England, with [Bromus erectus] and [Brachypodium pinnatum], or [Festuca] spp. and [Avenula] spp., often very rich in orchids.
Middle European [Bromus erectus] semidry grasslands	Mesophile and meso-xerophile calcareous grasslands of the sub-Atlantic domaine in the Low Countries, Germany, the Czech Republic, Switzerland, northern, central and western France and northwestern Spain. They are faunistically and floristically rich and the highly discontinuous nature of their distribution gives rise to a considerable geographical variation in the composition of plant and animal communities, marked by the occurrence of numerous species of local or disjunct occurrence in addition to the basic cortège common to most of them. Besides this geographical variation, the nature of these grasslands also depends, to a great extent, on hydric regime, substrate characteristics and agropastoral treatment, notably on whether they are mowed or grazed and how intensively. In particular, the relative abundance of the main constituent grass species, [Bromus erectus], [Brachypodium pinnatum] [s. l]., [Sesleria albicans] and [Koeleria pyramidata], varies both geographically with climatic conditions and locally with topography and agropastoral regime. Thus, although
Mosan [Mesobromion]	Mesophile grasslands of the northwestern Hercynian periphery, on mostly Devonian or Carboniferous limestones or dolomitic limestones, occasionally on calcschists, in the Mosan district of Belgium and the French Meuse, with isolated stations in the Ardenne-Eifel of Luxembourg and Rhineland.
Low Meuse [Mesobromion]	Chalk grasslands of the Belgian low Meuse, extreme southeastern Netherlands and Westphalia, generally without [Bromus erectus], and alluvial [Mesobromion] grasslands of adjacent regions (these to be listed under unit 34.324).
Harz [Mesobromion]	Closed mesophile grasslands, on substrates derived from Mesozoic limestones, of the periphery of the Harz in Saxony, Thuringe, Hesse and the hills of Lower Saxony.
Oder [Mesobromion]	Closed mesophile calcareous grasslands of the Oder basin in Brandenbourg and Mecklenburg.
Paris basin Cretaceous [Mesobromion]	Mesophile grasslands of the Cretaceous northwestern and western periphery of the Paris basin, the valleys of the Seine, Bray and Somme and adjacent Jurassic areas of Basse Normandie and the Boulonnais.

Parisian Tertiary [Mesobromion]	Mesophile calcareous grasslands of the Parisian Tertiary in the central Paris basin.
Paris basin Jurassic [Mesobromion]	Mesophile grasslands of the northeastern, eastern and southeastern Jurassic belt of the Paris basin and adjacent Cretaceous areas in Lorraine, Champagne, Haute-Marne, Burgundy, Haute-Saone.
Middle Rhine [Mesobromion]	Closed mesophile calcareous grasslands of the Rhine, Mainz, Moselle, Neckar, Nahe and Lahn valleys in their crossing of the northern Hercynian ranges.
Upper Rhine [Mesobromion]	Closed mesophile calcareous grasslands of the upper Rhine rift and adjacent hills, in Alsace, Baden-Württemberg and Switzerland.
Black Forest [Mesobromion]	Mesophile calcareous grasslands of the southern Black Forest.
Western Jura [Mesobromion]	Mesophile calcareous grasslands of the French and Swiss Jura and adjacent areas.
Swabian [Mesobromion]	Mesophile calcareous grasslands of the Swabian Alb and adjacent areas.
Franconian [Mesobromion]	Closed mesophile calcareous grasslands of the Franconian Alb, Franconian plateaux and adjacent areas.
Northwestern pre-Alpine [Mesobromion]	Hill and montane mesophile grasslands of the northwestern calcareous pre-Alps.
Eastern peri-Alpine [Mesobromion]	Hill and montane mesophile calcareous grasslands of the Isar valley, the Bavarian plateau, the Bavarian pre-Alps, the Austrian northern, eastern and southeastern pre-Alps.
Ligerian [Mesobromion]	Mesophile calcareous grasslands of the Ligerian basin in the southern Paris basin, Berry, Limagne d'Auvergne and Forez.
Aquitanian [Mesobromion]	Mesophile calcareous grasslands of southwestern France in Charentes, Perigord and Aquitaine.
Quercy [Mesobromion]	Closed mesophile calcareous grasslands of Quercy.
Western Pyrenean [Mesobromion]	Hill and montane mesophile calcareous grasslands of the western Pyrenees.
Western Iberian [Mesobromion]	Hill, montane and sometimes lower subalpine calcareous grasslands of the Picos de Europa, Cantabria, Asturias, Alava, Navarra dominated by [Brachypodium pinnatum ssp. rupestre] (to be listed as 34.323K) or by [Bromus erectus], [Carex brevicollis], [Sesleria argentea], [Helictotrichon cantabricum], [Avenula vasconica], [Avenula marginata], and often with [Seseli montanum], [Seseli cantabricum], [Chamaespartium sagittale], [Pulsatilla rubra ssp. hispanica], [Phyteuma orbiculare ssp. hispanicum], [Carduus argemone].
Eastern Hercynian [Mesobromion]	Sub-Atlantic mesophile and meso-xerophile calcareous grasslands of the Bohemian basin, its surrounding hills, Moravia and the Moravian pre-Carpathians, the Weinviertel of Austria, with local occurrences on the northern flank of the Sudeten in Poland.

Middle European [Brachypodium] semidry grasslands	[Brachypodium pinnatum ssp. pinnatum] or [Brachypodium pinnatum ssp. rupestre] facies of unit 34.322. Geographical subdivisions can be introduced by use of the fourth decimal digit of 34.322 in the fourth place of 34.323. [Brachypodium]-dominated facies may form in all the regional types of grasslands inventoried in unit 34.322 as a result of nitrification or of dominance of grazing over mowing. Such processes are accompanied by a drastic reduction in species diversity. South western grasslands of units H to K of 34.322 and 34.323 are, however, generally rich in [Brachypodium] even in the apparent absence of degradation processes.
Alluvial and humid [Mesobromion] grasslands	Closed grasslands rich in species of the [Mesobromion] and in particular [Bromus erectus], developed on calcareous marls, on somewhat elevated expanses of alluvial plains and on other water retentive soils within the range of the grasslands listed under 34.322. They are transitional to humid grasslands (37) and are often marked by the abundance of [Carex flacca]. Among characteristic elements are also [Thalictrum majus], [Peucedanum carvifolia], [Silaum silaus], [Festuca hirundinacea]. Geographical subdivisions can be introduced by use of the fourth decimal digit of 34.322 in the fourth place of 34.324. Extensive examples are known in particular from the marls of Lorraine, the Belgian low Meuse and the great rivers of the Netherlands, Westphalia, the alluvial plains of the French Moselle and Meuse, the Rhine valley in Germany and Alsace, various valleys in south Germany and the valley of the Sarthe.
Middle European [Sesleria] semidry grasslands	[Sesleria albicans]-dominated facies of communities of unit 34.322 or 34.326, often rich in dealpine species, occurring in particular in the Alpine and Pyrenean periphery, but also occurring locally, farther from the immediate Alpine influence, in anomalous stations such as steep, more or less shaded slopes or cliffs; [Sesleria argentea]-dominated grasslands of Alava and Navarra. Geographical subdivisions can be introduced by use of the fourth decimal digit of unit 34.322 in the fourth place of unit 34.325.
Sub-Mediterranean [Mesobromion]	Closed mesophile grasslands, usually rich in [Bromus erectus] and orchids, of the periphery of the Mediterranean basin in Catalonia, the eastern Pyrenees, the Corbières, the Causses, Provence, the southwestern Alps and the northern Apennines. Many are comparatively dry and have sometimes been included in the [Xerobromion].
Insubrian [Mesobromion] grasslands	Species-rich hill and montane grasslands of Lago di Garda, Lago di Como and neighbouring areas with [Chrysopogon gryllus], [Bromus erectus], [Festuca rubra] s.l., [Agrostis capillaris], [Brachypodium pinnatum], [Carex humilis] and many orchids including the endemic [Ophrys benacensis] and [Serapias vomeracea ssp. vomeracea].

Central Apennine [Mesobromion] grasslands	Closed mesophile grasslands of the piani of the beech level of the Monti Sibillini and adjacent regions of the central Apennines, with a rich floristic cortège including many higher altitude species and Apennine endemics, dominated by the grasses [Bromus erectus], [Festuca circummediterranea], [Brachypodium pinnatum], [Poa pratensis], [Briza media], [Festuca pratensis], with [Filipendula vulgaris], [Alchemilla glaucescens], [Scabiosa columbaria], [Trifolium montanum], [Lotus corniculatus], [Thymus longicaulis], [Rhinanthus personatus], [Cerastium fontanum], [Galium anisophyllon], and with the central Italian endemic[Gentiana columnae] on summits and slopes, [Asphodelus albus] and [Fritillaria tenella] in plains and gullies.
Illyrian [Mesobromion] grasslands	Closed mesophile grasslands of medio-European affinities developed on relatively deep, mostly calcareous soils of the Slovenian Alps, Croatia, Bosnia and Serbia, within the Illyrian beech forest level, extending south to Albania along the maritime façade of the western Balkan peninsula, dominated by perennial, tuft-forming grasses, in particular, [Bromus erectus], [Sesleria juncifolia] or [Molinia arundinacea].
Illyrian brome-plantain grasslands	Closed mesophile calcicolous grasslands of the Illyrian beech forest level of the Dinarides dominated by [Bromus erectus], with [Plantago media], [Ranunculus bulbosus], [Globularia elongata], [Scabiosa agrestis], [Knautia arvensis], [Viola alba ssp. scotophylla], [Dianthus giganteus ssp. croaticus], [Koeleria pyramidata].
Illyrian [Sesleria] grasslands	Closed mesophile calcicolous grasslands of the Illyrian beech forest level of the Dinarides dominated by [Sesleria juncifolia], with [Centaurea triumfetti], [Daphne cneorum], [Genista januensis].
Illyrian [Molinia-Gladiolus] grasslands	Closed mesophile calcicolous grasslands of the Illyrian beech forest level of the Dinarides dominated by [Molinia arundinacea], with [Succisa pratensis], [Serratula tinctoria], [Gladiolus illyricus], [Euphorbia brittingeri], [Anthericum ramosum], [Helianthemum nummularium], [Leucanthemum vulgare], [Carex humilis], [Agrostis tenuis], [Danthonia provincialis], [Bromus erectus].
Sub-Atlantic very dry calcareous grassland	Xerophile, open formations dominated by perennial, tuft-forming grasses, often rich in chamaephytes, colonizing superficial calcareous soils, often on steep slopes, clifftops or hilltops, in the sub-Atlantic domain of the [Quercion pubescentii-petraeae] and its northern irradiations and in the sub-Mediterranean mountains of the northern Italian peninsula, with [Bromus erectus], [Sesleria albicans], [Koeleria vallesiana], [Melica ciliata], [Stipa pennata], [Stipa bavarica], [Stipa capillata], [Stipa pulcherrima], [Phleum phleoides], [Brachypodium pinnatum], [Carex humilis], [Fumana procumbens], [Globularia punctata], [Ononis pusilla], [Helianthemum apenninum], [Helianthemum canum], [Helianthemum nummularium], [Linum tenuifolium], [Teucrium chamaedrys], [Allium sphaerocephalon], [Arabis hirsuta], [Anthericum liliago], [Aster linosyris], [Pulsatilla vulgaris], [Biscutella laevigata], [Orobanche teucrii], [Artemisia alba], [Sedum album], [Sedum acre], [Acinos arvensis], [Hippocrepis comosa], [Sanguisorba minor], [Potentilla neumanniana], [Scabiosa columbaria], [Astragalus monspessulanus], [Teucrium pyrenaicum], [Ono

Southern Britannic [Xerobromion] grasslands	Very dry calcicolous grasslands of southwestern England, restricted to very limited stations on the Carboniferous Limestones of the southern Mendips and on the Devonian Limestones of Tor Bay, with [Festuca ovina], [Koeleria vallesiana], [Carex humilis], [Helianthemum apenninum], [Sanguisorba minor], [Thymus praecox], [Hieracium pilosella], [Plantago lanceolata], [Scilla autumnalis], [Euphorbia portlandica], [Inula conyza], [Sedum forsteranum], [Trinia glauca].
Middle European [Xerobromion] grasslands	Formations of southern Belgium, Germany, France, Switzerland, northern Spain and the northern Apennines. Where they occur in the vicinity of communities of the [Festucetalia valesiacae], the latter occupy sites with more continental microclimates than those inhabited by the formations of this group.
Mosan [Xerobromion]	Xerophile grasslands of the northwestern Hercynian periphery, on mostly Devonian or Carboniferous limestones, in the Mosan district of Belgium and the French Meuse, with outposts in the Ardenne-Eifel of Luxembourg and Rhineland; the stations are for the most part very limited in extent and widely isolated.
Harz [Xerobromion]	Xerophile grasslands, on substrates derived from Mesozoic limestones of the periphery of the Harz, notably in Thuringe.
Paris basin Cretaceous [Xerobromion]	Xerophile grasslands of rare localities of the Cretaceous northwestern and western periphery of the Paris basin, in particular in the valleys of the Seine and Somme.
Parisian Tertiary [Xerobromion]	Xerophile calcareous grasslands of the Parisian Tertiary in the central Paris basin.
Paris basin Jurassic [Xerobromion]	Xerophile grasslands of the northeastern, eastern and southeastern Jurassic belt of the Paris basin and adjacent Cretaceous areas in Lorraine, Champagne, Haute Marne, Burgundy, Haute Saone.
Middle Rhine [Xerobromion]	Xerophile calcareous grasslands of the Rhine, Mainz, Moselle, Neckar, Nahe and Lahn valleys in their crossing of the northern Hercynian ranges.
Upper Rhine [Xerobromion]	Xerophile calcareous grasslands of the upper Rhine rift and adjacent hills, in Alsace, Baden-Württemberg and Switzerland.
Western Jura [Xerobromion]	Xerophile calcareous grasslands of the French and Swiss Jura and adjacent areas.
Swabian [Xerobromion]	Xerophile calcareous grasslands of the Swabian Alb, Lake Constance region and adjacent areas.
Franconian [Xerobromion]	Xerophile calcareous grasslands of the Franconian Alb, Franconian plateaux and adjacent areas.
Northwestern pre-Alpine [Xerobromion]	Hill and montane xerophile grasslands of the northwestern calcareous pre-Alps.
Bavarian [Xerobromion]	Hill and montane xerophile calcareous grasslands of the Bavarian plateau.
Ligerian [Xerobromion]	Xerophile calcareous grasslands of the southern Paris basin, Berry and Auvergne.
Aquitanian [Xerobromion]	Xerophile calcareous grasslands of southwestern France in Charentes, Perigord and Aquitaine.
Quercy [Xerobromion]	Xerophile calcareous grasslands of Quercy.

Pyrenean [Xerobromion]	Hill and montane xerophile calcareous grasslands of the Pyrenees and adjacent areas; in the pubescent oak level of the eastern part of the range [Xerobromion] grasslands with [Koeleria vallesiana], [Festuca ovina] s.l. and Bromus erectus come in contact with [Aphyllanthion] formations occupying more humid soils and closed postcultural [Brachypodium] grasslands of the [Brachypodion phoenicoides]. On the south side of the range, xerophile pastures are represented in lower zones and on the protected adrets by communities of the [Aphyllanthion], of decidedly Mediterranean hue, while the formations of the [Xerobromion], of more Euro-Siberian character, occupy the other situations. Chamaephytes such as [Helianthemum nummularium], [Artemisia alba], [Teucrium pyrenaicum], [Ononis spinosa], [Ononis natrix] are abundant alongside the gramineous [Phleum phleoides], [Festuca ovina] s.l., and [Carex humilis].
Southwestern Alpine [Xerobromion]	[Xerobromion] grasslands of the southwestern Alps.
Northern Apennine [Xerobromion]	Open, arid pastures developed in the thermophilous deciduous [Quercus cerris-Quercus pubescens-Ostrya carpinifolia] belt of the northern Apennines, south approximately to the area of the Monte della Luna, southeastern Tuscany, where they occupy arenaceous-marly substrates and come in contact with the grasslands of unit 34.74, located on limestones and much richer in Apennine endemics. At their southern limit, the northern formations are rich in chamaephytes, notably [Coronilla minima], [Asperula purpurea], [Fumana procumbens], alongside [Astragalus monspessulanus], [Bromus erectus], [Brachypodium pinnatum] and [Festuca inops].
Hercynio-Jurassic blue moorgrass [Xerobromion]	Dry calciphile grasslands of sunny stony slopes and cliff ledges of the Swabian and Franconian Jura and of the Franconian Main region, dominated by [Sesleria albicans], usually accompanied by [Bromus erectus] and often, particularly in the Jura, by [Festuca pallens] and dealpine species; they are somewhat intermediate between the sub-Atlantic very dry grasslands and the pale fescue grasslands of unit 34.35, particularly of unit 34.3511, and are sometimes included among the latter.
Central European calcaro-siliceous grassland	Low-altitude middle European xerophile, rupicolous or psammophilous, grasslands of slightly calcareous substrates, with [Festuca heteropachys], [Festuca trachyphylla], [Koeleria macrantha] ([Koeleria gracilis]), [Phleum phleoides], [Luzula campestris], [Dianthus deltoides], [Jasione montana], [Agrostis tenuis], [Potentilla erecta], [Armeria elongata], [Artemisia campestris], [Aster linosyris], [Lychnis viscaria], [Silene otites], [Silene nutans], [Chamaespartium sagittale], [Campanula patula], [Potentilla rupestris], [Helianthemum nummularium ssp. obscurum], [Helianthemum apenninum], [Scleranthus perennis], [Allium senescens ssp. montanum].

Hercynian calcaro-siliceous stony grasslands	Rupicolous communities, colonizing, in particular, deep cracks and ledges of calcaro-siliceous rocky slopes or cliffs, with, notably, [Festuca heteropachys], [Artemisia campestris], [Aster linosyris], [Lychnis viscaria], [Potentilla rupestris]. The range of these formations is centreed on the Hercynian ranges of middle Germany (notably Rhine, Nahe, Moselle, Mainz valleys and Hartz periphery), extending east to the Bohemian basin, west to Alsace and to extremely rare and isolated outposts in Ardenne valleys of Luxembourg, Belgium and France, where they are represented by [Festuca heteropachys] or [Potentilla rupestris] grasslands.
Central European calcaro-siliceous sand grasslands	Closed, perennial communities of slightly calcareous sands of northern and western Central Europe, and of northern Eastern Europe, characteristic, in particular, of old riverine dunes and morainal hills, with [Armeria elongata], [Festuca trachyphylla], [Sedum sexangulare], [Carex ligerica], [Helichrysum arenarium]. Best represented in the dunal system of the large rivers of Central Europe, in particular the Weser, the Aller, the Elbe, the Oder, the Vistula, the Bugu, the Narwi, of the morainal hills of the Baltic plain of Mecklenburg-Pomerania, of Brandenburg and of Poland and Lithuania, of the Main sands of Franconia and of the Bohemian basin, these formations extend west to the fluviatile district of the Netherlands, and east to Polesia, Lithuania and northwestern Russia, south to the upper Rhine sand flats and the Bavarian Plateau.
Calcicline Central European sand grasslands	Closed, perennial communities of moderately calcareous stabilised sands of northern and western Central Europe and northern Eastern Europe, with [Armeria elongata], [Festuca trachyphylla], [Dianthus carthusianorum], [Silene otites], [Phleum boehmeri], [Koeleria gracilis], [Centaurea rhenana], [Chondrilla juncea], [Asperula cynanchica], [Eryngium campestre], [Sedum sexangulare], [Helichrysum arenarium].
Acidocline Central European sand grasslands	Closed, perennial communities of acidocline stabilised sands of northern and western Central Europe and northern Eastern Europe, with [Armeria elongata], [Festuca trachyphylla], [Dianthus deltoides], [Helichrysum arenarium], [Vicia lathyroides], [Chondrilla juncea], [Hieracium pilosella].
Substabilised Central European sand grasslands	Moderately closed, perennial communities of loose slightly calcareous sands of northern and western Central Europe and northern Eastern Europe, with [Corynephorus canescens], [Silene tatarica], [Petasites spurius], [Plantago indica].

Pale fescue grassland	Subcontinental xeric, thermophile grasslands of middle European collinar rock ledges, mostly dominated by the strong tufts of the glaucous [Festuca pallens], [Festuca sadlerana] and [Festuca pannonica] and of the green [Sesleria albicans], and with [Dianthus gratianopolitanus], [Carex humilis], [Melica ciliata], [Aster alpinus], [Artemisia campestris ssp. lednicensis], [Hieracium] spp., [Biscutella laevigata ssp. varia], [Teucrium botrys], [Teucrium montanum], [Helianthemum canum], [Iris aphylla], [Allium strictum], [Allium senescens ssp. montanum], locally distributed from French Jura and Rhine valley to sub-Pannonic foothils and Carpathians in Romania. The communities of the [Festucion pallescentis] often occupy isolated stations and include rare or relictual species which impart to many of them a distinctive biogeographical and physiognomic individuality. In particular, rare and highly disjunct western outposts occur in the Meuse basin of the Belgian and French Ardennes, harbouring, among others, very isolated populations of [Draba aizoides var. montana], [Artemisia alba ssp. saxatilis] and [Hieracium vogesiacum]
Calci-orophile pale fescue grasslands	Central European calcicolous subcontinental rock-ledge grasslands of orogenous affinities, montane or submontane with a strong representation of species characteristic of higher-altitude communities, often occupying stations of comparatively cool microclimate.
Dealpine calciphile pale fescue grasslands	Calciphile rock ledge grasslands rich in dealpine species of northern exposures in the collinar and submontane levels of the eastern and southern periphery of the Alps and the Carpathians, with relict occurrences in the Bohemian basin, southern Moravia and the Central Hungarian Range.
Peri-Alpine feathergrass rock grasslands	Calciphile rock ledge grasslands of the eastern Alpine periphery dominated by [Stipa eriocaulis].
Peri-Alpine blue moorgrass rock grasslands	Calciphile rock ledge grasslands of the eastern Alpine periphery and inner valleys, dominated by [Sesleria albicans] ([Sesleria calcarea]), [Festuca pallens], [Festuca rupicola], [Koeleria pyramidata], [Brachypodium rupestre], [Carex humilis], [Seseli austriacum], [Teucrium montanum].
Peri-Carpathian dealpine rock grasslands	Calciphile rock ledge grasslands rich in dealpine species of northern exposures in the collinar and submontane levels of the southern spurs of the Northwestern Carpathians of Moravia and southern Slovakia, of the Pavlov Hills of southern Moravia and the northern Weinviertel of Austria.
Pannonic [Sesleria sadleriana] rock grasslands	Relict primary calciphile closed rock grasslands of northern exposures of dolomite hills of the central part of the Hungarian Central Range and of the Austrian Hainburger Bergen, developed on shallow rendzinas, dominated by [Sesleria sadleriana ssp. sadleriana], endemic to the region, with [Carex humilis], [Genista pilosa], [Hieracium danubiale], [Asplenium ruta-muraria], [Draba lasiocarpa], [Poa badensis], [Alyssum saxatile], [Dianthus lumnitzeri], [Thalictrum foetidum], [Sempervivum schlehanii], [Saxifraga aizoon], [Ceterach officinarum], [Homalothecium lutescens], [Rhytidiadelphus triquetrus].

Bohemian dealpine rock grasslands	North-facing slope rock-ledge grasslands of the Bohemian basin, in particular, of the Bohemian Karst and the Bohemian Central Range, with [Sesleria albicans], [Anthyllis vulneraria], [Vincetoxicum hirundinaria], [Primula veris], [Scabiosa columbaria], [Carex digitata], [Lembotropis nigricans].
East Carpathian [Sesleria rigida] grasslands	Calciphile rock-ledge grasslands of the montane level of the eastern Carpathian system, locally extending to the collinar and subalpine levels, dominated by [Sesleria rigida], [Festuca xanthina] or [Helictotrichon decorum], with [Asperula capitata], [Dianthus spiculifolius], [Dianthus kitaibelii], [Carduus candicans], [Iris reichenbachii], [Jovibarba heuffelii], [Sempervivum zeleborii], [Seseli gracile], [Seseli rigidum], [Thalictrum uncinatum], [Viola jooi].
Calcicline pale fescue grasslands	Central European subcontinental xero-thermophile grasslands of calcareous or weakly calcareous sunny collinar rock ledges. In the peri-Pannonic and peri-Alpine region, where they are in contact with communities of unit 34.351, they occupy stations with a warmer, drier microclimate, in particular south-facing slopes.
Peri-Hercynian calcicline pale fescue grasslands	Rock-ledge grasslands of the French, Swiss, Swabian, Franconian and Little Polish Jura, of the central Hercynian ranges, of the middle German Saale-Mulde basin, of the Bohemian basin, of the Pieniny, of the Bavarian Plateau, developed on mussel limestones, dolomites, porphyrios, basalts, schists and sometimes serpentines, with [Dianthus gratianopolitanus], [Festuca pallens], [Stipa bavarica], [Stipa eriocaulis], [Stipa joannis], [Poa badensis], [Melica ciliata], [Carex humilis], [Dracocephalum austriacum], [Campanula sibirica], [Minuartia setacea], [Fumana procumbens], [Helianthemum canum], [Pulsatilla grandis], [Scorzonera austriaca], [Teucrium montanum], [Seseli hippomarathrum] and local [Hieracium] species, including [Hieracium bifidum], [Hieracium schmidtii], [Hieracium wiesbaurianum], [Hieracium onosmoides].
Circum-Pannonic calcicline pale fescue grasslands	Species-rich xero-thermophile subcontinental rock-ledge grasslands of the western and southern periphery of the Carpathian arc in northeastern Austria, southern Moravia, Slovakia, northern Hungary and western Romania, developed on rendzinas over limestones or dolomite on south-facing steep slopes with extreme conditions of insolation, temperature variation and evaporation.
Pre-Carpathian pale fescue grasslands	Xero-thermophile subcontinental rock-ledge grasslands of Carpathian affinities, distributed in the hills of the western and southern periphery of the Carpathian arc and in the Central Hungarian Range.
Pre-Carpathian Baden meadowgrass pale fescue grasslands	Open xero-thermophile subcontinental primary rock-ledge grasslands of limestones and dolomites of the Hainburger Bergen, the Weinviertel, the Pavlov Hills and southern Slovakia, dominated by large, distant tufts of [Festuca pallens] alternating with small, prostrate espalier subshrubs, [Fumana procumbens], [Thymus praecox], [Helianthemum canum], succulents, [Sedum album], [Sedum sexangulare], [Jovibarba hirta], mosses and lichens.

Pre-Carpathian [Sesleria hungarica] grasslands	Open rock-ledge grasslands installed on limestone rocks of higher elevations of the Hungarian Central Range, with numerous species of Carpathian affinities, dominated by [Sesleria heuflerana ssp. hungarica], [Festuca pallens], with [Campanula divergentiformis], [Hieracium bupleuroides], [Saxifraga paniculata], [Asplenium ruta-muraria], [Sempervivum marmoreum], [Dianthus lumnitzeri], [Cytisus ciliatus], [Viola tricolor], [Allium montanum].
Central Pannonic pale fescue grasslands	Xero-thermophile subcontinental rock-ledge grasslands of the Central Hungarian Range, with irradiations in neighbouring ranges, in particular, in the southern Moravian and eastern Austrian hills.
Pannonic dwarf sedge pale fescue grasslands	Open, xero-thermophile subcontinental rock-ledge grasslands of the Hainburger Bergen, the Weinviertel, the southern Moravian hills and southern Slovakia, dominated by fairy-ring or half-moon shaped colonies of [Carex humilis], accompanied by [Festuca carnuntina], [Festuca pallens], [Stipa eriocaulis], [Stipa capillata], the subshrubs [Thymus praecox], [Helianthemum canum], [Teucrium montanum], [Fumana procumbens], the herbs [Seseli hippomarathrum], [Seseli osseum], [Echinops ritro], [Jurinea mollis], [Scabiosa canescens], many spring annuals of sub-Mediterranean affinities and drought-resistant mosses and lichens.
Pannonic seseli pale fescue grasslands	Xerothermic grasslands of the Transdanubian part of the Hungarian Central Range, developed on skeletal soils and dolomite debris of warm, dry, steep slopes with a south and southwest exposure, rich in [Festuca pallens], abundant in species of sub-Mediterranean or Eurasian affinities, such as [Stipa eriocaulis], [Stipa pulcherrima], [Fumana procumbens], [Paronychia cephalotes], [Allium moschatum], [Dorycnium germanicum], [Gypsophila arenaria], [Carex humilis], [Pulsatilla grandis], [Globularia aphyllanthes], [Asperula cynanchica], with [Thalictrum pseudominus], [Astragalus vesicarius ssp. albidus], with Pannonic endemics [Seseli leucospermum], [Linum dolomiticum], and a significant representation of some typically high mountain species including [Poa badensis] and [Draba lasiocarpa].
Pannonic brome pale fescue grasslands	Grasslands, almost completely closed, on shallow rendzines of north-facing dolomite hills of the western Hungarian Central Range, often in contact with the [Seseleo-Festucetum pallentis] communities of southern exposures, with abundant [Festuca pallens] and [Bromus erectus ssp. pannonicus], a well-developed moss layer and characteristic accompanying species, including [Daphne cneorum], [Thalictrum pseudominus], [Anthyllis vulneraria ssp. alpestris], [Polygala amara], [Phyteuma orbiculare], [Coronilla vaginalis], [Galium pumilum var. austriacum], [Carduus glaucus] and the extremely rare endemic [Linum dolomiticum].
Pannonic cinquefoil pale fescue grasslands	Open rock grasslands developed on slightly calcareous soft, crumbling oligocene sandstones of the northern Hungarian Central Range, dominated by [Festuca pallens], with [Potentilla arenaria], and other perennial species, including [Carex humilis], [Minuartia setacea], [Alyssum montanum].

Pre-Dacic pale fescue grasslands	Subcontinental xero-thermophile rock-ledge grasslands of strongly insolated calcareous rocks of the lower and median montane level of the eastern Carpathian system, in particular, of the inner valleys of the Apuseni mountains and the Southern Carpathians, with [Festuca pallens], [Melica ciliata], [Sedum hispanicum], [Thalictrum foetidum], [Helianthemum canum], [Sempervivum marmoreum], [Jovibarba heuffelii], [Thymus comosus], [Dianthus henteri], [Taraxacum hoppeanum], [Carduus candicans].
Acidocline pale fescue grasslands	Central European subcontinental xero-thermophile grasslands of siliceous collinar and montane rock ledges.
Hercynian siliceous pale fescue grasslands	Species-rich subcontinental open rock-ledge grasslands of siliceous substrates of the Bohemian Quadrangle and neighbouring regions, developed on shallow acid, weakly or sometimes neutral soils in stations, particularly south-facing slopes, submitted to extreme temperaturature variations, drought and wind action, with [Festuca pallens], [Galium valdepilosum], [Seseli osseum], [Hieracium schmidtii], [Hieracium mougeotii], [Onosma helvetica ssp. austriacum], [Aurinia saxatilis], [Helianthemum nummularium], [Sedum rupestre], [Jovibarba sobolifera], [Dianthus gratianopolitanus], [Dianthus moravicus], [Allium senescens ssp. montanum].
Circum-Pannonic siliceous pale fescue grasslands	Subcontinental open or semi-open rock-ledge grasslands of siliceous substrates of the Hungarian Central Range, of southern Slovakia, the Carpathic Ukraine and Transylvania, with [Festuca pseudodalmatica], [Stipa crassiculmis ssp. euroanatolica], [Poa pannonica], [Hierochloe australis], [Hierochloe hirta], [Asplenium adiantum-nigrum], [Cheilanthes marantae] ([Notholaena marantae]), [Centaurea coziensis], [Crupina vulgaris], [Genista januensis], [Hieracium pavichii], [Lathyrus nissolia], [Medicago rigidula], [Minuartia hirsuta ssp. frutescens], [Orlaya grandiflora], [Sempervivum marmoreum], [Sedum hispanicum].
Pannonic siliceous spleenwort-melick rock grasslands	Loosely-organized rock-ledge grassland communities of andesite and granite outcrops of the northern Hungarian Central Range, of southern Slovakia, of the Apuseni mountains and of the Southern Carpathians, comprising [Melica ciliata], [Polypodium vulgare], [Sempervivum marmoreum], [Sedum acre], [Asplenium septentrionale], [Asplenium brevnii] and [Woodsia ilvensis].
Pannonic [Festuca pseudodalmatica] rock grasslands	Open xero-thermophile grasslands of the northern Hungarian Central Range, the Slovakian Metallic Mountains and Kovacover Hills, installed on shallow soils of silicate rocks and sharing features of both rock swards and steppe grasslands, dominated by [Festuca pseudodalmatica], [Potentilla arenaria], [Seseli osseum], [Thymus glabrescens], [Koeleria cristata], [Asplenium trichomanes], [Achillea nobilis ssp. neilreichii], [Dianthus carthusianorum] and harbouring many species of high conservation value, including [Minuartia frutescens], [Saxifraga paniculata], [Alyssum saxatile].
Transylvanian [Festuca pseudodalmatica] rock grasslands	Open xero-thermophile grasslands of moderately sloping extremely insolated rocks, mostly breccias, of the Southern Carpathians, dominated by [Festuca pseudodalmatica] and [Minuartia frutescens], with the locally characteristic species [Genista januensis], [Alyssum murale], [Veronica bachofenii] and [Hieracium pavichii].

Pannonic meadowgrass pale fescue grasslands	Xeric, thermophile grasslands of the northern Hungarian Central Range and of Slovakia, installed on rocks of eruptive origin, notably diabase, gabbro, with Pannonic species [Poa pannonica], [Festuca pallens], [Melica ciliata], [Allium montanum], [Allium flavum], [Sempervivum hirtum], [Sempervivum marmoreum], [Potentilla arenaria], [Thymus praecox], [Veronica spicata], [Asplenium trichomanes], and characterized by a well developed moss and lichen layer including [Rhizocarpon geographicum], [Parmelia conspersa], [Parmelia pulvinaris], [Grimmia leucophaea], [Grimmia fragrans].
Phoenician torgrass swards	Closed, dry perennial grasslands of eutrophic soils within the meso- and thermo-Mediterranean zones of the western Mediterranean basin, often on post-cultural land, formed by relatively tall grasses and usually dominated by [Brachypodium phoenicoides], with, among many others, [Phleum bertolonii] ([Phleum nodosum], [Phleum pratense]), [Elymus repens], [Carex divisa], [Carthamus lanatus], [Diplotaxis viminea], [Echinops ritro], [Euphorbia serrata], [Echium vulgare], [Echium pustulatum], [Erodium acaule], [Galactites tomentosa], [Lepidium graminifolium], [Medicago orbicularis], [Salvia verbenaca], [Foeniculum vulgare], [Pallenis spinosa], [Psoralea bituminosa], [Seseli tortuosum], [Tragopogon australis], [Scabiosa atropurpurea], [Verbascum sinuatum], [Picris hieracioides], [Calamintha nepeta], [Centaurea aspera], [Vicia hybrida], [Phlomis herba-venti] and many orchids.
Iberian fescue - plantain swards	Open perennial formations colonizing arenaceous or skeletal, often unstable, siliceous soils of the supra-Mediterranean levels of Iberian mountains, rich in cushion-forming, rosette-leaved chamaephytes ([Jasione crispa ssp. sessiliflora], [Plantago radicata], [Scleranthus perennis]) and cespitose, rough perennial grasses ([Festuca costei], [Festuca indigesta], [Festuca summilusitana], [Corynephorus canescens], [Koeleria caudata ssp. crassipes]). Various formations, characterized by, among others, [Hieracium castellanum], [Leucanthemopsis pulverulenta], [Dianthus merinoi], [Dianthus laricifolius], [Armeria caballeroi], [Armeria alliacea], [Thymus serpylloides ssp. gadorensis], [Teucrium aureum] are distributed in the Cantabrian range, the southern Galician and Leonese mountains, the Iberian Range, the Cordillera Central, the Montes de Toledo, the Sierra Nevada.
Helleno-Balkanic supra-Mediterranean siliceous grasslands	Open perennial grasslands and pastures colonizing siliceous, usually poorly developed soils of the supra-Mediterranean levels of the southern Balkan peninsula and northern Greece.
Serpentine steppes	Steppic grasslands of serpentine outcrops, dispersed over a wide range in Central Europe and the Balkan peninsula. Open communities in shallow stony soils or eroded sites. Serpentine outcrops also exist in northwestern Europe, in Tuscany and in mediterranean Greece (Euboa); steppic grasslands have not formed on them or are less strongly individualised than those described here.

Pannonic loess steppic grassland	Grassland communities from the alliance [Festucion valesiacae] of the Pannonic region, rich on [Stipa] species ([Stipa capillata], [Stipa pulcherrima], [Stipa joannis]) and herbaceous dicotyledonous species including, among others, [Salvia nemorosa], [Salvia austriaca], [Filipendula vulgaris], [Astragalus austriacus], [Astragalus exscapus], [Phlomis tuberosa], [Crambe tatarica], [Galium verum], [Ajuga genevensis], [Dianthus pontederae], [Thymus glabrescens], and grasses, [Festuca rupicola], [Koeleria macrantha], established on, notably, loess ridges formed by fluviatile erosion and accumulation. These rare communities are sensitive to grazing and trampling and have been extensively transformed into other grassland types.
Pannonic loess steppes	Primary species-rich, relatively closed, multi-strata steppic grasslands, on deep chernozems, the main Pannonic representative of the steppes of Central Eurasia, composed mainly of [Festuca rupicola], [Stipa capillata], [Koeleria cristata], [Poa angustifolia], [Bromus inermis], [Elymus hispidus], [Achillea pannonica], [Taraxacum serotinum], [Viola ambigua], [Astragalus onobrychis], [Chamaecytisus austriacus], [Chamaecytisus supinus], [Adonis vernalis], [Veronica austriaca], [Veronica prostrata], [Vinca herbacea], [Asperula glauca], [Allium paniculatum], with [Nepeta parviflora], [Silene longiflora], [Ajuga laxmannii], [Astragalus dasyanthus], [Astragalus vesicarius], [Astragalus exscapus], [Astragalus austriacus], [Salvia nemorosa], [Salvia nutans], [Echium maculatum]. Originally widely distributed throughout the loess plateau of the Pannonic basin and at the foot of the Hungarian Central Range, but now reduced only to small fragments because of intensive agricultural activity. This habitat is of major conservation importance and harbours numerous rare and threatened taxa, including, among flowering
Pannonic tall forb meadow-steppes	Species-rich, relatively closed, multi-strata steppic grasslands of the periphery of the Hungarian Central Range, developed on deep chernozems at the 200-300 metre level, formed by a species cortège shared in large part with the steppes of 31.911 but including numerous tall forbs that confer to it an even greater meadow-like appearance, dominated by or rich in [Festuca rupicola], [Poa angustifolia], [Pulsatilla zimmermannii], [Phlomis tuberosa], [Trifolium montanum], [Trifolium alpestre], [Stachys officinalis] ([Betonica officinalis]), [Cytisus albus], [Arenaria micradenia], [Dianthus glabriusculus], [Salvia pratensis], and with the rare and threatened [Onosma tornensis], [Thlaspi jankae].
Pannonic semidesert steppes	Open, semidesert-like pioneering community of loess walls of the Pannonic basin, comprising regional species [Agropyron pectinatum], [Brassica elongata], [Adonis flammea] with [Kochia prostrata], [Artemisia pontica], [Stipa capillata], [Centaurea micranthos], [Iris pumila], [Xeranthemum annuum].
Pannonic loess pastures	Secondary grasslands of wide present distribution in the Pannonic basin, developed mainly on sites previously occupied by primary steppes and forests of wooded steppe zone, with a grazing-induced simplified stratification and resulting predominance of low grasses and forbs, in particular, [Cynodon dactylon], [Carex supina], [Achillea collina], [Bromus mollis], [Falcaria vulgaris], [Bothriochloa ischaemum], [Pimpinella saxifraga], [Agrimonia eupatoria], and presence of weeds such as [Echium vulgare], [Convolvulus arvensis], [Plantago lanceolata], [Veronica arvensis].

Ponto-Sarmatic steppes	Steppes of the plain of the western Black Sea, west of the Dniester, of its associated basins, including those of the lower Danube, of Transylvania and of northern Thrace, of the southern edge and valleys of the Podolian, Central Russian and Volga plateaux, with [Stipa capillata], [Kochia prostrata], [Koeleria lobata] ([Koeleria degenii]), [Stipa lessingiana], [Festuca valesiaca], [Dichanthium ischaemum] ([Bothriochloa ischaemum]), [Medicago minima], [Brachypodium pinnatum].
Western Pontic steppes	Steppes of the plain of the western Black Sea, west of the Dniester, of the basin of the lower Danube and of the northern Thracian basin of the middle Maritsa and the Tundzha, with [Pimpinella tragium], [Thymus zygioides], [Stipa lessingiana], [Stipa capillata], [Agropyron pectiniforme].
Sarmatic steppes	Steppes of the southern edge and valleys of the Podolian, Central Russian and Volga plateaux, forming a wooded steppe belt north of the Pontic plains, extending west to the upper Prut basin of Romanian Moldavia and east to the Volga-Kama trough, composed of [Stipa lessingiana], [Stipa joannis], [Stipa pulcherrima], [Stipa ucrainica], [Koeleria macrantha], [Agropyron cristatum], [Festuca valesiaca], [Astragalus onobrychis].
Eastern Pontic steppes	Steppes of the northern Black Sea-Sea of Azov plain, of the basins of the Dnieper and the Don, extending west to the Dniestr, northeast to the Volga, east to the Caspian deserts and semideserts, southeast to the pre-Caucasian hills in the basins of the Kouban, the Manytch, the upper Kuma and upper Terek.
Irano-Anatolian steppes	Steppes of the Anatolian Plateau, of Transcaucasia, of the eastern cis-Caucasian hills of Daghestan and the Terek basin, of the Iranian Plateau, the Kopet Dagh, the Pamir-Alai, the extreme western Tien-Shan, around the rim of the Ferghana basin and along the spur of the Karatau, and of northern Mesopotamia.
Pannonic sand steppes	Formations dominated by medium or tall perennial tuft-forming grasses or suffrutescents, with lacunar ground cover, together with their associated therophyte communities developed on moving or fixed sands within the range of the Pannonic steppes (unit E1.2C), thus in the Pannonic basin and the areas of preponderant influence of its communities. Most of these formations are associated with inland dune systems and relate to unit E1.99 and its subdivisions.
Pannonic sand pioneer swards	Therophyte-dominated stages of the first succession phase in the colonisation of Pannonic sands, and in particular of Pannonic dunes (64.71), characterized by a very thin, low cover of mostly ephemeral, early-blooming annuals of small stature, among which [Bromus mollis], [Bromus tectorum], [Bromus squarrosus], [Medicago minima], [Cerastium brachypetalum], [Erophila verna], [Plantago indica], [Saxifraga tridactylites], [Poa annua], [Poa bulbosa], [Viola kitaibeliana], [Lithospermum arvense], [Corispermum nitidum], [Polygonum arenarium], with a few species of longer seasonal visibility, such as [Equisetum ramosissimum var. altissimum], [Alyssum tortuosum], [Sedum acre], [Cynodon dactylon].

Drooping brome pioneer swards	Pioneer sand-swards of the northern Pannonic basin, dominated by [Bromus tectorum], with [Koeleria glauca], [Secale sylvestre], [Cynodon dactylon], [Polygonum arenarium], [Sedum urvillei], [Kochia laniflora], [Plantago arenaria], [Helichrysum arenarium], [Alyssum montanum ssp. gmelinii], [Alyssum alyssoides].
Corispermum pioneer swards	Pioneer sand-swards of the southern Pannonic basin, in particular of the Deliblat sand-steppe, dominated by [Corispermum nitidum] and [Polygonum arenarium].
Pannonic horsetail pioneer swards	Pioneer sand-swards of the Pannonic basin, well characterized in the Seewinkel, dominated by [Equisetum ramosissimum], with [Scirpus holoschoenus] and small herbs.
Pannonic open sand steppes	More or less open grasslands constituting the second stage of succession in the colonisation of Pannonic sands, in particular of Pannonic dunes (unit 64.71), best characterized in Hungary and the Vojvodina, with representatives in southern Slovakia, northeastern Austria and western Romania, dominated by the perennial grasses [Festuca vaginata], [Stipa capillata], [Stipa borysthenica], [Cleistogenes serotina], [Koeleria glauca], [Koeleria cristata], [Carex liparocarpos], accompanied by [Euphorbia seguierana], [Alkanna tinctoria], [Alyssum montanum ssp. gmelinii], [Dianthus serotinus], [Dianthus diutinus], [Gypsophila paniculata], [Scabiosa ochroleuca], [Astragalus austriacus], [Astragalus onobrychis], [Erysimum diffusum], [Fumana procumbens], [Minuartia glomerata], [Minuartia verna].
Pannonic calciphile sand steppes	More or less open grasslands constituting the second stage of succession in the colonisation of calcareous Pannonic sands, in particular of Pannonic dunes (64.71), dominated by [Festuca vaginata] or feathergrasses ([Stipa capillata], [Stipa borysthenica]).
Pannonic calciphile sand fescue steppes	More or less open grasslands of calcareous Pannonic sands dominated by [Festuca vaginata].
Central Pannonic calciphile sand fescue steppes	Extremely dry, open, semidesertic grasslands of the Hungarian Little Alf”ld and the Slovakian Marchfeld, of the Mezõföld and of the Danube-Tisza interfluve, on calcareous sands, with a 50-60% cover at most, constituted by [Festuca vaginata], [Euphorbia seguierana], [Fumana procumbens], [Viola rupestris], [Alyssum tortuosum], [Minuartia fastigiata], and harbouring numerous rare or endemic taxa, including [Achillea ochroleuca], [Corispermum canescens], [Dianthus serotinus], [Colchicum arenarium], [Astragalus exscapus], [Astragalus varius], [Iris arenaria], [Sedum hillebrandtii], [Linum hirsutum ssp. glabrescens], [Onosma arenaria], [Centaurea arenaria].
Eastern Pannonic calciphile sand fescue steppes	Open sand steppes of the Carei area of northwestern Romania, in the Nyirseg system of the northeastern Pannonic basin, characteristic of semi-fixed continental sand, dominated by [Festuca vaginata], with [Poa bulbosa], [Poa angustifolia], [Linaria genistifolia], [Draba verna], [Euphorbia seguierana], [Carex stenophylla].

Southern Pannonic calciphile sand fescue steppes	Open sand steppes of the Deliblat plateau of the Vojvodina, developed on extremely calcareous sands on which the moss [Barbula ruralis] contributes to the formation of carbonate crusts, dominated by [Festuca vaginata] with [Koeleria glauca], [Poa bulbosa], [Alyssum tortuosum], [Alyssum montanum ssp. gmelinii], [Polygonum arenarium], [Centaurea arenaria], [Artemisia campestris]. Representatives of the community irradiate in eastern Serbia to the confines of the Oltenian plain.
Pannonic feathergrass sand steppes	Pioneer perennial grasslands of Pannonic sands, slightly less open than the fescue sand steppes, of which they often constitute a development stage towards closed grasslands, dominated by the tall feathergrasses [Stipa capillata], [Stipa borysthenica] that confer to them a multistrata structure.
Pannonic acidophile sand fescue steppes	Open grasslands of acidic sands of the Hungarian Little Alf”ld and the Slovakian Marchfeld, of the Mezõföld periphery, of the northern Danube-Tisza interfluve, of the Drava basin of Croatia and of the Nyirseg complex of northeastern Hungary and the Carei area of northwestern Romania, formed by an admixture of elements of sub-Atlantic [Corynephorus] swards and of continental, Pannonic, [Festuca vaginata] grasslands, dominated by [Corynephorus canescens], [Festuca vaginata], and with [Minuartia viscosa], [Anchusa officinalis ssp. pustulata], [Filago germanica], [Filago minima], [Cynoglossum hungaricum], [Thymus serpyllum], [Veronica verna], [Jasione montana], [Helichrysum arenarium], [Crepis capillaris], [Equisetum ramosissimum], [Euphorbia seguierana], [Onosma arenaria], [Gypsophila paniculata], [Silene conica], [Koeleria glauca], [Scabiosa argentea] ([Scabiosa ucranica]). They constitute a preferential habitat for the rare and threatened [Pulsatilla hungarica], [Pulsatilla patens] and [Herniaria hirsuta].
[Festuca wagneri] sand steppes	Pannonic semiclosed sand steppes dominated by fescues of the [Festuca wagneri] group, and, in the more evolved stages, by [Stipa] spp., intermediate between the [Festuca vaginata] formations of 34.A12 and the closed [Festuca rupicola] grasslands of 34.A14, with a species cortège drawn from both the [Festucion vaginatae] and the [Festucion valesiacae].
Central Pannonic [Festuca wagneri] sand steppes	Semiclosed sand steppes of the Hungarian Plains, developed on calcareous sands with a degree of cover reaching 70-80%, usually in contact with the more open swards of the [Festucetum vaginatae], dominated by the endemic [Festuca javorkae] ([Festuca wagneri] p.), accompanied by a species assemblage constituted partly of elements of the open perennial grasslands, but mainly of the steppic grasslands, with [Poa pratensis ssp. angustifolia], [Centaurea arenaria], [Eryngium campestre], [Galium verum], [Potentilla arenaria], [Verbascum lychnitis], [Silene otites var. pseudotites], [Carex liparocarpos], [Scabiosa ochroleuca].
Deliblat [Festuca wagneri] sand steppes	Semiclosed sand steppes of the Deliblat steppe of the Vojvodina, developed on highly calcareous sands as a transition stage between the [Alysso-Festucetum vaginataea] and the [Chrysopogonetum pannonicum], dominated by the endemic [Festuca wagneri s.s]., with [Festuca rupicola], [Stipa capillata], [Poa bulbosa], [Peucedanum arenarium], [Potentilla cinerea], [Verbascum lychnitis], [Silene otites], [Scabiosa ochroleuca].

Pannonic closed sand steppes	Relatively closed, primary or secondary, fescue or feathergrass swards of basophilous, humus- and nutrient-rich, sandy or mixed sand-loessy soils of the Pannonic basin of Hungary, eastern Austria, southern Slovakia and Transylvania, of relatively rare and sporadic occurrence, dominated by [Festuca rupicola], [Stipa joannis], [Stipa pulcherrima], [Carex humilis], [Stipa capillata], [Koeleria macrantha], [Dichanthium ischaemum], or, in some facies, [Chrysopogon gryllus], with [Carex liparocarpos], [Festuca vaginata], [Festuca wagneri] s.l., [Agropyron cristatum ssp. pectinatum], [Achillea ochroleuca], [Astragalus aster], [Astragalus onobrychis], [Astragalus exscapus], [Astragalus austriacus], [Oxytropis pilosa], [Potentilla cinerea], [Potentilla arenaria], [Linum austriacum], [Salvia nemorosa], [Alyssum tortuosum], [Alyssum montanum ssp. gmelinii], [Silene parviflora], [Silene viscosa], [Dianthus giganteiformis ssp. pontederae], [Asperula cynanchica], [Galium glaucum], [Galium verum], [Pulsatilla grandis], [Pulsatilla nigricans], [Lotus corniculatus], [Onosma arenaria ssp. pseudoarenaria], [Euphorbia
Pannonic sand puszta	Fescue pastures of sandy alluvial soils of the Pannonic basin, distributed in the Austrian Seewinkel, the Hungarian plains, the Banat, the Crisana and Transylvania, forming a mosaic with saline pusztas (unit 15.A11) and water-edge vegetation to constitute the puszta landscape, formed by [Festuca pseudovina], [Potentilla arenaria], [Cynodon dactylon], [Carex stenophylla] and, in some stands, [Festuca valesiaca], with [Fragaria viridis], [Cerastium semidecandrum], [Euphorbia seguierana], [Eryngium campestre], [Thymus glabrescens], [Poa bulbosa].
Ponto-Sarmatic sand steppes	Formations dominated by medium or tall perennial tuft-forming grasses or suffrutescents, with lacunar ground cover, together with their associated therophyte communities developed on moving or fixed sands within the range of the Ponto-Sarmatic steppes (unit E1.2D) and the regions of influence of their communities. Most of these formations are associated with inland dune systems and and relate to unit E1.9A and its subdivisions.
Irano-Anatolian sand steppes	Formations dominated by medium or tall perennial tuft-forming grasses or suffrutescents, with lacunar ground cover, together with their associated therophyte communities developed on moving or fixed sands of the Anatolian Plateau, of Transcaucasia, of the Iranian Plateau and of northern Mesopotamia, in the Irano-Anatolian zone of transition between the continental Eurasian steppes and the Mediterranean and southern Palaearctic desert zones. These formations are associated with inland dune systems, see also unit E1.A5.
Mediterranean xeric grassland	Meso- and thermo-Mediterranean xerophile, mostly open, short-grass perennial grasslands rich in therophytes; therophyte communities of oligotrophic soils on base-rich, often calcareous substrates e.g. vegetation of the class [Thero-Brachypodietea].
West Mediterranean xeric grassland	Meso- and thermo-Mediterranean xerophile, short-grass perennial grasslands and therophyte communities of oligotrophic soils on base-rich substrates of Spain, southern France, the large west Mediterranean islands, Italy and Mediterranean North Africa.
Retuse torgrass swards	Grasslands dominated by [Brachypodium retusum] and with many therophytes and geophytes, often alternating in mosaic fashion with garrigues or occupying their clearings.

Crau steppe	Open grasslands of the coussous still covering vast but dwindling expanses of the Crau, fossil delta of the Durance, with [Brachypodium retusum], [Stipa capillata], [Dichanthium ischaemum], [Elymus caput-medusae], [Thymus vulgaris], [Bellis sylvestris], [Asphodelus fistulosus], [Euphorbia seguierana], [Linum gallicum], [Salvia multifida], [Bufonia macrosperma]; they support a fauna of exceptional originality.
Mediterranean annual communities of shallow soils	Spring-blooming, summer-desiccated formations of therophytes developed on base-rich, often calcareous, superficial soils of mesomediterranean and thermo-Mediterranean zones of the Mediterranean basin, with annual grasses such as [Bromus fasciculatus], [Brachypodium distachyon], [Lagurus ovatus], [Stipa capensis], [Parapholis incurva], [Hainardia cylindrica], [Echinaria todaroana], [Desmazeria marina], [Desmazeria sicula], [Desmazeria zwierleinii], [Lamarckia aurea], [Narduroides salzmannii], [Vulpia unilateralis], [Ctenopsis gypsophila], a few perennial grasses (e.g. [Koeleria splendens], [Dactylis hispanica]) and numerous flowering plants, many of them annuals, and a very significant number restricted endemics; among the characteristic species are [Silene tridentata], [Silene neglecta], [Silene sedoides], [Paronychia argentea], [Arenaria capillipes], [Ionopsidium prolongoi], [Erophila verna], [Astragalus sesameus], [Ononis ornithopodioides], [Ononis oligophylla], [Ononis sieberi], [Onobrychis aequidentata], [Trigonella monspeliaca], [Trigonella
Western Mediterranean calciphile annual communities	Thermo- meso- and occasionally supra-Mediterranean calciphile formations of spring-blooming, summer-desiccated annual grasses and flowering plants of Mediterranean France, Iberia and Italy.
Southeastern Iberian pre-desert annual communities	Ephemeral annual grasses and flowering plants formations of the arid Iberian southeast, appearing among the pre-desert scrub communities of unit 32.25.
Iberian gypsum annual communities	Formations of small annuals developing on gypsum soils of interior Iberia, among the gypsum-scrub communities of unit 15.91.
Andalusian magnesium annual communities	Formations of annual grasses and flowering plants colonizing dolomites, ophiolites, peridotites and serpentines of Andalusia, developing among garrigue communities of 32.28.
Sicilian saxicolous annual communities	Formations of annual grasses and flowering plants of Sicily, the Maltese Islands, Linosa, Lampedusa and Pantelleria, sometimes subhalophile, developed on steep slopes, exposed crests, coastal rocks and volcanic material, often among the rocky shore communities of 18.22 or the pre-desert scrub of 32.255.
Northern Sicilian aster annual communities	[Aster sorrentinii] formations of steep clay and marl slopes of northern Sicily.
Calabro-Sicilian esparto annual communities	Annual grasses and flowering plants formations accompanying the [Lygeum spartum] steppes of southern Calabria and Sicily.

Causse dolomitic arenas	Very open formations colonizing, within the supra-Mediterranean steppe zone of the Causses (unit 34.71), local deposits of dolomitic sands, characterized by [Armeria girardii] ([Armeria juncea]), [Arenaria aggregata], [Helianthemum pilosum], [Sedum ochroleucum], [Alkanna tinctoria], [Alyssum serpyllifolium], [Helichrysum stoechas], [Silene otites], [Aster alpinus], [Festuca christianii-bernardii], [Corynephorus canescens], [Phleum arenarium].
Southwestern Mediterranean perennial pastures	Iberian xerophile, intensively grazed pastures of both siliceous and calcareous substrates, dominated by short, perennial grasses, rich in specialised annuals, in particular peas and composites.
East Mediterranean xeric grassland	Meso- and thermo-Mediterranean xerophile, short-grass perennial grasslands and therophyte communities of oligotrophic soils on base-rich substrates of continental, peninsular and insular Greece, of the Balkan peninsula, of western Asia and of Crimea.
Eastern retuse torgrass swards	Grasslands of the Balkan peninsula, Greece and the Eastern Mediterranean region dominated by [Brachypodium retusum] and with many therophytes and geophytes, often alternating in mosaic fashion with garrigues and phryganas or occupying their clearings.
Helleno-Balkanic short grass and therophyte communities	Open, short, grasslands of thermo- and meso-mediterranean areas of Greece and its islands and of the Balkan peninsula, with numerous annual grasses such as [Bromus fasciculatus], [Bromus madritensis], [Bromus intermedius], [Bromus alopecuros], [Bromus rubens], [Brachypodium distachyon], [Aegilops neglecta], [Aegilops geniculata], [Aegilops triuncialis], [Avena sterilis], [Avena barbata], [Lagurus ovatus], [Cynosurus echinatus], [Stipa capensis], but sometimes with a strong representation of short or medium-sized perennial grasses such as [Hyparrhenia hirta], [Andropogon distachyos], [Cynodon dactylon], [Dactylis hispanica]. They are very rich in annual flowering plants, among which of genera [Euphorbia], [Silene], [Nigella], [Adonis], [Papaver], [Fumaria], [Biscutella], [Rapistrum], [Althaea], [Malva], [Linum], [Geranium], [Astragalus], [Ononis], [Trigonella], [Medicago], [Melilotus], [Trifolium], [Lotus], [Coronilla], [Scorpiurus], [Hedysarum], [Onobrychis], [Bupleurum], [Daucus], [Anagallis], [Orobanche], [Plantago], [Centaurium], [Galium], [Evax], [Filago], [Pallenis], [Anthemis], [Chrysanth
Asio-Mediterranean short grass and therophyte communities	Open, short, grasslands of thermo- and meso-Mediterranean areas of Cyprus, Anatolia and the Levant, with annual grasses, in particular, [Stipa capensis] ([Stipa tortilis]) and [Brachypodium distachyon] and often a representation of short or medium-sized perennial grasses, rich in annual flowering plants and geophytes.
Mediterranean tall-grass and wormwood ([Artemisia]) steppes	Meso-, thermo- and sometimes supra-Mediterranean formations of the Mediterranean basin, physiognomically dominated by tall grasses, between which may grow communities of annuals or sometimes chamaephytes. They include silicicolous as well as basiphile formations. In the Mediterranean region proper, they are most characteristic of the Iberian peninsula and of the Mediterranean rim of Anatolia, with local representations in southern Provence, Sardinia, southern peninsular Italy, Sicily and Greece. In the semiarid regions between the Mediterranean and the deserts of western Asia, they dominate the landscape, forming a major steppe belt in which low scrub of [Artemisia] may be prominent.
Alpha ([Stipa tenacissima]) steppes	[Stipa tenacissima]-dominated formations of the Mediterranean basin.

Esparto ([Lygeum spartum]) steppes	[Lygeum spartum]-dominated formations of North Africa, the Ebro basin, the arid Iberian Southeast, the Guadalquivir basin, Sardinia, Sicily, the Maltese Islands, southern Italy and Crete.
Iberian esparto steppes	Sometimes extensive [Lygeum spartum]-dominated formations of the Ebro basin, the arid Iberian Southeast and the Guadalquivir basin.
Central Mediterranean esparto steppes	More restricted [Lygeum spartum]-dominated formations of Sardinia, southern Italy, Sicily and the Maltese Islands.
Cretan esparto steppes	Rare and isolated [Lygeum spartum]-dominated formations of the south coast of Crete.
Mediterranean steppes dominated by tall grasses other than alpha or esparto	Mediterranean tall-grass steppes dominated by tall grasses other than [Stipa tenacissima] or [Lygeum spartum].
Berceales	[Stipa gigantea]-dominated formations of central and southern Spain and of northwestern North Africa, mostly on siliceous soils.
Mediterranean feathergrass steppes	Meso- and thermo-Mediterranean formations of North Africa, Spain, Italy, southern France, Greece, the southern Balkans and western Asia, dominated by tall perennial grasses of genera [Stipa] ([Stipa lagascae], [Stipa offneri i.a].) or [Piptatherum] ([Oryzopsis]), other than the very tall [Stipa tenacissima] or [Stipa gigantea].
Diss steppes	Formations of North Africa, Italy, Spain and Greece, dominated by [Ampelodesmos mauritanica]; many chamaephyte and diss formations have the physiognomy of a garrigue or a brush and have been listed under 32.23.
Andropogonid grass steppes	Meso- and thermo-Mediterranean steppes of North Africa, Spain, southern France, Italy and the central Mediterranean islands, Greece, the Balkans and western Asia, constituted by cespitose andropogonid grasses such as [Hyparrhenia hirta], [Andropogon distachyos], [Heteropogon contortus], [Dichanthium insculptum], [Dichanthium ischaemum] ([Andropogon ischaemum], [Bothriochloa ischaemum]) or [Chrysopogon gryllus].
Iberian andropogonid grass steppes	Meso- and thermo-Mediterranean steppes of Spain constituted by cespitose andropogonid grasses such as [Hyparrhenia hirta], [Andropogon distachyos], [Heteropogon contortus], [Dichanthium insculptum], [Dichanthium ischaemum] or [Chrysopogon gryllus].
Provençal andropogonid grass steppes	Meso- and thermo-Mediterranean steppes of southern France constituted by cespitose andropogonid grasses such as [Hyparrhenia hirta], [Andropogon distachyos], [Heteropogon contortus], [Dichanthium insculptum], [Dichanthium ischaemum] or [Chrysopogon gryllus].
Central Mediterranean andropogonid grass steppes	Meso- and thermo-Mediterranean steppes of Italy and the central Mediterranean islands constituted by cespitose andropogonid grasses such as [Hyparrhenia hirta], [Andropogon distachyos], [Heteropogon contortus], [Dichanthium insculptum], [Dichanthium ischaemum] or [Chrysopogon gryllus].

Helleno-Balkanic andropogonid grass steppes	Meso-, thermo- and sub-Mediterranean steppes of Greece and the southern Balkan peninsula, north to Albania and the F.Y.R. of Macedonia, constituted by cespitose andropogonid grasses such as [Dichanthium ischaemum], [Hyparrhenia hirta], [Andropogon distachyos], or [Chrysopogon gryllus]. They are continued in Bulgaria by the steppic grasslands of unit 34.31632, and in the western Balkan peninsula by tall-grass steppic grasslands of units 34.751, 34.752 and 34.753, in particular, of unit 34.7524. They are represented farther north in the southern Alpine region by grasslands of unit 34.327.
Mediterraneo-Anatolian andropogonid grass steppes	Meso- and thermo-mediterranean steppes of the Anatolian plateau, of the adjacent western Asian mediterranean lowlands and of Cyprus, constituted by cespitose andropogonid grasses such as [Hyparrhenia hirta], [Andropogon distachyos], [Heteropogon contortus], [Dichanthium insculptum], [Dichanthium ischaemum] or [Chrysopogon gryllus].
Andalusian fescue and oat grasslands	Meso- and supra-Mediterranean grasslands of the Baetic region dominated by the tall, cespitose [Festuca scariosa], [Festuca capillifolia], [Arrhenatherum album], [Helictotrichon filifolium] and [Helictotrichon sarracenorum].
Calcicolous fescue and oat grasslands	Formations of calcareous and dolomitic soils of the Serrania de Ronda mountain system, the peripheral ranges of the Sierra Nevada and the Sierra de Alhamilla.
Silicicolous fescue and oat grasslands	Formations of siliceous soils of the Sierra Nevada, the Sierra de Cabrera and the Sierra de Alhamilla.
Carrascoy fescue and oat grasslands	Formations of siliceous soils of the Sierra de Carrascoy.
Cane steppes	Meso-, thermo- and sometimes supra-Mediterranean formations of the Mediterranean basin, physiognomically dominated by very tall, robust, canelike grasses of genera [Imperata], [Saccharum], [Arundo], [Hemarthria].
Sub-Mediterranean wormwood steppes	[Artemisia]-dominated formations of the steppic regions of the North African and West Asian transition zones between the Mediterranean region and the Saharo-Arabian deserts.
Mediterranean-montane grassland	Open perennial grasslands, often rich in chamaephytes, most characteristic of the thermophilous oak level of Iberia, southern France, southern Italy, Greece and the Balkans. Some of the largest remaining expanses of unbroken grasslands in Europe, of evident importance as faunal habitats, belong to this division. Maintained by extensive grazing and mowing.
Mediterraneo-montane steppes	Sparse or discontinuous xerophile grasslands of [Stipa pennata], [Festuca auquieri] ([Festuca duriuscula]), [Festuca hervieri], [Koeleria vallesiana] or [Sesleria albicans var. elegantissima] with [Helianthemum apenninum], [Helianthemum canum], [Genista] spp., [Globularia] spp., [Ononis striata], [Euphorbia seguierana], [Potentilla crantzii], [Thymus dolomiticus], [Plantago argentea], [Rosa pimpinellifolia], [Dianthus sylvestris], [Lavandula angustifolia], [Aster alpinus], [Anthyllis] spp., [Carex humilis], best developed in the Causses, but also present locally in Provence and Languedoc, from the Alps to Catalonia.

Mediterraneo-montane [Stipa] steppes	Steppes dominated by [Stipa pennata], with [Festuca auquieri], [Koeleria vallesiana], [Brachypodium pinnatum], [Ononis striata], occupying vast expanses of the Causses, and locally represented on crests and plateaux of Haute Provence, the southwestern Alps and the Corbières.
Mediterraneo-montane [Sesleria] steppes	More closed [Sesleria albicans var. elegantissima]-dominated grasslands occupying usually exiguous surfaces of somewhat shaded slopes, ledges, rocky corridors and snow-retaining cliff-bases in the Causses and other low mountains of the Mediterranean periphery of southern France and Catalonia, in particular Montserrat, the Corbières, the montagne d'Alaric and western Provence.
Mediterraneo-montane [Festuca-Koeleria] steppes	Mediterraneo-montane steppe-grasslands poor in [Stipa pennata], for the most part [Festuca auquieri]-, [Koeleria vallesiana]- or [Carex humilis]-dominated facies of 34.711.
Mediterraneo-montane [Artemisia] steppes	Open formations with [Artemisia alba] and [Hyssopus officinalis], rich in chamaephytes, of eroded steep slopes of the Causses, harbouring, in particular, [Convolvulus cantabrica] and [Allium flavum]; similar formations of the southwestern Alps appear best included in the subcontinental steppe-grasslands (unit 34.314).
Blue grass lily grassland and supra-Mediterranean steppes	Coarse or steppe-like grasslands rich in chamaephytes of pronounced Mediterranean affinities formed as a degradation stage of thermophile deciduous oak forests, or of [Quercus rotundifolia] forests, in the supra-Mediterranean belt of Iberia, southern France and Liguria; grassland facies of the supra-Mediterranean garrigues (F6.6) and hedgehog heaths (F7.4).
Iberian fescue frost-influenced grassland	Supra-Mediterranean and montane psychroxerophile, open perennial grasslands of the Cantabrian and Iberian ranges particularly characteristic of frost-fashioned, snow-free, superficial soils of the [Juniperus thurifera] and [Juniperus sabina] environments, rich in [Festuca hystrix], [Festuca burnatii], [Poa ligulata] and with, among others, [Armeria bigerrensis ssp. legionensis], [Arenaria aggregata ssp. cantabrica], [Centaurea janeri ssp. babiana], [Draba cantabrica], [Saxifraga conifera], [Ononis striata], [Ononis cristata], [Ononis pusilla], [Coronilla minima], [Paronychia kapela ssp. serpyllifolia], [Helianthemum canum], [Carex humilis]. They ascend to the oro-mediterranean level and extend southeast to the eastern Baetic chains.
Central and southern Apennine dry grassland	Open grasslands of calcareous substrates of the middle and southern Apennines, southern vicariant of the [Xerobromion], with [Bromus erectus], [Sideritis syriaca] and many Apennine endemics or subendemics such as [Crepis lacera], [Centaurea rupestris ssp. ceratophylla], [Phleum ambiguum], [Carex macrolepis]. Many distinctive communities exist in this unit, some still covering vast expanses of land of exceptional biological significance such as Campo Imperatore in the Gran Sasso range; a few examples are cited below, others may be added.

Eastern sub-Mediterranean dry grassland	Open, xeric grasslands on carbonate rocks or flysh of the sub-Mediterranean zones of Trieste, Istria, the Balkan peninsula and of the [Ostryo-Carpinion] zone of Greece, where they coexist with steppic grasslands of the [Festucetalia valesiacae] (unit E1.21), developing in areas of lesser continentality than the latter, and incorporating a greater Mediterranean element than they do; like the steppic grasslands, however, they are often dominated by [Carex humilis] or [Festuca rupicola]. Maintained by extensive mowing or grazing, they are invaded by tall herbs after abandonment.
Lowland savory-chrysopogon dry grasslands	Sub-Mediterranean xeric grasslands of the warmer lowlands and hills of the Balkan and northern Hellenic peninsulas, within the [Ostryo-Carpinion orientalis aegeicum] and [Ostryo-Carpinion orientalis adriaticum] zones.
Helleno-Paeonian savory-chrysopogon dry grasslands	Sub-Mediterranean xeric grasslands of the [Ostryo-Carpinion orientalis aegeicum] zone of northern Greece, the southern F.Y.R. of Macedonia and southwestern Albania, on the northwestern spurs of the Pindus system.
Dalmatian savory-chrysopogon dry grasslands	Sub-Mediterranean xeric grasslands of the [Ostryo-Carpinion orientalis adriaticum] zone of Adriatic Croatia, in Istria and Dalmatia, western Bosnia-Herzegovina, western Montenegro, northwestern and western Albania south to the Vjosa lowlands.
Dalmatian savory-fescue-hairgrass grasslands	Sub-Mediterranean xeric grasslands of the [Ostryo-Carpinion orientalis adriaticum] zone of the western Balkan peninsula, with [Plantago holosteum ssp. depauperata], [Centaurea tommasinii], [Carlina lanata], [Koeleria splendens], [Festuca trachyphylla], [Festuca valesiaca], [Chrysopogon gryllus], [Stipa bromoides], [Bromus erectus].
Dalmatian sage-feathergrass grasslands	Sub-Mediterranean xeric grasslands of strongly eroded slopes of the [Ostryo-Carpinion orientalis adriaticum] zone of Istria and Dalmatia, with [Salvia officinalis], [Campanula sibirica], [Stipa bromoides], [Bromus erectus].
Dalmatian asphodel-chrysopogon grasslands	Sub-Mediterranean xeric grasslands of the northern part of the transition zone between the mesomediterranean and [Ostryo-Carpinion orientalis adriaticum] regions of Dalmatia, particularly well developed on the karst of the island of Pag, with [Asphodelus microcarpus], [Chamaecytisus spinescens], [Scutellaria orientalis var. pinnatifida], [Inula candida], [Cirsum acarna], [Chrysopogon gryllus], [Bromus erectus], [Melica ciliata].
Dalmatian thrift grasslands	Sub-Mediterranean xeric grasslands of the [Ostryo-Carpinion orientalis adriaticum] zone of the Dalmatian archipelago, noted in particular from Pag, with [Armeria dalmatica], [Artemisia alba], [Alyssum montanum], [Helichrysum italicum].
Dalmatian [Aethionema] grasslands	Sub-Mediterranean xeric grasslands of the upper [Ostryo-Carpinion orientalis adriaticum] zone of Dalmatia, with [Satureja montana], [Galium corrudifolium], [Aethionema saxatile], [Artemisia alba], [Melica ciliata], [Bothriochloa ischaemum], [Bromus erectus].
Dalmatian fescue grasslands	Fairly dense, closed sub-Mediterranean xeric grasslands of the [Ostryo-Carpinion orientalis adriaticum] zone of the western Balkan peninsula, developed on relatively fine-textured soils, with [Achillea nobilis], [Medicago prostrata], [Festuca valesiaca], [Koeleria splendens], [Bromus erectus], [Cladonia endiviaefolia].

Mountain savory-chrysopogon dry grasslands	Sub-Mediterranean xeric grasslands of the submontane and montane levels of the Adriatic façade of the Balkan peninsula, within the upper levels of the [Ostryo-Carpinion adriaticum] zone, reaching locally to the beech level, of more medio-European physiognomy than the formations of unit 34.751, and somewhat reminiscent of [Bromion erecti] grasslands.
Rock knapweed-dwarf sedge grasslands	Submontane and montane sub-Mediterranean xeric grasslands of the Adriatic façade of the Balkan peninsula with [Carex humilis], [Bromus erectus], [Centaurea rupestris], [Leucanthemum liburnicum], [Plantago argentea], [Jurinea mollis], [Iris cengialti], [Pulsatilla vulgaris ssp. grandis] and, in warmer stations, [Filipendula vulgaris], [Lotus corniculatus], [Leontodon hispidus], [Briza media], on exposed slopes, [Sesleria juncifolia], [Gentiana lutea], [Gentiana clusii], [Trinia glauca], in the most montane situations [Arctostaphylos uva-ursi]. They occur from Trieste to Montenegro, and in the Velebit, Dinara, Kamesnika, Prenj und Biokovo ranges, and are used as pastures or sometimes hay meadows.
Savory-edraianthus grasslands	Low, mat-forming submontane and montane sub-Mediterranean xeric grasslands of the Adriatic façade of the Balkan peninsula, occupying windswept hilltops, with [Satureja subspicata] with [Edraianthus tenuifolius], [Helianthemum oelandicum ssp. italicum], [Genista holopetala], [Crepis chondrilloides], distributed from the Orjen to the Obruc range.
Mucronated sedge grasslands	Submontane and montane sub-Mediterranean xeric grasslands of the Adriatic façade of the Balkan peninsula, replacing the grasslands of unit 34.7522 in the Obruc range and Gorsky Kotar on extremely wind-exposed domes with shallow dolomitic rendzinas, at an altitude of 800-1100 m, with [Carex mucronata], [Genista holopetala], [Euphorbia saxatilis], [Gentiana clusii], [Minuartia laricifolia], [Sesleria juncifolia].
Triestine knapweed-chrysopogon grasslands	Lacunar, cespitose steppic grasslands of the northeastern Adriatic dominated by the tall andropogonid grasses [Chrysopogon gryllus] and [Dichanthium ischaemum], associated with [Cleistogenes serotina], and with [Carex humilis], [Anthyllis adriadica], [Asperula purpurea], the endemic [Centaurea cristata], [Artemisia alba], [Bupleurum veronense], [Petrorhagia saxifraga], [Argyrolobium zanonii], [Onosma javorkae], [Carlina corymbosa], [Gentiana tergestina]. They are characteristic of the Triestine karst, with uncommon occurrence in karstic Slovenia. These tall-grass steppic grasslands are intermediate between the more mediterranean andropogonid grass steppes of unit 34.6344 and the peri-Alpine [Chrysopogon] grasslands of unit 34.327. Related [Chrysopogon] grasslands also exist in units 34.751 and 34.753.
Silky greenwood-[Sesleria] grasslands	Rock grasslands of steep slopes of the Triestine and Slovenian karst dominated by [Sesleria juncifolia], with [Carex humilis], [Allium ochroleucum], [Sempervivum tectorum], [Scorzonera austriaca var. platyphylla], [Athamanta turbith] and species of the [Sedo-Scleranthetea] and [Potentilletalia caulescentis] rock-debris and cliff cortèges.

Viper's grass dry grasslands	Sub-Mediterranean xeric grasslands of the Adriatic façade of the Balkan peninsula, within the [Ostryo-Carpinion adriaticum] zone, developed on deeper more acidified soils than the formations of units 34.751 and 34.752, over flysch or schists, or over loam or clay covered limestones.
Viper's grass-lime sieglinglia grasslands	Deep soil, acidocline sub-Mediterranean xeric grasslands of the Adriatic façade of the Balkan peninsula, distributed in Istria, northern coastal Croatia and Bosnia-Herzegovina, with [Danthonia provincialis], [Chrysopogon gryllus], [Bromus erectus], [Schoenus nigricans], [Dianthus ferrugineus ssp. liburnicus], [Ferulago campestris], [Scorzonera villosa].
Spurge-chrysopogon grasslands	Deep soil, acidocline sub-Mediterranean xeric grasslands of the Adriatic façade of the Balkan peninsula, characteristic of the northern Quarnero-Istrian coastal area, with [Euphorbia nicaeensis], [Potentilla pedata], [Potentilla cinerea], [Dianthus carthusianorum].
Restharrow-brome grasslands	Deep soil, acidocline sub-Mediterranean xeric grasslands of the Adriatic façade of the Balkan peninsula, distributed the Quarnero Islands, in particular Rab, Pag and Muc, and in central and northern Dalmatia, with [Ononis spinosa ssp. antiquorum], [Astragalus monspessulanus ssp. illyricus], [Inula oculus-christi], [Onobrychis arenaria], [Scorpiurus subvillosus], [Leucanthemum croaticum], [Inula ensifolia].
Viper's grass-catsear grasslands	Deep soil, acidocline sub-Mediterranean xeric grasslands of the Adriatic façade of the Balkan peninsula, limited to moutain slopes of Istria, up to the beech level, transitional to medio-European [Bromion erecti] grasslands, with [Bromus erectus], [Brachypodium pinnatum], [Festuca valesiaca], [Thalictrum aquilegifolium], [Lilium bulbiferum], [Gentianella germanica], [Primula veris], [Scorzonera villosa], [Hypochoeris maculata].
Lousewort-dwarf sedge grasslands	Deep soil, acidocline sub-Mediterranean xeric grasslands of the Adriatic façade of the Balkan peninsula, characteristic of clearings of the submontane hop-hornbeam beech woods with [Hypochoeris maculata], [Pedicularis acaulis], [Linum narbonense], [Carex montana], and a number of acidophilous species, such as [Calluna vulgaris].
Croatian fescue-meadowgrass grasslands	Open acidocline sub-Mediterranean xeric grasslands of the Adriatic façade of the Balkan peninsula, characteristic of fallow, superficially eroded fields of the Croatian coastal region, with [Poa bulbosa], [Seseli montanum ssp. tommasinii], [Trifolium incarnatum ssp. molinerii], [Ophrys bertolonii], [Salvia bertolonii], [Thymus longicaulis], [Sanguisorba minor ssp. muricata], [Silene vulgaris], [Festuca pseudovina], [Bromus erectus].
Cleistogenes grasslands	Postcultural acidocline sub-Mediterranean xeric grasslands of the Adriatic façade of the Balkan peninsula dominated by [Cleistogenes serotina] ([Diplachne serotina], [Leptochloa serotina]).
Bosnian dolomite grasslands	Sub-Mediterranean xeric grasslands of dolomitic rendzinas of Bosnia-Herzegovina, with [Peucedanum arenarium ssp. neumayerii], [Euphorbia barrelieri], [Reichardia macrophylla], [Silene reichenbachii], [Saponaria bellidifolia], [Haplophyllum patavium].

Subnitrophilous annual grassland	Land dominated by annual grasses and herbs, on soils slightly enriched in nitrates, in the meso- and thermo-Mediterranean zones. Characteristic are [Bromus], [Aegilops], [Avena], [Vulpia], crucifers and leguminous plants. These annuals occur as pioneers of bare soils slightly nitrified by aeration or organic addition, along roads, on land-fills and in interstitial spaces of cultivation. They also replace the oligotrophic annual vegetation of Mediterranean xeric grasslands (E1.3) under the influence of pastoral activities. Subnitrophilous annual grassland is widespread as a successional stage after cultivation. Woody recolonisation may lead to maquis (F5) or garrigues (F6).
Mediterranean subnitrophilous grass communities	Graminoid formations with [Bromus fasciculatus], [Bromus madritensis], [Bromus intermedius], [Bromus alopecuros], [Bromus rubens], [Bromus hordeaceus], [Bromus tectorum], [Aegilops neglecta], [Aegilops geniculata], [Aegilops triuncialis], [Aegilops ventricosa], [Taeniatherum caput-medusae], [Avena sterilis], [Avena barbata], [Lagurus ovatus], [Lolium rigidum], [Vulpia ciliata], [Vulpia bromoides], [Vulpia geniculata], [Lamarckia aurea], [Trisetum paniceum], [Cynosurus echinatus], [Stipa capensis], and with [Scandix australis], [Astragalus scorpioides], [Trifolium cherleri], [Trifolium hirtum], [Trifolium striatum], [Trifolium campestre], [Trifolium arvense], [Trifolium glomeratum], [Vicia lutea], [Medicago rigidula], [Medicago sativa], [Medicago littoralis], [Melilotus sulcata], [Coronilla scorpioides], [Filago minima], [Paronychia argentea], particularly widespread in Iberia, southern Italy, the mediterranean Balkans and Greece where they may cover vast expanses of post-cultural or extensive pasture lands, also locally represented in southern France and coastal northern Italy.
Meseta subnitrophilous crucifer communities	Brassicoid formations of the Spanish Meseta with [Brassica barrelieri], [Andryala arenaria], [Alyssum granatense], [Rhynchosinapis hispida], [Euphorbia matritensis], [Sisymbrium contortum], [Papaver argemone], [Hirschfeldia incana], [Capsella rubella].
Iberian southeastern subnitrophilous herb communities	Formations of the arid Iberian Southeast with [Astragalus longidentatus], [Brassica cossoniana], [Carrichtera annua], [Euphorbia dracunculoides], [Lasiopogon muscoides], [Leontodon salzmannii], [Lotus edulis], [Lycocarpus fugax], [Matthiola lunata], [Matthiola parviflora], [Notoceras bicorne], [Volutaria lippii] ([Amberboa lippii]).
Eastern Mediterranean subnitrophilous herb communities	Annual herb formations of arid areas of the Aegean (e.g. eastern Crete) and western Asia, developed in particular as ultimate degradation of overgrazed phryganas.

Closed non-Mediterranean dry acid and neutral grassland	Closed, dry or mesophile, perennial grasslands occupying acid soils in Atlantic or sub-Atlantic lowland to montane regions of northern Europe, middle Europe and western Iberia, with [Nardus stricta], [Festuca filiformis] ([Festuca tenuifolia]), [Festuca ovina], [Festuca rubra], [Agrostis capillaris], [Danthonia decumbens], [Anthoxanthum odoratum], [Deschampsia flexuosa], [Poa angustifolia], [Galium saxatile], [Polygala vulgaris], [Viola canina], [Meum athamanticum], [Arnica montana], [Centaurea nigra], [Dianthus deltoides], [Gentianella campestris], [Chamaespartium sagittale], [Jasione laevis], [Potentilla erecta], [Carex pilulifera]. Any of the grasses listed can dominate or codominate distinctive facies; [Calamagrostis epigejos] or [Carex arenaria] also can invade and dominate some formations.
Mat-grass swards	Mesophile and xerophile [Nardus stricta]-dominated or -rich grasslands of Atlantic or sub-Atlantic lowland, collinar and montane regions of northern Europe, middle Europe and western Iberia. Other important species: [Festuca rubra], [Agrostis capillaris], [Agrostis pyrenaica], [Avenula versicolor], [Campanula alpina] and [Avenella flexuosa].
Insular [Nardus]-[Galium] grasslands	Mesophile and xerophile [Nardus stricta]-dominated or -rich grasslands of the British Isles and the Faeroe Islands, with [Agrostis capillaris], [Galium saxatile], [Potentilla erecta].
Sub-Atlantic [Nardus]-[Galium] grasslands	Mesophile and xerophile [Nardus stricta]-dominated or -rich grasslands of Atlantic or sub-Atlantic lowland, collinar and montane regions of the mainland of Europe, extending north to western Jutland, northern Jutland, nemoral and boreonemoral southern Sweden, nemoral southern Norway and oceanic southern boreal Norway, east to Poland, Lithuania, the Bohemian Quadrangle, the Carpathians and the Austrian pre-Alps, southwest to Asturias and Cantabria; the species cortège includes [Polygala vulgaris], [Hypericum maculatum f. glabrum], [Galium saxatile], [Carex panicea], [Hieracium umbellatum], [Hypochoeris maculata], [Genista tinctoria], [Arnica montana], [Campanula rotundifolia], [Plantago lanceolata], [Potentilla erecta], [Thymus pulegioides].
Beskid [Calluna]-[Nardus] grassland	Endemic grassland community of the Beskid vicinity of Poland, dominated by [Nardus stricta], accompanied by [Danthonia decumbens] ([Sieglingia decumbens]), [Viola canina var. ericetorum], [Polygala vulgaris] and invaded to a varying degree by [Calluna vulgaris].
Bohemian orchid-matgrass swards	Rare grassland community of the Czech and Austrian Bohemian Forest (Sumava) and of the Austrian southeastern pre-Alps, dominated by [Nardus stricta] with [Carex pallescens], [Gymnadenia conopsea], [Orchis mascula], [Dactylorhiza majalis], [Platanthera bifolia], [Phyteuma nigrum], [Lychnis flos-cuculi], [Anemone nemorosa].
Illyrian mat-grass swards	Mesophile and xerophile [Nardus stricta]-dominated or -rich grasslands of relatively high-rainfall lowland, collinar and montane regions of the Dinarides of Slovenia, Croatia, Bosnia-Herzegovina, Yugoslavia, northwestern Albania, mostly characteristic of the [Fagion illyricum] beech level and of the heaths of the [Carpinion illyricum] environment, extending into the Adriatic-influenced western forests of the [Fagion moesiacum].

Bent - fescue grassland	Closed mesophile or dry grasslands of the nemoral and boreal zones of Atlantic or sub-Atlantic lowland, collinar and montane regions of Europe formed by [Agrostis] spp. and [Festuca] spp., in association with other grasses such as [Anthoxanthum odoratum], [Hierochloe odorata], [Deschampsia flexuosa], [Danthonia decumbens].
Nemoral [Agrostis]-[Festuca] grasslands	Closed mesophile grasslands of Atlantic and, locally, of sub-Atlantic, middle Europe, mostly characteristic of the nemoral zone, extending north to the boreonemoral zone and, locally, to the boreal zone, formed by [Agrostis] spp. and [Festuca] spp.
Boreo-arctic [Agrostis]-[Festuca] grasslands	Grasslands of subarctic affinities of the northern boreal and middle boreal zones of northern Scandinavia and northwestern Russia, of the alpine and arcto-alpine zones of the Caledonian chains of Scandinavia and of lowlands and hills of Iceland, composed of [Festuca] spp., [Agrostis capillaris], with [Anthoxanthum odoratum], other grass species, often with [Polygonum viviparum] and other herbs.
Boreo-subalpine [Agrostis] grasslands	Relatively short grasslands of lower mountain slopes of northern Scandinavia and of lowlands and hills of Iceland dominated by [Agrostis capillaris] or [Anthoxanthum odoratum], with [Polygonum viviparum] ([Bistorta vivipara]) and [Carex bigelowii]. These grasslands are strongly influenced by, and perhaps entirely dependent on, grazing or mowing.
Icelandic [Anthoxanthum]-[Hierochloe] grasslands	Grasslands of Iceland dominated by [Agrostis capillaris], [Anthoxanthum odoratum], [Hierochlo‰ odorata], with a species cortège similar to that of unit 35.1221, occurring under similar conditions but with a somewhat longer-lasting snow cover. Some stands are dominated by [Deschampsia flexuosa] and are included in unit 35.132.
Northern boreal [Festuca] grasslands	Herb-rich grasslands, 20-40 cm tall, developed on sandy soils, often on inundatable terrain, under cold-temperate climates, characteristic of the northern boreal zone of Fennoscandia and northwestern Russia, extending locally in the middle boreal zone of eastern Sweden and Finland and in the alpine and arcto-alpine zones of the Caledonian chains of Scandinavia, dominated by [Festuca ovina] with a cortège, rich in northern species, that includes [Polygonum viviparum] ([Bistorta vivipara]), [Anthoxanthum odoratum], [Deschampsia cespitosa], [Carex vaginata], [Achillea millefolium], [Campanula rotundifolia], [Galium boreale], [Geranium sylvaticum], [Rubus arcticus], [Solidago virgaurea], [Thalictrum simplex], [Trollius europaeus], [Veronica longifolia].
Icelandic [Festuca] grasslands	Grasslands of lowlands and lower mountains of Iceland and of the Faeroe Islands dominated by fescues of the [Festuca rubra] group, in particular, [Festuca vivipara], with a species cortège otherwise similar to that of unit 35.12212, including, in particular, [Polygonum viviparum] ([Bistorta vivipara]), [Kobresia myosuroides], [Anthoxanthum odoratum], [Carex bigelowii], developed on somewhat drier and sandier substrates than the grasslands of unit 35.12212.

Fenno-Scandian [Avenula pratensis]-[Festuca rubra] grasslands	Dry or mesophile calcareous grasslands of subarctic affinities, limited to the continental middle boreal zone of lowland Sweden and northern Finland and to the middle boreal and arcto-alpine zones of the Scandinavian mountains; they constitute a northern, less species-rich, variant of the communities of unit 32.111, dominated by [Festuca rubra], with [Botrychium boreale], [Botrychium lanceolatum], [Botrychium lunaria], [Carex brunnescens], [Carex ericetorum], [Cerastium alpinum], [Erigeron borealis], [Galium boreale], [Gentiana nivalis], [Gentianella amarella], [Gentianella campestris], [Gentianella tenella], [Poa glauca], [Primula scandinavica], [Primula striata].
Wavy hair-grass grassland	Closed, dry or mesophile, perennial grasslands occupying acid soils in Atlantic or sub-Atlantic lowland, collinar and montane regions of northern Europe, north to Iceland and southern Scandinavia, middle Europe and western Iberia dominated by [Deschampsia flexuosa].
Wood small-reed ([Calamagrostis]) stands	Tall [Calamagrostis epigejos]-dominated facies of siliceous grasslands of Atlantic or sub-Atlantic northern and middle Europe, otherwise described by units E1.71 or E1.72.
Sand sedge grassland	Closed acidophilous grasslands of Atlantic or sub-Atlantic lowland, collinar and montane regions of northern Europe, middle Europe and western Iberia dominated by [Carex arenaria], formed as invasion facies of grasslands of units E1.71 and E1.72.
Closed Mediterranean dry acid and neutral grassland	Perennial grasslands on acid soils of the supra-Mediterranean zone, dominated by e.g. [Festuca elegans] or [Nardus stricta]. Mediterranean annual-rich siliceous grassland of siliceous gravelly, sandy or silty, usually shallow, soils that remain cohesive during the dry season.
Mediterranean therophytic siliceous grassland	West Mediterranean and Dalmatian annual-rich grasslands of siliceous gravelly, sandy or silty, usually shallow, soils that remain cohesive during the dry season; they are rich in small Fabaceae, in particular of genera, [Trifolium], [Lathyrus], [Ornithopus], [Lupinus], [Anthyllis], [Coronilla] and grasses of genera [Corynephorus], [Aira], [Airopsis], [Molineria], [Vulpia], [Briza], [Anthoxanthum], [Micropyrum]; among characteristic species, shared by eastern and western formations, are [Tuberaria guttata], [Silene gallica], [Linaria pelisseriana], [Plantago bellardii], [Galium divaricatum].
West Mediterranean siliceous grassland	West Mediterranean annual-rich grasslands of siliceous gravelly, sandy or silty, usually shallow, soils that remain cohesive during the dry season; characteristic are [Tuberaria guttata], [Helianthemum sanguineum], [Jasione montana], [Paronychia cymosa], [Paronychia echinulata], [Pterocephalus diandrus], [Prolongoa pectinata], [Senecio minutus], [Tolpis barbata], [Filago gallica], [Filago minima], [Teesdalia coronopifolia], [Sedum caespitosum], [Sedum arenarium], [Sedum andegavense], [Crassula tillaea], [Saxifraga carpetana], [Radiola linoides], [Silene gallica], [Silene psammitis], [Silene portensis], [Linum gallicum], [Linaria pelisseriana], [Linaria arvensis], [Plantago bellardii], [Galium divaricatum], [Trifolium cherleri], [Trifolium strictum], [Trifolium suffocatum], [Trifolium arvense], [Trifolium bocconei], [Trifolium purpureum], [Lathyrus angulatus], [Ornithopus pinnatus], [Ornithopus sativus], [Lupinus hispanicus], [Lupinus angustifolius], [Anthyllis cornicina], [Coronilla dura] and the grasses [Corynephorus divaricatus], [Aira cupaniana], [Aira tenorii], [Aira caryophyllea], [Airopsis tenella], [Moli

Dalmatian siliceous grassland	Uncommon acidophile annual-rich grasslands of Dalmatia occupying small, insularised surfaces on colluvions and red earths of the Dalmatian karst and on southern Dalmatian sands; characteristic are [Tuberaria guttata], [Filago vulgaris], [Silene gallica], [Linaria pelisseriana], [Plantago bellardii], [Galium parisiense], [Hypochoeris radicata], [Cynanchum contiguum], [Crepis sancta], [Trifolium cherleri], [Trifolium lappaceum], [Trifolium subterraneum], [Trifolium stellatum], [Trifolium glomeratum], [Trifolium nigrescens], [Trifolium angustifolium], [Lathyrus sphaericus], [Ornithopus compressus], [Lupinus micranthus], [Lupinus lacromensis], [Luzula campestris] and the grasses [Aira elegans], [Vulpia ligustica], [Vulpia bromoides], [Vulpia myuros], [Briza maxima], [Anthoxanthum ovatum], [Gastridium ventricosum], [Gaudinia fragilis], [Phleum echinatum], [Psilurus aristatus]; the orchids [Ophrys apifera], [Ophrys oestrifera], [Spiranthes spiralis] are recorded.
Iberian tall fescue grassland	Perennial grasslands dominated by the tall cespitose [Festuca elegans] of the supra-Mediterranean [Quercus pyrenaica] level of the Cordillera Central and Sierra Nevada with, among others, [Geum heterocarpum], [Trifolium ochroleucon] and [Paeonia coriacea] of deep, siliceous soils.
Mediterraneo-montane mat-grass swards	[Nardus stricta]-dominated grasslands and related communities of the supra-mediterranean level of the mountains of the Mediterranean peninsulas, either developed on siliceous soils, or, rarely, on calcareous substrates.
Iberian montane mat-grass swards	Supra-mediterranean acidophilous communities rich in [Nardus stricta] with an accompanying cortège similar to that of the Iberian subalpine [Campanulo-Nardion] (unit 36.36), rather than to that of the Atlantic and sub-Atlantic [Violion caninae] (unit 35.1), occurring in particular in the [Quercus pyrenaica] level of the Cordillera Central.
Southern Italian mat-grass swards and related communities	Closed, mesophile grasslands of depressions, flats and snow patches of the beech level of the southern Apennines, with [Luzula multiflora], [Luzula pindica], [Anthoxanthum odoratum], [Festuca rubra], [Festuca varia] s.l., [Festuca violacea], [Bellardiochloa violacea] ([Poa violacea]), [Alopecurus gerardii], [Danthonia decumbens], [Phleum alpinum], [Carex leporina], [Hypochoeris laevigata], [Dianthus deltoides], [Nardus stricta], [Crocus vernus], [Sedum atratum], [Euphrasia minima], [Ajuga tenorii] ([Ajuga acaulis]), [Potentilla neumanniana var. rigoana], [Potentilla argentea var. calabra], [Ranunculus sartorianus], [Ranunculus polyanthemos ssp. thomasii], [Meum athamanticum], [Asphodelus albus var. pollinensis], [Plantago brutia], [Pedicularis petiolaris], [Omalotheca sylvatica] ([Gnaphalium sylvaticum]), [Cirsium vallis-demoni], [Viola calcarata], [Armeria majellensis]; they are widespread in the siliceous Sila range and also occur on deep decalcified soils of the piani of the calcareous Pollino range.
Balkanic montane mat-grass swards	Closed [Nardus stricta]-dominated grasslands of the [Fagion moesiacum] zone of the Balkan peninsula.
Open non-Mediterranean dry acid and neutral grassland, including inland dune grassland	Open grassland, often with therophytes, of the nemoral, boreonemoral and submediterranean zones, developed on raw non-calcareous soils, especially on inland dunes and fixed sands.

Dwarf annual siliceous grassland	Pioneer formations of typically dwarf annuals, often ephemeral and of very limited extent, characteristic in particular of fixed sands, of Atlantic, sub-Atlantic and supra-Mediterranean Europe, with [Aira caryophyllea], [Aira praecox], [Micropyrum tenellum] ([Nardurus lachenalii]), [Vulpia bromoides], [Vulpia myuros], [Trisetum ovatum], [Filago arvensis], [Filago gallica], [Filago lutescens], [Filago minima], [Filago pyramidata], [Filago vulgaris], [Spergula morisonii], [Hypochoeris glabra], [Evax carpetana], [Moenchia erecta], [Scleranthus polycarpos], [Teesdalia nudicaulis], [Myosotis discolor], [Myosotis stricta], [Linaria elegans], [Linaria amethystea], [Sedum lagascae], [Sedum pedicellatum], [Ornithopus perpusillus], [Trifolium striatum], [Trifolium arvense], [Trifolium dubium], [Trifolium campestre], [Trifolium micranthum], [Tuberaria guttata]; typical former crop-following species also find a refuge in these communities.
Perennial open siliceous grassland	Open or semi-open grasslands of fixed sands and dry ground of Atlantic and sub-Atlantic Europe dominated by perennial grasses such as [Agrostis capillaris], [Agrostis vinealis], [Agrostis delicatula], [Agrostis durieui], [Agrostis castellana], [Poa angustifolia], [Anthoxanthum odoratum], [Festuca filiformis], [Corynephorus canescens], [Calamagrostis epigejos] or [Carex arenaria], usually succeeding to formations of unit E1.91 or E1.93 and constituting a transition towards closed grasslands of unit E1.7.
Grey hair grass ([Corynephorus]) grassland	Very open grasslands of mobile or poorly fixed sands of Atlantic and sub-Atlantic Europe, dominated by [Corynephorus canescens], sometimes by [Leymus arenarius] or [Carex arenaria]; most are dunal and relate to other subunits of unit E1.9 (E1.94-E1.9E).
Inland dune pioneer grassland	Formations of unstable Germano-Baltic fluvioglacial inland sands with [Corynephorus canescens], [Carex arenaria], [Spergula morisonii], [Teesdalia nudicaulis] and carpets of fruticose lichens ([Cladonia], [Cetraria]) (cf. unit E1.93). Communities of Jutland are rich in [Ammophila arenaria].
Inland dune siliceous grassland	Grasslands of more stabilised Germano-Baltic fluvioglacial inland dune systems with [Agrostis] spp. and [Corynephorus canescens] or other acidophilous grasses. Related units are found in E1.7, E1.91 and E1.92.
Northern fluviatile dunes	Formations of the immediate vicinity of great rivers within the North Sea-Baltic plain, comprising, besides the communities of E1.94 and E1.95, slightly calcareous grasslands of E1.12 and E1.28.
Southern fluviatile dunes	Dunes of the great rivers of middle Europe (Seine, Loire, Saone, upper Rhine, upper Elbe). A small remnant exists in the Po plain of northern Italy. Like the fluvioglacial dunes of northern Europe, they carry specialised and rare ecosystems and are highly vulnerable. They are much more calcareous than the northern inland dunes and their grasslands (units E1.12, E1.28 i.a.) have a substeppic character contrasting with that of neighbouring regions.
Breckland inland dunes	Remnants of the once vast Breckland inland dune system, of similar glacial origin to that of the continental fluvioglacial dunes under units E1.94-E1.96, and like them, colonised by acidophilous grasslands and heaths.
Rhône riverine dunes	Fossil dunes of the Camargue, built up by silty alluvial sands of the Rhone.

Southern Iberian inland dunes	Fossil dunes of the Coto Doñana and other areas of southwestern Iberia. They support very specialised brushes (F5.5A) and open grasslands belonging to the [Malcomietalia] (unit E1.A1, see also unit B1.48).
Pannonic inland dunes	Inland dunes of the Pannonic plain and of neighbouring basins, northwest to the Marchfeld and fragmentary on blown sands of Borska nizina lowland. During the spring ephemeral therophytes prevail, while grasses and lichens dominate during autumn. Xerophilous siliceous grasslands are characterised by the communities of alliances [Corynephorion canescentis] and [Festucion vaginatae] and species [Corynephorus canescens], [Festuca vaginata], [Koeleria glauca], [Thymus serpyllum] and [Ceratodon purpureus].
Pannonic bare sands	Initial stage of renewal of the surface of wandering dunes, devoid or almost devoid of phanerogamic vegetation, in which the bare sand surface is usually covered by a thin film of soil algae and supports the fungus [Psatirella ammophyla].
Pannonic dune lichen communities	Lichen-dominated earliest stage of the first succession phase of colonisation of Pannonic dunes, with [Cladonia convoluta], [Cladonia furcata], [Cladonia magyarica] and the bryophytes [Syntrichia ruralis], [Tortula spp].
Pannonic dune pioneer grasslands	Therophyte-dominated later stages of the first succession phase in the colonisation of the Pannonic dunes, characterized by a very thin, low cover of mostly ephemeral, early-blooming annuals of small stature, among which [Bromus mollis], [Bromus tectorum], [Bromus squarrosus], [Medicago minima], [Cerastium brachypetalum], [Erophila verna], [Plantago indica], [Saxifraga tridactylites], [Poa annua], [Poa bulbosa], [Viola kitaibeliana], [Lithospermum arvense], [Corispermum nitidum], [Polygonum arenarium], with a few more perennials such as [Equisetum ramosissimum var. altissimum], [Alyssum tortuosum], [Sedum acre], [Cynodon dactylon].
Pannonic dune open grasslands	More or less open grasslands constituting the second stage of succession in the colonisation of Pannonic dunes, dominated by the perennial grasses [Festuca vaginata], [Stipa capillata], [Stipa borysthenica], [Cleistogenes serotina], [Koeleria glauca], [Koeleria cristata], [Carex liparocarpos], accompanied by [Euphorbia seguierana], [Alkanna tinctoria], [Alyssum montanum ssp. gmelinii], [Dianthus serotinus], [Dianthus diutinus], [Gypsophila paniculata], [Scabiosa ochroleuca], [Astragalus austriacus], [Astragalus onobrychis], [Erysimum diffusum], [Fumana procumbens], [Minuartia glomerata], [Minuartia verna]; arid sites on flattened plains are characterized by the abundance of lichens and have [Helechrysum arenarium] and [Kochia laniflora]; thermic slopes and tops of dunes support an open community with the shrub [Fumana procumbens], [Astragalus varius], [Helianthemum nummularium], [Scabiosa ochroleuca]; somewhat water-retentive depressions are characterized by [Scirpus holoschoenus] and [Linum hirsutum ssp. glabrescens]; shrub colonisation includes [Juniperus

Pannonic dune closed grasslands	Closed swards of basophilous, humus- and nutrient-rich, sandy or mixed sand-loessy soils of Pannonic fixed dunes, dominated by [Festuca rupicola], [Festuca wagneri], [Festuca pseudovina] or, in some facies, [Chrysopogon gryllus], with [Carex liparocarpos], [Festuca vaginata], [Agropyron cristatum ssp. pectinatum], [Achillea ochroleuca], [Astragalus asper], [Astragalus onobrychis], [Astragalus exscapus], [Potentilla cinerea], [Muscari botryoides], [Muscari comosum], [Linum austriacum], [Thymus glabrescens], [Iris variegata], [Iris humilis ssp. arenaria], [Colchicum arenarium], [Ophrys sphegodes], [Anacamptis pyramidalis], [Salvia nemorosa], [Alyssum] spp., [Silene parviflora], [Dianthus giganteiformis ssp. pontederae], [Lotus] spp., [Onosma arenaria ssp. pseudoarenaria].
Pannonic dune thickets and scrubs	Formations of large shrubs colonizing Pannonic dunes.
Pannonic dune woods	Natural woods installed within Pannonic dune systems. Their composition can be specified by use of codes of 41.
Pontic inland dunes	Inland dunes of the Pontic plain and of neighbouring basins, including the lower Danube basin of Oltenia and Muntenia and the northern Thracian plain, the northern Black Sea-Sea of Azov plain with the basins of the Dnieper and the Don, northeast to the Volga, east to the Caspian deserts and semideserts, southeast to the pre-Caucasian hills in the basins of the Kouban, the Manytch, the upper Kuma and upper Terek (units E1.2D1 and E1.2D3).
Pontic bare sands	Initial stage of renewal of the surface of wandering Pontic dunes, devoid or almost devoid of phanerogamic vegetation.
Pontic dune lichen communities	Lichen-dominated earliest stage of the first succession phase of colonisation of Pontic dunes.
Pontic dune pioneer grasslands	Therophyte-dominated later stages of the first succession phase in the colonisation of Pontic dunes, characterized by a very thin, low cover of mostly ephemeral, early-blooming annuals of small stature. Detailed communities can be indicated by addition of codes identifying subunits of 34.A211.
Pontic dune open grasslands	More or less open grasslands constituting the second stage of succession in the colonisation of Pontic dunes. Detailed communities can be indicated by addition of codes identifying subunits of 34.A212.
Pontic dune closed grasslands	Closed swards of basophilous, humus- and nutrient-rich, sandy or mixed sand-loessy soils of Pontic fixed dunes. Detailed communities can be indicated by addition of codes identifying units 34.A213 or 34.A214.
Standing stone inland dunes	Tertiary sands with upright stones and open psammophytic vegetation of the Varna district of Bulgaria.
Irano-Anatolian inland dunes	Inland dunes of the Anatolian Plateau, of Transcaucasia, of the Iranian Plateau and of northern Mesopotamia, in the Irano-Anatolian zone of transition between the continental Eurasian steppes and the Mediterranean and southern Palaearctic desert zones, of the eastern cis-Caucasian hills of Daghestan and the Terek basin, the Kopet Dagh, the Pamir-Alai, the extreme western Tien-Shan.
Open Mediterranean dry acid and neutral grassland	Sandy open ground with vernal therophytes, not necessarily grasses, in the Mediterranean region. Open perennial grasslands and pastures on siliceous, usually skeletal, soils of the supra-Mediterranean zone.

Mediterranean annual deep-sand communities	Open, spring-blooming communities of annuals developed on deep sands of Iberia, of Mediterranean North Africa and, very locally, of southern France and Italy, with [Malcolmia lacera], [Malcolmia ramosissima], [Anthyllis hamosa], [Maresia nana], [Erodium laciniatum], [Erodium cicutarium ssp. bipinnatum], [Arenaria emarginata], [Hymenostemma pseudanthemis], [Loeflingia baetica], [Loeflingia spartea], [Loeflingia tavaresiana], [Loeflingia hispanica], [Linaria donyana], [Linaria pedunculata], [Vulpia membranacea], [Ononis variegata], [Ononis baetica], [Ononis cossoniana], [Ononis subspicata], [Coronilla repanda], [Evax asterisciflora], [Evax lusitanica], [Leucojum trichophyllum]. Coastal dune equivalents are classified as unit B1.48; while others occur on coastal gravel banks, see units B2.4 and B2.5.
Supra-Mediterranean perennial siliceous grasslands	Open perennial grasslands and pastures colonizing siliceous, usually poorly developed soils of the supra-Mediterranean levels of Iberian mountains and the southern Balkan and northern Hellenic peninsulas.
Heavy-metal grassland	Dry, short grasslands, often rich in lichens and mosses, colonizing western and central European soils with a high content in heavy metals such as zinc and lead, and comprising uniquely adapted species, ecotypes or populations mostly related to, or derived from, otherwise montane, boreomontane or steppic species; heavy metal grasslands of distinctly alpine affinities, though spanning an altitudinal range that extends from the montane level and lowland dealpine stations to the subalpine and alpine levels, are included. Vegetation of alliance [Violetalia calaminariae].
Atlantic heavy-metal grassland	Heavy metal grasslands of the British Isles, with [Armeria maritima].
British heavy metal grasslands	Formations, in particular of Wales and the Pennines, developed in the vicinity of former mining operations or on river gravels, with [Minuartia verna], [Thlaspi caerulescens], [Armeria maritima], [Viola lutea], [Festuca ovina] s.l., [Festuca rubra] s.l., [Agrostis capillaris] ([Agrostis tenuis]).
Irish heavy metal grasslands	Grasslands on copper-rich soils of Kilarney, with [Armeria maritima] and [Silene maritima].
Calaminarian grassland	Open formations colonizing heavy metal soils, either natural or resulting from past mining operations, in rapid regression and limited to a few stations in eastern Belgium, western Rhineland, Westphalia and Lower Saxony, and to one station in the southern Netherlands, with outposts in northern France, comprised of a highly specialised flora with the endemics [Viola calaminaria], [Viola guestphalica], [Thlaspi caerulescens] ([Thlaspi alpestre ssp. calaminare]) and [Festuca aquisgranensis] ([Festuca ophioliticola ssp. calaminaria]), with [Minuartia verna var. hercynica], [Silene vulgaris ssp. humilis] and [Armeria halleri], limited to this formation and the next, and with the steppic, central European [Festuca valesiaca].
[Viola calaminaria] grasslands	Formations of eastern Belgium, the extreme southern Netherlands and the Aachen area, with the yellow-flowered [Viola calaminaria].
[Viola guestphalica] grasslands	Formations of northern Westfalia and of southern Lower Saxony, with the purple-flowered [Viola guestphalica].

Western calaminarian thrift grasslands	Western European calaminarian communities comprising [Armeria halleri] s.l. in the absence of [Viola lutea] or [Viola guestphalica], known from very isolated stations, in particular, in the Eifel, southwestern Belgium and northern France. [Cardaminopsis halleri] is characteristic.
Calaminarian pennycress grasslands	Fragmentary heavy metal grasslands of the Osnabrück region of Lower Saxony and of Sauerland, with [Thlaspi caerulescens] ([Thlaspi alpestre ssp. calaminare]), but without violets or thrift.
Central European heavy-metal grassland	Heavy metal grasslands of Saxony, of the Harz and of Upper Silesia, with the endemic or near endemic [Armeria halleri], [Armeria bottendorfensis], [Armeria hornburgensis] and with [Minuartia verna var. hercynica], [Silene vulgaris ssp. humilis].
Calaminarian catchfly grassland	Fragmentary heavy metal grasslands of which the distinctive cortège is essentially reduced to [Silene vulgaris ssp. humilis], characteristic, in particular, of cupreous shists of the Niedersmarsberg of Westfalia, of outlying heavy metal stations of southern Germany in the Wiesloch-Baiertal of northern Baden-Württemberg and the southern Black Forest, as well as of peripheral sites within the range of other heavy metal lowland and hill communities.
Alpine heavy-metal grassland	Formations of heavy metal soils of the alpine and subalpine levels of the Alps and the Pyrenees, with, among others, [Dianthus sylvestris], [Galium anisophyllon], [Poa alpina], [Armeria arenaria], [Thlaspi caerulescens], and the very restricted southern Alpine endemic [Viola dubyana]; they descend to the montane level and occur in some dealpine stations.
Mesic grasslands	Lowland and montane mesotrophic and eutrophic pastures and hay meadows of the boreal, nemoral, warm-temperate humid and mediterranean zones. They are generally more fertile than dry grasslands (E1), and include sports fields and agriculturally improved and reseeded pastures.
Permanent mesotrophic pastures and aftermath-grazed meadows	Regularly grazed mesotrophic pastures of Europe, fertilised and on well-drained soils, with [Lolium perenne], [Cynosurus cristatus], [Poa] spp., [Festuca] spp., [Trifolium repens], [Leontodon autumnalis], [Bellis perennis], [Ranunculus repens], [Ranunculus acris], [Cardamine pratensis], [Deschampsia cespitosa]; they are most characteristic of the nemoral and boreonemoral zones Europe, but extend to the Cordillera Central, the Apennines and the supra-Mediterranean zone of the Balkan peninsula and Greece.
Unbroken pastures	Continuous pastureland of Euro-Siberian Europe, Atlantic Iberia and the Cordillera Central, the Apennines and the supra-Mediterranean zone of the Balkan peninsula and Greece, unrelieved by networks of ditches. [Cynosurus cristatus] is usually present.
Ryegrass pastures	Relatively species-poor grasslands of Euro-Siberian Western and Central Europe, Atlantic Iberia and the Cordillera Central, the Apennines and the supra-Mediterranean zone of the Balkan peninsula and Greece dominated by [Lolium perenne], often with [Cynosurus cristatus].
Atlantic [Cynosurus]-[Centaurea] pastures	More species-rich grasslands of the British Isles dominated by [Cynosurus cristatus] and with many flowering herbs, notably [Centaurea nigra].

Sub-Atlantic hill pastures	Pastures mostly of uplands of Western Europe, Central Europe and Eastern Europe, less treated, rougher and more species-rich than those of unit 38.111, often with the cespitose [Festuca nigrescens] and a significant representation of nitrofuge species.
Continental pastures	Pastures of Eastern Europe, in the southern part of the Russian forest zone, Bashkiria and the southern Urals.
Ditch-broken pastures	Grasslands drained by a network of ditches, fleets, streams or pools.
Abandoned pastures	Abandoned grasslands in which either weedy and ruderal species or species of the next successional stages occur beside the dominant grassland species after cessation of anthropogenic management . The richest stands are on carbonate and eruptive rock soils. [Geranium sylvaticum], [Trifolium medium], [Astrantia major], [Coronilla varia], [Listera ovata], [Gentiana cruciata], [Platanthera bifolia] are typical species.
Species-rich lowland flood meadows	No description available.
Macaronesian mesic grassland	Secondary grasslands of the highest levels of the Atlantic islands.
Low and medium altitude hay meadows	Mesotrophic hay meadows of low altitudes of Europe, fertilised and well-drained, with [Arrhenatherum elatius], [Trisetum flavescens], [Anthriscus sylvestris], [Heracleum sphondylium], [Daucus carota], [Crepis biennis], [Knautia arvensis], [Leucanthemum vulgare], [Pimpinella major], [Trifolium dubium], [Geranium pratense]; they are most characteristic of the nemoral and boreonemoral zones of Europe, but extend to the Cordillera Central, the Apennines and the supra-Mediterranean zone of the Balkan peninsula and Greece.
Atlantic hay meadows	Lowland mesophile hay meadows of the Atlantic domaine of Europe, characteristic of the British Isles and western France.
Atlantic [Arrhenatherum] grasslands	Lowland mesophile hay meadows of the British Isles and western France rich in, or dominated by [Arrhenatherum elatius] accompanied by [Dactylis glomerata] and [Holcus lanatus] with [Centaurea debeauxii ssp. nemoralis] ([Centaurea nigra], [Centaurea nemoralis]), [Rhinanthus lanceolatus], [Oenanthe pimpinelloides], [Gaudinia fragilis], [Linum bienne], [Brachypodium pinnatum].
Atlantic [Alopecurus]-[Sanguisorba] grasslands	Lowland mesophile hay meadows of England, characteristic of areas where traditional hay meadow treatment has been applied to seasonally flooded alluvial soils, formed by [Alopecurus pratensis], [Festuca rubra], [Cynosurus cristatus], [Lolium perenne], with less abundant or less constant [Holcus lanatus], [Anthoxanthum odoratum], [Dactylis glomerata], [Trisetum flavescens], [Agrostis stolonifera], [Bromus hordeaceus], [Arrhenatherum elatius], [Deschampsia cespitosa], [Festuca arundinacea], with many dicots, among which [Sanguisorba officinalis], [Filipendula ulmaria], [Leontodon] spp., [Taraxacum] spp. are often abundant and [Fritillaria meleagris] particularly noteworthy.

Sub-Atlantic lowland hay meadows	Mesophile meso-to eutrophic lowland hay meadows of sub-Atlantic Western Europe, Central Europe, the humid Illyrian region and the Carpathian system, with [Arrhenatherum elatius], [Alopecurus pratensis], [Bromus erectus], [Dactylis glomerata], [Festuca rubra], [Daucus carota], [Crepis biennis], [Knautia arvensis], [Leucanthemum vulgare], [Pimpinella major], [Trifolium dubium], [Geranium pratense], [Alchemilla xanthochlora], [Campanula patula], [Pastinaca sativa], [Galium album], [Equisetum arvense], [Medicago sativa], [Picris hieracioides], [Sanguisorba officinalis]. Vegetation of alliance [Arrhenatherion elatioris].
Xero-mesophile medio-European lowland hay meadows	Drier, more thermophile, swards of the lowland sub-Atlantic mesophile hay meadows of Western Europe and Central Europe, dominated by [Arrhenatherum elatius], and with a species composition that includes [Festuco-Brometea] dry grassland species, in particular, [Salvia pratensis], [Bromus erectus], [Ranunculus bulbosus], [Dianthus carthusianorum], [Pimpinella saxifraga], [Plantago media], [Galium verum], [Euphorbia cyparissias], [Linum catharticum].
Hygromesophile medio-European lowland hay meadows	More humid, or temporarily more humid, swards of the lowland sub-Atlantic mesophile hay meadows of Western Europe and Central Europe, dominated by [Arrhenatherum elatius] and [Alopecurus pratensis], or by the latter alone, and with a species composition intermediate between that of mesophile and humid meadows (37) with [Cirsium oleraceum], [Angelica sylvestris], [Sanguisorba officinalis], [Ranunculus repens], [Myosotis palustris], [Glechoma hederacea], [Lychnis flos-cuculi], [Ajuga reptans], [Cardamine pratensis], [Lysimachia nummularia], [Geranium pratense], [Campanula patula], [Pastinaca sativa], [Heracleum sphondylium], [Anthriscus sylvestris]. Towards the east, in more continental climates, the [Alopecurus] meadows communities increasingly take the character of humid riverine meadows; they have been included in 37 from the Pannonic region eastwards, in the range of the mesophile meadows of 38.5.
Medio-European submontane hay meadows	Mesophile grasslands of middle European Hercynian hills, of the middle elevations of the greater Hercynian ranges, the Jura, the pre-Alps, the Dinarides, the Pelagonides, the Carpathians, the Pyrenees, the mountains of the northwestern Iberian peninsula, intermediate between the lowland meadows of unit E2.22 and the montane meadows of unit E2.3. Vegetation of alliance [Arrhenatherion elatioris], and association [Arrhenatheretum elatioris]. [Arrhenatherum elatius] is the dominant species, while [Pastinaca sativa], [Trifolium dubium], [Knautia arvensis] and [Crepis biennis] often occur.
Western Hercynian submontane hay meadows	Hay meadows of higher elevations of the lesser Hercynian ranges, with [Meum athamanticum], [Festuca nigrescens], [Geranium sylvaticum], [Lathyrus montanus], [Phyteuma spicatum], [Potentilla erecta], [Galium saxatile], [Ranunculus bulbosus], [Pimpinella saxifraga], [Lotus uliginosus].
Eastern Hercynio-Baltic submontane hay meadows	Hay meadows of mid-elevations of the great Hercynian ranges of Central Europe and of the hills of the eastern Germano-Baltic Plain, in particular, of the Baltic States.
Carpathian submontane hay meadows	Hay meadows of the submontane level of the Carpathians, at about 600-700 m.

Western Carpathian gladiolus meadows	Endemic community of the western Carpathians, with [Alchemilla walasii], [Alchemilla micans], [Alchemilla pastoralis], [Centaurea oxylepis], [Gladiolus imbricatus], [Viola saxatilis var. decorata].
Western Carpathian vetch-clover meadows	Species-rich hay meadows of the Pienini and the Beskides, limited to thermophilous stations on deep calcareous soils, with [Medicago falcata], [Polygala comosa], [Thymus pulegioides], [Salvia verticillata], [Ranunculus polyanthemos].
Eastern Carpathian yellow oatgrass meadows	Submontane mesophile meadows of the Romanian Carpathians, developed on nutrient-rich acid brown soils, dominated by [Trisetum flavescens], accompanied by [Arrhenatherum elatius] and a species cortège characteristic of the [Arrhenatherion], including [Campanula patula], [Trifolium repens], [Leucanthemum vulgare], [Lotus corniculatus].
Northern Iberian submontane hay meadows	Mesophile hay meadows of sub-Atlantic northern Spain, in particular, of the beech level of the oro-Cantabrian region, with [Arrhenatherum elatius ssp. bulbosum], [Trisetum flavescens], [Sanguisorba minor], [Malva moschata], [Knautia arvensis], [Pimpinella major], [Trifolium repens].
Alpic submontane hay meadows	Submontane mesophile hay meadows of the pre-Alps.
Jurassian submontane hay meadows	Submontane mesophile hay meadows of the Jura.
Illyrian submontane hay meadows	Submontane mesophile hay meadows of the beech level of the Dinarides, within the range of the [Fagion illyricum], dominated by [Trisetum flavescens], with [Poa pratensis], [Arrhenatherum elatius], [Festuca pratensis], [Alchemilla xanthochlora].
Southwestern Moesian submontane hay meadows	Submontane mesophile hay meadows of the beech level of the Pelagonides, within the range of the [Fagion moesiacum], dominated by [Trisetum flavescens].
Boreal and sub-boreal meadows	Herb-rich meadows of boreal affinities of the boreal and boreonemoral regions of the Palaearctic, with outposts in cool humid uplands of the northern nemoral zone, in particular, in the British Isles.
Fenno-Scandian boreal and sub-boreal meadows	Herb-rich meadows of boreal affinities of Fennoscandia, distributed in the boreonemoral, southern boreal, middle boreal, northern boreal, boreoalpine and oceanic southern boreal zones of Finland, Sweden and Norway, formed by [Deschampsia cespitosa], [Anthoxanthum odoratum], [Festuca ovina], [Briza media], with, as dominant dicots, [Geranium sylvaticum], [Alchemilla] spp., [Rhinanthus minor], [Anemone nemorosa] and a cortège that includes boreal elements such as [Polygonum viviparum], [Rubus arcticus], boreonemoral species, in particular, [Hypochoeris maculata], [Veronica chamaedrys], as well as [Cirsium helenioides], [Filipendula ulmaria], [Potentilla erecta], [Ranunculus auricomus], [Trollius europaeus], [Hepatica nobilis], [Dactylorhiza maculata], [Dactylorhiza fuchsii], [Listera ovata], [Platanthera chlorantha].
Britannic submontane meadows	Mesophile hay meadows of submontane areas of northern England, with affinities to both the Fennoscandian boreal meadows of unit 38.241 and to the submontane continental Western European meadows of unit 38.23.

Continental meadows	Lowland and collinar mesophile grasslands of the Pannonic basin, the Transylvanian basin, the lower Danubian plain, the Thracian plain and their fringing foothills, of Eastern Europe and of southern Siberia.
Ponto-Pannonic mesophile hay meadows	Lowland and collinar mesophile grasslands of the Pannonic basin, the Transylvanian basin, the lower Danubian plain, the Black Sea-Sea of Azov plain and their fringing foothills.
Moeso-Thracian mesophile hay meadows	Lowland, collinar and, locally, montane, mesophile grasslands of the northern Thracian plain and its fringing foothills.
Moeso-Thracian mesophile floodplain meadows	Mesophile floodplain hay meadows of the northern Thracian plain and its fringing foothills, on soils moistened by a high water table fed by riverine inundation, situated on higher ground than riverine meadows of unit 37, dominated by similar grass species, including [Poa pratensis], [Alopecurus pratensis]; [Alopecurus rendlei] ([Alopecurus utriculatus]), [Festuca pratensis].
Moeso-Thracian mesophile foothill meadows	Mesophile hay meadows of the valleys and lower slopes of mountain ranges fringing the northern Thracian plain and its peripheral basins installed on soils moistened by underground or surface water supplied by slope runoff, dominated by the same grass species as in the floodplain meadows of 38.2521, accompanied by [Arrhenatherum elatius] and [Agrostis capillaris].
Moeso-Thracian mesophile cold water meadows	Species-rich mesophile hay meadows of the lower slopes and foot of the southern flank of the Balkan Range, developed on calcareous substrates and with a supply of cold surface and ground water originating in the upper levels of the mountain, dominated by [Poa pratensis], [Alopecurus pratensis], [Alopecurus rendlei] ([Alopecurus utriculatus]), [Festuca pratensis] and with orchids, [Clematis integrifolia], [Cladium mariscus], [Merendera sobolifera], [Galium rubioides].
Mountain hay meadows	Often species-rich mesotrophic to eutrophic hay meadows of the montane and subalpine levels of higher mountains of the nemoral and southern boreal zones.
Alpic mountain hay meadows	Species-rich mesophile hay meadows of the montane and subalpine levels (mostly above 600 metres) of the Western Alpides and neighbouring mountains (the greater Hercynian ranges, Carpathians, the Dinarides) on fresh, neutral to moderately acid or moderately basic soils, cut one to three times per year. Usually dominated by [Trisetum flavescens] and with [Alchemilla] spp., [Anthoxanthum odoratum], [Astrantia major], [Campanula glomerata], [Carum carvi], [Centaurea nemoralis], [Crepis] spp., [Crocus albiflorus], [Geranium] spp., [Heracleum sphondylium], [Chaerophyllum hirsutum], [Lilium bulbiferum], [Malva moschata], [Muscari botryoides], [Narcissus poeticus], [Phyteuma] spp., [Pimpinella major], [Polygonum bistorta], [Primula elatior], [Salvia pratensis], [Silene] spp., [Thlaspi caerulescens], [Trollius europaeus], [Valeriana repens], [Viola] spp. and many others. In the Carpathians they are represented by the alliance [Polygono-Trisetion] with many endemic taxa.
Ponto-Caucasian hay meadows	Meadows of the montane and subalpine levels of the Caucasus and the Pontic mountains of northern Anatolia.

Iberian summer pastures (vallicares)	Summer pastures of the Iberian peninsula, subject to poor drainage, brief flooding and rapid desiccation with the first heat, composed of perennial and annual grasses, most commonly by [Agrostis castellana], [Agrostis pourretii] ([Agrostis salmantica]), [Gaudinia fragilis], [Festuca ampla], [Periballia involucrata], [Vulpia ciliata], [Vulpia myuros], [Vulpia bromoides], [Holcus setiglumis], [Molineriella minuta], [Anthoxanthum aristatum], [Anthoxanthum ovatum] and often with [Juncus capitatus] and clovers such as [Trifolium campestre].
Perennial vallicares	Perennial [Agrostis castellana]-dominated grasslands of the Iberian peninsula.
Annual vallicares	Annual [Agrostis pourretii]-dominated grasslands of the Iberian peninsula.
Andalusian thrift vallicares	Forb and grass communities of oligo-mesotrophic sandy soils of southwestern Iberia, with subsurface seasonal water saturation, in particular, of the edges of marshes and large lagoons, dominated by the endemic [Armeria gaditana], with [Gaudinia fragilis], [Centaurea exarata] and [Asphodelus aestivus].
Meadows of the steppe zone	Lowland and montane mesotrophic pastures and hay meadows of the steppe zone of eastern Europe and Anatolia.
Agriculturally-improved, re-seeded and heavily fertilised grassland, including sports fields and grass lawns	Land occupied by heavily fertilised or reseeded permanent grasslands, sometimes treated by selective herbicides, with very impoverished flora and fauna, used for grazing, soil protection and stabilization, landscaping or recreation.
Dry or moist agriculturally-improved grassland	Dry or mesophile intensive pastures and grasslands. Usually intensively fertilised and reseeded, or established entirely artificially.
Wet agriculturally-improved grassland, often with drainage ditches	Humid intensive pastures, often scored with drainage ditches, and capable of harbouring breeding waders or wintering waterfowl, in particular, geese.
Turf sports fields	No description available.
Park lawns	Grasslands, usually mowed, composed of native or sometimes exotic grasses, constituting elements of urban parks.
Small-scale lawns	No description available.
Unmanaged mesic grassland	Mesic grassland that is not currently mown or used for pasture, excluding abandoned pastures (E2.13).
Seasonally wet and wet grasslands	Unimproved or lightly improved wet meadows and tall herb communities of the boreal, nemoral, warm-temperate humid, steppic and mediterranean zones.

Mediterranean tall humid grassland	Mediterranean humid grasslands of tall grasses and rushes with [Scirpus holoschoenus] ([Holoschoenus vulgaris]), [Agrostis stolonifera], [Agrostis reuteri], [Calamagrostis epigejos], [Galium debile], [Molinia caerulea], [Briza minor], [Melica cupanii], [Cyperus longus], [Linum tenue], [Trifolium resupinatum], [Schoenus nigricans], [Peucedanum hispanicum], [Carex mairii], [Juncus maritimus], [Juncus acutus], [Asteriscus aquaticus], [Hypericum tomentosum], [Hypericum tetrapterum], [Inula viscosa], [Oenanthe pimpinelloides], [Oenanthe lachenalii], [Eupatorium cannabinum], [Prunella vulgaris], [Pulicaria dysenterica], [Tetragonolobus maritimus], [Orchis laxiflora], [Dactylorhiza elata], [Succisa pratensis], [Sonchus maritimus ssp. aquatilis], [Silaum silaus], [Sanguisorba officinalis], [Serratula tinctoria], [Genista tinctoria], [Cirsium monspessulanum], [Cirsium pyrenaicum], [Senecio doria], [Dorycnium rectum], [Erica terminalis], [Euphorbia pubescens], [Lysimachia ephemerum], widespread in the entire Mediterranean basin, extending, along the coasts of the Black Sea, in particular in dune systems, north to t
[Serapias] grassland	Meso-hygrophile grasslands of crystalline Provence, with [Carex divisa ssp. chaetophylla], often dominant, [Briza minor], [Oenanthe lachenalii] and numerous [Serapias] species ([Serapias lingua], [Serapias neglecta], [Serapias vomeracea]).
Mediterranean short humid grassland	Very short grasslands of impermeable compact soils or marls, wet for a large part of the year, and desiccated in summer, characteristic of the Mediterranean basin, with irradiations north to the Illyrian zone of the northwestern Balkan peninsula, with [Deschampsia media], [Centaurium pulchellum], [Lotus tenuis], [Trifolium lappaceum], [Prunella hyssopifolia], [Plantago maritima ssp. serpentina], [Centaurea timbali].
Sub-mediterranean humid meadows	Humid meadows rich in clover ([Trifolium] spp.) of sub- and supramediterranean regions remote from Atlantic influence, in particular, of the Balkan peninsula, of the Apennines and of Mediterranean Anatolia, mostly developed above the lowlands but below the montane level.
Helleno-Moesian riverine and humid clover meadows	Meso-hygrophile grasslands of river flood plains and other high water-table sites of the southern Balkan peninsula, in particular of Bulgaria, the F.Y.R. of Macedonia and northern Greece, with outposts in the Croatian coastlands, formed by [Alopecurus pratensis], [Alopecurus rendlei] ([Alopecurus utriculatus]), [Festuca pratensis] ([Festuca elatior]) or [Poa trivialis ssp. sylvicola] ([Poa sylvicola]), and by numerous [Trifolium] spp., [Medicago hispida ssp. apiculata], [Lotus corniculatus var. hirsutus], [Hordeum murinum], [Ranunculus marginatus], [Ranunculus velutinus], [Cirsium canum var. macedonicum], [Oenanthe stenoloba], [Moenchia mantica], [Lychnis flos-cuculi ssp. subintegra], [Teucrium scordioides], [Podospermum canum], [Narcissus poeticus], [Leucojum aestivum].
Apennine humid meadows	Permanent humid grasslands of Apennine karstic basins, with [Ranunculus velutinus], [Bromus racemosus], [Hordeum secalinum], [Trifolium dubium], [Trifolium resupinatum], [Trifolium micranthum], [Trifolium patens], [Trifolium fragiferum], [Trifolium pratense], [Trifolium repens], [Carex distans], [Deschampsia cespitosa], [Gaudinia fragilis], [Ophioglossum vulgatum], [Centaurea jacea], [Holcus lanatus], [Alopecurus rendlei] ([Alopecurus utriculatus]), [Orchis laxiflora], [Colchicum lusitanum].

Dalmatian riverine and humid meadows	Humid meadows of Illyrian Istria and Dalmatia, developed in a mild semihumid to semiarid climate, of pronounced sub-Mediterranean affinities.
Illyrio-Moesian riverine and humid clover meadows	Floodplain meadows of southern sub-Pannonic regions, within the eastern [Carpinion illyricum], the [Quercion frainetto] and the [Fagion moesiacum] zones of Bosnia, Serbia, Oltenia and northwestern Bulgaria, under semihumid to semiarid climates, mostly dominated by [Deschampsia cespitosa], [Alopecurus pratensis] or [Poa trivialis ssp. sylvicola], with [Trifolium pallidum], [Trifolium patens], [Trifolium fragiferum], [Trifolium cinctum], [Ranunculus stevenii], [Lathyrus nissolia], [Medicago arabica], [Clematis integrifolia].
Anatolian supra-Mediterranean humid grassland	Humid meadows rich in clover of sub- and supra-Mediterranean regions of Mediterranean Anatolia.
Moist or wet eutrophic and mesotrophic grassland	Wet eutrophic and mesotrophic grasslands and flood meadows of the boreal and nemoral zones, dominated by grasses [Poaceae], rushes [Juncus] spp. or club-rush [Scirpus sylvaticus].
Atlantic and sub-Atlantic humid meadows	Lightly managed hay meadows and pastures on both basicline and acidocline, nutrient-rich permanently or temporarily humid soils of middle European lowlands, hills and low mountains under Atlantic or sub-Atlantic climatic conditions, from the British Isles and northwestern Iberia east to the Baltic States, the western Carpathians and Illyrian region. Among the characteristic plant components of the highly diverse communities forming this unit are [Caltha palustris], [Cirsium palustre], [Cirsium rivulare], [Cirsium oleraceum], [Carduus personata], [Telekia speciosa], [Epilobium parviflorum], [Lychnis flos-cuculi], [Mentha aquatica], [Scirpus sylvaticus], [Stachys palustris], [Bromus racemosus], [Crepis paludosa], [Fritillaria meleagris], [Geum rivale], [Polygonum bistorta], [Senecio aquaticus], [Trollius europaeus], [Lotus uliginosus], [Trifolium dubium], [Equisetum palustre], [Equisetum telmateia], [Myosotis palustris], [Deschampsia cespitosa], [Angelica sylvestris], [Oenanthe silaifolia], [Gratiola officinalis], [Inula salicina], [Succisella inflexa], [Dactylorhiza majalis], [Ranunculus acris], [Rumex acetosa], [Holcus lanatus], [Alopecu
Cabbage thistle meadows	Tall-herb rich wet meadows dominated by, or with an abundance of, [Cirsium oleraceum], distributed in Western and Central Europe from Denmark, locally Scania, northwestern Germany, Belgium, France, northwestern Spain, east to Poland, Lithuania, the Bohemian basin, Austria, best developed in the submontane level of the Hercynian ranges, the Jura and the pre-Alps on base-rich loams of river and brook floodplains and lakesides; [Cirsium oleraceum], [Angelica sylvestris], [Caltha palustris], [Lychnis flos-cuculi], [Ranunculus acris], [Polygonum bistorta], [Rumex acetosa], [Holcus lanatus], [Alopecurus pratensis], [Festuca pratensis], [Poa trivialis] are characteristic of their cortège; in northern Germany, Poland, Lithuania, the communities are enriched in [Polygonum bistorta] and lack several characteristics of their middle Hercynian cortège, in particular [Sanguisorba officinalis], [Colchicum autumnale], [Silaum silaus].

Globe flower-brook thistle meadows	Wet meadows of montane areas of the higher Hercynian ranges, the Jura and the Alpine piedmont rich in [Trollius europaeus] and [Cirsium rivulare], replacing the cabbage thistle meadows of unit 37.212 at higher altitudes. Their cortège includes [Cirsium oleraceum], [Caltha palustris], [Lychnis flos-cuculi], [Myosotis palustris], [Geum rivale], [Festuca pratensis], [Galium album], [Ranunculus acris], [Holcus lanatus] and, sometimes, in particular in the Swiss Jura, [Fritillaria meleagris].
Western tufted hairgrass meadows	Coarse humid meadows of Atlantic and sub-Atlantic Europe dominated by [Deschampsia cespitosa], characteristic of permanently moist soils submitted to periodical inundation, favoured by grazing.
Atlantic tufted hairgrass meadows	Coarse grasslands of Atlantic and sub-Atlantic Western, Northern and, locally, western Central Europe and northern Eastern Europe, overwhelmingly dominated by [Deschampsia cespitosa], characteristic of permanently moist, gleyed and periodically inundated near-neutral soils, with a highly variable, usually species-poor, complement of species that includes the grasses [Holcus lanatus], [Festuca rubra], [Agrostis stolonifera], [Agrostis capillaris], [Poa trivialis], [Poa pratensis], [Dactylis glomerata], [Lolium perenne], [Alopecurus pratensis], sometimes forming closely grazed swards around the tussocks of the less palatable [Deschampsia], as well as, among others, [Juncus affinis], [Juncus inflexus], [Filipendula ulmaria], [Cardamine pratensis], [Angelica sylvestris], [Achillea ptarmica], [Ranunculus acris], [Ranunculus repens], [Cirsium arvense], [Rumex acetosa], [Cerastium fontanum], [Plantago lanceolata], [Lathyrus pratensis], [Centaurea nigra], [Dactylorhiza fuchsii]. They are particularly well characterized in the English lowlands and in Fennoscandia, but occur locally farther east and south, notably in the Neth
Boreal tufted hairgrass meadows	Wet meadows of the middle boreal, northern boreal, oceanic boreal, arctoalpine zones of Fennoscandia and of Iceland, where they colonize moist stoney slopes and land slips on mountainsides as well as valley bottom allluvions, dominated by [Deschampsia cespitosa], [Carex nigra], [Ranunculus acris] and, in Fennoscandia, [Cirsium helenioides], with, in particular, [Bartsia alpina], [Polygonum viviparum] ([Bistorta vivipara]), [Filipendula ulmaria], [Geranium sylvaticum], [Rumex acetosa]; the cortège of Fennoscandian communities includes [Rubus arcticus], [Saussurea alpina], [Trollius europaeus], [Viola epipsila], that of Icelandic communities [Agrostis canina], [Agrostis capillaris], [Anthoxanthum odoratum], [Cardamine pratensis], [Equisetum palustre], [Equisetum pratense], [Festuca rubra] s.l., [Festuca vivipara], [Juncus balticus], [Trifolium repens].
Marsh ragwort meadows	Wet meadows and water-meadows of the lowlands of Britain, northern Germany, Poland, the Netherlands, Belgium, France and northwestern Spain, developed on nutrient-rich, acidocline alluvions of rivers and brooks with a fluctuating water regime in which [Senecio aquaticus] and [Bromus racemosus] are usually prominent, accompanied by a variable cortège; [Potentilla palustris] and [Menyanthes trifoliata] characterize mesotrophic stands, [Ranunculus auricomus] and [Primula elatior] somewhat more base-rich ones. [Carex disticha] is usually present and sometimes abundant, marking a transition towards [Magnocaricion] communities of unit 53.211. At higher altitudes, above 250 m, on base-poor soils, these communities evolve towards [Polygonum bistorta]-dominated communities of unit 37.215.

Bistort meadows	Wet and humid meadows of sub-Atlantic Western and Central Europe dominated by, or very rich in, [Polygonum bistorta], most characteristic of montane or submontane regions of the Hercynian ranges and neighbouring regions. They include distinctive acidocline Hercynian communities in which [Polygonum bistorta] is associated with [Deschampsia cespitosa] or [Juncus filiformis], [Polygonum bistorta]-enriched submontane or montane variants of thistle or ragwort lowland communities of units 37.211 or 37.214, of the montane thistle-globeflower communities of unit 37.212, of the clubrush communities of unit 37.219, peri-Hercynian submontane and lowland thermophilous communities of the Danube basin, and montane communities of the Iberian peninsula. They constitute the principal habitat of the threatened fritillary [Proclossiana eunomia], and, at least locally, an important habitat for other threatened butterflies, in particular, the copper [Palaeochrysophanus (Lycaena) hippothoe].
Thread rush meadows	Humid and wet meadows of sub-Atlantic Europe dominated by or rich in [Juncus filiformis], or, in Iceland, [Juncus balticus] ([Juncus arcticus]), often accompanied by [Carex nigra], [Carex echinata], [Molinia caerulea], [Potentilla erecta], mostly developed on lime-poor soils, of strong boreal affinities, most characteristic of Fennoscandia, Iceland, the northern Germano-Baltic plain and the neighbouring Hercynian ranges, rare farther south, limited to small surfaces in cold-pocket areas of the greater Hercynian ranges and the pre-Alps.
Soft rush meadows	Wet and humid meadows of Atlantic and sub-Atlantic Europe dominated by the tall tussock-forming [Juncus effusus] or [Juncus inflexus], with a usually species-poor accompanying flora, characteristic of relatively nutrient-rich, acidocline to basicline, permanently moist soils.
Blunt-flowered rush meadows	Calciphile wet meadows of Western Europe, Central Europe and northwestern Eastern Europe, northeast at least to Estonia, dominated by or rich in [Juncus subnodulosus], characteristic of very wet calcareous soils or soils flushed by calcareous waters, transitional to the small sedge fens of the [Caricion davallianae] (unit 54.2), surviving mostly in the British Isles, in the Alpine foothills, in the moraine land of northern Germany, in chalk hills of northwestern Germany, in northern Jutland, on Fyn, in southern and central Scania, on Åland, in wet dune slacks of the Atlantic and North Sea seaboard of the continent of Europe; many formations are rather oligotrophic and could equally be listed under unit 37.3. Typical of these communities are the [Juncus subnodulosus]-[Cirsium palustre] fen-meadows, widespread in the southern British lowlands, particularly in East Anglia, north Buckinghamshire and Angelsey, rich in [Juncus subnodulosus], [Cirsium palustre], [Equisetum palustre], [Filipendula ulmaria], [Holcus lanatus], [Lotus uliginosus], [Mentha aquatica], [Caliergon cuspidatum]; a characteristically variable sp
Wood clubrush meadows	Lowland to montane wet grassland of sub-Atlantic Europe, east to Lithuania, the Bohemian basin and Austria, developed on waterlogged siliceous loams or peats, dominated, often overwhelmingly so, by [Scirpus sylvaticus].

Brook thistle meadows	Eutrophic wet meadows of the Carpathian region dominated by [Cirsium rivulare], eastern vicariant of the communities of unit 37.211, characteristically developed on loams, gleys or pseudogleys, often with anmoor characteristics, in higher, cooler elevations of the montane level. They extend to lowland and hill pre-Pannonic areas, to the pre-Alps of Styria, to the eastern Hercynian ranges, and to the eastern Germano-Baltic plain, northeast, as rare communities, to Lithuania.
Crested dog's tail-rush meadows	Humid grasslands of sub-Atlantic Europe submitted to a mixed regime of haycutting and grazing, in particular, single early-summer cutting followed by later prolonged grazing, occupied by a mixture of species of mesophile pastures, notably [Cynosurus cristatus], [Lolium perenne], [Trifolium repens], and [Molinietalia] species resistant to changes in the exploitation regime, such as [Juncus effusus], [Juncus inflexus], [Lychnis flos-cuculi], [Cirsium palustre]. These grasslands constitute transitions between mesophile grasslands of unit 38 and humid grasslands of 37.21, particularly of unit 37.214; they are also closely related to formations of unit 37.217.
Marsh thistle meadows	Sub-Atlantic wet grasslands of brook banks and soggy slopes of rainy granitic and cristaline hills and low mountains of middle Europe, most characteristic of the eastern Hercynian ranges and the northern pre-Alps, extending west to the Hercynian ranges of sub-Atlantic western Europe, dominated by [Cirsium palustre], accompanied by [Angelica sylvestris] at the lower altitudes, [Polygonum bistorta] at the higher altitudes.
Melancholy thistle meadows	Humid meadows of the montane level of the siliceous eastern Hercynian ranges, dominated by [Cirsium helenioides] ([Cirsium heterophyllum]) and [Cirsium palustre], accompanied by [Polygonum bistorta], [Crepis mollis], [Deschampsia cespitosa].
Chervil wet meadows	Montane brook meadows of the higher mid-German Hercynian hills, and very locally, of the northern pre-Alps, developed on clayey siliceous alluvions, with [Chaerophyllum hirsutum], [Ranunculus aconitifolius], [Caltha palustris], [Crepis paludosa], [Myosotis palustris], [Polygonum bistorta], [Filipendula ulmaria], [Angelica sylvestris].
Calcareous dunal small reed fens	Communities of calcareous wet dune slacks dominated by [Calamagrostis epigejos], in particular, [Calamagrostis epigejos]-dominated facies and evolution stages of the [Juncus subnodulosus] formations of unit 37.218, characteristic of northern French and Belgian dunes and rare fen formations of the Dutch North Sea Islands formed by [Carex hartmanii], [Calamagrostis epigejos], [Carex trinervis], [Ophioglossum vulgatum], [Salix repens], evolution stage with light sand covering of the fen communities of unit 54.2H2.

Sharp-flowered rush meadows	Humid meadows of Atlantic and sub-Atlantic Europe dominated by, or rich in, [Juncus acutiflorus]. They are floristically and phytosociologically very varied and many are as related to the oligotrophic [Molinion] communities of unit E3.5 as to the more eutrophic [Calthion] ones of unit E3.41. Sharp-flowered rush meadows are particularly characteristic of the oceanic and suboceanic regions of the western seaboard of Europe from northwestern Iberia to the Low Countries, extending locally in Hercynian ranges to the Harz and the Bohemian Quadrangle and in small sub-Atlantic enclaves of the Germano-Baltic plains to eastern Germany and Poland.
Subcontinental riverine meadows	Meadows of the valleys of great rivers of continental or subcontinental climate regions of Central Europe, submitted to repeated inundation periods in the year, characteristic of the Elbe, the Saale, the Main valleys of Germany and Bohemia, occuring also in Moravia, Austria, Slovakia, Croatia and Serbia, with a disjunct outpost in the arid Rhine graben. They are usually dominated by [Deschampsia cespitosa] or [Alopecurus pratensis], [Poa palustris], [Poa pratensis], [Carex] and [Juncus] species. Characteristic species include [Cnidium dubium] ([Cnidium venosum]), [Viola persicifolia], [Allium angulosum], [Clematis integrifolia], [Iris sibirica], [Oenanthe lachenalii], [Oenanthe silaifolia], [Gratiola officinalis], [Juncus atratus], [Leucojum aestivum], [Carex praecox var. suzae], [Carex melanostachya], [Serratula tinctoria], [Lythrum virgatum]. Because of universal river control schemes, these communities, dependent on natural or near natural flow regemes, are extremely threatened. Vegetation of alliance [Cnidion venosi].
Flood swards and related communities	Grasslands of occasionally flooded river and lake banks, of depressions where rain water collects, of disturbed humid areas and of humid pastures submitted to intensive grazing.
Tall rush pastures	Rush ([Juncus effusus], [Juncus conglomeratus], [Juncus inflexus]) colonies of intensively grazed pastures, in part an extreme facies of [Juncus effusus] humid grasslands of unit 37.217, but also of other wet grasslands of unit 37.2 and of more mesophile grasslands of unit 38.
Flood swards	Flood swards of Atlantic and sub-Atlantic Europe, developed on ground submitted to periodical or occasional inundation and subsequent drying under relatively maritime climates, with [Agrostis stolonifera], [Carex hirta], [Festuca arundinacea], [Juncus inflexus], [Alopecurus geniculatus], [Rumex crispus], [Mentha longifolia], [Mentha pulegium], [Potentilla anserina], [Potentilla reptans], [Ranunculus repens].
Marsh foxtail flood swards	Flood swards dominated by [Alopecurus geniculatus].
Creeping bent flood swards	Flood swards dominated by [Agrostis stolonifera].
Tall fescue flood swards	Flood swards dominated by [Festuca arundinacea].
Common couch flood swards	Flood swards dominated by [Elymus repens] ([Agropyron repens]).
Rhenish [Deschampsia media] flood swards	Local flood swards of the Rhine valley dominated by [Deschampsia media].

Small rush swards	Grasslands of occasionally flooded river and lake banks, of depressions where rain water collects, of disturbed humid areas and of humid pastures submitted to intensive grazing dominated by small rushes, in particular [Juncus compressus] or [Juncus tenuis] ([Juncus macer]).
Recently abandoned hay meadows	Recently abandoned hay meadows with invasion of [Polygonum bistorta], [Filipendula ulmaria] or [Phragmites communis], in a successional state between E3.41 and communities of unit E5.4 or of woodland.
Continental humid meadows	Meadows of moderately to very nutrient-rich, alluvial or fertilised, non-saline, wet or damp soils in the steppe and wooded steppe zones of Eurasia and their areas of influence. They are widespread in southeastern Central Europe, in Eastern Europe and southern Siberia, extending west to the Pannonic plain and to areas of Pannonic or Pontic influence in southern Moravia, sub-Carpathian hills and the Balkans. Depending on the degree of wetness and substrate type dominants in wet sites are [Molinia caerulea] or [Carex gracilis]; physiognomy of hygromesophile meadows is formed especially by [Deschampsia cespitosa], [Juncus inflexus] and [Mentha longifolia]; in mesophile and moderately moist conditions on alluvial sediments [Agropyron repens] or [Festuca pratensis] dominate.
Sub-Pannonic ashy thistle humid meadows	Humid grasslands of pre-Pannonic hills of Austria, Moravia, Hungary, Slovakia and Transylvania, rich in [Cirsium canum], usually dominated by [Alopecurus pratensis], [Festuca pratensis], [Deschampsia cespitosa], with [Polygonum bistorta], [Angelica sylvestris], [Scirpus sylvaticus].
Peri-Pannonic humid meadows	Humid meadows of river valleys of the eastern Carpathian ranges, their foothills and associated plateaux, of the southern pre-Pannonic foothills of the western Carpathians and of the Central Hungarian Range, similar to the sub-Atlantic meadows of the [Calthion palustris] and, like them, dominated by species such as [Scirpus sylvaticus], [Juncus effusus], [Cirsium rivulare], [Caltha palustris] ([Caltha laeta]), but developed under more subcontinental climatic conditions and accompanied by regional species, in particular [Valeriana simplicifolia], [Pedicularis limnogena], [Ligularia sibirica] and [Telekia speciosa].
Eastern Carpathian globe flower-cabbage thistle meadows	Humid meadows of the eastern Carpathian system rich in [Cirsium oleraceum] and [Trollius europaeus], with [Angelica sylvestris], [Equisetum palustre], [Deschampsia cespitosa], [Molinia caerulea].
Peri-Pannonic bistort meadows	Humid meadows of the eastern Carpathian system and of sub-Pannonic hills rich in [Polygonum bistorta].
Eastern Carpathian thread rush meadows	Humid meadows of the eastern Carpathian system dominated by [Juncus filiformis], often accompanied by [Carex pyrenaica] and [Deschampsia cespitosa].
Eastern Carpathian soft rush meadows	[Juncus effusus]-dominated humid meadows of the eastern Carpathian system, with [Epilobium palustre].
Peri-Pannonic wood clubrush meadows	Humid grasslands of the eastern Carpathian system and of sub-Pannonic hills dominated by [Scirpus sylvaticus].
Peri-Pannonic brook thistle meadows	Humid grasslands of the eastern Carpathian system and of sub-Pannonic hills rich in [Cirsium rivulare], accompanied by montane boreal species, in particular [Trollius europaeus] and [Ligularia glauca].

Illyrio-Pannonic riverine and humid meadows	Floodplain meadows of the great rivers of the Alf”ld and the Little Alf”ld, of the Pannonic Danube basin, of the Drava and Sava basins of Croatia, Hungary and Slovenia, of the Leitha and Danube basins of eastern Lower Austria and the Burgenland, of Transylvania and Oltenia, of the Illyrian oak and beech zones of Croatia and Bosnia-Herzegovina, subject to repeated flooding in the course of the year; wet or damp, non-saline meadows of moderately to very nutrient-rich, alluvial or fertilised soils of the same regions.
Ponto-Sarmatic humid meadows	Floodplain and humid meadows of the Ponto-Caspian basin and of the steppe and nemoral Russian plateaux and plains.
Northern boreal alluvial meadows	Meadows along large rivers with placid river sections which are frozen every winter, are affected by flooding in spring. The traditional management as hay meadows has usually ceased. They are not yet severely overgrown with trees and bushes. Distributed in Finland, Sweden. Includes several vegetation types which vary according to the moisture (flooding) gradient: alluvial meadows dominated by [Equisetum fluviatile], [Carex acuta], [Carex aquatilis], [Calamagrostis], [Phalaris], [Deschampsia cespitosa], or tall-herbs, and dry alluvial meadows. Other species: [Convallaria majalis], [Elymus fibrosus], [Elymus mutabilis], [Festuca ovina], [Galium boreale], [Molinia caerulea], [Nardus stricta], [Salix triandra], [Solidago virgaurea], [Thalictrum simplex ssp. boreale] and [Trollius europaeus].
Moist or wet oligotrophic grassland	Grasslands on wet, nutrient-poor, often peaty soils, of the boreal, nemoral and steppe zones. Includes coarse acid grassland dominated by [Molinia caerulea] and shorter wet heathy grasslands with [Juncus squarrosus], [Nardus stricta] and [Scirpus cespitosus].
Purple moorgrass ([Molinia]) meadows and related communities	Humid grasslands of soils poor in nutrients, unfertilised and with a fluctuating water level, of Western Europe, south to northwestern Iberia, of Northern Europe, of Central Europe, locally of western Eastern Europe, dominated by [Molinia caerulea], with [Succisa pratensis], [Deschampsia cespitosa], [Potentilla erecta], [Allium angulosum], [Allium suaveolens], [Stachys officinalis] ([Betonica officinalis]), [Cirsium dissectum], [Cirsium tuberosum], [Dianthus superbus], [Trollius europaeus], [Galium boreale], [Gentiana asclepiadea], [Gentiana pneumonanthe], [Gladiolus palustris], [Silaum silaus], [Selinum carvifolia], [Inula salicina], [Iris sibirica], [Laserpitium prutenicum], [Lathyrus pannonicus], [Tetragonolobus maritimus], [Serratula tinctoria], [Carex tomentosa], [Carex panicea], [Carex pallescens], [Parnassia palustris], [Ophioglossum vulgatum], [Dactylorhiza maculata], [Festuca arundinacea], [Festuca rubra].
Calcicline purple moorgrass meadows	Species-rich humid grasslands of oligotrophic calcareous or calcicline soils of middle Europe, southern Fennoscandia and northwestern Iberia, with [Silaum silaus], [Sanguisorba officinalis], [Selinum carvifolia], [Stachys officinalis] ([Betonica officinalis]), [Cirsium tuberosum], [Carex tomentosa], [Tetragonolobus maritimus], [Galium boreale], [Serratula tinctoria], [Inula salicina], [Dianthus superbus] and abundant [Colchicum autumnale].

Acidocline purple moorgrass meadows	Relatively species-poor humid grasslands of oligotrophic acid moist gley soils, sometimes with stagnant water and peat formation, of middle Europe north to the southern boreal approaches in Fennoscandia and the Faeroe Islands, and south to northwestern Iberia, with [Succisa pratensis], [Potentilla erecta], [Potentilla anglica], [Viola persicifolia], [Viola palustris], [Galium uliginosum], [Cirsium dissectum], [Crepis paludosa], [Luzula multiflora], [Juncus conglomeratus] ([Juncus subuliflorus]), [Ophioglossum vulgatum], [Inula britannica], [Lotus uliginosus], [Dianthus deltoides], [Carex pallescens], [Carex demissa], [Carex canescens], [Carex echinata].
Giant moorgrass swards	Very tall [Molinia caerulea ssp. arundinacea] ([Molinia arundinacea])-dominated humid meadows of southern Central Europe, in particular, of the Illyrian zone, the peri-Pannonic and peri-Bohemian regions, the Danube, Lech and Isar basins, the upper Rhine.
Boreal purple moorgrass meadows	Acidocline oligotrophic wet, often inundated, grasslands of boreal Fennoscandia dominated by [Molinia caerulea], with [Achillea millefolium], [Bartsia alpina], [Galium boreale], [Geranium sylvaticum], [Lysimachia thyrsiflora], [Pinguicula vulgaris], [Parnassia palustris], [Scutellaria galericulata], [Trientalis europaea], [Viola epipsila], [Carex acuta], [Carex aquatilis], [Juncus filiformis], [Deschampsia cespitosa], [Nardus stricta], [Vaccinium uliginosum], [Hypnum lindbergii], [Mnium rugicum].
Heath rush meadows and humid mat-grass swards	Humid, often peaty or semi-peaty swards of middle Europe, southwest to northwestern Iberia and east to Lithuania and southeast Europe, with [Nardus stricta], [Juncus squarrosus], [Festuca ovina], [Gentiana pneumonanthe], [Pedicularis sylvatica], [Scirpus cespitosus] and sometimes [Sphagnum] spp.
Continental oligotrophic humid grassland	Nutrient-poor humid grasslands of the northern steppe zone of central Eurasia, eastern vicariants of the [Molinion] communities.
Alpine and subalpine grasslands	Primary and secondary grass- or sedge- dominated formations of the alpine and subalpine levels of boreal, nemoral, mediterranean, warm-temperate humid and Anatolian mountains.
Vegetated snow-patch	Vegetated areas that retain late-lying snow. Dominants may be mosses, liverworts, macrolichens, graminoids, ferns and small herbs. Snow patches are well developed in boreal and arctic mountains and in subarctic lowlands; they are well represented, though of much smaller extent, above the tree limit in the Alps, Pyrenees, Carpathians and Caucasus. They are found very locally in the Paeonian mountains, Sierra Nevada, Cordillera Central, Monti Sibillini, Abruzzi, Scottish Highlands and Sudeten.

Boreo-alpine acidocline snow-patch grassland and herb habitats	Snow patches of the Alps, the Pyrenees, the Carpathians (e.g. alliances [Salicion herbaceae] and [Festucion picturatae]), the Dinarides, the Rhodopides (Rila) and the Pelagonides, occupying areas free from snow for less than two months, with the herbs e.g. [Luzula alpinopilosa], [Salix herbacea], [Ligusticum mutellina]; mosses [Polytrichum sexangulare], [Polytrichum juniperinum], [Pohlia commutata], [Kiaeria falcata] ([Dicranum falcatum]), the liverwort [Anthelia juratzkana] or sometimes lichens. Also snow-patch communities of arctic and boreal mountains of Fennoscandia, the Scottish Highlands, Iceland, Greenland and other islands of the Norwegian and Greenland seas, formed of mats of mosses and lichens.
Alpic acid moss snow-patch communities	Moss snow-patches of the Alps, the Pyrenees, the Carpathians, the Dinarides, the Rhodopides (Rila) and the Pelagonides, occupying areas free from snow for less than two months, with the mosses [Polytrichum sexangulare], [Polytrichum juniperinum], [Pohlia commutata], [Kiaeria falcata] ([Dicranum falcatum]), the liverwort [Anthelia juratzkana] or sometimes lichens.
Alpic acid cudweed snow-patch communities	Communities of areas covered by snow for six to eight months, with [Carex foetida], [Alopecurus gerardii], [Omalotheca supina] ([Gnaphalium supinum]) (including [Omalotheca supina var. pusilla]), [Lepidium stylatum], [Alchemilla pentaphyllea], [Mucizonia sedoides], ([Umbilicus sedoides], [Sedum candollei]), [Sedum alpestre], [Cardamine alpina], [Carex pyrenaica], of the Alps, the eastern Carpathian system, the ranges of the Balkan peninsula, the Pyrenees; they extend to the subalpine level and include the isolated cryoro-Mediterranean formations of the Cordillera Central and the Sierra Nevada.
[Luzula spadicea] snow patch communities	[Luzula alpinopilosa ssp. obscura] ([Luzula spadicea])-dominated snow patch communities of moderate slopes of the Alps and the Carpathians submitted to prolonged snow cover, ecological variant of the [Luzula spadicea] scree communities of 61.113, more prevalent in the central and eastern Alps, the Tatras and the eastern Carpathians, characterized by an important representation of species of the [Salicetea herbaceae], among which [Poa granitica], [Ranunculus montanus], [Oligotrichum hercynicum].
Hercynian acid snow patch communities	Acidophilous snow patch communities of the higher Hercynian ranges, in particular the Sudeten, the Black Forest, the Vosges, with [Nardus stricta], [Omalotheca supina] ([Gnaphalium supinum]), [Plantago atrata], [Salix herbacea], [Polytrichum gracile], [Polytrichum norvegicum], or with [Luzula desvauxii].
Boreal moss snowbed communities	Snow-patch communities of arctic and boreal mountains of Fennoscandia, the Scottish Highlands, Iceland, Greenland and other islands of the Norwegian and Greenland seas, formed of mats of mosses and lichens.
Boreo-alpine [Deschampsia]-[Anthoxanthum] communities	Acidophilous snow-patch communities of boreal and arcto-alpine mountains of Scandinavia, Iceland and the Scottish Highlands dominated by coarse tussocky grasses, in particular, [Deschampsia cespitosa], sometimes associated with large hypnaceous mosses.

Boreo-alpine herb-rich acid snowbed communities	Acidophilous or acidocline snow-patch communities of boreal and arcto-alpine mountains of Scandinavia, Iceland, the Faeroes and the Scottish Highlands forming a low, often open, turf of mat- and cushion-forming herbs, short tufted grasses and bryophyte patches.
Boreo-alpine acidocline sedge and rush snowbed communities	Acidophilous snowbed communities of boreal and arcto-alpine mountains and subarctic lowlands of Scandinavia and Iceland, mostly developed in areas of long snowcover, dominated by Cyperaceae or Juncaceae, usually with a prominent bryophyte or lichen ground layer.
Boreo-alpine calcicline snow-patch grassland and herb habitats	Herbaceous snow-patch swards of the Alpids, characteristic of calcareous soils under snow for long periods, with [Arabis caerulea], [Carex atrata], [Ranunculus alpestris], [Saxifraga androsacea] and other calciphile snowfield, snowbed and snow-patch communities of boreal and arcto-alpine mountains formed by small herbs, grasses or mosses. Dwarf, underground-stemmed willows may also be present but not dominant (c.f. unit F2.12).
Alpic small herb calcicolous snow-patch communities	Herbaceous snow-patch swards of the Alpids, characteristic of carbonated soils under snow for long periods, with [Arabis caerulea], [Carex atrata], [Ranunculus alpestris], [Saxifraga androsacea].
[Arabis-Gnaphalium] snow-patch communities	Herbaceous snow-patch swards of humid, carbonated soils, of the Alps and the Pyrenees, under snow for long periods, with [Ranunculus alpestris], [Arabis caerulea], [Omalotheca hoppeana] ([Gnaphalium hoppeanum]), [Hutchinsia alpina], [Potentilla brauniana] ([Potentilla minima]), [Soldanella alpina].
Carpathian saxifrage snow-patch communities	Endemic snow patch community of the high Tatras and nearby Carpathian ranges, characteristic of sites with very long snow cover, with the western Carpathian endemic [Saxifraga wahlenbergii] ([Saxifraga perdurans]), [Hutchinsia alpina], [Bucegia romanica].
Dinaro-Pelagonide calciphile herbaceous snow-patch communities	Uncommon, isolated herbaceous snow-patch swards of the southern Dinarides and the Pelagonides, on carbonated soils under snow for long periods, generally associated with dolines.
[Distichium capillaceum] snowbed communities	Moss dominated snowbed communities of calcareous gravel and stonefields, or moraine, of Scandinavian mountains, with, in particular, [Distichium capillaceum], [Pohlia albicans], [Pohlia drummondii], often pioneering on "new ground". Individual vascular plants, growing widely separated, include, notably, [Cardamine pratensis ssp. dentata], [Cerastium arcticum], [Cerastium cerastoides], [Saxifraga oppositifolia].

Snow buttercup snowbed communities	Open snowbed communities of the alpine level of the boreal and arcto-alpine zones of Scandinavian mountains forming on level calcareous substrates often waterlogged the whole year, in the proximity of melting snow or cold springs, on north-facing slopes, with prolonged snow-lie. Vascular plants are characteristically scattered, with great variation in the ground layer, with an often broken moss carpet, bare patches of gravel and stones. Characteristic species, often hygrophilous, include [Ranunculus nivalis], [Ranunculus sulphureus], [Salix herbacea], [Arabis alpina], [Polygonum viviparum] ([Bistorta vivipara]), [Cerastium cerastoides], [Minuartia biflora], [Oxyria digyna], [Taraxacum croceum], [Viola biflora], [Saxifraga oppositifolia], [Saxifraga rivularis], [Saxifraga nivalis], [Saxifraga tenuis], [Saussurea alpina], [Sibbaldia procumbens], [Juncus biglumis], [Poa alpina].
Snow grass snowbed communities	Sparse communities of the alpine level of northern boreal and arcto-alpine mountains of Scandinavia and of Iceland dominated by the grass [Phippsia algida], with, notably, [Salix herbacea], [Cerastium arcticum], [Cerastium cerastoides], [Oxyria digyna], [Ranunculus glacialis], [Ranunculus nivalis], [Ranunculus pygmaeus], [Saxifraga cernua], [Saxifraga oppositifolia], [Saxifraga rivularis], [Saxifraga stellaris], [Saxifraga tenuis], [Carex lachenalii], [Juncus biglumis], [Poa alpina f. vivipara], [Deschampsia alpina], [Sagina saginoides], with a fragmentary moss cover and no lichens, located on gravelly, sandy, sometimes totally waterlogged soils, calcareous in Scandinavia, with prolonged snow-cover. Snow grass communities frequently occur as pioneer vegetation on small surfaces, very common in the central part of southern Norway and in Sweden from Jamtland northwards.
Arctic woodrush snowbed communities	Open, herb-rich, snowbed communities of the middle to high alpine level of the boreal and southern arcto-alpine mountains of Scandinavia, developed on level or gently sloping moist calcareous ground with solifluction tongues separated by gravelly expanses with a thin but prolonged snow cover, dominated by [Luzula arctica]. [Luzula confusa], [Ranunculus glacialis], [Ranunculus sulphureus], [Cerastium] spp. and [Draba crassifolia] are characteristic of the species cortège.
Boreal herb-rich calcicline snowbed communities	Herb-rich and often mosaic patterned snow-patch or near snow-patch communities of alpine levels of boreal and arctic Scandinavia, of the lower alpine belt of Iceland, of the Scottish Highlands and of the English Lake District, with many moss species and few lichens, occurring on calcareous, nutrient-rich, humid substrates. Characteristic species include [Ranunculus acris], [Poa alpina], [Poa arctica], [Saxifraga oppositifolia], [Silene acaulis], [Oxyria digyna], [Potentilla crantzii], [Cerastium alpinum], [Polygonum viviparum] ([Bistorta vivipara]), [Saussurea alpina], [Primula stricta], [Viola biflora], [Carex norvegica], [Minuartia biflora], [Thalictrum alpinum].
Subarctic small-herb snowbed communities	Chionophilous communities of stony and gravelly ground of the islands of the polar basin developed in conditions of shorter snow cover than the polar willow communities, with a species cortège that includes [Trisetum spicatum], [Ranunculus nivalis], [Ranunculus pygmaeus], [Oxyria digyna], [Lidia biflora], [Poa arctica], [Potentilla hyparctica], [Carex lachenalii].

Ponto-Caucasian snow-patch grassland	Snow-patch communities of high mountains of the Pontic Range and of the Caucasus.
Boreo-alpine fern snowbed grassland	Acidophilous snowbed communities of alpine and arcto-alpine levels of the Fennoscandian mountains, of Iceland and of the Scottish Highlands dominated by ferns, characteristic of screes with prolonged snow cover, related to the tall-herb communities of unit E5.5. [Cryptogramma crispa], [Athyrium distentifolium] ([Athyrium alpestre]), [Athyrium filix-femina], [Dryopteris expansa] ([Dryopteris assimilis]) or [Dryopteris filix-mas] can dominate the communities. [Galium saxatile], [Calamagrostis purpurea], [Barbilophozia floerkii], [Polytrichum alpinum] are among the associates.
Moss and lichen dominated mountain summits, ridges and exposed slopes	Includes fjell fields in which mosses and lichens are dominant, often with low cover of [Carex bigelowii]. Fjell fields are best developed in boreal and arctic mountains and in subarctic lowlands.
Oroboreal [Carex bigelowii]-[Racomitrium] moss-heaths	Carpets of mosses of genus [Racomitrium], often thick, closed and extensive, sometimes fragmented with much bare ground, associated with usually scattered vascular plants, among which [Carex bigelowii] is often prominent, characteristic of wind-exposed, cloud-bound, relatively snowfree summital regions of the Scandinavian mountains and of Scotland, northern England and northern Wales, of Iceland, the Faeroe Islands, Greenland, Spitzbergen. For the most part they constitute habitats physiognomically dominated by bryophytes, c.f. equivalents with lower ground cover in units H3.5 or H6.24.
Rock pavement lichen communities	More or less level surfaces of rock of lowlands, hills and mountains of non-desert regions of the Palaearctic exposed by erosion or weathering processes, colonized by dense lichen mats.
Rock pavement, plateau and summital moss heaths	More or less level surfaces of rock of lowlands, hills and mountains of non-desert regions of the Palaearctic exposed or shattered by erosion or weathering processes, colonized by dense moss carpets.
Icelandic lava flow moss heaths	Lava flows and lava fields of Iceland covered by continuous carpets of [Racomitrium lanuginosum] (c.f. unit E4.21), forming thick mantles that cover very large surfaces over all parts of the relief, engulfing asperities, bridging gaps, draping protruding rocks with large cushions, or else, in less evolved complexes, forming preferentially in the depressions and concavities where some organic matter accumulates. These moss heaths constitute a particularly original landscape of Iceland.
Moss and lichen fjell fields	No description available.
Acid alpine and subalpine grassland	Alpine and subalpine grasslands developed over crystalline rocks and other lime-deficient substrates or on decalcified soils of mountains. On boreal mountains, [Carex bigelowii] and [Juncus trifidus] often dominate. The acid alpine grasslands of central Europe are more mixed, with [Armeria alpina], [Armeria alliacea] ([Armeria montana]), [Euphrasia minima], [Gentiana alpina], [Geum montanum], [Juncus trifidus], [Lychnis alpina], [Pedicularis pyrenaica], [Phyteuma hemisphaericum], [Pulsatilla alpina ssp. sulphurea], [Ranunculus pyrenaeus], [Sempervivum montanum], [Botrychium lunaria].

Alpic mat-grass swards and related communities	Closed grasslands of deep, acid soils of the Alps, the Carpathians, the Pyrenees, the northern Apennines, the Jura and the higher Hercynian ranges, the northern and central Dinarides, developed mostly and abundantly in the subalpine level and included in the alliance [Nardion], dominated or co-dominated by [Nardus stricta], [Festuca eskia], [Festuca nigrescens], [Festuca rubra], [Alopecurus gerardii], [Bellardiochloa violacea] ([Poa violacea]), [Carex sempervirens], [Anthoxanthum odoratum], [Hieracium alpinum], [Trommsdorfia uniflora], [Potentilla aurea]. Similar [Nardus stricta] grasslands of the Moesian region of the Balkan peninsula, distributed at high elevations of the Balkan Range, the Rhodopides, the Moeso-Macedonian mountains and the Pelagonides, as southern extensions of the Alpigenous communities or as grazing-induced facies of the more varied communities of unit E4.39.
Pyreneo-Alpine mesophile mat-grass swards	Subalpine and lower alpine mesophile grasslands dominated by, or rich in, [Nardus stricta], of the Alps, the Pyrenees and, very locally, the Central Massif, the Jura and the northern Apennines; for the most part, they are heavily grazed grasslands with much reduced species diversity and overwhelming dominance of mat-grass.
Pyreneo-Alpine hygrophile mat-grass swards	Subalpine and alpine hygro-mesophile, chionophilous [Nardus stricta] swards of depressions and humid flats around lakes and marshes, where snow melts slowly.
Pyreneo-Alpine hygrophile foxtail swards	Subalpine and alpine hygro-mesophile, chionophilous grasslands of depressions with prolonged snow cover dominated by [Alopecurus gerardii] and [Trifolium alpinum]; they constitute a transition between siliceous grasslands and snow-patch communities, which they often ring.
Pyrenean closed [Festuca eskia] grassland	Subalpine and lower alpine closed mesophile [Festuca eskia] grasslands of north-facing slopes (ubacs) and depressions in the Pyrenees with [Arnica montana], [Ranunculus pyrenaeus], [Selinum pyrenaeum], [Trifolium alpinum], [Campanula barbata], [Gentiana punctata], [Leucorchis albida], [Phyteuma betonicifolium].
Pyrenean [Poa violacea] swards	Subalpine [Bellardiochloa violacea] ([Poa violacea])-dominated grasslands of the Pyrenees.
Hercynian summital mat-grass swards	Summital swards of the greater Hercynian ranges dominated by, or rich in, [Nardus stricta].
Hautes Chaumes summital mat-grass swards	Formations of the Hautes Chaumes (high Vosges), with [Nardus stricta], [Gentiana lutea], [Arnica montana], [Pulsatilla alba], [Viola lutea ssp. elegans], [Selinum pyrenaeum], [Leontodon pyrenaicus], [Hieracium vogesiacum], [Hieracium olivaceum], [Hieracium alpinum] and abundant ericoid shrubs, [Erica tetralix], [Vaccinium myrtillus], [Vaccinium vitis-idaea].
Black Forest summital mat-grass swards	[Nardus stricta] grasslands of the Black Forest.
Harz summital mat-grass swards	Formations of the Harz dominated by, or rich in, [Nardus stricta].
Bohemian Forest summital mat-grass swards	[Nardus stricta] grasslands of the high altitudes of the Bayerischer Wald and of the central Bohemian Forest (Sumava).

Sudeten summital mat-grass swards	[Nardus stricta] grasslands of the high altitudes of the Sudeten mountains (Krkonose, Hruby Jesenik), with [Carex bigelowii ssp. rigida] ([Carex rigida], [Carex fyllae]), [Hieracium alpinum], [Primula minima], [Potentilla aurea], [Deschampsia flexuosa], [Anthoxanthum odoratum], [Lycopodium alpinum], and, in some formations, [Sphagnum nemoreum], [Sphagnum girgensohnii], [Polytrichum strictum].
Carpathian mat-grass swards	Grasslands dominated by, or rich in, [Nardus stricta] of the Carpathian system.
Western Carpathian mat-grass swards	[Nardus] grasslands of the northwestern Carpathians, with [Carex pilulifera], [Hieracium vulgatum], [Hypochoeris uniflora], [Crepis conyzifolia], [Gentiana punctata], [Homogyne alpina], [Potentilla aurea], [Pulsatilla alpina], of western Carpathian mountains.
Eastern Carpathian mat-grass swards	Grasslands rich in, or dominated by, [Nardus stricta], with [Festuca nigricans], [Festuca airoides], [Poa media] and regional species [Viola declinata], [Scorzonera rosea], [Potentilla aurea ssp. chrysocraspeda] ([Potentilla ternata]), [Campanula abietina], [Campanula serrata], of flats and gentle slopes of the subalpine and lower alpine levels of the Eastern and Southern Carpathians.
Oro-Moesian mat-grass swards	Acidophilous grasslands dominated by [Nardus stricta] of higher, mostly subalpine, sometimes alpine, elevations of the Balkan Range, the Rhodopides, the Moeso-Macedonian mountains and the Pelagonides.
Dinaride mat-grass swards	[Nardus stricta]-dominated grasslands of the subalpine and alpine levels of the Dinaride system.
Oroboreal acidocline grassland	Grass, sedge, rush, bryophyte and lichen acidophile or acidocline communities of the higher summits of the boreal and arcto-alpine mountains, southwest to the Highlands of Scotland, the Lake District, northern England and northern Wales, submitted to diverse, though generally moderate, levels of snow cover and wind exposure, with resulting affinities to both the fairly chionophilous Alpide grasslands of the [Caricetea curvulae] assembled in unit E4.31 and to the snowfield communities of unit E4.11; [Juncus trifidus] and [Carex bigelowii] are often present.
Thermo-Alpigenous subalpine acidophilous grassland	Subalpine thermophile formations on often skeletal soils of the southern Alps, the Pyrenees and, very locally, the Central Massif and the Apennines.
Thermo-Alpigenous [Festuca paniculata] swards	Thermophile, luxuriant, relatively closed grasslands formed by the very tall, bluegrey [Festuca paniculata] ([Festuca spadicea]) on south-facing slopes (adrets) of the upper montane and lower subalpine levels of the Pyrenees, the southern Alps and, locally, the Central Massif and the Abruzzi; characteristic and often abundant accompanying species include [Centaurea uniflora], [Silene nutans], [Trifolium montanum], [Hieracium peleteranum], [Hypochoeris maculata], [Potentilla grandiflora], [Lilium martagon], [Eryngium alpinum], [Luzula pediformis], [Meum athamanticum], [Nigritella nigra], [Helictotrichon parlatorei], [Asphodelus albus], [Iris xiphioides], [Paradisea liliastrum], [Dianthus monspessulanus], [Carduus defloratus]. Many have been traditionally treated as hay meadows and are of extraordinary floristic richness; they are nowadays increasingly abandoned or left to grazing.

Pyrenean [Festuca eskia] garland-grasslands	Open, thermophile, stripped grasslands organized in ribbons retaining stony, almost bare steps on the adrets of the upper subalpine and lower alpine zones in the Pyrenees, formed by the hard, sharp-pointed, slippery, bright green, tufted [Festuca eskia], sometimes associated with [Carex sempervirens] s.l.
Arverno-Alpine varicoloured fescue garland-grasslands	Open, thermophile, stripped grasslands of the adrets of the (mostly) southern Alps and Central Massif, formed by calcifuge species of the hard, sharp-pointed [Festuca varia] group ([Festuca varia], [Festuca scabriculmis]), often associated with [Carex sempervirens] s.l.
Alpigenous acidophilous grassland	Mostly closed [Carex curvula], [Festuca] spp., [Oreochloa] spp. or [Juncus trifidus] grasslands on siliceous soils of the alpine level of the Alps, the Carpathians and the Pyrenees, with very local outposts in the great Hercynian ranges and the Cantabrian Range. [Androsace obtusifolia], [Androsace carnea ssp. laggeri], [Campanula barbata], [Juncus jacquinii], [Juncus trifidus], [Silene exscapa], [Gentiana alpina], [Achillea erba-rotta], [Euphrasia minima], [Luzula lutea], [Luzula spicata], [Luzula hispanica], [Lychnis alpina], [Minuartia recurva], [Minuartia sedoides], [Pedicularis kerneri], [Pedicularis pyrenaica], [Phyteuma globulariifolium], [Phyteuma hemisphaericum], [Potentilla frigida], [Armeria alpina], [Senecio incanus], [Trifolium alpinum], [Veronica bellidioides], [Ranunculus pyrenaeus] are characteristic.
Alpigenous crooked-sedge grasslands	Formations of the Alps, of the Pyrenees and of the Carpathians, to which the dominance of the crooked sedge, [Carex curvula], with twisted leaves whithering early at the tip, gives a highly distinctive texture and yellow-brown hue.
Alpine [Carex curvula] grasslands	[Carex curvula] formations of the upper and middle alpine levels of the Alps.
Pyrenean [Carex curvula] grasslands	[Carex curvula] formations of the upper alpine level of the eastern Pyrenees and of the alpine level of the central and western Pyrenees.
Carpathian [Carex curvula] grasslands	Formations dominated by [Carex curvula] accompanied by [Juncus trifidus], [Oreochloa disticha], [Festuca airoides], [Primula minima] and characterized by regional species [Poa media], [Senecio carpathicus], [Potentilla aurea ssp. chrysocraspeda], of the middle alpine level of the Eastern and Southern Carpathians.
Alpigenous [Festuca halleri] grasslands	Formations of flats and gentle slopes of the lower alpine level of the Alps, dominated by [Festuca halleri] and [Juncus trifidus], particularly widespread in the southwestern Alps.
Alpigenous [Festuca airoides] grasslands	[Festuca airoides] ([Festuca supina])-dominated swards of the alpine zone of the eastern Pyrenees, the Northern Carpathians, the Eastern Carpathians and the Sudeten.
Pyrenean [Festuca airoides] grasslands	Low, fairly dry swards of the alpine zone of the eastern Pyrenees dominated by [Festuca airoides] ([Festuca supina]), with [Carex ericetorum], [Avenula versicolor], [Silene ciliata], [Lychnis alpina], [Arenaria grandiflora], [Jasione humilis], [Hieracium breviscapum] ([Hieracium pumilum]).
Carpathian [Festuca airoides] grasslands	Swards of the alpine zone of the Northern and Eastern Carpathians, dominated by [Festuca airoides] ([Festuca supina]), with [Juncus trifidus], [Cerastium alpinum], [Potentilla aurea ssp. chrysocraspeda].
Hercynian [Festuca airoides] grasslands	Swards of the alpine zone of the Sudeten dominated by [Festuca airoides] ([Festuca supina]).

Pyrenean [Festuca borderi] swards	Subnival formations of the Pyrenees with [Potentilla frigida], [Erigeron uniflorus], [Carex rupestris] and many cushion plants such as [Saxifraga bryoides], [Saxifraga oppositifolia], [Minuartia sedoides], [Silene acaulis].
Alpigenous [Oreochloa disticha] swards	Alpine grasslands of the Alps and the Carpathians dominated by [Oreochloa disticha].
Alpine [Oreochloa disticha] swards	[Oreochloa disticha]-dominated formations of the Alps, developed in particular in the northern Alps (Allg„u) and northeastern Alps.
Carpathian [Oreochloa disticha] grasslands	[Oreochloa disticha] ([Sesleria disticha])-dominated formations of high altitudes on shallow podsolic siliceous soils of windswept crests and shaded slopes of the Carpathians.
Hercynio-Carpathian [Juncus trifidus] swards	Formations of the Carpathians, of the Bohemian Forest, including the Bayerischer Wald, of the Sudeten and of the eastern Alps, dominated by [Juncus trifidus], with [Agrostis rupestris], [Carex rigida], [Festuca airoides] ([Festuca supina]), [Pulsatilla alpina], [Senecio carpathicus], [Hieracium alpinum], [Polytrichum piliferum], [Racomitrium canescens], [Thamnolia vermicularis], [Cetraria cucullata], [Cetraria islandica], [Cetraria nivalis].
Bohemian Forest [Juncus trifidus] swards	Formations of the Bohemian Forest, including the Bayerischer Wald, dominated by [Juncus trifidus].
Sudeten [Juncus trifidus] swards	Formations of the Sudeten dominated by [Juncus trifidus].
Carpathian [Juncus trifidus] swards	Swards dominated by [Juncus trifidus] of high, windswept exposures of subalpine and alpine levels of the northern and eastern Carpathians.
Northern Carpathian [Juncus trifidus] swards	Widespread, physiognomically striking, [Juncus trifidus]-dominated formations of the high altitudes of the northern Carpathians, with [Oreochloa disticha], [Avenula versicolor] ([Avenastrum versicolor]), [Hieracium alpinum], [Pulsatilla alpina], [Senecio carpathicus], [Lycopodium selago f. imbricatum].
Eastern Carpathian [Juncus trifidus] swards	Communities dominated by [Juncus trifidus] with [Oreochloa disticha], [Festuca airoides], [Agrostis rupestris] of windswept summits, ridges and steep slopes of subalpine and alpine levels of the eastern Carpathians.
Alpine [Juncus trifidus] swards	[Juncus trifidus]-dominated swards of the siliceous inner Alps and of lime-free anomalous stations of the calcareous outer Alps, limited to the central and eastern part of the range in Switzerland and Austria.
Cantabrian [Oreochloa blanka] swards	[Oreochloa blanka] and [Juncus trifidus] formations of the alpine level of the Cantabrian Range.
Alpigenous [Agrostis rupestris] swards	[Agrostis rupestris]-dominated siliceous grassland of the Alps, the Carpathians and the Sudeten.

Oro-Hellenic closed grassland	Dense, closed, usually unsculptured, chionophilous grasslands of acid and often deep soils over siliceous or calcareous substrates of the higher mountains of the southern Balkan peninsula, under Mediterranean climate influence, including the southern Pelagonides (Vermion), the Pindus of Greece and southern Albania, the Thessalian and the Peloponnese mountains; they develop on decalcified colluvions, on damp soils of seeps or poorly drained areas, and in depressions and other situations where snow lingers. Characteristic are [Alopecurus gerardii], [Poa pumila], [Anthoxanthum alpinum], [Phleum alpinum], [Nardus stricta], [Bellardiochloa violacea] ([Poa violacea]), [Trisetum flavescens], [Trifolium pallescens], [Trifolium parnassi], [Trifolium heldreichianum], [Trifolium alpestre], [Trifolium ottonis], [Omalotheca supina], [Omalotheca hoppeana], [Herniaria parnassica], [Ranunculus sartorianus], [Lotus corniculatus], [Thesium parnassi], [Plantago lanceolata], [Plantago atrata], [Plantago holosteum], [Scleranthus perennis], [Rorippa thracica], [Erigeron epiroticus], [Acinos alpinus], [Luzu
Oro-Iberian acidophilous grassland	Cryoro- and oro-Mediterranean grasslands of acid substrates in the higher mountain ranges of the Iberian peninsula.
Oro-Iberian acidophilous stripped grasslands	Thermophile, open, stripped and garland fescue grasslands of siliceous upper slopes and summits of the high Mediterranean mountains of the Iberian peninsula, locally extending into the Euro-Siberian domaine in the subalpine level of the Cantabrian mountains.
Cantabrian acidophilous stripped grasslands	[Festuca indigesta] and [Festuca eskia] grasslands of the oro-Mediterranean, cryoro-Mediterranean and subalpine levels of the Cantabrian mountains and other high mountains of the northwest.
Iberian Range acidophilous stripped grasslands	[Festuca indigesta] grasslands of the oro- and cryoro-Mediterranean levels of the Iberian Range.
Cordilleran [Festuca] stripped grasslands	[Festuca indigesta] and [Festuca summilusitana] grasslands of the oro- and cryoro-Mediterranean levels of the Cordillera Central.
Cordilleran [Agrostis] stripped grasslands	[Agrostis rupestris] grasslands of the cryoro-Mediterranean level of the Cordillera Central.
Nevadan [Festuca indigesta] stripped grasslands	Psychroxerophile garland grasslands of [Festuca indigesta], [Thymus serpylloides], and [Arenaria tetraquetra var. granatensis], widespread in the oro-Mediterranean level (2000-2900 metres) of the Sierra Nevada.
Nevadan [Agrostis] stripped grasslands	Chionophilous grasslands with [Agrostis nevadensis] and [Armeria splendens] of depressions and sheltered areas within the oro-Mediterranean level of the Sierra Nevada, often in contact with, and forming a transition to, the closed mat-grass swards of 36.362.
Nevadan tall fescue stripped grasslands	Pioneer grasslands formed by the robust [Festuca pseudeskia] and [Festuca paniculata] on steep slopes submitted to intense insolation and severe erosion of the oro-Mediterranean and locally cryoro-Mediterranean levels of the Sierra Nevada.
Nevadan [Festuca clementei] stripped grasslands	Psychroxerophile grasslands of the cryoro-Mediterranean level (above 2900 m) of the Sierra Nevada, formed by [Festuca clementei], [Erigeron frigidus], [Artemisia granatensis], [Ptilotrichum purpureum], [Papaver lapeyrousianum], all, except the last, Sierra Nevada endemics.
Nevadan [Trisetum] stripped grasslands	Communities of wind-beaten crests of the Sierra Nevada, with [Trisetum glaciale] and [Galium pyrenaicum].

Oro-Iberian mat-grass swards	[Nardus stricta]-dominated and related closed, dense grasslands of oro- and cryoro-Mediterranean levels of high Iberian mountains, characteristic of seeps, poorly drained soils and areas with prolonged snow cover.
Cantabrio-Cordilleran oro-Mediterranean mat-grass swards	Hygrophile and chionophile, closed grasslands of the oro- and cryoro-Mediterranean levels of the Cordillera Central and of the high Orensano-Sanabrian mountains, and of the subalpine level of the Cantabrian mountains, with [Nardus stricta], [Festuca iberica], [Juncus squarrosus], [Luzula campestris ssp. carpetana], [Campanula herminii].
Nevadan borreguiles	Dense hygrophilous grasslands occupying humid flats around lakes, gullies, glacial basins, depressions at the oro- and cryoro-Mediterranean levels of the Sierra Nevada, with [Nardus stricta], [Festuca hispanica], [Agrostis nevadensis], [Plantago nivalis], [Carex intricata], [Ranunculus acetosellifolius], [Vaccinium uliginosum], [Lotus glareosus], [Leontodon microcephalus], [Galium nevadense], [Gentiana boryi], [Meum nevadense], [Jasione crispa ssp. amethystina], many of which Sierra Nevada endemics.
Oro-Corsican grassland	Grasslands of the subalpine (oro-Mediterranean) and alpine levels of the highest mountains of Corsica.
Oro-Apennine closed grassland	Mesophile, closed, short turfs of the subalpine and alpine levels of the southern and central Apennines, developed locally above treeline, on both calcareous and siliceous substrates.
Oro-Moesian acidophilous grassland	Dense, closed, usually unsculptured, chionophilous grasslands of acid substrates at the 1800-2500 metre level of high mountains of the central Balkan peninsula, including the Balkan Range, the Rhodopides, in particular, Vitosha, Rila, Pirin, the Slavianka-Orvilos, the central Rhodopes (Cernatica-Prespa complex) and the Falakron, the central Moeso-Macedonian mountains (Ozogovska Planina), the southern Dinarides, dominated by [Festuca paniculata], [Bellardiochloa violacea], [Festuca airoides] ([Festuca supina]), [Agrostis rupestris] or the Balkan endemics [Festuca valida] and [Sesleria comosa], often associated with [Nardus stricta], which may be abundant or co-dominant; rare species harboured in these communities include [Aquilegia aurea], [Lilium jankae], [Gentiana lutea], [Gentiana punctata], [Viola rhodopeia]. Outside of protected areas these grasslands are usually submitted to pasture regimes. Formations overwhelmingly dominated by [Nardus stricta] have been included in unit E4.318.
Oro-Moesian [Festuca paniculata] grasslands	Extensive, closed, acidophilous tall grasslands dominated by the large [Festuca paniculata] of higher elevations, up to 2400 metres, of the Central Balkan Range, the Rhodopide Rila, Pirin and Vitosha, the Moeso-Macedonian mountains, the Pelagonides and the Montenegrine Dinarides, mainly on eroded soils of south-facing slopes, with [Festuca nigrescens], [Bellardiochloa violacea], [Nardus stricta], [Genista depressa], [Juniperus nana] ([Juniperus sibirica]), [Vaccinium myrtillus].
Oro-Moesian varicoloured fescue grasslands	Closed acidophilous grasslands of the mountains of the central Balkan peninsula dominated by fescues of the "[Festuca varia]" complex, in particular, by [Festuca valida] or [Festuca balcanica] ("[Festuca cyllenica]")

Oro-Moesian [Festuca valida] grasslands	Closed, tall, species-poor acidophile grasslands of the Rhodopide Vitosha, Rila and Pirin mountains, the western Balkan Range and the Moeso-Macedonian mountains of western Bulgaria, occupying usually fresh, little eroded soils, strongly dominated by [Festuca valida], with [Veratrum lobelianum], [Verbascum longifolium], [Campanula epigaea], [Viola tricolor], [Stellaria graminea], [Genista depressa].
Balkan [Festuca balcanica] grasslands	Closed acidophilous grasslands of the western and central Balkan Range dominated by [Festuca balcanica] ("[Festuca cyllenica]").
Pelagonide [Festuca varia] grasslands	[Festuca varia] s.l.-dominated grasslands of the southern Pelagonides (Pelister), with [Centaurea triumfetti], [Bellardiochloa violacea], [Festuca picta], [Geranium cinereum], [Verbascum longifolium].
Oro-Moesian [Poa violacaea] grasslands	Acid grasslands of upper elevations of the Balkan Range, the Rhodopide system, the Moeso-Macedonian mountains and the Pelagonides, dominated by [Bellardiochloa violacea] ([Poa violacea], [Festuca poaeformis]), with [Nardus stricta], [Linum capitatum], [Antennaria dioica], [Festuca nigrescens], [Thymus] spp.; most often distributed on siliceous terrain, these grasslands also occur on calcareous substrates in the Pirin mountains.
Oro-Moesian aeolian grasslands	Open, short, acidophilous grasslands of windswept, shallow, easily desiccated, nutrient-poor soils with little snow cover of the mountains of the central Balkan peninsula.
Oro-Moesian crooked sedge grasslands	Open acidophilous grasslands of Pirin and the Pelagonides (Sar Planina, Rudoka, Korab, Pelister), dominated by [Carex curvula].
Oro-Moesian Haller fescue grasslands	Open acidophilous grasslands of the Rhodopides, the Pelagonides and the southern Dinarides dominated by fescues of the [Festuca halleri] group.
Rhodopide [Festuca riloensis] grasslands	Open acidophilous grasslands of the Rila, occupying the highest altitudes, from 2550 metres to 2925 metres, dominated by [Festuca riloensis] and [Carex curvula], with [Minuartia recurva], [Gentiana frigida], [Carex ericetorum], [Silene acaulis], [Luzula spicata], [Dianthus microlepis], [Sesleria comosa], [Sesleria orbelica].
Pelagonide [Festuca scardica] grasslands	Open acidophilous grasslands of the central Pelagonides (Sar Planina, Rudoka, Bistra), dominated by [Festuca halleri ssp. scardica].
Montenegrine [Festuca riloensis] grasslands	Closed acidophilous grasslands of the alpine and subalpine levels of the Bjelsica mountains of Montenegro, developed on recent volcanic substrates.
Oro-Moesian [Festuca airoides] grasslands	Grasslands of acid substrates of high mountains of the central Balkan peninsula, including the Balkan Range, the Rhodopides, the Moeso-Macedonian mountains and the Pelagonides, dominated by [Festuca airoides] ([Festuca supina]), with [Nardus stricta], [Sesleria comosa], [Poa media] ([Poa ursina]), [Juncus trifidus], [Luzula spicata], [Potentilla ternata], [Potentilla aurea ssp. chrysocraspeda], [Cerastium banaticum], [Dianthus microlepis], [Campanula alpina], [Jasione laevis ssp. orbiculata], [Hieracium alpicola].
Oro-Moesian [Sesleria comosa] grasslands	Windswept, [Sesleria comosa]-dominated acid grasslands of the upper subalpine belt of the Balkan Range and the Rhodopide system, with [Poa media] ([Poa ursina]), [Avenula versicolor] ([Avena scheuchzeri]), [Festuca airoides], [Festuca riloensis].
Oro-Moesian [Agrostis rupestris] grasslands	Grasslands of acid substrates of high mountains of the central Balkan peninsula, including the Balkan Range, the Rhodopides, the Moeso-Macedonian mountains, dominated by [Agrostis rupestris].

Southern Pelagonide aeolian grasslands	Open acidophilous grasslands of high southern Pelagonides, dominated by [Sesleria varia], [Sesleria coerulans], [Festuca kajmakcalana], [Elyna myosuroides] and [Carex ericetorum], [Alopecurus gerardii] and [Plantago holosteum].
Montenegrine aeolian fescue grasslands	Open acidophilous grasslands of the Bjelasica mountains in the Montenegrine Dinarides.
Western Asian acidophilous alpine grassland	Acidophilous grasslands of the high mountains of western Anatolia and the Levant, developed, in particular, on rankers, in snow-soaked sinks and dolines.
Calcareous alpine and subalpine grassland	Alpine and subalpine grasslands of base-rich soils of the high mountains of the nemoral, submediterranean and supramediterranean zones. Characteristic species of the Alps include [Dryas octopetala], [Gentiana nivalis], [Gentiana campestris], [Alchemilla hoppeana], [Alchemilla conjuncta], [Alchemilla flabellata], [Anthyllis vulneraria], [Astragalus alpinus], [Aster alpinus], [Draba aizoides], [Globularia nudicaulis], [Helianthemum nummularium ssp. grandiflorum], [Helianthemum oelandicum ssp. alpestre], [Pulsatilla alpina ssp. alpina], [Phyteuma orbiculare], [Astrantia major] and [Polygala alpestris].
Closed calciphile alpine grassland	Mesophile, mostly closed, vigorous, often grazed or mowed, grasslands on deep soils of the subalpine and lower alpine levels of the Alps, the Pyrenees, the mountains of the Balkan peninsula, and, locally, of the Apennines and the Jura. Vegetation typically of alliance [Daphno-Festucetea].
Mesophile evergreen sedge grasslands	Mesophile grasslands of the northern, central and southwestern Alps and of the Pyrenees, occupying gentle ubac slopes and humid flats on deep, often slightly acid, soils over calcareous substrates, with [Sesleria albicans], [Carex sempervirens], [Helictotrichon montanum], [Arenaria ciliata], [Draba aizoides], [Globularia nana], [Geranium cinereum], [Ranunculus gouanii], [Ranunculus thora], [Primula elatior ssp. intricata], [Oxytropis triflora], [Trifolium thalii], [Anthyllis vulneraria ssp. pyrenaica], [Alchemilla plicatula] ([Alchemilla asterophylla]), [Adonis pyrenaica], [Horminum pyrenaicum], [Geum pyrenaicum], [Bartsia spicata], [Bartsia alpina], [Scabiosa cinerea], [Leuzea centauroides] ([Rhaponticum cynaroides]), [Fritillaria delphinensis], [Fritillaria burnatii], [Crocus vernus], [Bulbocodium vernum], [Carex tendae], [Salix pyrenaica].
Alpine evergreen sedge grasslands	Mesophile grasslands of the northern, central and southwestern Alps, occupying gentle ubac slopes and humid flats on deep, often slightly acid, soils over calcareous substrates, with [Sesleria albicans], [Carex sempervirens], [Helictotrichon montanum], [Arenaria ciliata], [Draba aizoides], [Globularia repens], [Ranunculus thora], [Oxytropis triflora], [Trifolium thalii], [Bartsia alpina], [Scabiosa cinerea], [Fritillaria delphinensis], [Fritillaria burnatii], [Crocus vernus], [Bulbocodium vernum], [Carex tendae].

Pyrenean evergreen sedge grasslands	Meso-hygrophile grasslands of the Pyrenees, occupying gentle ubac slopes and humid flats on deep, often slightly acid, soils over calcareous substrates, with [Sesleria albicans], [Carex sempervirens], [Helictotrichon montanum], [Geranium cinereum], [Globularia repens], [Ranunculus gouanii], [Ranunculus thora], [Primula elatior ssp. intricata], [Oxytropis campestris], [Oxytropis pyrenaica], [Trifolium thalii], [Anthyllis vulneraria ssp. pyrenaica], [Alchemilla plicatula] ([Alchemilla asterophylla]), [Adonis pyrenaica], [Horminum pyrenaicum], [Geum pyrenaicum], [Bartsia spicata], [Bartsia alpina], [Scabiosa cinerea], [Leuzea centauroides] ([Rhaponticum cynaroides]), [Salix pyrenaica].
Northern rusty sedge grasslands	Mesophile, often flower-rich grasslands of the northern Alps, and, locally, of the southeastern Alps, in the Karawanken and the Slovenian Alps, occupying deep soils in the subalpine and lower alpine levels of the calcareous ranges, usually dominated by [Carex ferruginea] and with [Astragalus alpinus], [Astragalus frigidus], [Hedysarum hedysaroides], [Lathyrus laevigatus], [Astrantia major], [Centaurea montana], [Anemone narcissiflora], [Crepis pyrenaica], [Crepis pontana], [Pedicularis foliosa], [Traunsteinera globosa], [Phleum hirsutum], [Agrostis agrostiflora].
Southern rusty sedge grasslands	Mesophile, flower-rich grasslands of the subalpine and lower alpine levels of the southern and southeastern outer Alps of Italy, Austria and Slovenia, including the Insubrian and Garda Alps, the Dolomites, the Venetian and Carnic Alps, the Karawanken, the Julian and Steiner Alps, usually dominated by [Carex ferruginea], [Carex austroalpina] or [Carex sempervirens] with, in particular, [Horminum pyrenaicum], [Pedicularis gyroflexa], [Pedicularis foliosa], [Knautia transalpina], [Astrantia major], [Asphodelus albus], [Traunsteinera globosa] and many composites and peas.
Violet fescue swards and related communities	Closed grasslands of the subalpine and lower alpine levels of the Alps, the Pyrenees and the Apennines dominated by [Festuca violacea] or [Festuca nigrescens] and [Trifolium thalii], developed on deep, often superficially slightly acidified, soils.
Cantabrian thrift swards	Chionophilous grasslands of deep soils, somewhat decalcified at the surface, of the subalpine, and locally of the alpine or upper montane, levels of the calcareous Cantabrian Mountains, dominated by [Armeria cantabrica], [Carex sempervirens], [Festuca glacialis] or [Festuca gautieri], associated with [Sesleria albicans], [Poa alpina], [Poa minor], [Festuca burnatii], [Bellardiochloa violacea], [Agrostis schleicheri], and with [Anemone baldensis ssp. pavoniana], [Aquilegia pyrenaica ssp. discolor], [Jasione cavanillesii], [Pedicularis pyrenaica ssp. fallax], [Draba aizoides ssp. cantabriae], [Pimpinella siifolia], [Oxytropis pyrenaica], [Oxytropis halleri].
Jura summital swards	Localized mesophile grasslands of the subalpine level of the French, Swiss and Swabian Juras, with [Calamagrostis varia], [Laserpitium siler], [Laserpitium latifolium], [Dryas octopetala], [Eryngium alpinum], and very locally, [Carex ferruginea].
Dinaro-Moesian oligophile closed calcicolous grasslands	Closed calciphile grasslands developed on deep nutrient-poor soils overlying limestones in sheltered locations of the alpine and subalpine levels of mountain systems of the Balkan peninsula.

Dinaric oligophile closed calcicolous grasslands	Closed calciphile grasslands developed on deep nutrient-poor soils overlying limestones in sheltered locations of the alpine and subalpine levels of the Dinarides, distributed from Slovenia in the north to Montenegro in the south.
Dinaric pungent fescue grasslands	Grasslands of the Dinarides of southern Slovenia, Croatia, Bosnia-Herzegovina, Montenegro dominated by [Festuca bosniaca ssp. bosniaca].
Dinaric violet fescue grasslands	Grasslands of the Dinarides of Croatia and Bosnia-Herzegovina dominated by [Festuca amethystina].
Dinaric closed evergreen sedge grasslands	Grasslands of the Dinarides of Croatia and Bosnia-Herzegovina developed on deep, somewhat acidified soils, [Carex sempervirens], [Festuca amethystina], [Campanula scheuchzeri].
Rhodo-Pelagonian oligophile closed calcicolous grasslands	Closed calciphile grasslands developed on deep nutrient-poor soils overlying limestones in sheltered locations of the alpine and subalpine levels of the Pelagonides and the Rhodopide Pirin.
Rhodopide pungent fescue grasslands	Closed calciphile grasslands of the alpine level of the western Rhodopides dominated by [Festuca bosniaca ssp. pirinensis] or [Festuca penzesii].
Pirin fescue grasslands	Closed calciphile grasslands of the alpine level of the Pirin formed by the endemic [Festuca bosniaca ssp. pirinensis] ([Festuca pirinensis]), with [Festuca penzesii], [Carex kitaibeliana], [Androsace villosa], [Achillea ageratifolia], [Centaurea tartarea], [Alyssum cuneifolium], [Cerastium alpinum ssp. lanatum] ([Cerastium lanatum]), [Linum capitatum], [Gentiana verna].
Slavianka pungent fescue grasslands	Closed calciphile grasslands of the alpine level of the Slavianka-Orvilos, dominated by the regional endemic [Festuca penzesii].
Pelagonide closed calcicolous feathergrass grasslands	[Stipa]-dominated closed calcicolous grasslands of the Pelagonides.
Pelagonide closed calcicolous sesleria grasslands	[Sesleria]-dominated closed calcicolous grasslands of the Pelagonides.
Pelagonide closed calcicolous fescue grasslands	[Festuca]-dominated closed calcicolous grasslands of the Pelagonides.
Balkan oligophile closed calcicolous grasslands	Closed calciphile grasslands developed on deep nutrient-poor soils overlying limestones in sheltered locations of the alpine and subalpine levels of the western Balkan Range system.
Balkan closed calcicolous fescue grasslands	Closed calciphile fescue-dominated grasslands developed on deep nutrient-poor soils overlying limestones in sheltered locations of the alpine and subalpine levels of the western Balkan Range system, in particular of the Suva Planina, formed by the regional endemic [Festuca xanthina], associated with [Festuca varia s.s].
Balkan closed erect brome grasslands	Closed calciphile grasslands developed on deep nutrient-poor soils overlying limestones in sheltered locations of the alpine and subalpine levels of the western Balkan Range system, in particular of the Suva Planina, formed by [Bromus erectus], with [Lamium garganicum].

Balkan closed evergreen sedge grasslands	Closed calciphile grasslands developed on deep nutrient-poor soils overlying limestones in sheltered locations of the alpine and subalpine levels of the western Balkan Range system, in particular of the Suva Planina and the Rtanj, formed by [Sesleria nitida], [Carex sempervirens], [Sempervivum marmoreum], [Lychnis viscaria].
Dinaro-Moesian mesophile closed calcicolous grasslands	Closed weakly acidophile grasslands developed on deep relatively nutrient-rich well-watered soils overlying limestones in sheltered locations of the alpine and subalpine levels of mountain systems of the Balkan peninsula.
Dinaric rusty sedge grasslands	[Carex ferruginea]-rich closed weakly acidophile grasslands developed on deep relatively nutrient-rich well-watered soils overlying limestones in sheltered locations of the alpine and subalpine levels of the Dinarides of Slovenia, Croatia and Bosnia.
Dinaric bellflower grasslands	Closed weakly acidophile grasslands developed on deep relatively nutrient-rich well-watered soils overlying limestones in sheltered locations of the alpine and subalpine levels of the Dinarides of Montenegro.
Western Balkanic calcicolous scabious-fescue grasslands	Closed grasslands of deep coluvial soils formed in karst dolines of the western Balkan Range system, in particular, of the Suva Planina, dominated by [Festuca nigrescens] or [Festuca paniculata], accompanied by a mixed cortège of acidophilous, neutrophilous and basiphilous species.
Wind edge naked-rush ([Kobresia myosuroides]) swards	Meso-xerophile, relatively closed and unsculptured swards of [Kobresia myosuroides] ([Elyna myosuroides]) forming on deep, fine soils of protruding ridges and edges exposed to strong winds in the alpine and nival levels of the Alps, the Carpathians, the Pyrenees, the Cantabrian Mountains and, very locally, the Abruzzi and the mountains of the Balkan peninsula, with [Oxytropis], [Draba], [Carex] spp. and others.
Alpine naked-rush swards	Brown swards of Alpine crests and ridges submitted to extreme winds, dominated by [Kobresia myosuroides] ([Elyna myosuroides]).
Pyrenean naked-rush swards	Relatively extensive [Kobresia myosuroides] ([Elyna myosuroides]) formations of the calcareous ranges of the Pyrenees, where the [Elyna]-[Oxytropis] swards represent the main grassland formation of the alpine level.
Cantabrian naked-rush swards	Uncommon [Kobresia myosuroides] ([Elyna myosuroides]) formations of the high summits of the Picos de Europa.
Apennine naked-rush swards	Very local [Kobresia myosuroides] ([Elyna myosuroides]) formations of the high crests of the Abruzzi.
Carpathian naked-rush swards	Very local formations of high summits of the Southern Carpathians (Bucegi Mountain) submitted to extreme winds, with [Kobresia myosuroides] ([Elyna myosuroides]), [Oxytropis carpatica], [Cerastium lanatum], [Silene acaulis], [Dryas octopetala], [Anthemis carpatica ssp. pyrethriformis], [Minuartia sedoides] and the endemic [Festuca bucegica].
Scandinavian naked-rush swards	[Kobresia myosuroides] ([Elyna myosuroides])-dominated calcicline communities of exposed ridges of the boreoalpine and arctoalpine levels of Scandinavian mountains.

Pirin naked-rush swards	Extremely rare, local, exiguous open formations of ridges and outcrops of the high Pirin, at 2300 metres, submitted to extreme winds, with [Kobresia myosuroides] ([Elyna myosuroides]), [Oxytropis campestris var. sordida], [Silene acaulis], [Minuartia verna] and lichens.
Pelagonide naked-rush swards	Local formations of the high Pelagonides (Sar Planina, Rudoka), submitted to extreme winds, with [Kobresia myosuroides] ([Elyna myosuroides]).
Calciphilous stepped and garland grassland	Xero-thermophile, open, sculptured, stepped or garland alpine and sub-alpine grasslands of the Alps, the Carpathians, the Pyrenees, the mountains of the Balkan peninsula and the Mediterranean mountains, with very local outposts in the Jura.
Blue moorgrass-evergreen sedge swards	Xero-thermophile stepped or garland, species-rich grasslands of the alpine and subalpine levels of the northern and southeastern Alps, and locally, of the Jura, on slopes with shallow soil and snowcover of short duration, with [Sesleria albicans], [Carex sempervirens], [Carex humilis], [Gentiana favratii], [Helianthemum alpestre], [Helianthemum nummularium ssp. grandiflorum], [Phyteuma orbiculare], [Leontopodium alpinum], [Pedicularis rostratocapitata], [Pedicularis verticillata], [Anthyllis vulneraria ssp. alpestris], [Ranunculus thora].
Alpine blue moorgrass-evergreen sedge swards	Widespread calciphilous formations of the Alps.
Jura blue moorgrass-evergreen sedge swards	Very local grasslands of the high Jura.
Southern Alpine oatgrass-blue moorgrass swards	Xero-thermophile, open, stepped or garland, species-rich grasslands of the alpine and subalpine levels of the southern Alps, and particularly of the southwestern Alps, similar to those of the previous unit (36.431), but in which [Carex sempervirens] is less prominent, while various oats, [Helictotrichon sedenense] ([Avena sedenensis]) ([Helictotrichon montanum], [Avena montana]), [Helictotrichon sempervirens], [Helictotrichon parlatorei], [Helictotrichon setaceum], or [Festuca dimorpha] become important components together with [Sesleria albicans], and oro-Mediterranean species such as [Globularia nana], [Hedysarum hedysaroides], [Lilium pomponium], [Centaurea triumfetti], [Ononis cristata] ([Ononis cenisia]), [Ononis striata], [Iberis sempervirens], [Aethionema ovalifolium], [Sempervivum calcareum], [Arenaria cinerea], [Alsine brunati], [Galeopsis reuteri], [Leuzea rhapontica ssp. bicknellii] ([Leuzea rhapontica], [Rhaponticum scariosum]) and the spiny [Astragalus sempervirens] appear; several of these species are local endemics of very restricted distribution.
Cushion sedge carpets	Open formations of the alpine level of the Alps, of the Carpathians and the Dinarics, composed of cushions of [Carex firma] and other low-growing rosette or cushion plants.

Alpine cushion sedge carpets	Open formations of the alpine level of the southeastern Alps, and, to a lesser extent, of the northeastern Alps, composed of cushions of [Carex firma] and other low-growing rosette or cushion plants among which [Saxifraga caesia], [Gentiana clusii], [Gentiana froelichii], [Gentiana terglouensis], [Crepis jacquinii], [Pedicularis rosea], [Saussurea pygmaea], [Dianthus monspessulanus ssp. sternbergii], [Primula wulfeniana], [Chamorchis alpina], [Sesleria albicans], [Carex mucronata], sometimes in association with mats of [Dryas octopetala].
Western Carpathian cushion sedge carpets	[Carex firma]-dominated formations of high altitudes and dealpine stations of the calcareous northern Carpathians, with [Chamorchis alpina], [Crepis jacquinii], [Helianthemum alpestre], [Saxifraga caesia], [Viola alpina] and [Leontopodium alpinum].
Eastern Carpathian cushion sedge carpets	Open formations of the alpine level of the eastern Carpathians, composed of cushions of [Carex firma] and accompanied by other low-growing rosette or cushion plants.
Dinaric cushion sedge carpets	Open formations of the alpine level of the Dinarids of southwestern Slovenia and Croatia composed of cushions of [Carex firma] and other low-growing rosette or cushion plants.
Pyrenean [Festuca gautieri] grasslands	Open, xeric, stepped, scraped, species-rich grasslands of calcareous adrets in the subalpine and lower alpine levels of the Pyrenees, formed by the smooth, sharp-pointed, often curved-leaved [Festuca gautieri], [Festuca scoparia] and often rich in small cushiony plants; characteristic elements include [Koeleria vallesiana], [Helictotrichon sedenense] ([Avena montana]), [Sesleria albicans], [Sideritis hyssopifolia], [Sideritis endressii], [Helianthemum oelandicum var. hirtum], [Androsace villosa], [Gypsophila repens], [Acinos alpinus], [Paronychia serpyllifolia], [Anthyllis vulneraria], [Arenaria grandiflora], [Astragalus sempervirens], [Astragalus monspessulanus], [Eryngium bourgatii], [Fritillaria pyrenaica], [Teucrium pyrenaicum], [Erigeron pyrenaicus], [Ononis cristata] ([Ononis cenisia]), [Onosma fastigiata], [Saponaria caespitosa], [Jurinea humilis], [Seseli nanum], [Arenaria tetraquetra], [Scorzonera aristata], [Thymelaea nivalis], [Iberis bernardiana], [Serratula nudicaulis], [Asperula cynanchica], [Polygala alpina], [Oxytropis pyrenaica], [Carex rupestris].
Oro-Iberian calciphilous stripped grasslands	Thermophile, open, stripped and garland fescue grasslands of calcareous upper slopes and summits in the subalpine and oro-Mediterranean levels of the Cantabrian mountains, the Iberian Range and the calcareous Baetic ranges, dominated by [Festuca hystrix], [Festuca burnatii], [Poa ligulata] or [Oreochloa confusa]. They are closely allied to the Iberian fescue frost-grasslands (unit 34.73) of the supra-Mediterranean and montane levels of the same mountains.
Apennine stripped grasslands	Open, xerophile, stripped, stepped, scraped and garland grasslands of alpine and subalpine slopes and summits of the central and southern Apennines, dominated by [Sesleria tenuifolia] ([Sesleria juncifolia]), [Sesleria nitida], [Sesleria italica], [Festuca dimorpha], [Carex kitaibeliana] ([Cesleria laevis]).

Helleno-Balkanic stripped grasslands	Open, scraped, stepped and garland grasslands of the alpine and subalpine levels of the calcareous mountains of the southern Balkan peninsula, under Mediterranean climate influence, including the southern Pelagonides (Vermion), the Pindus, the Thessalian and the Peloponnese mountains, dominated by [Sesleria korabensis], [Sesleria coerulans], [Festuca graeca], [Carex kitaibeliana], [Stipa pulcherrima] with [Viola heterophylla ssp. graeca], [Minuartia verna], [Paronychia rechingeri], [Silene ciliata], [Dianthus minutiflorus], [Draba athoa], [Iberis sempervirens], [Anthyllis vulneraria ssp. pulchella], [Acinos alpinus], [Edraianthus graminifolius], [Centaurea pindicola], [Galium anisophyllon], [Morina persica], [Bornmuellera baldaccii], [Bornmuellera tymphaea], [Poa pirinica], [Poa thessala], [Festuca olympica], and a few woody species, in particular [Daphne oleoides] and [Juniperus nana].
Oro-Moesian calciphile stripped grasslands	Open, scraped, stepped and garland grasslands of the alpine and subalpine levels of the calcareous mountains of the central Balkan peninsula, including the Balkan Range, the Rhodopides, the Dinarides, dominated by or rich in [Sesleria] spp. including [Sesleria korabensis], [Sesleria klasterskyi], [Sesleria coerulans], [Sesleria rigida], [Sesleria tenuifolia], [Sesleria wettsteinii], [Festuca] spp., [Carex kitaibeliana] ([Carex laevis]), with [Dryas octopetala], [Leontopodium alpinum], [Saxifraga] spp., [Draba] spp., [Daphne oleoides].
Dinaric calciphile stripped grasslands	Open calcicolous grasslands of the Dinarides, distributed from Slovenia to Albania, dominated by [Sesleria tenuifolia] ([Sesleria juncifolia]), accompanied by [Carex kitaibeliana].
Pelago-Rhodopide calciphile stripped grasslands	Open calcicolous grasslands of the Pelagonides and the Rhodopides, submitted to more extreme temperature variations than the more northwestern formations of unit 36.4381, dominated by [Sesleria tenuifolia], [Sesleria tenerrima], [Sesleria korabensis] or [Sesleria bielzii], accompanied by [Carex kitaibeliana].
Pelagonide calciphile stripped grasslands	Open calcicolous grasslands of the high summits of the Pelagonides formed by [Sesleria tenuifolia], [Sesleria tenerrima], [Sesleria korabensis], accompanied by [Carex kitaibeliana].
Rhodopide [Sesleria klasterskyi] grasslands	Open calcicolous grasslands of the Pirin and the Slavianka, developed at altitudes above 2500 metres, formed by [Sesleria korabensis] ([Sesleria klasterskyi]), [Carex kitaibeliana] ([Carex laevis]), with [Leontopodium alpinum ssp. nivale], [Saxifraga ferdinandi-coburgi], [Saxifraga luteoviridis], [Achillea ageratifolia ssp. aizoon], [Draba lasiocarpa var. athoa], [Dryas octopetala].
Balkan Range calciphile stripped grasslands	Open, calcicolous, dealpine grasslands of the Balkan Range system, in particular, of the Suva Planina and the Rtanj, dominated by [Sesleria rigida].
Montenegrine [Oxytropis] grasslands	Open alpine grasslands of basic volcanic substrates of the Montenegrine Dinaric Bjelasica.
Carpathian calciphile stepped grasslands	Open, scraped, stepped and garland grasslands of the alpine and subalpine levels of the calcareous mountains of the Carpathians, dominated by or rich in [Sesleria] spp., [Festuca] spp., [Carex] spp.
West Carpathian calciphile stepped grasslands	Calcicolous open, scraped, stepped and garland grasslands of the alpine and subalpine levels of the Northwestern Carpathians, dominated by, or rich in, [Sesleria tatrae].

Tatra sesleria-evergreen sedge grasslands	Species-rich tall open grasslands of calcareous stony and gravelly slopes of the subalpine and montane levels of the Tatras formed by [Sesleria tatrae], [Festuca tatrae], [Carex sempervirens ssp. tatrorum], with [Allium montanum], [Anthyllis alpestris], [Carduus glaucus], [Dianthus praecox], [Hieracium bifidum], [Hieracium bupleuroides], [Hieracium villosum], [Knautia kitaibelii], [Leontodon incanus], [Pulsatilla slavica], [Sempervivum soboliferum ssp. preissianum], [Thesium alpinum].
West Carpathian [Festuca versicolor] grasslands	Calcicolous open grasslands of the northwestern Carpathians dominated by [Festuca versicolor].
Hercynio-Carpathian [Agrostis alpina] grasslands	Open grasslands of the Northwestern Carpathians and the Sudeten formed by [Agrostis alpina] and [Festuca versicolor], intermediate between calciphile and acidophile formations, and between grasslands and rock communities.
East Carpathian calciphile stepped grasslands	Calcicolous, xero-thermophile, open, scraped, stepped and garland grasslands of the alpine and subalpine levels of the eastern Carpathians, on slopes with shallow limestone soils, dominated by, or rich in [Sesleria bielzii], [Sesleria rigida ssp. haynaldiana], [Festuca versicolor], [Festuca amethystina], [Festuca saxatilis], [Carex sempervirens].
East Carpathian sesleria-evergreen sedge grasslands	Calcicolous open grasslands colonizing ledges, sills, crests of limestone rocks in the alpine and subalpine levels of the Eastern and the Southern Carpathians, formed by [Carex sempervirens] and [Sesleria] species, in particular, [Sesleria bielzii], [Sesleria rigida ssp. haynaldiana], [Sesleria heuflerana], or, at the contact with rock formations, by [Festuca saxatilis], [Sesleria] spp., [Carex sempervirens] and [Dianthus tenuifolius], accompanied by saxicolous species.
East Carpathian [Festuca versicolor] grasslands	Calcicolous, xero-thermophile, open grasslands of the alpine and subalpine levels of the southeastern Carpathians, on shallow rendzinas of crests, summits and ledges, dominated by [Festuca versicolor] and [Carex sempervirens], with [Sesleria rigida ssp. haynaldiana], [Cerastium transsilvanicum].
East Carpathian [Festuca amethystina] grasslands	Calcicolous open grasslands of the lower alpine and subalpine levels of the eastern Carpathians formed by [Festuca amethystina], with [Bellardiochloa violacea], [Carex sempervirens], [Allium ochroleucum], [Phyteuma orbiculare], [Biscutella laevigata], [Linum perenne ssp. extraaxillare] ([Linum extraaxillare]), [Festuca saxatilis].
East Carpathian [Festuca flaccida] grasslands	Xero-mesophile open grasslands of sunny adrets of the Rodnei mountains in the Eastern Carpathians dominated by the southeastern Carpathian endemic [Festuca nitida ssp. flaccida] ([Festuca flaccida]), developed on rendzinas overlying limestone substrates, ecologically similar to the Alpine violet fescue grasslands of unit 36.414, though more open.
Ponto-Caucasian alpine grassland	High-altitude grass and sedge dominated formations of the Caucasus, of the Pontic Range, of the Elburz and of the Crimean mountains.
Pontic alpine grassland	Grasslands of the humid alpine level of the eastern Pontic Range, with [Campanula tridentata], [Alchemilla vulgaris], [Poa alpina], [Festuca ovina] s.l., and of the humid subalpine level, occupied by pastures of [Festuca] spp., with [Luzula spicata], [Carex tristis], [Lotus corniculatus].

Caucasian alpine grassland	Grass and sedge dominated formations of alpine and subalpine meadows of the high Caucasus, with a considerable variety of associations.
Crimean alpine grassland	Grass and sedge dominated formations of alpine and subalpine meadows of Crimea.
Hyrcanian alpine grassland	Extrasylvatic grasslands of the Elburz range of northern Iran, of limited extent and insularised, developed under humid alpine conditions, with [Dactylis glomerata], [Alopecurus] spp., [Sesleria phleoides], [Trifolium] spp., [Lotus corniculatus], [Polygonum bistorta], [Primula auriculata], [Pedicularis comosa].
Alpine and subalpine enriched grassland	Enriched pastures of the subalpine and lower alpine levels of mountains. Enriched hay meadows are listed under E2.3.
Subalpine yellow oatgrass hay meadows	[Trisetum flavescens]-dominated grasslands of the subalpine level of the Alps, the Carpathians, Balkans and the Jura. [Alchemilla] spp. dominates very often. Yellow oatgrass hay meadows are typically montane and are described under unit E2.3; these are subalpine equivalents.
Rough hawkbit ([Leontodon hispidus]) pastures	Species-poor manured cattle pastures of the subalpine and lower alpine levels of the western Alpids and their satellite ranges, with [Agrostis alpina], [Phleum alpinum], [Poa alpina], [Cerastium fontanum], [Crepis aurea], [Leontodon hispidus], [Trifolium badium], [Trifolium thalii].
Woodland fringes and clearings and tall forb stands	Stands of tall herbs or ferns, occuring on disused urban or agricultural land, by watercourses, at the edge of woods, or invading pastures. Stands of shorter herbs forming a distinct zone (seam) at the edge of woods.
Dry mediterranean lands with unpalatable non-vernal herbaceous vegetation	Dry lands with shrub cover < 10%, and with a large component of non-vernal unpalatable plants, including geophytes ([Asphodelus], [Urginea]), thistles ([Carthamus], [Carlina], [Centaurea], [Onopordum]), [Ferula] and [Phlomis], especially characteristic of the drier parts of the Mediterranean basin. These habitats usually result from over-grazing of garrigue, which eliminates the shrubs.
Asphodel fields	Communities of degraded terrains of the Mediterranean basin overwhelmingly dominated by facies-forming Liliaceae of genus [Asphodelus].
Thistle fields	Communities of degraded terrains of the Mediterranean basin overwhelmingly dominated by facies-forming thistles, notably of genera [Carthamus], [Carlina], [Centaurea], [Onopordum], [Notobasis], [Galactites].
Brushes dominated by [Phlomis] species	Communities of degraded terrains of the Mediterranean basin overwhelmingly dominated by facies-forming tall labiates of genus [Phlomis].
Giant fennel ([Ferula]) stands	Communities of degraded terrains of the Mediterranean basin dominated by facies-forming tall, robust umbellifers of genus [Ferula].
Thermophile woodland fringes	Woodland edge (seam) vegetation of the nemoral, boreo-nemoral and submediterranean zones, composed of warmth-requiring drought-resistant herbaceous perennials and shrubs, which form a belt between dry or mesophile grasslands and the shrubby forest mantle, on the sunny side, where the nutrient supply is limited, or, sometimes, pioneering the woodland colonization into the grasslands.

Xero-thermophile fringes	Hems of xerothermic mixed oak woods of middle Europe and its sub-Mediterranean approaches, mostly belonging to the [Quercetalia pubescenti-petraeae] or related groups of communities, extending north to the boreonemoral zone of Fennoscandia, with [Geranium sanguineum], [Vincetoxicum hirundinaria], [Tanacetum corymbosum], [Bupleurum] spp., [Origanum vulgare], [Inula] spp., [Dictamnus albus], [Anthericum ramosum], [Fragaria viridis], [Anemone sylvestris], [Lathyrus pannonicus], [Peucedanum] spp., [Laserpitium latifolium], [Polygonatum odoratum], [Rosa pimpinellifolia], [Trifolium rubens], [Clematis recta], [Coronilla coronata], [Melampyrum cristatum], [Campanula] spp., [Veronica teucrium]. Vegetation of alliance [Geranion sanguinei].
Mesophile fringes	Mesophile and xero-acidocline hems of [Carpinion] and [Fagion] woods, developed on deeper soil than those of unit E5.21, or on siliceous substrates, with [Trifolium medium], [Trifolium ochroleucon], [Brachypodium sylvaticum], [Digitalis grandiflora], [Peucedanum cervaria], [Campanula baumgartenii], [Origanum vulgare], [Melampyrum] spp., [Valeriana wallrothii], [Agrimonia eupatoria], [Vicia] spp., [Lathyrus latifolius] and [Teucrium scorodonia]. Alliances [Trifolion medii], [Melampyrion pratensis].
Bracken fields	Atlantic, sub-Atlantic, sub-Mediterranean and Macaronesian communities dominated by the large fern [Pteridium aquilinum], extensive and often closed.
Sub-Atlantic bracken fields	[Pteridium aquilinum] fields appearing as a recolonisation stage of the [Quercion] of the Atlantic and sub-Atlantic areas of continental Europe, including the British Isles and the Iberian peninsula.
Macaronesian bracken fields	[Pteridium aquilinum] facies of the heaths of the Atlantic Islands.
Supra-Mediterranean bracken fields	[Pteridium aquilinum] fields of the [Quercetalia pubescenti-petraeae] zone.
Moist or wet tall-herb and fern fringes and meadows	Tall-herb and fern vegetation of the nemoral and boreal zones, including stands of tall herbs on hills and mountains below the montane level. Tall herbs are often dominant along watercourses, in wet meadows and in shade at the edge of woodlands.
Screens or veils of perennial tall herbs lining watercourses	Tall herbs fringe communities on banks of runnning waters on gleyic soils with humus horizon. Characteristic species are [Petasites] spp., [Filipendula ulmaria], [Aegopodium podagraria], [Chaerophyllum hirsutum], [Urtica dioica], [Mentha longifolia], [Angelica sylvestris], [Caltha palustris], [Crepis paludosa], [Epilobium hirsutum] and [Geranium palustre]. Vegetation of [Calthion], [Senecionion fluviatilis], and [Petasition officinalis] is found in this unit. Often replaced by neophytes or ruderal plants.
Watercourse veils (other than of meadowsweet)	No description available.
[Angelica archangelica] fluvial communities	[Angelica archangelica ssp. litoralis] formations of great northern rivers, presently rare and threatened.
[Angelica heterocarpa] fluvial communities	[Angelica heterocarpa] formations of tidal estuaries of the Loire, the Charente and the Gironde; the species is a rare and very narrow endemic of southwestern France.

Marsh mallow screens	[Althaea officinalis] formations of river banks and marsh edges, particularly on somewhat saline soils.
Western nemoral river bank tall-herb communities dominated by meadowsweet	No description available.
Boreal river bank tall-herb communities dominated by meadowsweet	River bank and humid depression tall herb communities of the lowlands of the boreal zone dominated by [Filipendula ulmaria], with, among others, [Achillea ptarmica], [Dactylorhiza fuchsii], [Galium uliginosum], [Geum rivale], [Lysimachia vulgaris], [Trollius europaeus], [Valeriana sambucifolia].
Continental river bank tall-herb communities dominated by meadowsweet	River bank and freshwater humid depression tall herb communities of the continental steppe zones.
Tall-herb communities of humid meadows	Non-ruderal commuties of the alliance [Calthion]. [Filipendula ulmaria] is dominant here, [Crepis paludosa], [Iris sibirica], [Lythrum salicaria] and [Geranium palustre] are also present.
Western nemoral tall-herb communities of humid meadows	No description available.
Boreal tall-herb communities of humid depressions	River bank and humid depression tall herb communities of the lowlands of the boreal zone dominated by [Filipendula ulmaria], with, among others, [Achillea ptarmica], [Dactylorhiza fuchsii], [Galium uliginosum], [Geum rivale], [Lysimachia vulgaris], [Trollius europaeus], [Valeriana sambucifolia].
Continental tall-herb communities of humid meadows	River bank and freshwater humid depression tall herb communities of the continental steppe zones.
Shady woodland edge fringes	Nitro-hygrophilous communities of usually large-leaved herbs developing along the shaded side of wooded stands and hedges, with [Galium aparine], [Glechoma hederacea], [Geum urbanum], [Aegopodium podagraria], [Silene dioica], [Carduus crispus], [Chaerophyllum hirsutum], [Lamium album], [Alliaria petiolata], [Lapsana communis], [Geranium robertianum], [Viola alba], [Viola odorata].
Mediterranean grasslands on alluvial river banks	Nitrophilous annual and perennial grass and sedge formations of the alluvial banks of Mediterranean permanent or temporary water courses, most characteristic of great Mediterranean rivers, with [Paspalum paspalodes], [Paspalum vaginatum], [Polypogon viridis] ([Agrostis semiverticillata]), [Cyperus fuscus], [Catabrosa aquatica]. Vegetation of alliance [Paspalo-Agrostidion].

Subalpine moist or wet tall-herb and fern stands	Luxuriant tall herb formations of deep, humid soils in the montane to alpine, but mostly subalpine, levels of the higher mountains, with [Cicerbita alpina], [Cicerbita alpina plumieri], [Cirsium helenioides], [Cirsium spinosissimum], [Cirsium flavispina], [Geranium sylvaticum], [Polygonatum verticillatum], [Ranunculus platanifolius], [Aconitum vulparia], [Aconitum napellus], [Aconitum nevadense], [Adenostyles alliariae], [Senecio elodes], [Veratrum album], [Trollius europaeus], [Peucedanum ostruthium], [Doronicum austriacum], [Pedicularis foliosa], [Eryngium alpinum], [Leuzea rhapontica] ([Centaurea rhapontica]), [Valeriana pyrenaica], [Tozzia alpina].
Alpic tall-herb communities	Subalpine and alpine meso-hygrophile tall herb formations of moist hollows and gullies of the Alps, the Carpathians, the Dinarides, the Jura, the great Hercynian ranges, the Central Massif and the Apennines. Vegetation of [Adenostylion] with dominant [Adenostyles alliariae] and [Veratrum album], [Chaerophyllum hirsutum], [Cicerbita alpina], [Aconitum] spp. and others also present. In the Carpathians these communities are represented also by alliance [Delphinion elati]. Some habitats are dominated by ferns (e.g. [Athyrium distentifolium], [Dryopteris filix-mas]).
Alpine tall herb communities	Subalpine and alpine meso-hygrophile tall herb formations of moist hollows and gullies of the Alps.
Jura tall herb communities	Subalpine and alpine meso-hygrophile tall herb formations of moist hollows and gullies of the Jura.
Hercynian tall herb communities	Subalpine and alpine meso-hygrophile tall herb formations of moist hollows and gullies of the Central Massif and of the great ranges of the Hercynian arc, in particular, the Vosges, the Black Forest and the major ranges of the Bohemian Quadrangle, the Sudeten, the Erzgebirge, the Bohemian Forest (Sumava).
Carpathian tall herb communities	Subalpine and alpine meso-hygrophile tall herb formations of moist hollows and gullies of the Carpathians.
Carpathian adenostyles communities	Tall herb communities of the Carpathians formed by [Adenostyles alliariae], [Cicerbita alpina] ([Mulgedium alpinum]), [Epilobium alpinum].
Carpathian fern communities	Tall herb communities of the Carpathians dominated by [Athyrium distentifolium] ([Athyrium alpestre]).
Carpathian monkshood communities	Tall herb communities of the Carpathians formed by [Aconitum] species.
North Carpathian monkshood communities	Tall herb communities of the northwestern Carpathians formed by [Aconitum firmum] ([Aconitum callibotryon]), [Archangelica officinalis], [Delphinium oxysepalum].
East Carpathian monkshood communities	Tall herb communities of the subalpine and alpine levels of the Eastern and Southern Carpathians, occupying wet nutrient- and humus-rich colluvions of glacial cirque perimeters dominated by [Aconitum tauricum], with [Saxifraga heucherifolia] and a representation of species of the [Adenostylion].
Carpathian butterbur communities	Formations of the Carpathians dominated by [Petasites] spp.
Carpathian white butterbur communities	[Petasites albus]-dominated formations of the upper montane and lower subalpine levels of the Carpathians, with species typical of the [Adenostylion].

Carpathian glabrous butterbur communities	[Petasites kablikianus]-dominated formations of shady streamsides of Carpathian mountain valleys, with [Orobanche flava], [Carduus personata], [Chaerophyllum hirsutum].
Dinaric tall herb communities	Subalpine and alpine meso-hygrophile tall herb formations of moist hollows and gullies of the Dinarides.
Apennine tall herb communities	Subalpine and alpine meso-hygrophile tall herb formations of moist hollows and gullies of the Apennines.
Alpic tall grass communities	Communities of the montane and subalpine levels of high and moderately high mountains of the Alpine system and neighbouring ranges, dominated by tall grasses, accompanied by a species cortège similar to that of the subalpine tall-herb communities. They are bound to both siliceous and carbonate substrates. Characteristic species: [Calamagrostis arundinacea], [Calamagrostis villosa], [Deschampsia cespitosa]. In the Carpathians they are represented by a very high number of associations included in the alliances [Calamagrostion villosae], [Trisetion fusci], [Festucion carpaticae] and [Calamagrostion arundinaceae].
Pyreneo-Iberian tall-herb communities	Subalpine and alpine meso-hygrophile tall herb formations of the Pyrenees, the Cantabrian mountains, the Cordillera Central, the Iberian Range, with [Valeriana pyrenaica] and [Adenostyles alliariae ssp. hybrida] ([Adenostyles alliariae ssp. pyrenaica]).
Ibero-Mauritanian tall-herb communities	Subalpine and alpine meso-hygrophile tall herb formations of moist hollows and gullies of southern Iberian and North African mountains.
Southern Iberian tall herb communities	Subalpine and alpine meso-hygrophile tall herb communities of the Sierra Nevada and other southern Iberian mountains, with the endemic [Cirsium flavispina], [Aconitum nevadense], [Senecio elodes].
Corsican Toadflax ([Cymbalaria]) tall-herb communities	Tall-herb communities of the subalpine and lower alpine level of Corsica, limited to shady, strongly sloping corridors with prolonged snow cover and often with stabilised scree, formed by [Adenostyles briquetii], [Valeriana rotundifolia], [Peucedanum ostruthium], [Cymbalaria hepaticifolia], [Ranunculus platanifolius], [Aquilegia bernardii], [Viola biflora], and often several fern species.
Corsican leopard's bane ([Doronicum]) tall-herb communities	Tall herb riparian communities of stony and rocky torrents and of dripping rocks of the upper montane, subalpine and alpine levels of Corsica formed by [Doronicum corsicum], [Narthecium reverchonii], [Carex frigida], [Calamagrostris varia ssp. corsica], [Phalaris arundinacea var. rotgesii] ([Typhoides arundinacea ssp. rotgesii]).
Eastern oro-Mediterranean and Balkan tall-herb communities	Subalpine and alpine meso-hygrophile tall herb formations of moist hollows and gullies of the Balkan Range, the Hellenides and the mountains of Mediterranean Anatolia. Species: [Cirsium appendiculatum], [Angelica sylvestris], [Heracleum sphondylium], [Geum coccineum] from alliances [Cirsion appendiculati] and [Geion coccinei].

Hellenic tall herb communities	Riparian and spring-edge vegetation of the montane and subalpine level of the Pindus and the Thessalian mountains south to Giona and Parnassus, with [Cirsium appendiculatum], [Cirsium tymphaeum], [Heracleum sphondylium ssp. pyrenaicum] ([Heracleum pollinianum]), [Stachys alopecuros] ([Betonica jacquinii]), [Scrophularia umbrosa] ([Scrophularia samaritanii]), [Scrophularia scopolii], [Achillea grandifolia], [Campanula trachelium ssp. athoa], [Chaerophyllum aureum], [Epilobium obscurum], [Solidago virgaurea], [Veratrum album], [Geranium asphodeloides].
Moesian tall herb communities	Montane meso-hygrophile tall herb formations of small splashing mountain torrents, moist hollows and gullies of the Balkan Range, the Rhodopides, the Moeso-Macedonian mountains and the Pelagonides, irradiating southwards, in the montane, sylvatic, level of the northern Pindus and the Pieria. The formations of these units harbour many species of the genus [Alchemilla].
Moesian Balkan thistle tall herb communities	[Cirsium appendiculatum] tall herb formations of the Balkan Range, the Rhodopides, the Moeso-Macedonian mountains, the Pelagonides, irradiating southwards, in the montane, sylvatic, level of the northern Pindus and the Pieria. The communities of the Balkan Range and the Rhodopides harbour several species endemic or rare in the region, including [Alchemilla plicatula], [Trollius europaeus], [Pinguicula vulgaris].
Moesian butterbur tall herb communities	[Petasites albus] or [Petasites hybridus] tall herb formations of the Balkan Range, the Rhodopides, the Moeso-Macedonian mountains, the Pelagonides, with [Epilobium montanum], [Alchemilla] spp., [Carex] spp., [Geum coccineum].
Moesian hogweed tall herb communities	Tall herb communities of the Balkan Range, the Rhodopides, the Moeso-Macedonian mountains, the Pelagonides dominated by [Heracleum sphondylium ssp. verticillatum], or [Heracleum sphondylium ssp. ternatum], extending south to the Moeso-Macedonian and Rhodopide mountains of northeastern Greece, in particular, to Belles, Athos, the Pangeon, the Falakron and the Rhodopi.
Moesian scarlet avens tall herb communities	[Geum coccineum] formations of the Balkan Range, the Rhodopides, the Moeso-Macedonian mountains, the Pelagonides, south to the Varnous, Vernon, Vermion and Voras-Tzena groups.
Alpine dock communities	Alpine and subalpine meso-hygrophile nitrophilous tall herb formations of the Alpine system and the higher Hercynian and Carpathian ranges, in particular, the Sudeten, the Black Forest, the Fichtelgebirge, the Dinarides, characteristic of the vicinity of cattle and game resting places, with [Rumex alpinus], [Senecio alpinus], [Cirsium spinosissimum], [Aconitum napellus], [Geranium phaeum], [Peucedanum ostruthium], [Urtica dioica], [Phleum alpinum] and, in eastern Carpathian communities, [Senecio subalpinus], [Leucanthemum waldsteinii], [Achillea distans], [Heracleum sphondylium ssp. transsilvanicum]. This habitat may have sometimes ruderal character.
Oro-boreal tall-herb communities	Subalpine and alpine meso-hygrophile tall herb formations of moist hollows and gullies of the boreal mountains and of the Scottish Highlands.

Roseroot-cranesbill-woodrush oroboreal communities	Generally species-rich communities of North Atlantic boreal mountains and uplands dominated by forbs of moderate stature, in particular, [Rhodiola rosea], [Alchemilla glabra], [Geranium sylvaticum], associated with [Angelica sylvestris], [Angelica archangelica], grasses, woodrushes or geophytes.
Oroboreal tall forb communities	Communities of the mountains of the boreal and subarctic zones of the Eurasian continent dominated by tall dicotyledonous herbs.
Oroboreal tall grass and fern communities	Communities of the montane and subalpine levels of mountains of the boreal and subarctic zones of the northern Eurasian continent, dominated by tall grasses of genera [Calamagrostis], [Deschampsia], [Festuca] accompanied by ferns and a dicot species cortège similar to that of the oroboreal tall-herb communities.
Ponto-Caucasian tall-herb communities	Subalpine and alpine meso-hygrophile tall herb formations of moist hollows and gullies of the Pontic Range, of the Caucasus, of the Crimean mountains and of the Elburz.
Alpine and subalpine fern stands	Fern-dominated facies of the tall herb communities of the alpine and sub-alpine zone, with [Athyrium distentifolium] ([Athyrium alpestre]), [Athyrium filix-femina], [Dryopteris filix-mas], [Dryopteris dilatata]; succession stages are often floristically more related to the small reed communities of E5.52.
Anthropogenic herb stands	Stands of herbs developing on abandoned urban or agricultural land, on land that has been reclaimed, on transport networks, or on land used for waste disposal.
Lowland habitats colonised by tall nitrophilous herbs	No description available.
Weed communities of recently abandoned urban and suburban constructions	Communities of pioneering, introduced or nitrophilous plants colonising waste places, disturbed natural or semi-natural areas, roadsides and other interstitial spaces or disturbed ground within arctic, boreal, nemoral, mediterranean, steppic, desert or tropical regions of the Palaearctic.
Weed communities of recently abandoned rural constructions	Communities of pioneering, introduced or nitrophilous plants colonising waste places, disturbed natural or semi-natural areas, roadsides and other interstitial spaces or disturbed ground within arctic, boreal, nemoral, mediterranean, steppic, desert or tropical regions of the Palaearctic.
Weed communities of recently abandoned extractive industrial sites	Communities of pioneering, introduced or nitrophilous plants colonising waste places, disturbed natural or semi-natural areas, roadsides and other interstitial spaces or disturbed ground within arctic, boreal, nemoral, mediterranean, steppic, desert or tropical regions of the Palaearctic.
Land reclamation forb fields	Expanses occupied by colonies of forbs, notably leguminous species, planted for purposes of soil protection, stabilization, fertilisation or reclamation.
Inland salt steppes	Saline land with dominant salt-tolerant grasses and herbs. Excludes saline scrubland, listed under F6.8 xero-halophile scrubs.
Mediterranean inland salt steppes	Vegetated saline land of Mediterranean coastal regions and of the fringes of semiarid salt basins that lack drainage to the sea; often dominated by perennial, rosette-forming [Limonium] spp. or esparto grass, [Lygeum spartum]. The soils are temporarily permeated (though not inundated) by saline water and subject to extreme summer drying, with formation of salt efflorescences.

Mediterranean sea-lavender salt steppes	Mediterranean salt steppes dominated by rosette-forming species of [Limonium] and with the presence of [Inula crithmoides], [Elymus elongatus ssp. ponticus], [Elymus flaccidifolius], [Centaurium tenuiflorum], [Polypogon maritimus], [Polypogon monspeliensis], [Psilurus incurvus], [Centaurium pulchellum], [Halimione portulacoides], [Parapholis marginata], [Plantago crassifolia] and [Puccinellia festuciformis ssp. convoluta]. Aegean and eastern Mediterranean coastal saltmarsh formations of [Camphorosma monspeliaca] or [Petrosimonia].
Ibero-Tyrrhenian sea-lavender steppes	Communities of salt basins of Iberia and of northwestern Mediterranean coastal saltmarshes and saline dunal depressions subject to extreme summer drying, dominated by rosette-forming [Limonium].
Adriatic sea-lavender steppes	Communities of Adriatic and Ionian coasts dominated by rosette-forming species of [Limonium] or [Goniolimon], developed in coastal basins, coastal saltmarshes and saline dunal depressions subjected to extreme summer drying.
Aegeo-Levantine sea-lavender communities	Formations of Aegean and eastern Mediterranean coastal saltmarshes dominated by rosette-forming [Limonium] and [Goniolimon].
Mediterranean esparto ([Lygeum]) salt steppes	Saltmarsh and saltmarsh fringe formations of [Lygeum spartum] of coastal Crete, coastal and interior Iberia.
Mediterranean inland halo-nitrophilous pioneer communities	Formations of halo-nitrophilous annuals ([Frankenia pulverulenta], [Suaeda splendens], [Salsola soda], [Cressa cretica], [Parapholis incurva], [Parapholis strigosa], [Hordeum marinum], [Sphenopus divaricatus], [Polypogon maritimus], [Spergularia] spp., [Vella annua]) colonizing salt muds of Mediterranean and thermo-Atlantic coastal regions, of Iberian and North African endoreic basins, susceptible to temporary inundation and extreme drying. Vegetation e.g. of [Frankenion pulverulentae]. They are more species-rich or richer in non-chenopodids than the communities of unitA2.551; they are particularly developed in the Iberian peninsula, secondarily in the large Mediterranean islands, in coastal regions and endoreic basins of North Africa, in southern Italy and Mediterranean France; they occur as irradiations on thermo-Atlantic coasts, notably on the Atlantic coast of France. Somewhat similar communities occur in the steppe zones of Eurasia and their regions of influence, as well as in Saharo-Mediterranean steppes of North Africa; they are included in unit E6.23.
Continental inland salt steppes	Salt steppes and their associated salt-tolerant herbaceous communities outside the Mediterranean zone. In Europe they are found in the substeppe and steppe zones eastwards from the Hungarian Plain.

Pannonic salt steppes and saltmarshes	Salt steppes and saltmarsh meadows of the Pannonic plain and its satellite basins. Large expanses of salt steppe form an open landscape of short-grass swards on slightly elevated ground (unit E6.211) and of rills (units E6.213, E6.214), eroded shallow depressions with bare or sparsely vegetated saline soils, dry or moist in spring and prone to white salt efflorescences. Deeper rills, with less ephemeral water, support medium-tall saline meadows (unit E6.212). This unit is represented by the alliance [Beckmannion eruciformis] in the Carpathians and includes small-area fragments. Waterholes that dot the surface harbour brackish aquatic vegetation (unit C1.523) and are fringed by tall emergents (units C3, D5, in particular halophile communities of C3.27); their drying muds, subjected to prolonged immersion, are colonised by pioneer formations of Chenopodiaceae (unit D6.161) or crypsoid grasses (unit E6.23). These ensembles of communities are mainly represented in the central Pannonic plain, east of the Tisza, in the Danube lowlands of the Tisza-Danube interfluve and in the Neusiedler See (Lake Ferto) basin. Smaller r
Saline puszta	[Festuca pseudovina] swards of the slightly elevated natron shoulders and low benches of the Pannonic puszta, on saline but permanently dry soils with a thin humic layer. Together with the low-lying rills that score them, they constitute the main landscape of the saline Pannonian steppes; the formations of unit 15.A111 constitute the centre group of communities, those of unit 15.A113 mostly compose intermediate belts between these and the bare or sparsely vegetated rills, those of units 15.A112 and 15.A114 are edaphically or geographically limited variants, that of unit 15.A116 is both transitional to rill vegetation and geographically limited. The communities of unit 15.A115 comprise the transitions between the saline pusztas and saline steppe-forests.
Grassy saline puszta	Dominant salt-steppe communities of dry soils of the Pannonic plain, capable of covering vast surfaces, with [Festuca pseudovina], [Achillea collina], [Achillea setacea], [Trifolium subterraneum], [Trifolium pallidum], [Trifolium strictum], [Trifolium retusum], [Lotus tenuis], [Centaurea pannonica], [Scilla autumnalis].
Northern grassy saline puszta	Salt-steppe communities of the northern and central parts of the Pannonian basin.
Southern grassy saline puszta	Salt-steppe communities of the southern parts of the Pannonian basin, with [Trifolium subterraneum], [Scilla autumnalis].
[Agropyron] saline puszta	Rare local salt-steppe formation of the Hortobagy, invaded by the tall, physiognomically dominant [Elymus elongatus ssp. ponticus] ([Agropyron ruthenicum]).
Grassy psammo-saline puszta	Salt-steppe communities developed on sandy soils of the Pannonic plain, usually occupying much smaller surfaces than those of 15.A11, with [Festuca pseudovina], [Achillea collina] and [Achillea asplenifolia]. They are locally a refuge for tall grass loess-steppe and sand-steppe species such as [Astragalus varius], [Astragalus austriacus], [Astragalus aster], [Orchis ustulata], [Iris pumila].

[Artemisia] saline puszta	Saline steppe communities of the Pannonic plain, of strong middle Asian affinities, developed on more low-lying surfaces than those of unit 15.A111, often on the periphery of rills, usually inundated in early spring, dominated by sward-forming [Festuca pseudovina] with a variable admixture of emergent [Artemisia], often physiognomically dominant, and patchy mass-occurrences of [Limonium]. Characteristic species include [Artemisia santonicum ssp. santonicum], [Artemisia maritima ssp. maritima], [Festuca pseudovina], [Limonium gmelinii], [Trifolium retusum] ([Trifolium parviflorum]), [Sedum caespitosum], [Taraxacum bessarabicum] and the endemic [Plantago schwarzenbergiana].
East Pannonic [Petrosimonia]-[Artemisia] salt steppes	Salt steppes or semideserts of the Transylvanian basin, with [Festuca pseudovina], [Achillea collina] and species of Pontic and middle Asian affinities, such as [Artemisia santonicum ssp. patens], [Goniolimon tataricum], [Petrosimonia triandra].
Saline forest-edge meadow-steppe	Medium tall meadow communities of the Pannonic basin characteristic, in particular, of clearings and edges of oak forests on saline soils covered by water in early spring, species-rich and with an admixture of species of mesophile grasslands, dry grasslands and salt steppes, in particular, [Peucedanum officinale], [Peucedanum alsaticum], [Scutellaria galericulata], [Vicia narbonensis var. serratifolia], [Aster sedifolius] ([Aster punctatus]), [Aster linosyris], [Artemisia pontica], [Dianthus pontederae], [Rumex pseudonatronatus], [Iris spuria], [Orchis morio], [Festuca pseudovina], [Alopecurus pratensis], [Agrostis stolonifera].
East Pannonic [Limonium]-[Artemisia] salt steppes	Communities dominated by [Limonium gmelinii] and [Artemisia santonicum], with [Aster tripolium], [Spergularia media], [Hordeum hystrix], [Gypsophila muralis var. stepposa], of the Transylvanian basin of eastern Pannonia, transitional to formations of the [Puccinellion limosae] (unit 15.A13).
Pannonic saline meadows	Salt-meadow communities of medium tall often tussock-forming grasses, developed on summer-dry carbonate-poor clay soils ([Beckmannion] communities) or on carbonate-rich or sandy soils ([Scorzonero-Juncion gerardii] communities) of the Pannonic plain. The [Scorzonero-Juncion gerardii] formations are well represented in particular in western Pannonia, in the Neusiedler See (Lake Ferto) basin and in the Danube-Tisza interfluvial region.
Pannonic bent-grass saline meadows	Medium-tall saline meadow communities of the central and eastern Pannonic plain, developed on less alkaline soils, poor in halophytic species, with [Agrostis stolonifera], [Alopecurus pratensis], [Glyceria fluitans ssp. poiformis], [Lysimachia nummularia], [Lythrum hyssopifolia], [Sium sisaroideum] and the Pannonic endemic [Cirsium brachycephalum].
Pannonic [Beckmannia] saline meadows	Medium tall salt-meadow communities of the central and eastern Pannonic plain and the Transylvanian basin, developed on more alkaline soils, richer in halophytic species but poorer in overall species richness than the communities of unit 15.A121, with [Agrostis stolonifera], [Beckmannia eruciformis], [Bupleurum tenuissimum], [Pholiurus pannonicus], [Puccinellia limosa].

Pannonic spikerush-foxtail saline meadows	Medium-short salt-meadow communities of the central and eastern Pannonic plain and the Transylvanian basin, developed on silt accumulations, in particular of drift lines of larger marshes and along rills, with [Agrostis stolonifera], [Eleocharis palustris], [Eleocharis uniglumis], [Myosotis palustris], [Aster tripolium ssp. pannonicus], [Alopecurus geniculatus].
Pannonic saltmarsh rush saline meadows	Pannonic salt-meadow communities of tussock-forming species installed on higher ground and less alkaline soils, subject to brief periods of water cover, with [Scorzonera parviflora], [Juncus gerardi], [Agrostis stolonifera], [Carex distans], [Taraxacum bessarabicum]; [Lotus tenuis], [Tetragonolobus maritimus], [Blackstonia serotina] are characteristic. They also harbour [Plantago maxima], [Ophrys scolopax], [Iris spuria].
Pannonic divided sedge saline meadows	Salt-meadow communities of low-lying, mostly long-inundated, areas of the Alf”ld of Hungary and southern Slovakia, with strongly alkaline soil, dominated by [Carex divisa], accompanied by [Triglochin palustris], [Triglochin maritima], [Orchis coriophora], [Orchis palustris] and, on the highest surfaces, [Ophrys sphegodes].
Dacian saline meadows	Short-grass salt-meadow communities installed on high chloride soils that remain damp to very damp year-round, surrounding endoreic depressions of the Transylvanian basin of eastern Pannonia, composed of central Asian species such as [Peucedanum latifolium], together with [Aster tripolium ssp. pannonicus], [Triglochin maritima], [Plantago cornuti], [Agrostis stolonifera].
Pannonic solonetz hollows	Rill communities, mostly characteristic of the eastern part of the Pannonic basin, developed on lime-poor sandy or clayey solonetz soils.
Pannonic [Puccinellia limosa] hollows	Communities of moist rills, mostly characteristic of the eastern Pannonic salt steppes, with a 50% to 80% cover, dominated by the small tussocks of [Puccinellia distans ssp. limosa] with [Mentha pulegium], [Aster tripolium ssp. pannonicus], [Atriplex littoralis], [Atriplex tatarica], [Kochia prostrata], [Puccinellia distans ssp. distans], [Chenopodium botryodes].
Pannonic [Camphorosma] hollows	Communities of dry rills, sparse and species-poor, mostly characteristic of the eastern Pannonic salt steppes, though extending west to the Neusiedlersee (Lake Ferto), dominated by [Camphorosma annua], with [Chamomilla recutita], [Matricaria perforata], and, on more silty soils [Spergularia rubra], [Spergularia marina], [Spergularia media].
Pannonic [Bassia sedoides] hollows	Rare formations of dry rills of the eastern Pannonic salt steppes, characteristic of extreme dry conditions, with [Bassia sedoides].
Pannonic [Pholiurus-Plantago] hollows	Communities of moist rills, wet until the beginning of summer, mostly characteristic of the eastern Pannonic salt steppes, with [Pholiurus pannonicus], [Plantago tenuiflora], [Myosurus minimus] and the blue alga [Nostoc commune]. They reach their western limit at the Neusidlersee (Lake Ferto) where they are extremely rare and endangered.
Pannonic barley hollows	Halonitrophile, zooanthropogenous formations of the Pannonic salt steppes dominated by [Hordeum hystrix] ([Hordeum geniculatum]) and [Puccinellia distans ssp. limosa] with [Agrostis stolonifera], [Elymus repens], [Lotus tenuis] ([Lotus glaber]), [Artemisia santonicum ssp. santonicum], [Scorzonera cana].

Pannonic solonchak hollows	Poolside and rill communities, mostly characteristic of the western part of the Pannonic basin, developed on lime-rich sandy or clayey solonchak soils.
Pannonic [Lepidium-Puccinellia limosa] hollows	Rill formations of the Alf”ld and of the Danube-Tisza interfluve, with large tussocks of [Puccinellia distans ssp. limosa] surrounding bare low-lying surfaces. Characteristic species include [Lepidium cartilagineum ssp. crassifolium], [Tetragonolobus maritimus], [Plantago maritima], [Aster tripolium ssp. pannonicus] and the extinct [Puccinellia pannonica].
Seewinkel [Puccinellia peisonis] swards	Endemic community of the Seewinkel, in the eastern Neusiedlersee (Lake Ferto) basin, developed along the shores of salt pools on solonchaks that remain wet until the beginning of summer, with [Puccinellia festuciformis ssp. intermedia] ([Puccinellia peisonis]), [Aster tripolium ssp. pannonicus], [Cerastium diffusum ssp. subtetrandrum], [Plantago maritima].
Pannonic [Lepidium-Camphorosma] hollows	Sparse communities of hollows of the western Pannonic salt steppes, in particular of the Neusiedlersee (Lake Ferto) basin, of eastern Transdanubia and of the Danube-Tisza interfluve, developed on higher, drier ground than those of units 15.A141 and 15.A142.
Seewinkel [Lepidium] swards	Endemic community of the Seewinkel, in the eastern Neusiedlersee basin, developed along the shores of salt ponds, where it occupies higher ground or more landward locations of the solonchak belt than the [Puccinellia] swards of unit 15.A142, and is submitted to more extreme conditions of high saltiness and summer soda efflorescences resulting from a briefer annual period of soaking and less frequent inundations. [Lepidium cartilagineum ssp. crassifolium] dominates alone or in association with [Puccinellia festuciformis ssp. intermedia] ([Puccinellia peisonis]).
Pelago-Vardarian salt steppes	Interior halophile communities of the southwestern Balkan peninsula, isolated southwestern outlyers of the Ponto-Pannonic formations, developed in the low rainfall areas of the Vardar-upper Morava trough and and of associated or neighbouring small intermontane basins, in particular, within the Pelagonian and Moeso-Macedonian mountains.
Pelago-Vardarian saline meadows	Salt-meadow communities of medium tall often tussock-forming grasses of the intermontane basins of the southwestern Balkan peninsula, recorded, in particular, from the northern Vardar and Strumica basins in the F.Y.R. of Macedonia and from Albania.
Pelago-Vardarian solonetz hollows	Rill communities of interior salt-steppe and saltmarsh complexes of intermontane basins of the southwestern Balkan peninsula, in particular, of the Vardar trough of the F.Y.R. of Macedonia, with [Camphorosma annua], [Puccinellia festuciformis ssp. convoluta], [Pholiurus pannonicus], [Plantago tenuiflora].
Pelago-Vardarian [Camphorosma monspeliaca] flats	[Camphorosma monspeliaca]-dominated formations of saline flats of intermontane basins of the southwestern Balkan peninsula, recorded, in particular, from the Vardar trough in the F.Y.R. of Macedonia.
Central Paeonian salt steppes	Salt steppes of the central F.Y.R. of Macedonia developed in the Vardar trough between Titov Veles, Stip and Negotino.

Ponto-Sarmatic salt steppes and saltmarshes	Salt steppes and saltmarshes of the western and northern Black Sea and Sea of Azov plain, of the basins of the lower Danube, the Prut, the Dniester, the Dnieper, the Don, and of the southern Russian hills, north of the Caspian depression and west of the Volga-Kama trough, associated with the steppes of unit E1.2D. Coastal saltmarshes of the Black Sea and Azov Sea.
Western Pontic saline steppes	Communities dominated by low tufted grasses and subshrubs, in particular [Festuca pseudovina] and [Artemisia] spp., occupying higher, drier solonetz ground in salt steppes of the western Black Sea and lower Danube plains.
Western Pontic [Achillea]-[Festuca] steppes	Haloxerophile grassland communities dominated by [Festuca pseudovina], [Achillea collina] and [Achillea setacea] accompanied by [Alopecurus pratensis], [Trifolium strictum], [Trifolium retusum] (Trifolium parviflorum]), of the lower Danube basin.
Western Pontic [Artemisia]-[Festuca] steppes	Salt steppes of the western Pontic region dominated by [Artemisia santonicum ssp. patens] and [Festuca pseudovina], accompanied by [Limonium gmelinii], [Camphorosma annua], [Camphorosma monspeliaca], [Bromus hordeaceus], [Poa bulbosa].
Western Pontic [Petrosimonia]-[Artemisia] salt steppes	Salt steppes of the lower Danube basin, with [Artemisia santonicum ssp. patens], [Goniolimon tataricum], [Petrosimonia triandra], [Festuca pseudovina], [Achillea collina].
Western Pontic [Peucedanum]-[Festuca] salt steppes	Communities of weakly saline soils of salt steppes of the western Black Sea and lower Danube plains dominated by [Festuca pseudovina] and [Peucedanum latifolium], accompanied by [Aster sedifolius], [Aster linosyris], [Achillea collina], [Bupleurum tenuissimum], [Potentilla argentea], [Alopecurus pratensis], [Poa pratensis], [Carex praecox].
Western Pontic [Limonium]-[Artemisia] salt steppes	Communities of [Limonium gmelinii] and [Artemisia santonicum] with [Aster tripolium], [Spergularia media], [Hordeum hystrix], [Gypsophila muralis var. stepposa], of the lower Danube basin and of northern Thrace.
Western Pontic saline meadows	Salt-meadow communities of medium tall often tussock-forming grasses, sedges or rushes of the western Black Sea and lower Danube plains, with local representatives in the northern Thracian middle Maritsa and Tundzha basins.
Western Pontic [Zingeria] saline meadows	Saline meadows of Oltenia harbouring the Valacho-Anatolo-Caucasian [Zingeria pisidica] and the sub-Mediterranean [Trifolium resupinatum], [Trifolium michelianum], [Medicago arabica].
Western Pontic [Beckmannia] saline meadows	Western Pontic [Beckmannia eruciformis] saline meadows, with [Oenanthe silaifolia], [Rorippa kerneri], [Carex melanostachya], [Peplis portula], [Aster tripolium], [Ranunculus lateriflorus].
Western Pontic spikerush-foxtail saline meadows	Medium-short salt-meadow communities of Muntenia and Oltenia, developed on silt accumulations, in particular of drift lines of larger marshes and along rills, with [Eleocharis palustris], [Alopecurus geniculatus], [Glyceria fluitans], [Cerastium dubium], [Rorippa sylvestris ssp. kerneri].
Western Pontic saltmarsh rush saline meadows	Saline meadows of carbonate-rich or sandy soils of the western Black Sea and Danube plains, dominated by or rich in [Juncus gerardi].

Western Pontic divided sedge saline meadows	Saline meadows of Muntenia, Oltenia, the Dobrogea and the Danube delta, occupying moderately saline soils, dominated by [Carex divisa], with [Taraxacum bessarabicum], [Cirsium alatum], [Juncus littoralis], [Schoenus maritimus], [Halimione pedunculata], [Spergularia media].
Western Pontic arrow-grass sea-aster saline meadows	Saline meadows of Muntenia, dominated by [Triglochin palustris] and [Aster tripolium ssp. pannonicus], developed on soils that remain damp to very damp year-round, with [Spergularia marina], [Cyperus pannonicus] ([Acorellus pannonicus]), [Crypsis aculeata], [Trifolium fragiferum], [Taraxacum bessarabicum], [Puccinellia distans], [Suaeda maritima].
Western Pontic tall grass and rush saline beds	Formations of western Black Sea saltmarshes and of saline depressions of the western Pontic plains, dominated by tall rushes of the [Juncus maritimus] group or tall grasses, in particular [Phacelurus digitatus] and [Elymus elongatus].
Western Pontic solonetz hollows	Communities dominated by grasses, chenopods or sea-lavenders, formed on solonetz or solonchak-solonetz soils in the rills of salt steppes and other inland saline flats subject to inundation and desiccation of the western Black Sea plain, as well as on the higher ground of western Black Sea coastal saltmarshes, with outposts in the lower Danube valley and the northern Thracian middle Maritsa and Tundzha basins.
Western Pontic [Puccinellia] solonetz swards	Grassy formations of western Black Sea coastal and inland solonetz and solonchak-solonetz soils, constituted by [Puccinellia festuciformis] and its subspecies ([Puccinellia festuciformis ssp. convoluta], [Puccinellia festuciformis ssp. intermedia]) or [Puccinellia distans] ([Puccinellia limosa]), in monospecific swards or accompanied by other halophytes including [Hordeum hystrix], [Crypsis aculeata], [Suaeda maritima], [Camphorosma monspeliaca], [Camphorosma annua], [Salicornia] spp., [Limonium] spp., [Spergularia] spp.
Western Pontic [Camphorosma annua] hollows	[Camphorosma annua] formations with [Puccinellia limosa], [Aeluropus littoralis], [Cyperus pannonicus] ([Acorellus pannonicus]), [Bassia sedoides], [Lepidium crassifolium], [Spergularia media], [Taraxacum bessarabicum] of the Black Sea and lower Danube plain of eastern Romania, and of northern Thrace in the middle Maritsa and Tundzha basins, the Studena River valley, the Veliko Tarnovo, Yambol and Burgas districts.
Western Pontic [Bassia sedoides] hollows	Rare formations of dry rills of the western Pontic salt steppes of Muntenia, Moldavia and the Danube delta, characteristic of extreme dry conditions, with [Bassia sedoides].
Western Pontic [Pholiurus]-[Plantago] hollows	Formations of western Pontic solonetz and solonchak-solonetz soils, with outposts in the northern Thracian basin, composed by [Pholiurus pannonicus] and/or [Plantago tenuiflora], with [Myosurus minimus], [Puccinellia limosa], [Puccinellia distans], [Matricaria chamomilla], [Lepidium ruderale].
Western Pontic [Hordeum hystrix] swards	Grassy solonetz or solonchak-solonetz formations of the western Black Sea coast and lower Danube plain and of the northern Thracian basin, dominated by [Hordeum hystrix], often accompanied by [Poa bulbosa], [Crypsis] spp., [Trifolium neglectum], [Cynodon dactylon], [Lepidium ruderale].

Western Pontic solonchak communities	Communities dominated by Ponto-Pannonic perennial grasses and herbs, or by Ponto-Caspian steppe and semidesert zone annuals and perennials, developed on solonchak or solonchak-solonetz soils of the western Black Sea coastal saltmarshes and of the salt basins of adjacent lowlands.
Western Pontic salt scrubs	Scrubby formations of [Halimione verrucifera], [Halocnemum strobilaceum] and [Nitraria schoberi], accompanied by [Artemisia] spp., [Limonium] spp., [Petrosimonia] spp., colonizing saltmarshes and salt basins of western Black Sea coastal areas and of the lower Danube valley.
Sarmatic saline steppes	Communities dominated by low tufted grasses and subshrubs, in particular [Festuca pseudovina] and [Artemisia] spp., occupying higher, drier solonetz ground in salt steppes of the southern periphery of the Podolian plateau, of the Central Russian and the Volga plateaux, north of the Pontic and Caspian plains, west to the upper Prut basin and east to the Volga-Kama.
Sarmatic [Artemisia]-[Festuca] salt steppes	Halophilous communities of shady slopes of the Sarmatic steppe region composed of [Artemisia santonicum ssp. patens], with [Halimione pedunculata], [Aster tripolium], [Bassia sedoides], [Puccinellia distans].
Sarmatic [Petrosimonia] salt steppes	Salt steppes of the Sarmatic region, west to Romanian Moldavia, with [Festuca pseudovina], [Achillea collina], [Artemisia santonicum ssp. patens], [Goniolimon tataricum], [Petrosimonia oppositifolia].
Sarmatic [Limonium]-[Festuca] salt steppes	[Festuca pseudodalmatica], [Festuca pseudovina] and [Limonium tomentellum] saline steppes formed on deeply columnar solonetz of loess river terraces of the Ukrainian forest-steppe and steppe zones.
Sarmatic saline meadows	Sarmatic humid meadow communities of the [Puccinietalia], particularly of the [Beckmannion] and [Scorzonero-Juncion gerardii], developed on moderately saline, permanently humid soils.
Sarmatic [Beckmannia eruciformis] saline meadows	Communities occupying small, permanently humid, weakly saline depressions of the Sarmatic salt-steppes and saltmarshes.
Sarmatic [Leuzea altaica] saline meadows	Meso-hygrophile hay meadows of Moldavia, developed on weakly saline soils, with [Leuzea salina], [Peucedanum latifolium], [Iris halophila], [Aster sedifolius], [Scorzonera austriaca var. aucronata], [Lotus tenuis], [Taraxacum bessarabicum], [Juncus gerardi], [Aster tripolium ssp. pannonicus], [Plantago schwarzenbergiana], [Limonium gmelinii].
Sarmatic [Iris halophila] saline meadows	Sarmatic saline meadows formed on alluvial sandy, weakly saline soils, with a high diversity of halophile species, with [Iris halophila], [Camphorosma annua], [Juncus gerardi], [Puccinellia distans], [Atriplex littoralis].
Sarmatic [Juncus gerardii] saline meadows	Communities of [Juncus gerardi] with [Aster tripolium], [Puccinellia limosa], [Spergularia media], [Lotus tenuis], [Trifolium fragiferum], [Centaurium pulchellum].
Sarmatic [Carex distans] saline meadows	Sarmatic formations dominated by [Carex distans], of soils with low humidity and very low salinity.
Sarmatic solonetz hollows	Communities dominated by grasses, chenopods or sea-lavenders, formed on solonetz or solonchak-solonetz soils in the rills of salt steppes of the Sarmatic region.

Sarmatic solonchak hollows	Communities dominated by perennial grasses and herbs or by steppe and semidesert zone annuals, developed on solonchak soils of the Sarmatic region.
Central Eurasian solonchak grassland with [Crypsis]	Sparse solonchak formations of annual grasses of genus [Crypsis] ([Heleochloa]), accompanied by [Cyperus pannonicus] ([Acorellus pannonicus]), [Spergularia media] ([Spergularia marginata]), [Camphorosma annua], [Spergularia marina] ([Spergularia salina]), [Salicornia] spp., [Lepidium latifolium], [Chenopodium] spp., [Atriplex] spp., colonizing drying muds of humid depressions of the salt steppes and saltmarshes (c.f. unit E6.21) of Eurasia, from Pannonia to the Far East. In some countries it is a very rare habitat.
Ponto-Pannonic [Acorellus] community	Pioneer community of the salt basins of the Pannonic Plain, of Muntenia, the Danube delta, the Dobrogea, the northern Black Sea and Azov Sea coastlands and steppes, characteristic of sandy soils, with [Cyperus pannonicus] ([Acorellus pannonicus]).
Pontic [Frankenia pulverulenta] communities	Formations of halo-nitrophilous annuals dominated by [Frankenia pulverulenta] colonizing salt muds susceptible to temporary inundation and extreme drying in openings within [Artemisio austriacae-Poetum bulbosae] or [Obionetum pedunculatae] communities of lagoon systems of the Black Sea, the Azov Sea and the Danube Delta.
Sparsely wooded grasslands	Grasslands with a wooded overstorey that normally has less than 10% cover.
Atlantic parkland	Extensive surfaces of Atlantic regions of nemoral Europe occupied by grassland dotted with widely planted trees, characteristic of the British Isles, where they are usually enclosed, used for cattle or deer grazing.
Sub-continental parkland	Grassland dotted with widely planted trees, to the east of the Atlantic zone of nemoral Europe.
Dehesa	A characteristic landscape of the southwestern quadrant of the Iberian peninsula in which crops, pasture land or Mediterranean scrub, in juxtaposition or rotation, are shaded by a fairly closed to very open canopy of native oaks, [Quercus suber], [Quercus rotundifolia], [Quercus pyrenaica], [Quercus faginea]. It is an important habitat of raptors, including the threatened Iberian endemic eagle [Aquila adalberti], of the crane [Grus grus], of large insects and their predators and of the endangered Iberian lynx [Lynx pardinus].
Heathland, scrub and tundra	Non-coastal land which is dry or only seasonally inundated (with the water table at or above ground level for less than half of the year) with greater than 30% vegetation cover. Tundra is characterised by the presence of permafrost. Heathland and scrub are defined as vegetation dominated by shrubs or dwarf shrubs of species that typically do not exceed 5 m maximum height. Includes shrub orchards, vineyards, hedges (which may have occasional tall trees). Also includes stands of climatically-limited dwarf trees (krummholz) < 3 m high, such as occur in extreme alpine conditions. Includes [Salix] and [Frangula] carrs. Excludes coppice (G5.7) and [Alnus] and [Populus] swamp woodland (G1.4).

Tundra	Vegetated land with graminoids, shrubs, mosses or macrolichens overlying permafrost. European tundras are limited to Spitzbergen and northern Russia. Vegetation with the same species also occurs on boreal mountains and in the low arctic remote from the main permafrost region, notably in Fennoscandia and Iceland; these oroboreal and low arctic habitats are listed under alpine and subalpine grassland E4 or arctic, alpine and subalpine scrub F2.
Shrub tundra	Tundras of the southernmost tundra belt, characterized by an abundance of medium small and small shrubs, including 1-2 m tall [Alnus fruticosa], 0.5-0.8 m tall [Salix lanata], [Betula nana], [Betula exilis], [Salix reptans], [Salix pulchra], and of dwarf shrubs, in particular, [Vaccinium uliginosum], [Vaccinium vitis-idaea], [Ledum decumbens], [Rubus chamaemorus], [Empetrum hermaphroditum], [Empetrum nigrum], [Arctostaphylos alpinus]. They extend south to the wooded taiga belt.
Western shrub tundra	Southern tundras of Europe, comprising Kola tundras in the west, the southern part of the Eastern European tundras from the Kanin peninsula to the Ural piedmont, and the southern part of the Uralo-Vaikatchan tundras.
Moss and lichen tundra	Tundras of the middle tundra belt, characterized by a thick cover of mosses, formed notably by [Hylocomium splendens], [Aulacomnium turgidum], [Tomentypnum nitens], [Ptilidium ciliare], with dwarf shrubs, particularly [Dryas octopetala], [Cassiope tetragona], [Salix reptans], [Vaccinium vitis-idaea], sedges, among which the often dominant [Carex ensifolia]. Drier stands alternate in mosaic fashion with wetter areas dominated by sedges, in particular, [Carex stans], [Eriophorum angustifolium], [Eriophorum scheuchzeri], and grasses, notably [Arctophila fulva], [Dupontia fischeri].
Reindeer moss - espalier willow tundra	Moss and lichen tundras of the northern Kanin peninsula, Kolguiev island, the northeastern European Petchora tundras, the Kara sea tundras, the southern Yamal peninsula, the southern Gyda peninsula, the southern Taimyr peninsula, in the Ienissei and Piasana basins.
Moss tundra	Moss and lichen tundras of the middle Taimyr peninsula, on the southern flanks of the Byrranga Range, and in the Taimyr basin.
Arctic, alpine and subalpine scrub	Scrub occurring north of or above the climatic tree limit, but outside the permafrost zone. Scrub occurring close to but below the climatic tree limit, where trees are suppressed either by late-lying snow or by wind or repeated browsing.
Subarctic and alpine dwarf willow scrub	[Salix] scrub composed of species that rarely exceed 1.5 m in height. Dwarf willow scrub is well developed in boreal and arctic mountains and in subarctic lowlands. In mountains of the nemoral and warm-temperate zones, stands of dwarf willow scrub are of much smaller extent and are charactistic of late-lying snow patches. They occur in the Alps, Pyrenees, Carpathians and Caucasus, and very locally to the south in the Paeonian mountains, Sierra Nevada, Cordillera Central, Monti Sibillini and Abruzzi. They occur locally in the Scottish Highlands and in the Sudeten.

Boreo-alpine acidocline snow-patch dwarf willow scrub	Acidophile or acidocline snow-patch and snowbed communities of the boreal and arcto-alpine mountains, dominated by dwarf willows. Creeping species dominate, adapted to the short growth season in areas covered by snow for up to eight to ten months. Typical species: [Salix herbacea], [Carex firma], [Dryas octopetala], [Salix retusa], [Aster alpinus] and [Carex sempervirens]. Endemic species are also often found.
Alpic acid dwarf willow snow-patch communities	Dwarf willow ([Salix herbacea]) snow-patches of the Alps, the Pyrenees, the Carpathians, the Dinarids, the Pelagonides, the Pirin and Rila mountains, occupying areas covered by snow for up to eight to ten months.
Oroboreal moss-dwarf willow snowbed communities	Acidophilous snow-patch communities of boreal and arcto-alpine mountains of Scandinavia, Iceland and the Scottish Highlands dominated by dwarf willows embedded in dense bryophyte carpets.
Boreo-alpine calcicline snow-patch dwarf willow scrub	Calciphile or calcicline snow-patch and snowbed communities of the boreal and arcto-alpine mountains, dominated by dwarf willows. Typical species: [Salix reticulata], [Salix retusa], [Salix polaris], [Salix kitaibeliana], [Poa alpina], [Selaginella selaginoides] and [Polygonum viviparum].
Boreo-Alpic calcicolous espalier willow snowbed communities	Espalier willow communities of calcareous stone fields submitted to relatively long snow-cover of the Alpids and the boreal mountains, with [Salix reticulata], [Salix retusa].
Alpic espalier willow snowbed communities	Espalier willow communities of snow-bound calcareous stone fields of the Alpids, with the net-leaved willow, [Salix reticulata], and the retuse-leaved willow, [Salix retusa], or with [Salix kitaibeliana].
Alpide [Salix retusa-reticulata] snowbed communities	[Salix reticulata] or [Salix retusa] communities of calcareous stone fields with late-lying snow cover, of the Alps, the Pyrenees, the Apennines, the Carpathians, the Dinarides, the Pelagonides, the Rhodopides and their associated ranges, with [Gentiana bavarica], [Dryas octopetala], [Sesleria varia], [Sesleria rigida var. haynaldiana], [Carex parviflora], [Ranunculus alpestris], [Saxifraga androsacea], [Saxifraga oppositifolia], [Saxifraga sempervivum], [Omalotheca hoppeana] ([Gnaphalium hoppeanum]), [Homogyne discolor], [Veronica alpina], [Veronica aphylla], [Plantago atrata] ([Plantago montana]), [Bartsia alpina], [Anemone narcissiflora], [Achillea schurii].
Carpathian [Salix kitaibeliana] snowbed communities	Distinctive snow patch communities, endemic to the Eastern Carpathians, in particular, to the Rodnei Mountains, formed by the Carpathian endemics [Salix kitaibeliana] and [Soldanella hungarica ssp. hungarica], with [Luzula alpinopilosa], [Polygonum viviparum], [Oreochloa disticha], [Doronicum clusii], and, more sporadically, the Eastern Carpathian endemics [Poa deylii] and [Lychnis nivalis].
Scandinavian espalier willow snowbed communities	Espalier willow communities of calcareous stonefields in mountains in heavy-rainfall areas of boreal and arctic Scandinavia dominated by [Salix reticulata], often exclusively, and [Poa alpina], with a sparser participation of, among others, [Salix polaris], [Antennaria alpina], [Pinguicula alpina], [Silene acaulis], [Tofieldia pusilla], [Viola biflora], [Thalictrum alpinum], [Festuca vivipara], [Equisetum variegatum], [Selaginella selaginoides].

Polar willow snowbed communities	Chionophilous communities of boreal and arcto-alpine Palaearctic mountains and of islands of the polar basin dominated by, or rich in, [Salix polaris], associated with mosses and small forbs, developed, at least in the boreal and arcto-alpine regions, on calcareous substrates.
Fenno-Scandian polar willow snowbed communities	Snowbed communities of the boreal and arcto-alpine mountains of Scandinavia, characteristic of the edges of snowfields on calcareous often stone-littered soils with near-surface ground water or moisture in early spring and little or no solifluction, constituted by dense carpets of mosses and forbs in which [Salix polaris] dominates, often totally; the species cortège includes [Salix reticulata], [Polygonum viviparum] ([Bistorta vivipara]), [Erigeron uniflora], [Omalotheca supina] ([Gnaphalium supinum]), [Minuartia biflora], [Ranunculus pygmaeus], [Saxifraga aizoides], [Saxifraga cernua], [Saxifraga stellaris], [Saxifraga tenuis], [Silene acaulis], [Taraxacum croceum], [Thalictrum alpinum], [Tofieldia pusilla], [Veronica alpina], [Viola biflora], [Carex lachenalii], [Poa alpina f. vivipara] and mosses.
Spitzbergen polar willow snowbed communities	Snowbed communities of islands of the polar basin, in particular, of Spitzbergen with [Salix polaris], [Luzula confusa], [Pedicularis hirsuta], [Polygonum viviparum] ([Bistorta vivipara]), [Cerastium arcticum], [Dicranum elongatum], [Drepanocladus uncinatus], [Gymnomitrion coralloides], [Anthelia juratzkana], [Cetraria delisei], [Stereocolon alpinum].
Ponto-Caucasian snow-patch dwarf willow scrub	Snow-patch communities of high mountains of the Pontic Range and of the Caucasus.
Evergreen alpine and subalpine heath and scrub	Small, dwarf or prostrate shrub formations of the alpine and subalpine zones of mountains, dominated by ericaceous species, [Dryas octopetala], dwarf junipers, brooms or greenweeds; [Dryas] heaths of the British Isles.
Alpide dwarf ericoid wind heaths	Very low, single-stratum, carpets of trailing azalea, [Loiseleuria procumbens], prostrate [Vaccinium] spp. or other prostrate ericoid shrublets, accompanied by lichens [Cetraria islandica], [Cladonia] spp., of windswept, mostly snowfree, localities in the alpine belt of the high mountains of the Alpine system, with an outpost in the Balkan Peninsula: Šar planina (Kosovo).
Alpide dwarf azalea heaths	Dwarf alpine heaths of the western Alpides dominated by [Loiseleuria procumbens], often accompanied by [Vaccinium] spp., and rich in lichens.
Alpide dwarf [Vaccinium] wind heaths	Very low, single-stratum, carpets of prostrate [Vaccinium] spp. and lichens, of windswept, mostly snowfree, localities in the alpine belt of the high mountains of the Alpine system, for the most part [Vaccinium]-dominated facies of the trailing azalea communities, in which [Loiseleuria procumbens] often accompanies [Vaccinium myrtillus], [Vaccinium vitis-idaea] or [Vaccinium uliginosum], the latter represented, as in 31.411, 31.44 and 31.4A, by the distinctive low, small-leaved, creeping, mat-forming entity variously referred to as [Vaccinium gaultherioides], [Vaccinium uliginosum ssp. microphyllum], [Vaccinium alpina], [Vaccinium pubescens], [Vaccinium uliginosum ssp. pubescens].
Alps dwarf [Vaccinium] wind heaths	Prostrate [Vaccinium] spp. and lichen carpets of windswept localities in the alpine belt of the Alps.

Carpathian dwarf [Vaccinium] wind heaths	Very local prostrate [Vaccinium] spp. and lichen carpets of high windswept summits and peaks, in the lower alpine belt of the Eastern and Southern Carpathians, dominated by [Vaccinium gaultherioides] ([Vaccinium uliginosum ssp. microphyllum]) and [Cetraria islandica] with [Empetrum hermaphroditum], [Juncus trifidus], [Festuca airoides] and [Cetraria islandica].
Rhodopide and Balkan dwarf [Vaccinium] wind heaths	Communities of prostrate [Vaccinium uliginosum] and lichens of the alpine level of the mountains of the Rhodopide system and of the Balkan Range.
Rhodopide dwarf [Vaccinium] wind heaths	Communities of prostrate [Vaccinium uliginosum] and lichens of the alpine level of the Rila and Pirin mountains.
Balkan Range dwarf [Vaccinium] wind heaths	[Vaccinium uliginosum] and lichen mats occupying windswept localities in the alpine belt of the Balkan Range, local and fragmented representatives of the Rhodopide communities of unit 31.41231.
Pontic dwarf [Vaccinium] heaths	Prostrate [Vaccinium uliginosum ssp. microphyllum], or rarely [Vaccinium vitis-idaea], and lichen mats of high windswept localities in the Pontic Range.
Alpide acidocline alpenrose heaths	[Rhododendron] spp.-dominated heaths of acid podsols in the Alps, the Pyrenees, the Dinarides, the Carpathians, the Balkan Range, the Pontic Range, the Caucasus and the Himalayan system, often with [Vaccinium] spp., sometimes with dwarf pines.
Alpine rusty alpenrose heaths	[Rhododendron ferrugineum]-dominated heaths of acid podsols in the Alps, often with [Vaccinium] spp., sometimes with [Pinus mugo]. They often alternate in mosaic with units 31.431 and 31.44.
Pyrenean rusty alpenrose heaths	[Rhododendron ferrugineum]-dominated heaths of acid podsols in the Pyrenees, often with [Vaccinium] spp. and alternating in mosaic with units 31.431 and 31.44.
Dinaric rusty alpenrose heaths	[Rhododendron ferrugineum]-dominated heaths of the Dinarides.
Carpathian Kotschy's alpenrose heaths	Heaths of the subalpine and lower alpine levels (1700-2000 m) of the eastern and southern Carpathian Mountains, common and widespread, but occupying small surfaces, dominated by [Rhododendron myrtifolium] ([Rhododendron kotschyi]), [Vaccinium gaultherioides] and [Vaccinium vitis-idaea], with some regional species such as [Soldanella hungarica ssp. major], [Potentilla aurea ssp. chrysocraspeda], [Melampyrum saxosum], [Campanula abietina] and [Campanula serrata].
Balkan Kotschy's alpenrose heaths	[Rhododendron myrtifolium]-dominated heaths of the subalpine belt of the Balkan Range and the Rila.
Balkan Range Kotschy's alpenrose heaths	[Rhododendron myrtifolium]-dominated heaths of the subalpine belt of the central Balkan Range.
Rila Kotschy's alpenrose heaths	[Rhododendron myrtifolium]-dominated heaths of the subalpine belt of the eastern Rila.
Pontic alpenrose heaths	Heaths of the Pontic Range, formed, mostly above treeline, by [Rhododendron caucasicum], [Rhododendron smirnovii], [Rhododendron ungernii], [Rhododendron x sochadzeae], sometimes with [Rhododendron ponticum], [Rhododendron luteum].

Southern Palaearctic mountain dwarf juniper scrub	Usually dense formations of prostrate junipers of the higher levels of southern Palaearctic mountains.
Mountain [Juniperus nana] scrub	Thermophile [Juniperus nana]-dominated heaths of the upper levels, mostly of the subalpine or equivalent levels, of the Alps, mostly in the central and southern chains, of the northern and central Apennines, the Corsican and Sardinian mountains, the Forez, the Pyrenees, the Carpathians, the Dinarides, the Balkan Range, the Rhodopide Mountains, the Moeso-Macedonian Mountains, the Caucasus, the high mountains of the Iberian and Hellenic peninsulas, the Pontic Range, the Taurus, the Himalayan system, the temperate Far Eastern mountains.
[Juniperus sabina] scrub	[Juniperus sabina] heaths of Iberia, the Alps, the Apennines, the Tell of North Africa, the southeastern Central European mountains, the Pontic Range, the Anti-Taurus, the western Caucasus, Crimea, the Elburz, the Altai.
Iberian [Juniperus sabina] scrub	Oro-Mediterranean [Juniperus sabina] heaths of Iberia north to the Pyrenees, where they are limited to south-facing slopes in the montane and subalpine belt of the central part of the range.
Alpine [Juniperus sabina] scrub	[Juniperus sabina] heaths of the montane level of inner Alpine valleys with sporadic fragmentary occurrence in the alti-Mediterranean subalpine level of the southwestern Alps.
Apennine [Juniperus sabina] scrub	[Juniperus sabina] heaths of rare stations in the Marcho-Abruzzian Apennines.
Dinarid [Juniperus sabina] scrub	[Juniperus sabina] heaths of the Dinarides.
Carpatho-Balkanic [Juniperus sabina] scrub	Thermophile [Juniperus sabina]-dominated formation on limestone in the montane belt of the Apuseni Mountains of the southeastern Carpathians, accompanied by regional species [Rhamnus saxatilis ssp. tinctorius] and [Sesleria rigida], [Thymus comosus], and [Rhamnus catharticus]. Sporadic fragmentary [Juniperus sabina] formations of the Balkan Range and the Rila mountains.
[Juniperus hemisphaerica] scrub	[Juniperus hemisphaerica] heaths of Iberia, the southern Apennines, Sicily (Madonie, Nebrodi, Etna), Greece, the Caucasus and North Africa.
Mountain [Juniperus oxycedrus] scrub	[Juniperus oxycedrus] heaths of high mountain slopes of Greece, the Near East and the Caucasus.
Alpigenic high mountain crowberry - heather heaths	Dwarf heaths of alliances [Loiseleurio-Vaccinion] and [Juncion trifidi] dominated by [Empetrum hermaphroditum], [Empetrum nigrum] and [Vaccinium] spp., with [Arctostaphylos alpinus], [Calluna vulgaris], [Festuca supina], [Avenula versicolor]; lycopodes ([Huperzia selago], [Diphasiastrum alpinum]), mosses ([Barbilophozia lycopodioides], [Hylocomium splendens], [Pleurozium schreberi], [Rhytidiadelphus triquetrus]) and lichens ([Cetraria islandica], [Cladonia] spp., [Peltigera aphthosa]) of the subalpine belt of the Alps, the Carpathians, the Dinarides, the Pyrenees, the Central Massif, the Sudeten, the Jura, the Northern Apennines, characteristic of relatively windswept, snow-free stations, in frost-exposure situations that are, however, less extreme than those prevailing where communities of unit F2.21 dominate. Unlike the formations of F2.21, those of F2.24 are clearly two-layered.

Boreo-alpine and arctic heaths	Alpine and high-montane heaths of the highlands and islands of Scotland and, very locally, of the Lake District and of Ireland, alpine and lowland boreal heaths of Iceland, alpine heaths of boreal mountains, in particular of the mountains of Scandinavia, of the Urals, of the mountains of Siberia, alpine heaths of Far Eastern mountains at, or just south of, the limits of the boreal zone, with [Juniperus nana], [Loiseleuria procumbens], [Empetrum hermaphroditum], [Arctostaphylos alpinus], [Phyllodoce caerulea], [Betula nana] and elements of alpine flora.
Hiberno-Scotian dwarf mountain heaths	Prostrate alpine and high-montane [Calluna vulgaris] or [Vaccinium myrtillus] heaths of windswept summits and ridges, with little snow cover, of the Highlands, the Inner Hebrides and, very locally, of the uplands of Ireland, England and Wales, with [Loiseleuria procumbens], [Empetrum hermaphroditum], [Arctostaphylos alpinus].
Britannic chionophilous boreo-montane heaths	Low- to very low-growing low alpine and subalpine [Vaccinium myrtillus] heaths of the Highlands of Scotland, Skye, and, locally, the Southern Uplands and northern England, characteristic of somewhat more protected stations with longer snow cover than those of unit 31.451, with [Empetrum hermaphroditum], [Vaccinium vitis-idaea], [Rubus chamaemorus], [Cornus suecica], [Carex bigelowii], [Racomitrium lanuginosum].
Scotian juniper heaths	Prostrate [Juniperus nana] mats of the Highlands of Scotland, restricted to a limited number of stations on the west side of mountains in the northwest Highlands and on Skye, with [Calluna vulgaris], [Arctostaphylos uva-ursi], [Arctostaphylos alpinus], [Empetrum hermaphroditum], [Cladonia uncialis], [Racomitrium lanuginosum] and oceanic hepatics.
Fenno-Scandian boreo alpine heaths	Alpine heaths of the boreal mountains of Scandinavia, with [Juniperus nana], [Empetrum hermaphroditum], [Loiseleuria procumbens], [Arctostaphylos uva-ursi], [Vaccinium] spp., [Arctostaphylos alpinus], dwarf [Salix] spp., [Betula nana] and elements of alpine flora.
North Atlantic boreo-alpine heaths	Lowland and alpine boreal heaths of Iceland, Spitzbergen and Greenland formed by low, compact or mat-forming shrubs of Ericaceae, [Empetrum hermaphroditum], [Betula nana], [Juniperus nana] and [Salix] spp. and alpine flora elements.
Arctic heaths	Heaths of arctic mountains, coasts and islands of the Palaearctic zone, mostly dominated by or rich in [Cassiope tetragona], often associated with [Dryas] heaths of unit 31.494.
Heaths of spike heath ([Bruckenthalia])	Formations of [Bruckenthalia spiculifolia], often accompanied by [Juniperus nana], [Vaccinium myrtillus] and herbaceous alpine grassland species, occupying damp, non-calcareous substrates of high mountains of the Balkan peninsula and northern Anatolia.
Rhodopide [Bruckenthalia] heaths	[Bruckenthalia spiculifolia] heaths of the alpine and subalpine belts of the Vitosha, the Rila, the Pirin, the Slovianka, the Rhodopes, the Vrondous, the Menikion and the Pangeon.
Northwestern Hellenide [Bruckenthalia] heaths	[Bruckenthalia spiculifolia] formations of the subalpine, alpine and locally, montane, belts of the Pelagonian mountains, south to the Varnous, the Vitsi, the Piperitsa, the Voras, the Pinovon, the Tzena, of the Moeso-Macedonian mountains south to the Kerkini (Belles range), and of the Pieria in the northern Thessalian mountains.

Carpatho-Balkanic [Bruckenthalia] heaths	[Bruckenthalia spiculifolia] formations of the Balkan Range, with northern representatives in the southeastern Carpathians.
Balkan range [Bruckenthalia] heaths	[Bruckenthalia spiculifolia] formations of the subalpine, alpine and locally, montane, belts of the Balkan Range.
Carpathian [Bruckenthalia] heaths	Sporadically distributed formations in the Apuseni Mountains and the southern Carpathians, dominated by [Bruckenthalia spiculifolia], accompanied by [Juniperus nana], [Vaccinium vitis-idaea] and the endemic or near-endemic [Campanula patula ssp. abietina] ([Campanula abietina]), [Campanula serrata] and [Potentilla aurea ssp. chrysocraspeda].
Anatolian [Bruckenthalia] heaths	Scattered dwarf shrub formations dominated by [Bruckenthalia spiculifolia], of the alpine and subalpine belt of high mountains of northern Anatolia.
Alpide bearberry ([Arctostaphylos]) heaths	Mats of [Arctostaphylos uva-ursi] or [Arctostaphylos alpinus] of the alpine, subalpine and locally, montane, belts of the Alps, the Pyrenees, the northern and central Apennines, the Dinarides, the Carpathians, the Balkan Range, the Rhodopides (south to the Slavianka-Orvilos, the Menikion, the Pangeon, the Falakron and the Rhodopi), the Moeso-Macedonian mountains (including Athos), the Pelagonides (south to the Greek Macedonian border ranges Tzena, Pinovon and Kajmakchalan) and Olympus, in the Thessalian mountains, mostly on calcareous substrates.
Alpide hairy alpenrose [Erica] heaths	Forest substitution heaths, treeline fringe formations and alpine heaths or mats of calcareous soils in the Alps and the Dinarides, with [Rhododendron hirsutum], [Rhododendron intermedium], [Rhodothamnus chamaecistus] and [Erica herbacea], often accompanied by [Clematis alpina], [Daphne striata], [Daphne mezereum], [Globularia cordifolia], [Arctostaphylos uva-ursi]. [Rhododendron hirsutum] and, mostly in the Austrian Alps, [Erica herbacea] are the most frequent dominants; other shrubs can locally play that role. [Arctostaphylos] spp. -dominated facies have, however, been been included in unit F2.27.
Hairy alpenrose heaths	Forest substitution heaths, treeline fringe formations and alpine heaths or mats dominated by [Rhododendron hirsutum], of calcareous soils in the Alps and the Dinarides. [Rhododendron intermedium], [Rhodothamnus chamaecistus] and [Erica herbacea] may participate in the constitution of the heath, often accompanied by [Clematis alpina] and [Daphne mezereum].
Alpine erica heaths	Species-rich montane, subalpine and low alpine heaths of calcareous soils of the Alps and the Dinarids, dominated by [Erica herbacea] ([Erica carnea]), mostly characteristic of the Austrian northern and southern calcareous Alps, south to the Dolomites and the Karawanken, with [Sesleria albicans], [Arctostaphylos uva-ursi], [Daphne striata], [Globularia cordifolia], [Globularia nudicaulis], [Polygala chamaebuxus]. Small shrubs other than [Erica herbacea], in particular [Globularia cordifolia], may locally dominate communities. Distinctive formations also exist on siliceous and on serpentine substrates. They are provisionally included in this unit.

Mountain avens mats	Dwarf heaths formed by mats of the woody [Dryas octopetala] in high Palaearctic mountains, in arctic and boreal regions and in isolated Atlantic coastal outposts.
Alpigenic high mountain [Dryas] mats	Mats of [Dryas octopetala] of the high levels of the mountains of the western Alpine system, the Jura and the Central Massif, in calcicolous alpine grasslands and on high mountain rocks.
Alpine [Dryas] mats	[Dryas octopetala] mats of the high levels of the Alps, widespread pioneering communities on calcareous substrates.
Southwestern high moutain [Dryas] mats	[Dryas octopetala] mats of the high levels of the Pyrenees and Central Massif, relatively uncommon pioneering communities of calcareous substrates distributed in the Corbières (pic d'Ourthizet), in the eastern and central Pyrenees, and, very locally, on high summits of the Cental Massif ranges of Monts-Dore and Cantal.
Jura [Dryas] mats	[Dryas octopetala] mats of the high levels of the western Jura, mostly above 1300 metres, on, in particular, la D“le, le Reculet, le Creux-du-Van, le Chasseral, le Mont-d'Or, le Suchet, la Dent de Vaulion.
Apennine [Dryas] mats	Rare [Dryas octopetala] mats of the high levels of the Apuan Alps, the Pistoiese Apennines (Mandromini), the Central Apennines (Sibillini, Terminillo, Mount Viglio) and the Abruzzian and Campanian Apennines (Monte Cassino, Monte Cairo).
Carpatho-Balkanide [Dryas] mats	Communities dominated by [Dryas octopetala], scattered in calcicolous subalpine and alpine grasslands of the Carpathians and the Balkan Range.
Western Carpathian [Dryas] mats	[Dryas octopetala] mats of calcareous substrates in the subalpine and alpine belts of the western Carpathians.
Southeastern Carpathian [Dryas] mats	[Dryas octopetala] communities widespread in calcicolous subalpine and alpine grassland of the Romanian Carpathians, having as endemics [Achillea oxyloba ssp. schurii] ([Achillea schurii]), [Oxytropis carpatica], and [Cerastium transsilvanicum].
Balkan Range [Dryas] mats	Calciphile communities dominated by [Dryas octopetala] of subalpine and alpine grasslands of the Balkan Range, west to the Gethian mountains of eastern Serbia (Suva Planina).
Dinaro-Hellenide [Dryas] mats	[Dryas octopetala] mats of calcareous substrates of the high levels of the Dinarides and the Pelagonides south to Mount Tzena.
Rhodopide mountain avens mats	[Dryas octopetala] communities of the Rila, the Pirin, the Slavianka-Orvilos and the Falakron.
Hiberno-Britannic maritime [Dryas] mats	[Dryas octopetala] dwarf heaths of the oceanic lowlands of northern Scotland, the Inner Hebrides and western Ireland, associated with Durness, Jurassic or Carboniferous limestone outcroppings and karstic pavements, or with shell sands blown over rocky or peaty headlands, with [Arctostaphylos uva-ursi], [Thymus praecox], [Carex flacca], [Viola riviniana], [Plantago maritima], [Lotus corniculatus], [Festuca ovina], [Calluna vulgaris], [Carex rupestris].
Boreo-alpine [Dryas] mats	[Dryas octopetala] heaths of the boreoalpine and arctoalpine levels of northern Palaearctic mountains of Scotland and Fennoscandia.
Arctic [Dryas] heaths	Maritime or submaritime [Dryas octopetala] heaths of the arctic lowlands of the Palaearctic continent and of the low arctic and subarctic islands of the North Atlantic and the Northern Ocean.

Alpide high mountain dwarf bilberry heaths	[Vaccinium]-dominated dwarf heaths of the subalpine belt of southern mountains, in particular, of the northern and central Apennines, the Balkan Range, the Hellenides, the Pontic Range and the Caucasus, with [Vaccinium myrtillus], [Vaccinium uliginosum] s.l., [Vaccinium vitis-idaea] and, locally, [Empetrum nigrum]. They are richer in grassland species than the communities of unit F2.24 and often take the appearance of alpine grassland with dward shrubs. [Vaccinium myrtillus] also plays a much more dominant role, in lieu of [Vaccinium uliginosum] and [Empetrum hermaphroditum].
Central Mediterranean subalpine dwarf bilberry heaths	[Vaccinium] dwarf heaths of the subalpine or lower alpine belt of mountains of the Italian peninsula and of the large Tyrrhenian islands formed by [Vaccinium myrtillus] and [Vaccinium uliginosum] s.l., with a large admixture of alpine or subalpine grassland species and sometimes of megaforb elements.
Balkano-Hellenic dwarf bilberry heaths	Communities of [Vaccinium myrtillus] and/or [Vaccinium vitis-idaea], rich in grass and herb species, of the subalpine level of the Balkan Range, the Rhodopides, the Moeso-Macedonian mountains, the Pelagonides, the Pindus, the Thessalian mountains.
Pontic Range dwarf bilberry heaths	Communities of [Vaccinium myrtillus] and/or [Vaccinium vitis-idaea] of the Pontic Range.
Alpide high mountain greenweed heaths	Low [Genista] spp. or [Chamaecytisus] spp. heaths of the subalpine, low alpine or montane belts of high southern nemoral mountains, in particular of the southern Alps, the Apennines, the Dinarides, the southern Carpathians, the Balkan Range, the Moeso-Macedonian mountains, the Pelagonides, the northern Pindus, the Rhodopides, the Thessalian mountains.
Rayed broom heaths	[Genista radiata], [Genista holopetala], [Genista hassertiana] heaths of the montane, subalpine and alpine belts of the southeastern Alps, in particular the Bergamesque Alps, the Dolomites, the Carnic Alps, the Julian Alps, of the Dinarides, with more localized stations in the Novarese Alps, the northern and central Apennines, the southern Carpathians, the Pelagonides, the northern Pindus, the Thessalian mountains.
Balkano-Rhodopide [Chamaecytisus absinthioides] heaths	Low shrub formations dominated by the Balkan peninsula endemic [Chamaecytisus eriocarpus] ([Chamaecytisus absinthioides]) characteristic of the subalpine and montane belts of the Balkan Range, of the Rhodopides (Rila, Pirin, Orvilos, Vrondous, Pangeon, Falakron, Rhodope) and of the Moeso-Macedonian mountains south to the Belasitza-Kerkini.
Helleno-Balkanic [Chamaecytisus hirsutus] heaths	[Chamaecytisus hirsutus] heaths of the mountains of the southern Balkan and Hellenic peninsula, in particular, of the Pelagonides.
Subalpine deciduous scrub	Subalpine scrubs of [Alnus], [Betula], [Salix] and Rosaceae ([Amelanchier], [Potentilla], [Rubus], [Sorbus]), less than 5 m tall, often accompanied by tall herbs that in the absence of scrub would be classified as E5.5. Excludes dwarf [Salix] scrub (F2.1), which is composed of species that rarely exceed 1.5 m in height, and scrub on waterlogged soils (F9.2).

Mountain alder brush	Dense thickets of bushy alders characteristic of the Alps, the Carpathians, the Dinarides, the Balkan Range, Vitosha, Rila, Corsica and the mountains of northeastern Asia. Alders (e.g. [Alnus viridis]) are accompanied by shruby willows [Salix waldsteiniana], [Salix appendiculata], [Salix elaeagnos], [Salix purpurea] etc. and tall herbs.
Green alder brush	Green alder ([Alnus viridis ssp. viridis])-dominated formations of the Alps, the Carpathians, the Dinarides and the Balkan Range, Vitosha, Rila, rich in tall herbs.
Alpine green alder scrub	Green alder ([Alnus viridis ssp. viridis])-dominated formations, rich in tall herbs, of the subalpine and lower alpine belts of the Alps, on slopes with a good water-holding capacity, mostly on siliceous soils.
Carpathian green alder scrub	[Alnus viridis]-dominated formations of the Carpathian mountains, with, in some communities, [Pulmonaria filarszkyana], [Cirsium waldsteinii], [Rumex arifolius ssp. carpaticus].
Dinaric green alder scrub	[Alnus viridis]-dominated formations of the Dinarides.
Balkan range green alder brush	[Alnus viridis]-dominated formations, often with [Rumex alpinus], [Ligusticum mutellina], [Salix silesiaca], [Geum coccineum], [Veratrum album], of the Balkan Range.
Rhodopide green alder brush	[Alnus viridis]-dominated brushes of the subalpine, 1300-2100 metre, level of Vitosha and Rila.
Corsican sweet alder brush	One to three metre-tall brush of the Corsican endemic [Alnus viridis ssp. suaveolens], sometimes accompanied by a few [Sorbus aucuparia], [Acer pseudoplatanus] or [Rhamnus alpinus], limited to the moist, cool, north-facing slopes (ubacs) and, locally, to humid torrent galleries on the south-facing slopes (adrets) of the subalpine (1600-2100 m) belt of Corsica.
Subalpine and oroboreal willow brush	Willow-dominated communities of higher Eurasian mountains and of the boreal zone, mostly characteristic of the subalpine zone of the higher ranges of the Alpine system and its satellites, where many constitute facies of subalpine bush and tall herb communities, of the slopes of lesser ranges in the boreal zone, including the Scandinavian mountains, of Iceland and of the northern British Isles (cf. unit E5.5). Vegetation of the alliance [Salicion silesiacae]. Species composition is very variable and endemic species are highly represented here.
Alpide willow brush	Subalpine, alpine and occasionally montane [Salix]-dominated brushes and low scrubs of the mountains of the Alpine system and neighbouring ranges.
Alpigenous small willow brush	Subalpine, alpine and occasionally montane brushes and low scrubs of the Alps, the Apennines, the Jura, the western great Hercynian ranges, dominated by small shrubby, generally 0.5-2 metre tall, [Salix] species.
Alpine prostrate willow brush	Dwarf shrub heaths, very low brushes and espaliers of the alpine and subalpine belts of the Alps, formed by prostrate or near-prostrate [Salix alpina], [Salix breviserrata], [Salix reticulata], [Salix retusa], and occasionally very small forms of [Salix] species characteristic of unit 31.6211; snow patch communities dominated by [Salix reticulata] or [Salix retusa] (unit 36.1221) are excluded.
Alpigenous tall willow brush	Tall [Salix]-dominated brushes of the mountains of the subalpine, sometimes alpine and montane, belts of the Alps, the Apennines, the Jura, the western greater Hercynian ranges.

Pyreneo-Cantabric willow brush	Subalpine, alpine and occasionally montane [Salix]-dominated brushes and low scrubs of the Pyrenees and the Cordillera Cantabrica.
Hercynio-Carpathian willow brush	Subalpine, alpine and occasionally montane [Salix]-dominated brushes and low scrubs of the Carpathians and the eastern Hercynian ranges of the Sudeten.
Southeastern alpigenous willow brushes	Subalpine, alpine and occasionally montane [Salix]-dominated brushes and low scrubs of the Balkan Range, the Dinarides and the Hellenides.
Dinaride willow brush	Subalpine, alpine and montane [Salix]-dominated brushes and low scrubs of the Dinarides.
Balkan Range willow brush	Subalpine, alpine and montane [Salix]-dominated brushes and low scrubs of the Balkan Range, dominated by [Salix waldsteiniana] or [Salix silesiaca].
Rhodopide willow brush	Thickets of shrubby willows of Vitosha, Rila, Pirin and Rhodope, dominated by [Salix lapponum], [Salix waldsteiniana] or other mountain willows.
Ponto-Caucasian mountain willow brush	Subalpine, alpine and occasionally montane [Salix]-dominated brushes and low scrubs of the Pontic Range, the Caucasus and neighbouring ranges.
Oroboreal willow scrub	Willow-dominated brushes of boreal mountains and mountainous regions, in particular of the Highlands of Scotland, the mountains of Iceland, the boreal mountains of Scandinavia, European Russia, Siberia, northern China, Korea and Japan. Mostly characteristic of a suprasylvatic belt in the lower arcto-alpine or oroboreal zone, they may extend into the taiga belt in exposed locations and edaphic enclaves, and ascend locally into the arcto-alpine zone.
Northern British willow brush	Mixed [Salix aurita], [Salix atrocinerea], [Salix repens] and [Salix caprea] scrub, with [Rumex acetosa], [Filipendula ulmaria], [Dryopteris] spp., [Oxalis acetosella], developed on ungrazed ledges, islands and gullies of Shetland, Orkney, Hebrides and the Northern Highlands.
Subalpine mixed brushes	Communities of the subalpine zone, of the tree-limit, and sometimes of the montane zone, of higher nemoral mountains of the western Alpine system and its associated ranges (Carpathians) mainly of alliances [Calamagrostion villosae] and [Trisetion fusci] dominated by tall or medium shrubs, for the most part Rosaceae species (of genera [Rubus], [Sorbus], [Amelanchier], [Potentilla]), [Betula] or tall [Vaccinium], [Salix helvetica], [Salix kitaibeliana] and grasses [Calamagrostis villosa] and [Deschampsia cespitosa] often accompanied by tall herbs characteristic of the subalpine tall herb communities (unit E5.5), or by subalpine heaths, such as the [Juniperus nana]-[Arctostaphylos uva-ursi] heaths.
Subalpine [Sorbus] brush	Thickets of the subalpine zone of the Alps, the Carpathians, the Jura, the Hercynian ranges, dominated by [Sorbus aucuparia ssp. glabrata], [Sorbus chamaemespilus], [Sorbus mougeotii], [Sorbus ambigua], [Sorbus austriaca] or other shrubby [Sorbus] species, in particular, tree-limit formations with [Betula carpatica], [Lonicera nigra], [Prunus padus ssp. borealis] ([Padus petraea]).

Subalpine birch brush	Thickets or brushes of the subalpine zone of the Alps, the Carpathians, the Hercynian ranges, usually at the tree-limit, dominated by shrubby or krumholtz birches, in particular, [Betula carpatica], [Betula pubescens], often with [Sorbus aucuparia ssp. glabrata], [Lonicera nigra], [Prunus padus ssp. borealis] ([Padus petraea]).
Subalpine bramble brush	Brushes of the subalpine zone of the Alps, the Carpathians, the Hercynian ranges, the Balkan Range, the Hellenides, dominated by [Rubus] spp., in particular, [Rubus idaeus], [Rubus saxatilis].
Subalpine cherry brush	Thickets or brushes of the subalpine zone of the Alps, the Carpathians, the Jura, the Hercynian ranges dominated by shrubby species of genus [Prunus] or related genera, in particular, [Prunus padus ssp. borealis] ([Padus petraea]), often with [Sorbus aucuparia ssp. glabrata], [Betula carpatica], [Lonicera nigra].
Subalpine ericaceous brush	Thickets or brushes of the subalpine zone of the Alps, the Carpathians, the Jura dominated by large [Vaccinium] shrubs, often accompanied by tall herbs characteristic of the subalpine tall herb communities (unit 37.8).
Rhodope [Potentilla fruticosa] thickets	Closed formations dominated by [Potentilla fruticosa] of the 1550 metre level in the [Picea abies] and [Pinus sylvestris] belt of the west Rhodope mountains of Bulgaria.
Oroboreal birch scrub	Very low scrubs formed in exposed situations by otherwise thicket-building birches of boreal mountains and mountainous regions, in particular [Betula pubescens ssp. czerepanovii] ([Betula tortuosa], [Betula pubescens ssp. tortuosa], [Betula kusmisscheffii]) of Iceland, Greenland, the boreal mountains of Scandinavia, the Urals. These form dwarf facies of the woods and thickets of unit G1.917.
Conifer scrub close to the tree limit	Scrubland with dwarf conifers (krummholz), often with incomplete canopy cover, close to the tree limit. At the arctic tree limit, the trees are of species that can grow to large stature under favourable conditions. However [Pinus mugo] of central and southern Europe is often genetically fixed as a shrub. Excluded are stands of forest conifers with height > 3 m (G3).
Inner Alpine dwarf mountain pine scrub	[Pinus mugo] brushes of the dry eastern inner Alps, of local occurrence throughout the area, accompanied by [Rhododendron hirsutum], [Erica herbacea], [Arctostaphylos uva-ursi], [Arctostaphylos alpinus], [Rhodothamnus chamaecistus], or, on siliceous ground, [Rhododendron ferrugineum] and [Vaccinium myrtillus].
Outer Alpine dwarf mountain pine scrub	Main range [Pinus mugo] brushes of well-drained, mostly calcareous, soils of the northern and southeastern outer Alps, usually with [Rhododendron hirsutum], [Arctostaphylos uva-ursi], [Arctostaphylos alpinus], [Sorbus chamaemespilus], [Lonicera caerulea], [Lonicera alpigena], [Calamagrostis varia], sometimes with [Erica herbacea] or [Rhodothamnus chamaecistus] and, in acidophilous variants, known in particular from the Karawanken, [Vaccinium myrtillus], [Vaccinium vitis-idaea], [Rhododendron ferrugineum], [Empetrum hermaphroditum].

Southwestern dwarf mountain pine scrub	Very local [Pinus mugo] brushes of the southwestern Alps (Moyen-Valais, Haute-Roya, Ligurian Alps), with [Juniperus nana], [Arctostaphylos uva-ursi], [Daphne striata], [Erica herbacea], [Carex firma] and, in some stations, [Rhododendron hirsutum]; cold-block [Pinus mugo] formations of the Swiss Jura.
Apennine dwarf mountain pine scrub	Rare and local Apennine formations of the Parmian Apennines, the Abruzzi and the Campanian Apennines.
Hercynian dwarf mountain pine scrub	[Pinus mugo] brushes of the Sudeten, the Erzgebirge, the Bayerischerwald, the B”hmerwald, with [Vaccinium myrtillus], [Salix silesiaca] s.l., [Trientalis europaea], [Homogyne alpina].
Carpathian dwarf mountain pine scrub	[Pinus mugo] brushes of the Carpathians, where they form a separate vegetation altitudinal zone. Additional trees and shrubs are [Pinus cembra], [Ribes petraeum], [Sorbus aucuparia], [Salix silesiaca], herbs [Homogyne alpina], [Vaccinium myrtillus], [Adenostyles alliariae], [Calamagrostis villosa], [Luzula sylvatica] and endemic species, e.g. [Soldanella carpatica].
Carpathian subalpine mountain pine scrub	[Pinus mugo] brushes forming an extensive belt in the upper subalpine zone of the higher mountains of the northwestern, eastern and southeastern Carpathians with [Vaccinium myrtillus], [Ribes petraeum var. carpaticum], [Sorbus aucuparia var. glabrata], [Rosa pendulina], [Homogyne alpina], [Soldanella hungarica ssp. major] in siliceous stations, with tall herbs in calcareous ones. The southeastern Carpathian formations, particularly those of the Apuseni Mountains, harbour the regional endemic [Campanula patula ssp. abietina] ([Campanula abietina]).
Carpathian alpenrose mountain pine scrub	Widespread formations of [Pinus mugo] accompanied by the regional endemic [Rhododendron myrtifolium], on shallow-soil slopes of the subalpine level of the southeastern Carpathians.
Pelago-Dinaride dwarf mountain pine scrub	[Pinus mugo]-dominated formations of the Dinarides and of neighbouring chains of the Pelagonides, in particular the Jakupica range, with [Vaccinium myrtillus], [Rubus saxatilis], [Rubus idaeus], [Sorbus aucuparia], [Rosa pendulina], [Veratrum album] and [Polygonatum verticillatum].
Balkano-Rhodopide dwarf mountain pine scrub	[Pinus mugo]-dominated formations of the Pirin and the Rila, with remnants in the Balkan Range, including the Suva Planina and Stara Planina. This habitat has been severely reduced by clearance for pastures, and its distribution area regressed; in addition to the ranges where it still forms substantial stands, [Pinus mugo] is recorded from the western Rhodope, the Vitosha and, perhaps, Orvilos.
Temperate and mediterranean-montane scrub	Shrub communities of nemoral affinities. They include deciduous and evergreen scrubs or brushes of the nemoral zone, and deciduous scrubs of the submediterranean and supramediterranean zones. Excluded are heathlands with dominant [Ericaceae] F4, and the typically mediterranean maquis F5, garrigue F6 and phrygana F7.
Temperate thickets and scrub	Successional and plagioclimax scrub, mostly deciduous, of Atlantic, sub-Atlantic or subcontinental affinities, characteristic of the nemoral zone, but also colonizing cool, moist or disturbed stations of the mediterranean evergreen forest zone. Included are thickets of [Buxus sempervirens], [Corylus avellana], [Cytisus scoparius], [Juniperus communis], [Prunus spinosa], [Rubus fruticosus] and [Ulex europaeus].

Medio-European rich-soil thickets	Deciduous [Prunetalia] thickets of the Western and the Central Europe formed by [Prunus spinosa], [Prunus mahaleb], [Rosa] spp., [Cornus mas], [Cornus sanguinea], [Sorbus aria], [Crataegus] spp., [Lonicera xylosteum], [Rhamnus catharticus], [Rhamnus alpinus], [Clematis vitalba], [Ligustrum vulgare], [Viburnum lantana], [Viburnum opulus], [Rubus] spp., [Amelanchier ovalis], [Cotoneaster integerrimus], [Cotoneaster nebrodensis], [Pyrus pyraster], [Malus sylvestris], [Euonymus europaeus], [Corylus avellana], [Ulmus minor], [Acer campestre], [Acer monspessulanum] and [Carpinus betulus] characteristic of forest edges, hedges and woodland recolonisation, developed on soils relatively rich in nutrients, neutral or calcareous. In the herb layer the most common species are [Brachypodium pinnatum], [Fragaria moschata], [Geranium robertianum] and [Tithymalus cyparissias]. The alliances [Berberidion] and [Corylo-Populion tremulae]. They are substitution communities of the [Carpinion betuli] (units G1.A1), [Quercion pubescenti-petraeae] (unit G1.71) and [Fagion sylvaticae]
Blackthorn-bramble scrub	Mesophile, often luxuriant, shrub communities of Western Europe and western and northern Central Europe east to Poland, northern Moldavia, Slovakia and Austria, characteristic of [Carpinion] forest edges and substitution formations with, among others, [Prunus spinosa], [Carpinus betulus], [Crataegus] spp., [Sambucus nigra], [Rosa] spp., [Viburnum opulus], [Rubus] spp. Included are species-poor [Prunus spinosa] thickets, such as British [Prunus spinosa]-[Rubus fruticosus] scrub and corresponding mainland formations with [Rubus fruticosus], [Rubus elegantispinosus], [Rubus bifrons], [Rubus armeniacus].
Sub-Atlantic blackthorn-bramble scrub	[Prunus spinosa], [Carpinus betulus], [Crataegus] spp., [Rosa] spp., [Rubus spp]. communities of the Western European and western and northern Central European mainland east to Poland, northern Moldavia, Slovakia, Austria and Slovenia, under sub-Atlantic or subcontinental climates.
Atlantic blackthorn-bramble scrub	[Prunus spinosa], [Rubus] spp. communities of the British Isles and other areas of strongly Atlantic climates. [Ulex europaeus], [Hedera helix], [Lonicera periclymenum] and [Pteridium aquilinum] are often present.
Blackthorn-privet scrub	Shrub communities of Western Europe and western and northern Central Europe east to Poland, northern Moldavia, Slovakia and Austria, developed on the usually calcareous, dry soils with warm exposure characteristic of the [Quercion pubescenti-petraeae] and of xeric, calciphilous forms of the [Carpinion], with, among others, [Prunus spinosa], [Ligustrum vulgare], [Viburnum lantana], [Cornus mas], [Rhamnus catharticus].
Atlantic and medio-European blackthorn-privet scrub	Thermophile shrub communities of Western Europe and western and northern Central Europe east to Poland, Slovakia, Austria and Slovenia, occupying the domaine of the [Carpinion] and northern irradiations of [Quercetalia pubescenti-petraeae] communities.
Medio-European blackthorn-privet scrub	Thermophile shrub communities of the mainland of Western Europe and western and northern Central Europe east to Poland, Slovakia, Austria and Slovenia, formed by [Prunus spinosa], [Ligustrum vulgare], [Viburnum lantana], [Cornus mas], [Rhamnus catharticus], [Crataegus] spp., [Carpinus betulus] under sub-Atlantic or subcontinental climates.

Atlantic hawthorn-ivy scrub	Thermophile shrub communities of the British Isles and areas of strongly Atlantic climates differing from unit 31.81211 in particular in the scarcity of [Carpinus betulus].
Sub-Mediterranean blackthorn-privet scrub	Xero-thermophile shrub communities of Western Europe and western Central Europe, occupying the southern part of the west European range of unit 31.812, within the main range of the [Quercion pubescenti-petraeae], as well as a few highly xerothermic central European sites. [Prunus mahaleb] and [Acer monspessulanum] are characteristic species.
Rock pear scrub	Possibly primary scrub formations of the Hercynian ranges and their vicinity, the Jura, the Alpine periphery and Alpine inner valleys, with [Cotoneaster integerrimus], [Cotoneaster tomentosus] and [Amelanchier ovalis] developed on very shallow soils between [Xerobromion] grasslands and open xerothermic oak woods.
Peri-Alpine sea buckthorn-barberry scrub	Shrub formations characterized by the physiognomically distinctive presence of [Hippophae rhamnoides ssp. fluviatilis] or [Hippophae rhamnoides ssp. carpatica], rich in xero-thermophile species, colonizing dry shingle terraces, no longer subjected to flooding, of peri-Alpine water courses.
Inner Alpine barberry scrub	Thorny heaths of inner Alpine valleys with [Berberis vulgaris].
Iberian barberry scrub	Northwestern Iberian montane communities with [Berberis vulgaris ssp. cantabrica], [Prunus spinosa], [Corylus avellana], [Sorbus aria], [Taxus baccata], [Crataegus monogyna], [Ribes alpinum], [Ribes petraeum], [Rhamnus alpinus].
Box thickets	[Buxus sempervirens]-dominated variants of units F3.11, F3.22, F3.23 or F3.24 with for example [Juniperus oxycedrus] or [Pteridium aquilinum].
Atlantic poor soil thickets	Deciduous thickets of Western Europe and western and northern Central Europe formed by [Rubus] spp., [Frangula alnus], [Sorbus aucuparia], [Corylus avellana], [Lonicera periclymenum], [Cytisus scoparius], characteristic of forest edges, hedges and woodland recolonisation developed on soils relatively poor in nutrients, usually acid, mostly under climates with strong Atlantic influence. Substitution communities of the [Quercion robori-petraeae] (c.f. units G1.81-G1.86, parts of G1.87 and of G4.71).
Bramble thickets	Atlantic deciduous thickets of poor soils of Western Europe and western and northern Central Europe dominated by [Rubus] spp., including British [Rubus fruticosus]-[Holcus lanatus] underscrub.
Alder buckthorn, rowan, honeysuckle thickets	Atlantic deciduous thickets of poor soils of Western Europe and western and northern Central Europe dominated by [Frangula alnus], [Sorbus aucuparia], [Lonicera periclymenum] or other shrubs, with the exception of brambles (genus [Rubus]), included in unit 31.831, or of brooms (genus [Cytisus]), gorse ([Ulex europaeus]), hazel ([Corylus avellana]), bracken ([Pteridium aquilinum]), separately covered in units 31.84, 31.85, 31.8C1, 31.861, respectively.
Temperate broom fields	Expanses of broom ([Cytisus scoparius]), a common recolonisation stage of the [Quercion] in the plains and hills of northern and middle Europe, reaching the montane zone in the higher mountains.
Lowland and hill broom fields	[Cytisus scoparius] fields of the lowlands, hills and low mountains of northern, western and central Europe.
Alpine broom fields	Montane [Cytisus scoparius] fields of the Alpine system.

Central Massif [Cytisus scoparius] fields	Montane beech-level formations of [Cytisus scoparius] of the Central Massif.
Pyrenean [Cytisus scoparius] fields	Montane formations of [Cytisus scoparius] of the Pyrenees.
Gorse thickets	[Ulex europaeus] thickets of the Atlantic domaine (including British [Ulex europaeus]-[Rubus fruticosus] scrub p.)
Common juniper scrub	Temperate and mediterranean-montane communities dominated by [Juniperus communis], mostly [Juniperus]-dominated variants of units F3.11, F3.13, F3.22-F3.24. [Calluna vulgaris], [Crataegus] spp., [Pinus sylvestris], [Quercus petraea], [Bromus erectus] and [Festuca rupicola] are also present.
Juniper downs	[Juniperus communis] thickets developed on calcareous substrates of middle Europe, in particular, of southern England, southern Germany, southern Belgium, the periphery of the Paris Basin, the Danish, Swedish and eastern Baltic islands, the Estonian mainland, often as colonization facies of medio-European calcareous grasslands of unit 34.
Sub-Atlantic juniper heaths	[Juniperus communis] thickets developed on acidic, often sandy, substrates of middle Europe, including inland dunes, often as colonization facies of heaths and related communities, distributed in particular in southern Sweden, Denmark, the Netherlands, the Paris Basin, Belgium, Germany, Poland, Estonia.
Juniper-wood sorrel woodland	Upland formations of the central highlands of Scotland and of northern England, in which [Juniperus communis] is the most abundant small tree or large shrub, accompanied by ericoids, ferns, grasses, bryophytes and a fairly rich flora of herbaceous dicots.
Sub-Mediterranean common juniper thickets	Collinar and montane communities of sub-Mediterranean levels of southern and southeastern Europe, dominated by [Juniperus communis], mostly [Juniperus]-dominated facies of units 31.89, 31.8A or 31.8B, in particular, formations of Bulgaria, Greece and the F.Y.R. of Macedonia, such as the [Juniperus communis]-[Pteridium aquilinum] formations on deep soils of the [Ostryo-Carpinion aegaeicum].
Hazel thickets	Thickets or brush, often very extensive, composed exclusively or predominantly of [Corylus] spp. In associated units F3.11, F3.13, F3.22-F3.24, [Corylus] is mixed with other species.
Atlantic and sub-Atlantic hazel thickets	[Corylus avellana]-dominated thickets of the Atlantic and sub-Atlantic zones of middle Europe, a frequent facies of units 31.81 and 31.83, particularly in the most Atlantic areas of the British Isles, the Pyreneo-Cantabrian piedmont and northwestern Iberia.
Sub-boreal hazel thickets	[Corylus avellana]-dominated thickets of the northern nemoral zone, the boreonemoral zone and the southern boreal zone, in northern England, Denmark, southern Norway, southern Sweden, southern Finland, northern Poland, with a species-rich cortège that allies species of northern affinities with thermophile species; the field layer includes, in England, [Trollius europaeus], [Rubus saxatilis], [Melica nutans], [Geranium sanguineum], [Aquilegia vulgaris], [Convallaria majalis] or, in Scandinavia, [Geranium sylvaticum], [Anemone nemorosa], [Ranunculus ficaria], [Rubus saxatilis], [Hepatica nobilis], [Lathraea squamaria], [Paris quadrifolia], [Viola mirabilis], [Convallaria majalis].

Peri-Alpine hazel thickets	Thickets of the Jura, the pre-Alps, the southern German Hercynian ranges and the inner Alps, dominated by [Corylus avellana], with [Clematis vitalba] and [Cornus sanguinea], of particular bio-historical significance as a possible model of the hazel-dominated communities of the Boreal era.
Subcontinental hazel thickets	Thickets or brush of [Corylus avellana] or [Corylus colurna] of hills and low mountains of the Pannonic basin and its periphery, of the plateaux of southeastern Poland, of the eastern Carpathian system and of the Balkan peninsula, a frequent facies of 31.8B.
Inland dune thickets	Formations of large shrubs colonizing Germano-Baltic fluvioglacial inland dunes. Very rare in central Europe, as developments of the habitat units F4.21 and F4.22.
Inland dune juniper scrubs	[Juniperus communis]-rich scrubs of Germano-Baltic fluvioglacial inland dunes (unit 31.882).
Inland dune mixed thickets	Thickets other than juniper scrubs in Germano-Baltic fluvioglacial inland dune systems; their composition can be specified by use of codes of unit 31.8.
Submediterranean deciduous thickets and brushes	Successional and plagioclimax scrub, mostly deciduous, of the submediterranean and supramediterranean zones, but also colonizing cool, moist or disturbed stations of the mediterranean evergreen forest zone. Included are some non-leafy brushes, for example [Cytisus purgans] and [Genista aetnensis].
Montane fields of Pyrenean broom ([Cytisus purgans])	[Cytisus purgans]-dominated formations of higher levels (upper montane, subalpine, oro-mediterranean) of southwestern European and North African mountains, often associated with dwarf juniper scrubs (unit F2.23) or hedgehog-heaths (unit F7.4), and physiognomically reminiscent of the latter.
Cévennes [Cytisus purgans] fields	Localized formations of the upper levels of the Cévennes.
Pyrenean [Cytisus purgans] fields	Upper montane Pyrenean formations appearing on the edge of, or as substitution of, acidophilous pine woods.
Galicio-Cantabrian [Cytisus purgans] fields	Galician and oro-Cantabrian upper montane formations.
Upper Cordilleran [Cytisus purgans] fields	Alti-Mediterranean and oro-Mediterranean formations of the Cordillera Central.
Lower Cordilleran [Cytisus purgans] fields	Upper supra-Mediterrranean formations of the Cordillera Central.
Galicio-Leonese [Cytisus purgans] fields	Oro-Mediterranean formations of the high southern Galicio-Leonese sierras.
Nevadan [Cytisus purgans] fields	Oro-Mediterranean formations of the Sierra Nevada.
Southwestern sub-mediterranean deciduous thickets	Mostly deciduous shrubs and hedges, usually tall and luxuriant, often very rich in lianas, of Mediterranean France, of sub-Mediterranean areas of the Iberian peninsula and of North African mountains, of moist stations in the Mediterranean zone of the Iberian peninsula.

Franco-Iberian sub-Mediterranean deciduous thickets	Formations mostly of moist stations within the Mediterranean zone of France, Catalonia, the Balearics and Valencia, with [Rosa sempervirens], [Rubus ulmifolius], [Tamus communis], [Prunus spinosa], [Cornus sanguinea], [Crataegus monogyna] and, locally, [Coriaria myrtifolia].
Western Iberian sub-Mediterranean deciduous thickets	Formations of the western, particularly northwestern, part of the Iberian peninsula, with [Crataegus monogyna], [Prunus spinosa], [Cornus sanguinea], [Ligustrum vulgare], [Sambucus nigra], [Euonymus europaeus], brambles, particularly the Mediterranean [Rubus ulmifolius], various roses, notably [Rosa sempervirens] and [Rosa canina] agg., and particularly rich in lianas, [Tamus communis], [Smilax aspera], [Clematis vitalba], [Lonicera periclymenum], [Lonicera etrusca], [Rubia peregrina], [Bryonia cretica], [Vitis vinifera], [Humulus lupulus].
Central Iberian sub-Mediterranean deciduous thickets	More continental formations of central Iberia, developed mostly on deep, moist soils in the supra-Mediterranean zone of the Meseta, the Ebro basin, the Cordillera Central, the Southern Iberian Range, the Montes de Toledo, the Sierra Morena and the western Baetic or sub-Baetic mountains, with [Berberis hispanica], [Prunus spinosa], [Prunus mahaleb], [Crataegus monogyna], [Ribes uva-crispa], [Rubus ulmifolius], [Lonicera xylosteum], [Lonicera etrusca], [Amelanchier ovalis], [Rhamnus saxatilis], numerous roses of the [Rosa agrestis] and [Rosa canina] aggregates (e.g. [Rosa micrantha], [Rosa pouzinii], [Rosa corymbifera], [Rosa sicula]) and, locally, [Hippophae rhamnoides].
Oro-Baetic sub-Mediterranean deciduous thickets	Supra- and oro-Mediterranean deciduous thickets of eastern sub-Baetic and Baetic mountains (sierras de Cazorla, Segura, Baza, Magina, Alcaraz and the Sierra Nevada), with [Lonicera arborea], [Lonicera splendida], [Prunus ramburii], [Cotoneaster granatensis], [Berberis hispanica], [Crataegus monogyna], [Rosa] spp.
North African sub-Mediterranean deciduous thickets	Supra- and oro-Mediterranean deciduous thickets of North African mountains.
Tyrrhenian sub-mediterranean deciduous thickets	Mostly deciduous shrubs and hedges, often tall, luxuriant and rich in lianas, of sub-Mediterranean areas and moist stations in mediterranean areas of peninsular Italy, Sicily, Sardinia and Corsica.
Subcontinental and continental deciduous thickets	Deciduous pre- and postforest formations, forest edges, hedges and woodland recolonisation of thermophilous deciduous oak forest and steppe forest zones of the Balkan peninsula, of southeastern Europe, of western Asia and of Central Eurasia, in particular, of the [Quercion frainetto] and [Ostryo-Carpinion] zones of the Balkan peninsula, with very local irradiations in Central Europe, extreme northeastern Italy, the Aegean and the eastern Mediterranean. Vegetation of alliances [Prunion fruticosae], [Prunion spinosae] and partially [Berberidion] with species [Prunus spinosa], [Cornus mas], [Cotoneaster integerrimus], [Crataegus monogyna], [Rosa pimpinellifolia], [Rhus coriaria], [Rubus discolor] and [Pistacia terebinthus].

Central European subcontinental thickets	Deciduous thickets of the Pannonic basin and neighbouring regions, with northwestern irradiations in Central Europe, within and around the range of occurrence of white cinquefoil oak woods (units 41.7A11, 41.7A12, 41.7A13), of western tartar maple steppe oak woods (unit 41.7A21) and of Pannonian white oak woods (unit 41.7374).
Northern Central European ground cherry scrub	[Prunus fruticosa] scrubs of dry, continental enclaves of Central Europe, in particular of the rain shadow of the Harz in Anhalt and Thuringe, of the xeric left-bank limestone and loess hills of the Palatine upper Rhine, of the Nida Valley and Lublin uplands of southeastern Poland, of dry hills of the Bohemian basin and of Moravia.
Subcontinental peri-Pannonic scrub	Low deciduous scrubs of continental affinities of the Pannonic basin and neighbouring regions including the eastern Alpine periphery, the southern periphery of the Northwestern Carpathians, the Transylvanian plateau and the adjacent foothills and valleys of the Eastern and Southern Carpathians and the Apuseni mountains, the southern periphery of the Pannonic basin, with irradiations to the lower Danubian plain, to the Moravian plateau, to the Dobrogea and to the hills and valleys of the northern Balkan peninsula southeast to southwestern Bulgaria.
Peri-Pannonic ground cherry scrub	Low deciduous scrubs of the Hungarian Central Range, of Pannonic Austria west to the eastern Waldviertel, of southern Slovakia, central Transylvania, Muntenia and Moldavia, dominated by [Prunus fruticosa].
Peri-Pannonic dwarf almond scrub	Low deciduous, more or less closed, scrubs of the Hungarian Central Range, central Transylvania, the Apuseni mountains, the Eastern Carpathians, the southeastern Weinviertel and northern Bergenland of northern Austria, the southern and southeastern periphery of the Pannonic basin, east to the Chepan, Golo Bardo, Zemenska and Konyiavska hills of western Bulgaria and to the Balkan Range of eastern Serbia and Bulgaria, with [Prunus fruticosa], [Prunus tenella] ([Amygdalus nana]), [Prunus spinosa], [Rhamnus catharticus], [Rosa gallica], [Rosa pimpinellifolia], [Peucedanum alsaticum], [Asparagus officinalis], [Festuca rupicola], [Agropyron cristatum ssp. pectinatum] ([Agropyron pectinatum], [Elymus hispidus] ([Agropyron intermedium]), [Poa angustifolia], [Artemisia campestris], [Euphorbia cyparissias], [Salvia nemorosa], [Stachys recta], [Teucrium chamaedrys], [Vinca herbacea]. These forest steppe shrub communities have become greatly reduced throughout their range as a result of changes in land use, in particular, following the expansion of agriculture in the lowlands and low
Peri-Pannonic burnet rose scrub	Very low deciduous scrubs of Pannonic Austria, in particular the Weinviertel, of the Apuseni mountains, of the Balkan Range of Serbia and Bulgaria, dominated by [Rosa pimpinellifolia] ([Rosa spinosissima]), with [Achillea millefolium] agg., [Euphorbia cyparissias], [Teucrium chamaedrys].

Peri-Pannonic spiraea scrub	Very rare low deciduous scrubs on shallow rocky soils of limestone or andesite outcrops of the eastern Hungarian Central Range, of the eastern Alpine periphery of Austria and of Slovakia, dominated by [Spiraea media], with [Cotoneaster integerrimus], [Rosa pimpinellifolia], [Prunus fruticosa], [Waldsteinia geoides], [Silene vulgaris], [Carduus collinus], [Doronicum hungaricum], [Carex brevicollis], [Melica altissima], [Melica picta], [Melica ciliata], [Sedum maximum], [Euphorbia cyparissias].
Danubian hawthorn scrub	Low deciduous scrubs dominated by [Crataegus] spp. of the flood plain of the Danube basin in Slovakia, Hungary, Muntenia and Oltenia.
Peri-Pannonic thickets	Tall sub-Mediterranean deciduous brushes of the Pannonic basin and neighbouring regions, with [Cotinus coggygria], [Amelanchier ovalis], [Cotoneaster tomentosus], [Cotoneaster matrensis], [Pyrus nivalis], [Prunus mahaleb], [Spiraea media], [Sorbus graeca], [Fraxinus ornus].
Illyrio-Adriatic deciduous thickets	Deciduous thickets of the Illyrian region of northeastern Italy and the western Balkan peninsula, substitution communities of the [Carpinion betuli illyricum] (unit 41.2A), [Fagion illyricum] (unit 41.1C) or [Ostryo-Carpinion adriadicum] (units 41.73, 41.74) climax vegetation woodlands.
Illyrio-Adriatic oriental hornbeam thickets	Deciduous thickets of the Illyrian and eastern Adriatic region of northeastern Italy and the western Balkan peninsula dominated, or co-dominated, by [Carpinus orientalis].
Illyrio-Adriatic mixed thickets	Deciduous thickets of the Illyrian and eastern Adriatic region of northeastern Italy and the western Balkan peninsula formed by [Prunus spinosa], [Cornus sanguinea], [Ligustrum vulgare], [Rubus caesius], [Viburnum lantana], any of which may dominate or codominate, and by [Crataegus monogyna], [Euonymus europaeus], [Rhamnus catharticus], [Rosa] spp., [Acer campestre].
Illyrio-Adriatic Christ's thorn brush	Deciduous thickets of the Illyrian and eastern Adriatic region of northeastern Italy and the western Balkan peninsula dominated, or co-dominated, by [Paliurus spina-christi].
Balkano-Hellenic deciduous thickets	Varied, often species-rich, shrub formations of the temperate and sub-Mediterranean belts of the Southern and Eastern Carpathians, the Balkan Range, the Moeso-Macedonian Mountains, the Rhodopides, the Pelagonides, the Pindus, the Thessalian Mountains and adjacent regions, accompanied by a flora of mostly Moesian affinities, substitution formations of [Quercion frainetto] (unit 41.76), [Fagion moesiacum] (unit 41.19), [Fagion dacicum] (unit 41.1D), [Fagion hellenicum] (unit 41.1A) and, locally, [Ostryo-Carpinion aegeicum] (unit 41.73) climax forests, generally dominated by, or rich in, [Carpinus orientalis], [Syringa vulgaris], [Paliurus spina-christi], [Cotinus coggygria] or [Rhus coriaria].
Moesian oriental hornbeam thickets	Shrub communities dominated, or co-dominated, by [Carpinus orientalis], often rich in [Syringa vulgaris], [Cotinus coggygria] and other characteristically Moesian shrubs, of warm foothill slopes of the Southern and Eastern Carpathians, the Balkan Range, the Moeso-Macedonian Mountains, the Rhodopides, the Pelagonides, and neighbouring regions, within the geographical range of [Quercion frainetto], [Fagion moesiacum], [Fagion dacicum], and, locally, [Ostryo-Carpinion] forests.

Thracio-Macedonian oriental hornbeam thickets	Shrub communities dominated by [Carpinus orientalis], of Epirus, southern Paeonia, Macedonia and Thrace, with [Fraxinus ornus], [Cornus mas], [Crataegus] spp., [Pistacia terebinthus], [Lonicera caprifolium], [Asparagus acutifolius], [Ruscus aculeatus], [Colutea arborescens], [Cotinus coggygria], [Paliurus spina-christi], [Cyclamen hederifolium] ([Cyclamen neapolitanum], [Cyclamen linearifolium]), [Carex hallerana], [Geranium purpureum]. Many of the communities include evergreen shrubs; if these are sufficiently prevalent, the formation belongs to unit 32.71.
Central Moesian oriental hornbeam thickets	Tall shrub communities of Serbia, western Bulgaria and the F.Y.R. of Macedonia, dominated by [Carpinus orientalis], with [Fraxinus ornus], [Acer monspessulanum], [Acer hyrcanum], [Sorbus domestica], [Pyrus communis], [Pyrus amygdaliformis], [Coronilla emerus], [Cotinus coggygria], [Colutea arborescens], [Syringa vulgaris], [Cornus mas], [Ligustrum vulgare], [Euonymus verrucosus].
Peri-Carpathian manna ash oriental hornbeam thickets	Tall shrub communities dominated by [Carpinus orientalis], of the Banat, Muntenia and the Dobrogea, with [Fraxinus ornus], [Cotinus coggygria], [Prunus mahaleb], [Euonymus verrucosus], [Cornus mas], [Quercus pubescens], [Quercus virgiliana], [Rosa canina], [Paeonia peregrina], [Orchis purpurea], [Carex hallerana], [Cruciata laevipes], [Polygonatum odoratum], [Thalictrum minus], [Viola mirabilis], [Teucrium chamaedrys], [Chrysanthemum corymbosum].
Peri-Carpathian wig tree oriental hornbeam thickets	Tall shrub communities dominated by [Carpinus orientalis], of the Banat and Oltenia, with [Cotinus coggygria], [Prunus spinosa], [Crataegus pentagyna], [Cornus sanguinea], [Rosa arvensis].
Moesian lilac thickets	Xerothermic tall shrub communities of the middle and eastern Balkan peninsula, widespread in hills and low mountains of the Southern and Eastern Carpathians, the Balkan Range, the Moeso-Macedonian Mountains, the Rhodopides, the Pelagonides, within the zone of [Quercion frainetto], the [Fagion moesiacum], the [Fagion dacicum], and, locally, the [Ostryo-Carpinion], rich in continental Moesian species, dominated by, or with a great abundance of, [Syringa vulgaris]. [Cotinus coggygria], [Rhus coriaria], [Genista lydia], [Cercis siliquastrum], [Coronilla emerus], [Colutea arborescens], [Prunus mahaleb], [Prunus cerasifera], [Prunus cocomilia], [Pyrus amygdaliformis], [Crataegus monogyna], [Crataegus laciniata], [Sorbus domestica], [Rosa sempervirens], [Rosa canina] agg., [Rosa rubiginosa] agg., [Rubus ulmifolius], [Euonymus] spp., [Cornus mas], [Cornus sanguinea], [Ligustrum vulgare], [Clematis vitalba], [Rhamnus saxatilis], [Corylus] spp., [Acer] spp., [Fraxinus ornus], [Carpinus orientalis], [Quercus] spp. may contribute to the shrub layer. [Achillea clypeolata], [Asperula
Central Moesian lilac thickets	[Syringa vulgaris]-dominated or -rich tall brushes of the Balkan Range and neighbouring regions.
Danubian lilac thickets	Tall [Syringa vulgaris]-dominated brush of hills and low mountains of the Banat, Oltenia, Muntenia, western Bulgaria and eastern Serbia, in the vicinity of the Iron Gates and the lower Danube.

Moesio-Hellenic mixed thickets	Varied tall brushes of the [Ostryo-Carpinion aegaeicum] and [Quercion frainetto] zones of northern Greece, southern Bulgaria, the southern F.Y.R. of Macedonia and adjacent regions, with [Rhus coriaria] and/or [Syringa vulgaris], [Cotinus coggygria], [Carpinus orientalis], [Quercus] spp., [Paliurus spina-christi], [Fraxinus ornus], [Acer monspessulanum], [Cercis siliquastrum], [Pistacia terebinthus], [Buxus sempervirens].
Spleenwort lilac chasm thickets	Tall brushes of the Moesian region, northeast to the Banat, Oltenia and Transylvania, pioneering on abrupt slopes and in chasms, dominated by [Syringa vulgaris], with [Fraxinus ornus], [Cotinus coggygria], [Acer monspessulanum], [Coronilla emerus], [Ceterach officinarum].
Apuseni [Syringa josikaea] thickets	Shrub formations with the Southern and Eastern Carpathian endemic [Syringa josikaea], of the Apuseni mountains, within the zone of the [Fagion dacicum] at the 800 metre level.
Moesian Christ's thorn brush	[Paliurus spina-christi]-dominated thickets, usually dense and sometimes tall, often monodominated, with a Moesian subcontinental accompanying flora, of the hills of the Balkan Range, the Moeso-Macedonian Mountains, the Rhodopides, and more locally, of the extreme southeastern Dinarides, of the Pelagonides, the Pindus, the Thessalian Mountains.
Aegean deciduous thickets	Southern and eastern Aegean formations with [Crataegus monogyna], [Crataegus azarolus], [Prunus cocomilia], [Prunus webbii], [Prunus prostrata], [Prunus discolor], [Pyrus amygdaliformis], [Rubus ulmifolius], [Rosa sempervirens], [Berberis cretica], [Rhododendron flavum], [Acer sempervirens], [Quercus brachyphylla], [Quercus infectoria].
Eastern Mediterranean deciduous thickets	Deciduous thickets of Cyprus and of the Mediterranean or sub-Mediterranean zones of Asia Minor and the Levant, within the regions of occurrence of eastern white oak woods (unit 41.73), hop-hornbeam mixed oak woods (unit 41.74), Balkano-Anatolian thermophilous oak forests (unit 41.76), Macedonian-oak woodland (unit 41.78) and Mediterranean valonia oak woodland (unit 41.79).
Mediterraneo-Euxinian deciduous thickets	Deciduous thickets of sub-Mediterranean climate enclaves of the Black Sea in southern Crimea and the western Caucasus, within and around the area of occurrence of Euxinian white oak woods (unit 41.738).
Ponto-Sarmatic deciduous thickets	Deciduous thickets of the wooded steppe zone of the Pontic and Sarmatic regions and of adjacent areas, including the Thracian steppe zone, within and around the zone of occurrence of easternmost white cinquefoil oak woods (unit 41.7A14), of tartar maple steppe oak woods (unit 41.7A22) and of sub-Euxinian steppe woods (unit 41.7A3).
Ponto-Sarmatic steppe brush	Low brushes of the steppe and southern wooded steppe zones of the Ponto-Sarmatic region, characteristic in particular of microdepressions, dominated by [Caragana frutex], [Spiraea crenifolia], [Prunus tenella] ([Amygdalus nana]), [Prunus spinosa], [Prunus fruticosa] or [Crataegus monogyna].

Ponto-Sarmatic pre-steppe thorn thickets	Shrub formations of the southern wooded steppe zone of the Ponto-Sarmatic region, in which [Prunus spinosa] often plays a dominant role, constituting, in particular, natural, stable biocoenoses on degraded chernozems, similar, in appearance and bush-layer composition, to the sub-Atlantic European recolonisation thickets but with an herb layer dominated by steppe species.
Ponto-Thracian sub-Mediterranean scrub	Thickets and scrubs of the western Ponto-Sarmatic steppe and wooded steppe zone and of the Thracian steppe zone, composed of a mixture of species of continental and Mediterranean affinities, including [Crataegus monogyna], [Paliurus spina-christi], [Jasminum fruticans], [Carpinus orientalis], [Cotinus coggygria], [Asparagus verticillatus], [Achillea clypeolata], [Asphodeline lutea], [Salvia ringens], [Genista sessilifolia].
Western Pontic jasmine christ's thorn scrub	[Paliurus spina-christi], [Jasminum fruticans] and [Crataegus monogyna] scrubs of the western Pontic region, characteristic of superficial chernozems on calcareous substrates of the coastal regions of the southern Romanian Dobrogea and the northeastern Bulgarian Dobruja, with [Asparagus verticillatus], [Achillea clypeolata], [Asphodeline lutea], [Salvia ringens], [Genista sessilifolia].
Thracian christ's thorn scrub	[Paliurus spina-christi] thickets and scrub of the rim and hills of the Northern Thracian plain (East Rumelian plain) of eastern and southeastern Bulgaria, remnants of flower-rich bushy steppe communities of specific Thracian character, harbouring species of both sub-Mediterranean and Ponto-Pannonic or Central Eurasian affinities, including [Jasminum fruticans], [Prunus tenella] ([Amygdalus nana]), [Paeonia peregrina] ([Paeonia decora]), [Paeonia tenuifolia], [Tulipa aureolinea], [Tulipa urumoffii], [Adonis vernalis], [Adonis flammea], [Adonis aestivalis], [Ranunculus illyricus], [Salvia nutans], [Verbascum phoeniceum], [Milium vernale], [Scandix australis], [Phlomis herba-venti ssp. pungens] ([Phlomis pungens]), [Phlomis tuberosa], which still covered vast expanses at the beginning of the century but which may now be largely extinct in their most developed form.
Western Pontic wigtree scrub	Thickets of south-facing slopes of the wooded steppe zone of the Moldova Republic, with [Cornus mas], [Cotinus coggygria], [Tilia tomentosa], [Prunus mahaleb], [Staphylea pinnata].
Ponto-Sarmatic steppe-ravine scrub	Shrub formations of the mantle of steppe ravine woods (bairaks) of the central and eastern Ponto-Sarmatic steppe regions of the Ukraine, with [Prunus spinosa], [Prunus fruticosa], [Prunus tenella] ([Amygdalus nana]), [Caragana frutex], with [Filipendula vulgaris] ([Filipendula hexapetala]), [Stipa lessingiana], [Verbascum nigrum], [Achillea millefolium], [Melica altissima], [Phleum phleoides], [Stachys recta], [Galium rubioides], [Melampyrum cristatum], [Delphinium elatum], [Asperula glauca], [Coronilla varia].
Ponto-Sarmatic pod thickets	Thickets of endoreic depressions of the Ponto-Sarmatic steppe zone, dominated by [Prunus spinosa], with [Rosa gallica], [Spiraea crenata], [Prunus fruticosa], [Rubus caesius], [Prunus tenella] ([Amygdalus nana]), [Caragana frutex].
Piornales	[Cytisus multiflorus], [Cytisus striatus], [Cytisus scoparius], [Cytisus grandiflorus], [Cytisus cantabricus], [Genista florida] and other tall broom fields of the Iberian peninsula, mostly characteristic of the transition between the Atlantic and Mediterranean domaines.

White-flowered broom fields	Formations rich in white-flowered [Cytisus multiflorus] of the western Meseta, the (mostly western) Cordillera Central, the sierras of southern Galicia and Leon and the western Cantabrian mountains, in which [Cytisus multiflorus] is either the only tall broom or is an important component of broom fields also containing yellow-flowered [Genista florida ssp. polygaliphylla], [Genista florida ssp. florida], [Genista cinerea ssp. cinerascens], [Cytisus scoparius] and others.
Northwestern Iberian [Genista florida] fields	Formations rich in [Genista florida ssp. polygaliphylla] of the oro-Cantabrian region, the sierras of southern Galicia and Leon, the Serra da Estrela, the northern Iberian range, with [Cytisus cantabricus], [Cytisus scoparius], [Cytisus striatus], [Genista obtusiramea], [Adenocarpus complicatus].
Northwestern Iberian [Cytisus] fields	Formations rich in [Cytisus striatus] or [Cytisus ingramii] of the western Cordillera Central and of Galician hills and plateaux, with [Genista florida ssp. polygaliphylla], [Cytisus scoparius], [Cytisus multiflorus] or [Ulex europaeus].
Central Iberian [Genista florida] fields	Formations rich in [Genista florida ssp. florida] of the Cordillera Central and the Southern Iberian Range with [Cytisus scoparius], [Cytisus multiflorus], [Cytisus striatus], [Genista cinerea ssp. cinerascens], [Adenocarpus hispanicus].
Upper Cordilleran [Genista cinerea] fields	Formations dominated by [Genista cinerea ssp. cinerascens] of higher elevations of the Cordillera Central.
Central Iberian [Cytisus] fields	Formations rich in [Cytisus striatus] or [Cytisus scoparius] of the Cordillera Central and the Montes de Toledo with [Genista florida ssp. florida] or [Chamaespartium tridentatum].
Andalusian broom fields	Formations of [Cytisus reverchonii], [Cytisus grandiflorus], [Adenocarpus decorticans] of the supra-Mediterranean zone of Andalucian mountains.
Tyrrhenian broom fields	Broom fields of peninsular Italy and of the large Tyrrhenian islands.
[Genista aetnensis] stands	Formations of the very large [Genista aetnensis], endemic to the western Mediterranean and of considerable biogeographical interest, with a distribution limited to Sicily and Sardinia. The species has been introduced on Vesuvio, where it also forms extensive stands.
Canary Island broom fields	Canary Island formations with [Teline] spp., [Micromeria] spp., [Adenocarpus foliolosus] developed in particular in the humid montane zone where they replace heaths on sunnier exposures.
Moesian broom fields	Broom formations of the hills of the Balkan peninsula, in regions of transition between Central European and Mediterranean influences.
Temperate shrub heathland	Shrub communities of nemoral affinities, in which [Ericaceae] are dominant or at least prominent. Such heaths are best developed on acid soils in the Atlantic zone and also in sub-Atlantic Europe.
Wet heaths	Wet or humid ericoid-shrub dominated heaths of the Atlantic and sub-Atlantic zones, developed on peaty or semipeaty soils, waterlogged for at least part of the year, sometimes temporarily inundated, and usually moist even in summer.

Northern wet heaths	Wet heaths of the northern Atlantic and sub-Atlantic domaine and of boreal enclaves in the southern Atlantic and sub-Atlantic domaine. They mostly comprise wet and humid heaths of anmoors, gleypodsols and thin peats of the British Isles, the Germano-Baltic plains and neighbouring Hercynian hills, northern and northwestern France, southern Scandinavia, dominated by [Erica tetralix] or [Calluna vulgaris], sometimes in association with [Scirpus cespitosus] or [Molinia caerulea], usually accompanied by non-peatbuilding sphagna, in particular, [Sphagnum compactum], [Sphagnum molle], [Sphagnum tenellum]. They also include peaty heaths of more southern regions, in western France, the periphery of the Paris Basin and northwestern Iberia, mostly developed in the central, most humid, part of depressions, often in contact with somewhat less humid formations of unit F4.12.
Southern wet heaths	Humid and meso-hygrophile heaths of gley-podsols and semi-peaty soils of the northwestern Iberian peninsula, Atlantic France, the Paris Basin and its periphery, extreme southern England, dominated by [Erica tetralix] or [Erica ciliaris], with [Erica scoparia], [Erica ciliaris], [Calluna vulgaris], [Ulex minor], [Ulex gallii] or [Genista anglica]. They may, in particular, form transition belts between peaty heaths of unit F4.11 and dry heaths of unit F4.2.
Purple moorgrass ([Molinia]) wet heaths	Degraded facies of wet heaths, humid heaths and swamp-heaths of the Atlantic and sub-Atlantic zones, dominated by [Molinia caerulea]. Includes heaths on drained open peatlands.
Dry heaths	Heaths on siliceous, podsolic, rarely- or never-waterlogged soils in moist Atlantic and sub-Atlantic climates of the plains and low mountains of Western and Central Europe.
Submontane [Vaccinium] - heather heaths	Submontane, or sometimes lowland or coastal, heaths rich in [Vaccinium] spp., usually with [Calluna vulgaris], [Nardus stricta], [Luzula campestris] and [Genista] spp., of the northern and western British Isles, of the North Atlantic islands, of Fennoscandia, of the Hercynian ranges and the lower levels of the Alps, the Carpathians, the Pyrenees and the Cordillera Cantabrica. Secondary stands originating after deforestation of pine and oak acidophilous forests also belong to this unit.
North Atlantic [Vaccinium]-[Empetrum]-[Racomitrium] heaths	Low altitude heaths of boreomontane affinities developed under euoceanic climates along the coasts of low Arctic and northern temperate North Atlantic islands and of boreal and arctic Scandinavia, generally characterized by the prominence of [Empetrum hermaphroditum], [Vaccinium uliginosum] or [Vaccinium vitis-idaea].
Sub-boreal [Vaccinium] heaths	[Vaccinium]-dominated, [Vaccinium]-rich and [Empetrum]-rich heaths of boreomontane affinities characteristic of northern and western uplands of Britain and of western and southern Scandinavia, with extensions in the Germano-Baltic plain, particularly in Jutland, Poland, southern Finland and the Baltic States. [Vaccinium myrtillus], [Vaccinium vitis-idaea], [Vaccinium uliginosum], [Empetrum nigrum], [Empetrum hermaphroditum], [Arctostaphylos uva-ursi], [Pleurozium schreberi] and [Hylocomium splendens] are strongly represented among the associates of [Calluna vulgaris].

Hercynian [Vaccinium] heaths	Montane or submontane [Calluna]-[Vaccinium] heaths of the Hercynian ranges of northern and middle Western and Central Europe and of their surrounding regions. They mostly include secondary heaths of the beech level of the Vosges, of the Black Forest, of the Ardennes and the Eifel, of the mid-German Hercynian ranges, of the Bohemian Quadrangle, including the Erzgebirge (Metallic Mountains), the Sudeten, the Bohemian Forest (Sumava) and the Czecho-Moravian Hills, of the Massif Central and, locally, the Morvan, with [Calluna vulgaris], [Vaccinium myrtillus], [Vaccinium vitis-idaea], [Vaccinium uliginosum] and montane lycopodes ([Diphasiastrum] spp.). They also comprise partly primary and sometimes threatened local formations of extrasylvatic areas, in particular the [Calluna vulgaris] heaths enclaved in alpine and subalpine [Pinus mugo] scrub and acidophilous grassland complexes of the high slopes and plateaux of the Giant Mountains (Sudeten), or the [Calluna vulgaris], [Vaccinium myrtillus], [Vaccinium vitis-idaea] heaths of the Brocken summit in the Harz with [Anemone micrantha] and [Hieracium alp
Submontane Alpine [Vaccinium] heaths	[Vaccinium] spp. heaths of the collinar and montane levels of the Alps with, [Calluna vulgaris], [Artemisia alba], [Silene otites], [Campanula spicata] and other thermophile species.
Submontane Pyreneo-Cantabrian [Vaccinium] heaths	[Vaccinium]-rich heaths of the collinar and montane levels of the Pyrenees and the Cordillera Cantabrica.
Collinar-montane Carpathian [Vaccinium] heaths	[Vaccinium myrtillus]-[Vaccinium vitis-idaea] and [Vaccinium]-rich [Calluna vulgaris] heaths of the collinar and montane levels of the Carpathians.
Submontane western Carpathian bilberry-cowberry heaths	[Vaccinium myrtillus]-[Vaccinium vitis-idaea] heaths of the collinar and montane levels of the western and northern Carpathians of Moravia, Slovakia, Poland, with [Deschampsia flexuosa], [Melampyrum pratense], [Melampyrum sylvaticum], [Calamagrostis arundinacea].
Montane eastern Carpathian bilberry-ling heaths	[Calluna vulgaris] heaths of the beech and spruce levels of the eastern Carpathians, most widespread in the Apuseni mountains, rich in [Vaccinium myrtillus] and [Vaccinium vitis-idaea], with [Lycopodium clavatum], [Genista sagittalis], [Bruckenthalia spiculifolia], [Campanula abietina], [Campanula serrata], [Scorzonera rosea], [Viola declinata], [Nardus stricta], [Potentilla erecta], [Hieracium pilosella], [Anthoxanthum odoratum], [Agrostis capillaris], [Festuca rubra].
Sub-Atlantic heather - [Genista] heaths	Low [Calluna vulgaris] heaths often rich in [Genista] spp., [Armeria vulgaris], [Jasione montana], [Saxifraga granulata], [Teucrium scorodonia] mostly of the Germano-Baltic, but extended south- and eastwards to the Pannonic lowlands. Similar formations occurring in British upland areas, montane zones of high mountains of the western Mediterranean basin and high-rainfall Adriatic influenced areas are included. Vegetation of the alliance [Genistion pilosae] is present.

Northern [Calluna]-[Genista] heaths	Heaths of the northern Germano-Baltic plain and neighbouring regions, in Denmark, southern Sweden, Germany, northern Poland and the Netherlands north of the Rhine, dominated by [Calluna vulgaris], with [Genista pilosa] and, in the west, [Genista anglica], and with a species cortège that reflects boreal influences, marked, in particular, by the frequent presence of [Empetrum nigrum] or [Vaccinium] spp. These formations have their main area of occurrence in northwestern Germany, Jutland and the Netherlands in Friesland, the Drente, and the Hoge Veluwe, extending northward to northern Jutland and coastal Halland, eastward to the Prignitz and to Poland. Outliers occupy restricted surfaces in the Hercynian upper Rhine hills, the Rhine Valley and middle Franconia.
Subcontinental [Calluna]-[Genista] heaths	Relatively thermophile, subcontinental [Calluna vulgaris] heaths of Central Europe, in central and southern Germany, eastern France, the Czech Republic, Austria, with [Genista germanica], [Genista tinctoria], [Chamaespartium sagittale] ([Genista sagittalis]), [Vaccinium myrtillus] and, in peri-Alpine habitats, [Lembotropis nigricans] ([Cytisus nigricans]), [Chamaecytisus supinus] ([Cytisus supinus]), [Polygala chamaebuxus], [Vaccinium vitis-idaea]. They have their main area of distribution in the Thuringian and Franconian ranges, the Upper Palatinate hills, the Danube-Isar hills, the Swabian Alb, the Baar plateau, the eastern Black Forest, the Rhenano-Burgondian hills, the foothills of the Bayerischer Wald, the hills and low mountains of the Bohemian uplands, in the Bavarian and Austrian Danube basin, in the southeastern foothills of the Alps, in Carinthia and Styria; they irradiate northward, in thermophilous enclaves, in the Elbe basin.
Campino-Flandrian [Calluna]-[Genista] heaths	Heaths of the southwestern Germano-Baltic plain, in the Netherlands, south of the Rhine, Belgium and northwestern France, dominated by [Calluna vulgaris], with [Genista anglica], [Genista pilosa] and a species cortège that reflects Atlantic influences, marked, in particular, by the frequent presence of [Erica cinerea].
Campino-Flandrian [Erica cinerea] heaths	[Erica cinerea]-dominated heaths of the southern Netherlands and Belgium, facies of the [Calluna]-[Genista] heaths of unit 31.223. They represent a transition to the northern Atlantic heaths of unit 31.25.
Britannic [Calluna]-[Genista] heaths	Species-poor [Calluna vulgaris] lowland and hill heaths of England, limited to base-poor substrates in areas of local relative contintality.
Montane [Calluna]-[Genista] heaths	Thermophile [Calluna vulgaris] heaths of the montane zone (beech forest level) of the Central Massif, the Pyrenees and the southwestern Alps, with [Genista anglica], [Genista pilosa], [Vaccinium myrtillus] and, often, [Arctostaphylos uva-ursi].
Southern sub-boreal [Calluna]-[Empetrum] heaths	Sub-boreal heaths of the Netherlands and northern Germany, occupying enclaves within the range of heaths of unit 31.22, rich in [Vaccinium myrtillus], [Vaccinium vitis-idaea], or in [Empetrum nigrum], characteristic, in particular, of the Hoge Veluwe, Drente and Friesland.
Illyrian heaths	Heaths of the southern periphery of the Pannonic basin and the lower montane level of the Dinarides, with [Calluna vulgaris], [Erica herbacea], [Genista germanica ssp. heteracantha], [Genista pilosa], [Juniperus communis], [Prunella laciniata], [Hieracium murorum] ([Hieracium silvaticum]), [Serratula tinctoria], [Nardus stricta], [Carex pilulifera].

Po basin heaths	[Calluna vulgaris] heaths of the fluvioglacial terraces that constitute the high plains of the Po river system, with [Genista pilosa], [Genista tinctoria], [Cytisus scoparius], [Polygala chamaebuxus].
[Genista sagittalis] heaths	[Calluna vulgaris]-[Chamaespartium sagittale] ([Genista sagittalis]) heaths of the southwestern Alps, the Vosges, the Black Forest, the Jura, the Bavarian plateau and the southeastern Carpathians.
Central European basicline heaths	Heaths of calcareous or somewhat calcareous substrates, and of low-precipitation continental enclaves, in particular, in Hercynian hills and on Pleistocene inland dunes, of Germany, the Czech Republic, Austria, Poland, southern Scandinavia, with southern representatives in the northern Dinarides of Croatia, with [Calluna vulgaris], [Euphorbia cyparissias], [Cruciata glabra], [Peucedanum oreoselinum], [Prunella vulgaris], [Juniperus communis], [Carex caryophyllea], [Carex ericetorum], [Carex humilis], [Koeleria pyramidata].
Pontic ling heaths	Heaths, often extensive, of the Stranja-Istranca mountains and of the coasts of the Sea of Marmora, with [Calluna vulgaris], [Erica arborea], [Erica manipuliflora], [Cistus incanus], [Cistus salvifolius], [Genista carinalis], [Teucrium polium].
Atlantic [Erica] - gorse heaths	Heaths rich in gorse ([Ulex] spp.) of the Atlantic margins of Europe.
Maritime gorse heaths	Wind-swept heaths with prostrate, cushiony gorse or broom ([Ulex europaeus f. maritimus], [Ulex gallii f. humilis], [Cytisus scoparius ssp. maritimus]), [Erica vagans], [Erica cinerea], [Calluna vulgaris], and numerous other maritime ecotypes, of cliff tops of promontories and islands of Brittany, Cotentin, southern Ireland, Cornwall, Wales, the Cantabrian coast and Galicia.
Hiberno-Britannic [Calluna vulgaris]-[Ulex gallii] heaths	Oceanic heaths of Ireland, Wales, the Isle of Man, the South-West Peninsula and, locally, the Pennines and the coasts of East Anglia, dominated by [Ulex gallii], [Calluna vulgaris] and [Erica cinerea]. Basicline heaths, somewhat homologous to the continental formations of unit 31.22B, may form in zones of transition between some communities of this unit and calcareous grasslands of unit 34.
Irish [Erica mackaiana] heaths	Western Irish heaths comprising the northern, isolated, populations of [Erica mackaiana].
Northern heaths of Cornish heath	Heaths of well drained soils of the coasts and offshore islands of Ireland, Cornwall and Brittany, other than cushiony maritime formations, dominated by or rich in [Erica vagans], constituting isolated northern outposts of occurrence of the species.
Anglo-Armorican [Erica cinerea]-[Ulex gallii] heaths	Heaths of well drained soils of Brittany, the Cotentin peninsula, the South-Western Peninsula and the south coast of Wales, dominated by [Ulex gallii], [Erica cinerea] and [Calluna vulgaris], often rich in grasses, in particular, [Agrostis curtisii].
Cantabro-Pyrenean [Erica mackaiana]-[E. cinerea] heaths	Heaths with [Ulex gallii], [Erica mackaiana], [Erica cinerea], [Daboecia cantabrica] of well drained soils of the beech level of the Pyrenees and the Cantabrian chain and, very locally, of Galicia.
Cantabro-Pyrenean [Erica vagans]-[E. cinerea] heaths	Heaths with [Ulex gallii], [Erica vagans], [Erica cinerea], sometimes [Erica aragonensis], and [Pseudarrhenatherum longifolium] of the French and Spanish Basque coast and of the beech level of the Atlantic Pyrenees and of the Cantabrian chain, mostly on mildly acid or slightly calcareous soils.

Gallo-Britannic dwarf gorse heaths	Heaths of sub-Atlantic France and of southern and southeastern England formed by [Ulex minor], [Erica cinerea], [Calluna vulgaris] and [Ulex europaeus].
Aquitano-Ligerian dwarf gorse heaths	Heaths of well drained soils of Aquitaine, Saintonge, Poitou, Sologne and the Loire region formed by [Ulex minor] and [Erica cinerea], sometimes with [Erica scoparia].
Ibero-Atlantic [Erica - Ulex - Cistus] heaths	Aquitanian heaths with rock-roses. Iberian heaths with numerous species of heathers (notably [Erica umbellata], [Erica aragonensis]) and brooms, rock-roses and often [Daboecia]. When the rock-roses and other Mediterranean shrubs become dominant they should be classified as maquis or garrigues (units F5 or F6).
Biscay heaths	Coastal and collinar [Erica]-[Ulex]-[Cistus] heaths of the periphery of the Bay of Biscay and of the slopes of the Garonne Gap.
Aquitanian [Erica-Cistus] heaths	[Erica cinerea] and [Cistus salvifolius] heaths of the Aquitanian coast, with irradiations in the Landes and to the Montagne noire and Minervois.
Gascony-Sologne arid heaths	Arid [Erica cinerea] heaths of interior sandy hills and dunes of the Landes of Gascony and of Sologne gravels, with [Halimium alyssoides].
Northern Iberian heaths	Tall, dense heaths of the coasts, hills and lower montane areas of the Atlantic slope of Cantabria, the Asturias and Galicia, formed by [Erica vagans] and [Ulex europaeus], with [Erica cinerea], [Calluna vulgaris] and [Daboecia cantabrica].
Luso-Galician heaths	Atlantic Galician and Portuguese [Erica cinerea], [Erica umbellata] and [Ulex europaeus] heaths.
Luso-Galician collinar heaths	Coastal and collinar, thermo-Atlantic Galician and northern Portuguese heaths with [Erica cinerea], [Erica umbellata], [Ulex minor], [Ulex europaeus], [Ulex micranthus], [Cistus salvifolius] and [Halimium alyssoides].
Luso-Galician maritime heaths	Cushiony heaths with [Ulex europaeus ssp. latebracteatus f. humilis] and [Erica cinerea] of cliff tops of Galicia, north and central Portugal (southern vicariant of unit 31.231).
Cabreran heaths	Low [Calluna vulgaris]-rich heaths of interior northwestern mountains, limited to the Sierra de la Cabrera and the neighbouring Sierra Segundera, Pena Trevinca and Sierra del Teleno.
Cabreran dry whin heaths	Open, cushiony formations of [Calluna vulgaris], [Erica umbellata], [Genista sanabrensis], [Halimium umbellatum], [Halimium alyssoides] occupying dry, superficial soils.
Cabreran mesophile whin heaths	Formations of [Calluna vulgaris], [Genista carpetana], [Genista anglica], [Genista micrantha] and [Thymelaea coridifolia] ([Thymelaea dendryobryum]) of wetter stations.
Galicio-Leonese heaths	[Erica aragonensis] or [Erica umbellata] heaths of the interior slopes of the Cordillera Cantabrica, of interior Galicia and of the Leonese mountains.
Galicio-Leonese [Erica aragonensis] heaths	Supra-Mediterranean [Erica aragonensis] heaths with [Chamaespartium tridentatum], [Calluna vulgaris], [Halimium alyssoides] of the interior slopes of the Cantabrian Cordillera, eastern Galician ranges, Leon mountains and the Sierra de Cabrera.
Galicio-Leonese [Erica umbellata] heaths	Lower altitude heaths on the confines of Galicia and Leon dominated by [Erica umbellata] accompanied by [Erica cinerea], [Calluna vulgaris], [Chamaespartium tridentatum], [Halimium alyssoides], [Genista triacanthos], [Lavandula stoechas ssp. luisieri].

Galicio-Leonese [Erica cinerea] heaths	Lower altitude heaths on the confines of Galicia and Leon, characteristic of slightly more uniform and humid climates than those of unit 31.2442, dominated by [Erica cinerea], accompanied by [Calluna vulgaris], [Chamaespartium tridentatum], [Erica umbellata], [Halimium umbellatum] and Mediterranean elements such as [Lavandula stoechas ssp. pedunculata], [Thymus mastichina].
Oro-Castillan heaths	[Erica aragonensis] heaths of the Cordillera Central and the summits of the Montes de Toledo.
Western Cordilleran [Erica aragonensis] heaths	[Erica aragonensis] formations of the western Cordillera Central (Serra da Estrela, Sierra de Gata, Sierra de Pena de Francia) with [Erica umbellata], [Halimium alyssoides] and sometimes [Juniperus nana].
Ayllon [Erica aragonensis] heaths	[Erica aragonensis] formations of the Sierra de Ayllon with [Halimium viscosum], [Halimium ocymoides], [Genista pilosa] and, sometimes [Arctostaphylos uva-ursi].
Villuercan [Erica aragonensis] heaths	Isolated summital [Erica aragonensis] heaths of the Montes de Toledo (Villuercas).
Sorian heaths	[Erica aragonensis] and [Calluna vulgaris] heath communities of the northern Iberian Range, often with [Genista pilosa] or, on wetter soils, [Genista anglica] and [Genista micrantha].
Sorian summital heaths	[Calluna] heaths of high peaks, with [Viola montcaunica].
Sorian [Erica aragonensis] heaths	Beech-zone [Erica aragonensis] heaths with [Arctostaphylos uva-ursi].
Sorian [Erica vagans] heaths	Formations of lower beech zone, with [Erica vagans].
Sorian collinar heaths	[Erica arborea], [Erica cinerea], [Calluna vulgaris] formations of the acidophilous oak zone.
Cuencan heaths	[Erica aragonensis] heaths of the southern Iberian Range (Valdemeca, Serrania de Cuenca) with [Thymelaea subrepens].
Luso-Extremaduran heaths	Formations rich in [Erica umbellata], or sometimes [Erica aragonensis], of the meso-Mediterranean and occasionally thermo-Mediterranean zones of the western parts of the Iberian peninsula, intermediate between heath and maquis.
[Erica andevalensis] heaths	Formations constituted by the local endemic [Erica andevalensis] on soils rich in heavy metals of the rio Odiel basin in western Andalusia.
Boreo-Atlantic bell heather heaths	Low, open heaths of northern hyper-Atlantic Europe, north of the range of gorses, dominated by [Calluna vulgaris] and [Erica cinerea].
Inland dune heaths	Heaths colonizing Germano-Baltic fluvioglacial inland dunes.
Dry sandy heaths with crowberry	Crowberry heaths (unit 31.2272) of the relict wandering dunes of Drente and southern Friesland, with [Empetrum nigrum], [Salix arenaria], [Lophochloa cuspidata], [Pseudoscleropodium purum], [Hylocomium splendens].
Dry sandy heaths with heather and [Genista]	Sub-Atlantic [Calluna]-[Genista] heaths colonizing Germano-Baltic fluvioglacial inland dunes, other than those of 64.131; their composition can be specified by use of codes of unit 31.22.
Macaronesian heaths	Heaths of the Canary Islands, Azores and Madeira.
Canary Island heaths	Low and medium-tall ericaceous formations of the cloud belt of the Canary Islands.
Canary Island [Erica scoparia] heaths	Humid low heaths of high elevations of Tenerife (Anaga) and La Gomera (Incherada), with [Erica scoparia ssp. platycodon].

Canary Island [Erica arborea] heaths	Low and medium-tall stages of the [Erica arborea], [Myrica faya] and [Ilex canariensis] formations (tall forest-like formations are listed as 45.9).
Madeiran cloud heaths	Sometimes fairly tall, 2-3 metre high, [Erica arborea], [Myrica faya], [Erica scoparia], [Laurus azorica], [Clethra arborea] and [Pteridium aquilinum] heaths of the cloud zone of Madeira.
Madeiran summital heaths	[Erica cinerea var. maderensis]-dominated heaths of the highest peaks of Madeira.
Azorean lowland heaths	[Erica azorica], [Myrica faya] and [Laurus azorica] heaths of the lower altitudes of the Azores.
Upland Azorean [Erica azorica] and [Juniperus brevifolia] heaths	Heath facies of the [Erica azorica] and [Juniperus brevifolia] "upper woods" of the Azores.
Azorean summital heaths	[Calluna vulgaris], [Daboecia azorica] and [Thymus caespititius] communities of the highest altitudes of the Azores (1200-1500 m).
Maquis, arborescent matorral and thermo-Mediterranean brushes	Evergreen sclerophyllous or lauriphyllous shrub vegetation, with a closed or nearly closed canopy structure, having nearly 100% cover of shrubs, with few annuals and some vernal geophytes; trees are nearly always present, some of which may be in shrub form. Shrubs, sometimes tall, of [Arbutus], [Cistus], [Cytisus], [Erica], [Genista], [Lavandula], [Myrtus], [Phillyrea], [Pistacia], [Quercus] and [Spartium] are typical. Included is pseudomaquis, in which the dominants are mixed deciduous and evergreen shrubs.
Arborescent matorral	Successional and plagioclimax evergreen sclerophyllous or lauriphyllous vegetation of mediterranean or warm-temperate humid affinities with a more or less dense, broken or low arborescent cover and with a usually thick, high evergreen shrub stratum. Arborescent matorral derives mostly from degradation or regrowth of broad-leaved evergreen forests (G2) or is intermediate between them and maquis (F5.2); some derives from thermophilous deciduous (G1.7) or conifer (G3.7) forests.
Evergreen oak matorral	Mediterranean and sub-Mediterranean arborescent matorral organized around evergreen oaks. Dense, low, coppice-like Mediterranean and sub-Mediterranean woods of evergreen oaks.
Cork-oak matorral	Arborescent matorral dominated by [Quercus suber]. Detailed habitats can be coded by placing at the fourth and fifth decimal places of 32.111 the second and third digits after the decimal point of 45.2 that characterize the corresponding cork oak forest.
Acidiphile western Mediterranean holm-oak matorral	Arborescent matorral of siliceous substrates of the Iberian peninsula, France, Italy, the large western Mediterranean islands and Mediterranean North Africa dominated by [Quercus ilex] or [Quercus rotundifolia], usually with [Erica arborea] and [Arbutus unedo]. Detailed habitats can be coded by placing at the fourth, fifth and sixth decimal places of 32.112 the second, third and fourth digits after the decimal point of 45.3 that characterize the corresponding evergreen oak forest.

Calciphile western Mediterranean oak matorral	Arborescent matorral of calcareous substrates of the Iberian peninsula, France, Italy, the large western Mediterranean islands and Mediterranean North Africa dominated by [Quercus ilex], [Quercus rotundifolia] or [Quercus coccifera]. For [Quercus ilex] or [Quercus rotundifolia] matorrals, detailed habitats can be coded by placing at the fourth, fifth and sixth decimal places of 32.113 the second, third and fourth digits after the decimal point of 45.3 that characterize the corresponding evergreen oak forest. For Italian [Quercus coccifera] formations, use 32.1135.
Eastern Mediterranean oak matorral	Evergreen oak arborescent matorral of the Dalmatian coastlands, Montenegro and Albania, of continental Greece and its archipelagoes, of Cyprus, Asia Minor and the Levant, dominated by [Quercus ilex] or [Quercus coccifera] ([Quercus calliprinos]), developed on either siliceous or calcareous substrates.
Iberian mixed oak arborescent matorral	Arborescent matorral organized around mixed evergreen ([Quercus suber], [Quercus ilex], [Quercus rotundifolia]) and deciduous ([Quercus pyrenaica], [Quercus faginea]) oaks of Iberia.
Mediterranean evergreen oak low woods	Dense, low, coppice-like formations of evergreen oaks of Mediterranean and sub-Mediterranean regions.
[Quercus ilex] and [Quercus rotundifolia] low woods	Dense, low, coppice-like woods of [Quercus ilex] or [Quercus rotundifolia] of Mediterranean and sub-Mediterranean regions. Detailed habitats can be coded by combining with 32.1161 appropriate codes from unit 45.3.
[Quercus coccifera] and [Quercus alnifolia] low woods	Dense, low, coppice-like woods of [Quercus coccifera] ([Quercus calliprinos]) or [Quercus alnifolia] of Mediterranean and sub-Mediterranean regions. Detailed habitats can be coded by combining with 32.1162 appropriate codes from unit 45.4.
Olive and lentisc matorral	Thermo-Mediterranean or thermo-Canarian arborescent matorrals with [Olea europaea var. sylvestris], [Olea europaea ssp. cerasiformis], [Ceratonia siliqua], [Pistacia lentiscus], [Pistacia atlantica] or [Myrtus communis], degradation or colonisation stages of forests of unit G2.4.
Olive arborescent matorral	Thermo-Mediterranean arborescent matorrals dominated by [Olea europaea var. sylvestris], degradation or colonisation stages of forests of unit 45.11.
Carob arborescent matorral	Thermo-Mediterranean arborescent matorrals dominated by [Ceratonia siliqua], degradation or colonisation stages of forests of unit 45.12.
Lentisc and phillyrea arborescent matorral	Thermo-Mediterranean arborescent matorrals dominated by tall [Pistacia lentiscus] or [Phillyrea latifolia].
Myrtle arborescent matorral	Thermo-Mediterranean arborescent matorrals dominated by tall [Myrtus communis], in particular Balearic "murtedas" of the [Clematidi-Myrtetum].
Canary Island olive-lentisc arborescent matorral	Thermo-Canarian arborescent matorrals dominated by [Olea europaea ssp. cerasiformis] or [Pistacia atlantica], degradation or colonisation stages of forests of unit 45.13.

Juniper matorral	Mediterranean and sub-mediterranean evergreen sclerophyllous bush and scrub organized around arborescent junipers of different species ([Juniperus oxycedrus], [Juniperus phoenicea], [Juniperus lycia], [Juniperus excelsa], [Juniperus foetidissima], [Juniperus communis], [Juniperus drupacea] and [Juniperus thurifera], which are classified as subunits).
Prickly juniper ([Juniperus oxycedrus]) arborescent matorral	Arborescent matorral dominated by [Juniperus oxycedrus] s.l.
[Juniperus oxycedrus] arborescent matorral	[Juniperus oxycedrus ssp. oxycedrus]-dominated formations of dry, rocky slopes and deforested areas.
[Juniperus macrocarpa] arborescent matorral	[Juniperus oxycedrus ssp. macrocarpa] formations of coastal sands and abrupt shores; many are dunal and can be coded under unit 16.27.
[Juniperus transtagana] arborescent matorral	[Juniperus oxycedrus ssp. transtagana] formations of maritime sands of southwestern Portugal; they should usually be listed under unit 16.27.
Phoenician and Lycian juniper arborescent matorral	Arborescent matorral dominated by [Juniperus phoenicea] s.l.
[Juniperus phoenicea] arborescent matorral	[Juniperus phoenicea ssp. phoenicea]-dominated formations occupying steep rocky slopes of the meso-Mediterranean and, locally, thermo-Mediterranean or lower supra-Mediterranean zones, particularly developed on crests and spurs of the mountains bordering the Ebro depression, in calcareous mountains of Valencia, in the southwestern Alps and Provence, in Sardinia, in Sicily, in Puglia, in southern Greece, in North Africa. Remarkable, generally uncommon, stands of old, tall trees may take on an almost woodland appearance.
[Juniperus lycia] arborescent matorral	[Juniperus phoenicea ssp. lycia]-dominated formations of coastal sands, alluvions and abrupt shores. Many are dunal and can be coded under unit 16.27.
Grecian and stinking juniper arborescent matorrals	Arborescent matorrals of Greece, Anatolia and the Near East, dominated by [Juniperus excelsa] or [Juniperus foetidissima].
[Juniperus excelsa] arborescent matorral	Arborescent matorrals of Greece, Anatolia and the Near East, dominated by [Juniperus excelsa], derived from unit 42.A3.
[Juniperus foetidissima] arborescent matorral	Arborescent matorrals of Greece, Anatolia and the Near East, dominated by [Juniperus foetidissima], derived from unit 42.A4.
Common juniper arborescent matorral	Mediterranean formations dominated by [Juniperus communis].
Syrian juniper ([Juniperus drupacea]) arborescent matorral	Arborescent matorral dominated by [Juniperus drupacea], limited to the Peloponnese and Asia Minor, derived from forests of unit 42.A5.
Spanish juniper ([Juniperus thurifera]) arborescent matorral	Arborescent matorral dominated by [Juniperus thurifera] of Spain, southern France, Corsica and North Africa, derived from forests of unit 42.A2. Geographical divisions can be retained by appending the suffixes of units 42.A2 to 32.136.

Pine matorral	Mediterranean and sub-mediterranean sclerophyllous brush and scrub dotted by pines. Mixed dominance can be indicated by combination of codes.
Mesogean pine arborescent matorral	Arborescent matorrals dominated by [Pinus pinaster ssp. pinaster].
Stone pine arborescent matorral	Arborescent matorrals dominated by [Pinus pinea].
Aleppo pine arborescent matorral	Arborescent matorrals dominated by [Pinus halepensis].
Aegean pine arborescent matorral	Arborescent matorrals dominated by [Pinus brutia].
Black pine and scots pine arborescent matorral	Arborescent matorrals dominated by black pines ([Pinus pallasiana], [Pinus salzmannii]) or occasionnally by scots pines ([Pinus sylvestris]).
Arbor-vitae ([Tetraclinis]) matorral	Thermo-mediterranean, meso-mediterranean or sub-mediterranean arborescent matorral of North Africa, the Maltese Islands and southern Spain dominated by [Tetraclinis articulata].
Deciduous oak matorral	Tall scrub formations of the Mediterranean basin dominated by semideciduous or deciduous oaks.
Arid zone matorral	Brushes and steppes of the arid Iberian southeast, North Africa, Anatolia, central Cyprus and Palestine, dominated by often scattered tall shrubs and small trees of [Ziziphus lotus], [Ziziphus spina-christi] or [Acacia albida], in part distinctively thermo-mediterranean, in part intermediate between Mediterranean formations and open dry tropical woodland not found in the EUNIS classification area.
Iberian arid zone jujube ([Ziziphus]) matorral	Pre-desert brush of [Periploca laevigata], [Lycium intricatum], [Asparagus stipularis], [Asparagus albus], [Withania frutescens] with tall [Ziziphus lotus], confined to the arid Iberian Southeast; similar formations with lower [Ziziphus lotus] bushes are listed in unit 32.251.
European laurel matorral	Humid arborescent matorral with tall laurel ([Laurus nobilis]) developed locally in Sardinia, Sicily, the Maltese Islands, Campania, in particular.
Cypress matorral	Maquis dominated by native (in the Aegean and eastern Mediterranean basins; cf. unit G3.91) or planted cypress ([Cupressus]).
[Zelkova] matorral	Formations of the mountains of Crete, for the most part hedgehog-heaths, dominated by sparse to moderately closed stands of [Zelkova abelicea], a rare, endemic, declining Tertiary relict of Pontic affinities, often associated with [Acer sempervirens].
Maquis	Evergreen sclerophyllous or lauriphyllous shrub vegetation, with a more or less closed canopy structure, and with few annuals, some geophytes and often scattered trees, some of which may be in shrub form. Unlike arborescent matorral, maquis is typically dominated by species that do not have the potential to grow into tall trees. In high maquis these may be [Arbutus] spp., [Erica arborea], [Erica scoparia], [Juniperus oxycedrus], [Phillyrea] spp. In low maquis, [Cistus] spp., [Erica] spp., [Genista] spp., [Lavandula] spp. may predominate.
High maquis	Tall shrubby formations of the meso- and thermo-Mediterranean zones of the Mediterranean basin with a dominant stratum of [Erica arborea], [Arbutus unedo], [Quercus] spp. and [Pistacia lentiscus], but no or few emergent oaks, in contrast to unit F5.1.

Western Mediterranean high maquis	Tall shrubby formations of the meso- and thermo-Mediterranean zones of the Iberian peninsula, France, Italy, the large western Mediterranean islands and Mediterranean North Africa with [Erica arborea], [Arbutus unedo], [Quercus ilex], [Phillyrea angustifolia], [Phillyrea media], [Viburnum tinus], [Rhamnus alaternus], [Juniperus oxycedrus], [Fraxinus ornus].
Luso-Extremaduran high maquis	Western Mediterranean maquis with [Erica lusitanica], [Erica arborea], [Erica scoparia], [Cistus psilosepalus], [Cistus populifolius] developed in particular in the vicinity of lauriphyllus formations of ravines and watercourse edges of the Montes de Toledo.
Eastern Mediterranean high maquis	Maquis of Greece and the Balkan peninsula, with [Erica arborea], [Arbutus unedo], [Arbutus andrachne], [Myrtus communis], [Pistacia terebinthus], [Phillyrea latifolia], [Juniperus oxycedrus], [Quercus coccifera], [Quercus ilex].
Low ericaceous maquis	Lower (usually less than one metre) western Mediterranean maquis rich in [Calluna vulgaris], [Erica scoparia], [Erica cinerea] or sometimes low [Erica arborea], often accompanied by [Cistus] spp., [Lavandula stoechas] and various brooms.
Tall cistus maquis	Meso-, thermo- and occasionally supra-Mediterranean maquis of Iberia, southern France and western Mediterranean North Africa, in which the tall, large-flowered [Cistus ladanifer] is prominent. Included are more or less dense, homogeneous fields of [Cistus ladanifer], which can be identified by addition of digit 1 in the fourth decimal place of any of the subdivisions below, and more varied formations dominated by tall clumps of [Cistus ladanifer], which can be identified by addition of digit 2 in the fourth decimal place of these subdivisions.
Southwestern Iberian tall cistus maquis	[Cistus ladanifer]-dominated formations rich in gorses, spiny brooms or, occasionally, heathers, abundant on usually shallow soils in the thermo- and meso-Mediterranean zones of the southwest of the Iberian peninsula.
Central Iberian tall cistus maquis	[Cistus ladanifer]-dominated formations with brooms, heathers and lavenders of siliceous soils, generally rather eroded and oligotrophic of the meso- and, locally, supra-Mediterranean zones of the Meseta, the Iberian Range and its satellites, the eastern Cordillera Central and southern Galicia and Leon.
Baetic tall cistus maquis	[Cistus ladanifer]-dominated formations of southern Andalusia, developed in siliceous or peridotite ranges in association with local Baetic floras.
Tyrrhenian tall cistus maquis	Localized meso- and thermo-Mediterranean [Cistus ladanifer]-dominated formations of siliceous or decalcified soils and subhumid climates of the Tyrrhenian hinterland (crystalline Provence, Valencia), often with heath elements.

Low cistus maquis	Western Mediterranean formations of small or medium [Cistus] spp., most characteristic of the siliceous soils of the meso-Mediterranean zone, but also widely occurring in the thermo-Mediterranean zone and in the siliceous supra-Mediterranean zone. Formations dominated by different [Cistus] species are included as subunits, with the exception of: formations of mostly calciphile [Cistus] species (e.g. [Cistus albidus], [Cistus clusii]) and of indifferent species accompanied by strongly calciphile floras are classified as unit F6.1; formations of entirely thermo-Mediterranean species (e.g. [Cistus bourgaeanus], [Cistus palhinhae], [Cistus heterophyllus]) and of widespread species associated with co-dominant thermo-Mediterranean species are classified as unit F5.5.
[Cistus monspeliensis] maquis	Formations dominated by [Cistus monspeliensis], widespread in the Mediterranean region; homogeneous fields form in particular after fires.
[Cistus salvifolius] maquis	Formations dominated by [Cistus salvifolius], equally widespread, though less often dominant, in the entire Mediterranean region.
[Cistus populifolius] maquis	Formations dominated by [Cistus populifolius], often taller, mainly of cooler, moister, shadier, siliceous or serpentine stations of the meso-Mediterranean zone of the southern half of the Iberian peninsula, in particular of Portugal, Extremadura, the Sierra Morena, the Montes de Toledo, the Iberian Range system, the mountains of Andalusia Occidental, entering in several areas into the supra- or thermo-Mediterranean zones and extending north locally to northern Iberia and Languedoc.
[Cistus laurifolius] maquis	Formations dominated by [Cistus laurifolius], often also of medium height, widespread on siliceous or decalcified soils in meso- and supra-Mediterranean Iberia and northwestern Africa, particularly in the [Quercus pyrenaica] realm, extending to the montane zone of the Pyrenees, and locally to sub-mediterranean areas of the southern Central Massif and the southwestern Alps.
[Cistus psilosepalus] maquis	Formations dominated by [Cistus psilosepalus] of moist, lime-free soils of the western half of the Iberian peninsula, usually associated with southern heath elements, within the Atlantic influence, frequently located in depressions and gullies.
[Cistus crispus] maquis	Formations of southern and eastern Iberia, southern France, western Sicily and Mediterranean North Africa dominated by [Cistus crispus].
[Cistus incanus] maquis	[Cistus incanus] (including [Cistus incanus ssp. corsicus] and [Cistus incanus ssp. creticus]) formations of the Balearics, Corsica, Sardinia, Sicily, peninsular Italy and Mediterranean North Africa.
[Cistus albidus] maquis	Silicicolous formations with [Cistus albidus]. Most [Cistus albidus] formations have a pronounced garrigue character and should be listed under 32.4; however, some may be accompanied by a cortège so typical of silicolous maquis that they are better retained here.
Low cistus - French lavender maquis	Usually varied west-Mediterranean maquis rich in [Lavandula stoechas], accompanied by [Cistus] spp., [Erica] spp., brooms ([Genista] spp., [Cytisus] spp. i.a.). The subspecies of [Lavandula stoechas] can be used to characterize regional groups of communities otherwise differing by the assembly of accompanying species.

Central Mediterranean lavender maquis	Formations with [Lavandula stoechas ssp. stoechas] of northeastern Iberia, France, Italy and the west Mediterranean islands.
Central Iberian lavender maquis	Formations of central Iberia with [Lavandula stoechas ssp. pedemontana].
Western Iberian lavender maquis	Formations of western Iberia with [Lavandula stoechas ssp. luisieri] or [Lavandula stoechas ssp. sampaiana].
Low sparse maquis	Sparse, low silicicolous western Mediterranean maquis of [Helichrysum] spp., [Cistus] spp., [Erica] spp. physiognomically similar to calcicolous garrigues.
Broom-dominated maquis	Low, west-Mediterranean maquis dominated by leguminous shrubs ([Cytisus], [Teline], [Genista], [Adenocarpus], [Calicotome spinosa]).
Pseudomaquis	Mixed sclerophyllous evergreen and deciduous shrub thickets of the periphery of the range of Mediterranean sclerophyllous scrublands. They include, in particular, shrub formations of the Balkan and Italian peninsulas intermediate between Mediterranean maquis and schibljak, resulting from the degradation of thermophilous deciduous woodland G1.7, with a mixture of evergreen and deciduous bushes including [Quercus coccifera], [Juniperus oxycedrus], [Quercus trojana], [Carpinus orientalis], [Ostrya carpinifolia], [Pistacia terebinthus], [Buxus sempervirens], [Berberis cretica], [Paliurus spina-christi], [Pyrus spinosa], [Rosa] spp., similar Iberian formations with [Amelanchier ovalis], [Prunus lusitanica], [Ilex aquifolium], French and Italian formations with [Quercus pubescens] and [Quercus ilex], formations of Mediterranean Asia Minor and the Levant dominated by mixed deciduous and evergreen shrubs or small trees, in particular, [Quercus coccifera] ([Quercus calliprinos]) and [Pistacia palaestina].
Helleno-Balkanic pseudomaquis	Shrub formations intermediate between Mediterranean maquis and schibljak, resulting from the degradation of the [Ostryo-Carpinion] of the Helleno-Balkanic peninsula, distributed in particular in northern Greece, in the Maritsa, Tundja, Mesta, Struma and Vardar valleys of Bulgaria and the F.Y.R. of Macedonia, in the Lake Ohrid basin of Albania, along the Black Sea coasts of Bulgaria, and in the eastern Adriatic hills of Albania, Yugoslavia and Croatia, with a mixture of evergreen and deciduous bushes including [Quercus coccifera], [Juniperus oxycedrus], [Juniperus excelsa], [Quercus trojana], [Carpinus orientalis], [Ostrya carpinifolia], [Pistacia terebinthus], [Pistacia atlantica], [Berberis cretica], [Paliurus spina-christi], [Pyrus spinosa], [Buxus sempervirens], [Phillyrea media], [Prunus spinosa], [Prunus lusitanica], [Laurus nobilis], [Ligustrum vulgare], [Jasminum fruticans], [Crataegus monogyna], [Crataegus pycnoloba], [Pyracantha coccinea], [Rosa sempervirens], [Rubus ulmifolius].
Italo-French pseudomaquis	French and Italian mixed sclerophyllous evergreen and deciduous shrub formations dominated by [Quercus pubescens] and [Quercus ilex].
Iberian pseudomaquis	Mixed sclerophyllous evergreen and deciduous shrub formations of Iberia, with [Amelanchier ovalis], [Prunus lusitanica], [Ilex aquifolium].
Western Asian pseudomaquis	Formations of Mediterranean Asia Minor and the Levant dominated by mixed deciduous and evergreen shrubs or small trees, in particular, [Quercus coccifera] ([Quercus calliprinos]) and [Pistacia palaestina].

Spanish-broom ([Spartium junceum]) fields	Thickets and brushes of Spanish broom, [Spartium junceum], widespread in mediterranean and sub-mediterranean areas of western Europe.
Thermo-Mediterranean scrub	Shrub formations characteristic of the thermo-Mediterranean zone. Included here are those formations, for the most part indifferent to the siliceous or calcareous nature of the substrate, that reach their greatest extent or optimal development in the thermo-Mediterranean zone, typically with abundant [Pistacia lentiscus], [Myrtus communis], [Phillyrea] spp., [Erica manipuliflora], [Styrax officinalis], [Genista fasselata], [Euphorbia dendroides], [Calicotome villosa] and [Sarcopoterium spinosum]. Also included are the numerous, strongly characterized, thermophile formations endemic to the south of the Iberian peninsula, mostly thermo-Mediterranean but sometimes meso-Mediterranean; in their great local diversity they are a western counterpart of, and sometimes approach in appearance, the mostly eastern Mediterranean phryganas F7.
Thermo-Mediterranean brushes, thickets and heath-garrigues	Lentisc-dominated or lentisc-rich brushes and related formations with [Olea europaea var. sylvestris], [Pistacia lentiscus], [Rhamnus] spp. and [Rhamnus lycioides] subspecies, [Myrtus communis], [Rubia] spp., [Asparagus] spp., [Phillyrea] spp., [Osyris] spp., [Bupleurum] spp., various oaks ([Quercus ilex], [Quercus coccifera] and other species), [Calicotome] spp., [Laurus nobilis], [Helichrysum italicum] and other species widespread in the whole thermo-Mediterranean zone (except the arid Iberian Southeast: unit F5.55). A few extremely distinctive habitats formed by facies of these formations, distributed throughout large portions of their range, are separated under units F5.52-F5.54. Other characteristic habitats are classified as subunits of this unit according to the dominant species.
Oleo-lentisc brush	Usually pluri-specific brushes in which [Olea europaea var. sylvestris] accompanied by [Pistacia lentiscus] plays a determinant physiognomic role. Almost entirely restricted to the thermo-Mediterranean zone, they are represented by particularly well-developed, extensive stands in southern Iberia, the Balearics, Sardinia, Sicily, southern Greece and the Aegean, Mediterranean Anatolia, Cyprus and the Levant, North Africa. When the characteristic species increase in height they grade into arborescent matorral (unit 32.12).
Thermo-Mediterranean heath-garrigues	Formations dominated by the thermophile, often calciphile, heathers [Erica multiflora] and [Erica manipuliflora], best developed in the thermo-Mediterranean zones of southern and eastern Spain, the Balearics, Sardinia, Sicily, Pantelleria, southern Italy, southern Greece and the Aegean, Mediterranean Anatolia, Cyprus and coastal Mediterranean North Africa. Western meso-mediterranean formations are listed under unit 32.4B, eastern meso-Mediterranean formations under unit 32.5C.
Western [Erica multiflora] heath-garrigues	Usually calciphile [Erica multiflora] formations of the Iberian and Italian peninsulas, the large western Mediterranean islands and coastal Mediterranean North Africa.
Western [Erica manipuliflora] heath-garrigues	Rare, calciphile [Erica manipuliflora] formations of Puglia and Sicily.

Eastern [Erica manipuliflora] heath-garrigues	[Erica manipuliflora] formations of Greece and its archipelagoes, Mediterranean Anatolia, Cyprus.
Thorny burnet brush	Non-cushion formations dominated by [Sarcopoterium spinosum] of the eastern Mediterranean.
Lentisc brush	[Pistacia lentiscus] -dominated or -rich formations, widespread and abundant in thermo-Mediterranean and coastal meso-Mediterranean zones of the entire Mediterranean basin; locally, similar formations may appear in warm inland meso-Mediterranean areas. Often low and sometimes very open, the lentisc brush can in favourable situations reach a height of several metres, grading into arborescent matorral (unit 32.123).
[Calicotome] brush	Thermo-mediterranean formations physiognomically dominated by the brilliantly flowering [Calicotome villosa] or [Calicotome spinosa], widespread in European thermo-mediterranean regions, in the Levant, in particular on sandy plains and in pre-steppic areas, and in North Africa, notably in semi-arid areas of northeastern Tunisia and northeastern Libya.
Laurel thickets	[Laurus nobilis] thickets of humid or fresh stations of thermo-mediterranean regions, low-growing facies of unit 32.18, noted in particular in Sardinia, Sicily, the Maltese Islands, Campania and Crete.
Coastal curry plant ([Helichrysum]) garrigues	Low formations of [Helichrysum] ([Helichrysum italicum ssp. microphyllum], [Helichrysum italicum ssp. italicum]) with spurges ([Euphorbia pithyusa], i.a.), [Pistacia lentiscus], [Camphorosma monspeliaca], [Artemisia densiflora] or [Thymelaea passerina], [Thymelaea hirsuta], [Thymelaea tartonraira] of the immediate vicinity of sea cliffs, forming the transition between cliff vegetations or clifftop phryganas and thermo-Mediterranean brushes; they are particularly characteristic of the large Mediterranean islands.
Iberian thermo-Mediterranean kermes oak brush	Formations of [Quercus coccifera] of southern Portugal, southern and eastern Spain and the Ebro basin.
Tyrrhenian thermo-Mediterranean kermes oak brush	Rare [Quercus coccifera] formations of Liguria, Corsica, Sardinia and Sicily.
Hellenic thermo-Mediterranean kermes oak brush	Formations of [Quercus coccifera] of the thermo-Mediterranean zone of Greece and its archipelagoes.
Anatolian thermo-Mediterranean kermes oak brush	Formations of [Quercus coccifera] of the thermo-Mediterranean zone of the periphery of the Anatolian plateau.
Cyprian thermo-Mediterranean kermes oak brush	Formations of [Quercus coccifera] of the thermo-Mediterranean zone of Cyprus.
Levantine thermo-Mediterranean kermes oak brush	Formations of [Quercus coccifera] of the thermo-Mediterranean zone of the eastern Mediterranean coastal fringe.
North African thermo-Mediterranean kermes oak brush	Formations of [Quercus coccifera] of the thermo-Mediterranean zone of North Africa.

Myrtle thickets	[Myrtus communis]-dominated brush. Particularly noteworthy formations occur in the Balearics ([Clematidi-Myrtetum]), in southern Iberia, in Sardinia, in the Aegean, in the eastern Mediterranean coastal regions, in North Africa. Myrtle thickets can in favourable situations reach a height of a few metres, grading into arborescent matorral (unit 32.124).
Thermo-Mediterranean kermes oak brushes	[Quercus coccifera] thickets of the Mediterranean basin rich in thermo-Mediterranean elements, in particular, [Pistacia lentiscus], [Chamaerops humilis], [Rhamnus lycioides ssp. lycioides], [Rhamnus lycioides ssp. oleoides], [Asparagus albus], [Asparagus acutifolius], [Bupleurum gibraltarium].
[Phillyrea] thickets	[Phillyrea angustifolia] or [Phillyrea media]-dominated thermo-Mediterranean brushes; they constitute facies of mixed thermo-Mediterranean brushes, in particular of the southern Iberian [Asparago-Rhamnion] and of the Aegean [Ceratonio-Rhamnion], notably on Samothrace and Rhodes; they also constitute remarkable coastal formations on Minorca, based on the endemic [Phillyrea media var. rodriguezii], and in Valencia.
Minorcan [lentiscares]	Thickets of [Phillyrea media var. rodriguezii] of wind-beaten coastal areas of Minorca.
Valencian [mata]	Thickets of [Phillyrea angustifolia], [Pistacia lentiscus], [Quercus coccifera], [Rhamnus lycioides ssp. oleoides var. angustifolia], [Rhamnus alaternus] of fixed dunes of Valencia. They are almost extinct, surviving only in the Dehesa de la Albufera. The code should be used in conjunction with unit 16.28.
Western [Phillyrea] thickets	[Phillyrea angustifolia] or [Phillyrea latifolia]-dominated facies of mixed thermo-Mediterranean brushes of the westerm Mediterranean basin, with the exception of the coastal [Phillyrea] thickets of Minorca and Valencia.
Eastern [Phillyrea] thickets	[Phillyrea angustifolia] or [Phillyrea latifolia]-dominated formations of the eastern Mediterranean basin.
Buckthorn-asparagus brushes	Thermo-mediterranean formations in which [Asparagus] spp. and/or [Rhamnus] spp., in particular [Rhamnus lycioides], predominate.
[Osyris] brushes	Formations dominated by [Osyris alba] or [Osyris tripartita].
Storax thickets	[Styrax officinalis]-dominated formations of thermo- and meso-mediterranean areas of the eastern Mediterranean basin.
[Buxus balearica] box thickets	[Buxus balearica] formations of coastal regions of Andalusia, bordering the Sea of Alboran, and of the Balearics.
Dwarf oak scrub	Formations of the semievergreen shrub [Quercus fruticosa] ([Quercus humulus]), endemic of southern and southwestern Iberian and the Moroccan Tang,rois; they are located in southern Portugal, western Andalusia and in the lower elevations of the western Rif, at around 500 m (j. Kbir, j. Zem-zem, j. Khezana).
Tall spiny broom brush	Brushes dominated by tall, spiny species of [Genista].
Corema brush	[Corema album]-dominated formations of the southwestern coasts of the Iberian peninsula. Most of them are dunal and can be listed under unit 16.28, completed by this code. They often constitute the hem of juniper woodland or thickets.

Thermo-Mediterranean juniper brushes	Formations rich in thermo-mediterranean elements dominated by prostrate or low shrubby [Juniperus oxycedrus] or [Juniperus phoenicea]. Many of them are dunal and can be listed under unit 16.28, completed by this code. See also unit 32.2B2.
Thermo-Mediterranean wormwood brushes	[Artemisia arborescens] brushes of the Tyrrhenian islands and peninsular Italy, the Iberian peninsula, Mediterranean North Africa, the southern Balkans, Greece and Crete, Mediterranean Asia Minor.
Thermo-Mediterranean Jupiter's beard brushes	[Anthyllis barba-jovis] brushes of thermo-Mediterranean rocky coastal slopes often associated with coastal phrygana and [Euphorbia dendroides] formations, of eastern Spain, Provence, Corsica, Sardinia, Sicily, the Adriatic coast of the Balkan peninsula, mainland Greece and Crete.
Coastal dwarf leguminous garrigues	Local low thermo-Mediterranean formations of calcareous coasts of Corsica, Sardinia, Sicily and the west Mediterranean mainland of Europe and Africa, dominated by leguminous subshrubs of [Dorycnium] or [Coronilla].
Tree-spurge ([Euphorbia dendroides]) formations	Stands of [Euphorbia dendroides], remarkable tertiary relict of Macaronesian origin; they occur as a facies of the thermo-Mediterranean brushes of the Balearics, Corsica, Sardinia, Sicily, Islas Eolie, Egadi, Pelagi, Pantelleria, Crete, and, very locally, of those of the coasts of northern Catalonia, southeastern France, peninsular Italy and its islands, central Greece, notably on slopes facing the gulf of Corinth, the Peloponnese, the Aegean archipelagoes, Albania and enclaves of the Mediterranean periphery of Anatolia and the Levant. Particularly extensive and robust stands occur in Sicily, Sardinia and Crete where they may extend to relatively high altitudes. Very local formations in Mediterranean North Africa occupy the steep rocky slopes of some coastal capes and isolated inland sites, in Cyrenaica, northern Tunisia (Ichkeul), and in a narrow coastal strip in northern Algeria.
Diss ([Ampelodesmos]) - dominated garrigues	Garrigues invaded and dominated by the high tussocks of [Ampelodesmos mauritanica]; typically thermo-Mediterranean, they also occur extensively in the meso-Mediterranean zone. They are most prevalent on the Tyrrhenian coast of central and southern Italy, in Sicily, in the Mediterranean zone and the less arid parts of the Saharo-Mediterranean transition zone of North Africa.
Palmetto brush	[Chamaerops humilis]-dominated formations; other thermo-Mediterranean brushes or garrigues rich in the physiognomically important palmetto can be identified by a combination of this code and that of the other appropriate subdivision of unit F5.5. Palmetto brushes are best represented in the coastal areas of southwestern, southern and eastern Iberia, the Balearics, Sicily and its satellite islands and Mediterranean North Africa, with more sporadic occurrences in the Guadalquivir basin, Sardinia, and the Tyrrhenian coasts and islands of peninsular Italy. They are apparently extinct in the wild in the Maltese Islands.

Mediterranean pre-desert scrub	Shrub formations constituting, with the halo-nitrophilous scrubs (unit F6.824) and the localized gypsum scrubs (unit F6.73), much of the natural and semi-natural vegetation of the arid zone of southeastern Spain (Almeria, Murcia, Alicante), a highly distinctive region of unique climatological, biological and landscape character within Europe, extremely rich in African and endemic species. Several of the most remarkable formations remain in only a few undisturbed localities and are gravely at risk. Similar formations occur in the upper arid (Mediterranean arid) zone of North Africa. Outposts of these communities also exist in Sicily, the Egadi islands, the Pelagie islands, the Maltese Islands and Pantelleria.
Iberian jujube brush	Communities dominated by hummocks of the lotus tree [Ziziphus lotus], usually with [Lycium intricatum], [Withania frutescens], [Asparagus albus], [Asparagus stipularis], [Rhamnus lycioides], of the arid Iberian Southeast. Very tall stands can be coded as unit 32.17.
Sicilian jujube brush	[Ziziphus lotus] formations of western Sicily.
[Maytenus] brushes	More or less dense, spiny brushes limited to very restricted areas of the Almerian and Carthagenian coasts of the arid Iberian Southeast, dominated by the shrub of African affinities [Maytenus senegalensis var. europaeus] with [Rhamnus oleoides ssp. angustifolia] and [Rhamnus oleoides ssp. velutinus], [Asparagus albus], [Asparagus stipularis], [Asparagus horridus], [Chamaerops humilis] and occasionally [Buxus balearica].
Iberian [Periploca] scrubs	Open, sometimes sparse brush dominated by [Periploca laevigata ssp. angustifolia] with [Osyris quadripartita], [Chamaerops humilis], [Pistacia lentiscus], [Rhamnus lycioides] and locally [Calicotome infesta ssp. intermedia], [Tetraclinis articulata], [Maytenus senegalensis] or [Lycium intricatum], limited to very arid coastal areas of Murcia and Almeria.
Sicilian Channel [Periploca] scrubs	Summer deciduous shrub formations of [Periploca laevigata ssp. angustifolia], [Lycium intricatum], [Euphorbia dendroides] with [Prasium majus], [Pistacia lentiscus], [Asparagus acutifolius], [Phillyrea angustifolia], [Calicotome villosa] of islands of the Sicilian Channel, in particular of the southwestern coast of Pantelleria, of the Maltese Islands and of the Egadi Islands.
Iberian tall arid brushes	Communities essentially endemic to the province of Almeria, constituted by [Phlomis purpurea ssp. almeriensis], [Phlomis caballeroi], [Genista spartioides ssp. retamoides], [Genista umbellata], [Genista ramosissima], [Genista cinerea ssp. valentina], [Launaea arborescens], [Launaea lanifera], [Lavatera oblongifolia], [Linum suffruticosum], [Salsola webbii], [Salvia candelabrum], [Sideritis foetens], [Thymelaea tartonraira], [Ulex parviflorus ssp. canescens], [Frankenia webbii], [Anthyllis terniflora]. Formations belonging to this alliance dominated by large, non-spiny brooms are listed separately under unit 32.26.
[Salsola webbii] brush	Tall brush communities of arid slopes at the base of coastal mountains with [Salsola webbii], [Launaea arborescens], [Anthyllis terniflora], [Frankenia webbii], [Echium pycnanthum].

Sideritis brush	Montane brush of sunny calcareous slopes of the Sierra de Gador and the Sierra de Alhamilla, rich in endemics among which the shrubs [Sideritis foetens] and [Lavandula lanata] and the woody perennials [Salvia candelabrum], [Lavatera oblongifolia] and [Ptilostemon hispanicus].
Gorse-phlomis scrub	Formation endemic to the base-rich volcanic rocks of the mountains of Cabo de Gata, dominated by the gorse [Ulex argenteus ssp. erinaceus], of extraordinarily limited range, accompanied by [Phlomis purpurea ssp. almeriensis], [Phlomis caballeroi] and numerous elements of thermo-Mediterranean brushes, [Asparagus] spp., [Pistacia lentiscus], [Quercus coccifera], [Chamaerops humilis].
[Genista umbellata] garrigues	Open scrub rich in dwarf shrubs and dominated by the large cushions of var. [umbellata] of the remarkable, taxonomically widely isolated, southern and southeastern Spanish endemic [Genista umbellata], in association with the also cushion-forming [Thymus capitatus], [Genista spartioides ssp. retamoides], another southern Spanish endemic, and [Phlomis purpurea ssp. almeriensis]. This formation, which presents physiognomic similarities with phryganas (unit 33), constitutes a transition between the arid brushes and the thermo-Mediterranean garrigues of section 32.27, in particular those formed by the only other population of [Genista umbellata ssp. equisetiformis]). Many of the accompanying dwarf shrubs, such as [Thymus glandulosus], [Satureja obovata], [Teucrium eriocephalum], however, are Iberian Southeast endemics or preferentials.
Iberian arid garrigues	Low, open garrigues, often of steppic character, occupying mostly skeletal soils of the arid Iberian Southeast.
Murcio-Alicantian arid garrigues	Diverse formations of the northern part of the arid Iberian Southeast characterized by various combinations of the dwarf shrubs [Helianthemum caput-felis], [Helianthemum cinereum ssp. cinereum], [Helianthemum pilosum ssp. violaceum], [Hypericum ericoides], [Launaea pumila] and the endemic [Astragalus hispanicus], [Sideritis leucantha ssp. tragoriganum], [Teucrium pumilum ssp. carolipaui], [Thymus longiflorus ssp. moroderi].
Almerian arid garrigues	Very open formations limited to the areas of the Iberian Southeast with the most extreme arid conditions, characterized by [Anabasis articulata], [Frankenia webbii], [Haloxylon articulatum], [Launaea lanata], [Limonium album], [Teucrium gnaphalodes], [Sideritis pusilla ssp. flavovirens], and an exceptional number of endemics, including [Coris hispanica], [Euzomodendron bourgaeanum], [Herniaria fontanesii ssp. almeriana], [Limonium insigne], [Salsola papillosa], [Santolina viscosa], [Sideritis pusilla ssp. pusilla], [Sideritis pusilla ssp. osteoxyla], [Teucrium eriocephalum], [Teucrium almeriense].
[Limonium-Anabasis] arid garrigues	Formations rich in succulent plants of argillous and stony soils of Murcia and Almeria, with [Anabasis articulata] and [Limonium insigne].
Cabo de Gata arid garrigue	Formations of Cabo de Gata (Charidemum Promontorium) with [Teucrium charidemi], [Caralluma europaea var. confusa], [Lapiedra martinezii], [Antirrhinum charidemi], [Dianthus charidemii], [Sideritis pusilla ssp. osteoxyla], taxa for the most part endemic to the promontory.

Tabernas arid garrigues	Species-rich formations of the arid depression between the Sierras de Gador, Filabres and Alhamilla, with [Euzomodendron bourgaeanum], [Coris hispanica], [Koelpinia linearis].
Coastal Almerian arid garrigues	Coastal Murcio-Almerian formations with [Teucrium gnaphalodes], [Teucrium baltasari], [Sideritis pusilla ssp. pusilla] and [Sideritis pusilla ssp. flavovirens], [Launaea nudicaulis].
Thermo-Mediterranean broom fields (retamares)	Mediterranean formations dominated by retamas ([Lygos] spp.) or by large, non-spiny thermo-mediterranean brooms of genera [Cytisus] and [Genista], limited to the Iberian peninsula, the Balearics, mediterranean North Africa, Sicily and its associated islands, the Cilento coast of Campania.
Yellow retama brush	[Lygos sphaerocarpa] formations of the Iberian peninsula and Mediterranean North Africa.
Ibero-Mauritanian white retama brush	[Lygos monosperma] formations of the southwestern Iberian peninsula and coastal Mediterranean North Africa.
[Genista speciosa] broom fields	Tall, open formations dominated by or rich in the endemic [Genista cinerea ssp. speciosa], with [Phlomis purpurea ssp. purpurea], [Ulex parviflorus ssp. willkommii], [Chronanthus biflorus], [Ptilostemon hispanicus], and, sometimes, [Lavandula lanata], [Catananche caerulea], [Teucrium polium], [Salvia candelabrum] or [Satureja graeca], of the lower meso-Mediterranean slopes of hills facing the Guadalquivir depression of eastern Andalusia.
[Genista valentina] broom fields	Formations of the arid Iberian Southeast dominated by the endemic [Genista valentina], accompanied by [Lygos sphaerocarpa] or, in the Sierra de Cartagena area, [Calicotome infesta ssp. intermedia].
[Genista retamoides] broom fields	Formations of the coast of the Sea of Alboran and of the arid Iberian southeast dominated by the endemic [Genista spartioides ssp. retamoides].
[Genista haenseleri] broom fields	Open formations of abrupt, hot, sunny slopes of the sierras de Ojen, Mijas (Unidad Blanca), southern Andalusia characterized by the presence of the striking, tall endemic broom [Genista haenseleri], associated with [Phlomis purpurea ssp. purpurea], [Ulex parviflorus ssp. willkommii], [Genista umbellata ssp. equisetiformis], [Thymus capitatus], [Teucrium fruticans].
[Genista ramosissima] broom fields	Formations characterized by the presence of the usually dominant, non-spiny broom [Genista ramosissima] of southeastern Spain and North Africa.
Thermo-mediterranean [Lygos raetam] brush	Retama fields formed in coastal regions and on maritime sands of southern Sicily, North Africa and the Levant by [Lygos raetam ssp. gussonei], [Lygos raetam ssp. duraiei] and [Lygos raetam ssp. sarcocarpa], close relatives of the widespread retam, [Lygos raetam ssp. raetam], of the desert and subdesert regions (units 71 and 32.D).
Eolian broomfields	Thermo-Mediterranean formations of volcanic rocks and sands of Stromboli and Vulcano dominated by the very tall Eolian endemic broom [Cytisus aeolicus], with the Tyrrhenian insular endemic [Centaurea aeolica].
[Genista ephedroides] broomfields	Thermo-Mediterranean formations dominated by the Tyrrhenian endemic [Genista ephedroides], often on steep rocky substrates, restricted to a few localities on western and northern Sardinian headlands, on the island of Zannone, Circeo National Park (Latium), on the north coast of Sicily, on the Eolian and Ponsian islands and along the Cilento coast (Campania).

Ibiza broomfields	Formations characterized by the remarkable, tall Ibiza endemic [Genista dorycnifolia], accompanied by the eastern Iberian [Chronanthus biflorus] ([Cytisus fontanesii]).
[Genista pseudoretamoides] broom fields	North African brushes formed by the tall [Genista spartioides ssp. pseudoretamoides].
Mediterranean gorse-heaths	Western Mediterranean formations, for the most part limited to the lower meso-mediterranean and thermo-mediterranean zones of the western Iberian peninsula, with outposts in western Morocco, dominated by gorse ([Ulex] spp., [Stauracanthus] spp.) of thermo-Mediterranean affinities, or by the spiny, globular broom [Genista hirsuta], accompanied by a cortège of plants characteristic of the meso- and thermo-mediterranean cistus maquis (F5.23), thermo-mediterranean brushes (F5.51) or, occasionally, meso-mediterranean garrigues (F6.1). Other thermo-mediterranean gorse formations will be found among the more specialised extreme southern Iberian endemic communities listed under F5.55, F5.58, F5.59, F5.5A-F5.5C.
Monchique [Ulex argenteus] gorse-heaths	[Ulex argenteus ssp. argenteus]-dominated or -rich formations of low slopes of the Serra da Monchique and neighbouring areas of Algarve and southwest Alentejo, usually with [Cistus ladanifer]. The gorse is endemic to the area; the communities inhabited by its two equally restricted relatives, [Ulex argenteus ssp. subsericeus] and [Ulex argenteus ssp. erinaceus] are listed under units 32.2A3, 32.2B4 and 32.2563.
Lusitanian [Ulex densus] gorse-heaths	Cushion-heaths of [Ulex densus] formed in substitution stages of the [Melico-Cocciferetum] on dry, calcareous coastal hills of the Tejo and Estremadura regions of central-western Portugal; the gorse is endemic to the area.
Morena [Ulex eriocladus] gorse heaths	Formations of the western Sierra Morena (Sierra de Aracena, Badajos region, southeastern Portugal) dominated by [Ulex eriocladus], developed mostly in the meso-Mediterranean zone and locally in contact with [Erica umbellata] heaths; the gorse is endemic to the area.
[Ulex parviflorus] gorse-heaths	[Ulex parviflorus ssp. parviflorus]-dominated formations of central-western Portugal, southern and eastern Spain and southern France and coastal North Africa, locally distributed on calcareous or siliceous substrates of the thermo-Mediterranean and lower meso-Mediterranean zones, occasionally ascending to higher elevations. Communities including the related [Ulex parviflorus ssp. willkommii], [Ulex baeticus] and [Ulex australis] are listed under units 32.28, 32.2A and 32.2C, clearly meso-Mediterranean formations under unit 32.4H.
[Stauracanthus spectabilis] gorse-heaths	[Stauracanthus genistoides ssp. spectabilis]-dominated formations; the gorse has a very restricted distribution on the coast of Alentejo and in Morocco.
Luso-Extremaduran [Genista hirsuta] gorse-heaths	[Genista hirsuta]-dominated formations of thermo- and meso-Mediterranean Luso-Extremaduran regions, widespread and physiognomically striking by the hemispherical port of the shrub, similar to that of many gorses and of phrygana species.

Iberian thermo-Mediterranean garrigues	Mostly calcicolous, open garrigues of the extreme south of the Iberian peninsula characterized by the abundance of [Phlomis purpurea ssp. purpurea], [Ulex parviflorus ssp. willkommii], [Genista umbellata ssp. equisetiformis], [Thymus eryanthus], [Thymus capitatus], [Micromeria graeca], [Teucrium polium], [Calicotome villosa], [Asperula hirsuta].
Baetic garrigues	Varied calcicolous formations of Baetic hills; they may be dominated by any of a number of characteristic species of the class, and in particular by [Thymus capitatus], [Teucrium polium], [Helianthemum hirtum], [Phlomis purpurea ssp. purpurea] or [Ulex parviflorus ssp. willkommii]; they occur locally throughout the entire Baetic area. A few communities, remarkable for the dominance of less widespread, often endemic, usually striking species, and, in many cases, for their adaptation to non-calcareous soils or to outlying areas, have been listed separately.
Ronda [Ononis speciosa] garrigues	Spectacular formations dominated by the endemic shrub [Ononis speciosa] with [Bupleurum gibraltarium], [Thymus capitatus], [Micromeria graeca], [Phlomis purpurea ssp. purpurea], [Ulex parviflorus ssp. willkommii], [Genista umbellata ssp. equisetiformis], [Calicotome villosa], [Satureja obovata], [Ptilostemon hispanicus], locally distributed in calcareous areas of the Serrania de Ronda and satellite ranges.
Guadalquivir [Genista equisetiformis] garrigues	Sub-Baetic formations of calcareous hills lining the Guadalquivir depression of Andalusia with the large cushion-forming [Genista umbellata ssp. equisetiformis] and [Chronanthus biflorus] accompanied by [Thymus capitatus], [Thymus eryanthus] and [Ulex parviflorus ssp. willkommii].
Alboran [Genista equisetiformis] garrigues	Acidophilous formations limited to rare enclaves of the slopes above the Sea of Alboran, with [Genista umbellata ssp. equisetiformis], [Ulex parviflorus ssp. willkommii], [Calicotome villosa], [Lavandula stoechas ssp. stoechas], [Adenocarpus grandiflorus].
Andalusian magnesium garrigues	[Ulex baeticus]-dominated or -rich formations of ultra-basic dolomites, serpentines and peridotites of the Serrania de Ronda and its peripheral ranges.
Ronda dolomite garrigues	Dolomitic formations with [Ulex baeticus], [Phlomis purpurea ssp. purpurea], [Cistus clusii], [Halimium viscosum], [Euphorbia baetica], [Linaria clementei] and, sometimes, [Genista haenseleri] of the Serrania de Ronda, Sierra Blanquilla, de Ojen and surrounding areas.
Ronda serpentine and peridotite garrigues	Formations of serpentines and peridotites of the Sierra de Carratraca and a few nearby stations of the Serrania de Ronda with [Ulex baeticus] (or sometimes [Genista umbellata ssp. equisetiformis]), [Galium boissieranum], [Staehelina baetica], [Centaurea carratracensis].
Bermeja [Ulex] garrigues	Formations of the Sierra Bermeja dominated by [Ulex baeticus].
Bermeja [Halimium] garrigues	Tall [Halimium atriplicifolium] formations of the peridotites of the Sierra Bermeja with [Phlomis purpurea ssp. purpurea], [Genista lanuginosa], [Genista hirsuta], [Lavandula stoechas].
[Stauracanthus boivinii] gorse-heaths	Highly distinctive formations, dominated by the endemic gorse [Stauracanthus boivinii], limited to a few locations with siliceous, oligotrophic soils and high precipitation of the thermo- and lower meso-mediterranean zone of the vicinity of the Straits of Gibraltar and the southern shores of the Sea of Alboran.

Aljibe [Stauracanthus boivinii] gorse-heaths	Formations of the sierras del Aljibe, Blanquilla, del Nino and de Ojen with the Gibraltar endemics [Genista tridens] and [Bupleurum foliosum].
Algarve [Stauracanthus boivinii] gorse-heaths	Very local formation of the coast of the Algarve, with [Genista triacanthos], [Erica umbellata], [Calluna vulgaris] and [Tuberaria major].
North African [Stauracanthus boivinii] gorse-heaths	African formations dominated by [Stauracanthus boivinii], distributed in the thermo- and lower meso-Mediterranean zone of the vicinity of the Straits of Gibraltar and the southern shores of the Sea of Alboran.
Western Tethyan xero-psammitic brushes	Open brushes formed by [Stauracanthus genistoides ssp. genistoides], [Halimium halimifolium], [Halimium commutatum] or [Cistus libanotis] ([Cistus bourgaeanus]), highly adapted to the extreme aridity and oligotrophy of fossil dunes and other deep, fixed sands with very low water table of coastal areas of the western Mediterranean basin and the subtropical Atlantic, particularly developed in the southwestern Iberian peninsula.
Southern Andalusian "monte blanco"	Xero-psammitic brushes of the coasts of the Gulf of Cadiz, between the estuaries of the rios Guadalete, Guadalquivir and Tinto, particularly characteristic of the Coto Donana ("monte blanco"), in which [Stauracanthus genistoides ssp. genistoides], [Halimium halimifolium], [Halimium commutatum] and [Cistus libanotis] ([Cistus bourgaeanus]) are accompanied by, in particular, [Lavandula stoechas ssp. lusitanica], [Armeria velutina] and [Thymus tomentosus] and, in the wide transition zone with the "monte negro", by [Ulex australis] and [Erica scoparia]. The "monte blanco" is an important habitat for several threatened or rare vertebrates, including [Lynx pardellus], [Genetta genetta], [Felis sylvestris], [Dama dama], [Aquila adalberti].
Guadalquivir xero-psammitic brushes	Somewhat transitional xero-psammitic brushes of inland sands of the Guadalquivir valley with [Stauracanthus genistoides ssp. genistoides], [Halimium halimifolium], [Halimium commutatum], [Halimium viscosum], [Genista hirsuta], [Cistus libanotis] ([Cistus bourgaeanus]), [Cistus crispus] and elements of thermo-Mediterranean brushes.
Algarve xero-psammitic brushes	Very local xero-psammitic brushes of the Algarve coast with [Stauracanthus genistoides ssp. genistoides], [Halimium halimifolium], [Halimium commutatum], [Cistus libanotis] ([Cistus bourgaeanus]), [Lavandula stoechas ssp. lusitanica], [Armeria macrophylla] and the extremely narrow endemic [Ulex argenteus ssp. subsericeus].
Lusitanian xero-psammitic brushes	Xero-psammitic brushes of sands of the Atlantic coast of Portugal with [Stauracanthus genistoides ssp. genistoides], [Halimium halimifolium], [Halimium commutatum], [Cistus libanotis] ([Cistus bourgaeanus]), [Helichrysum italicum] and [Corema album].
Western Mediterranean xero-psammitic brushes	Xero-psammitic brushes of coastal sands of Tyrrhenian islands and Italy, dominated by [Halimium halimifolium].
Cabo de Sao Vicente brushes	Low brush and garrigue formations of the dolomitic tableland, karsts, sands and terra-rosas of the vicinity of Cape San Vicente, with dwarf [Juniperus phoenicea ssp. lycia], [Cistus palhinhae], [Ulex argenteus ssp. erinaceus], rich in endemics.

Thermo-Mediterranean heaths	Closed formations of heather, gorse and halimium constituting the extensive "monte negro" of the Coto Doñana; alternating with the xerophile "monte blanco" (unit F5.5A1), they occupy deep, sandy, oligotrophic soils with a water table close to the surface; their composition includes an admixture of thermo-Mediterranean and Atlantic heath species together with local endemics. Particularly characteristic in the Guadalquivir area, they are locally represented north to the Sado-Tago river area of coastal Portugal.
Dry Andalusian [monte negro]	Formations of higher ground with the endemic gorse [Ulex australis], [Erica scoparia], [Calluna vulgaris], [Genista triacanthos], [Erica umbellata], [Halimium halimifolium], [Cistus salvifolius].
Humid Andalusian [monte negro]	Formations of semi-peaty edges of freshwater lagoons and depressions where the winter and spring water table reaches the surface, with [Ulex minor var. lusitanicus], [Erica ciliaris], [Erica scoparia], [Calluna vulgaris], [Genista anglica], [Molinia caerulea], [Pteridium aquilinum], [Cistus salvifolius].
Garrigue	Evergreen sclerophyllous or lauriphyllous shrub vegetation, with an open canopy structure and some bare ground, usually with many winter annuals and vernal geophytes. Low shrubs of [Cistus], [Lavandula], [Rosmarinus] and [Stoechas] are usually present, and there may be some larger shrubs and scattered trees. Garrigue is found mostly in the Mediterranean, Macaronesian and Pontic regions, where it typically derives from degradation or regrowth of broad-leaved evergreen forests (G2), but it extends into deciduous forest areas in the supra-Mediterranean zone and sub-Mediterranean zones and into steppe areas in Anatolia. Includes scrubby land with mainly herbaceous vegetation and a large component of unpalatable non-vernal monocots ([Asphodelus], [Urginea]) and thistles, provided that shrub cover exceeds 10%.
Western garrigues	Shrubby formations, often low, on mostly calcareous soils of the meso-mediterranean zone of the Iberian peninsula, France, Italy and the large western Mediterranean islands, notably the Balearics, Corsica, Sardinia, Sicily and Malta. Included here are those formations that reach their optimal development within the meso-mediterranean zone although they often enter the thermo- or supra-mediterranean levels.
Western kermes oak garrigues	Shrubby formations of the western Mediterranean basin, usually relatively closed and tall, dominated by [Quercus coccifera] with no, or little, [Pistacia lentiscus] or other thermo-Mediterranean shrubs, very widespread in the meso-Mediterranean zone of the Iberian peninsula and southern France.
Western rosemary garrigues	Shrubby formations of the western Mediterranean basin, usually relatively tall, dominated by [Rosmarinus officinalis].
Western cistus garrigues	Shrubby formations of the western Mediterranean basin, mostly meso-Mediterranean, but often also thermo- or supra-Mediterranean, dominated by the low, calciphilous [Cistus albidus] or [Cistus clusii], or occasionally by indifferent species, usually accompanied by a more varied flora than that of the silicicolous cistus maquis, though sometimes capable of forming dense cistus fields. These can be identified by use of digit 1 in the fourth decimal place, digit 2 being reserved for more varied formations.
Western spurge garrigues	Shrubby formations of the western Mediterranean basin dominated by bushy or robust perennial [Euphorbia] species.

Western prostrate juniper ([Juniperus oxycedrus]) garrigues	Meso-Mediterranean garrigues of the western Mediterranean basin dominated by [Juniperus oxycedrus] or other low, shrubby junipers.
Western lavender garrigues	Meso-, or sometimes thermo-, mediterranean garrigues of the western Mediterranean basin rich in calciphile [Lavandula latifolia] or, occasionally, [Lavandula angustifolia]; almost pure fields of [Lavandula latifolia] may form, in particular, as a facies of calcareous grasslands.
Western garrigues dominated by sage and other labiates	Garrigues of the western Mediterranean basin of which the main components are labiate shrubs or robust perennials (except [Lavandula] and [Rosmarinus]).
Western genista garrigues	Shrubby formations of the western Mediterranean basin characterized by the abundance of small, spiny brooms such as [Genista scorpius], [Genista hispanica], [Genista corsica], [Genista lucida].
Western calicotome garrigues	Meso-Mediterranean shrubby formations of the western Mediterranean basin dominated by [Calicotome spinosa].
Western composite garrigues	Meso-Mediterranean shrubby formations of the western Mediterranean basin dominated by members of various genera of the family Asteraceae.
Western erica garrigues	Meso-Mediterranean shrubby formations of the western Mediterranean basin dominated by the calciphile heathers [Erica multiflora] or [Erica manipuliflora].
Western globularia garrigues	Shrubby formations of the western Mediterranean basin dominated by [Globularia alypum].
Western rock-rose and fumana garrigues	Shrubby formations of the western Mediterranean basin dominated by small or dwarf shrubs of the genera [Helianthemum] (e.g. [Helianthemum asperum], [Helianthemum pilosum], [Helianthemum oelandicum], [Helianthemum marifolium], [Helianthemum cinereum], [Helianthemum lavandulifolium], [Helianthemum nummularium], [Helianthemum caput-felis]) or [Fumana] (e.g. [Fumana ericoides], [Fumana laevipes], [Fumana thymifolia]).
[Lithodora fruticosa] garrigues	Shrubby formations of the western Mediterranean basin dominated by [Lithodora fruticosa], distributed in Spain and southern France.
Western thymelaea garrigues	Meso-Mediterranean shrubby formations of the western Mediterranean basin rich in shrubs of genus [Thymelaea] (e.g. [Thymelaea tinctoria], [Thymelaea nitida], [Thymelaea pubescens]).
Western shrubby hare's ear ([Bupleurum]) garrigues	Often tall, sometimes very tall, dense shrubby formations of the western Mediterranean basin dominated by [Bupleurum fruticosum].
Western gorse garrigues	Meso-Mediterranean shrubby formations of the western Mediterranean basin dominated by [Ulex parviflorus].
Western shrubby restharrow ([Ononis fruticosa]) garrigues	Shrubby formations of the western Mediterranean basin dominated by [Ononis fruticosa], limited to Iberia.
Western [Anthyllis cytisoides] garrigues	Shrubby formations of the western Mediterranean basin dominated by [Anthyllis cytisoides].
Western burning bush ([Dictamnus]) garrigues	Shrubby formations of the western Mediterranean basin dominated by [Dictamnus albus] ([Dictamnus hispanicus]), characteristic of stony terrains of eastern Spain.

Eastern garrigues	Shrubby formations, often low, of the meso-, thermo- and occasionally supramediterranean zones of Greece, southern Albania, Cyprus and southern Anatolia. Included here are all sclerophyllous formations, regardless of substrate, except those with conspicuous spiny cushion structure (F7), those with abundant thermo-Mediterranean scrub species (F5.5) and high maquis with [Erica arborea] and [Arbutus] spp. (F5.2).
Eastern kermes oak garrigues	Shrub communities of the eastern Ionian, Aegean and eastern Mediterranean coastlands and hinterland, usually relatively closed and tall, dominated by [Quercus coccifera] with no, or little, [Pistacia lentiscus] or other thermo-mediterranean shrubs; kermes oak garrigues are by far the most widespread xerophyllous shrub formations in the eastern meso-mediterranean zone. They are also well represented in the supra-Mediterranean and thermo-Mediterranean zones. Formations pertaining to the latter, when rich in other, more restrictively thermophile shrubs, have been listed as unit F5.5173.
Eastern rosemary garrigues	Garrigues of the eastern Ionian, Aegean and eastern Mediterranean coastlands and hinterland, usually relatively tall, dominated by [Rosmarinus officinalis].
Eastern cistus garrigues	Garrigues of the eastern Ionian, Aegean and eastern Mediterranean coastlands and hinterland dominated by or rich in [Cistus] species. Dense cistus fields can be identified by use of digit 1 in the fourth decimal place, digit 2 being reserved for more varied formations.
Eastern spurge garrigues	Garrigues of the eastern Ionian, Aegean and eastern Mediterranean coastlands and hinterland dominated by bushy or robust perennial [Euphorbia] species.
Eastern prostrate juniper ([Juniperus oxycedrus]) garrigues	Garrigues of the eastern Ionian, Aegean and eastern Mediterranean coastlands and hinterland dominated by low, shrubby [Juniperus oxycedrus], [Juniperus communis] or [Juniperus phoenicea].
Eastern lavender garrigues	Garrigues of the eastern Ionian, Aegean and eastern Mediterranean coastlands and hinterland rich in [Lavandula stoechas] or, occasionally, [Lavandula angustifolia].
Eastern garrigues dominated by sage and other labiates	Garrigues of the eastern Ionian, Aegean and eastern Mediterranean coastlands and hinterland of which the main components are labiate shrubs or robust perennials (except [Lavandula] and [Rosmarinus]).
Eastern tree germander garrigues	Garrigues of the eastern Ionian, Aegean and eastern Mediterranean coastlands and hinterland dominated by the tall or very tall [Teucrium fruticans].
Jerusalem sage garrigues	Fairly tall garrigues of the eastern Ionian, Aegean and eastern Mediterranean coastlands and hinterland dominated by [Phlomis fruticosa]. Very degraded habitats occupied by almost monospecific fields of this species can be listed under 32.9.
Eastern [Salvia] and [Stachys] garrigues	Fairly tall garrigues of the eastern Ionian, Aegean and eastern Mediterranean coastlands and hinterland dominated by shrubs or woody perennials of genera [Salvia] (e.g. [Salvia triloba], [Salvia argentea], [Salvia eichlerana], [Salvia pomifera]), [Stachys] (e.g. [Stachys cretica]) or others.

Eastern dwarf labiate garrigues	Low, open garrigues of the eastern Ionian, Aegean and eastern Mediterranean coastlands and hinterland formed by dwarf shrubs or perennials of genera [Thymus] (e.g. [Thymus capitatus], [Thymus teucrioides], [Thymus atticus], [Thymus sibthorpii], [Thymus striatus], [Thymus comptus]), [Teucrium] (e.g. [Teucrium polium]), [Sideritis] (e.g. [Sideritis syriaca], [Sideritis clandestina]), [Micromeria] (e.g. [Micromeria juliana], [Micromeria graeca]), [Phlomis] (e.g. [Phlomis cretica], [Phlomis floccosa], [Phlomis lanata]) or others.
Eastern Christ's thorn garrigues	Garrigues of the eastern Ionian, Aegean and eastern Mediterranean coastlands and hinterland dominated by [Paliurus spina-christi].
Eastern broom garrigues	Garrigues of the eastern Ionian, Aegean and eastern Mediterranean coastlands and hinterland characterized by the abundance of broom-like shrubs of genera [Genista], [Chamaecytisus], [Teline] or others.
[Ebenus cretica] brushes	Garrigues of Crete dominated by [Ebenus cretica].
Eastern curry-plant [Helichrysum] and other composite garrigues	Usually low, open garrigues of the eastern Ionian, Aegean and eastern Mediterranean coastlands and hinterland formed by dwarf, shrubby composites of genera [Helichrysum], [Phagnalon] ([Phagnalon graecum]), [Scorzonera].
Eastern [Erica] garrigues	Mesomediterranean garrigues of the eastern Ionian, Aegean and eastern Mediterranean coastlands and hinterland dominated by the heather [Erica manipuliflora].
Cyprus strawberry tree ([Arbutus]) garrigues	Garrigues of the eastern Ionian, Aegean and eastern Mediterranean coastlands and hinterland characterized by their richness in low bushes of [Arbutus andrachne].
Eastern shrubby globularia garrigues	Garrigues of the eastern Ionian, Aegean and eastern Mediterranean coastlands and hinterland dominated by [Globularia alypum].
Eastern rock-rose and fumana garrigues	Garrigues of the eastern Ionian, Aegean and eastern Mediterranean coastlands and hinterland dominated by small or dwarf shrubs of the genera [Helianthemum] or [Fumana].
Eastern thymelaea garrigues	Garrigues of the eastern Ionian, Aegean and eastern Mediterranean coastlands and hinterland rich in shrubs of genus [Thymelaea] (e.g. [Thymelaea tartonraira]).
Eastern shrubby hare's ear garrigues	Garrigues of the eastern Ionian, Aegean and eastern Mediterranean coastlands and hinterland, dense and often tall, sometimes very tall, dominated by [Bupleurum fruticosum].
East Mediterranean pre-desert scrub	Low formations of [Ziziphus spina-christi], [Ziziphus lotus], [Acacia albida], [Capparis spinosa], [Rhamnus palaestina], [Rhus tripartita] of the Levant and southern Anatolia.
Illyrian garrigues	Shrubby formations, often low, of the meso- and occasionally supra-Mediterranean zones of the Adriatic lowlands of the Balkan peninsula from Istria to southern Albania. Included here are all sclerophyllous formations, regardless of substrate, except high maquis (F5.2) with [Erica arborea] and [Arbutus] spp.
Illyrian kermes oak garrigues	Garrigues of the Adriatic lowlands of the Balkan peninsula dominated by [Quercus coccifera], of limited distribution.
Illyrian rosemary garrigues	[Rosmarinus officinalis]-dominated communities of the Dalmatian coast and its islands, in particular, Hvar, Brac, Solta, Vis.
Illyrian cistus garrigues	Garrigues of the Adriatic lowlands of the Balkan peninsula dominated by [Cistus incanus ssp. creticus], [Cistus monspeliensis] or [Cistus salvifolius].

Illyrian [Cistus incanus] garrigues	Garrigues of the Adriatic lowlands of the Balkan peninsula dominated by [Cistus incanus ssp. creticus].
Illyrian [Cistus salvifolius] garrigues	Garrigues of the Adriatic lowlands of the Balkan peninsula dominated by [Cistus salvifolius].
Illyrian [Cistus monspeliensis] garrigues	Garrigues of the Adriatic lowlands of the Balkan peninsula dominated by [Cistus monspeliensis].
Illyrian spurge garrigues	Garrigues of the Adriatic lowlands and hills of the Balkan peninsula dominated by the spiny cushions of [Euphorbia spinosa] or by non-spiny often woody-stocked, clump-forming species of [Euphorbia].
Illyrian prostrate juniper ([Juniperus oxycedrus]) garrigues	Garrigues of the Adriatic lowlands and hills of the Balkan peninsula dominated by low, shrubby [Juniperus oxycedrus] or [Juniperus phoenicea].
Illyrian garrigues dominated by sage and other labiates	Garrigues of the Adriatic lowlands and hills of the Balkan peninsula of which the main components are labiate shrubs or robust perennials (except [Rosmarinus]), in particular [Salvia officinalis].
Illyrian Christ's thorn garrigues	Garrigues of the Adriatic lowlands and hills of the Balkan peninsula dominated by [Paliurus spina-christi], characteristic, in particular, of Inner Istria, of Ravni Kotari, of the lower reaches of the Neretva and of Herzegovina. [Punica granatum] is a frequent component.
Illyrian broom garrigues	Garrigues of the Adriatic lowlands of the Balkan peninsula dominated by leguminous shrubs, in particular by [Calicotome villosa], [Genista sericea var. rigida], [Genista sylvestris ssp. michelii].
Illyrian garrigues dominated by [Helichrysum] and other composites	Garrigues of the Adriatic lowlands and hills of the Balkan peninsula formed by dwarf, shrubby composites of genus [Helichrysum] and related genera, in particular, [Scorzonera].
Illyrian [Erica] garrigues	Garrigues of the Adriatic lowlands of the Balkan peninsula dominated by [Erica manipuliflora] or sometimes [Erica multiflora].
Black Sea garrigues	Shrubby formations of the Mediterranean enclaves of the Black Sea coasts, in Crimea, southern Bulgaria, Turkey-in-Europe and northern Anatolia, as well as of the Mediterraneo-steppic zone of southern Thrace. Included here are all sclerophyllous formations, regardless of substrate, except high maquis (F5.2) with [Erica arborea] and [Arbutus] spp. and Phryganas (F7).
Crimean garrigues	Sclerophyte shrub communities of Mediterranean southern Crimea, with, in particular, [Cistus incanus ssp. incanus] ([Cistus tauricus]).
South-Euxinian garrigues	Sclerophyte shrub communities of Mediterranean enclaves along the Black Sea coast of Anatolia, with [Cistus incanus ssp. creticus], [Cistus salvifolius], [Arbutus andrachne], [Arbutus unedo], [Erica arborea], [Jasminum fruticans], [Myrtus communis], [Laurus nobilis].
Thracian garrigues	Sclerophyte shrub communities of the Mediterraneo-steppic Evros-Merich-Maritsa and Ergene river basins of southern Thrace and of Mediterranean enclaves along the Black Sea coast of the Stranja and of Turkey-in-Europe, with [Cistus incanus ssp. creticus], [Cistus salvifolius], [Jasminum fruticans], [Phillyrea latifolia], [Quercus coccifera], [Asparagus acutifolius], [Asparagus verticillatus], [Paliurus spina-christi], [Anemone pavonina]. They extend northward to Harmanli on the Maritsa, and to Varna on the Black Sea coast.
Macaronesian garrigues	Low shrub vegetation with an open canopy, of the Canary Islands, Azores and Madeira.

Supra-Mediterranean garrigues	Low shrub formations with pronounced Mediterranean affinities formed as a degradation stage of thermophilous deciduous woodland (G1.7) or sometimes of evergreen [Quercus] woodland (G2.1) in the supra-Mediterranean belt of the Mediterranean region. Included here are only those formations that are characteristic of the supra-Mediterranean level; formations, particularly of the lower supra-Mediterranean, that are closely related to meso-Mediterranean communities have been included under F6.1, F6.2, F6.3 or F6.4.
Common lavender garrigues	Montane formations dominated by [Lavandula angustifolia] ("[Lavandula vera]") with [Genista cinerea ssp. cinerea], [Buxus sempervirens] (both sometimes co-dominant), [Astragalus purpureus], [Onobrychis supina], [Satureja montana], [Artemisia alba], [Catananche caerulea], [Aphyllanthes monspeliensis], [Thymus vulgaris] characteristic of great surfaces of the supra-Mediterranean level of southwestern Alps of France, also occurring on the southern flanks of the Pyrenees in northern Spain.
[Genista cinerea] garrigues	Supra-Mediterranean garrigues or grasslands of the southwestern Alps, Haute Provence, the southern Central Massif, the Corbières and the eastern Pyrenees dominated by [Genista cinerea ssp. cinerea], including the broom-rich facies of the French lavender garrigues and the White Quercy broom-fields.
Ibero-Gallic supra-Mediterranean dwarf-shrub garrigues	Low frutescent or suffrutescent formations of the supra-Mediterranean levels of the Iberian Meseta and its surrounding mountains and of northern Spain and southern France, rich in small labiate shrubs of genera [Thymus], [Teucrium], [Salvia], [Satureja], [Sideritis], [Lavandula], accompanied by leguminous shrubs ([Genista scorpius], [Genista pilosa], [Genista pseudopilosa], [Genista cinerea ssp. speciosa], [Coronilla minima], [Dorycnium pentaphyllum ssp. pentaphyllum]) and various grasses ([Stipa] spp., [Brachypodium] spp.). In the north they often have an important, sometimes predominant, grass element and their impoverished shrub component is sometimes reduced to an almost monospecific [Thymus] formation; southwards, they become progressively more dominated by a richer constellation of shrub species.
Supra-Mediterranean box scrub	[Buxus sempervirens] thickets of the supra-Mediterranean zone, occurring as facies within several formations of southern France such as true-lavender garrigues (unit F6.61) and supra-Mediterranean steppic grassland complexes (unit E1.5), in northeastern Spanish ranges, in isolated stations of the Apennines and in Corsica.
Italian supra-Mediterranean garrigues	Characteristically supra-Mediterranean garrigues of Italy and the large central Mediterranean islands. In the supra-Mediterranean level of Italy and the large central Mediterranean islands, the substitution stages of the thermophile deciduous forests are mostly grasslands or shrubby grasslands, hedgehog heaths, deciduous shrubs, semimaquis or occasionally embryonic garrigues that differ little from those of the mesomediterranean level. A few formations, in particular with labiates of genera [Thymus], [Teucrium], [Salvia], [Lavandula] and others, with [Helichrysum] spp. or with [Euphorbia] spp., may warrant separate listing under this heading.
Balkan peninsula supra-Mediterranean garrigues	Formations of the supra-Mediterranean level and sub-Mediterranean areas of the Balkan peninsula dominated by sclerophyllous shrubs or subshrubs.

Balkan peninsula supra-Mediterranean shrub garrigues	Formations of the supra-Mediterranean level and sub-Mediterranean areas of the Balkan peninsula dominated by sclerophyllous shrubs, impoverished irradiations of the communities of units 32.32 and 32.5, in particular unit 32.51. Included are, notably, the [Phillyrea latifolia] and [Quercus coccifera] thickets or scrubs of the middle Struma-Strimon and Mesta-Nestos valleys of Bulgaria, when monodominated by these species, as well as some [Buxus sempervirens]- or [Juniperus oxycedrus]-dominated formations of the supra-Mediterranean [Ostryo-Carpinion aegeicum] region of northern Greece, southern Albania and the southern F.Y.R. of Macedonia; most of the communities that include them also comprise, however, a substantial admixture of deciduous species and thus belong to unit 32.7.
Balkan peninsula supra-Mediterranean subshrub garrigues	Formations of the supra-Mediterranean [Ostryo-Carpinion aegeicum] zone of the southern Balkan peninsula, in particular, of northern Greece and the southern F.Y.R. of Macedonia, dominated by subshrubs associated with supra-Mediterranean dry grassland elements and generally forming a mosaic with such grasslands; they include, notably [Satureja montana] grassy, stony scrubs and [Genista nissana] heaths.
Mediterranean gypsum scrubs	Garrigues occupying gypsum-rich soils of the Iberian peninsula, usually very open and floristically characterised by the presence of numerous gypsophilous species, among which [Gypsophila struthium], [Gypsophila hispanica], [Centaurea hyssopifolia], [Teucrium libanitis], [Ononis tridentata], [Lepidium subulatum], [Herniaria fruticosa], [Reseda stricta], [Helianthemum squamatum]. They are often rich in thymes ([Thymus]), germanders ([Teucrium]), rockroses ([Helianthemum]), composites ([Centaurea], [Jurinea], [Santolina]), [Frankenia].
Central Iberian gypsum scrubs	Low garrigues dotted with occasional tall bushes, developed on gypseous soils which are often covered by a crust of lichens, generally rich in [Centaurea hyssopifolia] and often in [Gypsophila struthium], [Lepidium subulatum], [Thymus zygis] or [Jurinea pinnata]. They are limited to the meseta and eastern Andalusia.
Meseta gypsum scrubs	Formations of the central meseta dominated by, or rich in, [Centaurea hyssopifolia].
Eastern Andalusian gypsum scrubs	Formations of eastern Andalusia (Armeria, Granada) dominated by, or rich in, [Centaurea hyssopifolia], [Jurinea pinnata] or [Gypsophila struthium].
Dueran gypsum scrubs	Formations of the central Duero with [Linum suffruticosum] and [Lepidium subulatum].
Ebro gypsum scrubs	Open low garrigues of eroded gypsiferous hills of the Ebro basin and of the upper Turia region, with [Gypsophila hispanica].
[Gypsophila hispanica] garrigues	Open formations of gypsiferous hills of the Ebro basin and of the upper Turia region dominated by, or very rich in, [Gypsophila hispanica], the most widespread northeastern gypsum scrub component.
[Helianthemum squamatum] garrigues	Formations of [Helianthemum squamatum] of gypsiferous hills of the Ebro basin and of the upper Turia region, often very homogeneous.

[Ononis tridentata] garrigues	Formations of somewhat deeper calcaro-gypsiferous soils of hills of the Ebro basin and of the upper Turia region, rich in [Ononis tridentata].
Southeastern Iberian gypsum scrubs	Low, open thyme, germander and rockrose garrigues colonizing poorly developed gypsiferous soils of the arid southeast of the Iberian peninsula (Alicante and Murcia). Characteristic elements are [Teucrium libanitis] ([Teucrium verticillatum]), [Teucrium polium], [Teucrium pumilum], [Teucrium carthaginense], [Thymus longiflorus], [Thymus antoninae], [Helianthemum lavandulifolium] ([Helianthemum racemosum]), [Helianthemum squamatum], [Gypsophila hispanica], [Gypsophila struthium], [Astragalus alopecuroides]. Grasses ([Lygeum], [Stipa], [Brachypodium]), wormwood ([Artemisia]) and Chenopodiaceae may be locally prominent.
Xero-halophile scrubs	Salt-tolerant shrub formations of dry ground in low-precipitation areas of the mediterranean zone, in particular, the Iberian peninsula and Sicily, and of the Macaronesian Islands.
Canary Island xero-halophilous scrubs	Shrubby formations of [Zygophyllum fontanesii], [Chenoleoides tomentosa], sea-heath, saltworts and seablites of the vicinity of the coasts of the Canary Islands.
Canary Island coastal scrub	Formations of [Chenoleoides tomentosa], [Suaeda vermiculata], [Frankenia laevis], [Zygophyllum fontanesii], [Polycarpaea nivea], [Atriplex halimus], [Atriplex glauca] and [Limonium] spp. forming a halophile belt in the littoral zone of the larger Canary Islands and, with somewhat modified composition, of the islets.
Canary Island [Zygophyllum] dry scrubs	Formations of [Zygophyllum fontanesii] of sandy stone fields and black sands of the coastal zone of the Canary Islands.
Canary Island [Salsola longifolia] dry scrubs	Formations of [Salsola oppositifolia] ([Salsola longifolia]) of dry coastal areas of the Canary Islands.
Selvagen woody seablite scrubs	Shrubby formations of [Suaeda vera] of the Selvagens, with [Limonium papillatum var. callibotryum].
Mediterranean halo-nitrophilous scrubs	Nitrophilous scrubby formations typically of dry soils and arid climates, often greyish-white and semidesert-like, sometimes including taller, denser brushes. They are most frequent in the eastern Iberian peninsula, where characteristic shrubs include [Peganum harmala], [Artemisia herba-alba], [Lycium intricatum], [Capparis ovata] and the Chenopodiaceae [Salsola vermiculata], [Salsola genistoides], [Salsola verticillata], [Suaeda pruinosa], [Atriplex halimus], [Atriplex glauca], [Camphorosma monspeliaca], [Anabasis articulata] and [Haloxylon articulatum]. In the eastern Mediterranean species like [Artemisia arborescens], [Piptatherum miliaceum], [Smyrnium apifolium], [Atriplex halimus], [Ruta chelepensis] and [Anagyris foetida] are typical.
Ebro sisallares	Interior, extensive and varied, halo-nitrophilous scrubs of the Ebro basin, comprising both dry ground sisallares proper, as well as various more hygrophile communities of edges of salt lagoons.
Manchegan sisallares	Halo-nitrophilous scrubs of La Mancha, in the central Iberian peninsula, formed of communities related to those of the Ebro.
Catalano-Valencian halo-nitrophilous scrubs	Local halo-nitrophilous scrubs of the coasts of Catalonia, Valencia and the Balearics.

Southeastern Iberian matojares	Halo-nitrophilous scrubs, matojares and related communities, of the arid zone of southeastern Spain, forming, with pre-desert scrubs (unit 32.25) and localized gypsum scrubs (unit 15.93), the unique vegetation of this highly distinctive region.
Sicilian halo-nitrophilous scrubs	Halo-nitrophilous scrubs of southwestern Sicily, with [Salsola verticillata], [Suaeda pruinosa], [Reaumuria vermiculata], [Capparis ovata] and the endemics [Limonium opulentum] and [Herniaria fontanesii ssp. empedocleana].
Spiny Mediterranean heaths (phrygana, hedgehog-heaths and related coastal cliff vegetation)	Shrublands with dominant low spiny shrubs, widespread in Mediterranean and Anatolian regions with a summer-dry climate, occurring from sea level to high altitudes on dry mountains.
West Mediterranean spiny heaths	Spiny shrublands, mainly on coastal cliffs, of the western Mediterranean region.
West Mediterranean mainland clifftop phrygana	Rare, extremely local and isolated associations of clifftops and adjacent areas dispersed along the coasts of Provence, Cap Corse, the Straits of Bonifacio, Catalonia (Cabo de Creus) and extreme southwestern Portugal, characterized by the presence of [Astragalus massiliensis] or [Anthyllis hermanniae], variously accompanied by [Thymelaea hirsuta], [Helichrysum italicum], [Plantago subulata], [Armeria ruscinonensis].
Calcareous Provence phrygana	Very rare clifftop cushion formations of the calcareous Marseilles coast of Provence (les Goudes), with [Astragalus massiliensis], [Thymelaea tartonraira] and [Plantago subulata].
Crystalline Provence phrygana	Cliff-top communities of the cristalline maritime façade of the Maures and the Est,rel, with [Anthyllis barba-jovis], [Thymelaea hirsuta], [Limonium minutum], [Euphorbia pithyusa], and of Catalonia and Roussillon, with [Thymelaea hirsuta], [Polycarpon polycarpoides], [Plantago subulata].
West-Mediterranean [Anthyllis] phrygana	Clifftop cushion formations of the western Mediterranean basin dominated by [Anthyllis hermanniae], distributed in particular on Cap Corse and the Maltese Islands.
Straits of Bonifacio phrygana	Formations of the southern tip of Corsica and the extreme northern coast of Sardinia, with [Astragalus massiliensis], accompanied by [Teucrium polium], [Asteriscus maritimus], [Plantago coronopus ssp. humulis], [Artemisia arborescens].
Cabo de Creus phrygana	Isolated formation of the Cabo de Creus promontory in Catalonia, with [Astragalus massiliensis], [Pistacia lentiscus], [Cistus albidus], [Cistus salvifolius], [Phillyrea angustifolia], [Juniperus oxycedrus].
Cabo de Sao Vicente phrygana	Very isolated formations of the Cabo de Sao Vicente and the Ponta de Sagres, with [Astragalus massiliensis] and [Crithmum maritimum].
Balearic clifftop phrygana	Formations of the coasts of Mallorca and Minorca dominated by the cushion-forming Balearic endemics [Launaea cervicornis], [Astragalus balearicus], [Centaurea balearica], [Anthyllis fulgurans], [Anthyllis hermanniae ssp. hystrix], [Teucrium subspinosum].
Central Mediterranean spiny heaths	Spiny shrublands, mainly coastal, of the central Mediterranean region.

Sardinian [Centaurea horrida] phrygana	Highly threatened formations of the promontories of northern Sardinia, limited to the peninsulas of Stintino and Capo Caccia and the islands of Asinara and Tavola, dominated by the large, silvery-blue, hemispherical cushions of the endemic Tertiary relict [Centaurea horrida], associated with many other endemic or restricted relict species including [Astragalus massiliensis], [Erodium corsicum], [Limonium acutifolium], [Nananthea perpusilla], [Evax rotundata], [Armeria pungens].
Sardinian [Genista acanthoclada] phrygana	Very local [Genista acanthoclada ssp. sardoa]-dominated communities of northwestern Sardinia.
Corsican and Sardinian genista phrygana	Thermo-Mediterranean formations of headlands and peninsulas of Corsica and Sardinia dominated by cushion-forming spiny [Genista corsica] or [Genista morisii]. These endemic species participate in the constitution of hedgehog-heaths (unit F7.45) as well as in that of the coastal formations listed here, which assume an evident phrygana appearance; they may also enter in the composition of midelevation formations of less distinctive appearance which can be listed under unit F6.18.
Pantelleria phrygana	Coastal formation of hemispherical shrubs with the Pantelleria endemics [Helichrysum saxatile ssp. errerae] and [Matthiola pulchella], vicariant of the west Mediterranean, Balearic and Sardinian clifftop phryganas.
Central Mediterranean thorny burnet ([Sarcopoterium]) phrygana	Very local, impoverished [Sarcopoterium spinosum] formations of Capo St. Elia (southern Sardinian coast), of the Gulf of Taranto (Puglia, Calabria) and of the Maltese Islands.
[Hypericum aegyptiacum] phrygana	Extremely rare, local colonies of hemispherical shrubs of [Hypericum aegyptiacum] forming open phryganas on calcareous rocks by the sea in the Ionian islands, western Crete, Sardinia and Lampedusa.
East Mediterranean phrygana	Spiny shrublands, widespread at low and middle altitudes in the eastern Mediterranean and Anatolian regions. [Sarcopoterium spinosum] is a common dominant in the Aegean region.
Aegean phrygana	Low, thorny formations of hemispherical shrubs of the coastal thermo-Mediterranean zone of Aegean islands, of mainland Greece and the Ionian islands, of coastal Anatolia and Crete (up to 1000 m a.s.l.), with [Sarcopoterium spinosum], [Centaurea spinosa], [Satureja thymbra], [Thymus capitatus], [Genista acanthoclada], [Anthyllis hermanniae], [Euphorbia acanthothamnos], [Stachys spinosa], [Ballota pseudodictamnus], [Ballota acetabulosa], [Erica manipuliflora], [Rhamnus oleoides], [Lithospermum hispidulum], [Fumana arabica], [Fumana thymifolia], [Cistus creticus], [Cistus parviflorus], [Cistus salvifolius], [Pistacia lentiscus], [Teucrium brevifolium], [Teucrium divaricatum], [Teucrium polium], [Calicotome villosa], [Micromeria graeca], [Micromeria juliana], [Micromeria nervosa], [Salvia triloba], [Ononis spinosa], [Helichrysum italicum ssp. microphyllum], [Helichrysum italicum ssp. italicum], [Phagnalon graecum], [Phlomis fruticosa],much more widespread and diverse than the western Mediterranean formations. The subunits are based on physiognomically significant

Aegean thorny burnet ([Sarcopoterium]) phrygana	[Sarcopoterium spinosum]-dominated formations, by far the commonest phrygana facies, widespread in the Aegean archipelagoes and Crete, with local outposts in peninsular Greece, the Ionian islands and coastal Anatolia.
Maritime [Centaurea spinosa] phrygana	Rare, relict formations on coastal sands and gravels of Egina, Attica, Euboea, Skyros, Samos, Lesbos, Khios, Kos, Lemnos, Samothrace, Crete, the Sea of Marmara, the Dardanelles, western Anatolia, dominated by the large, silvery hemispherical cushions of [Centaurea spinosa ssp. spinosa], sometimes accompanied by [Sarcopoterium spinosum] or [Euphorbia acanthoclada].
Lesbian [Centaurea spinosa] phrygana	Phryganas often rich in [Centaurea spinosa ssp. spinosa], mixed with [Sarcopoterium spinosum], [Satureja thymbra], [Ballota acetabulosa] of Lesbos, extending from the coast to the highest hills in the arid western part of the island; covering a relatively vast expanse, they harbour a highly distinctive flora and fauna as well as remnants of fossil forest.
Cycladian centaurea phrygana	Formations of the Cyclades, rich in [Centaurea spinosa ssp. cycladum], extending from coastal areas to the highest elevations.
Aegean heather phrygana	Phryganas of the Aegean region in which [Erica manipuliflora] plays an important role, often associated with [Sarcopoterium spinosum], [Genista acanthoclada], [Pistacia lentiscus], [Ballota acetabulosa], [Cistus creticus], [Cistus parviflorus], [Cistus salvifolius], a facies of the [Sarcopoterium] phrygana developing locally, notably in eastern Crete and the Cyclades.
Aegean thyme phrygana	Phryganas of the Aegean region dominated or formed by [Thymus capitatus].
Aegean [Genista acanthoclada] phrygana	[Genista acanthoclada] formations of the thermo-Mediterranean zone Aegean islands and coasts.
Aegean savory ([Satureja]) phrygana	Facies of the Aegean phryganas in which [Satureja thymbra] becomes locally dominant.
Aegean spiny spurge ([Euphorbia acanthothamnos]) phrygana	[Euphorbia acanthothamnos]-dominated formations of the Aegean.
Aegean gromwell ([Lithospermum]) phrygana	[Lithospermum hispidulum]-dominated phryganas, limited to southeastern Aegean islands and adjacent Anatolian peninsulas.
Aegean [Anthyllis hermanniae] phrygana	[Anthyllis hermanniae]-dominated or -rich phryganas, widespread, in particular in the northern Aegean.
Mid-elevation phrygana of Crete	Varied formations of supra- and oro- Mediterranean levels of Crete resulting from the broad contact between phryganas and hedgehog-heaths (unit F5.3), with [Euphorbia acanthothamnos], [Verbascum spinosum], [Berberis cretica], [Phlomis cretica], [Satureja biroi], [Sideritis syriaca], [Hypericum empetrifolium], [Origanum microphyllum], [Micromeria juliana], [Helichrysum italicum ssp. microphyllum], [Genista acanthoclada] and [Astragalus angustifolius].
Thracian phrygana	Thorny cushion communities of the Thracian wooded steppe zone enclaved between the Black Sea, the Sea of Marmora and the Aegean, with [Sarcopoterium spinosum] and [Astragalus thracicus].

Thracian thorny burnet ([Sarcopoterium]) phrygana	[Sarcopoterium spinosum]-dominated phryganas of the Thracian steppe zone of northeastern Greece and Turkey-in-Europe.
Northern Thracian collinar [Astragalus thracicus] phrygana	[Astragalus thracicus] phryganas of the Thracian steppe zone of northeastern Greece and Turkey-in-Europe, with local representatives in the xerothermic oak belt of the hills and rim of the Northern Thracian plain (East Rumelian plain) of southeastern Bulgaria, in particular, in the Bakadzicita hills of the Yambol Tundzja basin and in the foothills of the eastern Rhodopes.
East Mediterranean bathas	Cushion-forming thermo-Mediterranean summer-deciduous, often thorny, sclerophyllous formations of Mediterranean areas of the Levant, north and west to the Gulf of Alexandrette, with local outposts in the Gulf of Antalaya and in Cyprus; they occupy large areas in the lowlands, ascending locally into the hills and, in Lebanon, to 1300 m in the mountains.
Cyprian phrygana	Cushion-forming thermo-mediterranean summer-deciduous, often thorny, sclerophyllous formations of Cyprus, mostly characteristic of the central plains, of semisteppic batha appearance, outpost of the continental formations of units 33.C2 to 33.C5, and like them of Irano-Turanian affinities, formed by [Sarcopoterium spinosum], [Thymus capitatus] ([Coridothymus capitatus]), [Lithodora hispidula] ([Lithospermum hispidulum]), [Onosma fruticosum], [Galium suberosum].
Thorny burnet ([Sarcopoterium]) bathas	Thorny cushion formations of the Levant and southern Anatolia dominated by [Sarcopoterium spinosum] on calcareous substrates, including terra rossa, rendzina or sand, typically on hills near the coast; there is often a significant participation of annuals.
Thyme bathas	Cushion formations of the Levant and southern Anatolia dominated by [Thymus capitatus] ([Coridothymus capitatus]), typically forming a sparse plant cover poor in annuals, on calcareous substrates.
Sage bathas	Cushion formations of the Levant dominated by labiates, in particular, [Salvia triloba] or [Satureja thymbra], typically developed on calcareous rocky substrates and red soils.
Gromwell ([Lithospermum]) bathas	[Lithospermum hispidulum]-dominated phryganas of southeastern Anatolia and the Levant.
Hedgehog-heaths	Primary cushion heaths of the high, dry mountains of the Mediterranean region and Anatolia, with low, cushion-forming, often spiny shrubs, in particular of genera [Acantholimon], [Astragalus], [Erinacea], [Vella], [Bupleurum], [Ptilotrichum], [Genista], [Echinospartum], [Anthyllis], and various composites and labiates; secondary, zoogenic cushion heaths of the same regions, either downslope extensions of the high-altitude formations, and dominated by the same species, or specifically montane or steppic, often [Genista]-dominated in the Mediterranean region. Excluded are cushion-heaths of thermo-Mediterranean lowlands (F7.1, F7.2 and F7.3).

Pyrenean hedgehog-heaths	[Echinospartum horridum] formations of dry slopes of the supra-Mediterranean zone of the southern Pyrenees; accompanying the dense, spiny cushions are [Juniperus hemisphaerica], [Buxus sempervirens], [Ononis fruticosa], [Arctostaphylos uva-ursi ssp. crassifolia] and [Pinus sylvestris].
Cordilleran hedgehog-heaths	Formations of the Cordillera Central and adjacent areas dominated by diverse forms of [Echinospartum].
Gredos hedgehog-heaths	Oro-Mediterranean heaths of the Sierra de Gredos dominated by the endemic [Echinospartum lusitanicu ssp. barnadesii].
Bejar-Peña de Francia hedgehog-heaths	Oro-Mediterranean heaths of the Sierra de Bejar and Peña de Francia dominated by [Echinospartum ibericum ssp. pulviniformis].
Estrela hedgehog-heaths	Relict heaths of highly xeric upper supra-Mediterranean and oro-Mediterranean stations of the Serra da Estrela dominated by [Echinospartum ibericum ssp. pulviniformis].
Western Cordilleran secondary hedgehog-heaths	Secondary [Echinospartum lusitanicum]-[Genista hystrix] hedgehog-heaths developed on skeletal soils of the supra-Mediterranean zone of the western Cordillera Central and surrounding areas.
Nevadan hedgehog-heaths	Highly developed hedgehog formations of the Sierra Nevada with [Erinacea anthyllis], [Vella spinosa], [Astragalus sempervirens ssp. nevadensis], [Astragalus granatensis ssp. granatensis] ([Astragalus boissieri]), [Ptilotrichum spinosum], [Bupleurum spinosum], [Genista baetica]. Associated dwarf suffrutescent formations of high slopes and crests.
Lower Nevadan hedgehog-heaths	Supra-Mediterranean (lower xeroacanthic) hedgehog-heaths occupying mainly the 1700-2000 m altitudinal range, often rich in [Bupleurum spinosum], with [Vella spinosa], [Erinacea anthyllis] or [Echinospartum boissieri].
Middle Nevadan hedgehog-heaths	Oro-Mediterranean (higher xeroacanthic) hedgehog-heaths occupying mainly the 2000-2300 m altitudinal range, with [Vella spinosa], [Erinacea anthyllis], [Ptilotrichum spinosum], [Astragalus sempervirens ssp. nevadensis], [Astragalus granatensis ssp. granatensis].
Upper Nevadan hedgehog-heaths	Upper oro-Mediterranean hedgehog-heaths occupying mainly the 2300-2600 m altitudinal range, with [Erinacea anthyllis], [Astragalus sempervirens ssp. nevadensis], [Astragalus granatensis ssp. granatensis], [Juniperus nana] and [Juniperus sabina ssp. humilis].
Nevadan dwarf cushion-heaths	Dwarf suffrutescent formations of windswept crests and slopes on very superficial soils.
Siliceous Nevadan dwarf cushion-heaths	Formations of base-rich siliceous soils at 2600-2900 m with [Sideritis glacialis], [Arenaria pungens], [Astragalus sempervirens ssp. nevadensis].
Calcareous Nevadan dwarf cushion-heaths	Formations of white-tomentose dwarf cushions developed on calcareous soils (Trevenque, Dornajo, Dilar) with [Andryala agardhii], [Erodium boissieri], [Scabiosa pulsatilloides], [Santolina elegans], [Globularia spinosa], [Pterocephalus spathulatus], [Helianthemum pannosum].
Nevadan [Genista] hedgehog-heaths	[Genista baetica]-dominated hedgehog-heaths, often with [Juniperus nana] and [Genista purgans], of siliceous soils.
Franco-Iberian hedgehog-heaths	Oro-Mediterranean and montane hedgehog-heaths of other Iberian ranges and of southern France.

[Erinacea] hedgehog-heaths	Oro-Mediterranean [Erinacea]-dominated and related hedgehog-heaths.
Baetic [Erinacea-Vella] hedgehog-heaths	Hedgehog-heaths of the Baetic and sub-Baetic ranges and of the southern Iberian Range, dominated by [Erinacea anthyllis] and/or by [Vella spinosa], [Astragalus granatensis ssp. granatensis], [Astragalus sempervirens ssp. nevadensis], [Bupleurum spinosum], [Ptilotrichum spinosum], developed in particular in the sierras de Segura, de Cazorla, de Alcaraz, Tejeda, Harana, Magina, de Baza, La Sagra, de Gador, Maria and on a few summits of the Serrania de Ronda.
Iberian Range [Erinacea] hedgehog-heaths	[Erinacea anthyllis]-dominated hedgehog-heaths of the Iberian Range (Teruel, Cuenca, Guadalajara, Soria), often in altitudinal contact with [Genista pumila] formations.
Maestrazgo [Erinacea-Genista] hedgehog-heaths	Hedgehog-heaths with [Genista hispanica ssp. hispanica] and/or [Erinacea anthyllis] of the Maestrazgo, eastern spur of the Iberian Range under maritime influence.
Southeastern [Erinacea] hedgehog-heath	Hedgehog-heaths with [Genista lobelii ssp. longipes], [Erinacea anthyllis], [Vella spinosa] of the sub-Baetic Aitana and Mariola ranges in the arid southeast.
Southeastern [Daphne] hedgehog-heaths	Formations with [Daphne oleoides ssp. hispanica] of the mountains of the arid souteast.
Peri-Nevadan dwarf cushion-heaths	Oro-Mediterranean, and sometimes supra-Mediterranean, formations of dwarf white-tomentose, cushion-forming suffrutescents of the high sub-Baetic and Baetic ranges; characteristic are [Andryala agardhii], [Convolvulus boissieri], [Hippocrepis squamata ssp. eriocarpa], [Pterocephalus spathulatus] and [Thymus granatensis].
Cazorla dwarf cushion-heaths	Formations of the Sierras de Cazorla, Segura, Alcaraz, Taibilla of the high Guadalquivir basin, with [Erodium cazorlanum], [Scorzonera albicans].
Baza-Tejeda-Ronda dwarf cushion-heaths	Formations of the sierras Tejeda, Almijara, la Torrecilla, Harana, Baza, la Sagra, Cazulas, Lapeza and of the Serrania de Ronda with [Anthyllis vulneraria ssp. argyrophylla], [Anthyllis tejedensis], [Helianthemum viscidulum].
Magina dwarf cushion-heaths	Formations of the Sierra de Magina with [Helianthemum pannosum ssp. frigidulum], [Lithodora nitida] and [Viola cazorlensis].
Maria-Maimon dwarf cushion-heaths	Formations of the sierras Maria and Maimon with [Centaurea baetica], [Sideritis stachydioides], [Alyssum cadevallianum].
[Echinospartum boissieri] hedgehog-heaths	Mostly supra-Mediterranean hedgehog-heaths colonizing superficial, eroded soils and windswept stations of calcareous Baetic and sub-Baetic ranges, comprising many cushion plants and generally physiognomically dominated by the large hemispherical shrubs of [Echinospartum boissieri].
Alcaraz [Echinospartum] hedgehog-heaths	Formations of the Sierra de Alcaraz, sometimes including [Erinacea anthyllis].
Gador [Echinospartum] hedgehog-heaths	Formations of the 1300-1900 m altitudinal range in the Sierra de Gador, often with [Erinacea anthyllis] or [Ulex parviflorus].
Baetic [Echinospartum] hedgehog-heaths	Formations developed in the 800-1400 m altitudinal range of other Baetic and sub-Baetic ranges, often, in the higher mountains, immediately below [Erinacetalia] communities.

Catalano-Valencian [Erinacea] hedgehog-heaths	Uncommon hedgehog-heaths with [Erinacea anthyllis] and [Anthyllis montana], and related cushion plant formations, colonizing windswept stations with skeletal soil of the Mediterranean mountains of northeastern Spain (Montsant, Llaveria, Cardo, Maestrazgo septentrional, Beceite; Montserrat; Bergueda, Solsones).
[Genista] cushion-heaths	Mostly supra-Mediterranean hedgehog garrigues and heaths physiognomically dominated by small, hemispherical [Genista] spp.
Pyreneo-Cantabrian cushion-heaths	Cushion-heaths dominated by [Genista hispanica ssp. occidentalis] or [Genista hystrix ssp. legionensis], often with [Erica vagans], [Arctostaphylos uva-ursi ssp. crassifolia] or [Lithodora diffusa], characteristic of the Pyreneen-Cantabrian system, where they may occur from the collinar to the subalpine level.
[Genista sanabrensis] cushion-heaths	Heaths dominated by the cushions of [Genista sanabrensis], with [Erica umbellata] and [Calluna vulgaris], occupying crests of southern Galicio-Leonese mountains at about 1800 m (cf. 31.2431).
[Genista pumila] cushion-heaths	Cushion heaths dominated by [Genista pumila ssp. pumila] of windswept plateaux and crests of the Meseta and of the northern and southern Iberian Range.
[Genista scorpius] cushion-heaths	Meseta hedgehog-heaths with [Genista scorpius], rich in cushion-forming small shrubs.
[Genista pseudopilosa] cushion-heaths	Unarmed [Genista pseudopilosa]-dominated hedgehog-heaths with [Erinacea anthyllis] and other cushion plants of the sierras de Alcaraz and Segura.
[Genista lobelii] and [G. pulchella] cushion-heaths	[Genista lobelii] and [Genista pulchella] hedgehog-heaths of windswept hilltops of southeastern France.
Collinar [Astragalus] hedgehog-heaths	Local meso- and supra-Mediterranean [Astragalus] formations of the Spanish Meseta.
Dueran [Astragalus] hedgehog-heaths	Supra-Mediterranean [Astragalus granatensis ssp. granatensis] ([Astragalus boissieri]) formations of pastoral runs of the left bank of the middle Duero (Soria, Segovia) and of the highlands of Atienza (Guadalajara).
Southern Mesetan [Astragalus] hedgehog-heaths	Meso- and supra-Mediterranean hedgehog-heaths with [Astragalus clusii] ([Astragalus tumidus]) of the southern Meseta, from La Mancha to the Baetic hills of eastern Andalusia (Orce, Sagra, Baza, Maria), with [Paronychia aretioides], [Genista pumila ssp. mugronensis], [Genista scorpius].
Summital Balearic labiate hedgehog-heaths	Cushion-forming communities of high altitudes and wind-exposed plateaux of the Balearics, dominated by [Teucrium subspinosum].
Mallorcan hedgehog-heaths	Cushion-forming communities of the high altitudes of the Sierra Tramuntana of Mallorca, rich in endemics, among them [Teucrium subspinosum], [Teucrium asiaticum], [Pastinaca lucida], [Thymelaea velutina] and [Paeonia cambessedesii].
Menorcan hedgehog-heaths	Cushion-forming communities of wind-exposed plateaux and hills of Menorca with [Cistus creticus] and [Teucrium subspinosum var. spinescens].
Cyrno-Sardinian hedgehog-heaths	Expanses of small, compact bushes with [Astragalus sirinicus ssp. genargenteus], [Rosa serafinii], [Anthyllis hermanniae], [Thymus herba-barona], [Cerastium boissieri], [Genista salzmannii], [Genista corsica], [Berberis aetnensis], [Prunus prostrata] and [Daphne oleoides], of Sardinian and Corsican mountains.

Mount Etna hedgehog-heaths	Lava-colonising hedgehog-heaths of Mount Etna formed by cushions of [Astragalus granatensis ssp. siculus], with [Berberis aetnensis], [Juniperus hemisphaerica], [Genista aetnensis], [Adenocarpus bivonae], [Viola aethnensis].
Madonie and Apennine hedgehog-heaths	Hedgehog-heaths formed by [Astragalus] spp. or [Genista] spp., of the mountains of the southern Italian peninsula and Sicily, except Etna.
Helleno-Balkanic sylvatic milk-vetch ([Astragalus]) hedgehog-heaths	Hedgehog-heaths occupying situations peripheral to the main range of the alti- and oro-mediterranean hedgehog-heath communities of high Hellenic mountains (units F7.49 and F7.4A), mostly dominated by [Astragalus angustifolius], characteristic, in particular, of zoogenous clearings within the forest belt of southern Greek mountains and of regions of irradiation of Mediterranean communities within the hills and mountains of the Moesian zone and Serbia.
Southern Hellenic montane hedgehog heaths	Hedgehog-heath facies of mostly secondary grassland-scrubland communities replacing [Abies cephalonica] forests in the 1500-1800 m altitudinal range of Peloponnese mountains, in particular, Taygetos, Parnon and Kyllini, and of southern mainland Greek mountains, including the southern Pindus and the Thessalian mountains, composed of [Stipa pulcherrima] and [Morina persica], with bushes and cushion-shaped perennials including [Astragalus angustifolius], [Daphne oleoides], [Juniperus hemisphaerica], [Berberis cretica], [Anthemis montana], [Ribes uva-crispa], [Prunus cocomilia].
Moesian [Astragalus angustifolius] hedgehog-heaths	[Astragalus angustifolius] hedgehog-heaths, mostly secondary, scattered, mostly in the xerothermic oak belt, in the mountains of northern Greece and in regions of Mediterranean influence of the mountains and hills of the central Balkan peninsula, in particular, in the northern Pindus, in the Pelagonides, in the Moeso-Macedonian Ranges, in the Rhodopides and in the foothills of the Balkan Range. [Thymus striatus], [Satureja montana], [Artemisia alba], [Agropyron pectiniforme], [Rhodax canus], [Teucrium chamaedrys], [Teucrium montanum], [Sideritis montana], [Festuca thracica], [Hyacinthella leucophaea], [Sternbergia colchiciflora], [Asphodelus albus], [Adonis flammea] participate in the [Astragalus] communities.
Hellenic oro-Mediterranean hedgehog-heaths	Hedgehog-heaths developed on relatively humus-rich rendziniform soils at or above treeline, in the 1700-2200 m altitudinal range of high Greek mountains; hedgehog-heath facies of associated grasslands; similar, impoverished formations descending into the forest belts of the same mountains, with the exception of those of the Peloponnese, where they are replaced by distinctive formations, listed under F7.48.
Hellenic tragacanth hedgehog-heaths	Hedgehog-heaths of the Taygetos, Kyllini, Chelmos, Parnassus, Vardousia, Giona and calcareous central and northern Pindus, dominated by the large hemispherical tussocks of the tragacanths [Astragalus creticus ssp. rumelicus], and/or [Astragalus parnassi], and with [Marrubium velutinum], [Marrubium cyllenaeum], [Juniperus hemisphaerica], [Daphne oleoides], [Eryngium amethystinum], [Sideritis clandestina], [Cirsium hypopsilum] ([Cirsium cylleneum]).
Southern Peloponnese tragacanth hedgehog-heaths	[Astragalus creticus ssp. rumelicus] heaths of the southern Peloponnese.

Kyllini-Chelmos tragacanth hedgehog-heaths	[Astragalus parnassi ssp. cylleneus] and [Astragalus creticus ssp. rumelicus] heaths of Kyllini and Chelmos.
Hellenic mainland tragacanth hedgehog-heaths	[Astragalus creticus ssp. rumelicus] and/or [Astragalus parnassi ssp. parnassi] heaths of high mountains of the mainland of Greece.
Oro-Hellenic [Astragalus angustifolius] hedgehog-heaths	[Astragalus angustifolius] heaths of high Greek mountains, with [Marrubium thessalum] or [Marrubium velutinum ssp. haussknechtii].
Hellenic cushion-heaths	Cushion formations of high Greek mountains not dominated by thorny, tussock-forming species of [Astragalus].
Hellenic alti-Mediterranean hedgehog-heaths	Shrubby formations of the high mountains of the Peloponnese, of the southern mainland Greek mountains and of the Thessalian Olympus system, colonizing the altitudinal range immediately above that occupied by the communities of F7.49, as well as stony slopes with shallow soil, loose screes and humus-deficient soils within the main 1700-2200 m range of these communities. Included are true spiny hedgehog-heaths, cushiony formations of dwarf suffrutescents and bush-dominated facies of stripped grasslands. [Astragalus angustifolius], [Acantholimon androsaceum], [Astragalus lacteus], [Convolvulus cochlearis], [Rindera graeca], [Aster alpinus], [Globularia stygia], [Minuartia stellata], [Erysimum pusillum], [Thymus teucrioides], [Alyssum kionae], [Paronychia kapela], [Thymus hirsutus], [Anthyllis aurea], [Achillea ageratifolia], [Sideritis scardica], [Linum flavum], [Thymus boissieri] and [Sesleria coerulans] are characteristic.
Cretan hedgehog-heaths	Hedgehog-heaths of high mountains of Crete, in the 1500-2500 m altitudinal range, with [Astragalus creticus ssp. creticus], [Astragalus angustifolius], [Acantholimon androsaceum], [Atraphaxis billardieri], [Berberis cretica], [Chamaecytisus creticus], [Daphne oleoides], [Prunus prostrata], [Euphorbia acanthothamnos], [Verbascum spinosum], [Sideritis syriaca], [Satureja spinosa], [Asperula idaea], [Rhamnus prunifolius], [Pimpinella tragium], [Acinos alpinus].
Aegean summital hedgehog-heaths	Isolated, endemic-rich, mostly summital hedgehog-heaths of calcareous mountains of Aegean islands and Mount Athos.
Southern Hellenic [Genista acanthoclada] hedgehog-heaths	Formations dominated by hemispherical shrubs of [Genista acanthoclada] of the middle levels (about 800-1200 m) of mountains and plateaux of the Peloponnese.
[Astragalus sempervirens] hedgehog-heaths	[Astragalus sempervirens ssp. sempervirens], [Astragalus sempervirens ssp. muticus], [Astragalus sempervirens ssp. cephalonicus] formations of the southern Alps, the eastern Pyrenees, Iberia, the Apennines and Greece, transitional between the alpine and subalpine heaths of unit F2.2 and the true Mediterranean hedgehog-heaths of unit F7.4.
Canary Island cushion-heaths	Open formations dominated by broom-like plants of the montane zone (above 1900 m) of the Canary Islands, with many endemic species.

Tenerife cushion-heaths	Formations of Tenerife with [Spartocytisus supranubius], [Adenocarpus viscosus var. viscosus], [Descurainia bourgaena], [Pterocephalus lasiospermus], [Erysimum scoparium], [Scrophularia glabrata], [Nepeta teydea], [Echium wildpretii], [Echium auberianum], [Cheirolophus teydis], [Plantago webbii], [Sideritis cretica], [Argyranthemum teneriffae], [Pimpinella cumbrae], [Arrhenatherum calderae].
La Palma cushion-heaths	Formations of La Palma with [Adenocarpus viscosus var. spartioides], the very rare [Genista benehoavensis] and [Descurainia gilba], [Pterocephalus porphyranthus], [Viola palmensis], [Echium wildpretii], [Echium gentianoides], [Micromeria lasiophylla ssp. palmensis].
Cyprian hedgehog-heaths	Summital community of the Chionistra, in the Troodos group, developed above the tree limit, at about 1900-1950 m above sealevel, with [Berberis cretica], [Sorbus aria ssp. cretica], [Rosa canina ssp. dumalis], [Juniperus foetidissima] and tragacanthic shrubs, in particular, [Astragalus echinus], [Alyssum troodii], [Teucrium cyprium], [Nepeta troodi], [Satureja troodii]. Other highly restricted endemics include [Onosma troodi], [Scorzonera troodea].
Mediterraneo-Anatolian hedgehog-heaths	Tragacanthic communities of the Taurus, the Antitaurus, the Amanus, the Aegean ranges of western Anatolia, the Lebanon mountains, Mount Hermon, the Jebel Druz and the mountains of northern Sinai, with rich communities dominated by numerous species of genera [Astragalus] and [Acantholimon], acccompanied by, among others, [Berberis cretica], [Daphne oleoides].
Western central Eurasian hedgehog-heaths	Hedgehog-heaths of hills, plateaux and mountains of the steppe and substeppe zones of western central Eurasia, west to eastern Bulgaria and central Anatolia.
Northern Thracian tragacanth hedgehog-heath	Endemic [Astragalus aitosensis] ([Astragalus arnacantha], [Astracantha aitosensis]) formation of Bulgaria, restricted to a few sites of the xerothermic oak belt, on steep, south-facing slopes of the Aitoska hills, southeastern spur of the Balkan Range onto the Northern Thracian plain.
Central Anatolian hedgehog-heaths	Hedgehog-heaths of hills, plateaux and mountains of the steppe and substeppe zones of central Anatolia.
Thermo-Atlantic xerophytic scrub	Xerophytic scrub formations of the lower slopes of the Canary Islands and Madeira, rich in succulents, in particular cactiform or dendroid spurges [Euphorbia] spp., rosette-forming [Aeonium] spp. and composites.
Canary Island xerophytic scrub	Xerophytic scrub of the Canary Islands. Varied types include stem succulents, leaf succulents and woody sclerophyllous shrubs.
Western Canary Island spurge communities	Open, varied formations of arid, stony slopes of the lower, 0-700 m, level of the western and central Canarian islands, characterised by the abundance of fleshy-stemmed, aphyllous, or small-leafed species, in particular [Euphorbia] spp., [Senecio kleinia], [Periploca laevigata], [Cneorum pulverulentum], [Messerschmidia fruticosa], [Echium giganteum], [Convolvulus floridus], [Allagopappus dichotomus], [Rhamnus crenulata], [Rubia fruticosa], [Argyranthemum] spp., [Artemisia canariensis], [Sonchus leptocephalus], [Asparagus arborescens], [Rumex lunaria], [Micromeria] spp., [Paronychia canariensis]. They constitute a Macaronesian representation of the coastal desert formations of northwest Africa (which are outside the scope of this classification).

Cardonales	Xerophytic scrub communities of the Canary Islands dominated by the cactiform spurge [Euphorbia canariensis] and [Aeonium percarneum].
Spurge tabaibales	Xerophytic scrub communities of the Canary Islands dominated by the tree-like spurges [Euphorbia aphylla], [Euphorbia obtusifolia], [Euphorbia balsamifera], [Euphorbia atropurpurea], [Euphorbia bravoana], [Euphorbia regis-jubae], [Euphorbia bourgaeana], [Euphorbia berthelotii].
Kleinia tabaibales	Xerophytic scrub communities of the Canary Islands dominated by [Senecio kleinia] ([Kleinia neriifolia]), [Sonchus] spp. or other composites.
Dragon tree communities	Xerophytic scrub communities of the Canary Islands in which the forest relict [Dracaena draco] is present.
[Cneorum] cushion communities	Xerophytic scrub communities of the Canary Islands with [Neochamaelea pulverulenta] ([Cneorum pulverulentum]).
[Plocama] communities	Xerophytic scrub communities of the Canary Islands with [Plocama pendula].
Western Canary Island saxicolous formations	Xerophytic scrub communities of the Canary Islands colonizing hard rock faces, lava flows and ravine walls within the xerophytic zone of the western and central Canary Islands.
Western Canary Island saxicolous labiate communities	Canary Island communities of small ligneous plants colonizing hard, dry rocks with [Micromeria] spp., [Lavandula canariensis], [Lavandula pinnata], and the fern [Cheilanthes catanensis] ([Cosentinia vellea], [Notholaena vellea]).
Cardoncillo communities	Formations colonizing lava flows, with the succulent asclepiad cardoncillos [Ceropegia dichotoma] and [Ceropegia fusca], [Phagnalon purpurascens] and [Sonchus leptocephalus].
Western Canary Island crassulid communities	Formations of dry, less sunny rocks dominated by succulent crassulids ([Aeonium] spp., [Greenovia] spp.) with [Sonchus gummifer], [Sonchus radiatus], [Picridium ligulatum], [Lavandula abrotanoides], [Asparagus scoparius], [Hypericum reflexum], [Lavatera acerifolia], [Lavatera phoenicea], [Vieraea laevigata] and many lichens.
Eastern Canary Island xerophytic communities	Open formations of semidesertic Fuerteventura and Lanzarote, with high endemism; characteristic of various groupings are [Euphorbia obtusifolia], [Senecio kleinia], [Asparagus pastorianus], [Kickxia heterophylla], [Echium bonnetii], [Caralluma burchardii], the cactiform spurge [Euphorbia handiensis], [Pulicaria burchardii], [Pulicaria canariensis], [Argyranthemum winteri], [Echium handiense], [Bupleurum handiense], [Sideritis massoniana], [Asteriscus sericeus], [Asteriscus schultzii], [Minuartia platiphylla], [Reichardia famarae], [Aichryson tortuosum], [Aeonium lancerottense], [Aeonium balsamiferum], [Limonium bourgaei], [Echium decaisnei ssp. purpuriense], [Argyranthemum ochroleucum], [Helichrysum gossypinum], [Helichrysum monogynum], [Ferula lancerottensis], [Sedum lancerottense], [Thymus origanoides], [Lavandula pinnata], [Echium pitardii], [Limonium puberulum].
Canary Island [Launaea] scrub	Steppic grasslands of the Canary Islands invaded and dominated by [Launaea arborescens].
Madeiran xerophytic scrub	Xerophytic scrub of Madeira.

Madeiran spurge formations	Shrubby formations of the low slopes (0-350 m) of Madeira with [Euphorbia piscatoria], [Globularia salicina], [Phyllis nobla], [Myrtus communis], [Chamaemeles coriacea], [Rubus ulmifolius], [Olea europaea var. maderensis], [Bencomia caudata], [Echium nervosum].
Madeiran saxicolous formations	Formations colonizing rocks and volcanic ash deposits in the xerophytic zone of Madeira with [Aeonium glutinosum], [Plantago arborescens ssp. maderensis], [Helichrysum] spp., [Sonchus ustulatus], [Phagnalon] spp., [Tolpis fruticosa], [Sedum brissemoretii], [Davallia canariensis] or [Musschia aurea] and [Aeonium glandulosum].
Desertas dry scrub	Formation with Madeiran endemics [Artemisia argentata], [Calendula maderensis], [Andryala glandulosa], [Jasminum odoratissimum] and introduced plants.
Riverine and fen scrubs	Riversides, lakesides, fens and marshy floodplains dominated by woody vegetation less than 5 m high.
Riverine scrub	Scrub of broad-leaved willows, e.g. [Salix aurita], [Salix cinerea], [Salix pentandra], beside rivers. Scrub of [Alnus] spp. and narrow-leaved willows, e.g. [Salix elaeagnos], where these are less than 5 m tall. Riverside scrub of [Hippophae rhamnoides] and [Myricaria germanica]. Excludes riversides dominated by taller narrow-leaved willows [Salix alba], [Salix purpurea], [Salix viminalis] (G1.1).
Orogenous riverine brush	Riverside brush of fast, pebbly, summer-high rivers originating in the Alps or other major mountain ranges with similar climate cycle, with [Salix] spp., [Caltha palustris ssp. laeta], [Carduus personata], [Myricaria germanica] and [Hippophae rhamnoides]. Vegetation of the alliance [Salicion eleagno-daphnoidis] prevails mostly in narrow valleys with powerful erosion-accumulating activity.
Pre-Alpine willow-tamarisk brush	Low, prostrate [Myricaria germanica] and [Salix] spp., in particular [Salix elaeagnos], [Salix purpurea ssp. gracilis], [Salix daphnoides], [Salix nigricans], formations of low, silty shoals in Alpine and peri-Alpine valleys, with outposts in the Carpathians and the northern Dinarides.
Pre-Alpine willow and sea-buckthorn brush	Formations of [Salix elaeagnos], [Salix purpurea ssp. gracilis], [Salix daphnoides], [Salix nigricans] and [Hippophae rhamnoides] of higher gravel shoals in Alpine and peri-Alpine valleys, with outposts in and around the Carpathians and the Dinarides.
Boreo-alpine willow-tamarisk scrub	Brush of fast, fluctuating, stony or gravelly rivers of the boreal mountains, with [Myricaria germanica], [Salix nigricans] ([Salix myrsinifolia]), [Salix phylicifolia], [Salix borealis], [Salix daphnoides], sometimes with [Hippophae rhamnoides], and [Racomitrium canescens].
Lowland and collinar riverine willow scrub	Linear shrubby willow ([Salix] spp.) formations of river banks in plains, hills and low mountains of the western nemoral, eastern nemoral, boreal, warm-temperate, mediterranean, steppic and cold desert regions of the Palaearctic, extending to the montane level in the mediterranean region, and to the confines of the subtropical deserts.

Almond willow-osier scrub	Willow scrub, often dense, lining water courses of western Eurasian nemoral lowlands and hills, including those of the British Isles, of nemoral Western Europe, north to Denmark and nemoral Scandinavia, south to Euro-Siberian Iberia, of Central Europe, within the range of medio-European, Illyrian, Dacian and Getic deciduous forests, north to the Baltic States, south to the lower and middle courses of rivers of the Alpine, northern Dinaric and Carpathian periphery, of Eastern Europe in the upper basin of the Dniepr system, in particular the basins of the Prypiat, the Berezina, the Dniepr, the Desna, the upper basin of the Don and the Khoper, the upper basin of the Volga system, in particular the basins of the Oka, the Tana, the Volga, the Kama, the Bielaia, with [Salix purpurea ssp. lambertiana], [Salix triandra], [Salix viminalis], [Salix daphnoides var. acutifolia] ([Salix acutifolia]).
Western Mediterranean purple willow scrub	Willow scrub dominated by [Salix purpurea ssp. lambertiana] and [Salix elaeagnos ssp. angustifolia] of water courses of southern France, Italy and Mediterranean eastern Spain south to the Rio Segura basin; [Salix purpurea] and [Salix triandra] scrubs lining watercourses of mediterranean and sub-Mediterranean northwest Africa, the first extending south to the Anti-Atlas and Saharan Atlas, the second limited to eastern and middle northern Algeria.
Balkan riverine willow scrub	Willow-dominated scrub of banks and shoals of rivers of the mediterranean, sub-Mediterranean and Moesian domaines of the Balkan peninsula, south to Greece, with [Salix purpurea], [Salix amplexicaulis], [Salix elaeagnos], [Salix triandra], [Salix viminalis].
Ibero-montane riverine willow scrub	Willow scrub, up to 2-3 metres tall, lining water courses of the Pyrenees, the Iberian Range, the Sierra Nevada, formed by [Salix purpurea], [Salix elaeagnos ssp. angustifolia], [Salix triandra].
Cantabrian willow scrub	Willow scrub of montane rivers and arroyos of the Cordillera Cantabrica, with the endemic [Salix cantabrica] and with [Salix elaeagnos ssp. angustifolia], [Salix purpurea ssp. lambertiana], [Salix triandra ssp. discolor].
Iberian sage-leaved willow scrub	Small or medium-sized willow scrub of meso-Mediterranean and, locally, supra-Mediterranean, zones of central Iberia (Castellano-Leonese sectors, Extremadura), characterized by the presence of the Iberian endemic [Salix salvifolia] and [Salix x secalliana], together with [Salix atrocinerea], [Salix x matritensis], [Salix neotricha], [Salix purpurea ssp. lambertiana], [Salix triandra ssp. discolor]; they line, mostly on siliceous sandy soils, small oligotrophic rivers with strong seasonal amplitude, or form behind the taller curtain of the [Populo nigrae-Salicetum neotrichae] along large water courses of argilous base-rich soils.
Pedicellated willow scrub	Willow scrub of stream courses of extreme southern Europe and the Maghreb, characterized by the presence of the southwestern Mediterranean and North African [Salix pedicellata].
Andalusian willow scrub	Willow scrub of southwestern Iberian stream courses, fringing, in particular, humid [Quercus canariensis] forests in conjunction with rhododendron-alder galleries (unit 44.52), dominated by [Salix pedicellata] and [Salix salvifolia ssp. australis].
Sardinian pedicellated willow scrub	[Salix pedicellata] scrub of stream courses of Sardinia.

Sicilian pedicellated willow scrub	[Salix pedicellata] scrubs of stream courses of Sicily and of the Maltese Islands, where they are represented by a few diminishing, endangered fragments.
Calabrian pedicellated willow scrub	[Salix pedicellata] scrub of stream courses of Calabria.
Continental riverine willow scrub	Willow-dominated scrub of banks and shoals of rivers of the steppe, wooded steppe, cold semidesert and desert zones of Eurasia and of their associated steppic or desert mountain ranges, in particular, of the Pannonic basin, of the Ponto-Sarmatic steppes, of the Central Eurasian and East Asian steppes, deserts and semideserts, of the Irano-Anatolian steppes and their mediterranean or desert transitions.
Pannonic riverine willow scrub	Willow-dominated scrub of banks and shoals of rivers of the Pannonic plain, with [Salix purpurea ssp. lambertiana], [Salix triandra], [Salix viminalis].
Ponto-Sarmatic riverine willow scrub	Willow-dominated scrub of banks and shoals of rivers of the Pontic and Sarmatic steppes and wooded steppes of southern Eastern Europe, in particular, of the lower Danube, the lower Prut, the lower Dniestr, the lower Dniepr basin, the lower and middle Don and Donetz system, the lower Volga basin, the Kouma and Terek basins, with [Salix triandra], [Salix cinerea], [Salix daphnoides var. acutifolia] ([Salix acutifolia]), shrubby [Salix alba], [Salix amygdalina], [Salix gmelini], [Salix purpurea], [Salix australior], and [Hippophae rhamnoides].
Central Eurasian riverine willow scrub	Willow-dominated riverine scrubs of the Transvolgan, Kazakh, Kurgan, Ichim, Kulunda, Baraba, Barnaul steppe and wooded steppe regions and of the Kazakho-Dsungarian and Turanian semideserts and deserts. A number of species of willows, up to 12-15 in Turanian desert and semidesert areas, notably, [Salix blakii], [Salix wilhelmsiana], [Salix songarica], [Salix australior], [Salix euapiculata], [Salix flavida], [Salix microstacha], [Salix cheilophila], [Salix caspica], [Salix rosmarinifolia] associated with [Hippophae rhamnoides], [Myricaria germanica], [Elaeagnus oxycarpa], [Elaeagnus turkmanica], [Elaeagnus angustifolia], constitute various communities.
Boreal riverine willow scrub	Willow thickets of the boreal and boreonemoral regions of Fennoscandia, the Baltic States, Belarus, Russia, northern China, Korea and Japan, dominated, in particular, by [Salix triandra], [Salix daphnoides], [Salix viminalis], [Salix pentandra], [Salix cinerea], [Salix phylicifolia], [Salix glauca], [Salix myrsinifolia], colonizing sands, gravels or silts of the banks of torrents, larger rivers, lakes and reservoirs at low or middle altitudes.
Montane river gravel low brush	Communities of low shrubby pioneers invading the herbaceous formations of units C3.551 and C3.552 on gravel deposits rich in fine silt of montane and northern boreal streams with an alpine, summer-high, flow regime. [Myricaria germanica], [Chamaerion dodonai] and [Salix] spp. are characteristic. Vegetation may include the alliances [Salicion incanae] and [Salicion eleagno-daphnoidis].
Gravel bank thickets and woods	Thickets or woods of, among others, [Salix] spp., [Hippophae rhamnoides], [Alnus] spp., [Betula] spp., on stream gravels of mountain and northern boreal streams with an alpine, summer-high, flow regime. Vegetation includes communities of [Salicion elaeagni].

Willow carr and fen scrub	Low woods and scrubs colonizing fens, marshy floodplains and fringes of lakes and ponds, dominated by large or medium sized shrubby willows, generally [Salix aurita], [Salix cinerea], [Salix atrocinerea], [Salix pentandra], alone or in association with [Frangula alnus], [Rhamnus catharticus], [Alnus glutinosa] or [Betula pubescens], any of which may dominate the upper canopy. In boreal regions and on cold subboreal plateaux, small shrubs may dominate, e.g. dwarf [Salix] spp. associated with [Betula humilis] or [Betula nana]. Excludes boreal and subalpine lakeside scrub on well drained soils (F2).
Grey willow carrs	Mesotrophic or eutrophic low woods and scrubs colonizing fens, marshy floodplains and fringes of lakes and ponds, dominated by [Salix cinerea], [Salix pentandra], [Salix aurita] or, sometimes, [Salix atrocinerea], alone or in association with [Frangula alnus], [Rhamnus catharticus], [Alnus glutinosa] or [Betula pubescens], any of which may, at times, dominate the upper canopy. [Phragmites australis], [Carex elata], [Scirpus sylvaticus], [Menyanthes trifoliata] are typical for the herb layer.
Western grey willow carrs	Mesotrophic or eutrophic [Salix cinerea], [Salix aurita], or, sometimes, [Salix atrocinerea], and [Alnus glutinosa] scrubs of mires, fens, and water fringes of western Europe and northern Central Europe, within the Atlantic and sub-Atlantic domaines.
Central European grey willow carrs	[Salix cinerea]-dominated scrubs of often relatively eutrophic mires of the warmer lowlands and submontane level of central, southeastern and eastern Europe.
Intra-Carpathian grey willow carrs	[Salix cinerea] carrs occupying fen margins of the Eastern Carpathians and the Apuseni mountains, with [Frangula alnus], [Spiraea salicifolia], [Ribes nigrum], [Euonymus nanus], [Calamagrostis canescens], [Lysimachia vulgaris], [Filipendula ulmaria], [Poa trivialis], [Galium palustre], [Myosotis palustris], [Deschampsia cespitosa].
Sphagnum willow carrs	Oligotrophic [Salix aurita] or [Salix cinerea] and [Betula pubescens] or [Betula carpatica] scrubs, rich in sphagnum, of bog edges and acid fens of nemoral Europe.
Bay willow carrs	Medium-tall woods and brushes colonizing fens, marshy floodplains and fringes of lakes and ponds, dominated by the relatively large [Salix pentandra], particularly characteristic of boreal, sub-boreal and subcontinental Europe, from northern England through Scandinavia, northeastern Germany, Poland, the Baltic States to Bashkiria in the northeast, to the Bohemian quadrangle, the Alpine piedmont of Bavaria and Hungary in the south, with outposts in the Netherlands, in subcontinental western Europe to the Black Forest and the Baar plateau, in continental southern Europe to Bulgaria. Species [Phragmites australis], [Carex pseudocyperus], [Glyceria maxima], [Equisetum fluviatile] and [Menyanthes trifoliata] are typical.
Dwarf willow mire scrubs	Dwarf [Salix repens], [Salix rosmarinifolia] and [Betula humilis] scrubs of bogs and fens, of eastern nemoral and boreonemoral Europe, with outposts constituting rare glacial relicts in the higher middle German Hercynian ranges and on northern pre-Alpine plateaux.

Boreal sedge willow carrs	Low woods and scrubs colonizing fens, marshy floodplains and fringes of lakes and ponds of the boreal zone of the Palaearctic dominated by large or medium sized shrubby willows, generally [Salix cinerea] or [Salix aurita], accompanied by [Salix phylicifolia], [Salix nigricans] ([Salix myrsinifolia]) and the boreal [Salix glauca], [Salix lapponum], with sedges, in particular, [Carex aquatilis], [Carex caespitosa], brown mosses and sphagna.
Boreo-alpine willow fen scrubs	Willow thickets or scrubs of mires of the mountains of the boreal zone of the Palaearctic region, characteristically forming along fen margins, on their hummocks or strings, sometimes in their lawns, with an understorey of dwarf shrubs, herbs, mosses and sphagna.
Southern riparian galleries and thickets	Tamarisk, oleander, chaste tree galleries and thickets and similar low woody vegetation of permanent or temporary streams and wetlands of the thermo-Mediterranean zone and southwestern Iberia.
Oleander, chaste tree ([Vitex agnus-castus]) and tamarisk galleries	Thickets and galleries of [Nerium oleander], [Vitex agnus-castus] or [Tamarix] spp. of the southern parts of the Palaearctic domaine.
Oleander galleries	[Nerium oleander] cordons and screens, often with [Tamarix] spp., [Vitex agnus-castus], [Dittrichia viscosa], [Saccharum ravennae], [Arundo donax], [Rubus ulmifolius], most typical of temporary water courses, but also lining small and sometimes large rivers, marking springs and areas of high water table in southern and eastern Iberia, very locally in eastern Provence, Liguria and Corsica (Saint-Florent), in southern Italy, Sardinia and Sicily, in southern and western Greece, the Aegean and Ionian archipelagoes, in Crete, in Albania, in the eastern Mediterranean, in North Africa, including northern Saharan regions, and in Mesopotamia. They are particularly abundant in the south and east of Iberia, in Sicily, in the Aegean and eastern Mediterranean region and in North Africa.
Chaste tree thickets	[Vitex agnus-castus] formations of temporary water courses and other humid sites within, mostly, the thermo-Mediterranean zone. They occur, though uncommonly, in Mediterranean southern and eastern Spain and in the Balearics; they are local and rare in eastern Provence, the Tyrrhenian coast of Italy, Puglia, the gulf of Taranto, Corsica, Sardinia, Sicily and the Maltese Islands. They are frequent in Greece, particularly along the Ionian coasts, where they can constitute dense thickets, uncommon again in the Aegean archipelagoes and Crete. They extend to the southern Balkans, Crimea, Mediterranean Asia Minor, Anatolia and North Africa, including the northern Saharan regions.
Mediterraneo-Macaronesian tamarisk thickets	Formations of [Tamarix] spp., including [Tamarix gallica], [Tamarix africana], [Tamarix canariensis], [Tamarix parviflora], [Tamarix tetrandra], [Tamarix dalmatica], [Tamarix smyrnensis], [Tamarix hampeana], [Tamarix boveana], associated with river banks, wet areas and coastal localities of the Mediterranean basin, of the mediterranean coasts of the Black Sea, of the thermo-Atlantic coasts and lowlands of southwestern Europe and of the Macaronesian Islands.

West Mediterranean tamarisk thickets	[Tamarix gallica], [Tamarix africana] or [Tamarix canariensis] thickets of watercourse galleries, humid depressions and slightly saline coastal flats in Iberia, southern and western France, peninsular Italy, the Balearics, Corsica, Sardinia, Sicily, the Maltese Islands and mediterranean North Africa. The accompanying flora comprises [Scirpus holoschoenus], [Saccharum ravennae], [Arundo donax], [Brachypodium phoenicoides], [Piptatherum miliaceum], [Asparagus acutifolius], [Equisetum ramosissimum], [Rubia peregrina], [Rubia longifolia], [Rubia angustifolia], [Dittrichia viscosa].
Macaronesian tamarisk thickets	Formations of [Tamarix] spp., including [Tamarix gallica], [Tamarix africana], [Tamarix canariensis], of the Canary Islands and Madeira.
Canary Island tamarisk thickets	[Tamarix canariensis] and [Tamarix africana] galleries and thickets of the lower zone of the Canary Islands, lining the low part of barrancos and occupying the deltas of greater water courses. They are particularly abundant in the eastern desert islands, Lanzarote and, mostly, Fuenteventura, where they constitute one of the principal ligneous habitats for the fauna. They have also important representatives along the north coast of Tenerife and on Gran Canaria (Charca de Maspalomas, La Aldea).
Madeiran tamarisk thickets	[Tamarix gallica] thickets of the lowlands of Madeira.
East Mediterranean tamarisk thickets	[Tamarix parviflora], [Tamarix tetrandra], [Tamarix dalmatica], [Tamarix smyrnensis], [Tamarix hampeana] and [Tamarix hohenackeri] thickets of lowland watercourse galleries, humid depressions and slightly saline coastal flats of Greece and its islands, of the southern F.Y.R. of Macedonia, of Albania, of Cyprus, of southern Crimea, of mediterranean Asia Minor and of the Levant.
Hyper-saline Mediterranean tamarisk stands	Thickets of [Tamarix boveana], [Tamarix canariensis] or, sometimes, [Tamarix gallica] of the Mediterranean basin, accompanied by typical salt marsh flora, in particular, [Arthrocnemum fruticosum], [Arthrocnemum glaucum], [Suaeda brevifolia], [Halimione portulacoides], [Atriplex halimus], [Atriplex hastata], [Limonium lactibracteatum], [Limonium eugeniae], [Limonium cossonianum], [Limonium angustibracteanum], [Limonium sinuatum], [Inula crithmoides].
Iberian [Tamarix boveana] stands	Rare and vulnerable formations of the Ibero-African [Tamarix boveana], alone or associated with [Tamarix canariensis], characteristic of arid areas of eastern Iberia, limited to a few stations in the Iberian Southeast (Murcia, Almeria, Alicante), the Ebro depression (Salada de Chiprana), the Ebro delta and Mallorca (Alcudia).
Saline [Tamarix canariensis] stands	Formations of [Tamarix canariensis], sometimes with [Tamarix gallica], characteristic of strongly saline sites of Iberia and the European shores of the western Mediterranean, in particular, of Iberian interior saline depressions (La Mancha) and of coastal areas of the Iberian Arid Southeast.
Saline eastern tamarisk stands	[Tamarix smyrnensis], [Tamarix hampeana], [Tamarix dalmatica] stands of the strongly saline part of Greek and east Mediterranean coastal marshes.

Irano-Turanian tamarisk thickets	Formations of [Tamarix] spp., including [Tamarix smyrnensis] ([Tamarix pallasii], [Tamarix ramosissima] auct.), [Tamarix tetrandra], [Tamarix octandra] i.a., associated with river banks, wet areas and coastal localities of the Irano-Turanian floristic region and its irradiation areas within the steppe and cold desert zones of Eurasia, in particular, of the Pontic basin, of Central Eurasia, of East Asia, of Inner Anatolia, northern Iran and Afghanistan, of northern Mesopotamia.
Pontic tamarisk stands	Formations of [Tamarix smyrnensis] ([Tamarix ramosissima] auct.), of stream sides and coastal localities of the Pontic steppe region of western Eurasia.
Western Pontic fresh water [Tamarix smyrnensis] stands	Formations of [Tamarix smyrnensis] and/or [Tamarix tetrandra] on weakly saline sands of fresh water steppe streamsides of the western Pontic region, including river systems such as those of the lower Danube and the Maritza-Tunja basins.
Western Pontic coastal [Tamarix smyrensis] stands	Shrub communities of [Tamarix smyrnensis], [Tamarix ramosissima] and/or [Tamarix tetrandra] occupying weakly saline marine sand dunes of western Black Sea coastal areas.
Central and eastern Pontic tamarisk stands	Formations of [Tamarix smyrnensis] ([Tamarix ramosissima] auct.), of stream sides and coastal localities of the northern and eastern Black Sea lowlands, within the range of central and eastern Pontic steppes.
Southwestern Iberian tamujares	Low, spiny, almost monospecific fringes formed by the Ibero-African shrubby spurge [Securinega tinctoria] on the outer edge of temporary or permanent water courses of great seasonal amplitude in the southwestern quadrant of the Iberian peninsula (Montes de Toledo, Sierra Morena, Extremadura, southwestern Andalusia, southern Portugal). Among the few associated plants, are the lianas [Bryonia cretica], [Tamus communis] and the endemic [Clematis campaniflora]. [Pyrus bourgaeana] may transgress from neighbouring communities.
Lauriphyllous galleries of the Cordillera Oretana	Supra- and upper meso-Mediterranean riparian galleries of the Montes de Toledo (Cordillera Oretana), constituted by the lauriphyllous [Prunus lusitanica] and [Viburnum tinus]. They line water courses on the inner edge of alder galleries of unit G1.131, which they sometimes entirely replace.
Bog-myrtle - willow scrub of the Cordillera Oretana	Tall scrub of Montes de Toledo streams, with [Frangula alnus], [Salix atrocinerea], [Salix salvifolia] and [Myrica gale].
Hedgerows	Woody vegetation forming strips within a matrix of grassy or cultivated land or along roads, typically used for controlling livestock, marking boundaries or providing shelter. Hedgerows differ from lines of trees (G5.1) in being composed of shrub species, or if composed of tree species then being regularly cut to a height less than 5 m.
Hedgerows of non-native species	Hedges planted with species not native in the vicinity. They may be exotics such as [Ligustrum ovalifolium] or European species outside their native range.
Highly-managed hedgerows of native species	Regularly clipped hedges composed of native species that were planted as a hedge.

Species-rich hedgerows of native species	Hedgerows composed mainly of native species, with on average at least five native woody species per 25 m length, excluding undershrubs such as [Rubus fruticosus] or climbers such as [Clematis vitalba] or [Hedera helix]. In western Europe, many such hedges are thought to be medieval in origin.
Species-poor hedgerows of native species	Hedgerows composed mainly of native species, not neatly clipped or obviously planted as a hedge, with on average less than five woody species per 25 m length, excluding undershrubs such as [Rubus fruticosus] or climbers such as [Clematis vitalba] or [Hedera helix].
Shrub plantations	Plantations of dwarf trees, shrubs, espaliers or perennial woody climbers, mostly cultivated for fruit or flower production, either intended to have permanent cover of woody plants when mature, or else for wood or small tree production with a regular whole-plant harvesting regime.
Shrub plantations for whole-plant harvesting	Includes shrub nurseries. Excludes tree nurseries and plantations of Christmas trees (G5.7).
Shrub plantations for leaf or branch harvest	Includes tea [Camellia sinensis] plantations, and osier [Salix viminalis] beds grown for basket-making.
Tea plantations	Plantations of [Camellia sinensis], widespread in southeastern mainland China, Formosa, on Formosa, southern Honshu, Shikoku and Kyushu, more limited elsewhere in the Palaearctic, in particular, in the eastern Pontic range of Turkey, in the Caucasian periphery of Russia, Georgia and Azerbaijan, in northern Iran, in the Azores on Sao Miguel.
Osier beds	Beds of [Salix viminalis] grown as high quality willows for basket work, and also cultivated beds of other species of willow (e.g. red osier – [Salix rubra]).
Shrub plantations for ornamental purposes or for fruit, other than vineyards	Plantations of dwarf trees, shrubs, espaliers or perennial woody climbers other than grapevines, cultivated for fruit or flower production. They include, among others, berry-bearing bushes of [Ribes] and [Rubus].
Shrub and low-stem tree orchards	Plantations of dwarf trees, shrubs, espaliers or perennial ligneous climbers, other than vineyards and tea plantations, cultivated for fruit or flower production, with an avocation of permanent shrubby cover. They include, among others, espaliers of various Rosaceae plantations and berry shrub patches.
Ornamental shrub plantations	No description available.
Vineyards	Plantations of grapevine [Vitis vinifera].
Traditional vineyards	Vineyards that have preserved their characteristic accompanying flora (often species-rich communities of arable weeds), generally lightly treated.
Intensive vineyards	Vineyards usually cleared of their herb layer (ploughed), intensively treated, often covering large areas.

Woodland, forest and other wooded land	Woodland and recently cleared or burnt land where the dominant vegetation is, or was until very recently, trees with a canopy cover of at least 10%. Trees are defined as woody plants, typically single-stemmed, that can reach a height of 5 m at maturity unless stunted by poor climate or soil. Includes lines of trees, coppices, regularly tilled tree nurseries, tree-crop plantations and fruit and nut tree orchards. Includes [Alnus] and [Populus] swamp woodland and riverine [Salix] woodland. Excludes [Corylus avellana] scrub and [Salix] and [Frangula] carrs. Excludes stands of climatically-limited dwarf trees (krummholz) < 3m high, such as occur at the arctic or alpine tree limit. Excludes parkland and dehesa with canopy less than 10%, which are listed under sparsely wooded grasslands E7.
Broadleaved deciduous woodland	Woodland, forest and plantations dominated by summer-green non-coniferous trees that lose their leaves in winter. Includes woodland with mixed evergreen and deciduous broadleaved trees, provided that the deciduous cover exceeds that of evergreens. Excludes mixed forests (G4) where the proportion of conifers exceeds 25%.
Riparian and gallery woodland, with dominant alder, birch, poplar or willow	Riparian woods of the boreal, boreo-nemoral, nemoral and submediterranean and steppe zones, with one or few dominant species, typically [Alnus], [Betula], [Populus] or [Salix]. Includes woods dominated by narrow-leaved willows [Salix alba], [Salix elaeagnos], [Salix purpurea], [Salix viminalis] in all zones including the mediterranean. Excludes riverine scrub of broad-leaved willows, e.g. [Salix aurita], [Salix cinerea], [Salix pentandra] (F9.1).
Riverine willow woodland	[Salix] spp. brush or arborescent formations, lining flowing water and submitted to periodic flooding, developed on recently deposited alluvion. Willow brushes are particularly characteristic of rivers originating in major mountain ranges. Shrubby willow formations also constitute an element of lowland and hill riverine successions in all major biomes, often making the belt closest to the water course. Taller arborescent willow formations often constitute the next belt landwards in riverine successions of lowland western nemoral, eastern nemoral and warm-temperate humid forest regions, and a large part of the less diverse riverine systems of the steppic, mediterranean and cold desert zones. Vegetation of alliance [Salicion albae], species [Salix alba], [Salix fragilis], [Populus alba], [Populus nigra], [Populus canescens], [Lycopus europaeus], [Lysimachia vulgaris], [Phalaroides arundinacea] and [Urtica dioica]. May be affected by the invasive alien species [Solidago canadensis], [Aster novi-belgii], [Aster novi-anglii], [Impatiens glandulifera].

Middle European white willow forests	Arborescent galleries of tall [Salix alba], [Salix fragilis] and [Salix x rubens], with, in the east, [Populus nigra], developed on ground submitted to a regular regime of inundation along western Eurasian nemoral lowland, hill or submontane rivers, including those of the British Isles, of nemoral Western Europe, south to Euro-Siberian Iberia, of Central Europe, within the range of medio-European, Illyrian, Dacian and Getic deciduous forests, north to the Baltic States, south to the lower and middle courses of rivers of the Alpine, northern Dinaric and Carpathian periphery, of Eastern Europe in the upper basin of the Dniepr system, in particular the basins of the Prypiat, the Berezina, the Dniepr, the Desna, the upper basin of the Don and the Khoper, the upper basin of the Volga system, in particular the basins of the Oka, the Tana, the Volga, the Kama, the Bielaia.
Western European white willow forests	Arborescent galleries of tall [Salix alba], [Salix fragilis] and [Salix x rubens], lining lowland, hill or submontane rivers of Atlantic and sub-Atlantic middle Europe, outside of the main native range of [Populus nigra], which may nevertheless appear sporadically, or as a naturalised alien.
Eastern European poplar-willow forests	Arborescent galleries of tall [Salix alba], [Salix fragilis], [Salix x rubens], [Populus nigra] and sometimes [Populus alba], lining lowland, hill or submontane rivers of nemoral and boreonemoral Eastern Europe and of eastern and southeastern Central Europe, including eastern Germany, the Baltic States, Poland, the Czech Repubic, Slovakia, the nemoral parts of Danubian and Balkan states, nemoral Belarus, the Ukraine and Russia, east to Bashkiria.
Mediterranean tall willow galleries	Arborescent willow formations bordering watercourses of mediterranean regions of western Eurasia, willow-dominated belt or facies of the poplar-ash-elm forests.
Mediterranean white willow galleries	Riparian forests of the Mediterranean basin dominated by [Salix alba], [Salix fragilis] or their relatives.
Central Iberian [Salix neotricha] galleries	Arborescent willow galleries dominated by [Salix neotricha] accompanied by [Salix alba], [Salix fragilis], [Populus nigra] and sometimes [Populus alba], [Fraxinus angustifolia], [Frangula alnus], [Sambucus nigra], [Ulmus] spp., forming as the ligneous vegetation closest to the water along the middle and lower course of large rivers of little seasonal amplitude in the meso- and supra-Mediterranean foothills of the Cantabrian Cordillera, the Iberian Range and neighbouring regions.
Eumediterranean white and crack willow galleries	[Salix alba]-, [Salix fragilis]- or [Salix x rubens]-dominated facies of Mediterranean riverine poplar-ash-elm forests developed along rivers of lowland Iberia, southern France, Italy, Dalmatia, Albania, the F.Y.R. of Macedonia, Greece, the Mediterranean islands, Cyprus and Mediterranean Asia Minor; the accompanying cortège does not differ from that of poplar- or ash-dominated facies.
Olive-leaved and ashy willow riparian woods	Woods of arborescent willows, physiognomically dominated by [Salix atrocinerea] or [Salix cinerea], forming, in thermo-, meso- or supra-Mediterranean areas, on the banks of slow water courses; similar woods occupy soggy depressions (unit 44.92).

Iberian olive-leaved willow woods	Riparian woods of [Salix atrocinerea] of central and eastern Iberia, with [Salix neotricha], [Salix salvifolia], [Frangula alnus], [Populus tremula], [Fraxinus angustifolia] and many lianas and brambles ([Rubus] spp.).
Andalusian olive-leaved willow woods	Riparian woods formed almost exclusively by [Salix atrocinerea], with a few [Fraxinus angustifolia], numerous lianas and brambles ([Rubus] spp.) and an abundance of [Thelypteris palustris] in the undergrowth, characteristic of the southwestern Iberian peninsula.
Sardinian olive-leaved willow woods	Riparian woods of [Salix atrocinerea] of Sardinia.
Italo-Hellenic ashy willow riparian woods	Riparian woods of [Salix cinerea] of Italy and Greece.
Canary Island willow galleries	Riparian communities forming mostly in ravines and gullies within the laurel forest belt of the Canary Islands and characterized by the presence of the tall endemic, [Salix canariensis]. The best preserved are found in the barranco de Los Cernicalos of Gran Canaria, in the caldera de Taburiente of La Palma and in the barranco del Infierne of Tenerife.
Continental willow galleries	Willow-dominated riverine woods of the steppe, wooded steppe, cold semidesert and desert zones of Eurasia and of their associated steppic and desert mountain ranges.
Pannonic willow and poplar-willow galleries	Riverine woods of the Pannonic basin formed by [Salix alba], [Salix fragilis] and often [Populus alba] or [Populus nigra], which may at times dominate, in particular, in Vojvodina.
Ponto-Sarmatic steppe willow galleries	Riverine woods dominated by [Salix alba], [Salix fragilis] and [Populus nigra], of floodplains of rivers of the Pontic and Sarmatic steppes and wooded steppes of southern Eastern Europe, in particular, of the lower Danube, the lower Prut, the lower Dniestr, the lower Dniepr basin, the lower and middle Don and Donetz system, the lower Volga basin, the Kouma and Terek basins.
Lower Danube willow galleries	Riverine woods dominated by [Salix alba], [Salix fragilis] and [Populus nigra], of the floodplains, valleys and basins of the lower Danube, its tributaries and delta of southern and eastern Romania, northeastern Bulgaria and Moldova, with [Fraxinus angustifolia], [Fraxinus pennsylvanica], accompanied by [Tamus communis], [Amorpha fruticosa], [Rubus caesius], [Lycopus europaeus], [Lycopus exaltatus], [Polygonum hydropiper].
Northern Thracian willow galleries	Riverine woods dominated by [Salix alba], [Salix fragilis] and [Populus nigra], of floodplains of the northern Thracian plain of Bulgaria.
Eastern Ponto-Sarmatic steppe willow galleries	Riverine woods dominated by [Salix alba], [Salix fragilis] and [Populus nigra], of floodplains of the lower Dniestr, the lower Dniepr basin, the lower and middle Don and Donetz system, the lower Volga basin, the Kouma and Terek basins, reaching a width of three kilometres on the lower Dniepr.

Boreo-alpine riparian galleries	Riverside, lakeside and seaside alder, birch or pine galleries and cordons of the boreal, boreonemoral and boreosteppic zones, of the high mountains of the nemoral zone and of their piedmont influence region, dominated by [Alnus incana] along the montane and submontane rivers of the Alps, the Carpathians, the northern Apennines, the Dinarides, the Balkan Range, the Rhodopides and neighbouring regions, by [Alnus incana] or [Alnus glutinosa] in boreal Fennoscandia and northeastern Europe, by [Betula pendula] or [Pinus sylvestris] in western Siberia. In the herb layer, nitrophilous and hygrophilous species dominate: [Aegopodium podagraria], [Chaerophyllum hirsutum], [Petasites hybridus], [Crepis paludosa] and [Caltha palustris ssp. laeta].
Montane grey alder galleries	[Alnus incana]-dominated formations lining watercourses in mountainous regions of the Alps, the Carpathians, the Dinarides, the Balkan Range, the Rhodopides, the Apennines and the Bohemian Quadrangle.
Alpine grey alder galleries	[Alnus incana] formations of the upper reaches of Alpine, particularly inner Alpine, valleys, with outposts in the Dinarides, replacing, colonizing or fringing the pioneer willow scrubs of the [Salicion eleagni] (unit 44.11).
Apennine grey alder galleries	Relictual formations of [Alnus incana] of the northern Apennines.
Hercynio-Carpathian grey alder galleries	[Alnus incana] galleries of the montane rivers of the western and northern Carpathians and of the Hercynian ranges of the Bohemian Quadrangle, best developed in the 400 to 600 metre altitudinal range, ascending to 900 metres.
Hercynio-Carpathian sage grey alder galleries	[Alnus incana] riverine galleries of the western and northern Carpathians and of the Bohemian Quadrangle, developed on well drained substrates, in particular on gravel flats and the lower parts of valley slopes, with [Salvia glutinosa], [Thalictrum aquilegifolium], [Matteuccia struthiopteris].
Hercynio-Carpathian caltha grey alder galleries	[Alnus incana] galleries of the western and northern Carpathians and of the Bohemian Quadrangle, developed on damper substrates, with [Caltha palustris] ([Caltha laeta]), [Valeriana simplicifolia].
Eastern Carpathian grey alder galleries	[Alnus incana] galleries along the upper reaches of Eastern Carpathian valleys, with regional species [Telekia speciosa], [Petasites kablikianus], [Symphytum cordatum], [Pulmonaria rubra], [Leucanthemum waldsteinii], which replace the pioneer willow scrubs of the [Salici purpureae-Myricarietum].
Montenegrine grey alder galleries	[Alnus incana] galleries of the montane Tara and Lim rivers of Montenegro, with [Aconitum toxicum], [Doronicum austriacum], [Oxalis acetosella] and many species shared with Alpine grey alder galleries.
Balkan Range grey alder galleries	[Alnus incana] galleries lining watercourses of the upper levels of the central Balkan Range.
Rhodopide grey alder galleries	[Alnus incana] galleries lining watercourses of the upper levels of Vitosha, Rila and the western Rhodope mountains.
Dealpine grey alder galleries	Alder formations of the middle course of rivers flowing from the Alps, in particular of rivers of the Danube, Rhine and Rhone systems.

Boreal grey alder galleries	[Alnus incana]-dominated galleries and woods of the boreal zone of Fennoscandia and northeastern Europe, southwest to northeastern Poland, developed on nutrient-rich soils of river valleys, lakesides and the shores of the Gulf of Bothnia and the Gulf of Finland, periodically inundated by snow-melt waters or autumn rains, with [Betula pubescens], [Prunus padus], [Valeriana sambucifolia], [Anemone nemorosa], [Geranium sylvaticum], [Geum rivale], [Matteuccia struthiopteris], [Paris quadrifolia], [Silene dioica] ([Melandrium rubrum]), [Equisetum pratense].
Boreal black alder galleries	[Alnus glutinosa]-dominated galleries and woods of the boreal zone of Fennoscandia, developed in narrow cordons along rivers, on lakesides and on the coasts of the Baltic, with [Alnus incana], [Lycopus europaeus], [Filipendula ulmaria], [Lysimachia vulgaris], [Equisetum arvense].
Western Siberian birch and pine galleries	Riverine woods and scrubs of western Siberian flood plains, dominated by [Betula pendula] or [Pinus sylvestris], with [Populus tremula], [Salix bebbiana], [Rosa majalis], [Filipendula ulmaria], [Equisetum sylvaticum].
Eastern boreal riverine galleries	Riverine woods and scrubs of eastern Siberian flood plains, with [Alnus fruticosa], [Populus suaveolens].
Ponto-Caucasian montane alder galleries	Riverside and lakeside alder galleries and cordons of the Pontic Range and the Caucasus system, with [Alnus subcordata], [Alnus barbata] or [Alnus incana].
Southern alder and birch galleries	Riparian formations of [Alnus glutinosa], locally of [Alnus cordata] or [Betula] spp. of the Mediterranean basin and of western Iberia, often with [Fraxinus angustifolia] and [Osmunda regalis].
Southern black alder galleries	Riparian [Alnus glutinosa]-dominated multilayered formations of the meso- and supra-Mediterranean levels of the Iberian peninsula, the Cévennes, the Italic and Hellenic peninsulas.
Iberian meso-Mediterranean alder galleries	Meso-Mediterranean [Alnus glutinosa] riparian galleries of southern Galicia, Portugal, Extremadura, the western Cordillera Central, western Castilla, with [Betula celtiberica], [Salix atrocinerea], [Frangula alnus], [Fraxinus angustifolia], [Celtis australis], many lianas, [Clematis campaniflora], [Humulus lupulus], [Vitis vinifera ssp. sylvestris] and an herb layer comprising [Senecio bayonensis], [Galium broterianum], [Scrophularia scorodonia], [Osmunda regalis], [Carex acuta ssp. broteriana].
Iberian supra-Mediterranean alder galleries	Supra-Mediterranean [Alnus glutinosa] riparian galleries of water courses with moderate seasonal fluctuations, of western Iberia, with [Betula celtiberica], [Ilex aquifolium], [Populus tremula] and [Luzula sylvatica ssp. henriquesii], [Paris quadrifolia], [Galium broterianum], [Paradisea lusitanicum], [Carex acuta ssp. broteriana].
Western Mediterranean alder and ash-alder galleries	[Alnus glutinosa] riparian galleries of mainland southern France, mediterranean and sub-Mediterranean peninsular Italy, mediterranean Corsica, Sardinia, often with [Fraxinus angustifolia].
Aegean alder galleries	[Alnus glutinosa] riparian galleries along permanent water courses of non-calcareous regions of Greece, in particular, of Thessaly, the sea-facing slopes of the Pelion, the Ossa, the Pierria, the Pindus, Macedonia, Thrace, northern Euboea and the northern Peloponnese.

Rhododendron - alder galleries	Highly remarkable, relict thermo- and meso-Mediterranean alder galleries of deep, steep-sided valleys of the sierras of the Campo de Gibraltar and of southern Portugal, with [Rhododendron ponticum ssp. baeticum], [Frangula alnus ssp. baetica], [Arisarum proboscideum] and a rich fern community including [Pteris incompleta], [Diplazium caudatum], [Culcita macrocarpa]. They are often in contact with humid to hyper-humid [Quercus canariensis] forests (unit 41.773) and with [Salix pedicellata] formations (unit 44.1271).
Corsican black and cordate alder galleries	Collinar and montane riparian alder galleries of Corsica, dominated by [Alnus cordata] and [Alnus glutinosa].
Relict birch galleries of Cordillera Oretana	Relict [Betula parvibracteata] riparian galleries limited to two stations of the Montes de Toledo (Cordillera Oretana), one in the Sierra de Rio Frio where a unique gallery of about 20 km in length survives, the other at the spring of the Estena. The dominant species, an extremely narrow endemic, is accompanied by [Myrica gale], [Frangula alnus], [Salix atrocinerea], [Galium broterianum], [Scilla ramburei].
Mixed riparian floodplain and gallery woodland	Mixed riparian forests, sometimes structurally complex and species-rich, of floodplains and of galleries beside slow- and fast-flowing rivers of the nemoral, boreo-nemoral, steppe and submediterranean zones. Gallery woods with [Acer], [Fraxinus], [Prunus] or [Ulmus], together with species listed for G1.1. Floodplain woodland characterized by mixtures of [Alnus], [Fraxinus], [Populus], [Quercus], [Ulmus], [Salix].
Riverine ash - alder woodland, wet at high but not at low water	Riparian forests of [Fraxinus excelsior] and [Alnus glutinosa], sometimes [Alnus incana], of middle European and northern Iberian lowland or hill watercourses, on soils periodically inundated by the annual rise of the river level, but otherwise well-drained and aerated during low-water; they differ from riparian alder woods within unitsG1.41 and G1.52 by the strong representation in the dominated layers of forest species not able to grow in permanently waterlogged soils.
Ash - alder woods of rivulets and springs	[Fraxinus excelsior]-[Alnus glutinosa] formations of springs and small streams of Atlantic, sub-Atlantic and subcontinental middle Europe, usually dominated by ashes, with [Carex remota], [Carex pendula], [Carex strigosa], [Equisetum telmateia], [Rumex sanguineus], [Lysimachia nemorum], [Cardamine amara], [Chrysosplenium oppositifolium], [Chrysosplenium alternifolium], [Impatiens noli-tangere], [Ribes rubrum].
Sedge ash-alder woods	Formations of [Fraxinus excelsior] and [Alnus glutinosa] of sub-Atlantic and subcontinental middle Europe, distributed in western Europe, in northern, Central and Eastern Europe, extending south in Central Europe to the confines of the [Fagion sylvaticum], [Fagion illyricum] and [Carpinion illyricum] zones, with an abundance of [Carex remota], [Carex strigosa], [Carex pendula], [Carex sylvatica].
Fontinal ash-alder woods	[Fraxinus excelsior]-[Alnus glutinosa] woods of Atlantic, sub-Atlantic and subcontinental middle Europe, with a wetter soil occupied by [Cardamine amara] and [Chrysosplenium] spp., and often by [Impatiens noli-tangere].

Cabbage thistle ash-alder woods	[Fraxinus excelsior]-[Alnus glutinosa] woods of Atlantic, sub-Atlantic and subcontinental middle Europe, with an understorey rich in tall herbs, in particular, in sub-Atlantic areas, the tall [Cirsium oleraceum] and [Eupatorium cannabinum] and usually [Carex acutiformis]; these constitute a transition towards unit 44.332.
Hillside spring ash-alder woods	[Fraxinus excelsior]-[Alnus glutinosa] woods of sub-Atlantic and subcontinental middle Europe, of seeping hillside depressions and of moist peaty ground, with [Ribes rubrum].
Great horsetail ash-alder woods	[Fraxinus excelsior]-[Alnus glutinosa] woods of calcareous inundated substrates adjacent to streams and springs of Great Britain and middle Europe, characterized by an abundant herb layer dominated by [Equisetum telmateia] and rich in mosses.
Dacio-Moesian ash-alder woods	Higrophile, neutrophile gallery woods of low mountain rivers of the [Fagion moesiacum] and [Fagion dacicum] zones, in particular of Serbia and the southern and eastern Carpathians of Rumania, notably the Apuseni mountains, dominated by [Fraxinus excelsior] and [Alnus glutinosa], with [Alnus incana], [Tilia cordata], [Ulmus glabra], [Acer pseudoplatanus], and [Carex remota] in the herb layer.
Ash - alder woods of fast-flowing rivers	Alder or ash-alder galleries of the banks of fast-flowing rivers and large brooks replacing the peri-Alpine [Alnus incana] galleries in hills of middle Europe away from the direct influence of alpine rivers and north to Denmark and southern Sweden.
Collinar stream ash-alder woods	Alder or ash-alder galleries of the banks of fast-flowing nonalpine rivers and large brooks of hill and lowland regions of western, northern and central Europe.
Stitchwort ash-alder woods	Alder or ash-alder galleries of the banks of fast-flowing nonalpine rivers and large brooks of western, central and northwestern Europe. They are usually codominated by [Alnus glutinosa], [Fraxinus excelsior] and [Acer pseudoplatanus], accompanied by [Acer platanoides], [Ulmus glabra], [Ulmus laevis]. [Prunus padus] is frequent in the undergrowth, shrubs include [Ribes rubrum], [Ribes uva-crispa], [Corylus avellana]; the herb layer comprises [Stellaria nemorum], [Impatiens noli-tangere], [Aconitum vulparia], [Allium ursinum], [Geum rivale], [Athyrium filix-femina], [Dryopteris carthusiana], [Matteuccia struthiopteris], [Ranunculus platanifolius], [Urtica dioica], [Ranunculus ficaria], [Primula elatior], [Lamium galeobdolon] or [Filipendula ulmaria], [Luzula sylvatica]. The gallery may be enclosed within other forests or reduced to a thin line of alders along rivers traversing pastureland.
Northeastern stream spruce-ash-alder woods	Ash-alder-spruce galleries of the banks of fast-flowing rivers and large brooks of northeastern Central Europe.
Submontane Hercynian stream ash-alder woods	Herb-rich [Alnus glutinosa]- or [Fraxinus excelsior] and [Alnus glutinosa]-dominated galleries of more montane affinities than those of the [Stellario Alnetum], paralleling the [Alnetum incanae] in mountainous country away from the Alps and the main Carpathian ranges, in particular in and around the great Hercynian ranges of the Bohemian Quadrangle, north to the Silesian lowlands. [Alnus incana] is sometimes present; common in, or characteristic of the undergrowth are [Stellaria nemorum], [Chaerophyllum hirsutum], [Crepis paludosa], [Aegopodium podagraria], [Rubus idaeus], and, in some of the local variants, [Astrantia major], [Aruncus sylvestris].

Pre-Carpathian stream ash-alder woods	Woods of [Alnus glutinosa] and [Fraxinus excelsior] developed on alluvial soils along the middle and lower course of streams and rivers of pre-Carpathian hills, accompanied by [Frangula alnus] and [Ulmus laevis], with [Stellaria nemorum], [Aegopodium podagraria], [Matteuccia struthiopteris], [Carex remota], [Carex brizoides], [Equisetum maximum] and rich in [Fagetalia] and [Querco-Fagetea] species.
Ash - alder woods of slow rivers	Eastern, central and, locally, western European [Fraxinus excelsior]-[Alnus glutinosa] woods of valleys of lowland slow and even-flowing rivers, with a rich undergrowth of tall herbs and shrubs.
Central European slow river floodplain woods	Central European riverine and floodplain woods of valleys of lowland, often small, slow and even-flowing rivers, usually dominated by [Fraxinus excelsior] and/or [Alnus glutinosa], sometimes with [Picea abies], [Quercus robur], [Fagus sylvatica], with a rich undergrowth of tall herbs and shrubs. They may extend far into the floodplain, becoming progressively richer in [Quercus robur] and [Carpinion] species away from the stream or from low-lying areas.
Central European slow river ash-alder woods	[Alnus glutinosa]-[Fraxinus excelsior] forests of large valleys of lowland slow and even-flowing Central European rivers, south to the Illyrian region, often extensive, and capable of occupying floodplains well beyond the riparian gallery, progressively richer in [Quercus robur] and [Carpinion] species towards the exterior. The undergrowth includes, besides [Prunus padus], [Humulus lupulus], [Rubus idaeus], [Rubus caesius], [Ribes nigrum], [Ribes rubrum], [Sambucus nigra], [Aegopodium podagraria], [Peucedanum palustre], [Glyceria maxima], [Iris pseudacorus], [Carex acutiformis], [Carex riparia], [Phalaris arundinacea], [Filipendula ulmaria], [Cirsium oleraceum], [Cirsium palustre].
Central European spruce-alder woods	[Alnus glutinosa]-[Alnus incana]-[Picea abies] riverine woods developed along streams crossing poorly drained depressions and flats in mountainous regions of the Bohemian Quadrangle and neighbouring regions, with [Sorbus aucuparia], [Rubus idaeus], [Frangula alnus], [Calamagrostis villosa], [Caltha palustris], [Viola palustris], [Carex sylvatica], [Chaerophyllum hirsutum], [Oxalis acetosella].
Moravian oak-beech-alder riverine woods	Wet [Quercus robur], [Fagus sylvatica] and [Alnus glutinosa] woods of the upper Oder basin of northern Moravia, with an undergrowth composed of an admixture of riverine, oak-hornbeam and acidophilous species, among which [Carex brizoides], often dominant, [Festuca gigantea], [Impatiens noli-tangere], [Vaccinium myrtillus], [Circaea lutetiana], [Deschampsia cespitosa], [Carex remota], [Lysimachia nemorum], [Maianthemum bifolium], [Rubus caesius], [Lamium galeobdolon], [Oxalis acetosella].

West European tall herb ash-alder woods	[Alnus glutinosa] or [Fraxinus excelsior]-[Alnus glutinosa]-[Ulmus] riparian woods on eutrophic, moist soils of alluvial terraces, levees and floodplains of the lower courses of rivers of Atlantic and sub-Atlantic regions of the British Isles and the western seaboard of the European mainland, with [Salix cinerea] and [Urtica dioica], often rich in tall herbs, in particular [Cirsium oleraceum], [Eupatorium cannabinum], [Epilobium hirsutum], [Dipsacus pilosus], [Symphytum officinale], [Aconitum napellus] and creepers [Humulus lupulus], [Solanum dulcamara], [Calystegia sepium]; [Ribes rubrum], [Iris pseudacorus], [Equisetum telmateia], [Equisetum fluviatile] are locally characteristic; tall sedges, in particular [Carex acutiformis] and [Carex paniculata] dominate some of the wettest communities. Typical sub-communities of British [Alnus glutinosa-Urtica dioica] woodland are included, as are drier [Sambucus nigra] sub-communities in situations where they are adjacent. Formations of this unit are now rare, having for the most part been replaced by
Ponto-Pannonic tall herb ash-alder woods	Marshy riverine woods of [Alnus glutinosa], [Fraxinus angustifolia] and [Fraxinus pallisiae] of the Pannonic plain, of neighbouring Illyrian hills and mountains, and of the northwestern Black Sea lowlands of the lower Danube, Prut, Dniestr, Dniepr and Don basins, with [Viburnum opulus], [Frangula alnus], [Cornus sanguinea] in the shrub layer and [Lycopus europaeus], [Oenanthe aquatica], [Carex acutiformis], [Polygonum hydropiper], [Rubus caesius] in the herb layer.
Eastern Baltic slow river floodplain woods	Riverine forests of slow, often small, lowland streams of northeastern Central Europe and northwestern Sarmatic Eastern Europe, east to the upper reaches of the Vistula, Neman, Dvina and other Baltic river basins, in eastern Poland, northern and western Belarus and the Baltic States, dominated by [Fraxinus excelsior] and [Alnus glutinosa], sometimes with [Betula] spp. and [Picea abies].
Eastern Baltic enchanter's nightshade ash-alder woods	Riverine forests of slow, often small, lowland streams of northeastern Central and northern Eastern Europe, east to the upper reaches of the Vistula, Neman, Dvina and other Baltic river basins, dominated by sometimes very tall [Fraxinus excelsior] and [Alnus glutinosa], with [Acer platanoides], [Carpinus betulus], [Prunus padus], [Ulmus glabra], [Picea abies] and a luxuriant tall-herb undergrowth including [Urtica dioica], [Filipendula ulmaria], [Cirsium oleraceum], [Circaea alpina], [Lysimachia vulgaris].
Eastern Baltic slow river spruce-birch-alder woods	Riverine forests of northeastern Central and northern Eastern Europe, east to the upper reaches of the Vistula, Neman, Dvina and other Baltic river basins, dominated by [Alnus glutinosa] and [Picea abies], with [Fraxinus excelsior], [Betula pendula], [Betula pubescens], [Ulmus glabra], [Tilia cordata].
Sarmatic ash-alder woods	Riverine forests of slow and even-flowing, large or small, lowland streams of Sarmatic Eastern Europe, in the basins of the Dniepr, the Don and the Volga-Kama, dominated by [Fraxinus excelsior] and [Alnus glutinosa], with [Prunus padus], sometimes with [Betula] spp. and [Picea abies], with a rich undergrowth of tall herbs and shrubs, including [Urtica dioica], [Filipendula ulmaria], [Lysimachia vulgaris].

Northern Iberian alder galleries	Riparian alder or ash-alder woods of collinar and montane streams of the northern Iberian peninsula, with a pronounced medio-European influence marked in particular by the presence of [Fraxinus excelsior] (and not [Fraxinus angustifolia]). They are characteristic of streams originating in the Pyrenees, the Cantabrian Cordillera, the Northern Galician mountains and the Catalonian ranges. The canopy may include [Ulmus glabra], [Quercus robur] and tall willows; the undergrowth contains [Sambucus nigra], [Corylus avellana], [Cornus sanguinea], [Rubus caesius], [Carex pendula], [Carex remota], [Festuca gigantea], [Bromus ramosus], [Lathraea clandestina], [Circaea lutetiana], [Hypericum androsaemum], [Solanum dulcamara], [Valeriana pyrenaica], [Lysimachia nemorum], [Saxifraga hirsuta], [Galanthus nivalis], [Athyrium filix-femina], [Dryopteris dilatata], [Osmunda regalis], [Equisetum telmateia].
Galicio-Cantabrian alder galleries	Northern Galician and western Cantabrian [Alnus glutinosa] galleries, with [Carex acuta ssp. broteriana].
Eume near-natural alder galleries	Relict near-natural [Alnus glutinosa] galleries of the Eume basin, with the rare ferns [Trichomanes speciosum] ([Vandenboschia speciosa]) and [Culcita macrocarpa].
Semi-natural Galicio-Cantabrian alder galleries	Northern Galician and western Cantabrian [Alnus glutinosa] galleries, with [Carex acuta ssp. broteriana] and with a cortège that is somewhat impoverished compared to that of the galleries of unit 44.3411.
Pyreneo-Cantabrian alder galleries	Eastern Cantabrian and western Pyrenean [Alnus glutinosa] galleries.
Pyreneo-Catalonian alder galleries	Eastern Pyrenean and Catalonian [Alnus glutinosa] galleries.
Mixed oak - elm - ash woodland of great rivers	Diverse riparian forests of the middle courses of great rivers, inundated only by large floods. Hardwood trees with dominant [Fraxinus], [Ulmus] or [Quercus] spp. with a very typical spring herb aspect.
Great medio-European fluvial forests	Fully developed, very tall, multi-layered, highly diverse riparian forests of oaks, ashes, elms, limes, maples, alders, poplars, cherries, apple, willows of the middle and lower courses of large medio-European river systems, in particular, the Rhine, the Danube, the Emst, the Elbe, the Saale, the Weser, the Oder, the Loire, the Rhone-Saone systems. Their highly complex structure is formed of eight strata to which participate up to 50 species of trees and shrubs. The upper arborescent stratum includes [Quercus robur], [Fraxinus excelsior], [Ulmus minor], [Ulmus laevis], [Ulmus glabra], [Populus alba], [Populus tremula], [Populus canescens], [Populus nigra], [Acer pseudoplatanus], [Acer platanoides], [Salix alba], [Alnus glutinosa], [Prunus avium], the lower arborescent stratum [Malus sylvestris], [Tilia cordata], the sub-arborescent shrub layer [Alnus incana], [Prunus padus] and [Crataegus monogyna]. There are very varied high and low shrub layers and numerous lianas, [Clematis vitalba], [Tamus communis], [Humulus lupulus], [Hedera helix] and [Vitis vinifera ssp. sylvestris]. Most diverse, structurally, floristically an
Residual medio-European fluvial forests	Fragments of oak-elm-ash forests of large medio-European river systems, very altered and with greatly reduced species richness.

Southeast European ash - oak - alder forests	Mixed riverine forests of Ponto-Pannonic and sub-Mediterranean regions of southeastern Europe, usually dominated by [Quercus robur] and/or [Fraxinus angustifolia], with varying admixtures of [Ulmus minor], [Ulmus laevis], [Carpinus betulus], [Acer campestre], [Alnus glutinosa], [Fraxinus excelsior], [Salix alba], [Populus alba].
Illyrian ash-oak-alder forests	Mixed hardwood riverine forests of the Sava and Drava basins and adjacent areas, within the [Carpinion betuli illyricum] region, dominated by [Quercus robur] or, with longer periods of inundation, [Fraxinus angustifolia] and [Alnus glutinosa].
Illyrian snow-flake ash-oak forests	Riverine forests of the Illyrian region, in the Sava and Drava basins, with irradiations in the karst region of northeastern Italy and in the western Balkan peninsula, characteristic of areas with long inundation, dominated by [Fraxinus angustifolia], associated with [Alnus glutinosa] in high groundwater depressions away from the water course. [Quercus robur] and [Ulmus minor] participate in the major tree layer. The undergrowth is characterized by an abundance of [Leucojum aestivum], the presence of [Cardamine pratensis ssp. dentata], [Urtica radicans] and, in the alder-ash stands, [Frangula alnus], [Dryopteris carthusiana], [Filipendula ulmaria], [Valeriana dioica]. Particularly wet areas harbour [Hottonia palustris], [Hydrocharis morsus-ranae] and other standing water species.
Illyrian greenweed oak-ash forests	Riverine forests of the Sava and Drava basins characteristic of areas subjected to a shorter inundation period than those of occupied by the forests of unit 44.4311, dominated by [Quercus robur], with [Ulmus minor], [Fraxinus angustifolia], [Carpinus betulus], [Alnus glutinosa], [Genista tinctoria], [Leucojum aestivum], [Carex remota] and sometimes large expanses of [Carex brizoides] in pure colonies.
Illyrian riparian oak-hornbeam forests	Riverine forests of the Sava and Drava basins developed on the highest ground, dominated by [Quercus robur] and [Carpinus betulus], with [Ulmus minor], [Fraxinus angustifolia], [Alnus glutinosa], [Acer campestre], [Carex remota], [Carex strigosa], [Carex brizoides], often in large colonies that may dominate the herb layer.
Helleno-Balkanic ash-oak-alder forests	Mixed riverine forests of Pontic and sub-Mediterranean regions of the Balkan and Hellenic peninsulas, in particular, the Mauries forest of northern Greece, the riverine forests of the Maritsa and the Tundzha, the longos forests of coastal Bulgaria, and riverine forests of the sub-Mediterranean Dinaride system, usually dominated by [Quercus robur] and/or [Fraxinus angustifolia], with varying admixtures of [Ulmus minor], [Ulmus laevis], [Carpinus betulus], [Acer campestre], [Alnus glutinosa], [Fraxinus excelsior], [Salix alba], [Populus alba].
Hellenic ash-oak-alder forests	Rare mixed riparian forests of northern Greece, dominated by [Quercus robur] and [Fraxinus angustifolia], represented, in particular, by the remarkable Mouries forest in the Kilkis prefectorate.
Coastal Bulgarian longos forests	Regularly inundated forests of Pontic coastal lowland rivers, in particular the Kamchija and the Batova, and of the shores of Lake Arkutino in the Ropotamo Reserve, with [Fraxinus oxycarpa], [Ulmus minor] ([Ulmus foliacea]), [Acer campestre], [Acer tataricum], [Quercus pedunculiflora], [Carpinus betulus] and lianas [Smilax excelsa], [Periploca graeca], [Clematis vitalba], [Vitis sylvestris], [Calystegia sepium], [Humulus lupulus], [Hedera helix].

Central Balkan ash-oak-alder forests	Inland longos forests of the Maritsa and Tundzha river systems, drier, of poorer species composition and fewer lianas than the coastal longos forests of unit 44.4322; they harbour the rare, local endemic [Colchicum diampolis] and the Pheasant, [Phasianus colchicus], native to this region.
Albanian ash-oak-alder forests	Mixed riverine forests of the Adriatic façade of Albania, dominated by [Fraxinus angustifolia], with [Quercus robur] and, in some formations [Alnus glutinosa], [Populus alba], [Ulmus minor] or, in others, [Ulmus procera], [Acer campestre], [Carpinus orientalis], [Laurus nobilis], [Quercus coccifera], and with [Calystegia sepium], [Periploca graeca], [Pyracantha coccinea], [Hedera helix], [Crataegus monogyna], [Ruscus aculeatus], [Tamus communis], [Rosa sempervirens], [Smilax aspera], [Rubus ulmifolius], [Rubus nemoralis], constituting species-rich, multi-facies formations of very high biological value.
Montenegrine ash-oak-alder forests	Riverine forest of Lake Scutari, with [Quercus robur ssp. scutariensis] and [Periploca graeca].
Istrian ash-oak-alder forests	Riverine forest of the Mirna Valley in Istria, dominated by [Fraxinus angustifolia] and [Quercus robur], with [Ulmus minor], [Alnus glutinosa], [Salix alba], [Carpinus betulus], [Frangula alnus], [Acer campestre], [Corylus avellana], [Euonymus europaeus], [Staphylea pinnata], [Lonicera caprifolium], [Pyrus pyraster], [Rubus caesius], [Vitis vinifera ssp. sylvestris], [Carex remota], [Rumex sanguineus], [Lycopus europaeus], [Cerastium sylvaticum], [Primula vulgaris], [Helleborus dumetorum ssp. atrorubens], [Lathyrus vernus].
Pannonic ash-oak-alder forests	Riverine gallery forests of the Pannonic region, characteristic of the Danube basin, north to the lower Morava, of the Tisza basin and of the Danube-Tisza interfluve. They are dominated by [Quercus robur] and [Fraxinus angustifolia ssp. pannonica], sometimes with [Ulmus laevis], [Alnus glutinosa], [Carpinus betulus] and, in the wettest parts, [Populus alba]. The shrub layer includes [Acer campestre], [Acer tataricum], [Cornus sanguinea], [Crataegus monogyna], [Corylus avellana], [Ulmus minor]. The herb layer is dominated by [Carex acutiformis], [Carex elata], [Carex riparia], [Urtica dioica], [Urtica kioviensis] in the wetter belt ("[Fraxino pannonicae-Alnetum]"), by [Deschampsia cespitosa], [Veratrum album], [Polygonatum latifolium], [Symphytum officinale] otherwise.
Getic oak-elm-ash forests	Riverine forests of [Quercus robur], [Quercus pedunculiflora], [Fraxinus angustifolia], [Fraxinus pallisiae], [Ulmus minor] and [Ulmus effusa] of the great floodplains of the lower Danube, with [Cornus sanguinea], [Viburnum opulus], [Frangula alnus], [Crataegus monogyna] in the shrub layer and [Rubus caesius], [Lysimachia nummularia], [Glechoma hederacea], [Convallaria majalis] in the herb layer.

Po oak - ash - alder forests	Relict forests of the alluvial plain of the Po and its main tributaries, remnants of the greatest fluviatile system of Europe. They are formed by meso-hygrophile, mesotrophic, multi-layered, oak-ash-hornbeam-dominated communities ([Carpinion betuli]: [Polygonato multiflorae-Quercetum roboris]), with facies richer in ashes, willows and, mostly, alders, in the wettest areas ([Alno-Padion]). Constituent trees include [Quercus robur], [Quercus cerris], [Fraxinus excelsior], [Fraxinus ornus], [Carpinus betulus], [Ulmus minor], [Populus alba], [Populus nigra], [Acer campestre], [Acer pseudoplatanus], [Prunus padus], [Prunus avium], [Alnus glutinosa], [Salix alba], [Corylus avellana], [Sorbus torminalis], [Sorbus domestica], the shrub layers are formed, in particular, by [Ruscus aculeatus], [Cornus mas], [Cornus sanguinea], [Crataegus laevigata], [Crataegus monogyna], [Pyracantha coccinea], [Rubus fruticosus], [Rubus ulmifolius], [Rubus caesius], [Ribes uva-crispa], [Sambucus nigra], [Daphne mezereum], [Viburnum lantana], [Mespilus germanica], [Lonicera xylosteum], [Ligustrum vulgare], [Prunus spinosa],
Sarmatic riverine oak forests	Riverine forests of [Quercus robur], [Tilia cordata], [Ulmus laevis], [Ulmus effusa], [Alnus cordata] of the floodplains of great rivers of the Sarmatic nemoral and nemoro-steppic regions, distributed in the Baltic hinterland, in Polesia, along the rivers of the Podolian plateaux, and along those of the middle Russian plateaux and uplands, including the Belarus hills, the Valday Uplands, the Smolensk Uplands and the Central Russian Uplands, in the Volga-Kama system, in which [Tilia cordata] progressively replaces [Quercus robur] eastwards, extending south into the Pontic region, in particular along the lower Dniepr, and north into the southern boreal taiga zone.
Mediterranean riparian woodland	Alluvial forests and gallery woods of the mediterranean region. Dominance may be of a single species, of few species or mixed with many species including [Fraxinus], [Liquidambar], [Platanus], [Populus], [Salix], [Ulmus]. Excludes mediterranean [Salix] woods (G1.1) and shrubby riparian vegetation (F9.3).
Mediterranean riparian poplar forests	Mediterranean multi-layered riverine forests of base-rich soils submitted to seasonal prolonged inundation with slow drainage, with [Populus alba], [Populus nigra], [Fraxinus angustifolia], [Ulmus minor], [Salix alba], [Salix] spp., [Alnus] spp., lianas and often species of the [Quercetalia ilicis], distributed in the mediterranean regions of the Iberian peninsula, southern France, the Italic peninsula, the large Tyrrhenian islands, the Hellenic peninsula, the southern Balkan peninsula, North Africa, and their zones of transition to adjacent climatic zones. Formations physiognomically dominated by tall [Populus alba] and/or [Populus nigra] are listed here. The poplars may, however, be absent or sparse in some associations which are then dominated by [Fraxinus angustifolia], [Ulmus minor] and/or [Salix] spp. Such ensembles are listed under units G1.1121 or G1.33. The poplar forests are usually the tall ligneous vegetation belt closest to the water in riverside catenas.

Iberian poplar galleries	Riparian poplar galleries on inundatable eutrophic soils with permanent hydromorphy of the Iberian range, the Castilian plateau, the Ebro basin, the Mediterranean Iberian east, the great Baetic rivers, with [Populus alba], [Populus nigra], arborescent willows ([Salix neotricha], [Salix alba], [Salix fragilis], [Salix atrocinerea]), [Fraxinus angustifolia], [Ulmus minor] and [Celtis australis]. The naturalised madder, [Rubia tinctorum], grows in the shade of the eastern and central formations, the Atlantic [Salix atrocinerea] is an important component of the formations of the central Meseta, the Montes de Toledo and western Andalusia, and [Nerium oleander] penetrates the most thermophilous western Andalusian formations.
Provenço-Languedocian poplar galleries	Riparian gallery forests lining water courses and other water bodies of Provence and Languedoc, in particular the rivers of the Mediterranean periphery of the Pyrenees, the Languedocian rivers draining the Causses and the southern Central Massif, the Rhone and Durance systems, especially the Camargue, the Verdon, the Var, with [Populus alba], [Populus nigra], [Ulmus minor], [Fraxinus angustifolia] (locally accompanied by [Fraxinus excelsior]), [Acer negundo], [Acer campestre], [Acer platanoides], [Celtis australis], [Quercus pubescens], [Alnus glutinosa], and an undergrowth with [Cornus sanguinea], [Rubus caesius], [Sambucus nigra], [Vitis vinifera ssp. sylvestris], [Bryonia cretica], [Humulus lupulus], [Rubia peregrina], [Solanum dulcamara], [Alliaria petiolata], [Cucubalus baccifer], [Saponaria officinalis], [Iris foetidissima], [Arum italicum], [Brachypodium sylvaticum], [Carex pendula]; [Celtis australis] may form facies locally (e.g. Est,rel).
Cyrno-Sardinian poplar galleries	Riparian woods of lower water courses of Corsica and Sardinia, with [Populus alba], [Populus nigra], [Fraxinus ornus], [Fraxinus angustifolia], [Alnus glutinosa], [Alnus cordata] and arborescent willows.
Italic poplar galleries	Riparian poplar galleries of rivers and other water bodies of the Italic peninsula, Sicily and the Maltese Islands, with [Populus alba], [Populus nigra], [Alnus glutinosa], [Ulmus minor], [Acer campestre], [Viburnum lantana], [Viburnum opulus], [Rhamnus catharticus], [Crataegus monogyna], [Rubus caesius], [Humulus lupulus], [Clematis vitalba].
East Mediterranean poplar galleries	Riparian poplar galleries of rivers and other water bodies of peninsular Greece and the southern Balkan peninsula, with [Populus alba], [Populus nigra], [Ulmus minor], [Alnus glutinosa], [Platanus orientalis], [Salix] spp., [Periploca graeca], [Pyracantha coccinea], [Vitex agnus-castus], [Cornus sanguinea], [Brachypodium sylvaticum].
Nestos riparian forests	Hodja Orman forest of the Nestos, dominated by [Populus alba], formerly one of the most extensive riparian complexes in the Balkan peninsula.
Hellenic white poplar riparian forests	Riparian [Populus alba]-dominated galleries of rivers and water bodies of Greece, with the exception of the Nestos; the dominant poplar may be accompanied by, in particular, [Populus nigra], [Ulmus minor], [Alnus glutinosa], [Platanus orientalis], [Salix] spp., [Periploca graeca], [Pyracantha coccinea], [Vitex agnus-castus], [Cornus sanguinea], [Brachypodium sylvaticum].

Northern Hellenic black poplar riparian forests	[Populus nigra] [s.s].-dominated riparian galleries of northern Greece, in particular, of small valleys of the southeastern Moeso-Macedonian Vertiskos range and of the southern Rhodopide ranges north of Drama.
Hellenic downy poplar riparian forests	[Populus nigra var. pubescens] forests of the Pindus, notably, of the Epirean Sarandaporos and the Thessalian Pinios basins.
Rhodopide Mediterranean poplar galleries	Riparian poplar-rich or poplar-dominated galleries of the lower courses of the Maritza, Tundja, Mesta, Struma and other streams cutting through the Rhodopide system and opening to Mediterranean climate regimes, with [Populus alba], [Populus canescens] and/or [Populus nigra] accompanied by [Ulmus minor], [Alnus glutinosa], [Platanus orientalis], [Salix] spp., [Periploca graeca], [Cornus sanguinea], [Brachypodium sylvaticum].
Paeonian poplar galleries	Poplar galleries of the southern Balkanic hills of the F.Y.R. of Macedonia, in the region of transition between the [Ostryo-Carpinion orientalis aegeicum] and the [Quercion frainetto].
East Adriatic poplar galleries	Riparian poplar galleries of rivers and other water bodies of the Adriatic façade of the southern Balkan peninsula, dominated by [Populus alba] with [Populus nigra], [Ulmus procera], [Alnus glutinosa], [Platanus orientalis], [Salix alba], [Quercus robur], [Periploca graeca], [Pyracantha coccinea], [Vitex agnus-castus], [Cornus sanguinea], [Crataegus monogyna], [Vitis vinifera ssp. sylvestris], [Hedera helix], [Brachypodium sylvaticum].
Mediterranean riparian elm forests	Elm-dominated woodlands forming, on eutrophic soils, at the outer, drier, edge of the Mediterranean riparian or lacustrine galleries, constituted by [Ulmus minor] or, in the eastern Mediterranean and on the Maltese Islands, [Ulmus canescens]. [Populus alba] and [Fraxinus angustifolia] often participate in the tree-layer; [Arum italicum], [Ranunculus ficaria], [Acanthus mollis], [Brachypodium sylvaticum], [Elymus caninus], [Rubus ulmifolius] are characteristic of the undergrowth. Dense and dark in natural form, these woods have been extremely reduced and degraded by human action. The most characteristic examples to remain are probably those of the Iberian peninsula, although fragments are still recorded in France, Italy, the Maltese Islands, Greece, Asia Minor and North Africa.
Mediterranean riparian ash woods	Riparian galleries of the mediterranean regions of the Iberian peninsula, southern France, the Italic peninsula, the large Tyrrhenian islands, the Hellenic peninsula, mediterranean North Africa and their zones of transition to adjacent climatic zones, dominated by tall [Fraxinus angustifolia], mostly characteristic of less eutrophic soils than the elm and poplar galleries, and of drier stations, with shorter inundation periods, than those occupied by poplar woods.
Iberian supra-Mediterranean ash galleries	[Fraxinus angustifolia] and [Quercus pyrenaica]-dominated galleries of supra-Mediterranean watercourses of the Cordillera Central, the Leonese mountains and the Iberian Range, developed on siliceous, sandy soils with temporary hydromorphy (pseudogleys).
Iberian meso-Mediterranean ash galleries	[Fraxinus angustifolia] -dominated galleries of western Iberia, developed in meso- and thermo-Mediterranean areas on siliceous sandy, rarely inundated soils; [Populus alba], [Populus nigra], [Salix atrocinerea], [Rubus ulmifolius], [Osmunda regalis], [Ranunculus ficaria], [Arum italicum] frequently accompany the ashes.

Baetic ash-maple galleries	Meso- and supra-Mediterranean riparian galleries of the siliceous Sierra Nevada formed by [Fraxinus angustifolia] and [Acer granatense].
Tyrrhenian ash-alder galleries	[Fraxinus angustifolia]-dominated galleries, usually with [Alnus glutinosa], of southern France, Tyrrhenian northern and central Italy, Corsica and Sardinia.
Italic ash galleries	[Fraxinus angustifolia]-dominated galleries of the Adriatic slope of the Italic peninsula, the lower Po basin, the plain of Foggia, the Gulf of Taranto and Sicily, with [Ulmus campestris], [Salix alba], [Populus nigra], [Equisetum telmateia], [Brachypodium sylvaticum], [Carex pendula], [Ligustrum vulgare], [Rubus ulmifolius].
Hellenic ash galleries	Uncommon [Fraxinus angustifolia]-dominated galleries of continental Greece, reported in particular from the lower Achelos and Pinios.
Mediterranean riparian hop-hornbeam galleries	Meso-hygrophile forests of the southwestern Alps, limited to the edges of small streams in deep ravines and, sometimes, in wider valleys, dominated by [Ostrya carpinifolia], with [Ulmus minor], [Populus alba], [Salix elaeagnos], [Alnus glutinosa], [Fraxinus ornus], [Acer campestre], [Acer opalus], [Quercus pubescens], [Tilia cordata], [Ulmus minor], [Cornus sanguinea], [Ligustrum vulgare], [Laurus nobilis], [Tamus communis], [Hedera helix], [Viola reichenbachiana], [Euphorbia dulcis], [Brachypodium sylvaticum], [Melica uniflora], [Carex pendula], [Carex digitata] and the rare [Carex grioletii].
Mediterraneo-Pontic riverine ash forests	Riverine forests of the Mediterranean enclaves of the southern Black Sea coast and of the Sea of Marmora, dominated by [Fraxinus angustifolia], with [Ulmus minor], [Carpinus betulus], [Alnus glutinosa], [Acer campestre].
Ponto-Sarmatic mixed poplar riverine forests	Mixed riverine forests of the floodplains of rivers of the Pontic and Sarmatic steppes, wooded steppes and southern nemoral forests of southern Eastern Europe, in particular, of the lower Danube, the lower Prut, the lower Dniestr, the lower Dniepr basin, the lower and middle Don and Donetz system, the lower Volga basin, the Kouma and Terek basins, dominated by or rich in [Populus alba], [Populus nigra], [Populus canescens]. They extend west to the sub-Carpathian Getic region; poplar galleries described from the Pannonic margin of Moravia and the Bohemian basin occupy a similar ecological position and are listed with them.
Western Pontic poplar galleries	Poplar galleries of the western Pontic steppe region of Bulgaria, Romania and Moldova, and of adjacent Getic valleys, dominated by [Populus alba], [Populus nigra], [Populus canescens], developed along sandy strips of river flood plains.
Western Pontic white poplar galleries	Galleries of [Populus alba] with [Salix alba], [Salix fragilis] and [Ulmus laevis] along streams of the western Pontic plain, with [Viburnum opulus], [Cornus sanguinea], [Crataegus monogyna], [Frangula alnus] in the shrub layer and [Rubus caesius], [Lycopus europaeus], [Bidens tripartita], [Scutellaria galericulata] in the herb layer.
Western Pontic white-black poplar galleries	Galleries along streams of the western Pontic plain dominated by [Populus alba] and [Populus nigra], with [Salix alba], [Salix fragilis], [Ulmus laevis], [Quercus robur], with [Viburnum opulus], [Cornus sanguinea], [Frangula alnus] in the shrub layer and [Rubus caesius], [Lycopus europaeus], [Bidens tripartita], [Scutellaria galericulata] in the herb layer.

Danube delta galleries	Galleries of interdunal depressions of the sandy islands of the Danube Delta with [Quercus robur], [Quercus pedunculiflora], [Fraxinus angustifolia], [Fraxinus pallisiae], [Populus alba], [Populus tremula] and [Populus canescens].
Danube delta periploca-poplar-oak-ash galleries	Galleries of [Populus alba], [Populus tremula], [Populus canescens], [Quercus robur], [Quercus pedunculiflora], [Fraxinus angustifolia], [Fraxinus pallisiae] and [Alnus glutinosa], of the Danube Delta, in particular of interdunal depressions of sandy islands, with lianas [Periploca graeca], [Humulus lupulus], [Vitis sylvestris], [Clematis vitalba], shrubs [Salix cinerea], [Viburnum opulus], [Frangula alnus], [Cornus sanguinea], [Crataegus monogyna], and an herb layer of [Rubus caesius], [Lysimachia vulgaris], [Lythrum salicaria], [Carex spicata], [Carex hirta], [Carex acutiformis], [Galium rubioides].
Danube delta [Hippophae]-[Populus canescens] galleries	Open-canopied [Populus canescens] galleries of the Danube Delta, with a closed shrub layer of [Hippophae rhamnoides], in particular of sandy island dunes.
Southern Sarmatic poplar and elm galleries	Poplar and elm galleries, mostly formed by [Populus nigra] and [Ulmus laevis], of the Dniepr, Don and Volga-Kama systems within the wooded steppes and adjacent nemoral forests of the valleys of the Podolian plateau, of the Central Russian plateau, of the Volga plateau, of Orenburg and of Bachkiria, north of the Pontic and Caspian plains.
Central and eastern Pontic poplar forests	Poplar galleries of the Dniepr, Don, Volga-Kama, Kouma and Terek systems, within the steppes and wooded steppes of the northern plains of the Black Sea and of the northwestern and western Caspian Sea, with, in particular, [Populus nigra].
Central European poplar galleries	[Populus nigra], [Populus alba], [Quercus robur], [Fraxinus excelsior] galleries occupying, within the riverine forest systems of the Bohemian Elbe and the Morava, locations submitted to great annual fluctuations of the water table and relatively frequent inundation.
Irano-Anatolian mixed riverine forests	Riverine forests of the Irano-Anatolian plateau of Turkey, Iran and Afghanistan, of the Koura basin of Transcaucasia and of the Hyrcanian lowlands, of the Hindu-Kuch and western Himalayas, with [Populus nigra], [Populus caspica], [Populus alba], [Populus euphratica], [Populus pruinosa], [Populus transcaucasica], [Juglans regia], [Platanus orientalis].
Oriental plane woods	Forests of [Platanus orientalis].
Helleno-Balkanic riparian plane forests	[Platanus orientalis] gallery forests of Greek and southern Balkanic watercourses, temporary rivers and gorges; they are distributed throughout the mainland of Greece and its archipelagoes, extending north to Albania, the southern F.Y.R. of Macedonia and the valleys of southern Bulgaria, colonizing poorly stabilised alluvions of large rivers, gravel or boulder deposits of permanent or temporary torrents, spring basins, and particularly, the bottom of steep, shady gorges, where they constitute species-rich communities. The accompanying flora may include [Salix alba], [Salix elaeagnos], [Salix purpurea], [Alnus glutinosa], [Cercis siliquastrum], [Celtis australis], [Populus alba], [Populus nigra], [Juglans regia], [Fraxinus ornus], [Alnus glutinosa], [Crataegus monogyna], [Cornus sanguinea], [Ruscus aculeatus], [Vitex agnus-castus], [Nerium oleander], [Rubus] spp., [Rosa sempervirens], [Hedera helix], [Clematis vitalba], [Vitis vinifera ssp. sylvestris], [Ranunculus ficaria], [Anemone blanda], [Aristolochia rotunda], [Saponaria officinalis],

Hellenic slope plane woods	[Platanus orientalis] woods on colluvions, detritus cones, ravine sides or other poorly stabilised substrates, of Greece.
Sicilian plane tree canyons	Relict [Platanus orientalis]-dominated or -rich galleries of the Cassabile, the Anapo, the Irminio and the Carbo rivers, in the Iblei range of southeastern Sicily, of the gorge of the Sirmeto, in the vicinity of the Nebrodi. Some of these formations, in particular, in the gorges of the Cassabile and of the Anapo, are true plane tree woods. Others, such as on the Sirmeto, are [Populus alba], [Fraxinus angustifolia], [Salix] spp. formations with [Platanus orientalis]; as they grade into each other, and because of the very isolated occurrence, and great biogeographical and historical interest of [Platanus orientalis] in Sicily, they are all listed here. Plane tree woods have had a much greater extension in Sicily and probably in Calabria. A large forest has, in particular, existed on the Alcantara, where the species is now extinct.
Anatolian plane forests	[Platanus orientalis] forests of river courses of the sub-Mediterranean margin of the Anatolian plateau.
Cyprian plane forests	[Platanus orientalis] formations of streams and gorges of Cyprus, in particular, of the Troodos range.
Levantine plane forests	[Platanus orientalis] forests of river courses of the mediterranean plains and hills of the Levant.
Sweet gum woods	Riverine forests dominated by the Tertiary relict [Liquidambar orientalis], with a very limited range in southern Asia Minor and Rhodes.
Broadleaved swamp woodland not on acid peat	Broadleaved swamp woodland not on acid peat. Includes [Alnus], [Populus], [Quercus] swamp woods. Excludes [Salix] carr, with shrubby willows, e.g. [Salix aurita], [Salix cinerea], [Salix pentandra] (F9.2).
Alder swamp woods not on acid peat	Marshy [Alnus glutinosa]-dominated woods and scrubs, usually with shrubby willows in the undergrowth or with other shrubs, e.g. [Frangula alnus].
Meso-eutrophic swamp alder woods	Mesotrophic and meso-eutrophic [Alnus glutinosa] swamp woods of middle European and western Siberian, nemoral and sub-boreal, marshy depressions, with [Carex elongata], [Thelypteris palustris], [Dryopteris cristata], [Osmunda regalis], [Solanum dulcamara], [Calystegia sepium], [Ribes nigrum], [Calamagrostis canescens] and often, in acidocline variants, [Betula pubescens]. The constancy of [Carex elongata] is characteristic on the continent, less so in Britain. Tall sedges, [Carex paniculata], [Carex acutiformis], [Carex elata], often dominate the herb layer in the most humid types.
Atlantic greater tussock-sedge alder woods	Eutrophic and mesotrophic alder woods of Atlantic Europe, distributed in the British Isles, western France, locally, northwestern Germany, poor in [Carex elongata], and harbouring, in particular, [Oenanthe crocata], [Osmunda regalis], [Carex laevigata], [Scutellaria minor]. They include all meso-eutrophic alder swamp woods of the British Isles and western France, as well as the less eutrophic woods of the zone of transition between the main range of this unit and the more continental range of unit 44.9112.
Elongated-sedge swamp alder woods	Mesotrophic and meso-eutrophic [Alnus glutinosa] swamp woods of sub-Atlantic and subcontinental regions of the European continent characterized in particular by the constant presence of [Carex elongata].

East European swamp alder woods	Mesotrophic and meso-eutrophic [Alnus glutinosa] swamp woods of subcontinental and continental regions of eastern Europe, from Mazuria and Masovia east to Bashkiria, often rich in [Carex elongata], [Ribes nigrum], [Sphagnum] spp., [Dryopteris cristata]; in the Sarmatic region, they may occupy extensive areas of nutrient-rich swamps, in particular in the Pripyat area.
Sub-boreal swamp alder woods	Mesotrophic and meso-eutrophic [Alnus glutinosa] or [Alnus glutinosa]-[Alnus incana] swamp woods of northeastern Poland, the Baltic states, Fennoscandia, the northern Sarmatic region and Siberia, with [Calamagrostis canescens], [Athyrium filix-femina], [Cardamine amara], [Filipendula ulmaria], [Lysimachia thyrsiflora], [Carex elongata], [Carex remota], [Brachythecium rivulare], [Calliergon cordifolium], [Climacium dendroides], [Thuidium tamariscinum].
Eastern Carpathian alder swamp woods	Meso-eutrophic [Alnus glutinosa] swamp woods of marshy intramontane depressions and floodplains, at the 500-800 m level of foothills of the eastern Carpathian system, in particular, the Harghita and Baraolt mountains, with [Carex elongata], [Calamagrostis canescens], [Thelypteris palustris], [Carex caespitosa], [Dryopteris carthusiana], [Calla palustris] and [Ligularia sibirica], most of which may dominate facies of the herb layer.
Pre-Carpathian alder swamp woods	[Alnus glutinosa] swamp woods of the floodplains of southern Romania, developed along water bodies and in microdepressions on alluvial soils covered by stagnant or slowly moving water, with [Thelypteris palustris], [Festuca gigantea], [Lycopus europaeus], [Caltha palustris], [Veronica beccabunga], [Lythrum salicaria], [Oenanthe silaifolia], [Sium erectum], [Stellaria aquatica], [Carex acutiformis].
Intra-Carpathian elongated sedge alder swamp woods	Rare [Alnus glutinosa] swamp woods of peat bogs of central Romania, with [Spiraea salicifolia], [Euonymus nanus], [Frangula alnus], [Ribes nigrum], [Salix cinerea] in the shrub layer and [Carex elongata], [Calamagrostis canescens], [Ligularia sibirica], [Thelypteris palustris] in the herb layer.
Oligotrophic swamp alder woods	Oligotrophic or meso-oligotrophic, acidocline [Alnus glutinosa] woods of fens and poorly drained banks of brooks or small rivers of western Europe, mostly characteristic of siliceous regions and Atlantic climates, south to Galicia. [Betula pubescens] and [Frangula alnus] often accompany the alders. The ground layer is usually rich in [Sphagnum] spp. and includes [Carex laevigata], [Equisetum sylvaticum] and many ferns, including [Oreopteris limbosperma], [Blechnum spicant], [Athyrium filix-femina], [Dryopteris cristata] and [Dryopteris carthusiana].
Southern Helleno-Balkanic swamp alder woods	Rare swamp woods of the mediterranean and sub-Mediterranean zones of the southern Helleno-Balkanic peninsula.
Steppe swamp alder woods	[Alnus glutinosa] mire woods of the steppe zones of Eurasia, west to the Pannonic basin.
Pannonic swamp alder-ash woods	Mesotrophic and meso-eutrophic [Alnus glutinosa] swamp woods of the Pannonic basin.
Sarmatic swamp alder woods	Meso-eutrophic alder woods of mires of the east European steppe zone, south of the sub-boreal and nemoral regions.

Boreal swamp alder woods	Swamp woods of the Scandinavian lowlands dominated by [Alnus glutinosa] and [Alnus incana] with a shrub layer dominated by [Alnus] spp., [Betula pubescens] and various [Salix] spp. The field layer, sometimes very sparse, includes [Filipendula ulmaria], [Epilobium palustre], [Galium palustre], [Iris pseudacorus], [Lysimachia thyrsiflora], [Lysimachia vulgaris], [Viola palustris], [Calla palustris], [Thelypteris palustris], [Carex canescens], [Carex Elongata], [Carex rostrata], [Calamagrostis canescens], [Deschampsia cespitosa]. The ground layer, of mosses and sphagnums, is very poorly developed.
Oak swamp woods	[Quercus robur]-dominated woods of inundatable depressions of the Sarmatic region, west to lowlands of eastern Poland and Slovakia, with an accompanying species cortège composed of elements of the [Alnetalia glutinosae], [Molinietalia], [Phragmitetalia], [Caricetalia fuscae] and, to a lesser extent, [Vaccinio-Piceetea] and [Querco-Fagetea].
Aspen swamp woods	[Populus tremula]-dominated swamp woods of the eastern European and western Siberian northern steppe zone subject to continental climate conditions, where they occupy pods, inundated endoreic circular depressions.
Wet-ground woodland of the Black and Caspian Seas	Most hygrophilous communities of the mixed mesic Euxino-Hyrcanian forests (units G1.A71, G1.A74). They may include, in particular, [Fraxinus angustifolia] galleries, as well as dense [Alnus barbata] forest stands occupying areas of black damp or swampy soils on coastal alluvial plains, with [Fraxinus angustifolia] and an understorey of [Rubus hirtus], [Smilax excelsa] and other climbers and shrubs, notably of Rosaceae.
Broadleaved swamp woodland on acid peat	Broadleaved woodland on wet acid peat, dominated by [Betula pubescens] or rarely [Alnus glutinosa], sometimes with an admixture of conifers or shrubby [Salix] species. [Sphagnum] spp. are normally prominent in the ground vegetation.
Sphagnum birch woods	Forests of [Betula pubescens] or [Betula carpatica] on peaty, humid and very acid soils, colonizing bogs of reduced peat building activity and acid fens of the boreal, sub-boreal and nemoral zones, very locally of the wooded steppe and steppe zones, with [Molinia caerulea], [Vaccinium] spp., [Empetrum nigrum], [Trientalis europaea], [Eriophorum vaginatum] and many sphagna e.g. [Sphagnum fallax], [Sphagnum magellanicum], mosses and liverworts.
Cottonsedge sphagnum birch woods	Sphagnum-rich [Betula pubescens] or [Betula carpatica] woods of the boreal and nemoral, mostly sub-boreal, western Palaearctic in which bog species, in particular [Eriophorum vaginatum] and [Vaccinium oxycoccos], are prominent.

Sedge sphagnum birch woods	Sphagnum-rich [Betula pubescens] or [Betula carpatica] woods of the boreal and nemoral western Palaearctic in which [Molinia caerulea] is accompanied by a cortège of acid fen species, in particular, [Carex rostrata], [Carex nigra], [Carex echinata], [Juncus acutiflorus], [Agrostis canina], [Narthecium ossifragum], [Calamagrostis canescens] and by ericoid shrubs, in particular [Vaccinium uliginosum]. Depending on water level, regime of inundation, history of ligneous colonization and nature of the initial stage, the undergrowth may be dominated by [Molinia caerulea], by sedges [Carex] spp., by rushes [Juncus] spp., by [Scirpus cespitosus] or by ericoid shrubs, resulting in a number of rather distinctive habitats. Conifers, mostly [Picea abies], may participate in the canopy of boreal, northeastern nemoral, Hercynian sub-boreal and pre-Alpine communities; [Pinus sylvestris] has its westernmost relict stations in northwestern stands. Fennoscandian formations have a number of northern species, in particular [Calamagrostis purpurea], [Cornus suecica], [Empetrum] spp., [Rubus chamaemorus].
Meso-acidophilous birch swamp woods	Sphagnum-rich [Betula pubescens] or [Betula carpatica] woods of the boreal and nemoral western Palaearctic in which the presence of species characteristic of subhumid mineral soils indicate a transition towards acidophilous birch and oak woods; [Salix cinerea], [Alnus glutinosa], [Lysimachia vulgaris], [Luzula sylvatica], [Oxalis acetosella], [Deschampsia flexuosa] may be prominent, next to [Molinia caerulea]. Conifers, mostly [Picea abies], may participate in the canopy of boreal and sub-boreal communities.
Alder swamp woods on acid peat	Marshy [Alnus glutinosa]-dominated woods and scrubs of the Palaearctic region, usually with shrubby willows in the undergrowth.
Beech woodland	Forests dominated by beech [Fagus sylvatica] in western and central Europe, and [Fagus orientalis] and other [Fagus] species in southeastern Europe and the Pontic region. Many montane formations are mixed beech-fir or beech-fir-spruce forests, which are listed under G4.6
Medio-European acidophilous beech forests	[Fagus sylvatica] and, in higher mountains, [Fagus sylvatica]-[Abies alba] or [Fagus sylvatica]-[Abies alba]-[Picea abies] forests developed on acid soils of the medio-European domaine of central and northern Central Europe, with [Luzula luzuloides], [Polytrichum formosum] and often [Deschampsia flexuosa], [Calamagrostis villosa], [Calamagrostis arundinacea], [Vaccinium myrtillus], [Pteridium aquilinum] and other species from sub-alliance [Luzulo-Fagenion].
Medio-European collinar woodrush beech forests	Acidophilous [Fagus sylvatica] forests of the lesser Hercynian ranges and Lorraine, of the collinar level of the western greater Hercynian ranges, the Jura and the Alpine periphery, of the western sub-Pannonic and the intra-Pannonic hills, not or little accompanied by spontaneous conifers, and generally with an admixture of [Quercus petraea], or in some cases [Quercus robur], in the canopy.
Western Hercynian collinar woodrush beech forests	Acidophilous forests of [Fagus sylvatica], or [Fagus sylvatica] and [Quercus petraea], of the western lesser Hercynian ranges, of Lorraine and of the collinar level of the western greater Hercynian ranges, in particular of the Black Forest, forming a western group of communities with a cortège rich in Atlantic species, characterized in particular by the presence of [Teucrium scorodonia].

Hercyno-Jurassian collinar woodrush beech forests	Acidophilous forests of [Fagus sylvatica], or [Fagus sylvatica] and [Quercus petraea], of the Neckar, the Spessart, the Rh”n, the Swabio-Franconian Forest, of the collinar level of the Thüringian Forest and of the Swabian and Franconian Jura, forming a subcontinental ensemble of communities poor in Atlantic species, and characterized, in particular, by the frequent prevalence of [Poa chaixii].
Peri-Alpine collinar woodrush beech forests	Acidophilous forests of [Fagus sylvatica], or [Fagus sylvatica] and [Quercus robur] of the collinar level of the northern Alpine periphery.
Western sub-Pannonic collinar woodrush beech forests	Acidophilous [Fagus sylvatica] forests of the eastern Alpine periphery, in the hills of western Transdanubia, with a canopy that sometimes contains [Castanea sativa], a generally poorly developed shrub layer, an herb layer rich in [Cyclamen purpurascens], [Deschampsia flexuosa], [Hieracium silvaticum], [Melampyrum pratense], [Vaccinium myrtillus], [Calluna vulgaris], [Calamagrostis arundinacea], [Galium rotundifolium] and a moss cover generally rich in [Dicranum scoparium] with an abundance of [Leucobryum glaucum].
Pannonic collinar woodrush beech forests	Acidophilous [Fagus sylvatica] forests of Pannonic hills, mixed with [Betula pendula] and [Quercus petraea], with a poorly developed shrub layer, an herb layer rich in [Luzula luzuloides], [Deschampsia flexuosa], [Hieracium silvaticum], [Monotropa hypopitys], [Pyrola] spp., and without [Cyclamen purpurascens] or [Galium rotundifolium], a rich moss cover comprising [Polytrichum] spp., [Dicranum scoparium], [Leucobryum glaucum], [Hylocomium proliferum].
Medio-European montane woodrush beech forests	Acidophilous forests of [Fagus sylvatica], [Fagus sylvatica] and [Abies alba] or [Fagus sylvatica], [Abies alba] and [Picea abies] of the submontane, montane and high montane levels of the greater Hercynian ranges, from the Vosges and the Black Forest to the Bohemian Quadrangle, of the Thüringian Forest, of the Jura, the Alps, the Carpathians and the Bavarian Plateau.
Hercyno-Alpine montane woodrush beech forests	Acidophilous forests of [Fagus sylvatica], [Fagus sylvatica] and [Abies alba] or [Fagus sylvatica], [Abies alba] and [Picea abies] of the montane and high montane levels of the eastern greater Hercynian ranges, the Thüringian Forest, the Swabian and Franconian Jura, the Alps, where they are mostly expressed in the eastern Alps, and, in a dry version, in some parts of the western intermediate Alps, the Carpathians and the Bavarian Plateau, including, in particular, the remarkable near-natural montane woodrush beech forests of the Bayerischer Wald.
Western medio-European montane woodrush beech forests	Acidophilous forests of [Fagus sylvatica], [Fagus sylvatica] and [Abies alba] or [Fagus sylvatica], [Abies alba] and [Picea abies] of the montane and high montane levels of the Vosges, the Black Forest, the Odenwald, the French and Swiss Jura, accompanied by sub-Atlantic species and characterized in particular by the presence of [Digitalis purpurea], less developed and generally more transformed by exploitation than those of unit 41.1121.
Atlantic acidophilous beech forests	[Fagus sylvatica] or [Fagus sylvatica]-[Quercus] spp. forests developed on acid soils of the Atlantic domaine of Western Europe, differing from the forests of unit G1.61 by, in particular, the absence of [Luzula luzuloides] and a greater abundance of [Ilex aquifolium]. They may also contain [Taxus baccata].

Germano-Baltic acidophilous beech forests	Fragmented and insularised acidophile [Fagus sylvaticus] forests of the western seaboard of Europe, in Denmark, southern Scandinavia, northern Germany, northern and eastern Poland, the Netherlands, middle Belgium, Picardy, Normandy and southern England.
Sub-Atlantic acidophilous beech forests	Transition forests of the Paris basin, the Morvan, the periphery of the Central Massif, the eastern and central Pyrenees.
Armorican acidophilous beech forests	Hyper-Atlantic forests of Brittany with an abundance of epiphytes and an understory of ferns and evergreen bushes.
Pyreneo-Cantabrian acidophilous beech forests	Humid forests with luxuriant epiphytism of the western Pyrenees and eastern Cantabrian mountains.
Western Cantabrian acidophilous beech forests	Humid acidophilous beech forests of western Cantabrian and Asturian mountains.
Galician acidophilous beech forests	Humid beech forests of high, snowy dolomitic and calcareous sierras of Galicia (Ancares, Cebreiro, Caurel), somewhat intermediate between unit 41.12 and unit 41.13.
Humid Iberian acidophilous beech forests	Humid acidophilous beech forests of the Northern Iberian Range.
Hyper-humid Iberian acidophilous beech forests	Hyper-humid acidophilous beech forests of the Northern Iberian Range.
Ayllon acidophilous beech forests	Relict acidophilous beech forests of the Sierra de Ayllon.
Medio-European neutrophile beech forests	[Fagus sylvatica] and, in higher mountains, [Fagus sylvatica]-[Abies alba] or [Fagus sylvatica]-[Abies alba]-[Picea abies] forests developed on neutral or near-neutral soils, with mild humus (mull), of the medio-European and Atlantic domaines of Western Europe and of central and northern Central Europe, characterised by a strong representation of species belonging to the ecological groups of [Anemone nemorosa], of [Lamium galeobdolon], of [Carex pilosa], of [Galium odoratum] and [Melica uniflora] and, in mountains, various [Dentaria] spp., forming a richer and more abundant herb layer than in the forests of units G1.61 and G1.62. Vegetation of alliance [Fagion], suballiance [Eu-Fagenion].
Medio-European collinar neutrophile beech forests	Neutrocline or basicline [Fagus sylvatica] and [Fagus sylvatica]-[Quercus petraea]-[Quercus robur] forests of hills, low mountains and plateaux of the Hercynian arc and its peripheral regions, of the Jura, Lorraine, the Paris basin, Burgundy, the Alpine piedmont, the Carpathians and a few localities of the North Sea-Baltic plain.

Medio-European wood barley beech forests	Slightly moist [Fagus sylvatica] forests developed over calcareous bedrock on stony, neutral or weakly acid rendzina or similar humus-carbonate soils, with [Galium odoratum], [Melica uniflora], [Mercurialis perennis], [Lathyrus vernus], [Asarum europaeum], [Hordelymus europaeus], [Epipactis helleborine], [Epipactis leptochila], [Neottia nidus-avis], [Circaea lutetiana], [Viola reichenbachiana], distributed locally on the hills, low mountains and plateaux of the Hercynian arc and its peripheral regions, from the Ardenne-Eifel to Moravia, and north to Denmark and southern Sweden, in the entire Jura catena, in Lorraine and the eastern Paris basin, in Burgundy, in the Bavarian Alpine piedmont, the Vorarlberg limestone Alps, the Wienerwald. They include the Central European [Fagus]-[Mercurialis perennis] forests, as well as occasional stands exceptionally rich in spring-flowering geophytes, sometimes known as wild garlic-rich beech woods.
Medio-European woodruff and hairy sedge beech forests	[Fagus sylvatica] forests of sub-Atlantic Western and Central Europe, north to Denmark, southern Norway, southern Sweden and Poland, developed on a more or less deep layer of brown loess-loam, less rich in calciphile plants and richer in acid- and drought-tolerant species; [Melica uniflora] (in northern formations) and [Galium odoratum] are usually well represented.
Atlantic neutrophile beech forests	Atlantic beech and beech-oak forests with [Hyacinthoides non-scripta], of southern England, the Boulonnais, Picardy, the Oise, Lys and Schelde basins.
Calcicline bluebell beech forests	Atlantic [Fagus sylvatica], [Fagus sylvatica-Quercus] spp. or [Fagus sylvatica-Fraxinus excelsior] forests developed on base-rich and calcareous soils, particularly of limestone scarplands, of southern England ([Fagus sylvatica]-[Mercurialis perennis] woodland) and neighbouring regions of western France.
Neutrocline bluebell beech forests	Atlantic [Fagus sylvatica] or [Fagus sylvatica]-[Fraxinus excelsior] forests developed on neutral or slightly acid brown soils of southern England ([Fagus sylvatica]-[Rubus fruticosus] woodland) and ajacent regions of the mainland.
Medio-European montane neutrophile beech forests	Neutrophile forests of [Fagus sylvatica], [Fagus sylvatica] and [Abies alba], [Fagus sylvatica] and [Picea abies], or [Fagus sylvatica], [Abies alba] and [Picea abies] of the montane and high-montane levels of the Jura, the northern and eastern Alps, the western Carpathians and the great Hercynian ranges.
Jura bittercress beech forests	[Fagus sylvatica]-[Abies alba] forests of the montane to high montane level of the western Jura, with outlayers in the upper Rhine and Jura periphery of extreme southwestern Baden-Württenberg, with [Dentaria bulbifera] and [Dentaria heptaphylla].
Western Alps bittercress beech forests	[Fagus sylvatica]-[Abies alba] forests of the montane and high montane levels of the northwestern pre-Alps, east to the Vorarlberg, with [Dentaria bulbifera] and [Dentaria heptaphylla].
Austro-Bavarian Alps bittercress beech forests	[Fagus sylvatica], [Fagus sylvatica]-[Abies alba], [Fagus sylvatica]-[Picea abies] or [Fagus sylvatica]-[Abies alba]-[Picea abies] forests of the submontane, montane and high montane levels of the northern and northeastern outer Alps of Bavaria, Vorarlberg, northern Tyrol, Salzburg, Upper Austria, Lower Austria and northern Styria, with [Cardamine enneaphyllos] ([Dentaria enneaphyllos]) and [Aposeris foetida].

Southeastern Alpine bittercress beech forests	[Fagus sylvatica], [Fagus sylvatica]-[Abies alba], [Fagus sylvatica]-[Picea abies] or [Fagus sylvatica]-[Abies alba]-[Picea abies] forests of the montane level of the eastern Noric Alps of Styria, with [Poa stiriaca], [Cyclamen purpurascens], [Gentiana asclepiadea], [Knautia maxima], [Pulmonaria stiriaca] and elements of the Illyrian beech forests, in particular, [Peltaria alliacea], [Tephroseris longifolia], [Vicia oroboides]. They constitute a transition towards the Illyrian beech forests of the [Aremonio-Fagion] (unit 41.1C).
Vosges bittercress beech forests	Enclaved mesotrophic [Fagus sylvatica-Abies alba] forests of basicline eruptive substrates of the Vosges, with [Anemone nemorosa], [Mercurialis perennis], [Prenanthes purpurea], [Lonicera nigra], [Ribes alpinum], [Dentaria enneaphyllos], [Galium rotundifolium].
Black Forest bittercress beech forests	Enclaved neutrophile [Fagus sylvatica]-[Abies alba] forests of the Black Forest.
Northern Hercynian bittercress beech forests	Sub-Atlantic montane [Fagus sylvatica] forests of limestones and volcanic deposits of the Eifel, the Vogelsberg, and the Rh”n, above 560-600 m.
Bohemian Quadrangle bittercress beech forests	Neutrophile [Fagus sylvatica-Abies alba] forests of the Bohemian Quadrangle and neighbouring hills, with [Cardamine enneaphyllos] ([Dentaria enneaphyllos]), [Cardamine bulbifera] ([Dentaria bulbifera]) , [Galium odoratum], [Viola reichenbachiana], [Actaea spicata], [Hordelymus europaeus], [Euphorbia dulcis], [Festuca sylvatica].
Western Carpathian bittercress beech forests	Neutrophile [Fagus sylvatica-Abies alba] forests of the montane zone of the western Carpathians, with [Cardamine glandulosa] ([Dentaria glandulosa]), [Cardamine bulbifera] ([Dentaria bulbifera]), [Galium odoratum], [Salvia glutinosa], [Symphytum cordatum], [Symphytum tuberosum], [Euphorbia amygdaloides], [Glechoma hirsuta].
Bohemian lime-beech forests	[Fagus sylvatica] or [Fagus sylvatica-Abies alba] forests rich in [Tilia] spp., of the Bohemian basin.
Pannonic neutrophile beech forests	Neutrophilous beech forests of medio-European affinities of the hills of the Pannonic plain and its western periphery.
Sub-Pannonic beech forests	Neutrophile forests of [Fagus sylvatica], [Carpinus betulus] and [Quercus petraea] of the hills of lower Austria, Styria and western Transdanubia, with [Tilia cordata], [Galium sylvaticum], [Stellaria holostea], [Tanacetum corymbosum], [Galium odoratum], [Asarum europaeum ssp. europaeum], [Cardamine bulbifera] ([Dentaria bulbifera]), [Lathyrus vernus], [Viola reichenbachiana].
Pannonic neutrophile collinar beech forests	Neutrophile forests of [Fagus sylvatica], [Carpinus betulus] and [Quercus petraea] of mid-Pannonic hills, from the Tornaer Karst and the Bükk in the northeast to the Bakony Hills and the Balaton area in the southwest, accompanied by [Acer campestre], [Acer pseudoplatanus], with an herb layer rich in [Cardamine bulbifera] ([Dentaria bulbifera]), [Carex pilosa], [Carex brevicollis], [Galium odoratum] ([Asperula odorata]), [Oxalis acetosella], [Melica uniflora], [Mercurialis perennis], [Viola reichenbachiana] ([Viola sylvestris]).

Pannonic neutrophile montane beech forests	Neutrophilous [Fagus sylvatica] forests of the montane level (700-800 metres) of the northeastern mid-Pannonic Sator, Bükk, Matra, and B”rzs”ny ranges, sometimes with [Fraxinus excelsior], accompanied by a poorly developed shrub layer with [Sorbus aucuparia], [Sambucus racemosa], [Rosa pendulina] and a ground layer comprising many tall herbs such as [Astrantia major], [Aconitum moldavicum], [Aconitum variegatum ssp. gracile], [Cardamine glandulosa], ([Dentaria glandulosa]), [Polygonatum verticillatum], [Lunaria rediviva]; species characteristic of collinar beech forests, such as [Acer campestre], [Quercus cerris], [Quercus petraea], [Melittis melissophyllum], are absent.
Pyreneo-Cantabrian neutrophile beech forests	Neutrophile [Fagus sylvatica] or [Fagus sylvatica]-[Abies alba] forests of the southwestern Central Massif, the Pyrenees, the Cantabrian mountains, and, very locally, the Northern Iberian Range.
Hygrophile Pyrenean beech forests	Humid montane beech and beech-fir (43.141) forests on neutral soils with mild humus (mull) of the western Pyrenees, characterized by the vernal bloom of [Scilla lilio-hyacinthus] and [Lathraea clandestina] and by a summer cover rich in ferns ([Athyrium filix-femina], [Gymnocarpium dryopteris], [Asplenium scolopendrium], [Dryopteris] spp., [Polystichum] spp.) and species of the ecological group of [Melica uniflora] and [Galium odoratum]; they are locally represented in the eastern Pyrenees and the Montes Olositanicos.
Mesophile Pyrenean beech forests	Neutrophilous mesophile beech forests of the Pyrenees, the Montes Olositanicos and the northern Montes Catalanidicos, less species-rich than the preceding, characterized by the abundance of [Helleborus viridis ssp. occidentalis].
Sub-humid oro-Cantabrian beech forests	Neutrophilous beech forests of the subhumid montane areas of the Cantabrian mountains and, locally, of the Northern Iberian Range, with [Carex sylvatica], [Galium odoratum], [Lathyrus occidentalis], [Melica uniflora], [Mercurialis perennis], [Paris quadrifolia], [Scilla lilio-hyacinthus].
Humid Central Massif fir-beech forests	Fir-birch or beech forests of volcanic soils in the 1100-1600 metre range of the central and southern Massif Central, with [Galium odoratum], [Euphorbia hyberna], [Lilium martagon], [Scilla lilio-hyacinthus].
Medio-European subalpine beech woods	[Fagus sylvatica] woods usually composed of low, low-branching trees, with much sycamore ([Acer pseudoplatanus]), situated near the tree limit, mostly in low mountains with oceanic climate of Western Europe and of central and northern Central Europe, in particular the Vosges, Black Forest, Rh”n, Jura, outer Alps, Central Massif, Pyrenees, the mountains of the Bohemian Quadrangle, and, very locally, the Carpathians. The herb layer is similar to that of the forests of unit G1.63 or locally of unit G1.61 and contains elements of the adjacent open grasslands

Medio-European limestone beech forests	Xero-thermophile [Fagus sylvatica] forests developed on calcareous, often superficial, soils, usually of steep slopes, of the medio-European and Atlantic domaines of Western Europe and of central and northern Central Europe (also present in Greece), with a generally abundant herb and shrub undergrowth, characterised by sedges ([Carex] spp.), grasses ([Sesleria albicans], [Brachypodium pinnatum]), orchids ([Cephalanthera] spp., [Neottia nidus-avis], [Epipactis] spp.) of alliance [Cephalanthero-Fagenion] and thermophile species, transgressive of the [Quercetalia pubescenti-petraeae]. The bush-layer includes several calcicolous species ([Ligustrum vulgare], [Berberis vulgaris]) and [Buxus sempervirens] can dominate.
Middle European dry-slope limestone beech forests	Middle European sedge and orchid beech woods of slopes with reduced water availability.
Medio-European dry slope sedge beech forests	Beech woods occupying dry limestone slopes and areas of low precipitation of sub-Atlantic Western Europe, south and west to the Charentes and Normandy, of the Jura, the northwestern, northern, eastern and southern pre-Alps, of the Hercynian arc and neighbouring regions and of the western Carpathian hills, with an often rich shrub layer constituted by [Sorbus aria], [Ligustrum vulgare], [Viburnum lantana], [Rosa arvensis], [Lonicera xylosteum], [Daphne mezereum], [Berberis vulgaris], [Acer campestre], [Buxus sempervirens], and an herb layer rich in sedges, [Carex digitata], [Carex flacca], [Carex montana], [Carex alba], grasses, [Brachypodium sylvaticum], [Bromus benekenii], orchids, [Neottia nidus-avis], [Cephalanthera rubra], [Cephalanthera damasonium], [Epipactis] spp. The unit is composed of many highly distinctive and conservation-significant local variants.
Medio-European steep slope yew beech forests	Beech forests of cool steep marl slopes of the Jura, the foothills of the Alps and the Carpathians, in which [Taxus baccata] forms a second tree layer.
Medio-European blue moorgrass beech forests	Beech forests of dry slopes of firm limestone or dolomite of the montane, submontane, and sometimes, collinar or planitiar, levels of the Alps and pre-Alps, of the Jura and, locally, of the Hercynian arc, of the southwestern Western Carpathians (Strazov range) and the Germano-Baltic plain (Rügen), with an often gnarled and open growth of trees and an herb layer dominated by the tussocks of [Sesleria caerulea].
Medio-European naked basiphile beech forests	Beech forests on lime or gypsum in areas of dry microclimate, such as the rain shadow of the Harz and inner Bohemia, practically devoid of undergrowth.
Pannonic limestone beech forests	Low forests of [Fagus sylvatica], not exceeding 12-15 metres in height, on shallow soils, usually of steep slopes, of the mid- and peri-Pannonic Bükk and Pilis hills, with an herb layer characterized by the endemic [Sesleria heuflerana ssp. hungarica], [Calamagrostis varia], [Phyteuma spicatum], and the presence of xerophilous oak forest species, of orchids and rare species, including [Cypripedium calceolus] and [Allium victorialis].

Northwestern Iberian xerophile beech woods	[Fagus sylvatica] forests of relatively low precipitation zones of the southern ranges of the Pais Vasco and of superficially dry calcareous soils of the Cordillera Cantabrica, with [Brachypodium pinnatum ssp. rupestre], [Sesleria argentea ssp. hispanica], [Carex brevicollis], [Carex ornithopoda], [Carex sempervirens], [Carex caudata], [Cephalanthera damasonium], [Cephalanthera longifolia], [Epipactis helleborine], [Epipactis microphylla], [Neottia nidus-avis].
Southern medio-European beech forests	[Fagus sylvatica] forests of the southern flanks of the Alps and the western Mediterranean mountains with an often species-rich herb layer composed of an admixture of medio-European, Mediterranean and local endemic species.
Alpino-Apennine acidophilous beech forests	Acidophilous forests with [Luzula nivea] and [Luzula pedemontana] of the Maritime, Ligurian, Insubrian and Illyro-Gardesian Alps and pre-Alps and of the northern and central Apennines.
Pyreneo-C,vennian acidophilous beech forest	Acidophilous forests of the eastern Pyrenees and Cévennes, with [Luzula nivea], clearly distinguished from forests of the [Scillo-Fagenion] by their impoverished herb layer, and replacing the more Atlantic forests of the [Ilici-Fagenion].
Corsican beech forests	Beech forests of Corsica, acidophilous, with [Luzula pedemontana], [Galium rotundifolium] and insular endemics such as [Helleborus lividus].
Alpino-Apennine neutrophile beech forests	Neutrophile montane beech forests of the southwestern Alps, the Maritime Alps, the Ligurian Alps, the Insubrian, Gardesian and Illyric southern pre-Alps, the northern and central Apennines, with [Trochiscanthes nodiflora], [Geranium nodosum], [Calamintha grandiflora], various [Dentaria] spp.
Sub-Mediterranean calcicolous beech forests	Thermophile beech forests often rich in box and lavender of the warm, calcareous slopes of the southwestern pre-Alps, Haute Provence, Maritime Alps, of the Causses, the eastern Pyrenees, the Aragonese central Pyrenees.
Box beech forests	Beech forests with an undergrowth dominated by [Buxus sempervirens].
Androsace beech forests	Beech forests with a more reduced shrub layer and an herb layer characterized by the presence of the restricted southwestern Alpine endemics [Androsace chaixii] and [Fritillaria involucrata].
Lavender beech forests	Beech forests with [Lavandula angustifolia].
Sainte-Baume beech forest	Isolated, species-rich beech forest of the Sainte-Baume range of Provence, characterized by the strong representation of evergreen undergrowth, the development of the vegetation strata and the multiple waves of flowering. Among accompanying species are [Taxus baccata], [Ilex aquifolium], [Acer opulifolium], [Viburnum lantana], [Coronilla emerus], [Ruscus aculeatus], [Mycelis muralis], [Lilium martagon], [Neottia nidus-avis], [Helleborus foetidus], [Digitalis lutea].
Pre-Alpine hop-hornbeam beech forests	Thermophile calcicolous forests rich in [Ostrya carpinifolia] and [Fraxinus ornus] of the submontane level of the Ligurian and Gardesian southern pre-Alps, mostly reduced to tall coppice, related to the forests of unit 41.1C321, but with a weakened Illyrian character and a strong dealpine element.
Southern Italian beech forests	[Fagus sylvatica] forests of Italian mountains, south of 42° N. They are highly fragmented and harbour many endemic species. Altidudinal and hygric variants can be distinguished.

Gargano beech forest	Monte Gargano Foresta Umbra, rich in [Taxus baccata], extremely isolated.
Campano-Lucanian beech forests	Still relatively extensive beech forests of Campania and Basilicata with [Daphne laureola], [Galium odoratum], [Ranunculus brutius], [Geranium versicolor], [Melica uniflora], [Lathyrus venetus], [Euphorbia amygdaloides], [Aquilegia vulgaris], [Aquilegia viscosa], [Cardamine bulbifera].
Pollino beech forests	Extensive calcicolous beech forests of the montane level of the Pollino system, with [Lathyrus venetus], [Daphne laureola], [Melica uniflora], [Ranunculus brutius], [Geranium versicolor], [Doronicum orientale], [Calamintha grandiflora], [Epipactis microphylla], [Epipactis gracilis], [Epipactis pollinensis], [Monotropa hypopitys].
Sila beech forests	Silicicolous beech forests occupying more humid locations of the Sila, alternating with forests of [Pinus laricio].
Aspromonte beech forests	Silicicolous beech forests of the Aspromonte range of Calabria with [Taxus baccata], [Populus tremula], [Sorbus aucuparia], [Betula pendula].
Northern Sicilian beech forests	Relict beech forests of the Madonie, Nebrodi and, very locally, the monti Peloritani, with [Ilex aquifolium], [Daphne laureola], [Crataegus monogyna], [Prunus spinosa].
Etna beech forests	Isolated beech forests of Mount Etna, at the southern limit of the range of the species.
Moesian beech forests	[Fagus sylvatica] or [Fagus moesiaca] forests of the Balkan Range, the southern Dinarides, the Moeso-Macedonian mountains, the Pelagonids, the Rhodopids, the Thessalian mountains, reaching their southern limits in the Vermion, the Vernon, the border ranges of northern Macedonia, the Chalkidiki, Greek Thrace, the Olympus group, Ossa and Pelion. [Fagus sylvatica] is accompanied, at the higher altitudes and latitudes, by [Abies alba] and [Picea abies]. The forests have, even in the south of their range, a pronounced medio-European character, marked by the frequency of [Acer pseudoplatanus], [Quercus petraea], [Fragaria vesca], [Oxalis acetosella].
Southwestern Moesian beech forests	Moesian [Fagus sylvatica] or [Fagus moesiaca] forests of the Pelagonids and the Thessalian mountains south to, in Greece, the Voras-Tzena-Pa‹kon complex, the Vermion massive, the Olympus group, the Ossa and the Pelion.
Southwestern Moesian woodrush-beech forests	Acidophilous [Fagus sylvatica] or [Fagus moesiaca] forests of medio-European affinities of the Pelagonids and the Thessalian mountains south to, in Greece, the Voras-Tzena-Pa‹kon complex, the Vermion massive, the Olympus group, the Ossa and the Pelion.
Southwestern Moesian neutrophile beech forests	Neutrophilous [Fagus sylvatica] or [Fagus moesiaca] forests, of medio-European affinities, of the Pelagonids and the Thessalian mountains south to, in Greece, the Voras-Tzena-Pa‹kon complex, the Vermion massive, the Olympus group, the Ossa and the Pelion.
Southwestern Moesian bedstraw-beech forests	Neutrophilous [Fagus sylvatica] or [Fagus moesiaca] forests of the lower altitudes and southern ranges of the Pelagonids, south to the Voras-Tzena-Pa‹kon complex and the Vermion massive; neutrophilous beech forests of medio-European affinities of the Thessalian mountains, in particular, the Olympus group, the Ossa and the Pelion.

Southwestern Moesian fir-beech forests	Neutrophilous [Fagus sylvatica] or [Fagus moesiaca] and [Abies alba] forests of the higher altitudes of the montane level of the Pelagonids.
Southwestern Moesian beech-hornbeam forests	Neutrophilous [Fagus sylvatica] or [Fagus moesiaca] and [Carpinus betulus] forests of the Pelagonids.
Southwestern Moesian subalpine beech forests	Neutrophile or acidophile, often open, forests of generally low [Fagus sylvatica] or [Fagus moesiaca], with [Acer pseudoplatanus], [Acer platanoides] and [Acer heldreichii], sometimes with a small admixture of [Abies alba] or [Picea abies], invaded by [Adenostyletalia] species, developed at the tree limit in the subalpine or upper montane level of the Pelagonids.
Southeastern Moesian beech forests	[Fagus sylvatica] or [Fagus moesiaca] forests of the Rhodopides and the Moeso-Macedonian mountains, including, in Bulgaria, the Rhodope, Rila, Pirin, Vitosha and Slavianka (Orvilos) ranges, as well as the western border mountains west of the Struma, and in Greece all the higher mountains east of the Axios, in particular the Rodhopi, the Orvilos (Slavianka), Boura, Mavro Vouno, Vrondous, Menikion complex, the Falakron system (Boz Dagh of Dhrama), the Pangeon, the Kerkini (Belles, Belasicha), the Krousia-Vertikon-Kerdulia ridge and the mountains of the Chalcidiki peninsula (Chortiatis, Cholomon, Athos).
Southeastern Moesian woodrush-beech forests	Acidophilous [Fagus sylvatica] or [Fagus moesiaca] forests of the Rhodopides and the Moeso-Macedonian mountains, including the Rhodope, Rila, Pirin, Vitosha and Slavianka-Orvilos ranges, the western border mountains of Bulgaria west of the Struma, and the higher Greek mountains east of the Axios.
Southeastern Moesian neutrophile beech forests	Neutrophilous and calcicline [Fagus sylvatica] or [Fagus moesiaca] forests of the Rhodopides and the Moeso-Macedonian mountains, including the Rhodope, Rila, Pirin, Vitosha and Slavianka-Orvilos ranges, the western border mountains of Bulgaria west of the Struma, and the higher Greek mountains east of the Axios.
Southeastern Moesian bedstraw-beech forests	Neutrophilous and calcicline [Fagus sylvatica] or [Fagus moesiaca] forests of the lower montane level and southern ranges of the Rhodopides and the Moeso-Macedonian mountains, including the Rhodope, Rila, Pirin, Vitosha and Slavianka-Orvilos ranges, the western border mountains of Bulgaria west of the Struma, and the higher Greek mountains east of the Axios.
Southeastern Moesian fir-beech forests	Neutrophilous and calcicline [Fagus sylvatica] or [Fagus moesiaca] and [Abies alba], [Picea abies] or [Pinus sylvestris] forests of the higher montane levels of the Rhodopides and the Moeso-Macedonian mountains, including the Rhodope, south to their Greek slope, the Rila, Pirin, Vitosha and Slavianka ranges as well as the western border mountains of Bulgaria west of the Struma.
Southeastern Moesian beech-hornbeam forests	Neutrophilous [Fagus sylvatica] or [Fagus moesiaca] and [Carpinus betulus] forests of the Rhodopids and Moeso-Macedonian hills, fairly widespread and extensive in the northern and central Rhodopes, limited to small surfaces in Rila, Piren, Vitosha and other ranges.

Southeastern Moesian subalpine beech forests	Neutrophile or acidophile, often open, forests of generally low [Fagus sylvatica] or [Fagus moesiaca], with [Acer pseudoplatanus], [Acer platanoides] and [Acer heldreichii], sometimes with a small admixture of [Abies alba] or [Picea abies], invaded by [Adenostyletalia] species, developed at the tree limit in the subalpine or upper montane level of the Rhodopids.
Southeastern Moesian [Ostrya]-beech forests	Thermophile [Fagus moesiaca] forests of the Rhodopids, well represented, in particular, in the northern Rhodopes, with [Ostrya carpinifolia], [Fraxinus ornus], [Fraxinus excelsior].
Balkan Range beech forests	[Fagus sylvatica] or [Fagus moesiaca] forests of the Balkan Range, forming an extensive, continuous belt throughout the range, except its eastern extremity, with outliers in satellite chains and some neighbouring hills.
Balkan Range acidophile beech forests	Acidophilous [Fagus sylvatica] or [Fagus moesiaca] forests of the Balkan Range.
Balkan Range woodrush-beech forests	Uncommon acidophilous [Fagus sylvatica] or [Fagus moesiaca] forests of the Balkan Range, often low-growing and limited to ridges and south-facing slopes, with [Luzula luzuloides], [Deschampsia flexuosa], [Calamagrostis arundinacea], [Luzula sylvatica], [Prenanthes purpurea], [Vaccinium myrtillus], [Polytrichum attenuatum], [Dicranum scoparium].
Balkan Range cherry-laurel beech forests	Highly distinctive [Fagus sylvatica] or [Fagus moesiaca] forests of the western and central Balkan Range, developed on acid, deep coluvions of lower slopes and brook valleys, in which the understorey is dominated by the lauriphyllous [Prunus laurocerasus].
Balkan Range neutrophile beech forests	Neutrophilous [Fagus sylvatica] or [Fagus moesiaca] forests of the Balkan Range.
Balkan Range bedstraw-beech forests	Neutrophilous [Fagus sylvatica] or [Fagus moesiaca] forests of the lower montane levels of the Balkan Range, often very tall, accompanied by a typical [Fagetalia cortège] that includes [Galium odoratum], [Cardamine bulbifera], [Lamiastrum galeobdolon], [Impatiens noli-tangere], [Pulmonaria rubra], [Veronica montana], [Mercurialis perennis], [Symphytum tuberosum], [Sanicula europaea], [Lunaria rediviva].
Balkan Range fir-beech forests	Neutrophilous [Fagus sylvatica] and [Abies alba] or [Picea abies] forests of the higher montane levels of the Balkan Range, of extremely limited and local distribution in the central part of the chain.
Balkan Range beech-hornbeam forests	Forests of [Fagus sylvatica] or [Fagus moesiaca] and [Carpinus betulus] or [Carpinus betulus] and [Carpinus orientalis] of the Balkan Range, widespread, though on limited surfaces, in the main chain, in the Anti-Balkan and in neighbouring hills.
Balkan Range [Festuca drymeja] beech forests	Dry, acidocline forests of [Fagus moesiaca] or [Fagus sylvatica] of the Balkan Range, with an understorey dominated by [Festuca drymeja] and comprising [Galium rotundifolium] and [Luzula luzuloides], together with a reduced representation of [Galium odoratum] and the [Fagion] cortège.

Balkan Range subalpine beech forests	Neutrophile or acidophile, often open, forests of generally low [Fagus sylvatica] or [Fagus moesiaca], with [Acer pseudoplatanus], [Acer platanoides] and [Acer heldreichii], sometimes with a small admixture of [Abies alba] or [Picea abies], invaded by [Adenostyletalia] species, developed at the tree limit in the subalpine or upper montane level of the Balkan Range.
Balkan Range thermophile beech forests	[Fagus moesiaca] forests of the Balkan Range, mostly developed on warm slopes or shallow soils in which the beech is accompanied by thermophilous trees or shrubs, often of Illyrian origin, such as [Corylus colurna], [Acer hyrcanum], [Fraxinus ornus], [Ostrya carpinifolia].
Balkan Range [Ostrya]-beech forests	Thermophile [Fagus moesiaca] forests of the Balkan Range, with [Ostrya carpinifolia], [Fraxinus ornus], [Fraxinus excelsior], limited to a few areas, in particular, of the western Anti-Balkan.
Moesian Constantinople hazel beech forests	[Fagus moesiaca] forests of the western Balkan Range of eastern Serbia, known at least from the Suva Planina, developed on shallow calcareous soils of sunny slopes, with [Corylus colurna], [Acer hyrcanum], [Acer pseudoplatanus], [Fraxinus ornus], [Fraxinus excelsior], [Pyrus pyraster], [Malus sylvestris], [Sorbus torminalis], [Sorbus mougeotii], [Carpinus orientalis], [Carpinus betulus], [Primula veris], [Vincetoxicum hirundinaria], [Euphorbia amygdaloides], [Helleborus odorus], [Geranium macrorrhizum], [Galium mollugo], [Melica uniflora]. These formations have clear affinities with the communities of 41.1D52, included in the Dacian beech forest ensemble of the southern Carpathians.
South-Dinaric beech forests	Moesian [Fagus sylvatica] forests of the southern Dinarides, north of the Metohija depression, in contact with Illyrian beech forests of unit 41.C.
Hellenic beech forests	[Fagus sylvatica] forests of the Pindus north to the Smolikas and the Grammos, and of the Chassia, Olympus and Ossa groups, with reduced medio-European character and high endemism, characterised by the presence of [Abies borisii-regis], [Abies alba], [Buxus sempervirens], [Juniperus communis], [Taxus baccata], [Juniperus oxycedrus], [Cynosurus echinatus], [Doronicum caucasicum], [Galium laconicum], [Lathyrus venetus] and [Helleborus cyclophyllus].
Pindus Hellenic beech forests	[Fagus sylvatica] or [Fagus sylvatica-Abies borisii-regis] forests of reduced medio-European character and high endemism, mostly characteristic of the central Pindus (Noto Pindhos, "Southern Pindus"), with local occurrences in the northern Pindus, in particular in the Smolikas and the Grammos.
Olympian Hellenic beech forests	[Fagus sylvatica] or [Fagus sylvatica]-[Abies borisii-regis] forests, characterized like those of unit 41.161 by their reduced medio-European character and high endemism, isolated, west of the main Pindian range of Hellenic beech forests, in mountains of the Chassia and Olympus groups, in particular in the Andichasia, Olympus and Pieria ranges.
Mediterraneo-Moesian beech forests	[Fagus sylvatica] or [Fagus moesiaca] forests, more thermophile than those of G1.69 and G1.6A, occurring in the transition zone between the supra-Mediterranean and montane levels of Thrace and Macedonia, characterised by the presence of numerous species of the [Quercion frainetto].

Illyrian beech forests	[Fagus sylvatica] forests of the Dinarides and of associated ranges and hills, with outliers and irradiations in the southeastern Alps and in the mid-Pannonic hills. In these areas they are in contact with, or interspersed among, medio-European beech forests. Typical herb species are [Dentaria] spp., [Cyclamen purpurascens], [Hacquetia epipactis], [Lamium orvala] and others.
Illyrian woodrush-beech forests	Strongly acidophile [Fagus sylvatica] forests of the Dinarides and of associated ranges and hills, of weakly expressed Illyrian character, with possible outliers in the southeastern Alps and the mid-Pannonic hills.
Illyrian neutrophile beech forests	Neutrophile, neutrocline, acidocline and basicline [Fagus sylvatica] forests of the Dinarides and of associated ranges and hills, with outliers and irradiations in the southeastern Alps and in the mid-Pannonic hills.
Illyrian collinar neutrophile beech forests	Neutrophile and basicline [Fagus sylvatica] forests of the collinar level of the Dinarides and pre-Dinarides, of the southeastern pre-Alpine hills of Slovenia, of the southern Transdanubian hills of Hungary and, very locally, of pre-Alpine thermophile hills in valleys of Carinthia and Friuli Venezia Giulia, with [Aremonia agrimonoides], [Anemone trifolia], [Vicia oroboides], [Lathyrus venetus], [Cardamine enneaphyllos] ([Dentaria enneaphyllos]), [Primula vulgaris], [Hacquetia epipactis], [Ruscus hypoglossum], [Ruscus aculeatus], [Tilia tomentosa].
Illyrian montane fir-beech forests	Neutrophile, acidocline and basicline [Fagus sylvatica] forests of the montane level of the Dinarides; related forests of the southeastern Alps, characterized by the presence of a distinctively Illyrian cortège in the undergrowth.
Illyrian low-montane acidocline fir-beech forests	Neutrophile and acidocline forests of [Fagus sylvatica], [Abies alba] and [Picea abies] of the lower and middle montane levels of the Dinarides and, locally, of the southeastern Alps, with [Petasites albus], [Lamiastrum flavidum] and an Illyrian cortège that includes [Lamium orvala] and [Anemone trifolia], associated to acidocline species such as [Oxalis acetosella], [Calamagrostis arundinacea], [Luzula luzuloides] and several ferns.
Illyrian low-montane neutrophile fir-beech forests	Neutrocline or basicline forests of [Fagus sylvatica], [Abies alba] and [Picea abies] of the lower and middle montane levels of the Dinarides and the southeastern Alps of Slovenia and Carinthia, with [Anemone trifolia], [Helleborus niger], [Oxalis acetosella], [Lonicera xylosteum], [Sorbus aria].
Illyrian high-montane fir-beech forests	Neutrocline or basicline forests of [Fagus sylvatica], [Abies alba], [Picea abies] and [Larix decidua] of the upper montane levels of the Dinarides and, locally, the southeastern Alps of Slovenia and Carinthia, often low-growing or krummholz, with [Anemone trifolia], [Saxifraga rotundifolia], [Aposeris foetida], [Cardamine trifolia], [Helleborus niger], [Oxalis acetosella], [Petasites albus], [Prenanthes purpurea], [Lonicera alpigena].
Illyrian thermophile beech forests	Thermophilous and often calcicolous [Fagus sylvatica] forests of the Dinarides and of associated ranges and hills, with outliers and irradiations in the southeastern Alps and in the mid-Pannonic hills, characterized by the presence of [Ostryo-Carpinion orientalis] or [Fraxino orni-Ostryion] species.

Illyrian coastal beech forests	Thermophilous [Fagus sylvatica] forests forming, between Mediterranean [Ostrya] forests and montane beech forests, a sublittoral belt, stretching from Istria to Albania, and characterized by the massive occurrence of [Sesleria autumnalis] and the presence of many Mediterranean and sub-Mediterranean species, including [Fraxinus ornus], [Ostrya carpinifolia], [Acer obtusatum], [Quercus pubescens], [Sorbus aria].
Illyrian inland calciphile beech forests	Thermophilous Illyrian [Fagus sylvatica] forests of inland areas of the Dinarides and of associated ranges and hills, of the southeastern pre-Alps and the mid-Pannonic hills, characterized by the presence of [Ostryo-Carpinion orientalis] or [Fraxino orni-Ostryion] species.
Illyrian hop-hornbeam beech forests	Thermophilous Illyrian [Fagus sylvatica] forests of limestones and dolomites of the pre-Dinaric hills of Slovenia and of the southeastern pre-Alpine hills of Slovenia and Carinthia, with [Ostrya carpinifolia], [Fraxinus ornus], [Sorbus aria], [Sorbus torminalis] and a species-rich herb-layer comprising numerous [Quercetalia pubescentis] characteristics.
Illyrian [Helleborus odorus] beech forests	Thermophilous Illyrian [Fagus sylvatica] forests of the northern Dinarides and pre-Dinarides and of the southern mid-Pannonic or sub-Pannonic hills, north to the Hungarian Mecsek and Tolna hills, with [Tilia tomentosa], [Fraxinus ornus] and [Carpinus betulus] in the canopy, [Helleborus odorus], [Tamus communis], [Chaerophyllum aureum], [Ruscus hypoglossum], [Ruscus aculeatus], [Potentilla micrantha] in the herb layer.
Illyrian [Acer obtusatum] beech forests	Thermophilous [Fagus sylvatica] forests of inland areas of the central Dinarides.
Illyrian subalpine beech forests	Local [Fagus sylvatica] forests of the tree-limit in the upper montane or subalpine level of the high Dinarides, with extremely limited outliers in the southeastern Alps, not forming a clear belt, contrary to more western formations of the [Aceri-Fagion], though, like them, characterized by the frequent admixture of [Acer pseudoplatanus] in the canopy and of [Adenostyletalia] megaphorb species in the understorey. [Acer heldreichii], [Sorbus chamaemespilus], [Salix appendiculata], [Myrrhis odorata], [Cicerbita alpina], [Aconitum paniculatum], [Chaerophyllum hirsutum], [Petasites albus], [Stellaria nemorum] are noteworthy accompaniers.
Dacian beech forests	[Fagus sylvatica], or, locally, [Fagus orientalis], [Fagus moesiaca], [Fagus taurica], forests of the Romanian, Ukrainian and eastern Serbian Carpathians, east of the Uz and the Stry, and of the west Ukrainian pre-Carpathic hills and plateaux. Characteristic species include [Symphytum cordatum], [Cardamine glanduligera] ([Dentaria glandulosa]), [Hepatica transsilvanica], [Pulmonaria rubra], [Leucanthemum waldsteinii], [Silene heuffelii], [Ranunculus carpaticus], [Euphorbia carniolica], [Aconitum moldavicum], [Saxifraga rotundifolia ssp. heuffelii], [Primula elatior ssp. leucophylla], [Hieracium rotundatum], [Galium kitaibelianum], [Moehringia pendula], [Festuca drymeja].

East Carpathian acidophile beech forests	[Fagus sylvatica] forests of the eastern Carpathians and pre-Carpathian hills, developed on acid soils, in particular podsols and brown acid soils, mostly limited to rather small surfaces within the more extensive neutrophilous forest complexes, characterized by a species-poor acidophilous flora that includes [Vaccinium myrtillus], [Hieracium rotundatum], [Calamagrostis hirundinacea], [Luzula luzuloides], [Deschampsia flexuosa], [Galium rotundifolium], [Galium kitaibelianum], [Galium baillonii], [Veronica officinalis], [Blechnum spicant], [Pteridium aquilinum].
Dacian woodrush-beech forests	Widely distributed acidophilous [Fagus sylvatica] forests of the eastern and southern Carpathians, accompanied by a cortège in which the acidophile species characteristic of the [Calamagrostio-Fagenion] clearly predominate over the edaphically less restricted species of the [Symphyto-Fagion]; [Luzula luzuloides], [Hieracium rotundatum], [Calamagrostis arundinacea], [Deschampsia flexuosa], [Veronica officinalis], in particular, are often abundant.
Dacian [Galium kitaibelianum] beech forests	Acidophilous [Fagus sylvatica] forests of the central zone of the southern Romanian Carpathians, limited to small surfaces, characterized by the presence of thermophilous species such as [Galium kitaibelianum], [Galium baillonii] and [Potentilla micrantha].
Dacian [Galium rotundifolium] beech forests	Acidophilous [Fagus sylvatica] forests, mostly of high mountains in the southwestern Carpathians, with [Galium rotundifolium] and an admixture of acidophilous and neutrophilous [Fagetalia] species.
East Carpathian neutrophile beech forests	[Fagus sylvatica], [Fagus sylvatica]-[Abies alba], [Fagus sylvatica]-[Abies alba]-[Picea abies] and [Fagus sylvatica]-[Carpinus betulus] forests of the Romanian, Ukrainian and eastern Serbian Carpathians and pre-Carpathian hills, with typical [Fagetalia] species, developed on neutral, basicline and sometimes acidocline substrates.
Dacian [Symphytum] beech forests	[Fagus sylvatica], [Fagus sylvatica-Abies alba] and [Fagus sylvatica]-[Abies alba]-[Picea abies] forests of the Romanian, Ukrainian and eastern Serbian Carpathians and pre-Carpathian hills accompanied by a cortège of typical [Fagetalia] species supplemented by regional Dacian elements, including [Symphytum cordatum], [Cardamine glanduligera] ([Dentaria glandulosa]), [Ranunculus carpaticus], [Pulmonaria rubra], [Aconitum moldavicum], [Hepatica transsilvanica], [Silene heuffelii], [Ranunculus carpaticus], [Euphorbia carniolica], [Crocus heuffelianus], [Aremonia agrimonoides], [Festuca drymeja], widely distributed in all mountains and high hills of the region on neutral, basicline and sometimes acidocline substrates. [Fagus orientalis] and [Fagus taurica] may locally enter the canopy in sub-Carpathic ranges of Moldavia.
Dacian [Dentaria glandulosa] beech forests	Neutrophile [Fagus sylvatica] forests, sometimes with a small admixture of [Acer pseudoplatanus], [Picea abies] and [Abies alba], with a rich [Fagetalia] flora and regionally characteristic Dacian species including [Symphytum cordatum], [Cardamine glanduligera] ([Dentaria glandulosa]), [Pulmonaria rubra], [Hepatica transsilvanica], [Ranunculus carpaticus], widespread on rich soils throughout the Romanian and Ukrainian Carpathians, where they form the zonal forests of the lower and middle montane belt, between 600 and 1100 metres.

Dacian [Pulmonaria rubra] fir-beech forests	Neutrophile [Fagus sylvatica-Abies alba] forests with a rich [Fagetalia] flora and Dacian regional species such as [Pulmonaria rubra], [Cardamine glanduligera] ([Dentaria glandulosa]), [Symphytum cordatum], [Hepatica transsilvanica], [Ranunculus carpaticus], [Campanula abietina], widely distributed throughout the Romanian and Ukrainian Carpathians, on rich brown, leached or acid soils of steep slopes at altitudes comprised between 700 and 1300 m.
Dacian [Leucanthemum] beech forests	Acidocline [Fagus sylvatica]-[Picea abies] forests of the high southeastern Carpathians, occupying the upper fringe of the montane beech forests, at altitudes between 800 and 1350 metres, on acid brown soils, with [Leucanthemum waldsteinii] and a cortège otherwise typical of the [Symphyto-Fagenion], including [Oxalis acetosella], [Symphytum cordatum], [Pulmonaria rubra], [Cardamine glanduligera].
Dacian hairy sedge beech-hornbeam forests	Forests of [Fagus sylvatica], or sometimes [Fagus moesiaca] and [Carpinus betulus], occasionally of [Fagus sylvatica] without [Carpinus betulus], of the montane level of the Romanian, Ukrainian and eastern Serbian Carpathians and pre-Carpathian hills, accompanied by an eastern [Carpinion] cortège that includes [Tilia cordata], [Prunus avium], [Lathyrus hallersteinii], [Melampyrum bihariense], [Aposeris foetida], [Stellaria holostea], [Ranunculus auricomus], [Galium schultesii], [Carex pilosa], [Dactylis glomerata].
East Carpathian subalpine beech forests	Local [Fagus sylvatica] and [Fagus sylvatica]-[Picea abies] forests of the tree-limit in the upper montane or subalpine level of the high southern Carpathians, developed where subalpine [Picea abies] forests do not form an uninterrupted zone, less well individualised than more western formations of the [Aceri-Fagion], though, like them, characterized by the admixture of [Acer pseudoplatanus] in the canopy and of [Adenostyletalia] megaphorb species in the understorey.
Dacian subalpine beech-spruce forest	Neutrophile to weakly acidophile [Fagus sylvatica-Picea abies] forests with a mixed cortège composed of [Fagetalia] species, in particular [Symphyto-Fagion] characteristics, and of [Vaccinio-Piceetalia] and [Adenostyletalia] species, of the subalpine or upper montane level of high mountains of the southern Carpathians.
Dacian subalpine gooseberry beech forests	[Fagus sylvatica] forests with [Acer pseudoplatanus] characterized by the presence of [Ribes uva-crispa], [Glechoma hirsuta], [Lamium maculatum] and [Ulmus glabra], on very damp slopes of the subalpine or upper montane level of the southern and southwestern Carpathians.
East Carpathian calciphile beech forests	[Fagus sylvatica] forests developed on limestones of the eastern and southern Carpathians and pre-Carpathian hills, harbouring a strongly calciphile and thermophile cortège.
South Carpathian thermophilous beech forests	[Fagus sylvatica] or [Fagus moesiaca] forests of the southwestern and southern Carpathians and pre-Carpathian hills, with southern European floristic elements, including [Aremonia agrimonoides], [Festuca drymeja], [Helleborus odorus], [Tilia tomentosa], [Corylus colurna], of Illyrian or Moesian affinities.

South Carpathian [Aremonia] beech forests	Neutrophile or basicline montane [Fagus sylvatica] forests widespread in the southwestern Carpathians, characterized by the presence of thermophile species of Illyrian affinities, in particular, [Aremonia agrimonoides], [Potentilla micrantha], [Fraxinus ornus], [Tamus communis] and the extreme rarefaction of typical [Symphyto-Fagion] Carpathian species.
South Carpathian [Corylus colurna] beech forests	Neutrophile low montane [Fagus moesiaca] forests with [Corylus colurna] and a cortège of southern species, including [Primula columnae], [Fraxinus ornus], [Lathyrus venetus], [Knautia drymeia], [Ruscus hypoglossum], occupying small surfaces in a few localities of the southwestern Carpathians, south to the Rtanj range of eastern Serbia; they are related to Moesian formations of unit 41.19, in particular unit 41.1934.
South Carpathian [Helleborus odorus] beech forests	Neutrophile to weakly acidophile [Fagus moesiaca] forests, of low mountains and hills of the southwestern Romanian Carpathians and pre-Carpathian ranges, with a cortège of southern, in part Illyrian, species, including [Helleborus odorus], [Asperula taurina], [Daphne laureola], [Ruscus aculeatus], [Tamus communis], [Tilia tomentosa].
South Carpathian [Festuca drymeja] beech forests	Weakly acidophile to acidophile [Fagus sylvatica] or [Fagus moesiaca] forests of the upper part of sunny slopes of the mountains and hills of the southern and southwestern Carpathians, with an herb layer dominated by [Festuca drymeja] and in which [Luzula luzuloides] is always present and the [Symphyto-Fagenion] species poorly represented.
Pontic beech forests	[Fagus orientalis] forests of the Pontic Range and its satellite chains, extending into southeastern Central Europe in the Stranja-Istranca Range and the eastern Balkan Range.
Western Pontic beech forests	[Fagus orientalis] forests of the western Pontic Range, the Stranja-Istranca Range and the eastern Balkan Range.
Eastern Balkan Range oriental beech forests	Beech forests of the eastern Balkan Range dominated by [Fagus orientalis] and with an understorey formed in part by a Euxinian cortège, impoverished in comparison to that of more southern and eastern communities, though fairly similar to that of unit 41.1E21, comprising, as most characteristic taxa, [Primula vulgaris ssp. sibthorpii] ([Primula rosea], [Primula sibthorpii]), [Trachystemon orientalis] and [Scilla bithynica]. and the absence of other southern Euxinian elements that occur in the Stranja.
Stranja oriental beech forests	[Fagus orientalis] forests of the Stranja-Istranca Range.
Stranja bearberry tree-oriental beech forests	Beech forests of the Stranja-Istranca mountains dominated by [Fagus orientalis], less rich in lauriphyllous shrubs than those of 41.1E122, more similar to those of 41.1E11, although slightly richer in Euxinian elements, with a cortège that includes, locally, [Vaccinium arctostaphylos], otherwise formed primarily by [Primula vulgaris ssp. sibthorpii] ([Primula rosea]), [Trachystemon orientalis] and [Scilla bithynica].

Stranja rhododendron-oriental beech forests	Beech forests of the Stranja-Istranca mountains dominated by [Fagus orientalis], often accompanied by [Carpinus betulus], [Carpinus orientalis], [Tilia tomentosa], [Tilia cordata], [Tilia platyphyllos], [Quercus polycarpa], [Acer platanoides], [Acer campestre], [Ulmus glabra], [Sorbus torminalis], [Sorbus domestica], [Prunus avium], with an understorey rich in lauriphyllous shrubs of Euxinian affinities, comprising, in particular, [Rhododendron ponticum], [Daphne pontica], [Prunus laurocerasus] ([Laurocerasus officinalis]), [Pyracantha coccinea], [Ilex aquifolium], [Ruscus hypoglossum], and with the Euxinian [Primula vulgaris ssp. sibthorpii] ([Primula rosea]), [Trachystemon orientalis], [Teucrium cuneifolium], [Cyclamen coum], [Epimedium pubigerum], [Hypericum calycinum] and [Scilla bithynica] in the herb layer.
Western Pontic rhododendron-oriental beech forests	Forests of the western Pontic Range dominated by [Fagus orientalis], accompanied by [Quercus iberica], [Acer cappadocium], [Acer trautvetteri], with a lauriphile-rich one- to six-metre high understorey of [Rhododendron ponticum], [Rhododendron flavum] and [Ilex colchica] with [Hedera colchica], [Smilax excelsa], [Ruscus hypoglossum], [Daphne pontica], [Vaccinium arctostaphylos], [Crataegus pentagyna], [Aristolochia pontica], forming a massive belt at altitudes extending from sea level to 1100-1200 metres, under precipitations of 1000-2000 mm and on siliceous substrates.
Western Pontic calciphile beech forests	Rare forests limited to calcareous outcrops of the western Pontic Range dominated by [Fagus orientalis] accompanied by [Stephylea pinnata], [Buxus sempervirens], [Taxus baccata], [Euonymus latifolius ssp. caucanus].
Western Pontic neutrocline fir-beech forests	Forests of the western Pontic Range dominated by [Fagus orientalis] accompanied by [Abies bornmuelleriana] occupying sites at altitudes above the rhododendron-beech forests of unit 41.1E14, accompanied by a similar floral cortège.
Western Pontic calciphile fir-beech forests	Forests of the western Pontic Range dominated by [Fagus orientalis] with [Abies bornmuelleriana] limited to calcareous outcrops within the fir-beech belt formed by the forests of unit 41.1E15, and at altitudes above the rhododendron-beech forests of unit 41.1E14, with a species-rich cortège characterized by the presence of [Telekia speciosa], [Aristolochia bodamae], [Arum ponticum], [Hieracleum platytaenium], [Campanula lactiflora].
Western sub-Pontic beech-oak forests	Forests of the western Pontic Range composed of [Fagus orientalis], often with [Quercus dshorochensis], [Quercus syspirensis], [Quercus anatolica] or [Quercus iberica], [Carpinus betulus] and a presence of [Abies bornmuelleriana].
Dobrogea beech forest	Relict beech forests of the Macin Mountains, of extremely insular distribution, isolated within the steppe climate of the Romanian Dobrogea, far from the main beech regions of the Carpathians, with [Fagus sylvatica], [Fagus taurica] ([Fagus taurica var. dobrogica]), [Tilia tomentosa], [Tilia cordata], [Fraxinus ornus], [Fraxinus angustifolia], [Fraxinus pallisiae], [Carpinus betulus], [Populus tremula], [Ulmus glabra], [Fagetalia] species and southern European species, including [Potentilla micrantha], [Scutellaria altissima], in the herb layer.

Crimean beech forests	Beech forests of the northern slopes of the southernmost mountain range of the Crimean Peninsula at altitudes between 600 m and 1100 m, on Jurassic substrates, under a climate regime of cool temperatures and moderate precipitation; the beeches are in almost pure stands or occasionally mixed with [Carpinus betulus], [Fraxinus excelsior], [Tilia cordata], [Ulmus glabra], with a poorly developed understorey that may include [Euonymus latifolius], [Taxus baccata].
Caucasian beech forests	Beech, beech-hornbeam and beech-fir forests of the Caucasus.
Caspian beech forests	Forests of [Fagus orientalis] on north slopes of the Elburz Mountains, at the 1400-1800 metre level, under the climatic influence of the Caspian Sea, with cool temperatures and moderate annual precipitation, typically with abundant snowfall; the beech is either accompanied by [Acer insigne], [Alnus subcordata], [Carpinus betulus], [Quercus castaneifolia], [Sorbus torminalis], [Taxus baccata], [Ulmus glabra], or growing in pure formations, the presence of other tree species diminishing towards the upper altitudinal levels; a luxurient understorey includes [Ilex hyrcanica], [Daphne pontica], [Vaccinium arctostaphylos].
Eastern oro-Mediterranean beech forests	Isolated beech forests of the Taurus system in western and southern Anatolia (Muraldag, Garur Daglari).
Thermophilous deciduous woodland	Forests or woods of submediterranean climate regions and supramediterranean altitudinal levels, and of western Eurasian steppe and substeppe zones, dominated by deciduous or semideciduous thermophilous [Quercus] species or by other southern trees such as [Carpinus orientalis], [Castanea sativa] or [Ostrya carpinifolia]. Thermophilous deciduous trees may, under local microclimatic or edaphic conditions, replace the evergreen oak forests in mesomediterranean or thermomediterranean areas, and occur locally to the north in central and western Europe.
Western white oak woods and related communities	[Quercus pubescens] forests and woods of the supra-Mediterranean zone of France, west of the Alpine arc, and of northeastern Spain, with irradiations to southern Germany and Belgium. Low medio-European forests of [Quercus petraea] or [Quercus robur] occupying warm exposures beyond the range of [Quercus pubescens] and linked to the [Quercion pubescenti-petraeae] by the presence of [Buxus sempervirens] or other thermophile calcicolous plants, including [Limodorum abortivum], [Melittis melissophyllum]. In the Carpathians they are represented by the alliance [Genisto germanicae-Quercion] with species [Avenella flexuosa], [Calluna vulgaris], [Festuca ovina], [Genista] spp., [Luzula luzuloides].
Western [Quercus pubescens] woods	[Quercus pubescens ssp. pubescens] forests and woods of sub- and supra-Mediterranean regions of France, and of thermal stations in more northerly locations of Western Europe.
Southwestern [Quercus pubescens] woods	[Quercus pubescens ssp. pubescens] forests and woods of sub- and supra-Mediterranean regions of France.
Northern [Quercus pubescens] woods	[Quercus pubescens ssp. pubescens] forests and woods of thermal stations in the nemoral zone of France, Belgium, Luxembourg and western Germany.

Sub-Mediterranean [Quercus petraea-Q. robur] woods	Continental thermophilous [Quercus petraea] or [Quercus robur] woods of Lorraine, the Ardenne periphery, southern Germany, Poland, the Czech Republic outside of the area of dominance of pure [Quercus pubescens] but accompanied by the thermophile, calcicolous, sub-Mediterranean cortège of the [Quercion pubescenti-petraeae], and sometimes including [Quercus pubescens] or hybrids of [Quercus pubescens] with either [Quercus petraea] or [Quercus robur].
[Quercus palensis] woods	[Quercus pubescens ssp. palensis] forests and woods of the Pyrenees and northeastern Spain.
Eu-Mediterranean white oak woods	[Quercus pubescens] forests occupying fresh stations within the mesomediterranean zone, usually on ubacs and relatively deep soils, accompanied by [Quercus ilex] and an associated vegetation characteristic of the [Quercion ilicis].
Cyrno-Sardinian white oak woods	Woods of Sardinia and Corsica dominated by [Quercus pubescens], sometimes accompanied by [Quercus virgiliana], [Quercus congesta].
Eastern white oak woods	Often varied forests of the supra-Mediterranean (mostly lower supra-Mediterranean), and occasionally meso- or thermo-Mediterranean, levels of Greece, Italy, Dalmatia, the Black Sea coasts and western Asia, in which [Quercus pubescens] or its allies are the dominant deciduous oaks, usually associated with [Ostrya carpinifolia], [Carpinus orientalis], [Carpinus betulus], [Fraxinus ornus] and other species; white oak ([Quercus pubescens], [Quercus virgiliana])-dominated woods, with an [Ostryo-Carpinion] or [Orno-Cotinion] cortège, of thermic sub-Mediterranean enclaves within the sub-continental [Quercion frainetto] and [Carpinion illyricum] zones of the Balkan peninsula, Pannonia and the southern Carpathians.
Northern Italic [Quercus pubescens] woods	Forests of [Quercus pubescens ssp. pubescens], [Fraxinus ornus], [Ostrya carpinifolia], [Carpinus betulus], and, locally, [Carpinus orientalis], occupying the lower supra-Mediterranean (100-500 metres) level of the central and northern Apennines, the Ligurian ranges and the Alpine foothills of Italy, with local impoverished irradiations to the upper supra-Mediterranean level on calcareous soils.
Italo-Sicilian [Quercus pubescens] woods	Forests of [Quercus pubescens ssp. pubescens], [Ostrya carpinifolia], [Carpinus orientalis] of the supra-Mediterranean level of the southern Italian peninsula and of Sicily.
Hellenic [Quercus pubescens] woods	Forests of [Quercus pubescens ssp. pubescens], [Carpinus orientalis], [Carpinus betulus], [Ostrya carpinifolia] of the lower supra-Mediterranean level of Thessaly, Macedonia, Thrace, and locally, on calcareous soils, of western Greece and southern Albania, with northward penetration into the southern F.Y.R. of Macedonia along the Vardar valley.
Aegean [Quercus anatolica] woods	Usually open woods formed by [Quercus pubescens ssp. anatolica], often associated with [Quercus macrolepis], of Lesbos and Samothrace.
Aegean [Quercus brachyphylla] woods	Stands of [Quercus brachyphylla], often associated with [Quercus macrolepis] or [Quercus ilex], of the Peloponnese and Crete.

Dalmatian white oak woods	[Quercus pubescens]- or [Quercus virgiliana]-dominated woods of the eastern Adriatic seaboard, from central Albania, through Dalmatia, north to the Istrian peninsula, Slovenia and the Triestine Karst with [Quercus cerris], [Ostrya carpinifolia], [Carpinus orientalis], [Carpinus betulus], [Fraxinus ornus], [Sorbus torminalis], [Acer monspessulanum], [Cotinus coggygria].
Eastern sub-Mediterranean white oak woods	Azonal white-oak dominated woods with a sub-Mediterranean accompanying flora, occupying thermic oases within the sub-continental [Quercion frainetto] and [Carpinion illyricum] zones.
Thracian white oak-oriental hornbeam woods	[Quercus pubescens]-[Quercus virgiliana] woods of the Black Sea plains and hills of Turkey in Europe, and of the northern Thracian plain of southern and southeastern Bulgaria, where they are represented by mostly insular patches, particularly in the middle Maritsa and Tundja hills, the eastern and northern Rhodope foothills. The oaks are accompanied by [Carpinus orientalis], [Fraxinus ornus], [Acer campestre] or [Tilia tomentosa] and by Mediterranean floral elements.
Moesian white oak woods	Thermophilous, sub-Mediterranean [Quercus pubescens] and [Quercus virgiliana] woods of the southern Dinarides, the Balkan Range, and neighbouring regions.
Moesian white oak-oriental hornbeam woods	Thermophilous sub-Mediterranean oak woods of Serbia and Bulgaria, with [Quercus pubescens], [Quercus cerris], [Carpinus orientalis], [Fraxinus ornus], [Acer monspessulanum], [Acer hyrcanum], [Coronilla emerus], [Syringa vulgaris], [Cornus mas], [Euonymus verrucosus], [Arabis hirsuta], [Oryzopsis virescens], [Helleborus odorus].
Lydian greenweed-white oak woods	[Quercus pubescens] oak woods of dolomites of the Golo Bardo range of western Bulgaria.
Moesian [Paeonia peregrina]-white oak woods	Meso-xerophile, neutrophile [Quercus pubescens] woods of the limestone plateaux of the Romanian Dobrogea, of the Bulgarian Dobrudja and associated plateaux, of the Sredna Gora of central Bulgaria, accompanied by [Fraxinus ornus], [Carpinus orientalis], with [Cornus mas] in the shrub layer, and an herb layer rich in [Paeonia peregrina], [Ornithogalum fimbriatum], [Mercurialis ovata], [Myrrhoides nodosa], [Buglossoides purpurocaerulea] ([Lithospermum purpurocaeruleum]).
Moesian [Galium dasypodium]-white oak woods	Xerophile, neutrophile [Quercus pubescens] woods on rendzine soils of the limestone plateaux of the Dobrogea, with [Cotinus coggygria], [Prunus moldavica] in the shrub layer and [Galium dasypodum], [Asparagus verticillatus], [Buglossoides purpurocaerulea] ([Lithospermum purpurocaeruleum]), [Carex michelii], [Zerna inermis] in the herb layer.
Acanthus white oak woods	[Quercus pubescens] woods of steep sunny slopes of the Danubian Iron Gate region, with [Syringa vulgaris], [Echinops bannaticus], [Scutellaria pichleri], [Symphytum ottomanum], [Jansion heldreichii].
Moesian [Echinops]-white oak woods	Xerophile, neutrophile [Quercus pubescens] woods on sunny slopes of the Danube Iron Gates region, with [Fraxinus ornus], [Carpinus orientalis], [Acer campestre], [Quercus petraea], [Quercus frainetto] in the tree layer, [Cornus mas] in the shrub layer and [Echinops bannaticus], [Lychnis coronaria], [Lathyrus venetus], [Buglossoides purpurocaerulea] ([Lithospermum purpurocaeruleum]), [Chrysanthemum corymbosum] in the herb layer.

Intra-Carpathian insular [Quercus virgiliana] woods	Xerophile, neutrophilous [Quercus pubescens] and [Quercus virgiliana] woods distributed in insular patches on steep south-facing slopes of intra-Carpathian hills of Romania, in particular, of the foothills bordering the lower Danubian basin of Romania, with [Cotinus coggygria], [Amygdalus nana], [Cornus mas] in the shrub layer and [Astragalus monspessulanus], [Carex humilis], [Dictamnus albus], [Geranium sanguineum], [Astragalus austriacus] in the herb layer.
Pannonian white oak woods	Thermophilous, sub-Mediterranean woods of the periphery and hills of the Pannonic plain.
Pannonian white oak-manna tree woods	Thermophilous oak woods mainly on southern slopes and on calcareous soils of Hungary, southern Moravia, northeastern Austria and southern Slovakia, dominated by [Quercus pubescens], [Quercus cerris] and [Quercus petraea], accompanied by [Fraxinus ornus], [Sorbus torminalis], [Sorbus domestica], with a well-developed species-rich undergrowth composed mainly of sub-Mediterranean elements, including [Viburnum lantana], [Colutea arborescens], [Cornus mas], [Vicia sparsiflora], [Oryzopsis virescens], [Dictamnus albus], [Carex hallerana], [Mercurialis ovata], [Limodorum abortivum].
Pannonian karst white oak low woods	Low woods of [Fraxinus ornus] and [Quercus pubescens] on steep southern slopes of calcareous hills of Hungary, southern Moravia, northeastern Austria and southern Slovakia, with a well-developed shrub layer comprising [Cotinus coggygria], [Coronilla emerus ssp. emeroides], [Euonymus verrucosus] and an understorey including [Geranium sanguineum], [Iris graminea], [Euphorbia polychroma], [Polygonatum odoratum], [Carex humilis], [Brachypodium pinnatum], [Tamus communis], [Anthericum ramosum].
Illyrian white oak woods	Thermophilous, sub-Mediterranean [Quercus pubescens] woods of the [Carpinion illyricum] zone of the Drava and Sava basin, with a cortège of the [Ostryo-Carpinion].
Illyrian hop-hornbeam white oak woods	Mostly low woods of sunny, shallow-soil limestone and dolomite slopes of the [Carpinion illyricum] zone of northern Slovenia, Croatia and Bosnia, dominated by [Quercus pubescens] with [Quercus cerris], [Quercus petraea], [Ostrya carpinifolia].
Illyrian oriental hornbeam white oak woods	[Quercus pubescens]-dominated facies of mixed woods of oriental hornbeam, hop-hornbeam, ashes and oaks of the [Carpinetum orientalis illyricum] of the Drava and Sava basin.
Euxinian white oak woods	Forests of [Quercus pubescens ssp. anatolica] of the southern Crimean coast, of the western Caucasus and tthe Noworossijsk Black Sea coast and the western Great Caucasus Range.
Italo-Illyrian hop-hornbeam sub-thermophilous oak woods	Often varied forests of the supra-Mediterranean and occasionally meso- or thermo-Mediterranean, levels of northern Italy, the Drava and Sava basin and the western Balkan peninsula, dominated by oaks other than [Quercus pubescens], [Quercus macrolepis], [Quercus trojana] or their allies, and, in particular, by [Quercus cerris], [Quercus petraea] and their allies, usually associated with [Ostrya carpinifolia], [Carpinus orientalis], [Carpinus betulus], [Fraxinus ornus] and other species.
Northern Italian [Quercus cerris] woods	Supra-Mediterranean, occasionally mesomediterranean, forests of the northern Italian peninsula, dominated by [Quercus cerris], with [Quercus petraea], [Ostrya carpinifolia], [Carpinus betulus], [Fraxinus ornus].

Dalmatian thermophile turkey oak-sessile oak woods	Thermophile oak woods of the [Ostryo-Carpinion] zone of the eastern Adriatic seaboard, from central Albania, through Dalmatia, north to the Istrian peninsula, dominated by [Quercus cerris] or [Quercus petraea].
Dalmatian [Quercus cerris] woods	[Quercus cerris]-dominated woods of the eastern Adriatic seaboard, with [Quercus pubescens], [Ostrya carpinifolia], [Carpinus orientalis], [Carpinus betulus], [Fraxinus ornus], [Sorbus torminalis], [Acer monspessulanum], [Cotinus coggygria] and a cortège similar to that of the white oak woods of unit 41.736.
Dalmatian [Quercus petraea] woods	[Quercus petraea]-dominated woods of the eastern Adriatic seaboard, with [Ostrya carpinifolia], [Quercus pubescens], [Carpinus orientalis], [Carpinus betulus], [Fraxinus ornus], [Sorbus torminalis], [Sorbus aria], [Tilia platiphyllos], [Acer monspessulanum], [Cotinus coggygria], represented, in particular, by rare and localized [Quercus petraea] forests of the Triestine Karst, Slovenia and Istria.
Illyrian thermophile turkey oak-sessile oak woods	Thermophilous, sub-Mediterranean [Quercus cerris] and [Quercus petraea] woods of the [Carpinion illyricum] zone of the Drava and Sava basin, with a cortège of the [Ostryo-Carpinion].
Illyrian hop-hornbeam mixed oak woods	[Quercus cerris]- or [Quercus petraea]-dominated facies of the [Querco-Ostryetum carpinifoliae] hop-hornbeam oak woods of unit 41.73751.
Illyrian black pea sessile oak woods	Thermophilous, sub-Mediterranean [Quercus petraea] woods of the [Carpinion illyricum] zone of the Drava and Sava basin, occupying sunny steep slopes, with [Quercus cerris], [Fraxinus ornus], [Sorbus aria] and a cortège of the [Ostryo-Carpinion] that includes [Lathyrus niger], [Melitis melissophyllum], [Serratula tinctoria], together with [Carex flacca], [Galium sylvaticum].
Southeastern sub-thermophilous oak woods	Forests of strongly sub-Mediterranean character, dominated by subthermophilous oak species, such as [Quercus cerris], [Quercus frainetto], sometimes [Quercus petraea], [Quercus pseudocerris], [Quercus boissieri], characteristic of the supra-Mediterranean level of the southern part of the eastern Mediterranean peninsulas and of southern Asia Minor.
Southern Italic subthermophilous oak woods	Forest formations of [Quercus cerris], [Quercus frainetto] or, locally, [Quercus petraea], of the Campanian, Lucanian and Calabrian Apennines and of Monte Gargano.
Southern Italic [Quercus cerris] woods	[Quercus cerris]-dominated forest formations of the supra-Mediterranean, montane and, locally, meso-Mediterranean levels of the Lucanian and Calabrian Apennines, with a distribution centreed on the Basilicata, and of Monte Gargano, on siliceous or calcareous substrates.
Southern Italic [Quercus frainetto] woods	[Quercus frainetto]-dominated or rich forest formations of the Campanian, Lucanian and Calabrian Apennines, extending north to Latium, Tuscany and Molise, mostly on siliceous or decarbonated substrates of the supra-Mediterranean level.
Southern Italic [Quercus petraea] woods	[Quercus petraea]-dominated forest formations of the Calabrian Apennines and Sicily.
Southern Hellenic subthermophilous oak woods	Forest formations dominated by [Quercus cerris], by [Quercus frainetto], or both, of the Peloponnese, Attica and Beotia.

Southern Hellenic [Quercus cerris] woods	Forest formations dominated by [Quercus cerris] of the Peloponnese, Attica and Beotia.
Southern Hellenic [Quercus frainetto] woods	Forest formations dominated by [Quercus frainetto], of the Peloponnese, Attica and Beotia.
Eastern Mediterranean subthermophilous oak woods	Oak woods of the supra-Mediterranean and mesic mesomediterranean zones of the Taurus, the Amanus, the Lebanon and Anti-Lebanon mountains, Palestine, Syria and southern Anatolia, dominated by [Quercus pseudocerris] or [Quercus boissieri].
Balkano-Anatolian thermophilous oak forests	Xerophile or xero-mesophile forests of [Quercus frainetto], [Quercus cerris], of [Quercus petraea] and related deciduous oaks, locally of [Quercus pedunculiflora] or [Quercus virgiliana], of the sub-continental central and eastern Balkan peninsula, of the supra-Mediterranean level of continental Greece, except the extreme south, and of supra-Mediterranean Anatolia. In most of their range they constitute the lowest altitudinal tier of forest vegetation; in Greece and adjacent areas, however, they occur above the forests of the [Ostryo-Carpinion]. In western Carpathians they have the northern boundary of occurrence and here are represented by the alliance [Quercion confertae cerris] with species [Lathyrus niger], [Melica picta], [Serratula tinctoria], [Veronica officinalis].
Helleno-Moesian [Quercus cerris] forests	Extensive [Quercus cerris]-dominated forests of the hills and low mountain slopes of the Pelagonids, the Pindus, the Moeso-Macedonian mountains, the Rhodopids, the Thessalian mountains, in particular of the supra-Mediterranean level of northern and middle Greece (Macedonia, Thrace, Epiros, Thessaly, Central Greece), of the xerothermal oak belt of southern and southwestern Bulgaria, of the F.Y.R. of Macedonia and of Albania.
Helleno-Moesian [Quercus frainetto] forests	Extensive [Quercus frainetto]-dominated forests of the hills and low mountain slopes of the Pelagonids, the Pindus, the Moeso-Macedonian mountains, the Rhodopids, the Thessalian mountains, in particular of the supra-Mediterranean level of northern and middle Greece (Macedonia, Thrace, Epiros, Thessaly, Central Greece), of the xerothermal oak belt of southern and southwestern Bulgaria, of the F.Y.R. of Macedonia and of Albania.
Helleno-Moesian [Quercus dalechampii] forests.	[Quercus dalechampii]-dominated forests of the hills and mountain slopes of the Pelagonids, the Pindus, the Moeso-Macedonian mountains, the Rhodopids. They include, in particular, the xero-mesophile [Quercus dalechampii]-dominated forests, sometimes mixed with [Quercus cerris], [Quercus frainetto] or [Fraxinus excelsior], with [Carpinus orientalis], [Ostrya carpinifolia] or [Fraxinus ornus] often present and sometimes abundant, widespread in the durmast oak-hornbeam, 600-1200 metre, belt of the Rhodopides and the Moeso-Macedonian mountains, drier than the [Carpinus betulus]-[Quercus dalechampii] forests of unit 41.2C35. [Ruscus aculeatus] is often present and sometimes subdominant in their undergrowth. They also include local formations of the upper supra-Mediterranean level of northern and middle Greece, mostly of the Pindus and of crystalline or metamorphic ranges of the southern Moeso-Macedonian mountains and Rhodopides, likewise altitudinally inserted between [Quercus frainetto] and beech forests.

Helleno-Moesian montane oak forests	Rare forests of the hills and low mountain slopes of the Pelagonids, the Pindus, the Moeso-Macedonian mountains, the Rhodopids, in particular of the supra-Mediterranean level of northern and middle Greece, of the hornbeam-durmast oak belt of southwestern Bulgaria, the F.Y.R. of Macedonia and Albania, dominated by rare, endemic oak species, in particular [Quercus protoroburoides], or by highly disjunct populations of more northern species, in particular [Quercus petraea].
Helleno-Moesian [Quercus petraea] forests	Rare [Quercus petraea]-dominated forests of the hills and low mountain slopes of the Pelagonids, the Pindus, the Moeso-Macedonian mountains, the Rhodopids, in particular of the supra-Mediterranean level of northern and middle Greece and of the hornbeam-durmast oak belt of southern and southwestern Bulgaria, the F.Y.R. of Macedonia and Albania.
Rila [Quercus protoroburoides] forests	Endemic [Quercus protoroburoides] forests of the upper montane level of Rila.
Helleno-Moesian [Quercus virgiliana] forests	Local [Quercus virgiliana]-dominated forests of the hills and low mountain slopes of the Pelagonids, the Pindus, the Moeso-Macedonian mountains, the Rhodopids, the Thessalian mountains, in particular of the supra-Mediterranean [Quercion frainetto] level of northern and middle Greece (Macedonia, Thrace, Epiros, Thessaly, Central Greece) and of the "[Querceta frainetti]" component of the xerothermal oak belt of southern and southwestern Bulgaria.
Helleno-Moesian [Quercus pedunculiflora] forests	Local [Quercus pedunculiflora]-dominated forests of the supra-Mediterranean level of northern and middle Greece.
Helleno-Moesian [Quercus polycarpa] forests	Local [Quercus polycarpa]-dominated forests of the supra-Mediterranean [Quercion frainetto] level of Greece.
Moesio-Danubian thermophilous oak forests	Xerophile or xero-mesophile forests of [Quercus frainetto], [Quercus cerris], [Quercus petraea] and related deciduous oaks, of the subcontinental central and eastern Balkan peninsula, mostly of the xerothermal oak and hornbeam-durmast oak belts of Serbia and northern and central Bulgaria, in particular on the slopes of the Balkan Range and its associated hills and plateaux; irradiations extend into southern Romania. The associated flora has a marked southeastern European character and includes [Carpinus orientalis], [Fraxinus ornus], [Piptatherum virescens], [Paeonia peregrina], [Mercurialis ovata].
Moesio-Danubian xerothermal oak forests	Oak forests of the lower level of the [Quercion frainetto] zone of the central and eastern Balkan peninsula, mostly dominated by [Quercus frainetto] and [Quercus cerris].

Moesio-Danubian [Quercus frainetto]-[Quercus cerris] forests	Meso-xerophile, neutrophile forests of [Quercus frainetto] and [Quercus cerris] of the sub-continental central and eastern Balkan peninsula, mostly of the xerothermal oak belt of Serbia and northern and central Bulgaria, in particular on the northern and southern slopes of the Balkan Range and their associated hills and plateaux, extending to low mountains of the Danube Iron Gates region of Romania, accompanied by [Fraxinus ornus], [Carpinus orientalis], [Acer campestre], [Cornus mas], [Lychnis coronaria], [Rubus tomentosus], [Lathyrus niger], [Lathyrus venetus], [Helleborus odorus].
Moesio-Danubian oriental hornbeam [Quercus cerris] forests	Meso-xerophile, neutrophile forests of [Quercus cerris], [Fraxinus ornus] and [Carpinus orientalis] of the subcontinental central and eastern Balkan peninsula, mostly of the xerothermal oak belt of Serbia and northern and central Bulgaria, in particular of the lower Danube basin and its fringing plateaux, extending north into Romania to low mountains of the Danube Iron Gates region and of the southwestern Dobrogea, with [Cornus mas], [Cotinus coggygria] and sub-Mediterranean species, including [Mercurialis ovata], [Buglossoides purpurocaerulea] ([Lithospermum purpurocaeruleum]), [Piptatherum virescens], [Vincetoxicum hirundinaria] ([Cynanchum vincetoxicum]).
Moesio-Danubian mixed oak [Quercus frainetto] forests	Meso-xerophile, neutrophile mixed oak forests of [Quercus frainetto], accompanied by some [Quercus dalechampii], [Quercus polycarpa], [Quercus pubescens], [Quercus virgiliana], [Fraxinus ornus], [Carpinus orientalis], [Tilia tomentosa] in the tree layer, [Cornus mas], [Cotinus coggygria] in the shrub layer and many sub-Mediterranean species, including [Paeonia peregrina], [Mercurialis ovata], [Piptatherum virescens], [Lychnis coronaria], in the herb layer, limited to small insular surfaces in the lower Danube valley of Bulgaria and in the Romanian Dobrogea.
Moesio-Danubian oriental hornbeam-durmast oak forests	Forests mostly dominated by [Quercus frainetto] and [Quercus petraea] s.l., of the upper level of the [Quercion frainetto] zone of the central and eastern Balkan peninsula.
Central Moesian [Quercus dalechampii]-oriental hornbeam forests	Xero-mesophile [Quercus dalechampii]-dominated forests, sometimes mixed with [Quercus cerris], [Quercus frainetto] or [Fraxinus excelsior], with [Carpinus orientalis], [Ostrya carpinifolia] or [Fraxinus ornus] often present and sometimes abundant, widespread in the durmast oak-hornbeam, 600-1200 metre, belt of the Balkan Range and neighbouring hills, drier than the [Carpinus betulus]-[Quercus dalechampii] forests of 41.2C35. [Ruscus aculeatus] is often present and sometimes subdominant in the undergrowth.
Moesio-Danubian bedstraw sessile oak forests	Acidophile [Quercus petraea] s.l. forests of the southern and southwestern pre-Carpathian foothills, with [Galium pseudaristatum], [Luzula luzuloides], [Veronica officinalis], [Poa nemoralis], [Festuca heterophylla] in the herb layer.
Dobrogean oriental hornbeam-lime-oak forests	Oak forests of the Romanian Dobrogea dominated by [Quercus dalechampii], [Quercus polycarpa] or [Quercus pedunculiflora], rich in [Carpinus orientalis], [Tilia tomentosa], [Fraxinus ornus], [Fraxinus excelsior], of mixed Moesian and Pontic affinities, developed in stations ecologically intermediate between those that support [Carpinion betuli] forests of 41.72 and those that harbour steppe forests of 41.7A.

Dobrogean paeonia sessile oak forests	Neutrophile [Quercus dalechampii] forests, limited to low hills of the Romanian Dobrogea, accompanied by [Fraxinus excelsior ssp. excelsior], [Fraxinus excelsior ssp. coriariifolia] ([Fraxinus coriariifolia]), [Fraxinus ornus], [Tilia tomentosa], [Carpinus orientalis] in the tree layer, with [Cornus mas] in the shrub layer, and [Paeonia peregrina] and other sub-Mediterranean species, including [Mercurialis ovata], [Piptatherum virescens], [Buglossoides purpurocaerulea] ([Lithospermum purpurocaeruleum]), in the herb layer.
Dobrogean sessile oak-lime-oriental hornbeam-ash forests	Xero-mesophile, neutrophile [Quercus dalechampii] and [Quercus polycarpa] forests of the northern Dobrogean plateaux, with [Tilia tomentosa], [Carpinus orientalis], [Carpinus betulus], [Fraxinus excelsior], [Fraxinus coriariifolia], [Fraxinus ornus], accompanied by numerous sub-Mediterranean species including [Nectaroscordum dioscoridis], [Lychnis coronaria], [Digitalis lanata], [Myrrhoides nodosa], [Mercurialis ovata], [Piptatherum virescens], and a few [Fagetalia] species, such as [Zerna benekenii], [Pulmonaria obscura], [Cardamine bulbifera].
Dobrogean [Quercus pedunculiflora]-lime-oriental hornbeam forests	Xero-mesophile, neutrophile mixed [Quercus pedunculiflora] forests of the northern Dobrogea plateaux, with [Tilia tomentosa], [Carpinus orientalis], [Carpinus betulus], [Fraxinus excelsior], [Fraxinus ornus] in the tree layer, numerous sub-Mediterranean species, including [Ornithogalum fimbriatum], [Viola jordanii], [Paeonia peregrina], [Myrrhoides nodosa], [Mercurialis ovata], [Piptatherum virescens], and a few [Fagetalia] species, [Zerna benekenii], [Pulmonaria obscura], in the herb layer.
Getic sub-continental thermophilous oak woods	Sub-continental thermo-xerophile [Quercus frainetto]-[Quercus cerris]-Quercus petraea] forests of the foothills bordering the lower Danube depression of southern Romania, with the continental [Acer tataricum] and lacking typically sub-Mediterranean species such as [Carpinus orientalis] and [Ruscus aculeatus].
Getic white cinquefoil [Quercus cerris] forests	Xero-mesophile, weakly acidophile forests of [Quercus cerris], of the plains of southern Romania, with [Acer campestre], [Acer tataricum], [Crataegus monogyna], [Ligustrum vulgare], [Cornus mas], [Potentilla alba], [Lychnis coronaria], [Viola hirta], [Polygonatum latifolium], [Chrysanthemum corymbosum].
Getic early sedge [Quercus frainetto] forests	Xero-mesophile, acidophile [Quercus frainetto] forests of Muntenia and Oltenia, with [Acer campestre], [Pyrus pyraster], [Ligustrum vulgare], [Crataegus monogyna], [Carex praecox], [Genista tinctoria], [Veronica officinalis], [Poa angustifolia], [Lychnis coronaria], [Calamagrostis epigejos].
Getic crocus [Quercus frainetto]-[Quercus cerris] forests	Xero-mesophile, weakly acidophile forests of [Quercus cerris] and [Quercus frainetto] of the plains in the southern of Romania, with [Acer campestre] and [Acer tataricum], accompanied by [Ligustrum vulgare], [Crataegus monogyna], [Crocus flavus], [Lychnis coronaria], [Genista tinctoria], [Lathyrus niger], [Chrysanthemum corymbosum], [Polygonatum latifolium].

Getic [Q. frainetto]-[Q. cerris]-[Q. petraea] forests	Weakly acidophile forests of [Quercus cerris], [Quercus frainetto] and [Quercus petraea] s.l. of the southern and western pre-Carpathian foothills, accompanied by [Acer campestre], [Acer tataricum], [Fraxinus ornus], [Cornus mas], [Crataegus monogyna], [Ligustrum vulgare], [Lathyrus niger], [Lychnis coronaria], [Helleborus odorus], [Buglossoides purpurocaerulea] ([Lithospermum purpurocaeruleum]), [Sedum maximum], [Sedum cepaea], [Vincetoxicum hirundinaria] ([Cynanchum vincetoxicum]).
Getic [Quercus frainetto]-[Quercus petraea] [s.l.] forests	Weakly acidophile forests of [Quercus frainetto] and [Quercus petraea] s.l. of the southern pre-Carpathian foothills, with a shrub layer composed of [Acer campestre], [Acer tataricum], [Ulmus minor], [Cornus mas], and an herb layer of [Carex praecox], [Carex caryophyllea], [Genista tinctoria], [Potentilla micrantha], [Lychnis coronaria], [Galium pseudaristatum].
Pre-Carpathian [Quercus cerris]-[Quercus petraea] [s.l.] forests	Weakly acidophile to neutrophile forests of [Quercus petraea] s.l. and [Quercus cerris] of the southern pre-Carpathian foothills, with [Acer campestre], [Acer tataricum], [Sorbus torminalis], sometimes [Tilia tomentosa], [Cerasus avium], [Fagus sylvatica], [Fraxinus ornus], participating in the tree layer, accompanied by [Crataegus monogyna], [Ligustrum vulgare] in the shrub layer and [Genista tinctoria], [Lathyrus niger], [Silene viridiflora], [Buglossoides purpurocaerulea] ([Lithospermum purpurocaeruleum]), [Chrysanthemum corymbosum] in the herb layer.
Thracian sub-continental thermophilous oak woods	Subcontinental thermo-xerophile oak forests of southeastern Bulgaria and European Turkey, developed in the Euxinian Stranja-Istranca and eastern Balkan Range and in the peri-Mediterraneo-steppic hills rising from the northern Thracian plain or fringing it.
Euxino-Thracian [Quercus frainetto]-[Quercus cerris] forests	[Quercus frainetto]-[Quercus cerris] forests of the northern Thracian plain and its fringing Balkan Range, eastern Rhodope or Stranja foothills.
Thracian [Quercus frainetto]-[Quercus cerris] forests	Mostly fragmentary forests of the northern Thracian plain, its isolated hills and the fringing foothills of the Balkan Range, the eastern Rhodopes and the northwestern Stranja dominated by [Quercus frainetto] or sometimes [Quercus cerris], accompanied by [Carpinus orientalis], [Crataegus monogyna] and a thermophile, sub-Mediterranean cortège that includes [Physospermum cornubiense], [Lathyrus niger], [Lychnis coronaria], [Heptaptera triquetra].
Sub-Euxinian [Quercus frainetto]-[Quercus cerris] forests	Forests of the inner hills and eastern foothills of the Stranja dominated by [Quercus cerris] or [Quercus frainetto], sometimes with [Quercus hartwissiana], accompanied by [Carpinus orientalis], [Acer campestre], [Acer tataricum], [Crataegus monogyna], [Cornus mas], [Poa nemoralis], [Dactylis glomerata].
Thracian [Quercus frainetto]-[Quercus virgiliana] forests	Forests of [Quercus frainetto] and [Quercus virgiliana] of the northern thracian basin, located mainly on relatively dry hills up to 800 metres, and usually accompanied by a species cortège similar to those of 41.76A1, including [Carpinus orientalis], [Acer campestre], [Acer tataricum], [Crataegus monogyna], [Cornus mas], [Poa nemoralis], [Dactylis glomerata].

Thracian [Quercus pedunculiflora] forests	Mesophile [Quercus pedunculiflora] forests of the northern Thracian plain developed on moist nutrient-rich soils, with [Acer tataricum], [Ligustrum vulgare], [Crataegus monogyna], [Cotinus coggygria], [Brachypodium sylvaticum], [Physospermum cornubiense], [Lathyrus niger], [Lychnis coronaria]. They have been submitted to intensive clearing and are now represented only by very fragmentary stands or single trees in a very resricted area.
Stranja [Quercus polycarpa] forests	[Quercus polycarpa] forests of the Stranja-Istranca Range and of high mountains of the eastern Balkan Range.
Stranja [Primula rosea]-[Quercus polycarpa] forests	[Quercus polycarpa]- or [Quercus polycarpa] and [Quercus frainetto]-dominated forests of the Stranja-Istranca Range, accompanied by a cortège comprised of numerous Euxinian elements, rich in [Primula vulgaris ssp. rosea].
Stranja [Fagus orientalis]-[Quercus polycarpa] forests	[Quercus polycarpa]-[Fagus orientalis] forests of the Stranja-Istranca Range, accompanied by a species-rich cortège of the [Querceta polycarpae] that includes numerous Euxinian elements.
Southeastern Thracian thermophilous oak forests	Subcontinental xero-thermophile forests of the Istranca southern spurs, rich in Euxinian and Mediterranean elements, dominated by [Quercus petraea ssp. dschorochense] and [Quercus cerris].
Western Anatolian sub-continental thermophilous oak woods	Sub-continental, supra-Mediterranean, thermo-xerophile oak forests of western Anatolia with [Quercus frainetto], [Quercus cerris], [Quercus pubescens ssp. anatolica], [Quercus dshorochensis], [Castanea sativa], [Tilia tomentosa], [Mespilus germanica], [Geranium asphodeloides], [Aristolochia pallida], [Achillea grandiflora].
Afro-Iberian thermophilous oak forests	Iberian and North African forests and woods dominated by [Quercus faginea], [Quercus canariensis] or [Quercus afares]. The humid formations of southwestern Iberia (units G1.772 and G1.773) are forest types of unique character in Europe and of extreme biological importance; also highly distinctive and vulnerable are the Baetic and Valencian formations listed under subunits G1.7714 and G1.7715.
Spanish [Quercus faginea] forests	Xero-mesophile [Quercus faginea] formations of slopes and plateaux of middle elevations of the Spanish Meseta and associated ranges.
Western Spanish [Quercus faginea] forests	[Quercus faginea] forests of the supra-Mediterranean, sub-humid level of the Cantabrian periphery and upper Ebro basin.
Central Spanish [Quercus faginea] forests	[Quercus faginea] forests of the meso-supra-Mediterranean levels of the Iberian Range, upper Douro basin and neighbouring regions.
Eastern Spanish [Quercus faginea] forests	[Quercus faginea] forests of the meso-supra-Mediterranean levels of the Maestrazgo, interior Catalonia and adjacent Aragon.
Baetic [Quercus faginea] forests	Southern forests of the sub-humid to humid supra-Mediterranean level of calcareous Baetic ranges, limited to a few enclaves in the Serrania de Ronda and the ranges of the upper Guadalquivir basin, dominated by [Quercus faginea] associated with [Acer granatense], [Acer monspessulanum], [Sorbus aria], [Sorbus torminalis], [Taxus baccata] and sometimes [Quercus pyrenaica].
Valencian [Quercus faginea] forests	[Quercus faginea] forests of ubacs of the southern Valencian mountains (Aitana, Montcabrer, Benicadell), with [Acer granatense], [Fraxinus ornus] and [Taxus baccata].

Portuguese [Quercus faginea] forests	Humid, epiphyte-clad, dense, relict [Quercus faginea] forests of Portugal, restricted to a very few isolated localities.
Andalusian [Quercus canariensis] forests	Humid and hyper-humid, luxuriant [Quercus canariensis] forests of the sierras of extreme southern Spain, limited to the Aljibe and a very few localities in the Serrania de Ronda.
Catalonian [Quercus canariensis] stands	Formations of Catalonia rich in [Quercus canariensis].
Balearic [Quercus faginea] woods	Relict formations of Mallorca dominated by, or rich in, [Quercus faginea].
Trojan oak woodland	Supra-Mediterranean, and occasionally meso-mediterranean woods dominated by the semideciduous [Quercus trojana] or its allies. Other typical species include [Quercus pubescens], [Carpinus orientalis], [Juniperus oxycedrus], [Cistus creticus], [Fraxinus ornus], [Dactylis glomerata], [Brachypodium pinnatum], [Helictotrichum convolutum] and [Ostrya carpinifolia].
Helleno-Balkanic Trojan oak woods	Usually low formations dominated by [Quercus trojana], often with junipers or maples, of Macedonia, Thrace and Thessaly, north to Herzegovina, Montenegro, Albania and the the F.Y.R. of Macedonia, in the Vardar valley.
Apulian Trojan oak woods	Relict woods, sometimes of considerable height, of [Quercus trojana] and [Quercus pubescens], often with an admixture of [Quercus ilex] and its associated vegetation (Murge: e.g. bosco delle Pianelle, foresta Gaglione).
Mediterranean valonia oak ([Quercus macrolepis]) woodland	Woods dominated by the semideciduous [Quercus macrolepis], often fairly open, of the mostly meso-Mediterranean zone of Greece, Albania, western Asia, and, very locally, southern Italy.
Hellenic valonia oak woods	[Quercus macrolepis] formations of continental Greece and its archipelagoes, as well as of ajacent Albania; well developed forests exist, in particular, in the Ionian islands and on Lesbos; more modified, grove-like, stands, exist on the maritime slopes of the low mountains bordering the gulf of Arta and in western Etolia, in the northwestern Peloponnese, in Thessaly, in Attica, in Thrace, in Crete.
Apulian valonia oak woods	Relict [Quercus macrolepis] formations of Salento (Tricase).
Steppe oak woods	Xero-thermophile oak woods of continental affinities of the wooded steppe zone of Pannonia and the Ponto-Sarmatic region, and their irradiations into regions or sites of high local continentality west and north of the Ponto-Pannonic region. The substrate consists of 'Loess' (Chernozem soils). Different [Quercus] spp. dominate in the tree layer, which is rich in continental steppic vegetation elements and geophytes of the [Aceri tatarici-Quercion] and [Potentillo albae-Quercion], e.g. [Carex michelii], [Dactylis polygama], [Geum urbanum], [Lathryrus niger], [Polygonatum latifolium], [Pulmonaria mollis ssp. mollis], [Tanacetum corymbosum], [Vincetoxicum hirundinaria], [Convallaria majalis], [Dictamnus albus], [Festuca rupicola] and [Potentilla alba].
Euro-Siberian steppe oak woods	Xero-thermophile oak woods of continental affinities of the wooded steppe zone of Pannonia and the Ponto-Sarmatic region, and their irradiations into regions or sites of high local continentality west and north of the Ponto-Pannonic region.

White cinquefoil oak woods	Xero-thermophile oak woods of central Europe, Pannonia and the northern approaches to the Ponto-Sarmatic wooded steppe zone with a flora of moderate thermophily and high continental affinities, mostly characteristic of sandy soil along the edges of the eastern steppeland and of clay soils in northern and western woodland areas.
Western white cinquefoil sessile oak woods	Cinquefoil oak woods of the Rhine, Elbe, Oder, Vistula and upper Danube basins, including the northern and central Bohemian Basin and the southern flank of the Bohemian Massif and the Carpathians in Moravia, forming the northern and westernmost irradiations of the complex, with [Quercus petraea], [Quercus robur], [Pinus sylvestris], [Sorbus torminalis], [Ligustrum vulgare], [Lonicera xylosteum], [Viburnum lantana], [Corylus avellana], [Rhamnus catharticus], [Prunus spinosa], [Juniperus communis], [Carpinus betulus], [Pyrus communis], [Primula veris], [Campanula persicifolia], [Polygonatum odoratum], [Lathyrus niger], [Geranium sanguineum], [Potentilla alba], [Pulmonaria angustifolia], [Ranunculus polyanthemos], [Serratula tinctoria], [Silene nutans], [Veronica officinalis], [Veronica chamaedrys], [Hieracium silvaticum], [Carex montana], [Brachypodium pinnatum], [Anthoxanthum odoratum], [Calamagrostis arundinacea].
Pannonic turkey oak-sessile oak woods	Well-developed woods of the Pannonic basin, in Hungary, southern Slovakia, western Romania and Serbia, installed on deep brown forest soil, between 200 m and 500 m altitude, dominated by [Quercus petraea], [Quercus dalechampii], [Quercus polycarpa] and [Quercus cerris], with an underdeveloped shrub layer and a grassy understorey composed most frequently of [Festuca heterophylla], [Poa nemoralis], [Melica uniflora], accompanied by [Lychnis coronaria], [Potentilla alba], [Vicia cassubica], [Serratula tinctoria], [Chrysanthemum corymbosum], [Digitalis grandiflora].
Pannonic hairy greenweed sessile oak woods	Uncommon thermophilous [Quercus petraea] woods of the Pannonic basin, developed in Hungary, in particular in the Central Hungarian Range, extending to Lower Austria, southwestern Moravia, southern Slovakia and western Romania, on andesite, granite or slate substrates and slightly acidic soils of south-facing slopes, somewhat transitional to acidophilous oak woods of unit 41.57. [Quercus petraea] is monodominant in the tree layer or associated with [Quercus polycarpa]; the understorey, almost devoid of a shrub layer, is composed of an admixture of oak forest species and siliceous rock sward elements; [Lembotropis nigricans] ([Cytisus nigricans]), [Veronica officinalis], [Hieracium bauhinii], [Hieracium silvaticum], [Calamagrostis arundinacea], [Anthericum ramosum], [Sedum sexangulare] are frequent.
Sarmatic cinquefoil oak woods	Xero-thermophile oak woods dominated by [Quercus petraea] or [Quercus robur], of the central Sarmatic regions in Podolia, the central Russian plateaux, Bashkiria and the southern Urals, north of, and along the northern edge of, the Sarmatic wooded steppe zone.
Getic thermophilous sessile oak forests	Thermophile [Quercus petraea] forests of hills and low mountains of central and southern Romania accompanied by a mixed sub-Mediterranean flora including [Aremonia agrimonoides], [Festuca drymeja], [Vincetoxicum hirundinaria] ([Cynanchum vincetoxicum]), [Ruscus aculeatus], [Carex sylvatica], [Dentaria bulbifera], [Viola reichenbachiana].

Getic-pre-Carpathic [Festuca drymeia] oak forests	Acidophile [Quercus petraea] forests with an herb layer dominated by [Festuca drymeja], of hills and low mountains of central and southern Romania.
Getic-pre-Carpathic [Aremonia] oak forests	Weakly acidophile [Quercus petraea] forests of the southwestern hills and low mountains of Romania, with [Acer campestre], [Sorbus torminalis] in the tree layer, [Crataegus monogyna], [Ligustrum vulgare] in the shrub layer and [Aremonia agrimonoides], [Helleborus odorus], [Ruscus aculeatus], [Sedum cepaea], [Buglossoides purpurocaerulea] ([Lithospermum purpurocaeruleum]), [Vincetoxicum hirundinaria] ([Cynanchum vincetoxicum]), [Silene viridiflora], [Lychnis coronaria], [Carex sylvatica], [Dentaria bulbifera] in the herb layer.
Moravian serpentine oak woods	Xero-thermophile oak woods of serpentines of the middle Jihlava Valley of southwestern Moravia, dominated by [Quercus petraea] and [Pinus sylvestris] with well developed shrub and field layers; the former comprises, in particular, [Prunus mahaleb] and [Berberis vulgaris], the latter species of thermophilous oak forests and forest edges, species of dry grasslands, in particular, [Carex humilis], [Festuca pallens] and [Koeleria macrantha], serpentinophilous ferns, notably [Asplenium cuneifolium].
Tartar maple steppe oak woods	Xero-thermophile oak woods constituting the climax woodland element of the Pannonian and Ponto-Sarmatic wooded steppe biome, with a flora richer in southern, Euxinian and Sarmatic elements than that of the cinquefoil oak woods.
Pannonic steppe oak woods	Oak woods of the geographically isolated Pannonic basin wooded steppe zone, separated from the main Ukraino-Russian belt by the Carpathian arc.
Pannonic loess steppe oak woods	Oak woods on black or brown soils over loess substrates of the Pannonic basin and its hills, dominated by [Quercus cerris], [Quercus pubescens], [Quercus robur] or [Quercus petraea]; the upper part of the well-stratified shrub layer is composed mainly of [Acer tataricum] and [Acer campestre], the herb layer of [Festuca rupicola], [Brachypodium pinnatum], [Brachypodium sylvaticum], [Melica altissima], [Nepeta pannonica], [Phlomis tuberosa], [Pulmonaria mollissima], [Doronicum hungaricum], [Polygonatum odoratum], [Buglossoides purpurocaerulea] ([Lithospermum purpurocaeruleum]). Formerly extending in the entire Pannonic basin, from Hungary and southern Slovakia to the Srijem area of northeastern Croatia and northwestern Serbia and the Deliblat region of northeastern Serbia, these forests have been reduced to a few dozen remnant stands.

Pannonic alkali steppe oak woods	Rare oak woods of the Danube basin lowlands developed in the transition zone between inundation areas and loess plateaux, on soils with a higher water table in spring. [Acer tataricum], growing with great vitality, reaches the second tree layer. Characteristic understorey species are [Carex michelii], [Pulmonaria mollissima], [Doronicum hungaricum] accompanying [Alopecurus pratensis], [Melica altissima], [Festuca rupicola], [Brachypodium sylvaticum], [Geranium robertianum], [Polygonatum latifolium], [Corydalis bulbosa] ([Corydalis cava]), [Ranunculus ficaria], [Viscaria vulgaris]; tall herbs ([Peucedanum officinale], [Galatella punctata]) and other species ([Artemisia pontica], [Limonium gmelinii i.a].) penetrate the wood from the bordering grasslands on alkaline soil. Only a few stands of this community remain, in Hungary and Transsylvania.
Pannonic sand steppe oak woods	Oak woods of sandy substrates of the Pannonic plain.
Ponto-Sarmatic steppe oak woods	Xero-thermophilous oak woods of the southern wooded steppe zone, extending from northern Bulgaria and eastern Romania through the Ukraine and southern Russia to the Urals and the lower Volga.
Pontic [Acer tataricum]-[Q. pedunculiflora] steppe woods	Subcontinental, xerophile-thermophile wooded steppe oak woods on leached chernozem soils of low hills and plains of southern and southeastern Romania and northeastern Bulgaria, with [Quercus pedunculiflora], [Acer tataricum], [Pyrus pyraster] in the tree layer, [Crataegus monogyna], [Ligustrum vulgare] in the shrub layer and [Vincetoxicum hirundinaria] ([Cynanchum vincetoxicum]), [Pulmonaria mollis], [Thalictrum minus], [Fragaria viridis], [Teucrium chamaedrys], [Viola hirta], [Buglossoides purpurocaerulea] ([Lithospermum purpurocaeruleum]) in the herb layer.
Pontic [Acer tataricum]-[Quercus pubescens] steppe woods	Subcontinental, xerophile-thermophile wooded steppe oak woods, on leached chernozem soils, of low hills and plains of eastern and southern Romania, with [Quercus pubescens], [Acer tataricum], [Pyrus pyraster] in the tree layer, [Cotinus coggygria] in the shrub layer and [Buglossoides purpurocaerulea] ([Lithospermum purpurocaeruleum]), [Carex michelii], [Thalictrum minus], [Festuca rupicola], [Vicia tenuifolia] in the herb layer.
Pontic [Acer tataricum]-[Q. cerris]-[Q. pedunculiflora] steppe woods	Subcontinental, xerophile-thermophile woods of [Quercus pedunculiflora], [Quercus cerris], [Acer tataricum], [Pyrus pyraster] on leached chernozem soils of the plains of southern Romania, with [Prunus spinosa], [Ligustrum vulgare], [Crataegus monogyna] in the shrub layer and [Buglossoides purpurocaerulea] ([Lithospermum purpurocaeruleum]), [Vincetoxicum hirundinaria] ([Cynanchum vincetoxicum]), [Iris variegata], [Teucrium chamaedrys], [Fragaria viridis], [Polygonatum latifolium], [Lychnis coronaria] in the herb layer.
Sarmatic [Acer tataricum]-[Quercus robur] steppe woods	Continental xerophile woods of [Quercus robur] and [Acer tataricum] on leached chernozems of low hills of northeastern Romania, with [Acer campestre], [Pyrus pyraster], [Prunus avium] in the tree layer, [Prunus spinosa], [Euonymus europaeus], [Cornus sanguinea], [Prunus fruticosa], [Amygdalus nana] in the shrub layer and [Buglossoides purpurocaerulea] ([Lithospermum purpurocaeruleum]), [Viola hirta], [Vincetoxicum hirundinaria] ([Cynanchum vincetoxicum]), [Sedum maximum], [Fragaria viridis] in the herb layer.

Sarmatic [Acer tataricum]-[Q. robur]-[Q. petraea] steppe woods	Subcontinental forests of [Quercus robur], [Quercus petraea], [Acer tataricum] on grey soils of north-facing low hills of the wooded steppe region of northeastern Romania, with [Carpinus betulus], [Fraxinus excelsior], [Prunus avium], [Acer campestre], in the tree layer, [Cornus sanguinea], [Euonymus europaeus], [Rhamnus catharticus] in the shrub layer and [Carex pilosa], [Stellaria holostea], [Asarum europaeum], [Mercurialis perennis] in the herb layer.
Getic tartar maple steppe oak woods	Xero-thermophile oak woods of the pre-Carpathian hills fringing the lower Danube and Prut basins.
Sub-Euxinian steppe woods	Thermophilous oak woods of the wooded steppe zones of northern Crimea and the northern piedmont of the Caucasus, in the transition region from the Euro-Siberian steppes to the Euxinian montane vegetations.
Irano-Anatolian steppe oak woods	Xero-thermophile oak woods of the Mediterraneo-steppic transition zone of central and eastern Anatolia and Iran.
Pyrenean oak woodland	[Quercus pyrenaica]-dominated forests of the Iberian peninsula and, locally, southwestern France.
Central Iberian Pyrenean oak forests	Supra- and sometimes meso-Mediterranean [Quercus pyrenaica] forests of western Iberia, the Leonese interior, the Cordillera Central, the Iberian Range, the Montes de Toledo and the Sierra Morena.
Sub-Atlantic Iberian [Quercus pyrenaica] forests	[Quercus pyrenaica] forests of the Orensano-Sanabrian and Leonese mountains and of the western Cordillera Central.
Sub-Atlantic sub-humid [Quercus pyrenaica] forests	Supra- and meso-Mediterranean sub-humid [Quercus pyrenaica] forests of the Orensano-Sanabrian mountains and the Sierra de Gata complex.
Sub-Atlantic humid [Quercus pyrenaica] forests	Supra-Mediterranean humid to hyper-humid [Quercus pyrenaica] forests of the Orensano-Sanabrian and Leonese mountains, the Serra da Estrela and the Sierra de Gata complex.
Iberian sub-continental [Quercus pyrenaica] forests	[Quercus pyrenaica] forests of the central and eastern Cordillera Central and of the Northern and Eastern Iberian Ranges.
Sub-continental sub-humid [Quercus pyrenaica] forests	Supra-Mediterranean sub-humid [Quercus pyrenaica] forests of Bejar, Gredos, Guadarrama, Ayllon and of the Northern and Eastern Iberian Ranges.
Sub-continental humid [Quercus pyrenaica] forests	Supra-Mediterranean humid to hyper-humid [Quercus pyrenaica] forests of the Sierra de Ayllon, the northern Iberian Range and, very locally, the Castillian flank of the Cantabrian chain.
Mariano-Oretanian [Quercus pyrenaica] forests	[Quercus pyrenaica] forests of the southern Hercynian ranges, limited to enclaves of the Montes de Toledo system and Sierra Morena satellites.
Lower Mariano-Oretanian [Quercus pyrenaica] forests	[Quercus pyrenaica] forests of the meso-Mediterranean level of the Montes de Toledo and Sierra Morena systems.
Upper Mariano-Oretanian [Quercus pyrenaica] forests	[Quercus pyrenaica] forests developed above 1000 metres in the highest ranges of the Montes de Toledo (Villuercas, Rocigalgo) and in a few satellites of the Sierra Morena (Sierra Madrona, Sierra Palomera).

Cantabrian Pyrenean oak forests	[Quercus pyrenaica] formations of medio-European character, of the collinar and montane levels of the Cantabrian chain and its satellite ranges west to the Sierra de Picos de Ancares in Galicia, characteristic of areas with comparatively low precipitation, in the rain shadow of the coastward ranges or the interior oro-Cantabrian hills.
Maestrazgan Pyrenean oak forests	[Quercus pyrenaica] forests of the sub-Mediterranean siliceous enclaves of the Maestrazgo and eastern Catalonian ranges, reduced to a very few relicts in the Penagolosa and Prades massifs.
Baetic Pyrenean oak forests	[Quercus pyrenaica] forests of siliceous supra-Mediterranean areas with sub-humid climate of the western Sierra Nevada, the Sierra de Alfacar, the northern flancs of the Sierra de Cazulas and the Sierra Tejeda; in more humid locations [Fraxinus angustifolia] and [Acer granatense] accompany [Quercus pyrenaica].
French Pyrenean oak forests	[Quercus pyrenaica] forests of southwestern France north to the Sologne where they constitute relatively estensive formations on poor soils, with [Betula pendula], [Lonicera periclymenum], [Deschampsia flexuosa], [Holcus mollis], [Molinia caerulea], [Teucrium scorodonia].
Mixed thermophilous woodland	Nonalluvial deciduous or semideciduous forests or woods of sub-Mediterranean climate regions and supra-Mediterranean altitudinal levels, and of western Eurasian steppe and substeppe zones of Ostryo-Carpinion alliance, dominated by [Ostrya carpinifolia], [Carpinus orientalis], [Acer] spp., [Fraxinus] spp., [Tilia] spp. or [Celtis australis]; like the thermophilous oak woods of unit G1.7, they may, under local microclimatic or edaphic conditions, replace the evergreen oak forests in mesomediterranean or thermo-Mediterranean areas, and irradiate far north into medio-European or sub-Atlantic regions.
Hop-hornbeam woods	Forests or woods of sub-Mediterranean, sometimes mesomediterranean, climate regions and supra-Mediterranean altitudinal levels dominated by [Ostrya carpinifolia].
Mesomediterranean Gallo-Italic hop-hornbeam woods	[Ostrya carpinifolia]-dominated ravine forests of the mesomediterranean [Quercus ilex] zone of the Maritime and Ligurian Alps.
Supra-Mediterranean hop-hornbeam woods	[Ostrya carpinifolia]-dominated woods of the supra-Mediterranean zone of the Maritime and Ligurian Alps, the Mediterranean and Adriatic slope of the southeastern Alps, the Dinarides, the Hellenides, the Apennines and the large central Mediterranean islands.
Southwestern Alpine supra-Mediterranean hop-hornbeam woods	[Ostrya carpinifolia]-dominated woods of the supra-Mediterranean zone of the Maritime and Ligurian Alps.
Southeastern Alpine supra-Mediterranean hop-hornbeam woods	[Ostrya carpinifolia]-dominated woods of the supra-Mediterranean zone of the Mediterranean and Adriatic slope of the southeastern Alps, in the Gardesano- Dolomitic and Veneto-Julian sectors of Italy and extreme northwestern Slovenia.
Eastern Adriatic supra-Mediterranean hop-hornbeam woods	[Ostrya carpinifolia]-dominated woods of the supra-Mediterranean [Ostryo-Carpinion orientalis] zone of the Adriatic region of the western Balkan peninsula and of Greece.
Apennine supra-Mediterranean hop-hornbeam woods	[Ostrya carpinifolia]-dominated woods of the supra-Mediterranean zone of the northern and central Apennines.
Corsican supra-Mediterranean hop-hornbeam woods	[Ostrya carpinifolia]-dominated woods of the supra-Mediterranean zone of Corsica, limited to the northeastern part of the island.

Southern Tyrrhenian supra-Mediterranean hop-hornbeam woods	[Ostrya carpinifolia]-dominated woods of the supra-Mediterranean zone of the southern Appenines, Sardinia and Sicily.
Montane hop-hornbeam woods	[Ostrya carpinifolia]-dominated woods of the montane [Fagion medio-europaeum], [Fagion illyricum], [Fagion moesiacum], [Fagion dacicum], [Fagion hellenicum], developed at the upper limit of the altitudinal range of the forests of units 41.812 or 41.814, with an accompanying flora usually formed by a combination of beech forest and thermophilous oak forest species.
Illyrian hop-hornbeam woods	[Ostrya carpinifolia]-dominated woods of the [Carpinion illyricum] zone of the Sava and Drava basin, with irradiations into the southeastern Alps, in particular, in the Karawanken and in the eastern Dinarides, extending from southern Austria to Bosnia-Herzegovina.
Illyrian white oak hop-hornbeam woods	Mostly low woods of sunny, shallow-soil limestone and dolomite slopes of the [Carpinion illyricum] zone of northern Slovenia, Croatia and Bosnia, dominated by [Ostrya carpinifolia], facies of the [Querco-Ostryetum carpinifoliae] hop-hornbeam oak woods of unit 41.73751.
Illyrian spring heath hop-hornbeam woods	[Ostrya carpinifolia] woods of generally steep dolomite or limestone slopes and screes of the [Carpinion illyricum] region of Slovenia, Croatia and Bosnia-Herzegovina, extending north to Austria in the Drava basin, the Karawanken and, very locally, the middle Inn Valley, with [Fraxinus ornus], [Sorbus aria], [Acer obtusatum], a rich shrub layer formed by [Viburnum lantana], [Juniperus communis], [Berberis vulgaris], [Rosa] spp., [Amelanchier ovalis], [Clematis vitalba] and an herb layer dominated by [Sesleria albicans] and [Carex humilis] on rocky slopes, by [Erica herbacea] ([Erica carnea]) on scree slopes; [Helleborus niger ssp. macranthus] is often abundant and [Daphne blagayana] is notable in some stands.
Anatolian hop-hornbeam woods	Uncommon [Ostrya carpinifolia]-dominated facies of thermophilous woods of the Taurus, the Amanus.
Oriental hornbeam woods	[Carpinus orientalis]-dominated facies of the thermophilous woods of units 41.73, 41.74, 41.76, particularly abundant in Greece, the middle Balkan peninsula, Anatolia and the Caucasus. Often of secondary nature, they replace oak forests on eroded soil after deforestation, especially on calcareous soils.
Inner Illyrian oriental hornbeam woods	Thermophilous [Carpinus orientalis]-dominated woods of the [Carpinion betuli illyricum] and [Fagion illyricum] regions of northern and central Bosnia-Herzegovina, where they occupy sunny calcareous slopes, and of the Sava-Drava interfluve hills, between the Papuk Range and the Fruska Gora.
Helleno-Balkanic oriental hornbeam woods	[Carpinus orientalis]-dominated facies of thermophilous woods of the Balkan peninsula, south to Greece.
Helleno-Pelagonide oriental hornbeam woods	Low woods of northern Greece, Albania, the F.Y.R. of Macedonia and southwestern Bulgaria, including the northern and eastern foothills of the Rhodopes, dominated by [Carpinus orientalis].
Moesian oriental hornbeam woods	Low woods of Serbia and central Bulgaria, in particular, the foothills of the Balkan Range, dominated by [Carpinus orientalis].
Lilac oriental hornbeam woods	Low woods of eastern Serbia, western Bulgaria and the Banat, Oltenia and Muntenia in southwestern Romania, dominated by [Carpinus orientalis], rich in [Syringa vulgaris].

Oryzopsis oriental hornbeam woods	Low woods of northern Bulgaria, the Banat and Oltenia, dominated by [Carpinus orientalis], with [Fraxinus ornus], [Cotinus coggygria], [Oryzopsis holciformis], [Oxytropis virescens], [Stachys leucoglossa], [Paeonia peregrina], [Salvia ringens], [Cornus mas], [Quercus pubescens].
Eastern Adriatic oriental hornbeam woods	Woods of the [Ostryo-Carpinion orientalis] region of the western Balkan peninsula, developed in the supra-Mediterranean level of the Triestine Riviera, Slovenia, Croatia, Bosnia-Herzegovina, Montenegro, northern Albania, dominated by [Carpinus orientalis].
Anatolio-Caucasian oriental hornbeam woods	[Carpinus orientalis]-dominated facies of thermophilous woods of the Caucasus, the foothills of the Pontic Range, the Taurus, the Amanus and Alaouites.
Thermophilous maple woods	Supra-Mediterranean thermophilous woods dominated by [Acer] spp.
Andalusian [Acer granatense] woods	Supra-Mediterranean formations of the mountains of the upper Guadalquivir, with [Acer granatense], [Acer monspessulanum], [Quercus faginea], [Quercus pyrenaica], [Sorbus aria], [Sorbus torminalis], [Taxus baccata], [Daphne laureola], [Paeonia officinalis ssp. humilis]. Vestiges of this type of vegetation also survive in the Serrania de Ronda.
Balearic [Acer granatense] woods	Formations, extremely rare if not extinct, of the mountains of Majorca (Puig de Maçanella, Puig Major), dominated by [Acer granatense], with [Quercus faginea], [Amelanchier ovalis ssp. comafredensis], [Ilex aquifolium var. balearica], [Helleborus foetidus var. balearicus], [Sorbus aria], [Primula acaulis var. balearica], [Rubus ulmifolius], [Tamus communis], [Taxus baccata], [Hedera helix], [Smilax aspera var. balearica], [Paeonia cambessedesii], several of which are relict endemic taxa of very limited distribution and low numbers.
North African [Acer monspessulanum] forests	Low (eight metres tall) [Acer monspessulanum]-dominated forest of the Djebel Zaghouan in the Tunisian Dorsale, with a dominated stratum of [Quercus ilex].
Moesian thermophilous maple woods	Low [Acer monspessulanum]- or [Acer campestre]-dominated woods of the xerothermic oak belt of the Balkan peninsula, in Albania, the western F.Y.R. of Macedonia, southern Serbia and western and southern Bulgaria, in particular, of the northeastern Rhodope foothills and the northwestern Balkan Range.
Thermophilous lime woods	Supra-, sub- or mesomediterranean and Euro-Siberian steppe woods dominated by [Tilia] spp., for the most part, supra-, meso- or sub-Mediterranean [Tilia] spp. -dominated facies of the thermophilous woods of units 41.73, 41.74, 41.76, 41.7A.
Silver lime woods	[Tilia tomentosa]-dominated facies of mixed deciduous forests of southern Central Europe and the northern and middle part of the Balkan peninsula, mostly within the [Quercion frainetto] environment, but also locally developed in conjunction with eastern [Carpinion betuli] forests.
Moesian silver lime woods	[Tilia tomentosa]-dominated facies of mixed deciduous forests of Moesian hills of the Balkan peninsula, in particular, [Tilia tomentosa] woods of the sub-Mediterranean hornbeam-durmast oak belt of Bulgaria and Northern Greece.

Silver lime-hornbeam woods	[Tilia tomentosa] lime forests of the plains of Muntenia, near Bucharest, evolution stages of mixed forests of [Quercus robur] ([Quercus petraea]), [Carpinus betulus], [Tilia tomentosa], [Fraxinus] spp.
Voivodinian sand steppe lime woods	[Tilia tomentosa] steppe woods of Pannonic affinities developed on dry sands of Deliblat, with [Quercus robur], [Prunus mahaleb], [Fraxinus ornus], [Acer campestre], [Ligustrum vulgare], [Crataegus monogyna], [Viburnum lantana], [Lonicera xylosteum].
Oro-Pannonic steppe ash-lime woods	Loosely closed forests mainly of [Tilia platyphyllos] and [Fraxinus excelsior] developed on shallow soils of exposed crests of limestone mountains (more rarely on andesite rocks) of the Northern Hungarian Range, with an herb layer of [Brachypodium pinnatum], [Galium erectum], [Cruciata glabra], [Digitalis grandiflora], [Erysimum odoratum], [Sisymbrium strictissimum], [Aconitum anthora], accompanied by endemics among which [Hesperis vrabelyiana], [Carduus collinus] and by other regionally rare species with disjunct distribution, such as [Waldsteinia geoides], [Melica altissima], [Carex brevicollis]. They constitute relict forests, most probably of the Boreal era, and are of great biological value.
Nettle-tree ([Celtis australis]) woods	Thermophilous woods dominated by, or rich in, [Celtis australis]. Forests dominated by [Celtis australis] may have been an important component of Mediterranean woodland, in particular in North Africa, but appear to have been destroyed almost everywhere and to be represented only by individual trees and small stands.
Thermophilous ash woods	Nonalluvial, non-ravine meso-, supra- or sub-Mediterranean thermophilous woods dominated by [Fraxinus angustifolia] or [Fraxinus ornus], often mixed with [Quercus pubescens] or [Quercus pyrenaica].
Sicilian narrow-leaved ash woods	[Fraxinus angustifolia] woods of western Sicily.
Iberian narrow-leaved ash woods	[Fraxinus angustifolia] woods of the Iberian peninsula.
Manna tree woods	Thermophilous [Fraxinus ornus] woods, characteristic, in particular, of the Banat hills and the pre-Balkanic plateaux and hills of the lower Danube basin, dominated by [Fraxinus ornus] with [Cornus sanguinea], [Tilia platyphyllos], [Tilia tomentosa], [Ulmus minor], [Carpinus orientalis].
Pannonic juniper - poplar steppe woods	[Populus alba] woods of sands, in particular sand dunes, of the Danube-Tisza confluence of the Pannonic plain. The shrub layer includes [Juniperus communis], [Ligustrum vulgare], [Rhamnus catharticus], [Crataegus monogyna], [Prunus spinosa], [Prunus mahaleb], [Rubus caesius], [Euonymus verrucosus], [Berberis vulgaris].
Pannonic privet juniper-poplar steppe woods	Closed [Populus alba] forests of the Pannonian Danube-Tisza interfluvial region with a species-rich and strongly developed shrub layer and an herb layer comprising [Lithospermum officinale], [Teucrium chamaedrys], [Asparagus officinalis], [Vincetoxicum hirundinaria], [Polygonatum odoratum], [Poa angustifolia], [Euphorbia cyparissias], [Poa pratensis], [Senecio integrifolius], [Silene nutans], [Verbascum lychnitis] and [Solanum dulcamara var. pusztarum], frequently with the mosses [Dicranum scoparium] and [Hypnum cupressiforme].

Pannonic sedge juniper-poplar steppe woods	[Populus alba] woods of the Pannonian Danube-Tisza interfluvial region with an herb layer dominated by [Carex liparocarpos], accompanied by [Potentilla arenaria], [Thesium ramosum], [Viola rupestris var. arenaria], [Galium verum], [Lithospermum officinale], [Medicago falcata], [Phleum phleoides], [Pimpinella saxifraga], [Calamagrostis epigejos], [Taraxacum officinale], [Colchicum arenarium], [Iris humilis ssp. arenaria].
Pannonic gypsophila juniper-poplar steppe woods	[Populus alba] woods of the Pannonian Danube-Tisza interfluvial region with an herb layer formed by [Gypsophila fastigiata ssp. arenaria], [Stipa capillata], [Ephedra distachya], [Alkanna tinctoria], [Potentilla arenaria], [Scabiosa ochroleuca] and sometimes stands of [Calamagrostis epigejos].
Sub-Mediterranean and Pannonic mixed woods	Nonalluvial deciduous or semideciduous thermophilous forests or woods of sub-Mediterranean or supra-Mediterranean regions of the Mediterranean basin, and of the Pannonic plain, formed by [Tilia] spp., [Fraxinus] spp., [Quercus] spp., [Carpinus] spp., [Ostrya carpinifolia], [Acer] spp., [Sorbus] spp., [Populus] spp., [Celtis australis] and occasionally, [Fagus] spp., in varied combinations and dominance.
Sub-Mediterranean mixed woods	Mixed woods of [Tilia] spp., [Fraxinus] spp., [Quercus] spp., [Carpinus] spp., [Ostrya carpinifolia], [Sorbus] spp., [Populus] spp. and occasionally, [Fagus] spp. of the Mediterranean, supra-Mediterranean and sub-Mediterranean [Quercion pubescenti-petraeae], [Ostryo-Carpinion] and [Quercion frainetto] zones.
Pannonic mixed karstic woods	Mixed woods of dolomitic substrates of the periphery and hills of the Pannonic plain, in Hungary, southern Slovakia and Croatia, characterized by the juxtaposition of beech wood and thermophile oak wood species, rich in relict species of disjunct distribution such as [Calamagrostis varia], [Allium victorialis], [Rubus saxatilis], [Primula auricula ssp. hungarica], and therefore of great biogeographical significance.
Western Asian wild fruit tree steppe woods	Usually open or very open stands of [Pistacia] spp., [Amygdalus] spp., [Malus] spp., [Pyrus] spp., [Prunus] spp., [Juglans regia] and other fruit or nut-bearing trees, often associated with [Acer] spp., [Rosa] spp., [Crataegus] spp., of the steppes and subdesert fringes of eastern Anatolia, Iran, Syria and Afghanistan, with a probable outpost in the central plains of Cyprus.
Southern Mediterranean chasm woods	Brushy liana-rich woods of deep ravines of Crete, formed by [Ficus carica], [Pistacia terebinthus], [Celtis tournefortii], [Cotinus coggygria], [Rhus coriaria], [Amelanchier ovalis ssp. cretica], [Sorbus aria ssp. cretica], [Sorbus umbellata], restricted to a few calcareous cliffs. They appear to have affinities with the Irano-Turanian steppe woods of unit 41.89 and with the southern Palaearctic ravine and valley tropical dry woodland of units 4B.4 and 4B.5.
Chestnut woodland	Supra-Mediterranean and sub-Mediterranean [Castanea sativa]-dominated forests and old established plantations with semi-natural undergrowth.
Helleno-Balkanic chestnut forests	[Castanea sativa]-dominated forests and naturalised plantations of the [Quercion frainetto] zone of the Balkan peninsula, of northern Greece, including the Chalkidike peninsula, with irradiations in the [Ostryo-Carpinion orientalis aegeicum] zone. They appear to represent the main area of indigenousness of the species.

Aegean chestnut forests	[Castanea sativa]-dominated forests and naturalised plantations of the Peloponnese, the Aegean islands, Crete and western Asia Minor, occupying scattered, relatively rare localities in the supra-Mediterranean level of mountains ranges.
Eastern Adriatic chestnut forests	Sub-Mediterranean [Castanea sativa]-dominated acidophilous forests of the [Ostryo-Carpinion orientalis adriaticum] zone of the Balkan peninsula, distributed, in particular, in the Slovenian coastal mountains, in Istria, on the islands of Krk and Cres, in Bosnia-Herzegovina, in Montenegro, within an area of undoubted indigenousness of the species.
Illyrian chestnut forests	[Castanea sativa]-dominated forests and naturalised plantations of the [Carpinion betuli illyricum] zone, locally, notably in Bosnia-Herzegovina, extending into the [Fagion illyricum] zone, apparently constituting, with the subthermophilous oak region of the Balkans, a centre of indigenousness of the species. Extensive stands are recorded, in particular, from northwestern Croatia, neighbouring Slovenia, northern, central and eastern Bosnia-Herzegovina.
Liguro-Insubrian chestnut forests	[Castanea sativa]-dominated forests and naturalised plantations of the collinar level of the southern slope of the Alps of Italy and southern Switzerland, with a cortège characteristic of medio-European acidophilous oak forests; resulting from ancient introductions, they are particularly abundant on the margins of the Piedmont plains, where they constitute, in some valleys, an almost continuous forest mantle, extending up to 800 m, sometimes 1000 m, and in the Insubrian region. They occur more sparsely west to the Ligurian Alps.
Italo-Sicilian chestnut forests	[Castanea sativa]-dominated forests and naturalised plantations of the supra-Mediterranean zone of the Apennines, of lesser hill ranges of the Italian peninsula and of Sicily, at the 200-800 m level and mostly on siliceous soils, for the most part resulting from ancient introductions, probably indigenous in some areas, in particular, Etna and the Euganean hills.
Cyrno-Sardinian chestnut forests	[Castanea sativa]-dominated forests and naturalised plantations of Corsica and Sardinia, where they may be indigenous and are fairly widespread, particularly in the San Petrone massif of Corsica and in eastern central Sardinia.
Galloprovincial chestnut forests	[Castanea sativa]-dominated forests and naturalised plantations of southeastern France, in particular, of the Maures, the Cévennes and the eastern Pyrenees, where they may be, in part, indigenous and are characteristic of the supra-Mediterranean level, with a cortège of acidophilous [Quercion pubescenti-petraeae] forests.
Gallo-Iberian chestnut forests	[Castanea sativa]-dominated forests and naturalised plantations of the Iberian peninsula, southwestern and central France, probably entirely resulting from ancient introductions, common in northwestern Iberia, in Catalonia, in the mountains of central and western Iberia, in Andalucia and, mostly as substitutes of southwestern Atlantic medio-European oak forests in the northwestern piedmont of the Pyrenees and southwestern France, fairly rare in the rest of the Iberian peninsula.
Euxinian chestnut forests	[Castanea sativa]-dominated forests and naturalised plantations of the foothills and piedmont of the Pontic Range and the Caucasus, characteristic, in particular, of the 100-1100 m level of the Colchidian hills.

Acidophilous oak-dominated woodland	Forests of [Quercus robur] or [Quercus petraea] on acid soils with an herb layer mostly constituted by the ecological groups of [Deschampsia flexuosa], [Vaccinium myrtillus], [Pteridium aquilinum], [Lonicera periclymenum], [Holcus mollis], and of [Maianthemum bifolium], [Convallaria majalis], [Hieracium sabaudum], [Hypericum pulchrum], [Luzula pilosa], and the mosses [Polytrichum formosum] and [Leucobryum glaucum].
Atlantic pedunculate oak - birch woods	Acidophilous forests of the Baltic-North Sea plain, composed of [Quercus robur], [Betula pendula] and [Betula pubescens], often mixed with [Sorbus aucuparia] and [Populus tremula], on very oligotrophic, often sandy and podsolised or hydromorphic soils; the bush layer, poorly developed, includes [Frangula alnus]; the herb layer, formed by the group of [Deschampsia flexuosa], always includes [Molinia caerulea] and is often invaded by bracken. Forests of this type often prevail in the northern European plain, from Jutland to Flanders; they occupy more limited edaphic enclaves in the Ardennes and the middle and upper Rhenish ranges, in northwestern France, Normandy, Brittany, the Paris basin, the Morvan and Great Britain. East of the Elbe, in the Baltic lowlands, they are represented, east to Mecklenburg, by stands transitional, to a greater or lesser extent, to those of unit G4.71.
Atlantic acidophilous beech - oak forests	Forests analogous to those of the [Ilici-Fagion] but dominated by [Quercus petraea] or [Quercus robur], often accompanied by [Fagus sylvatica]. They differ from unit G1.81 by the representation of the group of [Maianthemum bifolium] in the herb layer.
Sub-Atlantic sessile oak forests	Acidophilous [Quercus petraea] forests with [Fagus sylvatica] of the Baltic and North Sea plains, north to southern Scandinavia and east to Poland, of Picardy, Normandy, Perche, the Paris region, western Morvan, Argonne, middle Belgium.
Armorican acidophile oak forests	[Quercus petraea] or [Quercus robur] forests of Brittany, generally richer in epiphytes, mosses and evergreen shrubs than the forests of unit 41.521, transitional to unit 41.53.
Northern dune oak woods	[Quercus robur] or [Quercus petraea]-dominated woods of dunes and dune slacks of the North Sea coasts, of very local and relict occurrence.
Atlantic sessile oak woods	Acidophilous [Quercus petraea] woods of the British Isles, with low, low-branched, trees, with many ferns, mosses, lichens and evergreen bushes; the herb layer is formed by the group of [Deschampsia flexuosa].
Irish sessile oak woods	[Quercus petraea] woods of Ireland, particularly rich in evergreen bushes, including [Arbutus unedo].
British sessile oak woods	Acidophilous [Quercus petraea] woods of western Britain, mostly found in Scotland, Cumbria, Wales and southwestern England, with a few outliers in northern England, in particular in Yorkshire.
Aquitano-Ligerian oak forests on podsols	Forests of [Quercus robur] and, sporadically [Quercus pyrenaica] or hybrids, on podsols of southwestern France, with an herb layer constituted by the group of [Deschampsia flexuosa], with [Molinia caerulea] and [Peucedanum gallicum].

Aquitano-Ligerian oak forests on leached or acid soils	Silicicolous thermocline forests of [Quercus petraea], [Quercus robur], [Sorbus torminalis], [Sorbus domestica], [Pyrus communis], [Malus acerba], [Ilex aquifolium], [Mespilus germanica] with an undergrowth of [Ruscus aculeatus], [Festuca heterophylla], [Pulmonaria longifolia], [Melica uniflora] and the [Deschampsia flexuosa] and [Convallaria majalis] groups of the [Quercion].
Ibero-Atlantic acidophilous oak forests	Forests or tall coppice of [Quercus robur] or [Quercus petraea] of the Pyrenees and northwestern Iberia, with an often species-poor herb layer formed by the groups of [Deschampsia flexuosa] and of [Hypericum pulchrum], by [Ruscus aculeatus] and often various ericaceous plants including [Daboecia cantabrica].
Pyrenean acidophilous oak forests	[Quercus petraea] forests of the Pyrenees and northwestern Iberia, often with [Tilia platyphyllos], [Prunus avium], [Quercus robur], [Betula pendula], [Sorbus torminalis], [Castanea sativa] and with [Rhamnus frangula], [Ilex aquifolium], [Mespilus germanica], [Corylus avellana], [Vaccinium myrtillus], [Pteridium aquilinum], [Teucrium scorodonia], [Melampyrum pratense], [Lathyrus montanus], [Luzula sylvatica], [Luzula forsteri], [Deschampsia flexuosa].
Cantabrian acidophilous oak forests	Cantabrian and peri-Cantabrian acidophilous [Quercus robur] or [Quercus petraea] forests, sometimes rich in [Betula celtiberica], [Quercus pyrenaica] or [Castanea sativa], with [Teucrium scorodonia], [Blechnum spicant], [Lonicera periclymenum], [Deschampsia flexuosa], [Veronica officinalis], [Hypericum pulchrum], [Lathyrus montanus], [Melampyrum pratense], [Euphorbia dulcis], [Euphorbia amygdaloides], [Stellaria holostea], [Oxalis acetosella], [Pteridium aquilinum], [Dryopteris dilatata], [Dryopteris affinis], [Dryopteris aemula], [Oreopteris limbosperma], [Polypodium vulgare], [Ulex europaeus], [Ulex gallii], [Vaccinium myrtillus], [Daboecia cantabrica], [Erica cinerea], [Erica vagans].
Eastern Cantabrian acidophilous oak forests	Cantabro-Euskaldian collinar to montane [Quercus robur] forests.
Western Cantabrian acidophilous oak forests	Galicio-Asturian collinar to montane [Quercus robur] forests, richer in western Iberian species such as [Linaria triornitophora], [Omphalodes nitida], [Saxifraga spathularis], than the forests of unit 41.5621.
Oro-Cantabrian acidophilous oak forests	Oro-Cantabrian montane [Quercus petraea] forests.
Luso-Galician collinar acidophilous oak forests	Galician and northern Portuguese collinar [Quercus robur] forests, with [Ilex aquifolium], [Frangula alnus], [Pyrus communis], [Laurus nobilis], [Crataegus monogyna].
Mesophile Luso-Galician collinar oak forests	Mesophile collinar [Quercus robur] forests, widely distributed in Galicia and northern Portugal.
Humid Luso-Galician collinar oak forests	Meso-hygrophile [Quercus robur] forests, limited to valley situations in contact with riparian forests, of Galicia and northern Portugal, accompanied by a cortège rich in ferns, with [Betula celtiberica] and the northwestern Iberian endemic [Narcissus cyclamineus].

Luso-Galician montane acidophilous oak forests	Galician and extreme northern Portuguese (Serra do Gerez) montane [Quercus robur] forests, characterized by the presence of [Betula celtiberica], [Vaccinium myrtillus], [Saxifraga spathularis], [Melampyrum pratense] and the absence of thermophile, in particular lauriphyllous, species.
Medio-European acidophilous oak forests	Forests of [Quercus petraea], sometimes of [Quercus robur], or of either or both oaks and [Fagus sylvatica], accompanied by a cortège of sub-Atlantic and submeridional acidophile species (e.g. [Pinus sylvestris], [Carpinus betulus]), developed in central and southern-central Europe, outside of the main Atlantic-influenced range of the [Quercion]. [Quercus]-dominated acidophilous forests of the western Hercynian ranges and their periphery, developed in more Atlantic conditions as substitution forests of the [Luzulo-Fagion] beech forests have been associated with them because of a shared contingent of sub-Atlantic accompanying species and similarities in overall appearance.
Woodrush oak forests	Mesophile, meso-xerophile or meso-hygrophile, mesothermal acidophilous forests of [Quercus petraea] or sometimes [Quercus robur], of central European or northwestern medio-European affinities, usually with [Luzula luzuloides], distributed in the Western and Central European Hercynian ranges and their periphery, the northern and northeastern Alpine periphery and the northern and western Carpathian periphery.
Western Hercynian woodrush-hawksbeard oak forests	Acidophilous [Quercus petraea] forests of the western Hercynian ranges and their periphery, developed on dry, sandy or stony shallow soils, or as substitution forests of [Luzulo-Fagion] beech forests, in the collinar and submontane level of the Vosges, the Black Forest, the Palatinate hills, the Kraischgau and Neckar hills, the Odenwald, the Spessart, the Rhenish Schist Ranges including the Ardenne-Eifel, the hills of Westphalia and southern Lower Saxony, the hills and plateaux of Lorraine, Champagne and Burgundy, the eastern Morvan, with a shrub layer comprising [Sorbus aucuparia], [Frangula alnus], often [Ilex aquifolium], and an herb layer that includes [Luzula luzuloides], [Teucrium scorodonia], [Deschampsia flexuosa], [Hieracium sabaudum], [Hieracium laevigatum], [Hieracium lachenalii], [Hieracium silvaticum], [Hieracium glaucinum], [Hieracium umbellatum], [Hypericum pulchrum], [Lathyrus linifolius].
Central European dyer's greenweed oak forests	Mesophile or meso-xerophile, mesothermal acidophilous forests of [Quercus petraea] or sometimes [Quercus robur], mixed in some parts of the range with [Pinus sylvestris] and sometimes [Castanea sativa], of central European affinities, with a cortège of acidophilous species accompanied by thermophile elements, and usually with [Luzula luzuloides] and [Genista tinctoria], distributed in the Central European Hercynian ranges and their periphery, the northern and eastern Alpine periphery, in particular, in Bavaria, lower Austria, Burgenland, Styria and Carinthia, and the northern and western Carpathian periphery.

Central Hercynian dyer's greenweed oak forests	Acidophilous [Quercus petraea] forests of the collinar and submontane levels of siliceous slopes of the Swabian and Franconian Jura, of the Swabo-Bavarian and Franconian plateaux, of the southern German Hercynian hills, east of the Black Forest-Spessart line and west of the Bayerischerwald, and of the hills of Upper Austria, forming a western group of communities within the dyer's greenweed forest complex, characterized, in particular, by the importance in the herb layer of sub-Atlantic indicators, among which [Lathyrus linifolius], [Hypericum pulchrum], various [Hieracium] spp., [Melampyrum pratense] or [Teucrium scorodonia], [Holcus mollis]. [Luzula luzuloides], [Genista germanica], [Genista tinctoria], [Chamaespartium sagittale], [Deschampsia flexuosa], [Campanula rotundifolia], [Campanula persicifolia] are characteristic or abundant constituents of the undergrowth.
Peri-Bohemian dyer's greenweed oak forests	Acidophilous forests of [Quercus robur], [Quercus petraea] and [Pinus sylvestris], sometimes with [Castanea sativa] or [Abies alba], developed on siliceous bedrock, gravels, loams, moraines, with shallow, often podsolised soils, on relatively dry, often south-facing slopes and hilltops of the collinar and submontane levels of the Bohemian Quadrangle, its piedmont and associated plateaux and ranges of southern Poland, Saxony, Saxe-Anhalt, Thuringe, the upper Palatinate, of the northeastern Alpine periphery in Lower Austria, Styria, the Burgenland, Carinthia, of the sub-Pannonic hills of Slovenia, western Transdanubia and the Central Hungarian Range, of the Western and Northern Carpathian foothills, with [Luzula luzuloides], [Deschampsia flexuosa] ([Avenella flexuosa]), [Hieracium murorum], [Hieracium sabaudum], [Calamagrostis arundinacea], [Lembotropis nigricans] ([Cytisus nigricans]).
Dacian dyer's greenweed oak forests	Mesophile or meso-xerophile [Quercus petraea]-dominated acidophilous oak forests of the foothills of the Apuseni mountains and of the Southern Carpathians, of the western and southern foothills of the Eastern Carpathians, and of the Transylvanian Plateau, accompanied by the cortège of Central European acidophilous species mixed with thermophile elements typical of the [Genisto tinctoriae-Quercetum petraeae], in particular, [Luzula luzuloides], [Genista tinctoria], [Genista germanica], [Lembotropis nigricans] ([Cytisus nigricans]), [Veronica officinalis], [Galium vernum], [Lychnis viscaria] ([Viscaria vulgaris]), [Hieracium racemosum], [Hieracium sabaudum], [Hieracium umbellatum] supplemented by Dacian species, such as [Melampyrum bihariense], [Lathyrus hallersteinii], [Lathyrus venetus], [Galium pseudaristatum], [Bruckenthalia spiculifolia], [Crocus banaticus], and usually with distributed Melin the Central European Hercynian ranges and their periphery, the northern and northeastern Alpine periphery and the northern and western Carpathian periphery.
Pre-Carpathian beech-sessile oak forests	Mesophile, acidophile [Quercus petraea] forests rich in [Fagus sylvatica], widespread within the range of eastern and central greenweed-sessile oak acidophilous forests, in particular on high foothills of the eastern Carpathian system, mostly as transition communities to the beech-hornbeam forests, with a sparse herb layer that includes many mesophile species characteristic of the [Fagetalia].

Central European hygrophile acidophilous oak forests	Meso-hygrophile, acidophile [Quercus petraea] or [Quercus robur] forests characteristic of the central and eastern range of the [Genisto tinctoriae-Quercetum petraeae] s.l. greenweed-sessile oak acidophilous forests, in particular within and around the Bohemian Quadrangle and on peri-Pannonic or pre-Carpathian plateaux and low hills of the eastern Carpathian system, with an herb layer often dominated by monospecific swards of social gramineous species, in particular, [Molinia arundinacea] or [Carex brizoides].
Peri-Bohemian giant moorgrass sessile oak forest	Acidophilous [Quercus petraea] forests of Bohemia, Styria, the Burgenland, Transdanubia, the Slovakian Zahory and southern Poland, with [Molinia caerulea ssp. arundinacea]. Some communities, in particular in Styria, the Burgenland, ("[Pino-Quercetum roboris molinietosum]") and in the Zahory ("[Molinio-Pinetum zahoricum]") are rich in [Pinus sylvestris].
Pre-Carpathian quaking sedge-pedunculate oak forests	Meso-hygrophile, acidophile, [Quercus robur] forests of the plain of the Somes and the Crisul of northwestern Romania, of the basins of the Transylvanian Plateau and of the Getic foothills of Oltenia and Muntenia, developed on old terraces and depressions with argilous substrates, with an herb layer dominated by [Carex brizoides], accompanied by other hygrophile species, including [Deschampsia cespitosa], [Lysimachia nummularia], [Glechoma hederacea].
Pre-Carpathian purple moorgrass-pedunculate oak forests	Meso-hygrophile, acidophile [Quercus robur] forests of argilous depressions of the Somes basin of northwestern Romania, with an herb layer dominated by [Molinia caerulea], accompanied by [Sanguisorba officinalis], [Gentiana pneumonanthe], [Achillea ptarmica], [Serratula tinctoria].
Western Hercynian thermophile acidophilous oak forests	Xerophile [Quercus petraea] woods on sunny escarpments with dry superficial, siliceous, often schistous soils of the Rhine rift and the schistous Hercynian ranges.
Illyro-Pannonic thermophile acidophilous oak forests	Strongly thermophile acidophilous [Quercus petraea] forests of the peri-Pannonic hills and of the Illyrian basins of the Drava and Sava, constituting a transition between the slightly thermophilous submeridional forests of unit 41.57 and the thermophilous oak sub-Mediterranean or steppe forests of unit 41.7.
Black broom-oak forests	Xero-mesophile, thermophile, acidophile [Quercus petraea] forests, occupying generally small surfaces on warm, south-facing, steep, siliceous, gneiss, shist or granite slopes of the Danube trough of Upper Austria, the Lower Austrian Waldviertel, the Bohemian basin, the western foothills of the Apuseni mountains, the Olt valley in the Getic piedmont of the Southern Carpathians, the southeastern foothills of the Carpathian Curve, with [Lembotropis nigricans] ([Cytisus nigricans]) in the shrub layer and acidophilous species in the subshrub and herb layers, including [Genista tinctoria], [Digitalis grandiflora], [Hieracium umbellatum], [Hieracium sabaudum], [Luzula luzuloides], [Veronica officinalis], [Deschampsia flexuosa] ([Avenella flexuosa]), [Convallaria majalis].

Wild service tree-oak forests	Subcontinental acidophilous and xerophilous forests of [Quercus petraea] accompanied by [Carpinus betulus], [Tilia cordata], [Sorbus torminalis] and occasionally, mostly under the influence of forestry practices, [Pinus sylvestris], characteristic of central Bohemia and southwest Moravia, extending to the Waldviertel and Weinviertel of Lower Austria and to Transdanubia.
Illyro-Pannonic chestnut-sessile oak forests	Acidophilous [Quercus petraea] forests rich in [Castanea sativa] of the basins of the Drava and Sava in Slovenia, Croatia, northern Bosnia-Herzegovina, the Mecsek hills of southern Hungary and the Crisanian pre Carpathic hills of northwestern Romania, developed on very acid substrates under warm humid climates or microclimates and accompanied by a mixed and regionally variable cortège composed of acidophile [Quercion robori-petraeae] species, mesophile [Carpinion betuli] species and thermophile [Quercetalia pubescenti-petraeae] species.
Pre-Carpathian chestnut-sessile oak forests	Mesophile, acidophile forests of [Quercus petraea], accompanied by [Castanea sativa], [Carpinus betulus], [Fagus sylvatica], [Tilia cordata], [Betula pendula], [Acer campestre], [Acer pseudoplatanus], [Prunus avium], [Populus tremula], [Quercus dalechampii], [Quercus robur], [Sorbus aucuparia], [Sorbus torminalis], limited to small surfaces in low siliceous sub-Pannonic mountains of the eastern Carpathian system, in the Baia Mare and Pocruia area, with an understorey composed of acidophilous species, including [Vaccinium myrtillus], [Calluna vulgaris], [Genista tinctoria], [Deschampsia flexuosa], [Luzula luzuloides], together with neutrophilous elements such as [Euphorbia amygdaloides], [Bromus benekenii], [Circaea lutetiana], [Salvia glutinosa], [Ligustrum vulgare], [Daphne mezereum], [Clematis vitalba], [Vitis sylvestris].
Illyrian chestnut-sessile oak forests	[Quercus petraea] forests of extremely acid substrates and warm humid climates of the basins of the Drava and Sava in Slovenia, Croatia, northern Bosnia-Herzegovina, including the Mecsek hills of southern Hungary, in which [Castanea sativa] plays an exceptionally important role. Their canopy is extremely mixed, including, in addition to the two species already mentioned, [Carpinus betulus], [Fagus sylvatica], [Acer pseudoplatanus], [Acer campestre], [Sorbus torminalis], [Fraxinus ornus], [Prunus avium], [Malus sylvestris], [Tilia platyphyllos], [Tilia cordata], [Populus tremula]. The understorey comprises a combination of acidophilous, thermophilous and [Fagetalia] species among which [Rubus hirtus], [Melampyrum pratense], [Pteridium aquilinum], [Veronica officinalis], [Genista tinctoria], [Luzula luzuloides], [Hieracium umbellatum], [Lathyrus montanus], [Vaccinium myrtillus], [Calluna vulgaris], [Lembotropis nigricans], [Chamaecytisus supinus], [Viola reichenbachiana], [Aposeris foetida], [Euphorbia dulcis], [Primula vulgaris], [Helleborus dumetorum].
Illyrian birch-sessile oak acidophilous forests	Acidophilous [Betula pendula]-[Quercus petraea] forests of the basins of the Drava and Sava in Slovenia, Croatia, northern Bosnia-Herzegovina, with [Calluna vulgaris], [Chamaespartium sagittale], [Cytisus procumbens], [Helleborus odorus], [Omalotheca sylvatica] ([Gnaphalium sylvaticum]), [Danthonia decumbens], [Carex digitata], [Pteridium aquilinum], [Veronica officinalis].

Insubrian acidophilous oak forests	Acidophilous forests of [Quercus petraea], often mixed with [Castanea sativa], of the southern foothills of the Alps in Liguria, Piedmont and Lombardy. The herbaceous layer is often dominated by [Festuca ovina] (s.l.) and the undergrowth includes, in addition to plants characteristic of the [Quercion], transgressives of the [Fagion] and of the [Quercetalia pubescenti-petraeae]. These forests are a western extension of the Illyrian forests of units G1.87332 and G1.8734.
Portuguese pedunculate oak forests	Relict forests of [Quercus robur] of central Portugal, often mixed with [Quercus suber], [Quercus pyrenaica] or [Castanea sativa] and with a luxuriant understory rich in lauriphyllous and xerophyllous lustrous-leaved shrubs and small trees such as [Prunus lusitanica], [Arbutus unedo], [Viburnum tinus], [Ilex aquifolium], [Laurus nobilis], [Myrtus communis] and [Ruscus aculeatus], limited to the basins of the Mondego and the Zezere, reduced to a very few, extremely fragile stands of exceptional biological and aesthetic value.
Continental sessile oak forests	No description available.
Non-riverine woodland with birch, aspen or rowan	Forests or woods dominated by [Betula], [Populus tremula] or [Sorbus aucuparia]. Excludes swamp woods (G1.4), woods on wet peat (G1.5) and riparian woods (G1.1).
Birch woodland not on marshy terrain	Woods and thickets dominated by [Betula pendula], [Betula pubescens], their allies, or other arborescent [Betula] spp., on non-marshy terrain. [Molinia arundinacea] may dominate.
Atlantic lowland and collinar birch woods	Pioneer and subclimax [Betula pendula] or [Betula pubescens] formations of the North Sea-Baltic plains, the lower Hercynian slopes, the periphery of the Paris Basin, southwestern France, northwestern Iberia, Insubria and Illyria, within the range of Atlantic and sub-Atlantic acidophilous oak woods.
Humid birch woods	Formations usually formed by [Betula pubescens], with [Molinia caerulea] and sometimes [Deschampsia flexuosa], developed on podsolised or hydromorphic soils, as substitution facies of oak and birch woods, or colonization stages, in particular, of [Molinion] grasslands or humid heaths.
Northern humid birch woods	Widespread [Betula pendula]-dominated formations characteristic of the North Sea-Baltic plain.
Aquitano-Ligerian humid birch woods	Southern [Betula pendula] formations common, in particular, in the Sologne and neighbouring areas.
Medio-European dry acidophilous birch woods	Formations usually formed by [Betula pendula], or, in the British Isles, [Betula pubescens], with [Deschampsia flexuosa], [Agrostis capillaris] ([Agrostis tenuis]), [Festuca ovina], [Vaccinium myrtillus], developed notably on sands, gravels, moraines and decalcified alluvions of nemoral northern and middle European plains and hills, as substitution facies of acidophilous oak woods ([Fago-Quercetum], [Blechno-Quercetum petraeae], [Rusco-Quercetum], [Luzulo-Quercetum]), occasionally of oak-hornbeam woods (particularly mixed Atlantic bluebell oak forests, [Endymio-Carpinetum]), or colonization stages of dry heaths and decalcified dunes.
Iberian acidophilous birch woods	Medio-European acidophilous birch woods of the collinar and lower montane levels of northwestern Iberia, formed by [Betula pendula] or [Betula celtiberica] as substitution stages of acidophilous oak woods.

Insubrian acidophilous birch woods	Birch woods of the collinar and lower montane levels of northern Italy, dispersed in the Alpine foothills where they constitute substitution stages of the Insubrian acidophilous oak woods ([Castaneo-Quercetum] p.), on the fluvioglacial terraces of the Po system, as facies of the acidophilous pine-birch-oak woods, and in the Euganean hills.
Heavy-metal birch woods	Subclimax birch woods occupying soils intoxicated by heavy metals, with an herb layer that may include metallophytes and habitually calciphile species.
Dune birch woods	Birch woods formed by [Betula pubescens], [Betula pendula] and [Populus canescens] with [Viola hirta], [Ligustrum vulgare], [Polygonatum odoratum], in calcareous North Sea and Baltic dunes.
Illyrian birch woods	[Betula pendula]-dominated woods of the basins of the Drava and Sava in Slovenia, Croatia, northern Bosnia-Herzegovina and of neighbouring regions, in part birch facies of the acidophilous [Betula pendula]-[Quercus petraea] forests of unit 41.5734, in part pioneer formations in forest clearings and other recolonisation areas.
British sub-boreal birch woods	Birch woods, often extensive and pure, formed by [Betula pubescens] ([Betula odorata], [Betula carpatica]) or [Betula pendula], beyond and above the present range of oak woods in Scotland and northern England.
Hercynio-Alpine birch woods	Birch stands of the montane and subalpine levels of the Alps, the Carpathians, the Apennines, the Pyrenees, the Jura, the Hercynian ranges and the mountains of the Balkan peninsula, mostly subclimax formations of stations with anomalous edaphic and microclimatic conditions.
Alpine timberline birch woods	Tree-limit birch stands, of local distribution in the Alps.
Birch block forests	Birch stands, mostly of [Betula pubescens] ([Betula carpatica], [Betula tortuosa]), occupying, in the Alps, the Jura and the Hercynian ranges, cold stations on cliff-base rocky screes and boulder-falls through which cold air flows.
Pyrenean birch woods	Birch-dominated formations of the Pyrenees, locally frequent in all vegetation levels.
Apennine birch woods	Isolated birch stations of the Apennines, in the Abruzzi, bosco di Manziana (Latium), monti Alburni, monti Picentini.
Illyro-Moesian montane birch woods	[Betula pendula] stands of the montane and subalpine levels of mountains of the Balkan Peninsula, including the Balkan Range, the Rhodopides, the Dinarides and the northwestern Hellenides.
Balkano-Rhodopide birch woods	[Betula pendula] stands of the montane and subalpine levels of the Balkan Range and the Rhodopides.
Dinaro-Pelagonide birch woods	[Betula pendula] stands of the montane and subalpine levels of mountains of the western Balkan Peninsula.
Carpathian birch woods	[Betula pendula] woods of montane level of the eastern Carpathian system forming as pioneer stands in felled areas of spruce, beech and mixed beech-fir and beech-fir-spruce forests.

Carpathian rowan birch woods	[Betula pendula]-dominated woods of the upper montane level of the Southern Carpathians and the Eastern Carpathians, on superficial brown acid soils of steep slopes in the zone of mixed spruce forests, rich in [Sorbus aucuparia] and accompanied by [Picea abies], [Oxalis acetosella], [Vaccinium myrtillus], [Vaccinium vitis-idaea], [Pulmonaria rubra], [Salix silesiaca], [Calamagrostis arundinacea] and some [Fagetalia] species.
Carpathian aspen birch woods	[Betula pendula]-dominated woods situated on sandy brown weathered soils of steep slopes and hilltops of the lower montane level of the Apuseni mountains, in particular of the Plopis and Gilau mountains, with [Populus tremula] and representatives of the [Epilobion angustifolii], and of the [Fagetalia].
Intra-Carpathian dune oak-birch woods	Woods dominated by [Betula pendula] accompanied by [Quercus robur] with psammophyllous species in the herb layer, characteristic of the inland dunes of the eastern rim of the eastern intra-Carpathian basin of Romania, in the region of St. Gheorghe, at Reci in the Kovasna district.
Corsican birch woods	[Betula pendula] formations of the upper montane level of Corsica, forming extensive subclimax belts on rocky, rapidly eroding soils at the upper forest limit, as well as transition communities in the evolution of laricio pine or beech forests.
Montane [Betula celtiberica] woodlands	Formations of the upper montane and supra-Mediterranean levels of Iberia dominated by the endemic [Betula celtiberica].
Cantabrian [Betula celtiberica] woodlands	Climax tree-limit [Betula celtiberica] woods of the Cantabrian mountains.
Western [Betula celtiberica] woodlands	Upper montane and supra-Mediterranean climax formations of the western Cordillera Central (Serra da Estrela) and the Orensano-Sanabrian mountains, limited to tree-limit situations and humid ravines.
Sorian and Guadarraman [Betula celtiberica] woodlands	Humid supra-Mediterranean climax formations of the eastern Cordillera Central (Guadarrama) and of the Northern Iberian Range (Sorian mountains), restricted to relict stations on rainy ubacs and in humid ravines.
Mount Etna birch stands	Endemic [Betula aetnensis] formations of Mount Etna lavas, limited to the 1200-2000 metre level, mostly within the 1600-1750 metre range, at northern to eastern exposures. The accompanying cortège includes [Adenocarpus complicatus], [Genista aetnensis], [Juniperus hemisphaerica], [Festuca circummediterranea].
Oroboreal birch woods and thickets	Timberline birch woods and thickets dominating the subalpine belt of the mountains of the boreal taiga zone or the transition zone between taiga and tundra or polar deserts in the Atlantic or Pacific influenced extreme western and extreme eastern regions of the northern Palaearctic, formed by [Betula pubescens ssp. czerepanovii] ([Betula pubescens ssp. tortuosa], [Betula kusmisscheffii]) or [Betula ermani].

Boreo-Atlantic birch woods and thickets	Boreal and subarctic [Betula pubescens ssp. czerepanovii] woods and thickets of Iceland, extreme southwestern Greenland and oceanic western Norway, distributed in lowlands, in valleys and at the foot of mountain slopes, in relatively humid, sheltered situations. In Iceland and Greenland they constitute the only form of boreal woodland. Their stature varies with microclimates, dense low scrubs prevailing along the coasts, in wind-exposed localities and in the most oceanic areas, taller brushes and woods forming further inland and in more continental districts.
Boreo-Atlantic crowberry-bog bilberry birch woods	Woods and thickets of [Betula pubescens ssp. czerepanovii] of Iceland and western Norway with an ericoid-dominated undergrowth, formed mainly by [Empetrum hermaphroditum], dominant in Iceland, and [Vaccinium uliginosum], dominant in Norway, accompanied by [Calluna vulgaris], [Arctostaphylos uva-ursi], [Betula nana], [Deschampsia flexuosa], mosses and, in Iceland, [Juncus trifidus], [Kobresia myosuroides].
Boreo-Atlantic small fern birch woods	Woods and thickets of [Betula pubescens ssp. czerepanovii] of Iceland and of the oceanic southern boreal and oceanic middle boreal zones of Norway, developed on moist moraine podsols, with a field layer dominated by ferns.
Icelandic bog bilberry-hairgrass birch woods	Woods and thickets of [Betula pubescens ssp. czerepanovii] of the lowlands of Iceland, occupying thick, relatively rich soils, with a heath-grassland undergrowth dominated by [Vaccinium uliginosum], [Empetrum hermaphroditum], [Agrostis capillaris], [Deschampsia flexuosa], accompanied by [Vaccinium myrtillus], [Salix callicarpaea] ([Salix arctica]), [Salix lanata], [Salix phylicifolia], [Campanula rotundifolia], [Galium verum], [Hierochloe odorata], [Anthoxanthum odoratum], [Festuca rubra] s.l., [Juncus trifidus], [Kobresia myosuroides], [Lycopodium annotinum], [Equisetum pratense].
Boreo-Atlantic cranesbill birch woods	Herb-rich woods and thickets of [Betula pubescens ssp. czerepanovii] occupying relatively rich mull sandy moraine soils in climatically favourable regions of western Norway and Iceland, with affinities to the oro-Scandinavian calcicline mountain birch woods of unit 41.B725.
Oro-Scandian birch woods	[Betula pubescens ssp. czerepanovii] woods and thickets of the boreo-alpine and arcto-alpine mountains of Fennoscandia, distributed mostly in the subalpine, subfjell belt, which they dominate.
Oro-Scandian crowberry-lichen birch woods	Low (2-3 m) [Betula pubescens ssp. czerepanovii] woods of the subalpine belt of northern, western and inner mountains of Fennoscandia with a lichen-rich ericoid-dominated undergrowth formed by [Empetrum hermaphroditum], [Vaccinium myrtillus], [Vaccinium vitis-idaea], [Phyllodoce caerulea], accompanied by junipers ([Juniperus nana]), dwarf birch ([Betula nana]), willows ([Salix] spp.).

Oro-Scandian bilberry-hairgrass birch woods	Medium-tall (4-7 m) [Betula pubescens ssp. czerepanovii] woods of sandy moraine podsols of the subalpine belt of the mountains of Fennoscandia, with a moss-rich grass and heath undergrowth formed by [Vaccinium myrtillus], [Empetrum hermaphroditum] and [Deschampsia flexuosa], accompanied by [Dicranum fuscescens], [Dicranum scoparium], [Hylocomium splendens], [Pleurozium schreberi]; their cortège includes [Betula nana], [Vaccinium vitis-idaea], [Linnaea borealis], [Pedicularis lapponica], [Solidago virgaurea], [Trientalis europaea], and sparse taller shrubs, in particular, of [Juniperus communis].
Oro-Scandian bilberry-dwarf cornel birch woods	Low to medium tall (to 6 m) [Betula pubescens ssp. czerepanovii] woods of the mountains of Norway and northern Finland, extending from the subalpine belt down, in western Norway, to the fjords, developing in somewhat warmer and wetter areas and occupying thick humus layers on weak podsols of sandy more nutrient-rich moraines than those of units 41.B721 and 41.B722, with an undergrowth dominated by [Cornus suecica], [Empetrum hermaphroditum], [Vaccinium myrtillus], [Vaccinium vitis-idaea], [Deschampsia flexuosa], accompanied by taller shrubs, primarily of [Juniperus communis] and [Salix] spp.; accompanying species include [Linnaea borealis], [Solidago virgaurea], [Trientalis europaea], [Vaccinium uliginosum], [Molinia caerulea], [Luzula sylvatica], [Thelypteris limbosperma], [Gymnocarpium dryopteris], [Blechnum spicant], [Dryopteris expansa], [Dicranum scoparium], [Dicranum majus], [Hylocomium splendens], [Pleurozium schreberi], [Cladonia] spp.
Oro-Scandian small-fern birch woods	[Betula pubescens ssp. czerepanovii] woods of the subalpine belt of Fennoscandian mountains, often with some spruce or pine, and with an understorey dominated by [Gymnocarpium dryopteris]; accompanying species include [Dryopteris assimilis], [Thelypteris phegopteris], [Oxalis acetosella], [Cerriphyllum piliferum], [Hylocomium umbratum], [Lophocolea bidentata], in addition to the cortège of the woods of unit 41.B722.
Oro-Scandian cranesbill-stone bramble birch woods	Tall (10-11 m) woods of [Betula pubescens ssp. czerepanovii], accompanied by [Salix] spp., [Sorbus] spp., of the subalpine belt of mountains of Fennoscandia, occupying relatively rich mull soils of sand moraines in climatically favourable regions, with a low herb-rich undergrowth dominated by [Geranium sylvaticum] and [Rubus saxatilis]. There is an often well developed understorey of taller shrubs, in particular, [Juniperus communis] and [Salix] spp. and a poorly developed moss and lichen layer. The species cortège comprises [Campanula rotundifolia], [Alchemilla vulgaris], [Cornus suecica], [Filipendula ulmaria], [Fragraria vesca], [Galium boreale], [Galium verum], [Geum rivale], [Hieracium] spp., [Melampyrum sylvaticum], [Prunella vulgaris], [Poa nemoralis], [Poa pratensis], [Hierochloe odorata], [Agrostis capillaris], [Anthoxanthum odoratum], [Deschampsia flexuosa], [Festuca rubra] s.l., [Melica nutans], [Trientalis europaea], [Vaccinium uliginosum], [Vaccinium myrtillus], [Elymus caninus] ([Roegneria canina]), [Carex bigelowii], [Carex vaginata], [Coeloglossum viride], [Dactylorhiza maculata

Oro-Scandian tall-herb birch woods	Tall (up to 12 m) woods of the subalpine belt of Fennoscandian mountains dominated by [Betula pubescens ssp. czerepanovii], with [Salix] spp., [Sorbus aucuparia], [Prunus padus] and an undergrowth dominated by tall herbs, comprising, together with abundant [Geranium sylvaticum], [Trollius europaeus], [Rubus saxatilis], [Aconitum septentrionale] ([Aconitum lycoctonum]), [Cirsium helenioides], [Cicerbita alpina], [Epilobium angustifolium], [Ranunculus platanifolius]. The well-developed taller shrub understorey is dominated by [Juniperus communis], accompanied by [Salix] spp.; dwarf shrubs are often absent and the moss and lichen layer is very poorly developed; ferns are common. The species cortège includes [Alchemilla] spp., [Astragalus alpinus], [Myosotis decumbens], [Paris quadrifolia], [Silene dioica], [Solidago virgaurea], [Stellaria nemorum], [Valeriana sambucifolia], [Vicia biflora], [Milium effusum], [Deschampsia flexuosa], [Calamagrostis purpurea], [Anthoxanthum odoratum], [Carex vaginata]. These woods occupy well-drained, mull-rich soils.
Oro-Scandian tall-fern birch woods	Tall [Betula pubescens ssp. czerepanovii] woods of the subalpine belt of Fennoscandian mountains, occasionally accompanied by [Alnus incana], [Prunus padus], [Salix] spp., with a fern-rich field layer dominated by [Athyrium filix-femina], [Matteuccia struthiopteris], [Dryopteris expansa], accompanied by [Athyrium distentifolium], [Phegopteris connectilis], [Thelypteris limbosperma] and tall herbs; the species cortège includes [Aconitum septentrionale] ([Aconitum lycoctonum]), [Solidago virgaurea], [Stellaria nemorum], [Viola biflora], [Filipendula ulmaria], [Geranium sylvaticum], [Ribes rubrum], [Rubus idaeus], [Rubus saxatilis], [Calamagrostis purpurea], [Deschampsia cespitosa]; tall-fern hirch woods are developed on sandy moraines with good water supply.
Eurasian boreal birch woods	Birch woods of the taiga belt, of the wooded tundra belt, and of the taiga-nemoral forest transition zone of Eurasia, formed by [Betula pendula], [Betula pubescens] s.l. or [Betula platyphylla].
Siberian steppe birch woods	Open, often parklike, woods of [Betula pendula], [Betula platyphylla] or [Betula pubescens] s.l. of the transition zone between steppe and taiga of Siberia, east of the range of the nemoral deciduous forests of the Sarmatic region.
Ponto-Caspian birch woods	Birch forests of the northern Black Sea basin, Anatolia, the Caucasus and neighbouring regions.
Aspen woodland	Woods of the western Palaearctic region dominated by [Populus tremula].
Inner Alpine aspen woods	Woods of [Populus tremula] and [Corylus avellana], accompanied by a xerophile flora, of dry inner valleys of the Alps.
Lowland nemoral aspen woods	Pioneer and subclimax [Populus tremula] formations of plains and hills of nemoral Europe, in particular the North Sea-Baltic plain and lower Hercynian slopes, within the range of Atlantic and sub-Atlantic acidophilous oak woods, and of the adjacent large alluvial systems, such as that of the Po.
Montane aspen stands	[Populus tremula] formations of the montane level of nemoral and Mediterranean mountains of Europe, occurring, in particular, within the beech belt of high southern mountains.
Sub-Mediterranean aspen stands	[Populus tremula] formations occurring within the sub- or supra-Mediterranean environment of the mixed deciduous broad-leaved forests of, in particular, the [Quercion frainetto].

Boreal aspen woods	[Populus tremula] stands of the taiga zone and of the transition zone between taiga and nemoral woods of Fennoscandia and the northern Sarmatic region.
Anatolian aspen forests	[Populus tremula] stands, sometimes vast, of the southern slopes of inner Pontic ranges.
Rowan woodland	Woods of the western Palaearctic region dominated by [Sorbus aucuparia], characteristic in particular of the Scottish Highlands.
Inland dune oak - birch woods	Natural woods, usually birch-oak or, east of the Elbe, [Pinus sylvestris], developing on Germano-Baltic fluvioglacial inland dune systems.
Aspen and birch woods with elder	Open woodlands dominated by [Betula pendula]. The tree and shrub layers are species-poor, with frequent occurrence of [Sambucus racemosa]. The herb layer is usually well developed, relatively species-rich, the most common species are [Poa nemoralis], [Hordelymus europaeus], [Anemone nemorosa], [Dryopteris filix-mas], [Luzula luzuloides], [Galium odoratum], [Rosa tomentosa], [Epilobium montanum], [Euphorbia amygdaloides].
Meso- and eutrophic oak, hornbeam, ash, sycamore, lime, elm and related woodland	Woods, typically with mixed canopy composition, on rich and moderately rich soils. Includes woods dominated by [Acer], [Carpinus], [Fraxinus], [Quercus] (especially [Quercus petraea] and [Quercus robur]), [Tilia] and [Ulmus]. Excludes acid [Quercus] woodland (G1.8) and woodland with a large representation of southern species such as [Fraxinus ornus] or [Quercus pubescens] (G1.7).
Oak - ash - hornbeam woodland on eutrophic and mesotrophic soils	Atlantic, medio-European and eastern European forests dominated by [Quercus robur] or [Quercus petraea], on eutrophic or mesotrophic soils, with usually ample and species-rich herb and bush layers. [Carpinus betulus] is generally present. They occur under climates too dry or on soils too wet or too dry for beech or as a result of forestry practices favouring oaks.
Mixed Atlantic bluebell oak forests	Atlantic forests of the British Isles, western Belgium and northwestern France, mostly on more or less water-retaining soils, characterized by a diverse tree layer, dominated by [Quercus robur] and rich in [Fraxinus excelsior], and by an herb layer rich in species of the group of [Hyacinthoides non-scripta], in particular [Narcissus pseudonarcissus], [Gagea spathacea], [Tamus communis], [Primula vulgaris], [Luzula forsteri]. [Allium ursinum], [Primula elatior], [Ranunculus ficaria], [Anemone nemorosa], [Lamium galeobdolon] characterise variants linked to soil acidity and hygromorphy.
Aquitanian ash - oak and oak - hornbeam forests	Forests of [Quercus robur], [Fraxinus excelsior] and [Carpinus betulus] of valley bottoms and cool, damp lower slopes of southwestern France, south to the Pyrenean piedmont, with [Sorbus torminalis], [Ruscus aculeatus] and many thermocline, acidocline and Mediterraneo-Atlantic species.
Sub-Atlantic oxlip ash - oak forests	Forests of [Quercus robur], sometimes [Quercus petraea], rich in [Fraxinus excelsior], with [Carpinus betulus], developed on more or less wet, meso-eutrophic soils, in regions of moderate Atlantic influence, from southern Champagne and Lorraine north to lower Rhenania, Westphalia and Hanover, characterized by the abundance of species of the ecological groups of [Primula elatior], of [Lamium galeobdolon], of [Anemone nemorosa] and by the absence of [Hyacinthoides non-scripta].

Arum ash-oak forests	Typical neutrocline and acidocline [Quercus robur]-[Fraxinus excelsior] forests with primrose, developed on silts, marls and clays, characterized by the presence of the ecological group of [Arum maculatum], including [Ranunculus ficaria], [Ranunculus auricomus], [Adoxa moschatellina], [Ribes rubrum], [Glechoma hederacea], [Listera ovata], or of the group of [Galium odoratum], with [Rosa arvensis], [Mercurialis perennis], [Sanicula europaea], [Melica uniflora], [Ornithogalum pyrenaicum], or by the abundance of [Lamium galeobdolon].
Corydalis ash-oak forests	[Quercus robur]-[Fraxinus excelsior] forests occupying damp colluvions at the bottom of slopes in valleys within sub-Atlantic forests, characterized by the presence of the group of [Anemone ranunculoides], [Corydalis solida], [Gagea lutea] and [Lathraea squamaria] or of [Aconitum vulparia], transitional to ravine or alluvial forests.
Garlic ash-oak forests	Sub-Atlantic [Quercus robur]-[Fraxinus excelsior] forests rich in [Allium ursinum], of alluvial terraces and adjacent colluvions.
Sub-Atlantic stitchwort oak - hornbeam forests	Sub-Atlantic and medio-European forests of [Quercus robur] and [Quercus petraea], with [Carpinus betulus], developed on meso-oligotrophic soils, less hydromorphic than those occupied by the often sympatric forests of unit 41.23, characterized by the replacement of the groups of [Primula elatior] and [Lamium galeobdolon], well represented in the forests of unit 41.23, by those of [Deschampsia flexuosa] and of [Maianthemum bifolium], transgressives from the [Quercion]. They constitute the prevalent oak-hornbeam forests of the Münster basin, the Rhenish and Mosan regions, the northwestern Hercynian lands, Lorraine and the eastern Paris basin, Burgundy.
Northwestern oak-hornbeam forests	Typical sub-Atlantic [Quercus robur]-[Quercus petraea]-[Carpinus betulus] forests of northern Europe, north to southern Norway, southern Sweden and southern Finland, and of the eastern Paris basin and Lorraine, with [Stellaria holostea], [Carex brizoides], [Narcissus pseudonarcissus], [Polygonatum verticillatum], [Potentilla sterilis], [Ranunculus nemorosus], [Poa chaixii], [Luzula sylvatica], [Luzula luzuloides].
Lorraine marl oak-hornbeam forests	Oak-hornbeam forests of Lorraine marls, with [Quercus robur], [Carpinus betulus], [Acer campestre], [Sorbus torminalis], [Lonicera xylosteum], [Galium odoratum], [Carex umbrosa], [Pulmonaria obscura] and [Ornithogalum pyrenaicum].
Burgundy collinar oak-hornbeam forests	[Quercus robur]-[Quercus petraea]-[Carpinus betulus] forests of the mesozoic hills and plateaux of northwestern Burgundy (Nivernais, Langres plateau, Barrois, Morvan piedmont).
Burgundy plain oak-hornbeam forests	[Quercus robur]-[Quercus petraea]-[Carpinus betulus] forests of the Saone plain in southern Burgundy and Bresse, of the southern Lyonnais and of the Limagne basin, including the outstanding multicentury-old stands of Côteaux and similar stations.

Famennian oak - hornbeam forests	Sub-Atlantic forests of [Quercus robur] and [Quercus petraea], mostly low-canopied, with [Carpinus betulus], [Sorbus torminalis], [Betula pendula], [Populus tremula] in the subcanopy or the understorey, developed on soils with an alternating hydric regime, mostly clays derived from the alteration of Devonian schists, characterized by the abundance of [Carex flacca] and the coexistence of acidocline and calcicline species, typical of the sub-Hercynian Fagne-Famenne depression where they constitute a highly distinctive, almost continuous, forest-belt.
Sub-continental oak - hornbeam forests	[Quercus robur] or [Quercus petraea] forests of eutrophic or mesotrophic soils of subcontinental and continental northern and central Central Europe and of Eastern Europe. [Carpinus betulus] is generally present in their western representatives, widespread in Central Europe and western Eastern Europe. They are richer in lime, [Tilia cordata], than the sub-Atlantic forests of units 41.23, 41.24 and 41.25. They are of more northern character in their area of mutual approach than the Balkanic forests of unit 41.2C. Their southern limit of occurrence follows the Carpathian arc, the northern rim of the Podolian plateaux, and, farther east, the southern limit of nemoral forests.
Wood bedstraw oak-hornbeam forests	[Quercus petraea]-[Carpinus betulus] forests of regions with subcontinental climate within the central European range of [Fagus sylvatica], such as the Upper Rhine plain, the rain shadows of the Harz, Rh”n and Spessart, the Swabian-Franconian basin, the Bavarian plateau and Thuringe, the Austrian northern pre-Alps and the Wienerwald, the Polish central lowlands and adjacent hills of Silesia, Great Poland and Kujawy, dominated by [Quercus petraea] and with [Sorbus torminalis], [Sorbus domestica], [Acer campestre], [Ligustrum vulgare], [Convallaria majalis], [Carex montana], [Carex umbrosa], [Festuca heterophylla].
Mixed lime-oak-hornbeam forests	Lime-oak forests of Central and Eastern Europe developed in regions of continental climate east of the range of [Fagus sylvatica], but within that of [Carpinus betulus], in Poland, Lithuania, Belarus, Ukraine and Russia, with [Quercus petraea], [Quercus robur], [Tilia cordata], [Acer platanoides], [Carpinus betulus].
Boreonemoral spruce-lime-oak-hornbeam forests	[Quercus robur]-[Quercus petraea]-[Tilia cordata] forests of northern nemoral or boreonemoral regions of northeastern Central Europe and Eastern Europe, east of the range of [Fagus sylvatica], north of the range of the forests of unit 41.262 from which they differ by an admixture of [Picea abies] and other boreal species.
Peri-Carpathian lime-oak-hornbeam forests	[Quercus robur]-[Quercus petraea]-[Tilia cordata] forests of the northern flank of the northern and northeastern Carpathians (Poloninskij Chrebet), west to northern Moravia, differing from those of unit 41.262 by the presence of [Abies alba] and [Picea abies] in the tree layer.
Bohemian oak-hornbeam and oak-lime forests	[Quercus petraea]-[Carpinus betulus] forests of plains and low hills of the Bohemian basin and adjacent areas of northeastern Lower Austria.

Carpathian hairy sedge oak-hornbeam forests	[Quercus petraea]-[Tilia cordata]-[Carpinus betulus]-[Fagus sylvatica] forests of the collinar level of the Carpathians, of southern Moravia, of the flysch hills of northeastern Lower Austria, of the Hainburger Berge and Leitha hills of northeastern Burgenland and of the volcanic hills of northern Hungary.
Sub-Pannonic primrose oak-hornbeam forests	[Quercus petraea]-[Quercus robur]-[Carpinus betulus]-[Acer campestre] forests of warm hills of the Pannonic domaine, in southern Moravia, southern Slovakia, the eastern Lower-Austrian Weinviertel and Marchfeld, the hills of western Transdanubia and the mid-Pannonic range of central Transdanubia, outside of the range of [Fagus sylvatica], with [Quercus cerris], [Cornus mas], [Sorbus torminalis], [Ulmus minor], [Rhamnus catharticus], [Viola mirabilis], [Viola alba], [Viola suavis], [Primula veris], [Polygonatum latifolium], [Polygonatum multiflorum], [Polygonatum odoratum], [Pulmonaria mollis ssp. mollis], [Pulmonaria murinii], [Chamaecytisus supinus], [Serratula tinctoria], [Convallaria majalis], [Carex curvata], [Carex michelii], [Melica uniflora], [Poa nemoralis].
Central sub-Carpathian oak-hornbeam forests	[Quercus petraea]-[Quercus robur]-[Carpinus betulus] forests of hills, valleys and plateaux of the southern flank of the eastern section of the Western Carpathian arc, in Slovakia and northern Hungary, within the range of [Fagus sylvatica].
Waldsteinia oak-hornbeam forests	[Quercus petraea]-[Quercus robur]-[Carpinus betulus] forests of the Slovakian-Hungarian karst.
Scorpion-vetch oak-hornbeam forests	[Quercus petraea]-[Quercus robur]-[Carpinus betulus] forests of eastern Slovakia, with [Coronilla elegans] ([Coronilla latifolia]).
Western boreal mixed deciduous forests	Forests of [Quercus robur], [Ulmus glabra], [Tilia cordata], [Acer platanoides], [Fraxinus excelsior], [Corylus avellana] and sometimes [Fagus sylvatica] and/or [Carpinus betulus], of the southern Fennoscandian and Baltic regions of transition and interdigitation between taiga and nemoral deciduous forests. They usually constitute deciduous forests enclaved in a taiga environment, near the limits of the ranges of [Fagus sylvatica] and/or [Carpinus betulus].
Northern middle Russian oak-lime forests	Forests of [Quercus robur] of the northern nemoral zone and of enclaves in the southern boreal zone of Eastern Europe, with [Tilia cordata] and no [Carpinus betulus]. They are characteristic of the Baltic States, eastern Belarus, the Ukraine and Russia, east to the Volga, outside of the range of [Carpinus betulus]. They also occur within the geographical range of hornbeam on soils unfavourable to its growth. [Quercus robur] and [Tilia cordata] are accompanied by [Acer platanoides], [Populus tremula], [Picea abies], [Corylus avellana], [Sorbus aucuparia], [Euonymus europaeus], [Daphne mezereum], [Galium odoratum], [Anemone nemorosa] and boreal herbs.
Sub-Atlantic calciphile oak - hornbeam forests	Often low, open, xerophile forests dominated by [Quercus robur] or [Quercus petraea], developed on superficial to deep soils associated with calcareous substrates in Hercynian southern central Germany, eastern and southern Belgium, eastern and central France; located within the range of the [Pulmonario-Carpinenion], they offer similarities to the [Galio-Carpinenion] and generally constitute substitution forests of the [Cephalanthero-Fagion], either regressive phases brought about by coppicing or recolonisation phases permitted by abandonment of [Bromion] grasslands.

Sub-Atlantic calciphile privet oak-hornbeam forests	Generally low forests and woods characteristic of superficial calcareous soils on often steep sunny slopes of Hercynian southern central Germany, southern Belgium and eastern France, with [Quercus robur] (usually dominant), [Quercus petraea], [Tilia platyphyllos], [Fraxinus excelsior], [Carpinus betulus], [Acer campestre], [Corylus avellana], [Cornus sanguinea], [Cornus mas], [Crataegus laevigata], [Crataegus monogyna], [Prunus spinosa], [Euonymus europaeus], [Ligustrum vulgare], [Viburnum lantana], [Daphne laureola], [Primula veris], [Viola hirta], [Mercurialis perennis], [Scilla bifolia], [Orchis mascula], [Carex digitata], [Carex montana].
Sub-Atlantic xerophile [Anthericum] oak-hornbeam forests	Low, open forests and woods characteristic of steeep, sunny slopes on slightly calcareous schists in the Ardenne-Eifel periphery, with [Quercus petraea] (dominant), [Carpinus betulus], [Quercus robur], [Sorbus torminalis], [Sorbus aria], [Pyrus pyraster], [Malus sylvestris], [Prunus avium], [Amelanchier ovalis], [Stellaria holostea], [Anemone sylvestris], [Silene nutans], [Silene inflata], [Campanula persicifolia], [Anthericum liliago], [Melica nutans], [Carex montana].
Sub-Atlantic calciphile squill ash-oak forests	Forests of [Quercus robur] and [Fraxinus excelsior], rich in ligneous species, in particular, [Fagus sylvatica], [Carpinus betulus], [Sorbus aria], [Sorbus torminalis], [Ulmus glabra] ([Ulmus scabra]), [Taxus baccata], [Acer campestre], [Cornus mas], [Pyrus pyraster], [Daphne laureola], characteristic of well-drained, often deep, sometimes rocky, moist or partly dry calcareous soils on gentle slopes of the south Paris basin and adjacent regions, with [Arum italicum], [Asarum europaeum], [Doronicum plantagineum], [Helleborus foetidus], [Hepatica triloba], [Orobanche hederae], [Lilium martagon], [Carex montana].
Southern Alpine oak - hornbeam forests	Fragmentary mesophile or meso-hygrophile formations of the Insubrian pre-Alps, the northern Apennines, the Ligurian Apennines, the Esterel and the Tanneron and very locally, the southern French Alps (forˆt du Saou, Dr“me), with [Quercus petraea], [Quercus robur], [Fraxinus excelsior], [Tilia platyphyllos], [Tilia cordata] and [Carpinus betulus], developed on deep soils in conditions of sufficient atmospheric and edaphic humidity. They represent a transition between the medio-European formations of the [Pulmonario-Carpinenion] and [Galio-Carpinenion] on the one hand, the southeastern formations of the [Carpinion illyricum], and perhaps the southwestern formations of the [Polysticho-Corylenion], on the other hand.

Pyreneo-Cantabrian oak - ash forests	Forests dominated by [Quercus robur], or, in parts of the Pyrenees and in the Oro-Cantabrian interior, [Quercus petraea], with [Fraxinus excelsior], [Tilia platyphyllos], [Corylus avellana], [Acer campestre], [Acer pseudoplatanus], [Prunus avium], [Ulmus glabra], many shrubs and lianas, abundant [Hedera helix], many ferns, such as [Polystichum setiferum], [Dryopteris affinis], [Dryopteris dilatata], [Asplenium scolopendrium], and with [Arum italicum], [Veronica montana], [Hypericum androsaemum], [Primula vulgaris], [Pulmonaria longifolia], [Helleborus viridis ssp. occidentalis], [Isopyrum thalictroides], [Ajuga reptans], [Carex sylvatica], [Bromus racemosus], [Melica uniflora], of the collinar, submontane and, in a somewhat impoverished form with [Crataegus laevigata], montane levels of the piedmont of the Cordillera Cantabrica, in Navarra, Guipuzcoa, Vizcaya, Cantabria, Asturias and Castilla-Leon, as well as of the submontane level of the northern slope, and locally in Navarra and Catalonia, the southern slope of the Pyrenees.
Illyrian oak - hornbeam forests	Forests of [Quercus robur] or [Quercus petraea], sometimes [Quercus cerris], and [Carpinus betulus] occupying the basins of the Drava and Sava in Slovenia, Croatia, northern Bosnia-Herzegovina, with outliers in south Hungarian mid-Pannonic and peri-Pannonic hills, south of Lake Balaton, in southern Carinthia and Styria and in valleys and hills, particularly karst valleys, of the western Balkan peninsula south to Montenegro, Albania and the F.Y.R. of Macedonia, characterized by higher continentality than in the sub-Mediterranean and by higher temperatures than in middle Europe; they are intermediate between those of central Europe and those of the Balkans and merge northwards into the Pannonic oak woods. Constituting a centre of diversity, they have a much higher species richness than the Central European oak woods. [Acer tataricum], [Cyclamen purpurascens], [Epimedium alpinum], [Erythronium dens-canis], [Helleborus dumetorum ssp. atrorubens], [Knautia drymeia] are characteristic. Outliers of these forests also occur in Frioul and the northern Apennines; they have been included in unit 41.2
Illyrian sessile oak-hornbeam forests	Forests of [Quercus petraea], sometimes mixed with [Quercus robur] or [Quercus cerris], and [Carpinus betulus] occupying well-drained ground in the basins of the Drava and Sava in Slovenia, Croatia, northern Bosnia-Herzegovina, extending to the southern Hungarian mid-Pannonic and peri-Pannonic hills, to southern Carinthia and Styria, Frioul and the northern Apennines, and to valleys and hills of the western Balkan peninsula.
Illyrian calcicline sessile oak-hornbeam forests	Forests of [Quercus petraea], sometimes mixed with [Quercus robur] or [Quercus cerris], and [Carpinus betulus] occupying limestones and rendzinas, often on skeletal soils, in the basins of the Drava and Sava, north to the hills of southwestern Transdanubia and the upper Drava basin of southern Carinthia.
Illyrian neutrocline sessile oak-hornbeam forests	Forests of [Quercus petraea], sometimes mixed with [Quercus robur] or [Quercus cerris], and [Carpinus betulus], occupying brown soils in the basins of the Drava and Sava, north and west to Friuli Venezia Giulia and the northern Apennines, southern Styria and southern Hungary, extending south in valleys and hills of the western Balkan peninsula to Albania and the F.Y.R. of Macedonia.

Illyrian acidocline sessile oak-hornbeam forests	Forests of [Quercus petraea], sometimes mixed with [Quercus robur] or [Quercus cerris], and [Carpinus betulus], occupying well-drained acid soils in the basins of the Drava and Sava.
Illyrian pedunculate oak-hornbeam forests	[Quercus robur] and [Carpinus betulus] forests of the Illyrian basin, in particular, humid forests of non-carbonated pseudogleys and gleys of valleys of the Drava and Sava basins of Slovenia, Croatia and Hungary, forming in contact with riverine forests of the [Alno-Padion], but on somewhat higher ground, vicariants of the Pannonic forests of unit 41.2B1.
Illyrian sub-Mediterranean oak-hornbeam forests	[Quercus petraea] and [Carpinus betulus] forests of sub-Mediterranean regions of the southeastern pre-Alps and karstic reliefs of Slovenia, northwestern Croatia and extreme northeastern Italy, where they occupy north-facing doline slopes and cool vales, much richer in thermophile elements than the forests of unit 41.2A1.
Pannonic oak - hornbeam forests	Forests of [Quercus robur] or [Quercus petraea] with [Carpinus betulus] occupying anomolous stations, in particular, on humid peri-riverine ground or on acid bedrock, in the hills of the Pannonic plains and their periphery, including Styria, the Burgenland, the Alf”ld, the western Transdanubian hills, the mid-Transdanubian ridge, the western Slovakian Danube plain and the eastern Slovakian lowlands, thus, in the zone of contact between zonal medio-European and Illyrian [Carpinion] communities with both of which they share characteristics.
Pannonic hygrophile ash-oak-hornbeam forests	[Quercus robur], [Quercus petraea], [Carpinus betulus], [Fraxinus angustifolia], [Ulmus minor] forests of deep nutrient-rich gley soils of the Pannonic plains and hills of Styria, the Burgenland, the Alf”ld, the northern Hungarian Sator Range, the western Slovakian Danube plain and the eastern Slovakian lowlands, often developed in contact with riverine forests of the [Alno-Padion], occupying slightly higher ground, Pannonic vicariant of the Illyrian forests of unit 41.2A2. [Carex brizoides], [Anemone nemorosa], [Corydalis solida], [Galanthus nivalis] are abundant in the herb layer, which is particularly rich in vernal ephemerals, including [Gagea spathacea], [Gagea lutea], [Gladiolus imbricatus], [Cyclamen purpurascens], [Crocus neapolitanus], [Erythronium dens-canis], [Helleborus dumetorum], [Adoxa moschatellina], [Anemone ranunculoides], [Ranunculus ficaria], [Scilla vindobonensis], [Leucojum vernum].
Peri-Pannonic acidophile oak-hornbeam forests	[Quercus petraea]-[Carpinus betulus] forests of eastern peri-Alpic regions, western Transdanubia, the Transdanubian mid-Pannonic ridge and adjacent areas of Slovakia, developed on acidic rocks, with [Luzula luzuloides], [Deschampsia flexuosa], [Vaccinium myrtillus], [Mycelis muralis].
Southeastern European oak - hornbeam forests	Forests of [Carpinus betulus] and [Quercus robur], [Quercus petraea] or [Quercus dalechampii], sometimes with [Quercus cerris] or [Quercus frainetto], of the flanks and piedmont of the eastern and southern Carpathians and of the plateaux of the western Ukraine; azonal, often isolated oak-hornbeam woods of the Moesian [Quercion frainetto] zone, of the eastern Pannonic and western Pontic steppe woods zone and of the pre-Pontic hills of southeastern Europe. They are characterized by an admixture of sub-Mediterranean [Quercion frainetto] species, and, in the east, of Euxinian species.

Dacian oak-hornbeam forests	Forests of [Quercus robur] or [Quercus petraea] and [Carpinus betulus] of the Transylvanian plateau, the foothills of the Apuseni Mountains and the eastern sub-Pannonic hills of Crisana and Maramures, with a [Carpinion] cortège that includes [Prunus avium], [Tilia cordata], [Stellaria holostea], [Carex pilosa], [Galium schultesii], [Festuca heterophylla], [Ranunculus auricomus] accompanied by regional differential species such as [Lathyrus hallersteinii], [Melampyrum bihariense], [Aposeris foetida].
Dacian [Melampyrum biharense] oak-hornbeam forests	Forests of [Quercus robur] and [Carpinus betulus] of the Transylvanian plateau and the eastern sub-Pannonic hills of Crisana, developed on basicline deep brown soils of depressions and gentle slopes, under a weakly sub-Atlantic climate, with a species-rich herb layer formed by [Carpinion betuli] species, including [Melampyrum bihariense], [Helleborus purpurascens], [Lathyrus transsilvanicus], [Aposeris foetida], [Hepatica transsilvanica], [Aconitum moldavicum].
Dacian [Lathyrus hallersteinii] oak-hornbeam forests	Forests of [Quercus petraea] and [Carpinus betulus] of the peripherial hills of the Transylvanian plateau, including the western foothills of the Eastern Carpathians, the northern foothills of the Southern Carpathians, the Brasov basin and the eastern foothills of the Apuseni Mountains, locally of the eastern sub-Pannonic hills of Crisana, developed on acidocline leached brown soils of shady slopes, with [Carex pilosa], [Galium schultesii], [Stellaria holostea], [Helleborus purpurascens], [Ranunculus auricomus], [Lathyrus hallersteinii], [Aposeris foetida], [Festuca drymeja], and in the more thermophile communities, [Aristolochia pallida], [Rhamnus catharticus], [Quercus cerris].
Dacian tatar maple oak-hornbeam forests	Forests of [Quercus petraea], [Quercus robur] and [Carpinus betulus] of low hills of the central Transylvanian plateau, with [Prunus avium], [Acer tataricum], [Acer campestre] in the tree layer, [Viburnum lantana], [Cornus sanguinea], [Ligustrum vulgare], [Staphylea pinnata] in the shrub layer, [Vincetoxicum hirundinaria] ([Cynanchum vincetoxicum]), [Melittis melissophyllum], [Stellaria holostea], [Ranunculus auricomus], [Asarum europaeum] in the herb layer.
Moldo-Muntenian oak-lime-hornbeam forests	Forests of [Quercus petraea] s.l., [Quercus robur] and [Carpinus betulus], usually with [Tilia tomentosa], of the plateaux and eastern Carpathian foothills of Moldavia, of the Dobrojea plateau, of the plateaux, Southern Carpathian foothills and, locally, plains of Muntenia and Oltenia, west to the western Getic piedmont, characterized by a cortège richer in sub-Mediterranean or sub-Pontic species than that of the forests of unit 41.2C1.
Moesian oak-hornbeam forests	Oak-hornbeam forests dominated by [Quercus petraea] s.l., [Quercus robur], [Quercus cerris], and sometimes [Quercus frainetto], of somewhat humid sites, shady slopes and narrow valleys of the [Quercion frainetto] zone of Serbia, Bulgaria and Romania; they are characterized by a distinctly middle European cortège comprising [Carpinus betulus], [Acer campestre], [Prunus avium], [Corylus avellana], [Euonymus europaeus], [Lonicera caprifolium], [Helleborus odorus], [Cruciata glabra] and [Ranunculus ficaria] to which are associated various sub-Mediterranean and Ponto-Pannonic elements.

Moesian mesophile oak-hornbeam forests	Forests dominated by [Quercus dalechampii], accompanied by [Carpinus betulus], widespread in the xero-mesophytic durmast oak-hornbeam, 600-1200 metre, belt of the Balkan Range and its northern and northwestern spurs and satellites of northwestern Bulgaria and eastern Serbia, the Anti-Balkan (Sredna Gora) and neighbouring hills, the southeastern Dinarides, the Moeso-Macedonian mountains, the Rhodopides and the Sakar range of central Thrace, more humid than the [Carpinus orientalis]-[Quercus dalechampii] forests of unit 41.76831, accompanied by a distinctly middle-European cortège, comprising as local characteristics, [Acer campestre], [Prunus avium], [Corylus avellana], [Crataegus monogyna], [Cornus sanguinea], [Helleborus odorus], [Stellaria holostea], [Cruciata glabra], [Melica uniflora], [Poa nemoralis], [Dactylis glomerata], [Festuca heterophylla].
Moesian thermophile oak-hornbeam forests	Oak-hornbeam forests dominated by [Quercus petraea] s.l., [Quercus cerris], and sometimes [Quercus frainetto], of the [Quercion frainetto] zone of Serbia, northern Bulgaria and the Southern Carpathian foothills and valleys of Romania, characterized by a strong representation of thermophile species, in particular, of species of the [Quercion frainetto] constellation, including [Tilia tomentosa], [Sorbus torminalis], [Pyrus pyraster], [Acer tataricum], [Cornus mas], [Nectaroscordum siculum], together with medio-European [Carpenion betuli] or [Fagetalia] species.
Pre-Moesian [Galium kitaibelianum] oak-hornbeam forests	Forests of [Quercus petraea] and [Carpinus betulus] of the Olt, Jiu and Cerna valleys of the Getic piedmont of the Southern Carpathians, developed on sunny, moderate slopes and slightly acid leached brown soils, with [Tilia tomentosa], [Tilia cordata] and [Fagus sylvatica] sporadically present in the tree layer, and with a cortège that includes the characteristic [Galium kitaibelianum], [Galium baillonii], [Veronica bachofenii], the acidophile [Luzula luzuloides], [Calamagrostis arundinacea], [Deschampsia flexuosa] and the thermophile [Primula columnae], [Potentilla micrantha], [Aremonia agrimonoides], [Lychnis coronaria].
Moesian [Quercus cerris] oak-hornbeam forests	Neutrophile forests dominated by [Quercus cerris] and [Carpinus betulus] of Serbia, northern Bulgaria and the western Romanian pre-Carpathian hills, with an herb layer composed of elements of the [Fagetalia], such as [Stellaria holostea], [Dentaria bulbifera], [Asarum europaeum] and from the [Quercetea pubescenti-petreae] including [Cornus mas], [Campanula persicifolia], [Vincetoxicum hirundinaria] ([Cynanchum vincetoxicum]), [Coronilla varia].
Southern Sarmatic oak-lime-hornbeam forests	Oak-hornbeam forests of plains and plateaux of eastern foothills of the Eastern Carpathians of the Ukraine and northern Romanian Moldavia and of the central and southern parts of the Podolian plateau and its southern extensions in northern Moldavia, the northern Moldova Republic and the south-central Ukraine east to the Dniepr. They may be dominated by oak, usually [Quercus robur], or, in particular, in large portions of their central sector, by hornbeam, [Carpinus betulus]; the latter are included in unit 41.C.

Podolic pedunculated oak-hornbeam forests	Forests of [Quercus robur] and [Carpinus betulus] of plains, plateaux and pre-Carpathic hills of northeastern Romania, the northern Moldova Republic, Podolia and the south-central Ukraine east to the Dniepr, with [Acer platanoides], [Fraxinus excelsior], [Tilia cordata], [Ulmus glabra], [Ulmus laevis], [Ulmus minor], [Quercus petraea], [Acer campestre], [Acer tataricum], [Malus sylvestris], [Prunus avium], [Pyrus pyraster] and a predominantly medio-European field layer that includes [Asarum europaeum], [Pulmonaria officinalis], [Mercurialis perennis], [Stellaria holostea], [Carex pilosa], [Carex sylvatica].
Moldavian spindle oak-hornbeam forests	Neutrophile or acidocline forests of [Quercus robur] and [Carpinus betulus] of humid depressions in river basins and low hills of northern Moldavia and the Moldova Republic, with [Tilia cordata], [Fraxinus excelsior], [Acer campestre], sometimes [Acer tataricum], [Euonymus nanus], [Euonymus europaeus], [Asarum europaeum], [Mercurialis perennis], [Stellaria holostea], [Geum urbanum], [Carex pilosa].
Non-riverine ash woodland	Nonalluvial Atlantic, sub-Atlantic and nemoral forests dominated by [Fraxinus excelsior], particularly characteristic of Britain, of the northwestern Iberian peninsula and of the Baltic moraine hills of Mecklenburg, but distributed also in other parts of central and southeast Europe. Pioneer secondary formations on abandoned cultivated land are included.
Ash - rowan - dog's mercury forests	Forests and woodland of [Fraxinus excelsior], with some [Ulmus glabra], [Acer pseudoplatanus], [Quercus petraea], [Betula pubescens], [Sorbus aucuparia] and an understorey dominated by [Corylus avellana], often accompanied by [Crataegus monogyna] or occasionally [Crataegus laevigata], characteristic of submontane climates and moist soils on calcareous bedrocks of the northern and western British Isles, particularly in valley heads of the upland fringes, distributed in Ireland, Scotland, northern England, Wales and locally Devon. Ferns ([Athyrium filix-femina], [Dryopteris] spp., [Blechnum spicant]), grasses ([Brachypodium sylvaticum], [Deschampsia cespitosa], [Poa trivialis], [Arrhenatherum elatius], [Dactylis glomerata], [Holcus lanatus], [Holcus mollis], [Agrostis capillaris], [Anthoxanthum odoratum]), [Oxalis acetosella] are abundant and characteristic in the field layer, often with [Hyacinthoides non-scripta], [Mercurialis perennis], tall herbs ([Crepis paludosa], [Crepis mollis], [Filipendula ulmaria], [Conopodium majus], [Trollius europaeus]) and an extensive and diverse bryophyte flora.

British ash - field maple - dog's mercury forests	Forests and woodland of [Fraxinus excelsior], with [Quercus robur] (in the southwest), or [Quercus petraea], [Acer pseudoplatanus], [Ulmus glabra] (in the northwest), with an understorey dominated by [Corylus avellana], frequently accompanied by [Crataegus monogyna], [Crataegus laevigata], [Acer campestre], [Sambucus nigra], characteristic of often calcareous base-rich soils in relatively warm and dry lowlands of southern Britain, distributed mostly in southern and central England, eastern Wales, southern and eastern Scotland. The field layer comprises [Mercurialis perennis], [Hyacinthoides non-scripta], [Circaea lutetiana], [Geum urbanum], [Arum maculatum], [Viola riviniana], [Viola reichenbachiana], [Sanicula europaea], [Lamium galeobdolon], [Carex sylvatica]; [Primula vulgaris] and [Glechoma hederacea], [Anemone nemorosa], [Deschampsia cespitosa], [Hedera helix], [Geranium robertianum], [Allium ursinum], [Teucrium scorodonia] characterize geographical and edaphic subtypes. In humid northern and western Britain, outside of the range of [Fagus sylvatica] and [Carpinus betulus],
Pyreneo-Cantabrian ash forests	[Fraxinus excelsior]-dominated facies of the Pyreneo-Cantabrian ash-oak forests (unit 41.29).
Baltic moschatel ash - sycamore forests	[Fraxinus excelsior] forests of Baltic moraine hills (Mecklenburg), possibly related to the peri-Alpine slope-foot forests of 41.43.
Mixed Atlantic bluebell ash forests	[Fraxinus excelsior]-dominated facies of the mixed Atlantic bluebell oak forests (unit 41.21), including ash-dominated facies of British oak-bracken-bramble woodland.
Aquitanian ash forests	[Fraxinus excelsior]-dominated facies of Aquitanian ash-oak forests (41.22).
Sub-Atlantic ash forests	[Fraxinus excelsior]-dominated facies of sub-Atlantic oxlip oak forests (unit 41.23), characteristic, in particular, of forests on imperfectly drained marls and schistoid clays.
Lutetian calciphile ash forests	[Fraxinus excelsior]-dominated facies of calciphile oak-ash forests (unit 41.273), characteristic of the French Paris basin, particularly on chalk deposits; their affinities are with the southeastern British formations of unit 41.31.
Post-cultural ash woods	Pioneer formations of [Fraxinus excelsior] occupying abandoned agricultural land.
Hornbeam woodland	Woods of the western Palaearctic region dominated by [Carpinus betulus], alone or with a small admixture of other species.
Western hornbeam woodland	Woods of Western Europe and northern and central Central Europe, north to southern Denmark, Bornholm and southeastern Sweden, within the range of the [Fagion medio-europaeum] and the [Carpinion betuli], dominated by [Carpinus betulus], alone or with a small admixture of other species, uncommon, generally low, habitually secondary. Scandinavian stands, characteristic of diabases, basalts and greenstones, often dominated by tall [Carpinus betulus], have a field layer dominated by abundant [Anemone nemorosa], [Stellaria nemorum] and [Hedera helix].
Eastern hornbeam woodland	Forests of southeastern Central Europe and of Eastern Europe, within the range of the [Carpinion illyricum], of the [Fagion moesiacum] and of the [Fagion dacicum], as well as of areas east of the range of [Fagus sylvatica], dominated by [Carpinus betulus], alone or with a small admixture of other species, more widespread and developed than those of unit 41.A1, sometimes primary.

Illyrian hornbeam forests	Forests of southeastern Central Europe, within the range of the [Carpinion illyricum], dominated by [Carpinus betulus], alone or with a small admixture of other species, in particular [Carpinus betulus]-dominated communities of the Carinthian [Helleboro nigri-Carpinetum].
Dacio-Moesian hornbeam forests	Neutrophile or weakly acidophile forests of southeastern Central Europe, within the range of the [Fagion moesiacum], the [Fagion dacicum] and, locally, of the [Quercion frainetto], dominated by [Carpinus betulus], alone or with a small admixture of other species, with [Carpinion] species in the herb layer; they occur in various conditions on hills and in plains, as substitution for mixed forests of [Quercus robur] or [Quercus petraea], [Carpinus betulus], [Tilia] spp., [Fraxinus excelsior].
Sarmatic hornbeam forests	Forests of Eastern Europe, east of the range of [Fagus sylvatica], dominated by [Carpinus betulus], alone or with a small admixture of other species, in particular, [Carpinus betulus] forests of the Podolian plateaux.
Ravine and slope woodland	Cool, moist forests with a multispecific tree layer (especially maples [Acer] spp., lime [Tilia] spp., ash [Fraxinus] spp.) of variable dominance, most often on more or less abrupt slopes. They are of considerable biohistorical and biogeographical importance, as examples of the mixed forests of the Atlantic period, preserved in stations inaccessible to beech domination. Vegetation of alliance [Tilio-Acerion].
Medio-European ravine forests	Atlantic and medio-European collinar and submontane forests of [Fraxinus excelsior], [Acer pseudoplatanus], [Acer platanoides], [Ulmus glabra], [Tilia platyphyllos], [Fagus sylvatica], [Quercus robur], on unstable scree or colluvions of abrupt, shady and humid slopes, with abundant ferns, characterized by the presence of the ecological group of [Asplenium scolopendrium], [Mercurialis perennis]. They are characteristic of the hills, mountains and plateaux associated with the Hercynian ranges, the Jura, the Northern Carpathians, the Alps, the hills of the Pannonic plain, within the range of the [Fagion medio-europaeum]. Sub-Atlantic forests of calcareous hills of the Paris Basin, of Burgundy, of the Plateau de Langres, somewhat intermediate between these formations and those of unit 41.45 are included, in view of their restriction to situations of cool microclimates without marked summer drought, in particular, north-facing slopes and the lack of thermophilous species characteristic of the [Tilenion platiphylli].
Calcicline ash-sycamore ravine forests	Atlantic and medio-European collinar and submontane forests of [Fraxinus excelsior], [Acer pseudoplatanus], [Acer platanoides], [Ulmus glabra], [Tilia platyphyllos], [Fagus sylvatica], on unstable scree or colluvions of abrupt, shady and humid slopes, with a very complete ensemble of typical ravine forest species, including [Asplenium scolopendrium], [Actaea spicata], [Lunaria rediviva], [Helleborus viridis], [Lamiastrum galeobdolon ssp. montanum], accompanied by calciphile species and particularly by calciphile ferns. They are characteristic of the hills, low mountains and plateaux associated with the Hercynian ranges, the Jura, the Northern Carpathians, the Alps, the hills of the Pannonic plain, within the range of the [Fagion medio-europaeum].

Hartstongue ash-sycamore ravine forests	Forests of [Fraxinus excelsior], [Acer pseudoplatanus], [Acer platanoides], [Ulmus glabra], [Tilia platyphyllos], [Fagus sylvatica], of calcareous block screes and rocky slopes, in shady, humid ravines of the hills, low mountains and plateaux associated with the Hercynian ranges, the Jura, the Paris Basin, the western, northern and locally eastern and southeastern pre-Alps, the Northern Carpathians, the Vertes, Bakony and Bükk hills of the Pannonic plain, characterized by the dominance in the understorey of [Asplenium scolopendrium] and the presence of [Ribes uva-crispa], [Asplenium trichomanes], [Asplenium viride], [Cystopteris fragilis], [Polystichum aculeatum], [Moehringia muscosa], [Chrysosplenium alternifolium], [Valeriana tripteris], [Adenostyles alpina]; accompanying subdominants are shared with other ravine forests, in particular, [Mercurialis perennis], [Lunaria rediviva], [Lamiastrum galeobdolon ssp. montanum], [Galium odoratum], [Dryopteris filix-mas], [Ctenidium molluscum].
Honesty ash-sycamore ravine forests	Forests of [Fraxinus excelsior], [Acer pseudoplatanus], [Acer platanoides], [Ulmus glabra], [Tilia platyphyllos], [Fagus sylvatica], on unstable screes, richer in fine soil than those that support the forests of unit 41.4111, in ravines, at higher altitudes, on steep slopes of the collinar to montane, but mostly submontane, level of the Vosges, the mid-German and Bohemian Quadrangle Hercynian ranges, the Jura, the northern pre-Alps, the northern Carpathians, the sub-Pannonic Matra and Bükk ranges, with [Anthriscus nitidus], [Campanula latifolia], [Hesperis matronalis ssp. matronalis], [Lunaria rediviva], [Lamiastrum galeobdolon ssp. montanum], [Mercurialis perennis], [Impatiens noli-tangere], [Urtica dioica].
Corydalis ash-sycamore ravine forests	Forests of [Fraxinus excelsior], [Acer pseudoplatanus], [Acer platanoides], [Ulmus glabra], [Tilia platyphyllos], [Fagus sylvatica], on fine soil and humus-rich colluvions of ravines and cool, shady, humid slopes of the submontane level of the Black Forest, the mid-German Hercynian ranges, the Franconian and Swabian Jura, the northern and eastern pre-Alps, with [Corydalis bulbosa], [Corydalis intermedia], [Corydalis pumila], [Corydalis solida], [Allium ursinum], [Gagea lutea], [Galanthus nivalis], [Leucojum vernum], [Narcissus pseudonarcissus], [Scilla bifolia], [Lathraea squamaria], [Ranunculus ficaria].
Goatsbeard ash-sycamore ravine forests	Forests of [Fraxinus excelsior], [Acer pseudoplatanus], [Acer platanoides], [Ulmus glabra], [Tilia platyphyllos], [Fagus sylvatica], restricted to small surfaces on erosion-fashioned slope bases in shady ravines and valleys of the submontane level of the Bohemian Quadrangle, the extreme Western Carpathians, the Jura, the northern and eastern pre-Alps, the mid-German Hercynian ranges, with [Aruncus dioicus] dominant, [Petasites albus], [Veronica montana], [Circaea alpina], [Dryopteris carthusiana], [Dryopteris dilatata], [Dryopteris affinis] and the mosses [Blasia pusilla], [Conocephalum conicum], [Fissidens taxifolius].
Alpine hepatica-sycamore ravine forests	Mixed forests of ravines and slopes of the intermediate Middle Alps, known, in particular, from the Swiss Valais.

Acidophile ash-sycamore-lime ravine forests	Ravine forests on siliceous screes and colluvions of the great western Hercynian ranges, the Ardenne-Eifel system, the mid-German Hercynian ranges, the Harz, the southwestern Bohemian Quadrangle, dominated by [Tilia platyphyllos], [Tilia cordata], [Acer pseudoplatanus], [Acer platanoides], [Quercus petraea], [Carpinus betulus], [Ulmus glabra], with an impoverished cortège that includes, with ravine forest species, acidophilous [Fagetalia] species, including [Luzula luzuloides], [Vaccinium myrtillus], [Deschampsia flexuosa], and an abundance of acidophile ferns and mosses.
Tall herb mixed sycamore forests	Mixed forests of [Acer pseudoplatanus], with [Ulmus glabra], [Fagus sylvatica], [Fraxinus excelsior], and an understorey rich in tall herbs, of slopes, ravines and avalanche corridors of the montane to subalpine levels of the northern pre-Alps, the greater Hercynian ranges and the Northern Carpathians.
Hercynian slope forests	Mixed forests of colluvions and screes of humid, shady river valley slopes of the Hercynian ranges and the Western Carpathians, transitional between ravine forests and [Carpinion betuli] communities, formed by [Quercus robur], [Quercus petraea], [Fagus sylvatica], [Ulmus glabra], [Acer pseudoplatanus], [Acer platanoides], [Tilia platyphyllos], [Fraxinus excelsior], [Carpinus betulus], [Alnus glutinosa].
Peri-Alpine mixed ash - sycamore slope forests	Mixed forests of [Acer pseudoplatanus], [Fraxinus excelsior] and [Ulmus glabra], developed on colluvial deep soils at the foot of very rainy slopes and on rarely inundated river sediments of the submontane to high montane levels of the northern pre-Alps and their piedmont, with [Prunus avium], [Prunus padus], [Alnus incana], [Alnus glutinosa], [Fagus sylvatica], [Carpinus betulus], [Quercus robur], [Corylus avellana], [Mercurialis perennis], [Aegopodium podagraria], [Cirsium oleraceum], [Deschampsia cespitosa], [Filipendula ulmaria], [Carex pendula], [Equisetum telmateia], [Matteuccia struthiopteris], [Primula elatior], [Brachypodium sylvaticum], [Cardamine trifolia], [Carex sylvatica], [Paris quadrifolia], [Stachys sylvatica].
Pyreneo-Cantabrian mixed elm - oak forests	Mixed forests of [Ulmus glabra], [Acer campestre], [Acer opalus], [Fraxinus excelsior], [Fagus sylvatica], [Quercus petraea], [Quercus robur], [Tilia cordata], [Tilia platyphyllos], [Sorbus aria], [Sorbus mougeotii], [Alnus glutinosa], [Pinus sylvestris], [Hedera helix], with an understorey comprising numerous shrubs, such as [Corylus avellana] and [Crataegus monogyna], and a rich and luxuriant herb layer including numerous ferns, characteristic of the bottom colluvions of steep, shaded valleys, canyons and gorges of the collinar to montane levels of the Pyrenean and Cantabrian ranges.
Thermophilous Alpine and peri-Alpine mixed lime forests	Thermophilous forests of [Tilia cordata], [Tilia platyphyllos], [Acer platanoides], [Fraxinus excelsior], [Ulmus glabra], [Fagus sylvatica] with [Euonymus latifolius], [Corylus avellana], most typical of the warm valleys of the Alpine system and some peripheral ranges, characterized by [Asperula taurina], [Cyclamen purpurascens] and numerous transgressives of the [Quercetalia pubescenti-petraeae]. These remarkable relict forests are particularly characteristic of the föhn valleys of the Insubrian and northern Alps; they occur in similar situations in the Jura and the Hercynian ranges, north to the Harz.

Northern Alpine föhn ash-lime forests	Forests dominated by [Tilia platyphyllos] and [Fraxinus excelsior], sometimes by [Acer pseudoplatanus], with [Ulmus glabra], characteristic of warm, humid föhn valleys of the northern face of the Alps. [Corylus avellana] often dominates the understorey, which also includes [Tamus communis], and an abundance of [Asperula taurina ssp. taurina], [Mercurialis perennis], [Lamiastrum galeobdolon ssp. montanum], [Aegopodium podagraria], [Brachypodium sylvaticum], [Galium odoratum], [Salvia glutinosa], [Viola reichenbachiana] and [Cyclamen purpurascens].
Dealpine mixed thermophile oak-maple-lime forests	Forests dominated by [Acer pseudoplatanus] and [Tilia platyphyllos] developed on unstable substrates of steep slopes in warm and summer-dry regions and microclimatic stations in the Jura, the Hercynian ranges, the northern and northeastern pre-Alps and neighbouring plateaux.
Southern Alpine mixed lime forests	Thermophilous forests of [Tilia cordata], [Tilia platyphyllos], [Acer platanoides], [Fraxinus excelsior], [Ulmus glabra] of warm valleys with high rainfall of the southern Alps, where, within a context of warmer regional climate, they are associated with relatively cool stations, such as north-facing slopes, in contrast with their warm-exposure linked northern counterparts.
Sub-Pannonic mixed lime slope forests	Forests of [Tilia platyphyllos], sometimes with [Fraxinus excelsior], of steep slopes of submontane to high montane levels of the Hungarian Central Range and of adjacent Carpathian hills of middle Slovakia. Forests of the same area, similarly dominated by [Tilia platyphyllos] and [Fraxinus excelsior], but with the character of steppe forests and developed on exposed crests, have been listed under unit 41.842 (oro-Pannonic steppe ash-lime forests, [Tilio-Fraxinetum]).
Sub-Pannonic mixed ash-lime slope forests	Forests dominated by [Tilia platyphyllos ssp. subrubra] and [Fraxinus excelsior] developed on unstable limestone block slopes with humus rich, deep soils, of submontane regions of the Hungarian Central Range and middle Slovakia, with a well developed shrub layer and and an herb layer characterized by [Waldsteinia geoides], [Scutellaria columnae], [Gagea minima] and the endemic [Hesperis vrabelyiana].
Sub-Pannonic mixed whitebeam-lime forests	Very rare forests of [Tilia platyphyllos] of very steep ravine slopes of higher montane levels of the Northern Hungarian Range, developed in the absence of the Carpathian [Picea abies] subalpine belt, with an understorey comprising numerous locally rare, relict species, including [Viola biflora], [Valeriana tripteris], [Cimicifuga europaea] ([Cimicifuga foetida]), and the endemic [Sorbus austriaca ssp. hazslinszkyana] ([Sorbus hazslinszkyana]).
Southeastern European ravine forests	Ravine and steep slope forests of the Dinarides, the Eastern Carpathians, the Balkan Range, the Pelagonids, the Moeso-Macedonian mountains, the Rhodopids, the Pindus, the Thessalian mountains, within the range of the [Fagion moesiacum], [Fagion hellenicum], [Fagion dacicum] and [Fagion illyricum].
Hellenic ravine and slope forests	Ravine and steep slope forests of the southern Pelagonids, Moeso-Macedonian mountains and Rhodopids, of the Pindus, of the Thessalian mountains, within the range of the southern [Fagion moesiacum] and of the [Fagion hellenicum], in areas of strong sub-Mediterranean influence.

Moesian ravine and slope forests	Ravine forests of the Balkan Range, the southern Dinarides, the Pelagonids, the Moeso-Macedonian mountains, the Rhodopids, within the range of the [Fagion moesiacum].
Moesian beech-ash-sycamore ravine forests	Forests of [Fagus moesiaca], [Fraxinus excelsior], [Acer pseudoplatanus], [Acer platanoides] of scree or rock slopes and ravines of the beech and durmast oak belts of the Balkan Range, the Rhodopids and the Serbian mountains, of predominantly medio-European affinities.
Moesian [Geranium macrorrhizum] ravine forests	Forests of [Fagus sylvatica], of screes, boulder slopes and rock outcrops of the beech forest belt of the Balkan Range, the Rhodopids and neighbouring mountain systems, with [Geranium macrorrhizum].
Moesian beech-hornbeam-ostrya ravine forests	Forests of [Fagus moesiaca], [Fraxinus excelsior], [Ostrya carpinifolia], and sometimes [Carpinus betulus], [Acer hyrcanum], [Fraxinus ornus], of gorges and ravines of the hornbeam-durmast oak forest belt of the Balkan Range and the Rhodopids.
Moesian ash-sycamore ravine forests	Forests of [Acer pseudoplatanus], [Acer platanoides], [Fraxinus excelsior], [Tilia platyphyllos], [Fagus moesiaca], [Quercus dalechampii], of deep, moist soil, rocks and screes of slopes and ravines of the Balkan Range, particularly its southern flank, of Rila and of Serbian mountains, with [Acer hyrcanum], [Sambucus nigra], [Clematis vitalba], [Humulus lupulus], [Galium odoratum], [Sanicula europaea], [Arum maculatum], [Alliaria petiolata], [Scutellaria altissima], [Eupatorium cannabinum], [Dactylis glomerata ssp. aschersoniana] ([Dactylis polygama]).
Moesian horse-chestnut ravine forests	Forests of [Aesculus hippocastanum], [Fagus moesiaca], [Juglans regia], [Tilia tomentosa], [Carpinus betulus], with a field layer of medio-European affinities, forming in rare localities in narrow, humid and warm valleys and gorges of the submontane, montane or high montane levels of the Moesian mountains.
Balkan Range horse-chestnut ravine forests	Forests of [Aesculus hippocastanum], [Fagus moesiaca], [Tilia tomentosa], [Ulmus glabra], [Fraxinus excelsior], [Juglans regia], [Carpinus betulus], [Alnus glutinosa], with [Acer campestre], [Fraxinus ornus], [Staphylea pinnata], [Corylus avellana], [Dactylis glomerata], [Poa nemoralis] of humid and warm valleys of the 250-400 metre upper submontane level of the northern piedmont of the eastern Balkan Range (Derven-Balkan), southeast of Preslav, in an extremely exiguous region that represents a very remarkable outlier of the range of the southeastern European endemic [Aesculus hippocastanum].
Pelagonid horse-chestnut ravine forests	Forests of [Aesculus hippocastanum], [Fagus moesiaca], [Juglans regia], [Tilia tomentosa], [Carpinus betulus], with a field layer of medio-European affinities, forming in rare localities in narrow, humid and warm valleys and gorges of the montane or high montane levels of the Pelagonids in Albania and the northwestern part of the F.Y.R. of Macedonia.
Moesian ash-oak slope forests	Forests of [Fraxinus excelsior] and southeastern European oaks, in particular [Quercus dalechampii], [Quercus cerris], accompanied by thermophilous small trees, [Fraxinus ornus], [Carpinus orientalis], [Ostrya carpinifolia], developed on scree and rock slopes within the durmast oak belt of Moesian mountains, more thermophilous than those of unit 41.4621.

Balkan ash-oak slope forests	Thermophile forests dominated by [Fraxinus excelsior], with [Quercus dalechampii], [Quercus cerris], [Fraxinus ornus], of scree and rock slopes of the southern flank of the Balkan Range.
Rhodopid ash-oak-ostrya slope forests	Thermophile forests of [Quercus dalechampii] and [Ostrya carpinifolia], with [Fraxinus excelsior], [Carpinus orientalis], [Fraxinus ornus], of scree and rock slopes of the foothills of the Rhodopes and of the sub-Mediterranean Struma and Mesma valleys of southwestern Bulgaria.
Illyrian ravine forests	Ravine forests of the Dinarides and of the southeastern Alpine periphery, within the range of the [Fagion illyricum].
Eastern Carpathian ravine forests	Forests of [Fagus sylvatica], [Acer pseudoplatanus], [Fraxinus excelsior], [Ulmus glabra] accompanied by a cortège of hygrophile species, including [Asplenium scolopendrium], [Polystichum aculeatum], [Polystichum lobatum], [Aruncus dioicus], [Lunaria rediviva], [Moehringia muscosa], [Moehringia pendula], [Saxifraga rotundifolia ssp. heuffelii], on calcareous substrates of narrow humid valleys and steep slopes of the eastern Carpathians.
Dacian [Phyllitis] beech ravine forests	Mixed forests of [Fagus sylvatica] accompanied by [Acer pseudoplatanus], [Fraxinus excelsior], [Ulmus glabra] and with an herb layer comprising many hygrophile species, such as [Asplenium scolopendrium] ([Phyllitis scolopendrium]), [Polystichum aculeatum], [Lunaria rediviva], [Moehringia muscosa], [Moehringia pendula], [Saxifraga rotundifolia ssp. heuffelii], installed on calcareous rocks, stony rendzines and lithosoils of shady and half-shaded, often damp, steep slopes and narrow humid valleys of the Eastern Carpathians and Southern Carpathians.
Dacian ash-sycamore ravine forests	Mixed forests of [Acer pseudoplatanus], [Fraxinus excelsior], [Ulmus glabra], [Acer platanoides], accompanied by an herb layer rich in hygrophile species, such as [Asplenium scolopendrium], [Lunaria rediviva], [Cardamine impatiens], [Polystichum setiferum], [Cystopteris fragilis], on calcareous substrates of humid narrow valleys and steep slopes of the eastern Carpathians.
Dacian [Geranium macrorrhizum] beech ravine forests	Forests of [Fagus sylvatica] accompanied by [Carpinus betulus], and [Fraxinus ornus] in the tree layer, [Corylus avellana] in the scrub layer, [Geranium macrorrhizum], [Arabis procurrens], [Doronicum columnae], [Silene heuffelii], [Helleborus purpurascens], [Asplenium scolopendrium] in the herb layer, on the calcareous screes of gorges of the western Southern Carpathians.
Euxinian ravine forests	Ravine forests of the Pontic Range, the Caucasus, Crimea, the Hyrcanic region.
Lime woodland	[Tilia] spp.-dominated forests and woods of dry, sometimes humid but non-riparian, stable soils of the nemoral and boreal zones. Ravine forests, on screes or colluvions, dominated by these species are listed in unit G1.A2, riverine forests in unit G1.2 and G1.3.
Western lime forests	Rare [Tilia]-dominated stands of nemoral western and central Europe, within the range of [Fagus sylvatica], often [Tilia]-dominated facies of lime-rich oak-hornbeam forests. They are distributed, in particular, in the Bohemian basin, in southern Scandinavia and in the British Isles.

Sub-boreal lime forests	[Tilia]-dominated forests of the northern nemoral zone and of enclaves in the southern boreal zone of Fennoscandia, the Baltic States and Russia, east to the Volga, outside of the range of [Fagus sylvatica] and mostly of [Carpinus betulus]. [Tilia cordata] may be accompanied by [Quercus robur], [Acer platanoides], [Populus tremula], [Picea abies], [Corylus avellana], [Sorbus aucuparia], [Euonymus europaeus], [Daphne mezereum], [Galium odoratum], [Anemone nemorosa] and boreal herbs.
East-European lime forests	[Tilia]-dominated forests of eastern Central Europe and the southern nemoral zone of Russia, east of the range of [Fagus sylvatica] and, for the most part, of that of [Carpinus betulus], and west of the Volga, with [Quercus robur], [Acer platanoides] and [Ulmus montana].
Trans-Volgan lime forests	Forests of the nemoral zone of Russia, east of the Volga, with an eastward trend of diminishing [Quercus robur] and augmenting [Tilia cordata], and an often luxuriant shrub layer comprizing, in particular, [Corylus avellana]. Many, or most, are dominated by lime and listed here rather than under unit 41.26C.
Crimean lime forests	[Tilia cordata]-dominated forests of the oak-hornbeam-lime forest complex occupying the central part of the Tauric chain of southern Crimea.
Non-riverine elm woodland	Forests and woods dominated by [Ulmus] spp. or [Acer] spp. of dry, sometimes humid but non-riparian, stable soils of the nemoral zone. Ravine forests, on screes or colluvions, dominated by these species are listed in unit G1.A2, riverine forests in unit G1.2.
Small-leaved elm woods	[Ulmus minor] ([Ulmus carpinifolia], [Ulmus campestris]) or [Ulmus procera] woods of base- and nutrient-rich, often ruderal, terrain, dispersed along the western seaboard of Western Europe and in warm, dry, subcontinental areas of Central Europe, usually rich in species of southern affinities.
Sweet violet elm woods	Nitrophile [Ulmus minor] or [Ulmus procera] woods of the western seaboard of the European continent, from northern France to Poland, distributed, in particular, in the Paris Basin, in the maritime dunes of the Netherlands and Belgium, on the dikes of the Dutch fluviatile district and on the cretaceous low Meuse hills, sporadically also in suburban forests, parks and green spaces throughout its range.
Thermo-Atlantic elm woods	[Ulmus minor] woods of the coasts of Normandy, Brittany and Vend,e.
British suckering elm woods	Woods of the British Isles, mostly of the [Fraxinus]-[Acer]-[Mercurialis] type, invaded and dominated by suckering elms of the [Ulmus minor] group ([Ulmus carpinifolia], [Ulmus procera]); postcultural small-leaved elm groves are included.
Sub-continental field elm woods	[Ulmus minor] woods of dry, warm stations in regions of subcontinental climate of Central Europe, mostly secondary colonists of agricultural land on loess, marls, degraded chernozems or alluvial terrain, distributed in particular in southern German dry enclaves, in peri-Pannonic areas and in Bulgaria.
Wych elm and fluttering elm woods	Non-riparian, non-ravine [Ulmus glabra] or [Ulmus laevis]-dominated formations of northern and central Europe.
Mixed deciduous woodland of the Black and Caspian Seas	Mixed summer-green broad-leaved forests limited mainly to the mountains bordering the Black Sea and the Caspian Sea.

Euxinian mixed mesic forests	Mixed summer-green broad-leaved forests of the Pontic Range of northern Anatolia and the Stranja-Istranca of Thrace, with outlyers in the eastern Balkan Range.
Western Euxinian mixed forests	Species-rich mixed forests of mountains of the western Pontic Range and the mountains of the western and southwestern Black Sea region, including the eastern Balkan Range, the Stranja-Istranca, typically with a varied, multispecific shrub layer and herb layer comprising many Euxinian elements.
Thracio-Euxinian mixed forests	Species-rich mixed forests of mountains of the western and southwestern Black Sea region, including the eastern Balkan Range, the Stranja-Istranca, composed of [Quercus polycarpa], [Quercus cerris], [Carpinus betulus], [Carpinus orientalis], [Sorbus torminalis], [Fagus orientalis], with a varied, multispecific shrub layer and herb layer comprising many Euxinian elements.
Sub-Euxinian mixed oak - hornbeam forests	Mixed forests of inner slopes of the Pontic Range generally in conditions of lower humidity and temperature than those of the Euxinian mixed forests of unit 41.H1, rich in species of [Quercus] and usually accompanied by [Carpinus betulus] or [Carpinus orientalis], sometimes with conifers. Characteristic species include [Quercus dshorochensis], [Quercus syspirensis], [Quercus anatolica], [Quercus iberica], [Quercus macranthera], [Acer cappadocium], [Fagus orientalis], [Abies bornmuelleriana].
Caucasian oak - hornbeam forests	Mixed forests rich in hornbeam, oak or beech, of slopes of the Central Caucasus of Georgia, with [Prunus avium], [Pyrus caucasica], [Corylus avellana], [Euonymus europaeus], [Euonymus verrucosus], [Lathyrus roseus], [Dactylis glomerata], [Brachypodium sylvaticum], [Melica nutans].
Hyrcanian mixed mesic forests	Mixed summer-green broad-leaved forests of the region bordering the southern periphery of the Caspian Sea, including its coastal plain and the northern slopes of the Elburz system.
Eurosiberian maple woods	Forests and woods dominated by [Acer] spp. of dry, sometimes humid but non-riparian, stable soils of the nemoral zone, in particular, maple-dominated, pioneer, young and perturbed stands of the Atlantic and sub-Atlantic varied oak-hornbeam and ash forests of units G1.A1 and G1.A2.
Non-riverine alder woodland	Nonriparian, nonmarshy woods dominated by [Alnus] spp.
Woods of Italian alder	[Alnus cordata]-dominated formations of slopes with deep, loose, moist soils, endemic to the Campanian, Lucanian and Calabrian Apennines and the Castaniccia and San Petrone ranges of Corsica.
Nemoral alder woods	Non-riparian, non-marshy formations of the nemoral or boreonemoral zones dominated by [Alnus glutinosa] or [Alnus incana].
Atlantic [Alnus glutinosa] woods	Non-riparian, non-marshy formations of Atlantic regions of the nemoral zone dominated by [Alnus glutinosa] or [Alnus incana].

Central European dry alder woods	Dry [Alnus incana] or [Alnus glutinosa] woods of nemoral Central Europe, in particular, great horsetail dry alder woods of Poland, dense alder stands of steep valley slopes of Great Poland, dominated by [Alnus incana] alone or by [Alnus glutinosa] and [Alnus incana] together, with a rich undergrowth composed predominantly of ruderal and riparian species; characteristic or abundant species include [Equisetum telmateia], [Lamium maculatum], [Myosotis sparsiflora], [Corylus avellana], [Chaerophyllum temulentum], [Urtica dioica], [Cardamine amara], [Veronica hederifolia].
Sarmatic dry alder woods	Dry alder woods of the nemoral and boreonemoral regions of Lithuania, Russia, Belarus and Ukraine, in particular, nettle grey alder woods, tall herb-rich dry [Alnus incana] forests on comparatively fertile acid brown forest soils, recorded from the northern part of the Valday Upland and Lithuania, with [Urtica dioica], [Anthriscus sylvestris], [Mnium cuspidatum].
Rhodopide grey alder woods	[Alnus incana] woods of the subalpine level of the western Rhodopes, substitution facies of [Picea abies] forests, usually developed in wetter stations than those occupied by [Betula pendula] or [Populus tremula].
Boreal and boreonemoral alder woods	Non-riparian, non-marshy formations of the boreal zone of the Palaearctic region dominated by [Alnus glutinosa] or [Alnus incana].
Boreal [Alnus glutinosa] woods	Non-riparian, non-marshy formations of the boreal zone of the Palaearctic region dominated by [Alnus glutinosa]. They are related to the shore woods of unit 44.24 and have a similar composition.
Boreal [Alnus incana] woods	Non-riparian, non-marshy formations of the boreal zone of the Palaearctic region dominated by [Alnus incana], appearing, in particular, as first recolonisation stage on rich damp soils of central and northern Fennoscandia. They are related to the shore woods of unit 44.23 and have a similar composition.
Highly artificial broadleaved deciduous forestry plantations	Cultivated deciduous broad-leaved tree formations planted for the production of wood, composed of exotic species, of native species out of their natural range, or of native species planted in clearly unnatural stands, often as monocultures.
Poplar plantations	Plantations of species, hybrids or cultivars of the deciduous genus [Populus], in particular, [Populus nigra], [Populus nigra var. italica], [Populus deltoides], [Populus x canadensis], [Populus balsamifera], [Populus trichocarpa], [Populus candicans].
Poplar plantations with megaphorb herb layer	Old poplar plantations with a tall herb-rich undergrowth, substitution habitat for some riparian forest species of plants and animals.
Other poplar plantations	Poplar plantations devoid of tall herb-rich undergrowth.
Deciduous exotic oak plantations	Cultivated formations of deciduous trees of genus [Quercus] (e.g. [Quercus rubra]) planted most often for the production of wood, composed of exotic species or of Palaeartic species out of their natural range
False acacia ([Robinia]) plantations	Plantations and spontaneous formations of [Robinia pseudacacia]. Vegetation of alliances [Chelidonio-Robinion] and [Balloto nigrae-Robinion].

Other broadleaved deciduous plantations	Cultivated deciduous broad-leaved formations of trees of genera other than [Populus], [Quercus] and [Robinia], planted for the production of wood, composed of exotic species, of native species out of their natural range, or of native species planted in artificial conditions with a considerably modified accompanying cortège.
Fruit and nut tree orchards	Stands of trees cultivated for fruit or flower production, providing permanent tree cover once mature. Extensively cultivated and old orchards are habitats supporting rich flora and fauna.
Chestnut plantations	Land planted in broad-leaved winter-deciduous chestnuts ([Castanea]), of sub-Mediterranean affinities.
Walnut groves	Land planted in broad-leaved winter-deciduous walnuts ([Juglans]), of temperate affinities.
Almond groves	Land planted in broad-leaved winter-deciduous almond trees.
Fruit orchards	High-stem orchards of apple, pear, plum, apricot, peach, cherry and other [Rosaceae].
Other high-stem orchards	Land planted in deciduous trees, other than those of units G1.D1-G1D4, cultivated for fruit, leaves or flowers.
Broadleaved evergreen woodland	Temperate forests dominated by broad-leaved sclerophyllous or lauriphyllous evergreen trees, or by palms. They are characteristic of the Mediterranean and warm-temperate humid zones.
Mediterranean evergreen oak woodland	Woodland with dominant evergreen arborescent [Quercus], e.g. [Quercus alnifolia], [Quercus coccifera], [Quercus ilex], [Quercus rotundifolia], [Quercus suber].
Cork-oak woodland	West-Mediterranean silicicolous forests dominated by [Quercus suber], usually more thermophile and hygrophile than those of unit G2.12.
Tyrrhenian cork-oak forests	Mostly meso-Mediterranean [Quercus suber] forests of Italy, Sicily, Sardinia, Corsica, France and northeastern Spain. They are most often degraded to arborescent matorral (unit 32.11).
Provençal cork-oak woodland	Formations of crystalline Provence (Maures, Esterel), no longer represented by fully developed, mature stands.
Corsican cork-oak woodland	Formations of the lower meso-Mediterranean level of Corsica, developed on deep siliceous soils, mostly of the southeastern part of the island; better preserved than on the continent, they are nevertheless almost never represented by fully developed, extensive forest.
Sardinian cork-oak forests	Extensive, widespread and varied forests of Sardinia, extending from sea level to about 900 m in non-calcareous mountains. [Quercus suber] is sometimes associated with [Quercus ilex] or [Quercus pubescens]. These forests include luxuriant, fully developed, mature formations, by far the best-preserved cork-oak forests in the central Mediterranean basin.
Central Italian cork-oak forests	Very local, relict coastal forests of Toscany and Latium in which [Quercus ilex] often accompanies [Quercus suber].
Southern Italian cork-oak forests	Very local formations of Calabria, Puglia and of northern and southeastern Sicily (Monte Scorace; Bosco di San Pietro, western Iblei), for the most part very degraded.
Catalan cork-oak woodland	[Quercus suber]-dominated facies appearing on the more oligotrophic soils within the meso-Mediterranean [Quercus ilex] zone of Catalonia and the Pyrenean foothills.
Valencian cork-oak woodland	Isolated, relict formations of the Sierra Espadan, Valencia.

Balearic cork-oak woodland	[Quercus suber]-dominated facies appearing on deep siliceous soils of the thermo-Mediterranean [Quercus rotundifolia] formations of Menorca.
Southwestern Iberian cork-oak forests	[Quercus suber] forests, often with [Quercus faginea] or [Quercus canariensis], of the southwestern quadrant of the Iberian peninsula.
Thermo-Mediterranean cork-oak woodland	Subhumid thermo-Mediterranean forests and woodlands of the southwestern Iberian peninsula, occurring in sandy coastal areas of western Andalusia and the Algarve, as well as at lower elevations of the sierras of the Campo de Gibraltar, immediately below the following formation, and characterized by the presence of [Olea europaea var. sylvestris] and other thermo-Mediterranean elements.
Aljibian cork-oak forests	Luxuriant, fully developed, humid and hyper-humid meso- to thermo-Mediterranean forests occupying, with the more exiguous and even more umbrophilous [Quercus canariensis] formations, the higher elevations of the sierras of the Campo de Gibraltar and a few enclaves of the Sierra de Ronda, with elements of north African oak forests such as [Teucrium scorodonia ssp. baeticum] and [Ruscus hypophyllum]; they are best represented in the Sierra de Aljibe, and are, next to those of Sardinia, the best-preserved cork-oak forests of the Community.
Eastern Andalusian cork-oak woodland	Isolated, relict meso-Mediterranean forest of the Sierra de la Contraviesa, eastern Andalusia.
Extremaduran cork-oak woodland	Meso-Mediterranean forests of the Sierra Morena, the Montes de Toledo system and lower southern slopes of the Cordillera Central (Extremadura and surrounding regions), only locally well developed, with lauriphyllous undergrowth or mantle.
Northwestern Iberian cork-oak woodland	Very local, exiguous [Quercus suber] enclaves in the [Quercus pyrenaica] forest area of the valleys of the Sil and of the Mino (Galicia).
Aquitanian cork-oak woodland	Isolated [Quercus suber]-dominated stands occurring either as a facies of dunal pine-cork oak forests or in a very limited area of the eastern Landes.
Holm-oak woodland	Forests dominated by [Quercus ilex] or [Quercus rotundifolia], often, but not necessarily, calcicolous.
Meso-Mediterranean holm-oak forests	Rich meso-Mediterranean [Quercus ilex] forests, penetrating locally, mostly in ravines, into the thermo-Mediterranean zone. They are often degraded to arborescent matorral (unit 32.11), and some of the types listed below no longer exist in the fully developed forest state relevant to category 45; they have nevertheless been included, both to provide appropriate codes for use in 32.11, and because restoration may be possible.
Northwestern Iberian holm-oak forests	[Quercus ilex] forests with exuberant undergrowth of Mediterranean, often lauriphyllous, small trees, shrubs, and lianas, including [Laurus nobilis], [Rhamnus alaternus], [Arbutus unedo], [Phillyrea media], [Rosa sempervirens], [Rubia peregrina], [Smilax aspera], [Hedera helix], often well-preserved on steep slopes of the calcareous mountains rising above the southern coast of the Bay of Biscay.

Catalo-Provençal lowland holm-oak woodland	Lower meso-Mediterranean [Quercus ilex] formations of Catalonia, Languedoc, Provence and the lowlands of Tyrrhenian Italy rich in lauriphyllous and sclerophyllous shrubs and lianas, in particular [Viburnum tinus], [Arbutus unedo], [Smilax aspera], [Phillyrea latifolia], [Ruscus aculeatus], [Rubia peregrina]; they are mostly degraded to arborescent matorral, the few remaining groves of holm oaks with a forest-like canopy being generally heavily modified by intensive human use.
Catalo-Provencal hill holm-oak forest	Humid upper meso-Mediterranean [Quercus ilex] formations of Montseny, Valles, Montserrat, Prades, Ports de Beseit, eastern Pyrenees, high Languedoc, Cévennes, upper Provence and southwestern Alps with an undergrowth poorer in shrubs, especially those of eu-Mediterranean affinities, and richer in often acidocline herbaceous species characteristic of supra-Mediterranean deciduous oak woods. Well-developed stands with full forest characteristics exist in several locations on the slopes of well-watered hills, in particular the tall, dense canopy of Montseny. Sparser, lower formations colonize many rocky hillsides in the entire upper meso-Mediterranean arc of the Gulf of Lions basin, locally ascending into the supra-Mediterranean level.
Balearic holm-oak forests	Humid [Quercus ilex] formations, often well developed, of the higher mountains of northern Mallorca, in which the thermo-Mediterranean elements of the [Quercus rotundifolia] formations of lower altitude have given way to more hygrophilous elements such as [Viburnum tinus], [Viola alba ssp. dehnhardtii], [Monotropa hypopitys], [Neottia nidus-avis], [Cephalanthera] spp.; they are rich in endemics, among which [Cyclamen balearicum], [Smilax aspera var. balearica], [Rhamnus ludovici-salvatoris], [Paeonia cambessedesii].
Corsican lowland holm-oak woodland	[Quercus ilex] formations of the lower meso-Mediterranean level of Corsica with [Viburnum tinus], [Erica arborea], [Lonicera implexa], [Phillyrea angustifolia], [Clematis flammula], [Smilax aspera], [Rubia peregrina]; generally degraded to arborescent matorral or dense coppice, they still include, mostly above 400 m of altitude, a few better-preserved woodland fragments.
Corsican hill holm-oak woodland	[Quercus ilex] formations of the upper meso-Mediterranean level (500-600 m to 1100-1200 m) of Corsica with [Arbutus unedo], [Erica arborea], [Viburnum tinus], [Ilex aquifolium], [Daphne laureola], [Teucrium scorodonia], [Helleborus lividus], [Cyclamen repandum], [Sanicula europaea], [Melica uniflora]; often installed on steep slopes, they include rather more stands with forest characteristics than the lowland formations.

Sardinian holm-oak forests	Lower and upper meso-Mediterranean [Quercus ilex] forests of Sardinia with [Viburnum tinus], [Phillyrea angustifolia], [Phillyrea latifolia], [Rhamnus alaternus], [Arbutus unedo], [Erica arborea], [Ruscus aculeatus], [Crataegus monogyna], [Rubia peregrina], [Smilax aspera], [Clematis flammula], [Clematis cirrhosa], [Clematis vitalba], [Rosa sempervirens], [Tamus communis], [Rubus ulmifolius], [Cyclamen repandum], [Carex hallerana], [Carex distachya], [Luzula forsteri], [Hedera helix], [Lonicera implexa] and [Pistacia lentiscus] in more thermo-Mediterranean areas. Extensive, fully developed, mature stands survive in particular in the hinterland of the Golfo di Orosei, around Mount Gennargentu, in the Barbagia, the Iglesiente, the Sarrabus, the Catena di Margine, on Monte Albo. They occupy a wide altitudinal range, grading at the upper limit into the more sub-Mediterranean formations of unit 45.32.
Northern and central Italian holm-oak forests	[Quercus ilex]-dominated formations of Tyrrhenian and Adriatic coastal areas of the northern half of the Italian peninsula with [Phillyrea media], [Phillyrea angustifolia], [Viburnum tinus], [Ruscus aculeatus], [Daphne gnidium], [Fraxinus ornus], [Rosa sempervirens], [Lonicera implexa], [Rubia peregrina], [Smilax aspera], [Myrtus communis], [Clematis flammula], [Tamus communis], [Carex olbiensis], [Luzula forsteri], [Cyclamen repandum] and often an admixture of [Quercus suber] or of the deciduous [Quercus pubescens] and [Quercus cerris]; at higher altitude they take on a more montane character with a greater prevalence of sub-Mediterranean elements. Although these formations are, like most other continental holm-oak communities, mostly degraded to arborescent matorral or coppice, fully developed forests subsist very locally, in particular in Toscany and Latium and, to a lesser extent, in Veneto and Emilia-Romagna.
Illyrian holm-oak woodland	[Quercus ilex]-dominated forests and woods of the Adriatic coast of the Balkan peninsula, restricted to the Dalmatian archipelago and to a narrow coastal belt of the mainland extending from the gulf of Sarand‰ to Istria, with [Pistacia terebinthus], [Fraxinus ornus], [Coronilla emerus], [Ostrya carpinifolia], [Carpinus orientalis], [Laurus nobilis], [Viburnum tinus], [Rhamnus alaternus], [Rosa sempervirens], [Lonicera etrusca], [Clematis flammula], [Rubia peregrina], [Smilax aspera], [Vitis vinifera ssp. sylvestris], [Cyclamen purpurascens], [Prunus mahaleb], and, in the most thermic stands, [Myrtus communis] and [Juniperus phoenicea]. They are mostly degraded to arborescent matorral or coppice; fully developed forests are recorded very locally in the Dalmatian archipelago, in particular on Rab, Lokrum, Mljet and Brioni.

Southern Italian holm-oak forests	Mostly upper meso-Mediterranean [Quercus ilex]-dominated formations of Calabria and Sicily with [Viola alba ssp. dehnhardtii], [Teucrium siculum], [Carex distachya], [Cyclamen repandum], [Pyrus amygdaliformis], [Ruscus aculeatus], [Cytisus villosus], [Asparagus acutifolius], [Rubia peregrina], [Asplenium onopteris], [Luzula forsteri], [Lonicera etrusca], [Smilax aspera], [Rosa sempervirens] and, in some facies, [Chamaerops humilis], [Pistacia lentiscus], [Phillyrea media], [Arbutus unedo]; like the preceding formations, they are usually degraded to arborescent matorral or coppice, but fine stands survive locally, particularly in Sicily, Puglia (e.g. Bosco delle Pianelle) and Calabria (e.g. Boschi di Badolato).
Pantellerian and Maltese holm-oak woodland	Relictual pockets of [Quercus ilex] woodland of Pantelleria and the Maltese Islands.
Greek holm-oak woodland	[Quercus ilex]-dominated formations of peninsular Greece and the Ionian and Aegean archipelagoes, with the exception of those of Crete; associated with [Quercus ilex] are [Quercus coccifera], [Arbutus andrachne], [Arbutus unedo], [Phillyrea latifolia], [Pistacia terebinthus], [Pistacia lentiscus], [Olea europaea], [Juniperus oxycedrus]; arborescent matorrals (unit 32.1) occur throughout the area, though much less commonly than in the western Mediterranean; reasonably extensive, fully developed, mature forest stands do not appear to remain.
Cretan holm-oak woodland	Uncommon [Quercus ilex] formations of Crete; small stands of arborescent matorral (unit 32.1), in which [Quercus ilex] may be associated with [Quercus coccifera] or [Quercus brachyphylla], occur sporadically, particularly on rocky slopes; orchard-like groves of old [Quercus ilex], [Quercus brachyphylla] and cultivated [Olea europaea] exist in the extreme west of the island; heavily grazed, they may be more akin to dehesa (unit 84.5) than to forest.
Supra-Mediterranean holm-oak forests	[Quercus ilex] forests of the supra-mediterranean levels of northwestern Mediterranean and Adriatic hills and mountains, often mixed with deciduous oaks, [Acer] spp. or [Ostrya carpinifolia].
Aquitanian holm-oak woodland	Isolated [Quercus ilex]-dominated stands occurring as a facies of dunal pine-holm oak forests.
Spanish holm-oak woodland	Iberian forest communities formed by [Quercus rotundifolia]. Generally, even in mature state, less tall, less luxuriant and drier than the fully developed forests that can be constituted by the closely related [Quercus ilex], they are, moreover, most often degraded into open woodland or even arborescent matorral. Species characteristic of the undergrowth are [Arbutus unedo], [Phillyrea angustifolia], [Rhamnus alaternus], [Pistacia terebinthus], [Rubia peregrina], [Jasminum fruticans], [Smilax aspera], [Lonicera etrusca], [Lonicera implexa].
Continental [Quercus rotundifolia] woodland	Forests and woodland of [Quercus rotundifolia] occupying mostly base-rich soils of the meso- and supra-Mediterranean areas of the central and eastern Meseta, the edges of the Ebro basin and of their bordering northern and eastern mountain ranges, under fairly continental, dry climates.

Meso-Mediterranean continental encinares	[Quercus rotundifolia] formations distributed over a large potential range on the Meseta and its margins, from the upper Ebro to the Valencian hinterland and the cold, dry plateaux of northeastern Andalusia. Well-preserved examples are rare, most of the forests on good soils having been replaced by cultivation.
Supra-Mediterranean Iberian continental encinares	Basophilous, dry to subhumid woodland widespread in the supra-Mediterranean levels of the Castilian Duero basin, and of the northeastern mountains and plateaux associated with the Iberian Range. They are often rich in [Juniperus thurifera] and associate or alternate with juniper woodland and [Quercus faginea] or [Quercus pyrenaica] deciduous woodland.
Northern supra-Mediterranean continental encinares	[Quercus rotundifolia] woods of superficial calcareous soils of crests, spurs and upper adret slopes of the upper Ebro basin and southern slopes of the Cordillera Cantabrica, locally entering also Euro-Siberian Cantabrian areas, with [Amelanchier ovalis], [Rosa agrestis], [Lonicera etrusca], [Spiraea hypericifolia ssp. obovata], [Juniperus communis], [Juniperus oxycedrus], [Juniperus phoenicea].
Oro-Cantabrian encinares	Relict, xerophile collinar-montane [Quercus rotundifolia] and [Quercus rotundifolia] x [Quercus ilex] forests developed on mostly calcareous, well-drained shallow soils of steep slopes and gorges in the Cordillera Cantabrica and a very few areas of Galicia, rich in [Cephalanthera] and [Epipactis] orchids.
Western [Quercus rotundifolia] woodland	Forests and woodland of [Quercus rotundifolia] occupying mostly siliceous soils of the meso- and supra-Mediterranean areas of the western Meseta and neighbouring regions under more Atlantic, though generally dry, climates. Well-preserved examples are rare, most of the remaining wooded areas being under dehesa (84.5) regime.
Luso-Extremaduran encinares	Meso-Mediterranean [Quercus rotundifolia] formations widespread on the plains and plateaux of Extremadura, Alentejo and neighbouring regions, and in the Sierra Morena and the Montes de Toledo. It is almost entirely transformed into dehesa.
Castilian encinares	More northern, upper meso-Mediterranean and lower supra-Mediterranean [Quercus rotundifolia] formations, poorer in Mediterranean species, of the western plateaux of Old Castile and adjacent southern Leon and Galicia; [Genista hystrix] is a physiognomically striking element. Also essentially eliminated as forest formations, these woodlands constitute, together with the preceding unit, the basis for the western Iberian dehesa, one of the most characteristic landscapes of the peninsula and an importand habitat of larger fauna.
Cordilleran encinares	[Quercus rotundifolia] formations of the Cordillera Central, characteristic of cool meso-Mediterranean and sunny supra-Mediterranean slopes of the sierras de Guadarrama, de Gredos, de Bejar, de Ayllon and neighbouring areas; they extend east to siliceous enclaves of the Iberian Range. Adapted to a more continental climate than the two previous units, they are poorer in shrubs and lianas. They often constitute low, open woodland.
Villuercan encinares	Summital [Quercus rotundifolia] elfin forests of the high elevations of the Montes de Toledo.

Andalusian [Quercus rotundifolia] woodland	Forests and woodland of [Quercus rotundifolia] developed in the meso- and supra-Mediterranean levels of Baetic mountains and foothills, and neighbouring interior plains. Well-preserved examples are extremely rare.
Meso-Mediterranean basophilous Andalusian encinares	Woodland dominated by [Quercus rotundifolia] with [Juniperus oxycedrus], [Daphne gnidium], [Ruscus aculeatus], [Asparagus acutifolius], [Crataegus monogyna], [Lonicera implexa], [Rubia peregrina], [Paeonia coriacea], [Paeonia broteroi], [Endymion hispanicus] that represents the potential, mature vegetation of a great part of Andalusia, in the Guadalquivir basin, coastal areas and Baetic ranges, on base-rich and often silt-laden soils, under meso-Mediterranean conditions. They have been largely replaced by cultivation and, where they subsist, are often very degraded.
Supra-Mediterranean basophilous Andalusian encinares	Woodland dominated by [Quercus rotundifolia], with [Quercus faginea], [Acer monspessulanum], [Sorbus aria], [Sorbus aucuparia], [Taxus baccata], [Berberis hispanica], [Crataegus monogyna], [Lonicera arborea], [Daphne laureola], [Rosa] spp., [Polygala boissieri], [Helleborus foetidus] and many orchids, of the supra-Mediterranean level (1400-1900 m) of calcareous Baetic ranges.
Silicicolous Andalusian encinares	[Quercus rotundifolia]-dominated woodland characteristic of the meso- and supra-Mediterranean levels of the Sierra Nevada and of a few siliceous mountain ranges of the arid Iberian southeast. Totally destroyed in the Sierra Nevada, this community is still represented by well-preserved examples in the sierras de Carrascoy and Alhamilla, and to a lesser extent, in the Sierra de Cabrera.
Southwestern [Quercus rotundifolia] woodland	Forests and woodland of [Quercus rotundifolia] developed in the thermo-Mediterranean zone of Andalusia and neighbouring areas. Well-preserved examples are extremely rare.
Basophilous southwestern encinares	[Quercus rotundifolia] formations of thermo-Mediterranean calcareous slopes of the Quadalquivir basin and the coastal foothills of Baetic and arid southeastern ranges, with [Olea europaea var. sylvestris], [Chamaerops humilis], [Pistacia lentiscus], [Smilax aspera], [Asparagus albus], [Rhamnus oleoides], [Quercus coccifera], [Clematis cirrhosa], [Aristolochia baetica], [Bupleurum gibraltarium] and, locally, [Maytenus senegalensis] or [Buxus balearica]. They have almost disappeared in forest form except in a few ranges of the arid Iberian Southeast.
Silicicolous southwestern encinares	Formations of [Quercus rotundifolia] with [Myrtus communis], [Pulicaria odora], [Pistacia lentiscus], [Phillyrea angustifolia] and [Arbutus unedo] occupying the siliceous soil of the thermo-Mediterranean levels of eastern Andalusia between the Sea of Alboran and the coastal Tejeda, Almijara, Alpujarra and Gador ranges, a few granitic outcroppings of the Sierra Morena and limited enclaves of the Badajos region. They have almost entirely disappeared.

Valencian [Quercus rotundifolia] woodland	Thermo-Mediterranean, basophilous forests and woodland of [Quercus rotundifolia] characteristic of the southeastern maritime façade of the Iberian peninsula in Valencia and Levante, rich in shrubs and lianas, with [Rubia peregrina ssp. longifolia], [Osyris quadripartita], [Chamaerops humilis], [Phillyrea angustifolia], [Clematis flammula]. Well-preserved examples survived until recently in, among others, the Sierra del Ave y Cortes de Pallas, in the Pobla Tornesa, in Millares, in Montduver. This community now appears extinct in its full forest form.
Balearic [Quercus rotundifolia] woodland	Forests or woodland of [Quercus rotundifolia] occupying deep soils in the dry thermo-Mediterranean areas of the Balearic islands. Reasonably preserved examples are extremely rare.
Kermes and alder-leaved oak woodland	Forest or woodland formations dominated by arborescent [Quercus coccifera] ([Quercus calliprinos], [Quercus pseudococcifera]) or [Quercus alnifolia].
Greek kermes oak forests	Arborescent [Quercus coccifera]-dominated formations of peninsular Greece, of the Ionian and Aegean archipelagoes and of Crete. Extensive, fully-developed stands exist in several areas of Crete. The most representative forests occupy valleys in the 700-800 m range of the southern slopes of the Psiloriti mountains; [Acer orientale], [Cephalanthera cucullata] and [Epipactis cretica] are associated. Other forests are found in the Lefka and Lassithi mountains; [Pyrus amygdaliformis], [Prunus webbii], [Pistacia terebinthus], [Phillyrea latifolia], [Styrax officinalis] are characteristic of various Cretan stands. Outside of Crete, forest stands are found sporadically, in particular on Ikaria, Samothrace and Mount Athos, where [Quercus coccifera] is associated with [Quercus ilex], and at high elevations of Rhodes, where [Quercus coccifera] forms woodland fragments with arborescent [Phillyrea media]. In many areas remnant tall [Quercus coccifera] may form arborescent matorral, as for instance on Ossa; coppice-like formations of young trees also occur.
Italian kermes oak woodland	Very local [Quercus coccifera] formations of Puglia and southern Sicily.
Portuguese kermes oak forest	Extremely isolated [Quercus coccifera]-dominated forest of Nazare, Monte de S. Bartolomeu, with [Phillyrea media], [Pistacia lentiscus], [Phillyrea angustifolia], [Arbutus unedo], [Viburnum tinus], [Smilax aspera], [Asplenium onopteris].
Cyprian kermes oak forest	Arborescent [Quercus coccifera] ([Quercus calliprinos])-dominated formations of calcareous or ultra basic substrates of Cyprus.
Anatolian kermes oak forest	Arborescent [Quercus coccifera] ([Quercus calliprinos])-dominated forests or steppe-forests of Mediterranean and sub-Mediterranean Anatolia, with [Quercus brachyphylla], [Quercus infectoria], [Arbutus andrachne], [Acer syriacum], [Fontanesia phillиraeoides], [Aristolochia altissima], [Cyclamen persicum], [Eryngium falcatum].
Cyprian alder-leaved oak forests	Arborescent [Quercus alnifolia]-dominated formations of Cyprus, installed on basic eruptive substrates of the Troodos range, with [Acer sempervirens], [Teucrium kotschyanum], [Salvia cypria], [Crepis fraasii], [Sedum cyprium].

Eurasian continental sclerophyllous woodland	Lauriphyllous and mixed lauriphyllous-xerophyllous evergreen forests of the Warm-Temperate Humid zones of the Eurasian continent and continental shelf islands and of humid enclaves within the Mediterranean zones. Lauriphyllous forests of the oceanic Macaronesian archipelagoes are listed separately under G2.3.
Mediterraneo-Atlantic laurel - oak woodland	[Laurus nobilis]-dominated facies of evergreen oak forests characteristic of areas of warm-temperate humid conditions of the southern Atlantic coasts of the European continent and of humid microclimatic enclaves in the Mediterranean region, in particular, of coastal Asturias (cf. G2.1211), of Andalusia, of Istria and the Dalmatian coast.
Ponto-Hyrcanian sclerophyllous forests	Communities of the Ponto-Caspian warm-temperate humid zone of the southern shores of the Black and Caspian seas, dominated by lauriphyllous or xero-lauriphyllous evergreen tree species, in particular, [Laurus nobilis], [Prunus laurocerasus] ([Laurocerasus officinalis]) and [Buxus hyrcanica], anomalous and often limited to exiguous enclaves within a predominantly deciduous forest environment.
Macaronesian laurel woodland	Humid to hyper-humid, mist-bound, luxuriant, evergreen, lauriphyllous forests of the cloud belt of the Macaronesian islands, extremely rich in floral and faunal species, among which many are restricted to these communities. Genera such as [Picconia], [Semele], [Gesnouinia], [Lactucosonchus], [Ixanthus] are entirely endemic to these communities, while others, such as [Isoplexis], [Visnea] and [Phyllis] reach in them their maximum development; in addition, each of the formations of the various archipelagoes harbours distinctive endemic species. Laurel forests are the most complex and remarkable relict of the humid sub-tropical vegetation of the Mioceno-Pliocene late Tertiary of southern Europe. Areas of intact forests have been drastically reduced to a level below which the preservation of their elements could not be sustained.
Azorean laurisilvas	Lauriphyllous forests of the Azores, with [Laurus azorica], [Myrica faya], [Frangula azorica], [Ilex perado ssp. azorica], [Juniperus brevifolia], [Picconia azorica], [Prunus lusitanica ssp. azorica], [Euphorbia stygiana], [Viburnum tinus ssp. subcordatum], [Vaccinium cylindraceum], [Smilax divaricata]. The humid forests of the coastal areas ("[Myrico-Pittosporietum undulati] p.") have been totally or almost totally degraded, largely invaded by the introduced Australian [Pittosporum undulatum]. A better representation survives of the hyper-humid forests ([Culcito-Juniperion brevifoliae] p.) of higher elevations.

Madeiran laurisilvas	Lauriphyllous forests of Madeira with [Laurus azorica], [Persea indica], [Ocotea foetens], [Apollonias barbujana], [Pittosporum coriaceum], [Clethra arborea], [Visnea mocanera], [Picconia excelsa], [Prunus lusitanica ssp. hixa], [Heberdenia excelsa], [Vaccinium padifolium], [Ilex perado ssp. perado], [Ilex canariensis], [Myrica faya], [Erica arborea], [Hedera canariensis], [Isoplexis canariensis], [Euphorbia mellifera], [Sambucus lanceolata], [Teline maderensis] ([Cytisus maderensis]), [Sonchus fruticosus], [Senecio auritus] ([Senecio maderensis]), [Ruscus streptophyllus], [Rubus bollei], [Semele androgyna], [Smilax canariensis], [Tamus edulis], [Carex peregrina] and many ferns. These forests, which still occupy a relatively large surface, of the order of 10,000 ha (15% of their former surface), are the habitat of the threatened endemic Madeiran Pigeon, [Columba trocaz].
Canary Island laurisilvas	Lauriphyllous forests of the Canary Islands, with [Laurus azorica], [Picconia excelsa], [Persea indica], [Ocotea foetens], [Apollonias barbujana], [Visnea mocanera], [Pleiomeris canariensis] ([Myrsine canariensis]), [Ardisia bahamensis], [Prunus lusitanica], [Sambucus palmensis], [Euphorbia mellifera], [Ixanthus viscosus], [Rubus bollei], [Convolvulus canariensis], [Geranium canariensis], [Hedera canariensis], [Smilax aspera], [Smilax canariensis], [Canarina canariensis], [Semele androgyna], [Sideritis macrostachys], [Sideritis canariensis], [Cryptotaenia elegans], [Rubia peregrina], [Carex canariensis], [Asparagus fallax] and many ferns. They are the habitat of the threatened endemic laurel pigeons [Columba junoniae] and [Columba bollii], now limited to La Gomera, Tenerife and La Palma. The laurel forests of each island harbour a distinctive set of endemic plants and animals, as exemplified by the species of the composite genus [Pericallis], the well-marked races of the chaffinch [Fringilla coelebs] or the carabid faunas. They are thus best listed separately. The total remnant surface of laurel fo
Laurisilvas of La Gomera	Laurel forests of La Gomera, best preserved and most extensive of the archipelago, with large areas of humid [Persea indica] -[Laurus azorica] forests ([Lauro-Perseetum indicae]), particularly in high areas, and good examples of [Ocotea foetens]-dominated forests, hyper-humid and very rich in ferns and epiphytes ([Athyrio-Ocoteetum foetentis]).
Laurisilvas of Tenerife	Laurel forests of Tenerife, mostly restricted to the Anaga range and Los Silos, with a few smaller patches in Guimar ravines and at a few north slope sites in the La Esperanza-Agua Garcia area and the Barranco de San Antonio - Icod area. There are good representations of til ([Ocotea foetens]) forests (Anaga), as well as of drier [Picconia excelsa]-[Apollonias barbujana] forests (Los Silos).
Laurisilvas of La Palma	Laurel forests of La Palma essentially restricted to a few large, deep ravines of the northern slope, particularly in the Las Sauces area, including both [Lauro-Perseetum] vinyatigo-laurel and [Athyrio-Ocoteetum] til stands.
Laurisilvas of Hierro	Laurel forests of Hierro, very small and limited to cliff sides in the Ensenada El Golfo area of the north coast.
Laurisilvas of Gran Canaria	Laurel forests of Gran Canaria, extinct. Very small, but fully expressed, fragments existed until very recently, notably at Los Tiles, but now appear to have been totally degraded.

Olive - carob woodland	Thermo-Mediterranean or thermo-Canarian woodland dominated by arborescent [Olea europaea var. sylvestris], [Ceratonia siliqua], [Pistacia lentiscus], [Myrtus communis] or, in the Canary Islands, by [Olea europaea ssp. cerasiformis] and [Pistacia atlantica]. Most formations will be listed as arborescent matorral F5.1, but a few stands have a sufficiently tall, closed canopy to qualify for this unit.
Wild olive woodland	[Olea europaea var. sylvestris]-dominated formations. A climax olive forest, with [Ceratonia siliqua] and [Pistacia lentiscus] exists on the north flank of Djebel Ichkeul in northern Tunisia. Elsewhere, the communities most resembling olive forest are found in southern Andalusia ([Tamo communis]-[Oleetum sylvestris], extinct?), in Menorca ([Prasio majoris]-[Oleetum sylvestris]), Sardinia, Sicily, Calabria, Crete.
Carob woodland	[Ceratonia siliqua]-dominated formations, often with [Olea europae var. sylvestris] and [Pistacia lentiscus]. The most developed examples, some truly forestlike, are to be found in Tunisia, on the slopes of the Djebel Ichkeul, where they constitute carob-dominated facies of the previous unit, in Mallorca ([Cneoro tricocci-Ceratonietum siliquae]), in eastern Sardinia, in southeastern Sicily, in Puglia, in Crete, in northeastern Algeria, in Cyrenaica.
Canary Island olive woodland	[Olea europaea ssp. cerasiformis] and [Pistacia atlantica] formations of the Canary Islands.
Palm groves	Woods, often riparian, formed by palm trees of the Mediterranean and Macaronesian zones, [Phoenix theophrasti] of Crete and western Anatolia, and [Phoenix canariensis] of the Canary Islands.
Cretan palm groves	Relict [Phoenix theophrasti] woods of Crete, restricted to damp sandy coastal valleys; they include the extensive forest of Vai, where the luxuriant palm growth is accompanied by a thick shrubby undergrowth rich in [Nerium oleander], and about four other smaller coastal groves, notably on the south coast of the prefectorate of Rethimnon.
Canary Island palm groves	Relict [Phoenix canariensis] woods of the Canary Islands, mostly characteristic of the bottom of barrancos and of alluvial soils, below 600 metres. Palm groves are now very rare, but still exist in all the islands, with particularly representative examples at Haria on Lanzarote, Vega del Rio Palmas on Fuerteventura, Fataga, Maspalomas and the Barranco de Tirajana in Gran Canaria, Valle Gran Rey in La Gomera, Masca in Tenerife and Brena Alta in La Palma.
Anatolian palm groves	Relict [Phoenix theophrasti] woods of western Anatolia, restricted to a few coastal valleys.
Holly woods	Woods dominated by tall arborescent [Ilex aquifolium]. They occur in the supra-Mediterranean level of Sardinia and Corsica and in Atlantic mountains of northwestern Spain, mostly as a facies of relict yew-holly forests G3.9. Other scattered occurrences exist in the nemoral zone of western Europe, as facies of beech forest G1.6 or acidophilous oak forest G1.8.
Canary Island heath woodland	Very tall, forest-like, formations dominated by [Erica arborea], [Myrica faya], [Arbutus canariensis] or [Visnea mocanera], occurring naturally in the most wind-exposed and the driest stations within the "monte verde" of the Canary Island cloud belt; they also occur extensively as degradation stages of the [Laurus] woodland G2.3 or as secondary colonists.

Canary Island fayal-brezal	Tall [Erica arborea]-dominated formations of Tenerife, La Palma, La Gomera, Gran Canaria and Hierro, with [Myrica faya], [Ilex canariensis], [Rhamnus glandulosa], [Viburnum tinus ssp. rigidum], [Cedronella canariensis], [Bystropogon canariensis], [Isoplexis canariensis], [Urtica morifolia], [Teline canariensis], [Sonchus abbreviatus], [Hypericum glandulosum], [Gesnouinia arborea] and many species of the genus [Pericallis], including several island or local endemics that characterize several differentiated communities; among these are [Pericallis tussilaginis] ([Pericallis] = [Senecio]), [Pericallis webbii], [Pericallis cruenta], [Pericallis steetzii], [Pericallis murrayi].
[Visnea] - [Arbutus] forests	Formations characterized by the abundance of [Arbutus canariensis] and [Visnea mocanera] occurring, in particular, in the Valle de Guimar and Los Silos of Tenerife, and in the Ladera de Jinama of Hierro.
Hierran fayal	Tall [Myrica faya] formation of the southern slope of Hierro, almost devoid of [Erica arborea].
Highly artificial broadleaved evergreen forestry plantations	Cultivated evergreen broad-leaved tree formations planted for the production of wood, composed of exotic species, of native species out of their natural range, or of native species planted in clearly unnatural stands, often as monocultures.
Eucalyptus plantations	Plantations of trees of the Australian genus [Eucalyptus], in particular, [Eucalyptus globulus], [Eucalyptus camaldulensis], [Eucalyptus cladocalyx], [Eucalyptus delegatensis], [Eucalyptus nitens], [Eucalyptus radiata], [Eucalyptus astringens], [Eucalyptus bicostata], [Eucalyptus brockwayi], [Eucalyptus regnans], [Eucalyptus gomphocephala], [Eucalyptus grandis], [Eucalyptus maidenii], [Eucalyptus cornuta], [Eucalyptus fastigata], [Eucalyptus pauciflora], [Eucalyptus viminalis]. These plantations offer little support for indigenous biological diversity and constitute biological deserts as far as the fauna is concerned.
Evergreen exotic oak plantations	Cultivated formations of deciduous trees of genus [Quercus] planted most often for the production of wood, composed of exotic species or of Palaeartic species out of their natural range.
Other evergreen broadleaved tree plantations	Cultivated evergreen broad-leaved formations of trees of genera other than [Eucalyptus] planted for the production of wood, composed of exotic species, of native species out of their natural range, or of native species planted in artificial conditions with a considerably modified accompanying cortège.
Evergreen orchards and groves	In Europe these are mostly olives and citrus.
Olive groves	Mediterranean formations of [Olea europaea var. europaea].
Citrus orchards	Land planted in broad-leaved evergreen citrus trees.
Palm plantations	Formations dominated by planted or introduced palms, in particular, date palm ([Phoenix dactylifera]).
Other evergreen orchards	Land planted in evergeen trees, other than those of units G2.91-G2.93, cultivated for fruit, leaves or flowers.
Coniferous woodland	Woodland, forest and plantations dominated by coniferous trees, mainly evergreen ([Abies], [Cedrus], [Picea], [Pinus], [Taxus], Cupressaceae) but also deciduous [Larix]. Excludes mixed forests (G4) where the proportion of broadleaved trees exceeds 25%.

Fir and spruce woodland	Woodland dominated by [Abies] or [Picea].
Neutrophile medio-European fir forests	Fir ([Abies alba]) and fir-spruce forests developed on neutral or near-neutral soils of the Alps, the Dinarides, the Carpathians, the Pyrenees, the Jura, the Hercynian ranges and the northern Apennines, in association with forests of the [Fagion medio-europaeum], of the [Fagion illyricum] or of the [Fagion dacicum].
Inner Alpine neutrophile fir forests	Neutrophilous [Abies alba] and [Abies alba]-[Picea abies] forests developed on brown soils of the intermediate or inner Alps, outside of the climatic range of the beech ([Fagus sylvatica]).
Sorrel fir forests	Typical inner Alpine [Abies alba] forests with a predominance of mull-moder species such as [Veronica urticifolia] ([Veronica latifolia]), [Melampyrum sylvaticum], [Prenanthes purpurea], [Oxalis acetosella], [Luzula nivea]; all fir forests of the intermediate and inner Alps can be included in this category with the exception of those that present clearly acidophilous or calciphilous facies and of the well-characterized local types listed immediately below.
Tall herb fir forests	High altitude, upper montane, tall-herb rich inner-Alpine fir forests with [Adenostyles alliariae], [Geranium sylvaticum], [Cicerbita alpina], [Chaerophyllum villarsii], [Peucedanum ostruthium], [Alnus viridis] and [Sorbus aucuparia].
Trochischantes fir forests	[Abies alba] forests of the Maritime Alps, distributed in particular in the Quatre-Cantons forest in the Tournairet massif, in the Haute-V,subie, in the Peira Cava massif, in the middle and high Roya, with [Trochiscanthes nodiflora], [Galium sylvaticum], [Luzula pedemontana], [Aquilegia atrata], [Phyteuma halleri].
Neutrophile Hercynio-Alpine fir forests	Neutrophile fir forests of the montane or submontane levels of the outer Alps, the Dinarides, the Carpathians, the northern Apennines, the Pyrenees, the Jura and the Hercynian arc, dominated by [Abies alba] with a varying admixture of [Picea abies], [Fagus sylvatica] or both.
Peri-Alpine neutrophile fir forests	Neutrophile fir forests of the montane or submontane levels of the northern, western, southwestern and southern outer Alps, the western Carpathians, the northern Apennines, the Pyrenees, the Jura and the Hercynian arc, within the area of distribution of the montane beech forests of the [Fagion medio-europaeum], dominated by [Abies alba] with a varying admixture of [Picea abies], [Fagus sylvatica] or both.
Peri-Alpine neutrophile spruce fir forests	Neutrophile fir forests of the montane or submontane levels of the northern, western, southwestern and southern outer Alps, the western Carpathians, the northern Apennines, the Jura and the Hercynian arc, developed in stations edaphically or microclimatically unfavourable to beech, dominated by [Abies alba] accompanied to a varying extent by [Picea abies] and with a species cortège composed by elements of the [Fagetalia] and of the [Piceetalia].
Peri-Alpine neutrophile beech fir forests	Neutrophile fir forests of the montane or submontane levels of the northern, western, southwestern and southern outer Alps, the western Carpathians, the northern Apennines, the Pyrenees, the Jura and the Hercynian arc, developed in stations sufficiently favourable to beech, dominated by [Abies alba] accompanied to a varying extent by [Fagus sylvatica] and [Picea abies] and with a species cortège identical to that of the montane beech forests of units 41.13, 41.14, 41.17.

Illyrian neutrophile fir forests	Neutrophile fir forests of the montane or submontane levels of the southeastern outer Alps and the Dinarides, within the area of distribution of the montane beech forests of the [Fagion illyricum], dominated by [Abies alba] with a varying admixture of [Picea abies], [Fagus sylvatica] or both.
Illyrian neutrophile spruce fir forests	Neutrophile fir forests of the montane or submontane levels of the southeastern outer Alps and the Dinarides, developed in stations edaphically or microclimatically unfavourable to beech, dominated by [Abies alba] accompanied to a varying extent by [Picea abies] and with a species cortège composed by elements of the [Fagetalia] and of the [Piceetalia].
Illyrian neutrophile beech fir forests	Neutrophile fir forests of the montane or submontane levels of the southeastern outer Alps and the Dinarides, developed in stations sufficiently favourable to beech, dominated by [Abies alba] accompanied to a varying extent by [Fagus sylvatica] and [Picea abies] and with a species cortège identical to that of the montane beech forests of units 41.13, 41.14, 41.17.
Dacian neutrophile montane fir forests	Neutrophile to acidophile forests of [Abies alba] and [Fagus sylvatica], often with [Picea abies], on very steep slopes of the montane level of the eastern and southern Carpathians, with a cortège of [Fagetalia] and [Symphyto-Fagenion] species, including [Pulmonaria rubra], [Dentaria glandulosa], [Symphytum cordatum], [Salvia glutinosa], [Actaea spicata], [Rubus hirtus], [Dryopteris filix-mas], [Athyrium filix-femina].
Pyrenean fir forests	Montane [Abies alba] forests of inner valleys of the Pyrenees, and of other stations of relative continentality, unfavourable to beech, more acidophilous than those of units 42.111 and 42.112, with [Vaccinium myrtillus], [Goodyera repens], [Galium rotundifolium] and a good representation of species of the neutrophilous beech forests, intermediate between this unit and unit 42.13.
East Carpathian high montane fir forests	Forests dominated by [Abies alba] and [Picea abies], accompanied by [Fagus sylvatica] and characterized by the presence of boreal elements in the herb layer, of gentle slopes of the upper montane level of the Eastern and Southern Carpathians, with [Hieracium rotundatum], [Orthilia secunda], [Moneses uniflora], [Goodyera repens], [Homogyne alpina], [Soldanella hungarica ssp. major], [Calamagrostis villosa], [Calamagrostis arundinacea].
Calciphilous silver fir forests	[Abies alba] and [Abies alba]-[Picea abies] forests developed on calcareous soils of the Alps, the Dinarides, the Pyrenees, the Jura and the Hercynian ranges.
Inner Alpine calcicolous fir forests	Calcicolous [Abies alba] and [Abies alba]-[Picea abies] forests of the intermediate Alps, with [Carex alba], [Polygala chamaebuxus], [Hepatica triloba], [Calamagrostis varia].
Outer Alpine calcicolous fir forests	[Abies alba] facies of calcicolous [Picea abies]-[Abies alba] forests of the outer Alps.
Jurasso-Hercynian calcicolous fir forests	[Abies alba]-[Picea abies] woods of calcareous soils of the eastern Black Forest foothills, the Baar Plateau and the piedmont of the Swabian Alb, rich in sedges and orchids.

Dinaric calcareous block fir forests	[Abies alba]-dominated fir forests of calcareous block slopes of the Dinarides of Slovenia, western Croatia, mostly in the Gorski Kotar, the Velebit and the Pljesevica, and Bosnia-Herzegovina, extending north to the Triglav range in the southeastern Alps of Slovenia and south in fragmentary form to the Piva Valley of Montenegro, with [Juniperus nana], [Calamagrostis hirundinacea], [Calamagrostis varia], [Cirsium erisithales], [Clematis alpina], ferns and mosses including [Leucobryum glaucum]. They include primaeval and near-natural forests of considerable biological and aesthetic value.
Acidophilous silver fir forests	[Abies alba] and [Abies alba]-[Picea abies] forests developed on acid soils of the Alps, the Dinarides, the Carpathians, the Pyrenees, the Jura, the Hercynian ranges and the northern Apennines, within the biogeographical range of beech forests of the [Fagion medio-europaeum], of the [Fagion illyricum] or of the [Fagion dacicum].
Inner Alpine acidophile fir forests	Oligotrophic fir and fir-spruce forests of the intermediate or inner Alps, with [Luzula nivea], [Vaccinium myrtillus], [Calamagrostis villosa], [Festuca flavescens], [Saxifraga cuneifolia].
Acidophile Hercynio-Alpine fir forests	Acidophile fir forests of the montane or submontane levels of the outer Alps, the Dinarides, the Carpathians, the northern Apennines, the Pyrenees, the Jura and the Hercynian arc, dominated by [Abies alba] with a varying admixture of [Picea abies], [Fagus sylvatica] or both.
Peri-Alpine acidophile fir forests	Acidophile fir forests of the montane or submontane levels of the outer Alps, the western Carpathians, the Jura, the Bohemian Quadrangle, the Black Forest, the Vosges, the Central Massif, the Pyrenees, locally of other mid-German Hercynian ranges, in particular, the Thüringer Wald, developed in stations edaphically or microclimatically unfavourable to beech, dominated by [Abies alba] accompanied to a varying extent by [Picea abies] and with a species cortège combining elements of the [Piceetalia] with those of the [Fagetalia].
Illyrian acidophile fir forests	Acidophile fir forests of the montane or submontane levels of the Dinarides, developed in stations edaphically or microclimatically unfavourable to beech, dominated by [Abies alba] with a varying admixture of [Picea abies] and [Fagus sylvatica], with a species cortège composed by elements of the [Fagetalia] ([Fagion illyricum]) and of the [Piceetalia].
Dacian acidophile beech fir forests	Neutrophile to acidophile [Abies alba] or [Abies alba]-[Picea abies] forests of the montane beech-fir belt of the southeastern Carpathians and the Apuseni mountains, with a cortège comprising [Fagetalia] and [Symphyto-Fagenion] species including [Pulmonaria rubra], [Dentaria glandulosa], [Symphytum cordatum], [Salvia glutinosa], [Actaea spicata], [Rubus hirtus], [Dryopteris filix-mas], [Athyrium filix-femina].
Alpenrose fir forests	High-altitude fir forests characteristic of ubacs of the Pyrenees and southwestern Alps, outside of the range of spruce, with [Rhododendron ferrugineum], [Vaccinium myrtillus], [Homogyne alpina], [Festuca flavescens].
Pyrenean alpenrose fir forest	Fir forests of the lower subalpine level of the Pyrenees, with [Rhododendron ferrugineum], [Homogyne alpina], [Lonicera nigra], [Polystichum lonchitis], [Rosa pendulina] ([Rosa alpina]), [Huperzia selago].
Alpine alpenrose fir forests	Fir forests of the lower subalpine level of the western Alps, with [Rhododendron ferrugineum], [Vaccinium myrtillus], [Homogyne alpina], [Lonicera caerulea], [Festuca flavescens], [Huperzia selago].

Block alpenrose fir forests	Block fir forests of the montane level of the Pyrenees and the southwestern Alps.
Holy Cross fir forests	Upland fir, or fir-dominated fir-spruce or fir-pine-oak forests developed on mesotrophic acid soils of Little-Poland, in particular, of the Holy Cross mountains and of sub-Carpathic hills, with an undergrowth rich in ferns, bryophytes and lowland forest species shared with the deciduous forests of the [Tilio-Carpinetum].
[Bazzania] fir forests	Fir-dominated [Abies alba]-[Picea abies] forests of the German, Swiss and Austrian outer Alps and their piedmont, and of the Carpathians, recorded from the Slovakian Carpathians and the Apuseni mountains, with [Frangula alnus] and an herb and moss layer rich in [Vaccinium myrtillus], [Bazzania trilobata], [Blechnum spicant], [Dryopteris carthusiana] agg., [Oxalis acetosella], [Sphagnum palustre], [Sphagnum girgensohnii], [Hylocomium splendens], [Polytrichum formosum], [Thuidium tamariscinum].
Corsican silver fir forests	[Abies alba] woods and forests locally replacing, mostly in cool stations, the acidophilous beech forests of the montane level of Corsica.
Southern Apennine silver fir forests	Relict [Abies alba] woods associated with the beech forests of the [Geranio versicolori-Fagion] of the Lucano-Calabrian Apennines (Pollino, Sila, Aspromonte).
Moesian silver fir forests	Forests of [Abies alba] or of [Abies alba] mixed with [Fagus sylvatica], [Picea abies], [Pinus sylvestris] or [Pinus nigra] of the Rhodopides, the Balkan Range, the Moeso-Macedonian mountains and the Pelagonids, within the geographical range of [Fagion moesiacum] forests.
Rhodopide fir forests	Forests of [Abies alba] or of [Abies alba] mixed with [Fagus sylvatica], [Picea abies], [Pinus sylvestris] or [Pinus nigra] of the Rhodopes and the northeastern Greek mountains, Pirin, Rila, Vitosha, within the geographical range of [Fagion moesiacum] forests.
Falakron silver fir forests	Very local, calciphilous, [Abies alba] forests of Falakron and the southern flank of the Rhodopes of extreme northern Greece.
Rhodope fir forests	Forests of [Abies alba] or of [Abies alba] mixed with [Fagus sylvatica], of the main Rhodope range, within the [Fagion moesiacum] zone.
Western Rhodopide fir forests	Forests of [Abies alba] or of [Abies alba] mixed with [Fagus sylvatica], [Picea abies], [Pinus sylvestris] or [Pinus nigra] of Pirin, Rila and Vitosha.
Moeso-Macedonian fir forests	Forests of [Abies alba] or of [Abies alba] mixed with [Fagus sylvatica], [Picea abies], [Pinus sylvestris] or [Pinus nigra] of the Moeso-Macedonian mountains.
Balkan Range fir forests	Forests of [Abies alba] or of [Abies alba] mixed with [Fagus sylvatica], [Picea abies], [Pinus sylvestris] or [Pinus nigra] of the Balkan Range system.
Pelagonide silver fir forests	[Abies alba] forests of the the Pelagonid mountains south to extreme northern Greece, including the Varnous system.
Balkano-Pontic fir forests	Forests of [Abies nordmanniana], [Abies borisii-regis], [Abies bornmuelleriana] of the southern Balkans peninsula, the Pontic range and the Caucasus, often mixed with beech, or adjacent to beech forests.

King Boris's fir forests	[Abies borisii-regis]-dominated fir forests of the southern Dinaric Alps, the northern Pindus, the central Pindus, the southern Rhodopes of Bulgaria and Greece, the Slavanka and Belaciza, adjacent to beech and beech-fir forests of the [Fagion hellenicum] or [Fagion moesiacum].
Bornmueller's fir forests	[Abies bornmuelleriana]-dominated forests of the Pontic Range and outlying massifs.
Nordmann's fir forests	[Abies nordmanniana]-dominated forests of the Caucasus and of the eastern Pontic Range.
Aegean fir forests	[Abies]-dominated fir or fir-pine forests of the northeastern Mediterranean basin, developed outside of, but in the immediate vicinity of beech [Fagus] spp., by [Abies cephalonica] and [Abies equi-trojani], outlier species of the group of [Abies alba] and [Abies nordmanniana].
Grecian fir forests	Endemic [Abies cephalonica] or mixed [Abies cephalonica] and [Abies borisii-regis] forests of the Peloponnese, Cephalonia, Parnassos, the southern Pindus, north to Panetolikon, Timfristos, Vardousia, Iti, Kallidromon and Othris, well outside of the range of beeches, [Fagus spp].
Trojan fir forests	Forests of [Abies equi-trojani] of the higher elevations of the Kaz Dag and of the Mustapha Kemal mountains in extreme western Anatolia, with [Epipogium aphyllum].
Forests of Spanish fir ([Abies pinsapo])	Fir or fir-cedar forests dominated by relict species of [Abies], including forests of [Abies pinsapo], [Abies marocana], [Abies numidica], [Abies cilicica] or [Abies nebrodensis], distributed along the rim of the southern Mediterranean basin, well outside the range of beech.
Ronda pinsapo fir forests	Calcicolous forests and stands of the endemic [Abies pinsapo] of the supra-meso-Mediterranean level of Andalucia, limited to the Serrania de Ronda and associated ranges.
Bermeja pinsapo fir forests	Forests and stands of the endemic [Abies pinsapo] of the supra-meso-Mediterranean level of Andalucia, developed on ultra basic serpentine outcroppings of the Sierra Bermeja and isolated stands of associated ranges.
Relict Nebrodi fir ([Abies nebrodensis]) stands	Surviving stands of the endangered [Abies nebrodensis] in the Madonie mountains of Sicily.
Alpine and Carpathian subalpine spruce forests	[Picea abies] forests of the lower subalpine level, and of anomalous stations in the montane level, of the outer, intermediate and inner Alps; in the latter, they are often in continuity with the montane spruce forests of unit G3.1C. The spruces, often stunted or columnar, are accompanied by an undergrowth of decidedly subalpine affinities. [Picea abies] forests of the lower subalpine level of the Carpathians.
Bilberry spruce forests	Mostly acidophilous, mesophile, subalpine [Picea abies] forests of the outer, intermediate and inner Alps, with [Oxalis acetosella], [Vaccinium vitis-idaea], [Vaccinium myrtillus], [Calamagrostis villosa] and the moss [Hylocomium splendens].

Tall herb subalpine spruce forests	Tall-herb rich, hygrophile or meso-hygrophile, [Picea abies] forests of high altitude stations of the Alps, subjected to prolonged snow cover and frequent fogs, with [Adenostyles] spp., [Chaerophyllum hirsutum], [Peucedanum ostruthium], [Ranunculus aconitifolius], [Aconitum vulparia], [Aconitum paniculatum], [Stellaria nemorum], [Geranium sylvaticum], [Cicerbita alpina].
[Adenostyles glabra] subalpine spruce forests	[Picea abies] or [Picea abies]-[Larix decidua] forests of subalpine to high montane slopes of the Alps developed on base-rich and usually lime-rich substrates, in particular, on dolomites, limestones, calcschists, green schists, usually on steep rocky slopes, with an undergrowth dominated by [Adenostyles glabra] ([Adenostyles alpina]).
[Adenostyles alliariae] subalpine spruce forests	[Picea abies] forests of the subalpine level of the Alps developed in high precipitation regions on usually calcareous bedrock, sometimes on base-rich siliceous substrates such as flysch, with an undergrowth dominated by dense formations of tall herbs, in particular, [Adenostyles alliariae], [Cicerbita alpina], [Rumex alpestris].
Moist subalpine spruce forests	Sphagnum-rich [Picea abies] forests of the Alps, developed on more or less peaty, humid but not waterlogged substrates, with [Listera cordata], [Sphagnum acutifolium], [Sphagnum quinquefarium], [Sphagnum girgensohnii]. Spruce forests developed in fens or swamps at the periphery of raised bogs or on waterlogged soils in forests are included in swamp forests of class 44, as unit 44.A411.
Xerophile subalpine spruce forests	[Picea abies] forests on dry adrets of the northern and northwestern Alps, with [Vaccinium vitis-idaea] and a small admixture of [Vaccinium myrtillus] on siliceous soils over sandstones and carboniferous schists, with [Arctostaphylos uva-ursi], [Polygala chamaebuxus], [Carex humilis] on lustrous schists, with [berberis vulgaris], [Valeriana montana], [Valeriana tripteris] on stabilised calcareous screes.
Cold station spruce forests	[Picea abies] woods of anomalous stations at the montane or subalpine level of the Alps, in particular block forests of "ice cellars" (shaded rocky screes through which cold air flows), woods developed in valleys and depressions where cold air accumulates on clear nights, woods colonizing stabilised screes and narrow bands of rocks, woods on moist sites.
Carpathian spruce forests	[Picea abies] forests, usually unmixed, forming, in most of the Carpathian arc, a lower subalpine belt between beech-fir or beech-fir-spruce forests of the montane level and the mugo pine upper subalpine zone.
Western Carpathian subalpine spruce forests	Subalpine [Picea abies] forests of the northwestern and northern Carpathians of Poland and Slovakia.
Western Carpathian acidophilous spruce forests	Subalpine [Picea abies] forests of siliceous soils of the northwestern and northern Carpathians of Poland and Slovakia.
Carpathian holly-fern spruce forests	Subalpine [Picea abies] forests of calcareous ranges in the northwestern and northern Carpathians of Poland and Slovakia, in particular of the calcareous Tatras.
Eastern Carpathian subalpine spruce forests	Subalpine [Picea abies] forests of the northern Eastern, the eastern and the southern Carpathians of the Ukraine and Romania.

Carpathian subalpine rhododenron spruce forests	[Picea abies] forests of the subalpine level, at 1550-1700 metres, of the Eastern Carpathians, with [Pinus mugo], [Pinus cembra], [Rhododendron myrtifolium], [Vaccinium myrtillus], [Vaccinium vitis-idaea], [Homogyne alpina], [Soldanella hungarica ssp. major] and [Calamagrostis villosa].
Carpathian subalpine Bruckenthalia spruce forests	[Picea abies] forests of the subalpine level (1600-1850m) of the Apuseni Mountains and the Southern Carpathians, with [Pinus mugo], [Pinus cembra], [Bruckenthalia spiculifolia], [Soldanella hungarica ssp. major], [Campanula abietina], [Campanula serrata], [Homogyne alpina] and [Calamagrostis villosa].
Carpathian high montane [Hieracium] spruce forests	[Picea abies] forests of the upper montane level of the Eastern, Southern and Southwestern Carpathians, with a usually sparse herb layer mostly of acidophilous species including [Hieracium rotundatum], [Calamagrostis villosa], [Calamagrostis arundinacea], [Vaccinium myrtillus], [Oxalis acetosella], [Campanula abietina], [Luzula luzuloides], [Luzula sylvatica].
Carpathian high montane [Bazzania] spruce forests	[Picea abies] forest stands installed on wet, acid, peaty ground of the margins of bogs and marshes within the montane level of the Eastern and Southwestern Carpathians, with a mucinal layer of [Sphagnum palustre], [Sphagnum wulfianum], [Sphagnum squarrosum], [Bazzania trilobata]; regional species such as [Soldanella hungarica ssp. major], [Campanula abietina], [Valeriana simplicifolia], [Salix silesiaca], are characteristic and [Listera cordata] is sometimes present.
Carpathian [Leucanthemum] high montane spruce forests	[Picea abies] forests frequently installed along streamsides and inner valleys of lower montane levels of the Eastern and western Southern Carpathians, with a cortège including [Adenostyletalia] elements, in particular [Leucanthemum waldsteinii], [Athyrium distentifolium], [Stellaria nemorum].
Inner range montane spruce forests	[Picea abies] forests of the montane level of the inner Alps, characteristic of regions climatically unfavourable to both beech and fir. Analogous [Picea abies] forests of the montane and collinar levels of the inner basin of the Slovakian Carpathians subjected to a climate of high continentality.
Acidophile montane inner Alpine spruce forests	Inner Alpine [Picea abies] forests of siliceous crystalline or schistous substrates, with [Calamagrostis villosa] and woodrushes.
Calciphile montane inner Alpine spruce forests	Calcicolous inner Alpine [Picea abies] forests with [Calamagrostis varia], [Carex flacca], [Sesleria caerulea], [Hieracium trifidum], [Aster bellidiastrum].
Bedstraw montane inner Alpine spruce forests	Xerophile, more or less mesotrophic inner Alpine [Picea abies] or [Picea abies]-[Abies alba] forests, often characterized by an admixture of deciduous trees, in particular [Acer pseudoplatanus], [Fraxinus excelsior], and with a species-rich herb layer comprising [Oxalis acetosella], [Galium rotundifolium], [Galium odoratum], [Anemone nemorosa], [Doronicum austriacum], [Petasites albus], [Primula elatior], [Fragaria vesca], [Cardamine trifolia], [Carex montana] and [Melica nutans].
Tall herb montane inner Alpine spruce forests	Upper montane inner Alpine [Picea abies] or [Picea abies]-[Abies alba] forests with [Amelanchier ovalis], [Berberis vulgaris] and an undergrowth rich in tall herbs, usually dominated by [Adenostyles glabra].

Peatmoss montane inner Alpine spruce forests	Montane inner Alpine [Picea abies] forests of peaty soils, rich in [Sphagnum] spp. and with [Equisetum sylvaticum], [Listera cordata] and [Dryopteris dilatata].
Inner Carpathian spruce forests	[Picea abies] forests of the montane and collinar levels of the inner basin of the Slovakian Carpathians, formed along the Proprad River valley between the High Tatras and the Low Tatras and subjected to a climate of high continentality.
Hercynian subalpine spruce forests	Subalpine [Picea abies] forests of high ranges of the central and eastern sections of the Hercynian arc, from the Harz to the Bohemian Quadrangle.
Subalpine spruce forests of the Bayerischer Wald	Acidophilous [Picea abies] forest of the granitic domes of the Bayerischer Wald and the B”hmerwald, with [Abies alba], [Sorbus aucuparia], [Vaccinium myrtillus], [Homogyne alpina], [Soldanella montana], [Calamagrostis villosa].
Subalpine spruce forests of the Harz and Erzgebirge	Spruce forests of the higher elevations of the Harz (above 750 m), the Thüringer Wald and the Erzgebirge.
Subalpine spruce forests of the Sudeten	Spruce forests of the higher elevations of the Sudeten (Krkonose or Riesengebirge, Orlicke Hory, Jeseniky).
Southern European Norway spruce forests	Outlying [Picea abies] formations of the Apennines, the southern Dinarides, the Balkan Range and the Rhodopides, at the southern limit of the range of the species and mostly south of its continuous range. [Pinus sylvestris] may be present, and undergrowth species may include [Vaccinium myrtillus], [Urtica dioica], [Rubus idaeus], [Bruckenthalia spiculifolia], [Poa nemoralis], [Daphne oleoides], [Calamagrostis arundinacea] and [Fragaria vesca].
Southeastern Moesian spruce forests	[Picea abies] forests of the Rhodopide Vitosha, Rila, Pirin and Rhodope ranges and of the Moeso-Macedonian mountains.
Aegeo-Rhodopean spruce forests	Very local [Picea abies] forests of the Aegean-facing southernmost ridge of the main Rhodope ranges in extreme northern Greece, constituting part of the Kara-Dere Forest.
Central Rhodopide spruce forests	[Picea abies] forests of the Rhodopides, forming an extensive subalpine belt on Vitosha, Rila, Pirin and the Rhodopes; the isolated forests developed on the Aegean flank of the Iztocni-Rodope are listed in unit 42.2411.
Moeso-Macedonian spruce forests	[Picea abies] forests of the Moeso-Macedonian mountains, in particular, of the Osogovska Planina of the F.Y.R. of Macedonia and Bulgaria.
Apennine spruce forests	Relict woods of spontaneous [Picea abies] of the northern Apennines (Passo del Cerreto, Emilia-Romagna; Foce del Campolino sull'Abetone, Tuscany).
Montenegrine spruce forests	Isolated subalpine and high montane [Picea abies] forests of the Ljubisnja range of Montenegro, developed on both siliceous and calcareous substrates, at altitudes comprised between 1150 and 1850 m on adrets and between 1100 and 1900 m on ubacs. They are species-rich on limestones with a cortège of medio-European affinities, except for the presence of [Laserpitium marginatum].

Pelagonide spruce forests	Very local subalpine [Picea abies] forests of the Pelagonides, particularly of the southern Sar Planina of the F.Y.R. of Macedonia, with smaller stands farther south in the F.Y.R. of Macedonia, and in Albania.
Balkan Range spruce forests	Rare and local [Picea abies] forests of the western and central Balkan Range.
Enclave Norway spruce forests	Spontaneous [Picea abies] formations occupying outlying altitudinal or edaphic enclaves within the range of more predominant vegetation types, in particular the montane levels of the outer Alps, the Carpathians, the Dinarides, the Jura, the Hercynian ranges, the subalpine levels of the Jura, the western Hercynian ranges and the Dinarides.
Subalpine Jura spruce forests	Restricted [Picea abies] forests of subalpine affinities of the Jura, comprising truly subalpine formations of the Haut-Jura, well developed but of small extent because of relatively low altitude and competition with [Pinus uncinata] formations, tall herb spruce forests as well as cold station or "ice cellar" formations similar to those of the northern outer Alps.
Subalpine Black Forest spruce forests	[Picea abies] forests of the Black Forest, characteristic of the subalpine level and of edaphic enclaves and cold stations, rich in [Bazzania trilobata], with [Vaccinium myrtillus], [Listera cordata], [Lycopodium annotinum].
Peri-Alpine bazzania spruce forests	Edaphic [Picea abies] enclaves of the montane and submontane levels of the pre-Alps and the pre-Alpine plateaux rich in [Bazzania trilobata], in particular, block forests, boulder field forests, frost-pocket forests and woods on moist soils.
Hercynio-Alpine montane spruce forests	Spruce forests of the montane or submontane levels of the outer Alps, of the mid-Pannonic hills, of the outer Western and Northern Carpathians, of the Eastern and Southern Carpathians, of the west Ukrainian pre-Carpathic hills and plateaux, of the Jura system and of the Hercynian arc dominated by [Picea abies] with a varying admixture of [Abies alba], [Fagus sylvatica] or both. They include spruce or fir-spruce forests and spruce-dominated facies of montane or submontane beech-fir forests.
Medio-European montane spruce forests	Spruce and fir-spruce forests of the montane or submontane levels of the outer Alps, of the mid-Pannonic hills, of the outer Western and Northern Carpathians, of the Jura system and of the Hercynian arc, including spruce facies of fir-beech forests of the range of the [Fagion medio-europaeum]. Spruce-dominated facies of Alpine beech-fir forests of the range of the [Fagion illyricum] are listed separately in unit 42.2542.
Illyrio-Alpine montane beech spruce forests	[Picea abies]-dominated facies of montane [Fagion illyricum] beech-fir forests of the southeastern outer Alps. Spruce-dominated forests of the same region replacing the beech-fir forests in stations edaphically or microclimatically unfavourable to beech and fir have been listed in unit 42.2541.
Dacian beech-spruce forests	[Picea abies]-dominated forests of the montane level of the Romanian, Ukrainian and eastern Serbian Carpathians, east of the Uz and the Stry, and of the west Ukrainian pre-Carpathic hills and plateaux, within the range of [Fagion dacicum] beech-fir forests, of which they may constitute a facies or a substitute in stations edaphically or microclimatically unfavourable to beech and fir.

Dinaric spruce forests	Spruce forests of the subalpine, montane or submontane levels of the Dinarides dominated by [Picea abies] with a varying admixture of [Abies alba], [Fagus sylvatica] or both. They include subalpine spruce forests, edaphic or microclimatic montane spruce or fir-spruce forests and, occasionally, spruce-dominated facies of montane or submontane [Fagion illyricum] and [Fagion moesiacum] beech-fir forests. They extend throughout the range, from the northern edge of the Dinarides in Slovenia south to the Tara, Povlen, Zlatibor, Golija, Zeljin and Kopaonik ranges, immediately to the north of the Metohija depression.
Illyro-Dinaric cold station spruce forests	[Picea abies]-dominated forests of montane and subalpine block slopes and of karst-dolines of the Dinarides of Slovenia, Croatia and Bosnia-Herzegovina, within or immediately above the range of fir-beech forests of the [Fagion illyricum].
Dinaric dolomite spruce forests	[Picea abies]-dominated forests of dolomite rendzina of the Dinarides of Croatia and western Bosnia-Herzegovina, within the range of fir-beech forests of the [Fagion illyricum], with a species cortège that combines raw humus species with calciphile and xerophile species.
Dinaric acidophilous spruce forests	[Picea abies]-dominated forests of acid soils of the montane level of the Dinarides of Slovenia, Croatia and Bosnia-Herzegovina, within or immediately above the range of fir-beech forests of the [Fagion illyricum], with a species cortège characteristic of the [Vaccinio-Piceetalia], often including many ferns.
Moeso-Dinaric spruce forests	Spruce forests of the southern Dinarides of Serbia, developed on both calcareous and siliceous substrates, in particular in the Tara, Povlen, Zlatibor, Golija, Zeljin and Kopaonik ranges.
Omorika spruce forests	[Picea omorika]-dominated forests of the Drina basin of central Serbia, occuring also in Bosnia and Hercegovina. [Picea abies], [Abies alba] and mosses [Dicranum scoparium], [Ctenidium molluscum], [Eurhynchium striatum], [Hylocomium splendens], [Rhytidiadelphus triquetrus] are usually also present. Other trees and shrubs are represented by [Salix caprea], [Pinus nigra], [Rosa pendulina]. The herb layer is relatively species-poor, the most frequently occuring species being [Valeriana montana], [Vaccinium myrtillus], [Luzula sylvatica], [Hieracium transsilvanicum], [Gentiana asclepiadea], [Erica carnea], [Calamagrostis varia], [Veronica chamaedrys], [Lathyrus vernus], [Euphorbia amygdaloides].
Oriental spruce forests	[Picea orientalis]-dominated forests of the Caucasus and of the eastern Pontic Range.
Fir reforestation	Plantations of native firs within or near their area of present or recent natural occurrence. Other plantations of these species and plantations of exotic firs are included under unit G3.F.
[Abies alba] reforestation	Plantations of [Abies alba] within its area of occurrence or north and west of it.
[Abies borisii-regis] reforestation	Plantations of [Abies borisii-regis] in Greece and the southern Balkan peninsula.
[Abies cephalonica] reforestation	Plantations of [Abies cephalonica] in Greece.
[Abies pinsapo] reforestation	Plantations of [Abies pinsapo] in Andalucia.
[Abies nebrodensis] reforestation	Plantations of [Abies nebrodensis] in the mountains of northern Sicily.

Norway spruce reforestation	Plantations of [Picea abies] in or near the present or recent natural range of the species, including all Hercynian and peri-Hercynian formations accompanied by semi-natural undergrowth. Intensive, very dense and out-of-station plantations of [Picea abies] are included under unit G3.F.
Alpine larch - Arolla woodland	Forests of the subalpine and sometimes montane levels of the Alps and the Carpathians, dominated by [Larix decidua] or [Pinus cembra]; the two species may form either pure or mixed stands, and may be associated with [Picea abies] or, in the western Alps, [Pinus uncinata].
Eastern Alpine siliceous larch and Arolla forests	Subalpine [Larix decidua], [Pinus cembra], or [Larix decidua]-[Pinus cembra] forests of the eastern and central Alps, mostly of the inner ranges, usually on siliceous substrates, with an often species-poor undergrowth comprising [Vaccinium myrtillus], [Rhododendron ferrugineum], [Calamagrostis villosa], [Luzula albida].
Eastern Alpine calcicolous larch and Arolla forests	Subalpine and montane [Larix decidua], [Larix decidua]-[Picea abies], [Pinus cembra] or [Larix decidua]-[Pinus cembra] forests of the eastern and central Alps, mostly of the outer ranges, on calcareous substrates, with a usually species-rich undergrowth including [Erica herbacea], [Polygala chamaebuxus], [Rhododendron hirsutum] or [Pinus mugo].
Western larch, mountain pine and Arolla forests	Subalpine [Larix decidua], [Larix decidua]-[Pinus cembra], [Larix decidua]-mountain pine, [Pinus cembra] and [Pinus cembra]-mountain pine forests of the western, and mostly southwestern Alps, in regions where [Pinus uncinata] usually associates with [Larix decidua] and/or [Pinus cembra]. Characteristically xeric, open formations, they are best characterized by their understorey.
Alpine secondary larch formations	Formations of [Larix decidua] colonizing abandoned fields and pastures in lower levels of the Alps. Alpine [Larix decidua] plantations; plantations of [Larix decidua] out of range and of other [Larix] spp. or hybrids are included under unit G3.F.
Carpathian larch and Arolla forests	Uncommon [Larix decidua] or [Pinus cembra] formations of the Carpathians, each occurring as a single dominant, together as codominants, or mixed with spruce ([Picea abies]).
Western Carpathian larch and arolla forests	Timberline silicicolous [Larix decidua] and [Pinus cembra] formations of the Tatras.
Inner Carpathian larch and arolla forests	[Larix decidua] and [Pinus cembra] formations of the dry, inner Carpathian Proprad basin.
Eastern Carpathian larch and arolla forests	Local mixed forests of [Pinus cembra], [Picea abies] and [Pinus mugo], of the lower subalpine level (1650-1500 m), with regional species [Rhododendron myrtifolium], [Bruckenthalia spiculifolia], [Melampyrum saxosum], [Soldanella hungarica ssp. major], [Campanula abietina].
Eastern Carpathian larch forests	[Larix decidua] woods on rocky calcareous substrates at the upper limit of the forest zone (1600-1750 metres) of the Southwestern Carpathians, sometimes with [Pinus cembra] and [Picea abies], and with an herb layer formed by [Saxifraga cuneifolia], [Soldanella hungarica ssp. major], [Campanula abietina], [Moneses uniflora], [Ranunculus carpaticus], [Aquilegia transsilvanica], [Hieracium rotundatum], [Tricetum fuscum].

Eastern Carpathian arolla forests	[Pinus cembra] and [Picea abies]-dominated formations of the subalpine level of the Eastern and Southern Carpathians, formed at the upper forest limit, with a herb layer dominated by spruce forest species and a shrub layer with [Pinus mugo] and [Juniperus nana].
[Larix polonica] forests	[Larix decidua ssp. polonica]-dominated facies of the white cinquefoil oak woods (units G1.7A111, G1.7A114) of Poland and the western Ukraine.
Mountain pine ([Pinus uncinata]) woodland	Mostly subalpine forests of the Alps, the Jura, the Pyrenees and the Iberian Range, dominated by [Pinus uncinata], usually open and with a very developed shrubby understory.
Rusty alpenrose mountain pine forests	[Pinus uncinata] forests of the western outer Alps, the Jura and Pyrenean ubacs, developed on siliceous or decalcified soils of the subalpine level with a predominately ericaceous undergrowh comprising [Rhododendron ferrugineum] (dominant), [Vaccinium myrtillus], [Vaccinium uliginosum], [Calluna vulgaris], [Homogyne alpina], [Deschampsia flexuosa], [Lycopodium annotinum].
Outer Alpine alpenrose mountain pine forests	[Pinus uncinata] forests occupying hard limestone plateaux of the outer Alps, in the Chablais, the Aravis, the Bauges, the Chartreuse, the Vercors, the Dévoluy in which the almost pure calcareous bedrock is covered by a thick layer of raw humus supporting an acidophilous undergrowth dominated by [Rhododendron ferrugineum], [Vaccinium myrtillus], [Vaccinium vitis-idaea], [Vaccinium uliginosum] accompanied by [Empetrum hermaphroditum], [Lycopodium selago], [Selaginella spinosa], [Cladonia rangiferina], [Homogyne alpina], [Bartsia alpina], [Astrantia minor].
Jura alpenrose mountain pine forests	Subalpine [Pinus uncinata] forests of the western Jura, similar to the Alpine formations of unit 42.411.
Pyrenean alpenrose mountain pine forests	[Pinus uncinata] forests of ubacs of the Pyrenees developed on siliceous soils, or on decalcified soils in the calcareous ranges, in the more humid and snowy parts of the subalpine level, with a ground layer dominated by [Rhododendron ferrugineum] accompanied by [Vaccinium myrtillus], [Homogyne alpina], [Rosa alpina], [Deschampsia flexuosa], [Oxalis acetosella], [Juniperus nana], [Calluna vulgaris], [Dryopteris linneana], [Polystichum spinulosum], [Solidago virgaurea].
Xerocline mountain pine forests	[Pinus uncinata] forests of the inner Alps, of the western outer Alps and the Jura, and of Pyrenean adrets, accompanied by a shrubby undergrowth in which [Rhododendron ferrugineum] is absent or rare, while [Juniperus nana], [Juniperus hemisphaerica], [Arctostaphylos uva-ursi], [Arctostaphylos alpinus], [Erica herbacea], [Rhododendron hirsutum], [Cotoneaster integerrimus], [Daphne striata], [Dryas octopetala] or [Polygala chamaebuxus] may be prominent.
Inner Alpine mountain pine forests	Subalpine or montane [Pinus uncinata]-dominated formations of the inner and intermediate Alps.
Outer Alpine juniper-bearberry mountain pine forests	[Pinus uncinata] forests of the calcareous ranges of the western pre-Alps (cf. unit 42.411) and the Jura, on less evolved soils than those of unit 42.411, which do not allow the development of [Rhododendron ferrugineum] heaths.
Ventoux mountain pine woods	Spontaneous subsummital [Pinus uncinata] woods of the Ventoux, with [Juniperus nana], [Juniperus hemisphaerica] and [Arctostaphylos uva-ursi].

Pyrenean adret mountain pine forests	[Pinus uncinata]-dominated forests of adrets in the subalpine level of the Pyrenees, developed on both siliceous and calcareous substrates.
Speedwell mountain pine forests	[Pinus uncinata] forests of siliceous Pyrenean adrets, on schists, granites or gneises, with [Arctostaphylos uva-ursi], [Juniperus nana], [Juniperus hemisphaerica], [Calluna vulgaris], [Genista pilosa], [Cytisus purgans], [Cotoneaster integerrimus] and a predominantly acidophilous herb layer comprising [Deschampsia flexuosa], [Cruciata glabra], [Festuca eskia], [Veronica officinalis], [Silene rupestris], [Potentilla erecta], [Antennaria dioica].
Pyrenean bearberry mountain pine forests	[Pinus uncinata] forests of calcareous Pyrenean adrets with [Arctostaphylos uva-ursi], [Juniperus nana], [Juniperus hemisphaerica], [Cotoneaster integerrimus], [Rhamnus alpinus], [Amelanchier vulgaris], [Dryas octopetala] and a predominantly calciphilous herb layer comprising [Festuca gautieri], [Valeriana montana], [Teucrium pyrenaicum], [Hepatica nobilis], [Hippocrepis comosa], [Polygala calcarea], [Sesleria caerulea], [Helectotrichon sedenense] ([Avena montana]), [Primula suaveolens].
Pasqueflower mountain pine forests	[Pinus uncinata] forests of steep calcareous ubacs of the Pyrenees with very superficial soil and a mostly grassy herb layer comprising [Sesleria caerulea], [Festuca gautieri], [Pulsatilla alpina], [Valeriana montana], [Salix pyrenaica], [Hepatica nobilis], [Deschampsia flexuosa], [Pyrola uniflora], [Listera cordata].
Mountain pine forests of the Iberian Range	Isolated outposts of [Pinus uncinata]-dominated formations in the Northern and Southern Iberian Ranges.
Urbion mountain pine forests	[Pinus uncinata] forests of the Sierra de Urbion, usually associated with heaths of [Vaccinium myrtillus] and [Juniperus nana].
Gudar mountain pine forests	[Pinus uncinata] forests of the Sierra de Gudar, in the Southern Iberian Range.
Mountain pine reforestation	[Pinus uncinata] plantations in or near the natural range of the species.
Scots pine woodland south of the taiga	Forests of [Pinus sylvestris ssp. sylvestris] and [Pinus sylvestris ssp. hamata] of the Nemoral and Mediterranean zones and of their transitions to the Steppe zone. Included are, in particular, the forests of Scotland, of the Alpine system, of the Mediterranean peninsulas, of the lowlands of Central Europe, of the East European Nemoral zone and its adjacent wooded steppes, formed by [Pinus sylvestris ssp. sylvestris], as well as those of Anatolia, of the Caucacus and of Crimea, formed by [Pinus sylvestris ssp. hamata]. Excluded are the formations situated within the range of natural lowland occurrence of [Picea abies].
Caledonian forest	Relict, indigenous Scots pine forests of endemic [Pinus sylvestris var. scotica], limited to the central and northeastern Grampians of Scotland. They are mostly open and have a ground layer usually rich in ericaceous species and mosses, in particular, [Hylocomium splendens], and often harbouring, together with abundant [Deschampsia flexuosa], [Goodyera repens], [Listera cordata], [Corallorhiza trifida], [Linnaea borealis], [Trientalis europaea], [Pyrola minor], [Moneses uniflora], [Orthilia secunda]. Accompanying, dominated, tree species include [Juniperus communis], [Sorbus aucuparia], [Betula pubescens], [Betula pendula], [Ilex aquifolium], [Populus tremula].

Heather Caledonian forest	[Pinus sylvestris var. scotica] forests with a heath-like ground cover of [Erica cinerea] and [Calluna vulgaris].
Bilberry Caledonian forest	[Pinus sylvestris var. scotica] forests with a heath-like ground cover of [Vaccinium myrtillus] and [Vaccinium vitis-idaea].
Moss Caledonian forest	[Pinus sylvestris var. scotica] forests with a closed canopy and an understorey formed mostly by mosses, in particular [Scapania gracilis], [Diplophyllum albicans], [Thuidium tamariscinum] and the hepatic [Anastrepta orcadensis].
Woodrush Caledonian forest	[Pinus sylvestris var. scotica] forests with a ground cover rich in grass-like species, in particular [Luzula pilosa], [Anthoxanthum odoratum], [Agrostis capillaris], [Agrostis canina], [Festuca ovina], together with [Vaccinium] spp. and bryophytes.
Peatmoss Caledonian forest	[Pinus sylvestris var. scotica] forests of damp hollows, with carpets of [Sphagnum] spp., [Molinia caerulea] and [Erica tetralix].
Middle European Scots pine forests	Indigenous [Pinus sylvestris] forests of the lowlands of nemoral Europe, south of the main, boreal and boreonemoral, nonalpigenous, area of continuous natural lowland occurrence of [Picea abies], of adjacent wooded steppe regions, and of siliceous soils of the montane or collinar levels of the central European Hercynian ranges and the eastern Alpine system. Acidophilous mixed forests with vegetation of the alliance [Dicrano-Pinion] with [Festuca ovina] dominating in the herb layer.
Subcontinental Scots pine forests	Forests dominated by [Pinus sylvestris] of acid, often podsolised, sands of the plains and hills of middle Europe. Associated trees include [Quercus robur], [Quercus petraea], [Betula pendula], [Fagus sylvatica]; [Vaccinium myrtillus], [Calluna vulgaris], [Dicranum undulatum] are usually prominent in the ground layer, [Molinia caerulea] may be abundant in humid stands.
Central European Scots pine forests	Main-range acidophilous [Pinus sylvestris] forests of diluvial sands of the northeastern plains and hills of Central Europe, where they reach their greatest dominance, and of the nemoral belt of the middle and southern Sarmatic region, in areas of less xericity or continentality than those occupied by the steppe woods of unit 42.523. They are distributed from Franconia and the inner Bohemian basin, through eastern Germany, to western and central Poland, extending, more locally, in areas of greater prevalence of steppe woods, to eastern Poland, Belarus, the northern Ukraine and Russia to the eastern confines of the Nemoral zone of western Eurasia. They are very similar to some taiga formations of which they often represent an outpost beyond the boreal and boreonemoral range of [Picea abies]; their separation from boreo-nemoral taiga pine woods of unit 42.C is generally arbitrary and one of regional convenience.
Subcontinental moss Scots pine forests	Moss-rich acidophilous [Pinus sylvestris] forests of diluvial sands of the northeastern plains and hills of Central Europe and of the nemoral belt of the middle and southern Sarmatic region, with [Leucobryum glaucum], [Deschampsia flexuosa], [Hypnum cupressiforme].
Subcontinental lichen Scots pine forests	Lichen-rich acidophilous [Pinus sylvestris] forests of diluvial sands of the northeastern plains and hills of Central Europe and of the nemoral belt of the middle and southern Sarmatic region, with [Cladonia silvatica], [Cladonia gracilis], [Cladonia furcata], [Ptilidium ciliare], [Polytrichum commune], [Molinia caerulea].

Subcontinental moorgrass Scots pine forests	Acidophilous [Pinus sylvestris] forests of humid podsols of the northeastern plains and hills of Central Europe and of the nemoral belt of the middle and southern Sarmatic region, with [Polytrichum commune] and [Molinia caerulea].
Subcontinental saw-wort Scots pine forests	Strongly pine-dominated facies of the mixed [Pinus sylvestris]-[Quercus robur]-[Quercus petraea] Central European and Sarmatic forests of units 41.58 and 43.58, with [Carpinus betulus], [Corylus avellana], [Carex digitata], [Carex montana], [Melica nutans], [Serratula tinctoria], [Scorzonera humilis].
Western lowland Scots pine forests	Relict woods of indigenous [Pinus sylvestris] of coarse sands in enclaves of cold subcontinental climate west of the main range of the subcontinental pine and pine-oak woodland, as in the Pays de Bitche basin.
Hercynian Scots pine forests	Montane acidophilous woods of indigenous [Pinus sylvestris] forming local, edaphic or microclimatic enclaves, particularly on sandstones, on blocks and in steep valleys in the beech belt of Hercynian ranges, and in sub-Hercynian collinar systems, usually with [Vaccinium myrtillus] or lichens.
Eastern Hercynian Scots pine forests	Indigenous acidophilous [Pinus sylvestris] enclave formations, in particular block woods and xeric slope woods, of the montane and submontane levels of the Erzgebirge, Fichtelgebirge, Sudeten, B”hmer Wald, Thüringer Wald.
Black Forest Scots pine forests	Indigenous [Pinus sylvestris] formations of the Black Forest.
Vosges Scots pine forests	Indigenous [Pinus sylvestris] formations of the mostly dry, acid sandstones of the Vosges, and of sandstone slabs capping rocky outcrops of the the Pays de Bitche.
Luxembourg sandstone Scots pine forests	Indigenous [Pinus sylvestris] formations of Luxembourg sandstone outcrops.
Pale hawkweed Scots pine forests	Generally light [Pinus sylvestris] woods of deep-cut valleys of the Central Bohemian hills (valleys of the Vltava, the Otava and the Berounka rivers) and of southern Saxony, with the saxicolous [Hieracium pallidum].
Lower Austrian block heath pine woods	Isolated [Pinus sylvestris] formations of granite blocks of the pre-Hercynian Waldviertel of Lower Austria.
Western Eurasian steppe pine forests	[Pinus sylvestris] woods of the wooded steppe belt of western Eurasia and of areas with extreme continental local climates of middle Europe outside of the Alps.
Rhine steppe pine forests	[Pinus sylvestris] woods of areas with extreme continental local climates of middle Europe outside of the Alps, in particular formations with [Pinus sylvestris var. haguenensis] of the Rhine Valley and adjacent hills (Haguenau, Vosges du Nord, southern Rhine Palatinate).
Sarmatic steppe Scots pine forests	Xerophilous [Pinus sylvestris] woods of the wooded steppe belt of the Sarmatic region of western Eurasia and of areas with extreme continental local climates of northeastern Central Europe and Eastern Europe, extending from northeastern and eastern Brandenburg and Mecklenburg-Vorpommern, north-central and eastern Poland in the west, through Podolia and the southern Russian plateaux, to Bashkiria.

Carpathian steppe Scots pine woods	Local xerophile [Pinus sylvestris] steppe woods of sub-Pannonic low Carpathian spurs of southwestern and southeastern Slovakia and of the Slovakian inner Carpathian basins, with [Cornus mas], [Brachypodium pinnatum], [Melica nutans], [Luzula luzuloides], [Hypochoeris maculata], [Buglossoides purpurocaerulea], [Lathyrus niger], [Vicia dumetorum], [Melittis melissophyllum], [Digitalis grandiflora], [Viola collina], [Achillea distans], [Euphorbia epithymoides], [Orchis purpurea].
Pannonic steppe Scots pine woods	[Pinus sylvestris] sand steppe woods of the western Pannonic plain and its satellite basins, in particular, the Zahorie (Marchfeld) and the little Alf”ld.
Baltic dune Scots pine woods	[Pinus sylvestris]-dominated dune woods of the coasts of the southeastern Baltic, from the mouth of the Oder to the Gulf of Finland, with [Empetrum nigrum], [Moneses uniflora], [Linnaea borealis], [Listera cordata], [Goodyera repens], [Erica tetralix], [Calluna vulgaris].
Eastern Alpine acidophilous Scots pine woods	Acidophilous [Pinus sylvestris] woods of the collinar and montane levels of the eastern Alps, of the northeastern Dinarides and of adjacent pre-Pannonic and Pannonic hill ranges, mostly subclimactic or anthropogenic, distributed in Lower Austria, Styria, the Burgenland, Slovenia, the pre-Noric hills and the edge of the Bakony Range in western Hungary.
Inner-Alpine restharrow ([Ononis]) steppe forests	Xerophile, often calcicolous, open [Pinus sylvestris] or [Pinus sylvestris] and [Pinus uncinata] forests of the montane level of inner Alpine valleys submitted to extreme continental climate (upper Durance, Ubaye, upper Tin,e, Val di Susa, Maurienne, Val d'Aoste, Alto Adige (Val Venosta), Upper Engadine, Vintschgau, Virgental), rich in leguminous plants such as [Ononis rotundifolia], [Ononis cenisia], [Astragalus austriacus], [Astragalus purpureus], [Coronilla minima], [Onobrychis saxatilis] and with a shrub layer comprising [Juniperus communis], [Juniperus sabina], [Berberis vulgaris], [Amelanchier ovalis].
Spring heath Scots pine forests	Mesophile, mostly calcicolous, [Pinus sylvestris] forests of the intermediate Alps, the inner Alps, the northern and southeastern outer Alps, with outposts in northern peri-Alpine areas, in the Jura and in the Carpathians, generally characterised by the presence of [Erica herbacea].

Alpine spring heath Scots pine forests	Mesophile, mostly calcicolous, [Pinus sylvestris] forests of the intermediate Alps, and, locally, of the inner Alps, the northern, eastern and southeastern outer Alps, the Bavarian plateau, the serpentines of northern Bavaria, Bohemia, the Lake Constance area, the Baar plateau and the Jura, generally characterised by the presence of [Erica herbacea], accompanied by [Juniperus communis], [Berberis vulgaris], [Sorbus aria], [Amelanchier ovalis], [Lembotropis nigricans], [Chamaecytisus supinus], [Polygala chamaebuxus], [Goodyera repens], [Pyrola chlorantha], [Epipactis atrorubens], [Melampyrum pratense], [Melampyrum sylvaticum], [Carex alba], [Carex ornithopoda], [Carex humilis], [Carex flacca], [Molinia caerulea], [Calamagrostis varia], [Sesleria albicans]. They include numerous variants, as indicated in part by the associations listed above, most of them with [Erica herbacea], and could be further subdivided. Communities of the intermediate Alps and neighbouring regions form the core of the unit and are adapted to a variety of fairly oligotrophic substrates, mostly calcareous, but occasionall
Carpathian relict calcicolous Scots pine forests	Isolated, calcicolous [Pinus sylvestris] forests of the western Carpathians, related to the spring heath Scots pine forests of the Alpine area, limited to a few small enclaves in the Strazov mountains, the Velka Fatra, the Pienini ([Pinus sylvestris]-[Calamagrostis varia] community, [Pinus sylvestris]-[Carex alba] community), the Slovakian inner-Carpathian basins and the Slovakian Erzgebirge. [Erica herbacea] and [Polygala chamaebuxus] are absent; the undergrowth includes a number of species of continental distribution and xerothermic affinities, some, western Carpathian endemics; characteristic are [Linum flavum], [Carex humilis], [Carex alba], [Calamagrostis varia], [Pulsatilla slavica], [Thymus carpathicus], [Primula auricula ssp. hungarica], [Globularia aphyllanthes], [Campanula carpatica], [Festuca tatrae].
Inner Alpine sandwort ([Minuartia]) steppe forests	Xerophile, acidophilous, [Pinus sylvestris] forests of the montane level of southwestern inner Alpine valleys (Maurienne, Guisane, Dora-Riparia, Chisone) where they replace the formations of the [Ononido-Pinion] on strongly siliceous adrets, with [Deschampsia flexuosa] and [Minuartia laricifolia] dominant.
Pyrenean mesophile Scots pine forests	Montane, mossy [Pinus sylvestris] forests of the Pyrenees; characteristic of regions with a moderately dry, sunny climate, they occur, at all exposures but mostly on ubacs, in a wide belt on the south flank of the range, with limited outposts on the north flank. Characteristic is the abundance of wintergreens ([Pyrola chlorantha], [Pyrola minor], [Moneses uniflora], [Orthilia secunda]) and of mosses ([Hylocomium splendens], [Rhytidiadelphus triquetrus], [Pleurozium schreberi]); [Vaccinium myrtillus], [Luzula nivea], [Hepatica nobilis] are usually present.
Pyrenean calcicolous mesophile Scots pine forests	Calcicolous formations of [Pinus sylvestris] with [Sorbus aria], [Amelanchier ovalis], [Ribes alpinum], [Prunus mahaleb], [Cotoneaster integerrimus], [Polygala calcarea], [Helleborus foetidus], [Valeriana montana], [Festuca gautieri].
Pyrenean siliceous mesophile Scots pine forests	Silicicolous formations of [Pinus sylvestris] with [Sorbus aucuparia], [Salix caprea], [Calluna vulgaris], [Galium rotundifolium], [Melampyrum sylvaticum], [Melampyrum pratense], [Lathyrus linifolius] ([Lathyrus montanus]), [Potentilla erecta], [Helleborus viridis ssp. occidentalis], [Deschampsia flexuosa].

Central Massif Scots pine forests	Montane [Pinus sylvestris] forests of interior, relatively dry, regions of the Central Massif in the upper Loire basin (Velay and neighbouring regions) and the Causse M,jean.
Southwestern Alpine mesophile Scots pine forests	Mesophile montane forests with wintergreens occupying a broad belt on the southwestern flank of the Alps from Dauphin, to the Maritime Alps, differentiated from the forests of unit G3.44 by the absence of [Erica herbacea]; the undergrowh usually comprises [Arctostaphylos uva-ursi], [Centaurea scabiosa], [Tolpis staticifolia] ([Hieracium staticifolium]), [Calluna vulgaris], [Polygala chamaebuxus], [Monotropa hypopitys], [Goodyera repens], [Epipactis atrorubens], [Neottia nidus-avis].
Supra-Mediterranean Scots pine forests	[Pinus sylvestris]-dominated facies of the thermophilous, supra-Mediterranean oak woods (unit G1.7), alternated, mixed or imbricated with [Quercus pubescens] or [Quercus faginea] woods in the southwestern Alpine foothills, on the periphery of the Central Massif, along the southern flank of the Pyrenees and, locally, in the Ligurian and Insubrian Alps, in the western Alps of northern Dauphin, and Savoie, in the northern Apennines and on the northern flank of the Pyrenees. [Buxus sempervirens] is usually abundant in the undergrowth; other components of the shrub layer include [Corylus avellana], [Sorbus aria], [Sorbus torminalis], [Acer opalus], [Acer campestre], [Acer monspessulanum], [Euonymus latifolius], [Genista cinerea], [Juniperus communis].
Iberian calcareous Scots pine woods	Montane and oro-Mediterranean, xerocline, calcicolous [Pinus sylvestris] forests of the Iberian Range, the Baetic ranges and the southern flank of the Pyrenees.
Pyrenean hedgehog-heath Scots pine woods	Woods or prewoods of adrets in the montane level of calcareous ranges of the southern flank of the central Pyrenees, with usually low and contorted [Pinus sylvestris] accompanied by a hedgehog-heath (cf. unit 31.71) of [Echinospartum horridum], [Buxus sempervirens], [Juniperus hemisphaerica].
Savin Scots pine forests	Oro-Mediterranean, calcicolous [Pinus sylvestris] forests of the Iberian Range and the Baetic ranges, often fairly open, and with a shrub layer that includes the prostrate [Juniperus sabina].
Iberian-Range calcicolous Scots pine forests	Oro-Mediterranean, calcicolous forests of [Pinus sylvestris var. iberica] of the Southern Iberian Range (Maestrazgo: Gudar, Jabalambre, Penyagolosa; serrania de Cuenca: sierra de San Felipe, Montes Universales), with a shrub layer constituted mainly by [Juniperus sabina]; secondary calcicolous Scots pine formations of lower altitude in the Iberian Range.
Baetic calcicolous Scots pine forests	Oro-Mediterranean forests of [Pinus sylvestris var. nevadensis] of the Baetic ranges, Sierra Magina, Sierra de Baza, Sierra Tejeda, Sierra del Trevenque (calcareous periphery of the Sierra Nevada), with a shrub layer of [Juniperus sabina] and [Juniperus nana] accompanied by [Ononis aragonensis], [Genista lobelii ssp. longipes], [Daphne oleoides] and [Prunus prostrata], on limestones and dolomites.
Iberian silicicolous Scots pine forests	Montane and oro-Mediterranean, xerocline, silicicolous [Pinus sylvestris] forests of the Iberian Range, the Cordillera Central and the southern flank of the Pyrenees.

Pyrenean xerophile Scots pine forests	Montane and lower subalpine [Pinus sylvestris] or [Pinus sylvestris] and [Pinus uncinata] forests of dry adrets of the southern flanks of the Pyrenees and of the Val d'Aran, with a shrub layer comprising [Juniperus hemisphaerica], [Cytisus purgans], [Buxus sempervirens] and an herb layer dominated by [Deschampsia flexuosa], accompanied by, among others, [Veronica officinalis].
Iberian-Range silicicolous Scots pine forests	[Pinus sylvestris] forests of siliceous ground in the oro- and supra-Mediterranean levels of the Northern and Southern Iberian Ranges.
Cordilleran silicicolous Scots pine forests	[Pinus sylvestris] forests of siliceous ground in the oro- and supra-Mediterranean levels of the Cordillera Central.
Summital Guadarraman silicicolous Scots pine forests	Oro-Mediterranean, summital, silicicolous forests of [Pinus sylvestris var. iberica] of the Sierra de Guadarrama, with [Juniperus nana].
Lower Cordilleran silicicolous Scots pine forests	Supra-Mediterranean [Pinus sylvestris var. iberica] woods of the Cordillera Central (Guadarrama, Gredos), forming in particular as a substitution stage of [Quercus pyrenaica] woodland of which they largely retain the accompanying flora.
Cantabrian Scots pine forests	Isolated [Pinus sylvestris] forests of the Cantabrian mountain system, in the Cordillera Cantabrica, the Montes de Leon and the Serra do Geres.
Southeastern European Scots pine forests	[Pinus sylvestris] forests of the eastern Carpathians and of the mountains of the Balkan peninsula, south to northern Greece, formed by the largely isolated, disjunct, southeastern forms ([Pinus sylvestris var. rhodopaea], [Pinus sylvestris var. illyrica], [Pinus sylvestris var. romanica]) of [Pinus sylvestris ssp. sylvestris], and often limited to azonal edaphic enclaves.
Thessalo-Macedonian Scots pine forests	[Pinus sylvestris] forests of the mountains of northern Greece (Pieria, Olympus, Vermion, Voras, La‹la, Elatia range), often with [Acer pseudoplatanus], [Sorbus aucuparia], and sometimes [Fagus sylvatica] or [Picea abies] in the tree layer and with [Vaccinium myrtillus] and [Rubus idaeus] in the shrub layer.
Rhodopide Scots pine forests	[Pinus sylvestris] forests of Vitosha, the Rila, the Pirin and the Rhodope.
Balkan Range Scots pine forests	[Pinus sylvestris] forests of the Balkan Range.
Southwestern Moesian Scots pine forests	[Pinus sylvestris] forests of the Pelagonides and Moeso-Macedonian mountains of the F.Y.R. of Macedonia and Bulgaria, in particular of ultra-basic trachytes and andesites.
Moeso-Macedonian Scots pine forests	[Pinus sylvestris] forests of the Moeso-Macedonian mountains of western Bulgaria, and of trachytes and andesites of the Moeso-Macedonian mountains of the F.Y.R. of Macedonia, in the Bregalnica basin.
Pelagonian Scots pine forests	[Pinus sylvestris] forests of trachytes and andesites of the Pelagonides of the F.Y.R. of Macedonia, in the Mavrovo range.
Dinaric spring heath Scots pine forests	Thermophile [Pinus sylvestris] woods of serpentines, dolomites and dolomite rendzinas of the Dinarides of Slovenia, Croatia, Bosnia-Herzegovina and western and southern Serbia, with [Erica herbacea] ([Erica carnea]), [Galium lucidum], [Aquilegia vulgaris].

Dinaric calcicole Scots pine forests	[Pinus sylvestris] woods on limestones of the Dinarides of Bosnia-Herzegovina, within the range of Illyrian beech forests, with [Abies alba], [Fagus sylvatica], [Picea abies], [Populus tremula], [Betula pendula], [Juniperus communis], [Cotoneaster nebrodensis], [Vaccinium myrtillus], [Arctostaphylos uva-ursi], [Galium lucidum], [Luzula sylvatica], [Brachypodium pinnatum].
Dinaric acidophile Scots pine forests	Dry acidophilous [Pinus sylvestris] woods of the Dinarides of Bosnia-Herzegovina, within the range of Illyrian beech forests, with [Picea abies], [Abies alba], [Betula pendula] and an undergrowth dominated by [Leucobryum glaucum] accompanied by a species cortège characteristic of the [Vacinio-Piceetalia].
East Carpathian [Sesleria] Scots pine forests	Relict, preice age, forests developed on limestone substrates of the montane level of the Apuseni Mountains of the Southwestern Carpathians and of the Southern Carpathians, dominated by [Pinus sylvestris], with numerous calcicolous species such as [Sesleria rigida], [Helianthemum nummularium ssp. obscurum], [Thymus comosus], [Asperula capitata], [Dianthus spiculifolius], [Arctostaphylos uva-ursi], [Sorbus aria] and [Cotoneaster integerrimus].
East Carpathian bilberry Scots pine forests	Montane silicicolous [Pinus sylvestris] forests of the eastern and southern Carpathians, developed on superficial brown soil or bog soil, with a predominantly acidophilous herb layer including [Vaccinium myrtillus], [Vaccinium vitis-idaea], [Luzula luzuloides], [Oxalis acetosella], [Deschampsia flexuosa] and [Dicranum scoparium].
East Carpathian [Daphne blagayana] Scots pine forests	Relict forests developed on amphibolitic substrates of the upper montane level of the Southern Carpathians, in particular the Cozia mountains, dominated by [Pinus sylvestris] and [Betula pendula], accompanied by regional species such as [Daphne blagayana], [Iris ruthenica], [Bruckenthalia spiculifolia] and [Anthemis carpatica].
Po terrace Scots pine forests	Forests of [Pinus sylvestris] of the fluvioglacial terraces that constitute the high plains of the Po river system, with [Betula pendula], [Quercus pubescens], [Castanea sativa] and a ground layer with [Cytisus scoparius], [Calluna vulgaris], [Pteridium aquilinum], [Deschampsia cespitosa], [Molinia caerulea].
Ponto-Caucasian Scots pine forests	Forests composed of pines of the [Pinus sylvestris] group, mostly included in [Pinus sylvestris ssp. hamata] or its intermediates with [Pinus sylvestris ssp. sylvestris], sometimes in species [Pinus kochiana], [Pinus hamata] or [Pinus armena], of the Pontic Range, its satellites and inner Anatolian outposts, of the mountains of the Crimea and of the Caucasus.
European Scots pine reforestation	[Pinus sylvestris] plantations inside or near the present or recent natural nemoral and Mediterranean European range of the species. Other and very artificial [Pinus sylvestris] plantations are included under unit G3.F.
Black pine ([Pinus nigra]) woodland	Forests dominated by pines of the [Pinus nigra] group.
Alpino-Apennine black pine forests	[Pinus nigra] sens strictu forests of the eastern Italian, Austrian and Slovenian Alps, of the Apennines and of Adriatic coasts of northern Italy. Distibuted in dry, sunny steep rocky slopes.

Southern Alpine [Pinus nigra] forests	[Pinus nigra ssp. nigra] ([Pinus nigra], [Pinus austriaca]) forests of dry, sunny, rocky steep slopes and cliffs of the southeastern pre-Alps (Carnian pre-Alps, Julian pre-Alps, Carso), between 200 and 1200 m altitude, with [Cyclamen purpurascens] and [Aquilegia einseleana].
Apennine [Pinus nigra] forests	Relict "Villetta Barrea pine" ([Pinus nigra ssp. italica]) stations of the Abruzzi (Costa Camosciara, Villetta Barrea), the Campanian Apennines (monti Picentini), the Pollino system (Orsomarso).
Lower Austrian [Pinus nigra] forests	[Pinus nigra ssp. nigra] forests of dry, sunny, often rocky and steep dolomite or sometimes limestone slopes and cliffs of the eastern pre-Alps of Lower Austria, between 300 m and 1200 m altitude, with [Amelanchier ovalis], [Cotoneaster] spp., [Berberis vulgaris], [Erica herbacea], [Daphne cneorum], [Polygala chamaebuxus], [Melampyrum angustissimum], [Epipactis atrorubens], [Cyclamen purpurascens], [Carex humilis], [Euphorbia saxatilis], [Sesleria albicans], [Calamagrostis varia].
Northwestern Adriatic [Pinus nigra] forests	[Pinus nigra] [s.s]. forests of the Adriatic coasts of northern Italy, in the gulf of Venice, apparently indigenous, and of glacial relict character.
Western Balkanic Corsican Pine forests	Light, open forests of [Pinus nigra ssp. nigra] or [Pinus dalmatica] of the Dinarides, the Pelagonides and the Dalmatian coastal areas. The tree and shrub layer are not dense, therefore the herb layer is quite rich, dominated by [Potentilla opaca], [Euphorbia glabriflora], [Erica carnea], [Sesleria rigida], forming compact "meadows“ in the forest.
Dinaro-Pelagonian [Pinus nigra] forests	Forests of [Pinus nigra ssp. nigra] of the Dinarides and the Pelagonides.
Moeso-Hellenic montane [Pinus nigra] forests	[Pinus nigra] [s.s]. ([Pinus nigra ssp. nigra]) pine woods of ultra-basic substrates, generally trachytes and andesites, of the Pelagonides of northwestern Greece, Albania and the F.Y.R. of Macedonia, in the Mavrovo range, as well as of the Moeso-Macedonian mountains of the F.Y.R. of Macedonia, in the Bregalnica basin.
Illyrian serpentine [Pinus nigra] forests	[Pinus nigra] [s.s]. ([Pinus nigra ssp. nigra]) woods of serpentines of the Dinarides of Bosnia-Herzegovina and western and southern Serbia, with [Daphne blagayana], [Rosa pendulina], [Erica herbacea] ([Erica carnea]), [Galium lucidum], [Laserpitium krapfii], [Vicia villosa], [Symphytum tuberosum], [Erythronium dens-canis], [Pteridium aquilinum] and the serpentine plants [Asplenium cuneifolium ssp. serpentini], [Campanula servicaria], [Crocus veluchensis], [Stachys scardica], [Helleborus multifidus ssp. serbicus]. They are developed within the Illyrian and Moesian beech forest zones and generally occupy steeper, stonier slopes and lower elevations than the serpentine [Pinus sylvestris] woods of unit 42.5C51.
Illyrian limestone [Pinus nigra] forests	[Pinus nigra] [s.s]. ([Pinus nigra ssp. nigra]) woods on limestones of the Dinarides of Bosnia-Herzegovina, within the range of Illyrian beech forests, uncommon black pine facies of the calcicole [Pinus sylvestris] woods of unit 42.5C6.

Illyrian dolomite [Pinus nigra] forests	[Pinus nigra] [s.s]. ([Pinus nigra ssp. nigra]) woods of dolomites and dolomite rendzinas of the Dinarides of Bosnia-Herzegovina, Croatia and Slovenia, with [Erica herbacea] ([Erica carnea]), [Galium lucidum], [Genista januensis], [Aquilegia vulgaris], [Buphthalmum salicifolium], [Teucrium chamaedrys], [Carex humilis], [Anthericum ramosum], [Cyclamen purpurascens], [Polygala chamaebuxus], [Hepatica nobilis], [Geranium sanguineum], [Helleborus niger ssp. macranthus], [Epipactis atrorubens], [Carex alba]. They are developed within the Illyrian beech forest zone and often occupy somewhat lower elevations than the similar dolomite [Pinus sylvestris] woods of unit 42.5C52.
Illyrian sub-Mediterranean [Pinus nigra] forests	[Pinus nigra] [s.s]. ([Pinus nigra ssp. nigra]) pine woods on dolomites and limestones of the sub-Mediterranean [Ostryo-Carpinion adriaticum] zone of the Dinarides, extending from sea level to about 1400m, and from the Velebit in the north to Montenegro in the south.
[Pinus dalmatica] forests	Forests of [Pinus dalmatica] of Dalmatian coastal areas, limited to the sub-Mediterranean level of the Biokovo range and the Mediterranean zone of the Peljesac peninsula and of the islands of Brac and Hvar.
Salzmann's pine forests	[Pinus salzmannii] ([Pinus nigra ssp. salzmannii], [Pinus nigra ssp. clusiana], [Pinus nigra ssp. mauretanica]) forests of Spain, the Causses and North Africa.
Causses Salzmann's pine forests	Isolated [Pinus salzmannii var. cebennensis] woods of the southern edge of the Causses, with an undergrowth typical of supra-Mediterranean white oak forests at the upper limit and of evergreen oak forests at lower altitudes; [Buxus sempervirens] is usually abundant.
Pre-Pyrenean Salzmann's pine forests	Meso- and supra-Mediterranean [Pinus salzmannii var. pyrenaica] forests of Pyrenean foothills; they are extensive in the southeastern foothills, with outposts in the central foothills, in Catalonian ranges and, very locally, on the north side of the range (Valley of the Tˆt, Conflent). The understorey is formed by the cortège of [Quercus ilex] ([Juniperus oxycedrus], [Rosmarinus officinalis], [Quercus ilex]) at low altitudes, and by that of [Quercus pubescens] ([Buxus sempervirens], [Juniperus communis], [Amelanchier ovalis], [Cornus sanguinea], [Lonicera etrusca]) at higher altitudes.
Northern-Iberian Salzmann's pine forests	Isolated [Pinus salzmannii var. pyrenaica] woods of the northern Iberian Range (Soria).
Cordilleran Salzmann's pine forests	Isolated silicicolous [Pinus salzmannii var. iberica] woods of the Cordillera Central, limited to small enclaves in the Sierra de Gredos and associated ranges, in the Rio Tietar-Rio Alberche area.
Southern-Iberian Salzmann's pine forests	Supra- and, locally, oro-Mediterranean [Pinus salzmannii var. hispanica] forests of the Southern Iberian Range, occupying extensive areas in the Serrania de Cuenca, the Maestrazgo and associated ranges, mostly on limestones.
Baetic Salzmann's pine forests	Supra- and, locally, oro-Mediterranean [Pinus salzmannii var. hispanica] forests of the Baetic and sub-Baetic ranges, covering vast expanses, mostly on limestones, in the sierras de Cazorla, Segura and Alcaraz, with outposts in the Sierra de Baza, the Sierra de Filabres and the calcareous periphery of the Sierra Nevada.

Supra-Mediterranean Baetic Salzmann's pine forests	Forests of [Pinus salzmannii] accompanied by a cortège similar to that of thermophilous oak forests, including [Quercus rotundifolia], [Juniperus oxycedrus], [Lavandula latifolia], [Erinacea anthyllis], [Rosmarinus officinalis], [Genista scorpius], [Crataegus monogyna], [Berberis hispanica], [Rosa pouzinii], [Daphne laureola], [Acer granatense], [Paeonia officinalis], of the sierras de Cazorla, Segura and Alcaraz, the erra de Baza, the Sierra de Filabres and the calcareous periphery of the Sierra Nevada.
Oro-Mediterranean Baetic Salzmann's pine forests	Oro-Mediterranean woods of [Pinus salzmannii], more open than those of 42.6361 and occupying very limited areas in the sierras de Cazorla, Segura and Alcaraz, with a shrub layer of [Juniperus sabina] and [Juniperus nana], accompanied by [Ononis aragonensis], [Genista lobelii ssp. longipes], [Daphne oleoides] and [Prunus prostrata].
Corsican laricio pine forests	[Pinus laricio] forests of the mountains of Corsica. The nuthatch [Sitta whiteheadi] is endemic to these forests.
Calabrian laricio pine forests	[Pinus laricio var. calabrica] forests of the Sila, the Aspromonte and Etna.
Banat and Pallas' pine forests	Montane forests of [Pinus pallasiana], or of [Pinus banatica] ([Pinus nigra var. banatica]), of the southern Carpathians, the Balkan peninsula, Cyprus, Anatolia and Crimea.
Helleno-Balkanic Pallas' pine forests	Montane forests of [Pinus pallasiana] of Greece and the Balkan peninsula.
Taygetos Pallas' pine forests	[Pinus pallasiana]-dominated forests occupying steep rocky slopes of the montane level of the Taygetos mountains of the Peloponnese.
Parnon Pallas' pine forests	[Pinus pallasiana]-dominated forests of the montane level of the Parnon.
Northern Peloponnese Pallas' pine forests	[Pinus pallasiana]-dominated forests of the montane level of the Killini, Chelmos mountains of the northern Peloponnese.
Southern Pindus Pallas' pine forests	Isolated [Pinus pallasiana]-dominated forests of the montane level of mountains of the southern Pindus complex, in particular of the Giona group, and of outlying ranges in Beotia and Eubaea.
Olympian Pallas' pine forests	Forests dominated by [Pinus nigra ssp. pallasiana] occupying slopes and ridges of the 500 metre to 1500 metre belt of the Thessalian Mount Olympus, Pieria and Vourninos, extending from the upper limit of the Mediterranean forest and shrub level to, and into, the beech forest zone, accompanied by species characteristic of both the Mediterranean and montane levels, most extensive on the northern side, constituting the most important forest element of the Olympic system.
Central Pindus Pallas' pine forests	Forests dominated by [Pinus nigra ssp. pallasiana] of the northern and central Pindus system.
Pelagonide Pallas' pine forests	[Pinus nigra ssp. pallasiana]-dominated forests of the Pelagonides of north-central Greece, Albania and the F.Y.R. of Macedonia, north to the middle Treska Valley.
Rhodopide Pallas' pine forests	Scattered [Pinus nigra ssp. pallasiana]-dominated forests of the Rila, Pirin, Slavianka, Rhodopes, Vrondous and Falakron, most widespread in the Rhodope, in part accompanied by [Quercus dalechampii], [Ostrya carpinifolia] (southern Rhodopes), [Abies alba] or [Pinus sylvestris].

Balkan Range Pallas' pine forests	Uncommon [Pinus nigra ssp. pallasiana]-dominated forests of the beech and durmast oak levels of the western and central Balkan Range and its associated southern chains, sometimes accompanied by [Abies alba], by [Quercus dalechampii], or by [Ostrya carpinifolia].
Moeso-Macedonian Pallas' pine forests	[Pinus nigra ssp. pallasiana]-dominated forests of the Moeso-Macedonian mountains.
Aegean Pallas' pine forests	[Pinus nigra ssp. pallasiana]-dominated forests of the Aegean islands of Thasos and Samos.
Banat pine forests	Relict thermophile forests of [Pinus banatica] ([Pinus nigra var. banatica]) developed on calcareous substrates of the montane level of the Southern Carpathians, in particular, of the Banat, with [Genista radiata], [Fraxinus ornus], [Cotinus coggygria], [Biscutella laevigata], [Ceterach officinarum], [Festuca xanthina], [Seseli rigidum], [Campanula kladniana], [Centaurea rhenana] and [Campanula divergens].
Cyprian Pallas' pine forests	Forests of [Pinus pallasiana var. caramanica] of the cold, snowy, high altitudes, above 1400 metres, of the Troodos Range, with [Euphorbia cassia] and numerous Cyprian endemics or near-endemics, among which [Platanthera holmboei], [Epipactis troodi], [Thlaspi cyprium] and [Jurinea cypria].
Anatolian Pallas' pine forests	[Pinus pallasiana] forests of northwestern, southwestern and southern interior Anatolia, occurring between 1200 and 1800 metres altitude, in areas of only a few months of snow cover, moderate to low precipitation and up to six months of summer drought a year.
Black pine reforestation	Plantations of pines of the [Pinus nigra] group, accompanied by semi-natural undergrowth formations. These are usually calciphilous communities when accompanying [Pinus nigra], acidophilous ones when with [Pinus laricio].
Subalpine mediterranean pine woodland	Woods of [Pinus heldreichii], [Pinus leucodermis] or [Pinus peuce].
White-barked pine ([Pinus leucodermis]) forests	Local treeline formations of [Pinus heldreichii] or [Pinus leucodermis] restricted to the southern Balkans, northern Greece and southern Italy, usually open and with an undergrowth formed by stripped grasslands on dry, often stony or rocky soils.
Italian white-barked pine forests	Rare white-barked pine formations of high southern Italian mountains, limited to the Abruzzian Appenines (Montagna della Maiella), the Campanian Apennines (monti Picentini) and the Lucano-Calabrian Apennines (Pollino, monti Alpi di Latronico, monte la Spina, monti di Orsomarso, monte Montea, serra delle Ciavole).
Pindus white-barked pine forests	White-barked pine formations of high elevations of the Pindus, mostly on ophiolites, at altitudes above 1600 metres.
Olympus white-barked pine forests	White-barked pine formations of Mount Olympus, mostly on jurassic and triassic limestones at altitudes above 1350 metres, with an undergrowth including [Juniperus nana], [Daphne laureola], [Daphne mezereum], [Daphne oleoides], [Genista radiata], [Buxus sempervirens], [Cotoneaster integerrimus].
Pelagonide white-barked pine forests	White-barked pine formations of high elevations of the Pelagonides of Albania, the F.Y.R. of Macedonia and northern Greece, south to the Vourinos and the Vermion.

South Dinaric white-barked pine forests	White-barked pine formations of high elevations of the Dinarides of Bosnia-Herzegovina, Montenegro and northern Albania, extending from the Prenj range to the Prokletije and other ranges immediately north of the Metohija depression.
Rhodopide white-barked pine forests	[Pinus leucodermis] forests of the Pirin and the Slavianka Mountains, on calcareous substrates.
Macedonian pine ([Pinus peuce]) woods	[Pinus peuce] formations, restricted to the subalpine zone of the high mountains of the Balkan peninsula south to extreme northern Greece (Voras, Varnous, Rhodope).
Pelagonide Macedonian pine woods	[Pinus peuce] forests of the subalpine zone of the high Pelagonides of the F.Y.R. of Macedonia, Albania and northern Greece, recorded, in particular, from the Rudoka, Voras-Nidze and Varnous ranges.
Southern Dinaric Macedonian pine woods	[Pinus peuce] forests of the subalpine zone of the southern Dinarides of Montenegro and northern Albania, in the Prokleti and Metochi mountains.
Rila and Pirin Macedonian pine forests	Forests dominated by [Pinus peuce] of high altitudes of the Rila and Pirin ranges of Bulgaria, forming a belt of mixed or pure stands within the 1650 to 2100 metre zone and harbouring the largest populations of the species.
Rhodope Macedonian pine woods	[Pinus peuce]-dominated forests of the western Rhodope mountains of Bulgaria and of the Elatia region of Greece.
Balkan Macedonian pine woods	[Pinus peuce] forests of the central Balkan Range.
Lowland to montane mediterranean pine woodland (excluding black pine [Pinus nigra])	Mediterranean and thermo-Atlantic forests of thermophilous pines, mostly appearing as successional stages or plagioclimax replacements of Mediterranean evergreen broadleaved woodland G2.1 or G2.4. Long-established plantations of these pines, within their natural area of occurrence, and with an undergrowth basically similar to that of G2.1 and G2.4, are included.
Maritime pine ([Pinus pinaster]) forests	Forests and plantations of [Pinus pinaster ssp. atlantica] of southwestern France and the western Iberian peninsula not on coastal dunes (otherwise see unit B1.71).
Charente maritime pine-holm oak forests	[Pinus pinaster ssp. atlantica] forests with a subcanopy of [Quercus ilex], [Arbutus unedo] and sometimes [Quercus pubescens] or [Quercus robur] and an undergrowth of [Rubia peregrina], [Cistus salvifolius], [Daphne gnidium] and, in the more acid stands, [Ulex europaeus], [Cytisus scoparius], [Erica scoparia] or, in more calcareous ones, [Hedera helix], [Ruscus aculeatus], developed on mostly calcareous inner dunes of the low-rainfall coasts of Vend,e, Charente-maritime and northern Gironde, including the islands of Noirmoutier, Yeu, R, and Ol,ron.
Aquitanian maritime pine-cork oak forests	[Pinus pinaster ssp. atlantica] forests with a subcanopy of [Quercus suber], [Arbutus unedo] and sometimes [Quercus robur] and an undergrowth of [Erica cinerea], [Pteridium aquilinum], [Frangula alnus], [Rubia peregrina] and, in the more open stands, [Cistus salvifolius], [Cytisus scoparius], [Erica scoparia], [Calluna vulgaris] or, in more closed ones, [Hedera helix], [Ruscus aculeatus], [Ilex aquifolium], developed on acidocline inner dunes of the warmer, more humid coasts of the Marensin, between the Eyre and the Adour river mouths.
Landes maritime pine plantations	[Pinus pinaster ssp. atlantica] woodland of southwestern France other than the dunal formations listed in units 42.811 and 42.812.

Iberian maritime pine forests	[Pinus pinaster ssp. atlantica] forests of Galicia, Portugal and neighbouring areas.
Mesogean pine forests	Forests of [Pinus pinaster ssp. pinaster] ([Pinus mesogeensis]) of the western Mediterranean, mostly in siliceous meso-Mediterranean, upper meso-Mediterranean and supra-Mediterranean situations of Spain, Portugal, Corsica, southeastern France, northwestern Italy, Sardinia and Pantelleria not on coastal dunes (otherwise see unit B1.71).
Iberian mesogean pine forests	[Pinus pinaster] forests of the Iberian peninsula, appearing mostly as substitution communities of [Quercus rotundifolia], [Quercus pyrenaica] or, locally, [Quercus suber], [Quercus faginea] woodlands.
Northern-Iberian mesogean pine forests	Very extensive [Pinus pinaster] forests of the Northern Iberian Range and neighbouring areas, occupying siliceous, often sandy substrates.
Cordilleran mesogean pine forests	Extensive [Pinus pinaster] forests of the Cordillera Central and neighbouring areas, particularly developed on the southern slope of the range, occupying siliceous substrates, mostly gneiss and granite.
Southern-Iberian mesogean pine forests	[Pinus pinaster] forests of the Southern Iberian Range and plateaux of eastern New Castile.
Cazorlan mesogean pine forests	Extensive [Pinus pinaster] forests of the Sierras de Cazorla, Segura, Alcaraz and Sagra, mostly on Mesozoic limestones.
Southern Andalusian mesogean pine forests	[Pinus pinaster] forests of southern mountains.
Leonese mesogean pine forests	Isolated [Pinus pinaster] woods of Nogarejas and Castrocontrigo in southern Leon.
Catalonian mesogean pine forests	[Pinus pinaster] forests of Catalonia.
Corbières mesogean pine forests	Isolated [Pinus pinaster]-dominated woods of the Corbières.
Franco-Italian mesogean pine forests	[Pinus pinaster] forests of siliceous lower meso-Mediterranean areas of Provence, of marls and limestones of the upper meso-Mediterranean level of the Maritime Alps and the Ligurian Alps, and of mostly siliceous or clayey soils of the hills of Liguria and Tuscany.
Corsican mesogean pine forests	[Pinus pinaster]-dominated forests of the meso- and supra-Mediterranean levels of Corsica, mostly on granitic substrates; they are very developed, accompanied by a maquis-like understorey, in the meso-Mediterranean zone, mostly at its upper tier; they occur locally within the supra-Mediterranean zone, on adrets and at lower altitudes, as facies of laricio pine forests.
Sardinian mesogean pine forests	[Pinus pinaster] formations on granitic substrates of northern Sardinia, with [Arbutus unedo], [Quercus ilex], [Rosmarinus officinalis], [Erica arborea], [Genista corsica], [Lavandula stoechas], [Rubia peregrina], [Calicotome spinosa], [Pistacia lentiscus], [Teucrium marum].
Pantellerian mesogean pine forests	[Pinus pinaster] woods of Pantelleria.

Stone pine forests	Mediterranean forests and old naturalised plantations of [Pinus pinea] not on coastal dunes (otherwise see unit B1.71). Ancient introductions in many areas often makes the distinction between spontaneous forests and long-established formations of artificial origin difficult. These are thus included, while recent, obviously artificial groves are not.
Iberian stone pine forests	[Pinus pinea] forests of the Iberian peninsula, where they reach their greatest development.
Western Andalusian stone pine forests	[Pinus pinea] forests of the lowlands of western Andalusia and adjacent areas, with [Halimium halimifolium], [Halimium rosmarinifolium], [Calicotome villosa], [Cistus salvifolius], [Cistus crispus], [Erica scoparia], [Corema album], [Rhamnus oleoides], [Chamaerops humilis], [Juniperus phoenicea].
Lusitanian stone pine forests	[Pinus pinea] forests of the coasts of Portugal, notably the Setubal peninsula, pure or with [Pinus pinaster].
Castilian stone pine forests	[Pinus pinea] forests of the plateaux of Old Castile in the provinces of Valladolid, Zamora, Avila and Segovia, pure or with [Pinus pinaster]; the undergrowth includes [Cistus laurifolius], [Cytisus scoparius], [Crataegus monogyna], [Salvia officinalis], [Lavandula latifolia], [Juniperus communis], [Juniperus thurifera] and tufts of [Corynephorus canescens].
Cordilleran stone pine forests	[Pinus pinea] forests of the foothills of the Cordillera Central, particularly in areas between Guadarrama and Gredos, pure or with [Pinus pinaster]; the undergrowth, similar to that of evergreen oak forests, includes [Juniperus oxycedrus], [Retama sphaerocarpa], [Cytisus scoparius], [Pistacia terebinthus], [Lavandula pedunculata], [Helichrysum serotinum].
Catalonian stone pine forests	[Pinus pinea] forests of coastal and lowland Catalonia, often natural, and with an abundant shrub layer comprising [Arbutus unedo], [Erica arborea], [Ulex australis], [Calicotome spinosa], [Cistus albidus], [Cistus monspeliensis], [Cistus salvifolius], [Cistus laurifolius].
Morena stone pine forests	[Pinus pinea] forests of the Sierra Morena, largely represented by plantations.
Manchegan stone pine forests	[Pinus pinea] forests of the foothills of the Southern Iberian Range and the plateaux of La Mancha, also mostly of artificial origin.
Balearic stone pine woods	[Pinus pinea] formations of the Balearic Islands, native only on Ibiza and Formentera.
Provence stone pine woods	[Pinus pinea] formations of Provence, possibly spontaneous on coastal sands and in the Maures area.
Corsican stone pine woods	[Pinus pinea] formations of the littoral of Corsica, some of which may be of natural origin, in particular on old dunes of the east coast.
Sardinian stone pine forests	[Pinus pinea] formations of Sardinia.
Sicilian stone pine forests	[Pinus pinea] formations of the Monti Peloritani, northwestern Sicily, of probable native origin.
Italic stone pine forests	Large [Pinus pinea] forests and ancient plantations of the Tyrhenian and Adriatic coasts of the Italian peninsula, in Liguria, Toscany, Latium, Campania, Emilia-Romagna (Ravenna) and Friuli-Venetia Giulia (Grado). At least the forests of the Adriatic coast, between Ravenna and the P“, are of natural origine, with a continuous record since post-glacial times.

Hellenic stone pine forests	[Pinus pinea] woods of the littoral and coastal hills of the Peloponnese, Chalcidice, Crete and Aegean islands, rather local but probably in part, at least, spontaneous; a splendid example exists, in particular, on Skiathos.
Albanian stone pine forests	[Pinus pinea] forests of the southern Adriatic and Otranto Canal coastlands of Albania, where they form, in particular, considerable forests of varied composition on coastal sands between the Shkumbin and Seman rivers.
Dalmatian stone pine forests	[Pinus pinea] forests of the eastern Adriatic coastlands, distributed, in particular, in Istria and the Gulf of Rijeka and in southern Croatia.
Pontic stone pine forests	[Pinus pinea] forests of Mediterranean enclaves on the southern Black Sea coast of Anatolia in extreme eastern Paphlegonia and in western and eastern Lazistan, some, at least, apparently indigenous. In Lazistan, they occur, in particular, on hill slopes, from sea level to the top of the coastal range, on eruptive rocks, with a rich undergrowth including [Cistus creticus], [Pistacia palaestina], [Juniperus oxycedrus].
Mediterranean Anatolian stone pine forests	[Pinus pinea] forests of the Aegean and east Mediterranean coasts of Anatolia and of their Mediterranean hinterland.
Aleppo pine ([Pinus brutia]) forests	Woods of [Pinus halepensis], a frequent colonist of thermo- and calcicolous meso-mediterranean scrubs not on coastal dunes (otherwise see unit B1.71). The distinction between spontaneous forests and long-established formations of artificial origin is often difficult. The latter are thus included here, while recent, obviously artificial groves are not.
Iberian Aleppo pine forests	[Pinus halepensis] forests of Spain, considered native for at least two-thirds of their considerable expanse; they are mostly restricted to eastern regions on the Mediterranean slope of the Catalonian mountains, the Maestrazgo, the pre-Baetic ranges of the upper Guadalquivir basin, the southern Andalusian mountains; they penetrate farther inland in the Ebro basin and around the headwaters of the Tagus and Guadalquivir systems. They appear to extend north along the coast of the French Golfe du Lion to the region of Agde.
Balearic Aleppo pine forests	[Pinus halepensis] formations of the Balearics, present and probably native on all the major islands.
Provenço-Ligurian Aleppo pine forests	Mostly lower meso-Mediterranean [Pinus halepensis] forests of Provence and of the lower slopes and coastlines of the Maritime and Ligurian Alps, extensive and undoubtedly native.
Corsican Aleppo pine woods	Rare and local [Pinus halepensis] woods of the Corsican coasts, some, at least, possibly natural.
Sardinian Aleppo pine woods	[Pinus halepensis] formations of Sardinia, where certainly native woods occur on Isola di San Pietro and the Sulcis coast of Iglesiente.
Sicilian Aleppo pine woods	[Pinus halepensis] formations of Sicily and peripheral islands.
Italic Aleppo pine forests	[Pinus halepensis] formations of the Italian peninsula; extensive, probably at least partially native ones, are individualised in the subdivisions below.
Gargano Aleppo pine forests	[Pinus halepensis] forests of monte Gargano and the Tremiti islands.
Metapontine Aleppo pine forests	[Pinus halepensis] forests of the Gulf of Taranto area, in particular of the Metapontine littoral.

Umbrian Aleppo pine forests	[Pinus halepensis] forests of southern Umbria, in the Narni and Spoleto-Terni areas.
Hellenic Aleppo pine forests	[Pinus halepensis] formations of Greece, where the species is relatively widespread, particularly in Attica, Thessaly, the coasts of the Peloponnese and of central continental Greece, the Ionian islands, Chalcidici, the northern Sporades, Euboea and Skiros.
Illyrian Aleppo pine forests	[Pinus halepensis] forests and woods of the southern and central part of the meso-Mediterranean [Orno-Quercetum illicis] zone of the Balkan peninsula, extending in a narrow coastal and archipelagic band from the Gulf of Sarand‰ to northern Dalmatia.
East Mediterranean Aleppo pine forests	Forests of [Pinus halepensis] of the Mediterranean coastal regions of the Middle East. Extensive and varied in the southern part of the region, they are represented further north by isolated outposts in the coastal region of Syria and in south central Anatolia, where [Pinus halepensis] occurs in the thermo-Mediterranean zone of the Cilician plain, apparently mixed with [Pinus brutia].
Aegean pine forests	[Pinus brutia] forests of Crete, the eastern Aegean islands, extreme southeastern continental Europe, Anatolia, Cyprus and the eastern Mediterranean coastal regions not on coastal dunes (otherwise see unit B1.71). Eastern vicariants of Aleppo pine forests (unit G3.74), they comprise, however, taller, more luxuriant, and often extensive, formations. Disjunct formations of this pine or of related species, described from Crimea and the Caucasian region ([Pinus pityusa], [Pinus stankewiczii], [Pinus eldarica]) have been included.
Canary Island pine ([Pinus canariensis]) woodland	Forests of endemic [Pinus canariensis], of the dry montane level at around 800 to 2000 m (locally down to 500 and up to 2500 m) in Tenerife, La Palma, Gran Canaria and Hierro, with [Chamaecytisus proliferus], [Adenocarpus foliolosus], [Cistus symphytifolius], [Lotus campylocladus], [Lotus hillebrandii], [Lotus spartioides], [Daphne gnidium], [Juniperus cedrus], [Micromeria] spp.; these forests, of which well-preserved examples have become rare, are the only habitat of [Fringilla teydea], [Dendrocopos major canariensis] and [Dendrocopos major thanneri].
Canary pine - rockrose forests	Climax [Pinus canariensis] forests of the main zone of altitudinal occurrence of the species, with an undergrowth characterized and often dominated by [Cistus symphytifolius] and comprising [Chamaecytisus proliferus], [Lotus campylocladus], [Lotus hillebrandii], [Lotus spartioides], [Juniperus cedrus], [Bystropogon origanifolius], [Argyranthemum adauctum].
Tenerife pine-rockrose forests	[Pinus canariensis] forests of Tenerife, with [Lotus campylocladus], [Chamaecytisus proliferus]; they are the main habitat of the endangered [Dendrocopos major canariensis] and of [Fringilla teydea teydea].
La Palma pine-rockrose forests	[Pinus canariensis] forests of La Palma, with [Lotus hillebrandii].
Gran Canaria pine-rockrose forests	[Pinus canariensis] forests of Gran Canaria, with [Cistus symphytifolius var. leucophyllus] and [Lotus spartioides]; they are the main habitat of the threatened [Dendrocopos major thanneri] and [Fringilla teydea polatzeki].
Hierro pine-rockrose forests	[Pinus canariensis] forests of Hierro, with [Lotus hillebrandii].

Canary pine - dry scrub forests	Forests of dry, south-facing slopes of the Canary islands developed in the lower part of the [Pinus canariensis] belt, transitional towards juniper formations and their degradation scrubs, with an undergrowth often formed by [Cistus monspeliensis], [Euphorbia obtusifolia ssp. regis-jubae], [Salvia canariensis], [Micromeria hyssopifolia], [Echium aculeatum].
Tenerife pine-dry scrub woods	Pine forests with a dry scrub undergrowth developed on dry, south-facing slopes of the lower part of the [Pinus canariensis] belt of Tenerife.
La Palma pine-dry scrub woods	Pine forests with a dry scrub undergrowth developed on dry, south-facing slopes of the lower part of the [Pinus canariensis] belt of La Palma.
Gran Canaria pine-dry scrub woods	Pine forests with a dry scrub undergrowth developed on dry, south-facing slopes of the lower part of the [Pinus canariensis] belt of Gran Canaria.
Hierro pine-dry scrub woods	Pine forests with a dry scrub undergrowth developed on dry, south-facing slopes of the lower part of the [Pinus canariensis] belt of Hierro.
Canary pine - heath forests	Forests of humid, fogbound north- and northwest-facing slopes in the lower reaches of the [Pinus canariensis] belt, with an abundance of [Erica arborea] and [Myrica faya], and occasionally with [Ilex canariensis] and [Arbutus canariensis]; epiphytic lichens are abundant, as are dense carpets of mosses, in particular, [Hypnum cupressiforme]. These woods are the main habitat of [Regulus teneriffae].
Tenerife pine-heath forests	Fogbound heath-rich pine forests of the lower reaches of the [Pinus canariensis] belt of Tenerife.
La Palma pine-heath forests	Fogbound heath-rich pine forests of the lower reaches of the [Pinus canariensis] belt of La Palma.
Gran Canaria pine-heath forests	Fogbound heath-rich pine forests of the lower reaches of the [Pinus canariensis] belt of Gran Canaria, harbouring the endemic [Micromeria pineolens].
Hierro pine-heath forests	Fogbound heath-rich pine forests of the lower reaches of the [Pinus canariensis] belt of Hierro, harbouring the almost extinct [Adenocarpus ombriosus].
Canary pine - broom ([Adenocarpus viscosus]) woods	Forests of the highest altitudes of the [Pinus canariensis] belt, invaded by species of the supra-Canarian level, in particular [Adenocarpus viscosus].
Tenerife pine-broom woods	High-altitude pine forests of Tenerife, with [Adenocarpus viscosus var. viscosus].
La Palma pine-broom woods	High-altitude pine forests of La Palma, with [Adenocarpus viscosus var. spartioides].
Canary pine - juniper woods	[Pinus canariensis] and [Juniperus cedrus] forests of steep, rocky slopes of high altitudes of Tenerife and La Palma.
Tenerife pine-juniper woods	[Pinus canariensis] and [Juniperus cedrus] forests of the edges of Las Canadas del Teide.
La Palma pine-juniper woods	[Pinus canariensis] and [Juniperus cedrus] forests of the summits of La Palma.
Coniferous woodland dominated by [Cupressaceae] or [Taxaceae]	Woods dominated by [Cupressus sempervirens], [Juniperus] spp. or [Taxus baccata] of the nemoral and Mediterranean mountains and hills.

Western Palaearctic cypress forests	Montane forests of the Mediterranean basin, of the Elburz and of the Sahara dominated by [Cupressus sempervirens], [Cupressus atlantica] or [Cupressus dupreziana].
Spanish juniper ([Juniperus thurifera]) woods	Forest formations dominated by [Juniperus thurifera] of Spain, southern France, Corsica and North Africa. Many communities may be better described as arborescent matorrals, see unit F5.136.
Iberian Spanish juniper forests	[Juniperus thurifera] forests on calcareous substrates in the supra-Mediterranean levels of the Iberian Range and neighbouring plateaux, dispersed throughout the entire system, in an arc extending from the province of Burgos to the Serrania de Cuenca and the mountains of Teruel; these constitute the main range of the species. [Pinus sylvestris] and [Pinus salzmannii] may accompany the juniper; [Juniperus hemisphaerica] and [Berberis hispanica] may be common in the undergrowth.
Guadarraman Spanish juniper woods	Relict [Juniperus thurifera] woods of enclaves on the periphery of and within the Sierra de Guadarrama, occurring both on rare local limestone deposits and in a few siliceous stations.
Guadarraman calciphilous Spanish juniper woods	Formations of [Juniperus thurifera] linked to local limestone deposits of the Sierra de Guadarrama area.
Guadarraman silicicolous Spanish juniper woods	Anomalous silicicolous [Juniperus thurifera] formations of the Sierra de Guadarrama area, with [Juniperus oxycedrus].
Cantabrian Spanish juniper woods	Relict, open [Juniperus thurifera] woodlands of dry, warm, rocky, calcareous southern slopes of the Cordillera Cantabrica, between the Rio Pisuerga and the Rio Luna, with [Juniperus nana], [Juniperus sabina], [Berberis vulgaris ssp. cantabrica], [Rhamnus alpinus], [Viburnum lantana].
Monegros Spanish juniper woods	[Juniperus thurifera] woodlands on gypsiferous soils of the Ebro basin, with [Rhamnus lycioides].
Manchegan Spanish juniper woods	[Juniperus thurifera] woods on La Mancha clay soils of the Campo de Montiel.
Baetic Spanish juniper woods	Relict, open [Juniperus thurifera] formations of the pre-Baetic system in the Sierra Taibilla (Albacete, Murcia).
Pyrenean Spanish juniper woods	Relict [Juniperus thurifera] wood of the supra-Mediterranean level of the Montagne de Rie, on the northern flank of the central Pyrenees.
Southern Alpine Spanish juniper woods	[Juniperus thurifera] formations of warm calcareous supra-Mediterranean slopes of the southwestern Alps, in Dr“me, Hautes-Alpes and Alpes-de-Haute-Provence, between 700 and 1200, occasionally 1400, metres.
Isère Spanish juniper woods	[Juniperus thurifera] formations of warm calcareous supra-Mediterranean slopes of the Isère valley, in the western Alps, between 300 and 500 metres.
Corsican Spanish juniper woods	Open montane forests of [Juniperus thurifera], sometimes mixed with [Pinus laricio], restricted to a few valleys in the interior of Corsica with extreme temperature ranges (Pinnera, Rudda, Pruniccia)

Grecian juniper ([Juniperus excelsa]) woods	Forest formations dominated by [Juniperus excelsa] or the closely allied [Juniperus macropoda] ([Juniperus polycarpos], [Juniperus seravshanica]) of the Irano-Turanian plateaux and mountains of Anatolia, Iran, Afghanistan, extending to Lebanon, the Caucasus, Crimea, Cyprus and the Balkanic peninsula, in the periphery of the Pelagonides and Rhodopides. Arborescent matorrals, somewhat more widespread in Mediterranean and sub-Mediterranean regions, are included as unit F5.1331.
Northern Hellenic Grecian juniper woods	[Juniperus excelsa] forests of the [Ostryo-Carpinion] zone of the southern periphery of the Pelagonides, in particular of the mountains surrounding Lake Prespa in northern Greece where they occur up to 900-1000 m.
Peri-Rhodopide Grecian juniper woods	Woods of [Juniperus excelsa], of the western and northern periphery of the Rhodopides, localized in the southwestern Bulgarian Struma trough, and in the northern foothills of the central Rhodope mountains near Krichim and Bachkovo, usually open, with deciduous forest elements including [Fraxinus ornus], [Pistacia terebinthus], [Carpinus orientalis], sometimes [Quercus pubescens], and many Mediterranean species, such as [Phillyrea latifolia], [Asparagus acutifolius], [Lonicera etrusca], [Achnatherum bromoides].
Paeonian Grecian juniper woods	[Juniperus excelsa] forests of the [Ostryo-Carpinion] zone of the northern periphery of the Pelagonides, in particular of the Vardar and Crna Reka valleys of the northern F.Y.R. of Macedonia, at an altitude of 100-400 metres.
Cyprian Grecian juniper woods	Forests of [Juniperus excelsa] of the Troodos Range, where the species locally (Madari Peak, Papoutsa Peak) replaces [Pinus pallasiana].
Anatolian Grecian juniper woods	Pre-steppic, meso-Mediterranean and subalpine [Juniperus excelsa]-dominated forests of Anatolia.
Stinking juniper ([Juniperus foetidissima]) woods	Forest formations dominated by [Juniperus foetidissima] of the Balkan peninsula, Cyprus, Anatolia, Transcaucasia.
Syrian juniper ([Juniperus drupacea]) woods	[Juniperus drupacea] woods of Greece and Asia Minor. Similar lower-growing formations take the appearance of arborescent matorral, included as unit F5.135.
Arbor-vitae ([Tetraclinis articulata]) forests	Forests of [Tetraclinis articulata], a species restricted to North Africa, southeastern Spain and the Maltese Islands.
Western Palaearctic yew woods	Woods dominated by [Taxus baccata], often with [Ilex aquifolium], of very local occurrence in plains, hills and mountains of the Western Palaearctic nemoral zone and in the mountains of the Mediterranean basin, with isolated outliers in the southern and eastern Carpathian system and the northern Rhodopides (Mount Vitosha).
Atlantic yew woods	[Taxus baccata] woods with [Sorbus aria] or [Mercurialis perennis] of dry valleys and scarps of the Chalk of southeastern England, and, very locally of the Durham Magnesium limestone; relict formations of Jutland.
Corsican yew woods	Formations of [Taxus baccata], [Ilex aquifolium], [Buxus sempervirens], restricted to cool, montane areas in the Tenda range, the San Pedrone range and the Cap Corse mountains.
Sardinian yew woods	[Taxus baccata] and [Ilex aquifolium] woods of the Catena del Marghine and the Mount Limbara system.

Italic yew woods	[Taxus baccata] and [Ilex aquifolium] of the Macerata region.
Iberian yew woods	Occasional pure [Taxus baccata] formations of Spanish mountains, most often on steep shady slopes.
Provence yew woods	[Taxus baccata] formations of southern France, similar to those of unit 42.A75.
Alpino-Carpathian yew woods	[Taxus baccata] woods of the Alpine system and of the Carpathians, in part rare facies of the yew-beech formations, in part amphibolite-colonizing woods with [Picea abies] and [Fraxinus excelsior] and [Juniperus sabina].
Dinaric yew woods	Yew-dominated forests of the Dinarides, mostly yew-lime steep slope forests of northwestern Croatia, developed between 400 and 800 m on 30ø-80ø calcareous rock slopes with very shallow rendzina soils, also, locally, block forests within calcicolous fir forests of the Dinaric karst.
Baltic yew woods	Pre-Sarmatic [Taxus baccata] formations of central Poland.
Vitosha yew woods	Isolated [Taxus baccata] grove of Mount Vitosha, in Bulgaria.
Macaronesian juniper woods	Juniper-dominated formations of the Atlantic islands. All such formations are listed here whether wood-like or scrub-like in physiognomy; ericoid-dominated facies of the same formations are included under unit F4.3.
Canary Island juniper woods	[Juniperus cedrus] formations of the high altitudes of Tenerife, La Palma, Gomera, Gran Canaria, restricted to steep rocky slopes.
Azorean juniper woods	Endemic [Juniperus brevifolia] formations of the Azores.
Macaronesian Phoenician juniper woods	[Juniperus phoenicea] formations of Tenerife, La Palma, Hierro, Gran Canaria, Gomera.
Prickly juniper ([Juniperus oxycedrus]) woods	Woods dominated by [Juniperus oxycedrus] (s.l.). Most [Juniperus oxycedrus] formations are thickets, scrubs or, at most, arborescent matorrals, listed under units F5.131, F6.15, F6.25, F6.35 or, in dunal formations, unit B1.631. A few, however, qualify as woodland.
Phoenician juniper woods	[Juniperus phoenicea ssp. phoenicea] and [Juniperus phoenicea ssp. lycia] forests of the Mediterranean and Saharo-Mediterranean regions. Exceptional, tall and dense formations, however, may be more appropriately characterised as woodland and listed in this unit. Mediterranean formations dominated by [Juniperus phoenicea] are scrubs, thickets or arborescent matorrals, listed under units F5.132, F6.15, F6.25, F6.35 or, in dunal formations, unit B1.632. Saharo-Mediterranean formations may more often take the appearance of an open or steppe forest.
Hyrcanian thuja forests	[Platycladus orientalis] ([Thuja orientalis], [Biota orientalis]) forests scattered in restricted areas of the Hyrcanian zone of the Elburz range of northern Iran, constituting a very isolated occurrence of the species; they develop in the same 2000 to 2500 metre altitudinal level as the [Cupressus sempervirens] formations, or mixed with them; [Crataegus monogyna], [Paliurus spina-christi], [Pyrus cordata], [Quercus castaneifolia] accompany the thuja.
Cedar woodland	Eastern Mediterranean and western North African forests dominated by [Cedrus libani], [Cedrus brevifolia] or [Cedrus atlantica].
Spruce taiga woodland	Boreal spruce or spruce-pine forests of Fennoscandia, northeastern Poland, the Baltic States, Belarus and European Russia, with G3.B constituting the westernmost section of the continuous Eurasian northern taiga belt.

Bilberry western spruce taiga	Forests of [Picea abies], [Picea obovata], or [Picea] spp. and [Pinus sylvestris], of Fennoscandia, Russia west of the Ural piedmont, Belarus, the Baltic States, northeastern Poland, with an understorey dominated by [Vaccinium myrtillus], [Deschampsia flexuosa] and mosses, developed on mesic moraine ground, on podsols with heavy raw humus. They constitute the most widespread and characteristic type of western spruce taiga in the boreal zone and extend to the boreonemoral zone. Accompanying small tree and shrub species include [Betula pubescens], [Sorbus aucuparia], [Empetrum] spp., [Juniperus communis], [Vaccinium vitis-idaea], [Ledum palustre] (in the north), with a field layer comprising [Linnaea borealis], [Maianthemum bifolium], [Melampyrum pratense], [Solidago virgaurea], [Trientalis europaea], [Luzula pilosa], [Lycopodium annotinum], [Dicranum] spp., [Hylocomium splendens], [Pleurozium schreberi]. In the boreo-nemoral zone, deciduous trees may accompany the conifers, in particular, [Quercus robur], [Tilia cordata], [Acer platanoides], [Ulmus laevis], [Populus tremula].
Subcontinental bilberry western spruce taiga	Bilberry spruce and spruce-pine forests of boreal Fennoscandia and Russia, east of the Scandinavian mountains and west of the Northern Dvina and Vetluga rivers, extending in the sub-boreal zone, particularly in Scandinavia, developed under subcontinental to near-continental climates, dominated by [Picea abies], sometimes accompanied by [Pinus sylvestris], and with a species cortège devoid of oceanic elements.
Suboceanic bilberry western spruce taiga	Bilberry spruce and spruce-pine forests of western Norway, with a species cortège enriched in oceanic or suboceanic elements, in particular, [Betula pubescens], [Cornus suecica], [Plagiothecium undulatum], [Rhytidiadelphus loreus].
Continental bilberry western spruce taiga	Bilberry spruce and spruce-pine forests of boreal Russia, east of the Northern Dvina and Vetluga rivers, and west of the Ural piedmont, extending in the sub-boreal zone, developed under continental climates, dominated by [Picea obovata], sometimes accompanied by [Pinus sylvestris] or [Abies sibirica].
Boreo-nemoral bilberry western spruce taiga	Forests of [Picea abies], [Picea obovata], or of [Picea] spp. and [Pinus sylvestris], accompanied by deciduous trees ([Quercus robur], [Quercus petraea], [Tilia cordata], [Acer platanoides], [Ulmus laevis], [Populus tremula]), of boreonemoral Fennoscandia, boreonemoral Russia west of the Ural piedmont, Belarus, the Baltic States, northeastern Poland, with an understorey dominated by [Vaccinium myrtillus]. [Picea abies] is the main tree dominant west of the Oka and Vetluga rivers, [Picea obovata] east of them.
Fern western spruce taiga	Forests of [Picea abies] or [Picea obovata], or of [Picea] spp. with [Pinus sylvestris], of Fennoscandia, Russia west of the western Ural piedmont, Belarus, the Baltic States, with an understorey dominated by ferns accompanied by ericaceous shrubs or phanerogamic herbs, by mosses and lichens.

Small fern western spruce taiga	Forests of [Picea abies] or, in the east, [Picea obovata], sometimes accompanied by [Pinus sylvestris], of boreal Fennoscandia, boreal Russia west of the western Ural piedmont, extending into the boreonemoral region, in particular, in Fennoscandia, with an understorey dominated by [Gymnocarpium dryopteris], [Oxalis acetosella], ericaceous shrubs and mosses. They occupy stations with a richer nutrient supply and a higher humidity level than those of the bilberry forests of unit 42.C1, with a lower humidity level than the tall fern forests of unit 42.C22 and with a lower nutrient supply than the small herb forests of unit 42.C3.
Subcontinental small fern western spruce taiga	Small fern spruce and spruce-pine forests of boreal Fennoscandia and Russia, east of the Scandinavian mountains and west of the Northern Dvina and Vetluga rivers, extending in the sub-boreal zone, particularly in Scandinavia, developed under subcontinental to near-continental climates, dominated by [Picea abies], sometimes accompanied by [Pinus sylvestris], and with a species cortège devoid of oceanic elements. The dominant [Gymnocarpium dryopteris] and [Oxalis acetosella] are accompanied by, in particular, [Thelypteris phegopteris], [Dryopteris expansa], [Anemone nemorosa] and by the mosses [Brachythecium reflexum], [Hylocomium umbratum].
Suboceanic small fern western spruce taiga	Small fern spruce forests of western Norway, with a species cortège enriched in oceanic or suboceanic elements, in particular, [Thelypteris limbosperma], [Blechnum spicant], [Cornus suecica], [Luzula sylvatica], [Plagiothecium undulatum], [Rhytidiadelphus loreus].
Continental small fern western spruce taiga	Small fern spruce and spruce-pine forests of boreal Russia, east of the Northern Dvina and Vetluga rivers, and west of the Ural piedmont, extending in the sub-boreal zone, developed under continental climates, dominated by [Picea obovata], sometimes accompanied by [Pinus sylvestris] or [Abies sibirica].
Tall fern western spruce taiga	Forests of [Picea abies] or, in the east, [Picea obovata], sometimes accompanied by [Pinus sylvestris] and/or [Populus tremula], of southern boreal and boreonemoral regions of Fennoscandia, Russia west of the western Ural piedmont, Belarus, the Baltic States, with an understorey dominated by ferns, in particular, [Athyrium filix-femina], [Dryopteris carthusiana], [Dryopteris expansa], [Dryopteris dilatata], [Phegopteris connectilis], [Gymnocarpium dryopteris], [Matteuccia struthiopteris], often with two tiers, one of taller ferns, one of medium-sized ferns, with a greater presence of herbs than of [Vaccinium myrtillus] and much [Oxalis acetosella], developing on mesic to moist moraines (podsol-acid brown forest earth). Accompanying species include [Betula pubescens], [Maianthemum bifolium], [Trientalis europaea], [Geranium sylvaticum], [Rubus saxatilis], [Stellaria nemorum], [Viola epipsila], [Paris quadrifolia], [Luzula pilosa], [Melica nutans], [Milium effusum], [Deschampsia flexuosa] [Equisetum sylvaticum], and mosses. They occupy stations with a richer nutrient supply than those of the bilberry forests of unit 42.C1

Small-herb western spruce taiga	Forests of [Picea abies] or, in the east, [Picea obovata], sometimes accompanied by [Pinus sylvestris] and/or [Populus tremula], of southern boreal and boreonemoral regions of Fennoscandia, Russia west of the western Ural piedmont, Belarus, the Baltic States, extending locally in the middle and northern boreal zones, with an understorey dominated by dwarf-shrubs and a low-growing herb layer, characteristic of calcareous substrates and warm stations, developed on acid brown forest soils with mull, or on weakly podsolised soils, with a preference for low-lying areas with fine sediments and a good water supply, sometimes with a tendency to waterlogging. They occupy stations with a richer nutrient supply than those of the bilberry forests of unit G3.A1 and of the fern forests of unit G3.A2, and with a lower humidity level than the fern forests and the tall herb forests of unit G3.A4. Accompanying tree and shrub species include a predominance of [Sorbus aucuparia], [Vaccinium myrtillus], with [Alnus] spp., [Betula] spp., [Juniperus communis], [Vaccinium vitis-idaea], a field layer dominated by [Oxalis acetosella], [Melampyrum sylvaticum], [Maiant
Subcontinental small-herb western spruce taiga	Small herb spruce and spruce-pine forests of southern boreal and boreonemoral Fennoscandia and Eastern Europe, east of the Scandinavian mountains and west of the Northern Dvina and Vetluga rivers, extending locally in the middle and northern boreal zones, particularly in calcareous regions, developed under subcontinental to near-continental climates, dominated by [Picea abies], sometimes accompanied by [Pinus sylvestris], with a species cortège devoid of oceanic elements.
Suboceanic small-herb western spruce taiga	Small herb spruce forests of western Norway, with a species cortège enriched in oceanic or suboceanic elements.
Continental small-herb western spruce taiga	Small herb spruce and spruce-pine forests of boreal Russia, east of the Northern Dvina and Vetluga rivers, and west of the Ural piedmont, extending in the sub-boreal zone, developed under continental climates, dominated by [Picea obovata], sometimes accompanied by [Pinus sylvestris] or [Abies sibirica].
Boreo-nemoral small-herb western spruce taiga	Forests of [Picea abies], accompanied, in a second tree layer by deciduous trees, in particular, [Quercus robur], [Tilia cordata], [Acer platanoides], [Ulmus laevis], sometimes with [Pinus sylvestris] and/or [Populus tremula] in the canopy, with a low understorey dominated by dwarf-shrubs and low-growing herbs, of which many are of nemoral affinities, often with a well-developed taller shrub layer that may include much [Sorbus aucuparia], characteristic of boreonemoral regions of Russia west of the western Ural piedmont, Belarus, the Baltic States and northeastern Poland.

Tall-herb western spruce taiga	Forests of [Picea abies] or, in the east, [Picea obovata], of boreal and boreonemoral regions of Fennoscandia, Russia west of the western Ural piedmont, Belarus, the Baltic States, with a species-rich understorey dominated by tall herbs and ferns and with a significant component of deciduous trees, including [Betula pubescens], [Alnus incana], [Sorbus aucuparia]; the species cortège includes an abundance of [Oxalis acetosella] and [Sambucus nigra], [Actaea spicata], [Campanula latifolia], [Mercurialis perennis], [Aconitum septentrionale] ([Aconitum lycoctonum]), [Cicerbita alpina], [Geranium sylvaticum], [Angelica sylvestris], [Crepis paludosa], [Filipendula ulmaria], [Geum rivale], [Viola epipsila], [Melica nutans], [Milium effusum], [Paris quadrifolia], [Rubus idaeus], [Rubus saxatilis], [Trientalis europaea], [Trollius europaeus], [Equisetum pratense], [Equisetum sylvaticum], [Dryopteris expansa], [Athyrium filix-femina], [Matteuccia struthiopteris]. Tall-herb spruce forests occupy low-lying areas, slopes and ravines with fine sediment and good water supply, on calcareous brown forest soils. Their stations ha
Northern subcontinental tall-herb spruce taiga	Tall herb forests of [Picea abies] of northern Fennoscandia and of northern Russia west of the western Ural piedmont, installed on calcareous substrates, with a species-rich understorey dominated by [Aconitum septentrionale] ([Aconitum lycoctonum]), [Cicerbita alpina], [Alnus incana].
Southern subcontinental tall-herb spruce taiga	Tall herb forests of [Picea abies] of southern boreal and sub-boreal Fennoscandia and Russia, west of the western Ural piedmont, of Belarus and the Baltic States, developed on calcareous brown forest soils, with a species-rich understorey dominated by [Actaea spicata], [Campanula latifolia], [Mercurialis perennis], [Sambucus nigra], and ferns.
Oceanic tall-herb birch-spruce taiga	Tall herb forests of [Picea abies] of calcareous brown soils of western Norway, developed under oceanic climate conditions with much [Betula pubescens] and an understorey harbouring western, oceanic species, sometimes dominated by [Matteuccia struthiopteris].
Continental tall-herb western spruce taiga	Tall herb [Picea obovata] forests of boreal and boreonemoral Russia, east of the Northern Dvina and Vetluga rivers, and west of the Ural piedmont, developed under continental climates.
Pretundra Siberian spruce ([Picea obovata]) taiga	Sparse or patchy, often stunted, [Picea obovata] woods forming the timberline in the wooded tundra zone of eastern Europe, east of the White Sea and west of the Ural piedmont.
Pine taiga woodland	Boreal pine forests of Fennoscandia, northeastern Poland, the Baltic States, Belarus and European Russia, with G3.A constituting the westernmost section of the continuous Eurasian northern taiga belt.
Ling - crowberry western taiga	Conifer forests of the taiga belt of western Eurasia, west of the middle Petchora, dominated by [Pinus sylvestris], sometimes accompanied by [Picea abies], with an ericoid-dominated, moss-rich or lichen-rich undergrowth mostly formed by [Calluna vulgaris], [Empetrum hermaphroditum], [Empetrum nigrum].

Ling-crowberry birch-spruce-pine taiga	Sparse, extensive forests of the taiga belt of western Eurasia, west of the middle Petchora, dominated by [Pinus sylvestris] and [Picea abies], with many birches and an understorey dominated by [Calluna vulgaris], [Empetrum hermaphroditum], [Empetrum nigrum], [Vaccinium myrtillus] and, in the north, [Vaccinium uliginosum], with [Vaccinium vitis-idaea], lichens, notably of genus [Cladonia], mosses ([Dicranum]). They are, in particular, characteristic of cold, low evaporation regions of Norwegian, Swedish and Finnish mountains, up to the subalpine belt, occupying heavy raw humus on podsols.
Barbilophozia birch-pine taiga	Sparse woodlands of suboceanic subalpine Scandinavia dominated by [Pinus sylvestris], with much [Betula pubescens ssp. czerepanovii], accompanied by some low-growing [Picea abies], with an undergrowth dominated by [Calluna vulgaris] and [Empetrum hermaphroditum], with [Vaccinium myrtillus], [Vaccinium uliginosum], [Vaccinium vitis-idaea], [Betula nana], [Cornus suecica], [Deschampsia flexuosa] and thick cushions of lichens and mosses formed by [Cladonia islandica], [Cladonia rangiferina], [Cladonia sylvatica], [Dicranum scoparium], [Pleurozium schreberi], [Barbilophozia lycopodioides], [Dicranum fuscescens], [Hylocomium splendens], [Sphagnum nemoreum]. They are installed on podsols with heavy raw humus in cool, submaritime, moist mostly northern boreal regions.
Oceanic Bazzania pine taiga	Sparse woods of low-growing [Pinus sylvestris], and some elements of birch, of maritime climate regions of western Norway, at subalpine levels, with an undergrowth dominated by [Calluna vulgaris], [Empetrum hermaphroditum], [Empetrum nigrum], [Vaccinium myrtillus], and with a species cortège characterized by the presence of [Cornus suecica], [Vaccinium uliginosum], [Blechnum spicant], [Pteridium aquilinum], [Bazzania trilobata], [Leucobryum glaucum], [Racomitrium lanuginosum], [Rhytidiadelphus loreus], [Sphagnum nemoreum], [Sphagnum quinquefarium]; [Picea abies] is absent.
Cowberry pine and spruce - pine taiga	Conifer forests of the taiga belt of western Eurasia, limited to southern and central Finland, central and northern Sweden and southeastern Norway, the Baltic States, southern boreal and boreonemoral Russia, dominated by [Pinus sylvestris], often accompanied by [Picea abies], which may dominate or codominate, with an ericoid-dominated, moss-rich and lichen-rich undergrowth mostly formed by [Vaccinium vitis-idaea] with [Empetrum nigrum], [Empetrum hermaphroditum]. The species cortège includes [Betula pubescens], [Calluna vulgaris], [Ledum palustre], [Vaccinium myrtillus], [Vaccinium uliginosum], [Pyrola chlorantha], [Goodyera repens], [Deschampsia flexuosa], [Lycopodium complanatum], [Cladonia] spp., [Dicranum scoparium], [Dicranum polysetum], [Dicranum fuscescens], [Hylocomium splendens], [Pleurozium schreberi]. They occur on sandy moraines or calcareous sand sediments in low rainfall areas.
Herb-rich and grassy pine taiga	Conifer forests of the taiga belt of western Eurasia, west of the middle Petchora, dominated by [Pinus sylvestris], sometimes accompanied by [Picea abies], with a grass-, small herb-, tall herb- or fern-dominated undergrowth.

Lichen pine taiga	Woods of [Pinus sylvestris] of Fennoscandia, the Baltic States and northern Russia, with a very low, sparse, dwarf-shrub layer and a ground layer dominated by lichens mainly of genus [Cladonia], notably [Cladonia rangiferina], [Cladonia alpestris], [Cladonia mitis]. Participating species include [Arctostaphylos uva-ursi], [Calluna vulgaris], [Vaccinium vitis-idaea], [Cetraria islandica], [Dicranum polysetum], [Dicranum spurium], [Pleurozium schreberi], [Stereocaulon] spp., installed on podsols with a thin raw humus layer, often on sand sediment.
Maritime lichen pine taiga	Lichen-carpeted [Pinus sylvestris] woods of the maritime climate region of western Norway, rich in [Racomitrium lanuginosum].
Southern boreal continental lichen pine taiga	Lichen-carpeted [Pinus sylvestris] woods of areas of continental climate regions of Fennoscandia, of the Baltic States and of the southern boreal and boreonemoral zones of northern Russia, particularly characteristic of eastern Sweden and Finland. Dominant lichens are [Cladonia rangiferina], [Cladonia alpestris], [Cladonia mitis] and, in coastal Åstland, [Cladonia uncialis]. Eastern Swedish and southeastern Norwegian stands harbour [Anemone sylvestris].
Northern boreal lichen pine taiga	Lichen-carpeted [Pinus sylvestris] woods of northern boreal Russia, the Kola peninsula and extreme northeastern Fennoscandia.
Boreal rock-outcrop pine woodland	Woods of [Pinus sylvestris] colonizing often small, level, glacier-fashioned granite, gneiss or acidic-sediment rock outcrops of southern and middle Fennoscandia, with dense lichen carpets, mostly of [Cladonia rangiferina], or a varied lichen and moss cover, accompanied by small shrubs, grasses and petrophile forbs, sometimes by abundant [Juniperus communis].
Larch taiga woodland	Boreal larch, forests of Fennoscandia, the Baltic States, Belarus and European Russia, occuring in limited, edaphic pockets within the area dominated by G3.A and G3.B.
Siberian larch ([Larix russica]) taiga	[Larix russica] ([Larix sukaczewii], [Larix sibirica]) forests of the western Eurasian taiga zone of European Russia west of the middle Pechora, middle Kama basins and the western piedmont of the Urals, developed in edaphic pockets of the dark taiga spruce forests and on steep river valley slopes.
Boreal bog conifer woodland	Woods of [Pinus] spp. or [Picea] spp., sometimes mixed with [Betula pubescens], colonizing bogs and fens in the boreal and boreonemoral zones.
Boreal Scots pine bog woods	[Pinus sylvestris]-dominated woods of bogs of the boreal regions of western Eurasia.
Boreal Labrador tea Scots pine bog woods	Scots pine bog woods of the western boreal region of the Palaearctic formed of [Pinus sylvestris] with a shrub layer dominated by [Ledum palustre], [Calluna vulgaris], [Chamaedaphne calyculata] in eastern Finland, or [Betula nana] in the north, with [Eriophorum vaginatum]; the mucinal layer is dominated by [Sphagnum angustifolium] with [Sphagnum fuscum], [Sphagnum magellanicum], [Sphagnum russowii], [Polytrichum strictum], [Pleurozium schreberi], [Aulacomnium palustre], characteristic of dry mires with relatively low-lying groundwater surface.

Boreal heath Scots pine bog woods	Scots pine bog woods of the western boreal region of the Palaearctic formed of [Pinus sylvestris] with a shrub layer dominated by the ericaceous shrubs [Calluna vulgaris], [Vaccinium myrtillus], [Vaccinium uliginosum], [Vaccinium vitis-idaea] and by [Betula nana], with [Eriophorum vaginatum], [Andromeda polifolia], [Empetrum nigrum], [Rubus chamaemorus], and a mucinal layer dominated by [Sphagnum fuscum] and [Pleurozium schreberi], accompanied by [Sphagnum magellanicum], [Cladonia rangiferina]. In Finland, this type of bog woods occupies entire mire areas. This type also occurs on hummocks in concentric raised bogs, on strings in the excentric bogs and aapa mires, and as marginal woodland around concentric raised bogs with treeless plateaux.
Boreal ling Scots pine bog woods	Scots pine bog woods of the western boreal region of the Palaearctic formed of sparse, low growing [Pinus sylvestris] with a shrub layer dominated by [Calluna vulgaris].
Boreal cowberry Scots pine bog woods	Scots pine bog woods of the western boreal region of the Palaearctic formed of sparse, low growing [Pinus sylvestris] with a shrub layer dominated by [Empetrum nigrum].
Boreal bog rosemary Scots pine bog woods	Scots pine bog woods of the western boreal region of the Palaearctic formed of sparse, low growing [Pinus sylvestris] with a shrub layer dominated by [Andromeda polifolia].
Boreal cottonsedge Scots pine bog woods	Scots pine bog woods of the western boreal region of the Palaearctic, with a 5-7 m high tree layer formed of [Pinus sylvestris], sometimes with an important admixture of birch, a field layer dominated by [Eriophorum vaginatum], and a sphagnum carpet of, in particular, [Sphagnum angustifolium], [Sphagnum fuscum], of raised bogs and aapa mire fringes.
Boreal sphagnum Scots pine fen woods	[Pinus sylvestris]-dominated woods of fens of the boreal region of the western Palaearctic, with an understorey rich in or dominated by sedges, ericoid shrubs and acidophile or neutrocline sphagnum mosses.
Boreal globe sedge Scots pine fen woods	Scots pine fen woods of the western boreal region of the Palaearctic, with a tree layer of [Pinus sylvestris], field layer dominated by [Carex globularis], a dwarf-shrub layer sparser than in Scots pine fen woods of unit 44.A242, and a ground layer dominated by the acidophilous sphagna [Sphagnum angustifolium] or [Sphagnum fuscum]. The species cortège comprises [Betula nana], [Andromeda polifolia], [Calluna vulgaris], [Empetrum] spp., [Ledum palustre], [Myrica gale], [Vaccinium oxycoccos], [Vaccinium uliginosum], [Vaccinium myrtillus], [Vaccinium vitis-idaea], [Rubus chamaemorus], [Carex pauciflora], [Eriophorum vaginatum], [Polytrichum commune], [Sphagnum magellanicum].

Boreal dwarf scrub Scots pine fen woods	Oligotrophic, acidophile [Pinus sylvestris] woods of peat-forming fens, fen edges, bog edges, lake shores of the boreal region of the western Palaearctic with an understorey dominated by ericoid shrubs, in particular, [Vaccinium uliginosum], [Vaccinium myrtillus], [Empetrum hermaphroditum], [Empetrum nigrum], [Ledum palustre], associated with [Betula nana], and accompanied by an abundance of [Eriophorum vaginatum], of acidophilous sphagnum mosses, in particular, [Sphagnum fuscum], [Sphagnum angustifolium], [Sphagnum nemoreum], [Sphagnum russowii], and of lichens of genus [Cladonia]. The species cortège habitually includes [Picea abies], [Betula pubescens], [Rubus chamaemorus], [Calluna vulgaris], [Vaccinium vitis-idaea], [Molinia caerulea], [Pleurozium schreberi], [Polytrichum commune] and, regionally, [Chamaedaphne calyculata], [Erica tetralix], [Myrica gale], [Carex globulosa].
Boreal leatherleaf Scots pine fen woods	[Pinus sylvestris] mire woods of subcontinental regions of the boreal western Palaearctic, in particular, of Finland and northwestern Russia, with a shrub-dominated undergrowth rich in [Chamaedaphne calyculata] and [Ledum palustre].
Boreal bog bilberry Scots pine fen woods	[Pinus sylvestris] mire woods of sub-Atlantic regions of the boreal western Palaearctic, in particular, of eastern Norway and Sweden, with a shrub-dominated undergrowth formed by ericoid shrubs of genera [Vaccinium] and [Empetrum].
Boreal neutrocline sphagnum Scots pine fen woods	[Pinus sylvestris] fen woods of the boreal region of the western Palaearctic, with a sparse tree layer and an undergrowth comprising a combination of ericoid shrub hummocks and wetter lawns and depressions, constituting a highly varied ensemble that may include neutrophile or even basicline species. Sedges, in particular [Carex lasiocarpa] and [Carex rostrata], may be prominent or dominant; the species cortege includes [Andromeda polifolia], [Betula nana], [Empetrum] spp., [Rubus chamaemorus], [Pedicularis palustris], [Menyanthes trifoliata], [Tofieldia pusilla], [Carex dioica], [Carex echinata], [Carex chordorrhiza], [Scirpus cespitosus ssp. cespitosus] ([Trichophorum cespitosum]), [Eriophorum vaginatum], [Molinia caerulea], [Equisetum fluviatile], [Drepanocladus badius], [Drepanocladus exannulatus], [Sphagnum fuscum], [Sphagnum platyphyllum], [Sphagnum magellanicum], [Sphagnum subsecundum], [Sphagnum teres], [Sphagnum warnstorfii].
Boreal brown moss Scots pine fen woods	[Pinus sylvestris] mire woods of rich fens of the boreal region of the western Palaearctic west to Finland with a brown-moss rich undergrowth formed of herbs, graminids and small shrubs. The species cortège includes [Betula nana], [Empetrum hermaphroditum], [Salix nigricans] ([Salix myrsinifolia]), [Vaccinium uliginosum], [Juniperus communis], [Rubus chamaemorus], [Angelica sylvestris], [Filipendula ulmaria], [Geranium sylvaticum], [Potentilla erecta], [Pedicularis palustris], [Solidago virgaurea], [Carex lasiocarpa], [Carex vaginata], [Carex dioica], [Carex caespitosa], [Equisetum palustris], [Aulacomnium palustre], [Campylium stellatum], [Drepanocladus intermedius], [Drepanocladus revolvens], [Hylocomium splendens], [Pleurozium schreberi], [Sphagnum fuscum], [Tomentypnum nitens].

Boreal spruce and spruce - birch fen and bog woods	Woods of bogs and fens of the western Palaearctic taiga zone dominated by [Picea abies] or [Picea obovata], generally accompanied by [Betula pubescens], with an understorey constituted by carpets of sphagnum or brown mosses associated with sedges or small shrubs.
Boreal acidophile sphagnum spruce woods	Woods of bogs and acidic fens of the western Palaearctic taiga zone dominated by [Picea abies] or [Picea obovata], generally accompanied by [Betula pubescens], with a field layer dominated by [Carex] spp., [Eriophorum vaginatum], [Menyanthes trifoliata], [Potentilla palustris], and a ground layer dominated by acidophilous sphagna, in particular, [Sphagnum angustifolium], [Sphagnum recurvum] ([Sphagnum fallax]), [Sphagnum magellanicum], [Sphagnum riparium]. The variable species cortège includes [Pinus sylvestris], [Salix] spp., [Vaccinium oxycoccos], [Vaccinium uliginosum], [Vaccinium vitis-idaea], [Carex canescens], [Carex chordorrhiza], [Carex lasiocarpa], [Carex magellanica], [Carex nigra], [Carex rostrata], [Calamagrostis purpurea], [Juncus filiformis], [Equisetum fluviatile], [Aulacomnium palustre], [Pleurozium schreberi], [Polytrichum commune], [Sphagnum girgensohnii].
Boreal neutrocline sphagnum spruce woods	Woods of neutrocline to basicline fens of the western Palaearctic taiga zone dominated by [Picea abies] or [Picea obovata], generally accompanied by [Betula pubescens], with an undergrowth rich in herbs, graminids and sphagna. The species cortège includes [Caltha palustris], [Galium palustre], [Lysimachia thyrsiflora], [Pedicularis palustris], [Peucedanum palustre], [Solidago virgaurea], [Agrostis canina], [Carex dioica], [Carex echinata], [Carex vaginata], [Sphagnum centrale], [Sphagnum squarrosum], [Sphagnum subsecundum], [Sphagnum teres], [Sphagnum warnstorfii], [Calliergon cordifolium], [Calliergon richardsonii], [Drepanocladus exannulatus], [Helodium blandowii], [Mnium] spp.
Boreal brown moss spruce fen woods	Low, eutrophic fen woods of the western Palaearctic taiga dominated by [Picea abies], accompanied by [Betula pubescens], with an understorey rich in herbs, dwarf-shrubs, graminids and brown mosses. The species cortège includes [Betula nana], [Vaccinium uliginosum], [Carex diandra], [Carex dioica], [Carex limosa], [Carex rostrata], [Carex vaginata], [Carex chordorrhiza], [Scirpus cespitosus ssp. cespitosus] ([Trichophorum cespitosum]), [Equisetum palustre], [Crepis paludosa], [Filipendula ulmaria], [Geum rivale], [Menyanthes trifoliata], [Parnassia palustris], [Potentilla palustris], [Saussurea alpina], [Saxifraga hirculus], [Aulacomnium palustre], [Drepanocladus] spp., [Helodium blandowii], [Hylocomium splendens], [Paludella squarrosa], [Pleurozium schreberi], [Sphagnum warnstorfii], [Tomentypnum nitens].
Boreal spruce swamp woods	Woods of wet mineral or parapeaty soils of the western Palaearctic taiga zone dominated by [Picea abies] or [Picea obovata], with an understorey formed by tall or short herbs, ferns, horsetails and gramineous species, sometimes associated with ericoid shrubs.

Boreal fern spruce swamp woods	Swamp woods of the western Palaearctic taiga zone dominated by [Picea abies] or [Picea obovata], with an understorey comprising wet woodland species, often dominated by ferns and herbs, notably, [Athyrium filix-femina], [Dryopteris carthusiana], [Dryopteris expansa], [Oxalis acetosella]; the species cortège includes [Betula pubescens], [Vaccinium myrtillus], [Caltha palustris], [Maianthemum bifolium], [Galium palustre], [Geranium sylvaticum], [Paris quadrifolia], [Ranunculus repens], [Calamagrostis purpurea], [Deschampsia flexuosa], [Melica nutans], [Milium effusum], [Carex canescens], [Luzula pilosa], [Equisetum sylvaticum], [Equisetum arvense], [Phegopteris connectilis], [Dryopteris dilatata], [Gymnocarpium dryopteris], [Matteuccia struthiopteris], [Bryum] spp., [Calliergon cordifolium], [Sphagnum] spp.
Boreal tall-herb spruce swamp woods	Spruce swamp woods of the boreal region of the western Palaearctic dominated by [Picea abies] or [Picea obovata] with an understorey of tall herbs, developed in wet depressions or along watercourses, mire variant of the tall-herb spruce forests of unit 42.C4.
Boreal sedge-sphagnum spruce swamp woods	Spruce swamp woods of boreonemoral and boreal regions of the western Palaearctic dominated by [Picea abies] or [Picea obovata], with a field layer rich in sedges, horsetails, short and tall herbs, developed on nutrient-rich gley substrates with wet fen mull at the surface, and near-surface flowing or stagnant groundwater. [Betula pubescens], [Alnus glutinosa], [Alnus incana] may participate in the tree layer, [Carex] spp., [Filipendula ulmaria], [Equisetum] spp., [Salix] spp., [Calla palustris] may dominate the herb and shrub layer, [Sphagnum] spp. dominate the ground layer; the species cortège includes [Phalaris arundinacea], [Calamagrostis purpurea], [Chamaegrostis canescans], [Geranium sylvaticum], [Lysimachia thyrsiflora], [Rubus chamaemorus], [Menyanthes trifoliata], [Caltha palustris], [Cardamine amara], [Cornus suecica], [Vaccinium myrtillus].
Boreal heath-horsetail spruce swamp woods	Spruce swamp woods of the boreal region of the western Palaearctic dominated by [Picea abies] or [Picea obovata] with an understorey dominated by, or rich in, horsetails ([Equisetum] spp.) or horsetails and ericaceous shrubs.
Boreal northern bilberry spruce swamp woods	Oligotrophic, species-poor spruce swamp woods of the western Palaearctic taiga zone dominated by [Picea abies] or [Picea obovata] in the tree layer and an understorey dominated by hygrophile ericoid shrubs, [Vaccinium uliginosum] and [Vaccinium myrtillus], by [Equisetum sylvaticum] and by sphagnum carpets formed by [Sphagnum girgensohnii], [Sphagnum russowii], [Sphagnum angustifolium], developed on oligotrophic, hydromorphic soils with carr-peat or raw humus by lake-shores, on mire margins, in hollows and on slopes. The species cortège includes [Betula pubescens], [Betula nana], [Vaccinium vitis-idaea], [Empetrum] spp., [Rubus chamaemorus], [Polytrichum commune], [Sphagnum fuscum] and, notably in eastern Scandinavia, [Ledum palustre], [Carex globularis].
Boreal cloudberry spruce swamp woods	Oligotrophic, species-poor spruce swamp woods of the boreal western Palaearctic dominated by [Picea abies] or [Picea obovata] in the tree layer, with an understorey dominated by [Rubus chamaemorus] and a species cortège like that of unit 44.A4441, developed on oligotrophic soils with a high waterlevel.

Boreal horsetail spruce swamp woods	Oligotrophic, species-poor spruce swamp woods of the western Palaearctic taiga dominated by [Picea abies] or [Picea obovata] with an understorey dominated by [Equisetum sylvaticum] and [Sphagnum girgensohnii], accompanied by a species cortège that includes [Calamagrostis purpurea], [Carex vaginata], [Linnaea borealis] and many species in common with that of unit 44.A4441.
Nemoral bog conifer woodland	Woods of [Pinus] spp. or [Picea] spp., sometimes mixed with [Betula pubescens], colonizing bogs and fens in the nemoral zone. Conifer-dominated bog woodland occurs mainly in the boreal and boreonemoral zones, but extends into the nemoral, wooded steppe and steppe zones.
Dwarf mountain pine bog woods	Woods or scrubs formed by erect or prostrate members of the [Pinus mugo] complex, namely the tall, single-stemmed [Pinus uncinata], the multi-stemmed, up to 8m tall, [Pinus rotundata], and the multi-stemmed, up to 2m tall, [Pinus mugo], developing on drier buttes and ridges of raised bogs, acid fens and transition moors of the Alps, the pre-Alpine plateaux and valleys, the Jura, the Carpathians, the higher Hercynian ranges and associated hills and depressions, with [Eriophorum vaginatum], [Vaccinium oxycoccos], [Vaccinium uliginosum], [Vaccinium myrtillus], [Sphagnum] spp. and sometimes [Betula nana].
Nemoral Scots pine mire woods	[Pinus sylvestris] formations of bogs and transition mires of the plains of sub-boreal and northern nemoral central and eastern Europe, with isolated stations in the Hercynian system.
Northern bilberry Scots Pine mire woods	[Pinus sylvestris] formations of bogs and transition mires of the plains of northern Germany, northern Poland and the northern nemoral Sarmatic region, with [Eriophorum vaginatum], [Ledum palustre], [Vaccinium uliginosum], [Calluna vulgaris], [Andromeda polifolia], [Myrica gale].
Inland northern bilberry Scots Pine mire woods	[Pinus sylvestris] formations of bogs and transition mires of nemoral and boreonemoral eastern Europe and of inland sites in the Baltic lowlands of northern central Europe.
Coastal northern bilberry Scots Pine mire woods	[Pinus sylvestris] formations of dunal depressions of the southern and southeastern Baltic coasts, with [Empetrum nigrum], [Erica tetralix], [Deschampsia flexuosa].
Hercynian Scots pine mire woods	[Pinus sylvestris] formations of bogs and transition mires of the Hercynian system, best represented in the Bohemian Quadrangle, with rare outposts farther west to the Vosges, with [Betula pubescens], [Betula carpatica], [Frangula alnus], [Sorbus aucuparia], [Eriophorum vaginatum], [Ledum palustre], [Vaccinium uliginosum], [Vaccinium oxycoccos], [Andromeda polifolia].
Small reed Scots pine mire woods	Peri-Hercynian [Pinus sylvestris] formations of mires with species-poor undergrowth, comprising [Vaccinium myrtillus], usually dominant, [Calamagrostis villosa], [Sphagnum girgensohnii].
Balkan Scots pine mire woods	Isolated relict Scots pine mire woods of the Balkan peninsula, often with [Picea abies] and [Betula pubescens] and a sometimes species-rich cortège of fen, bog or transition mire species, including sphagna and cottonsedges.

Illyrian Scots pine mire woods	Scots pine mire wood of the Han-Kram range in southern Bosnia, in the Illyrian beech forest zone, with [Picea abies], [Betula pubescens] and [Salix pentandra], accompanied by [Frangula alnus], [Sorbus aucuparia], [Salix caprea], [Salix cinerea], [Sphagnum] spp., [Carex] spp., [Molinia caerulea], [Agrostis canina].
Moesian Scots pine mire woods	Scots pine mire woods of the western Rhodope of Bulgaria and of western and eastern Serbia, with occasional [Picea abies] and [Betula pubescens]; the accompanying cortège is related to that of acid fens and transition mires; [Eriophorum latifolium], [Eriophorum vaginatum], [Vaccinium myrtillus], [Vaccinium vitis-idaea] characterize constituting communities.
Steppe Scots pine mire woods	[Pinus sylvestris]-dominated mire woods of the wooded steppe and steppe zones of western Eurasia, in particular of the Ukraine, with [Betula pendula], [Ledum palustre], [Vaccinium uliginosum], [Salix] spp., [Chamaedaphne calyculata], [Carex pauciflora], [Eriophorum vaginatum], [Sphagnum] spp.
Nemoral peatmoss spruce woods	[Picea abies] woods rich in sphagnum and other wetness indicators, occupying fens or swamps at the periphery of raised bogs, as well as waterlogged soils in acidophilous spruce woods, frequent particularly in the montane and subalpine levels of hills and mountains of the high-precipitation areas of the Alpine periphery and in the lowlands at the edge of the spruce wood region of the boreal zone.
Peri-Alpine peatmoss spruce woods	Montane and subalpine peaty soils [Picea abies] forests of the Alps, the Carpathians, the Jura, the great Hercynian ranges, and, very locally, the Dinarides, often dense, carpeted with sphagnum and mosses, accompanied occasionally by [Abies alba], and with an understorey of [Sorbus aucuparia], [Vaccinium myrtillus], [Vaccinium vitis-idaea], [Deschampsia flexuosa], [Calamagrostis villosa], [Blechnum spicant], [Dryopteris dilatata], [Maianthemum bifolium], [Homogyne alpina] and [Listera cordata].
Sub-boreal fen spruce woods	Peaty soils [Picea abies] or [Picea abies]-[Pinus sylvestris] forests of northern central and eastern Europe, south of the main, boreal and boreonemoral, area of continuous natural lowland occurrence of spruce, with [Listera cordata], [Moneses uniflora], [Sphagnum girgensohnii], and, in drier places, [Maianthemum bifolium], [Oxalis acetosella].
Nemoral bog spruce woods	[Picea abies] formations colonizing raised bogs of the nemoral region of Eurasia, with [Betula pubescens], [Betula carpatica], [Vaccinium uliginosum], [Vaccinium vitis-idaea], [Vaccinium myrtillus], [Vaccinium oxycoccos], [Eriophorum vaginatum], [Sphagnum magellanicum] and other sphagna.
Highly artificial coniferous plantations	Plantations of exotic conifers or of European conifers out of their natural range, or of native species planted in clearly unnatural stands, typically as monocultures in situations where other species would naturally dominate.
Native conifer plantations	Plantations of Palaearctic conifers within their broad biogeographical area of occurrence, but outside of the conditions described under "reforestation" in other relevant subdivisions of unit G3.
Native fir, spruce, larch, cedar plantations	Plantations of Palaearctic conifers of genera [Abies], [Picea], [Larix] or [Cedrus] within their broad biogeographical area of occurrence, but outside of the conditions described under "reforestation" in the relevant subdivisions of unit 42.

Native pine plantations	Plantations of Palaearctic conifers of genus [Pinus] within their broad biogeographical area of occurrence, but outside of the conditions described under "reforestation" in the relevant subdivisions of unit 42.
Native cypress, juniper, yew plantations	Plantations of Palaearctic conifers of genera [Cupressus], [Juniperus], [Taxus] within their broad biogeographical area of occurrence, but outside of the conditions described under "reforestation" in the relevant subdivisions of unit 42.
Exotic conifer plantations	Plantations of non-Palaearctic species of conifers or of Palaearctic species outside of their broad biogeographical region of occurrence.
Exotic spruce, fir, larch, douglas fir, deodar plantations	Plantations of conifers of genera [Abies], [Picea], [Larix], [Pseudotsuga] or [Cedrus] formed of non-Palaearctic species or of Palaearctic species outside of their broad biogeographical region of occurrence.
Exotic pine plantations	Plantations of conifers of genus [Pinus] formed of non-Palaearctic species, or of Palaearctic species outside of their broad biogeographical region of occurrence.
Other exotic conifer plantations	Plantations of conifers of genera other than [Pinus], [Abies], [Picea], [Larix], [Pseudotsuga] or [Cedrus], formed of non-Palaearctic species or of Palaearctic species outside of their broad biogeographical region of occurrence.
Mixed deciduous and coniferous woodland	Forest and woodland of mixed broad-leaved deciduous or evergreen and coniferous trees of the nemoral, boreal, warm-temperate humid and mediterranean zones. They are mostly characteristic of the boreonemoral transition zone between taiga and temperate lowland deciduous forests, and of the montane level of the major mountain ranges to the south. Neither coniferous, nor broadleaved species account for more than 75% of the crown cover. Deciduous forests with an understorey of conifers or with a small admixture of conifers in the dominant layer are included in unit G1. Conifer forests with an understorey of deciduous trees or with a small admixture of deciduous trees in the dominant layer are included in unit G3.
Mixed swamp woodland	Broadleaved swamp woodland (G1.4 or G1.5) in combination with bog conifer woodland (G3.D or G3.E). Includes [Pinus] spp. or [Picea] spp. mixed with [Betula pubescens], [Alnus], [Populus] or [Quercus].
Mixed taiga woodland with birch	Boreal taiga conifer woodland (G3.A, G3.B or G3.C) mixed with a significant component of [Betula] woodland (G1.91).
Mixed sub-taiga woodland with acidophilous oak	The boreo-nemoral southern fringe of the taiga conifer woodland (G3.A, G3.B or G3.C) mixed with a significant component of acidophilous [Quercus robur] or [Quercus petraea] woodland (G1.8).
Boreonemoral lichen-dwarf shrub mixed forests	Forests of the boreonemoral transition zone between taiga and temperate lowland deciduous forests in which conifers, mostly [Pinus sylvestris], share the main canopy with deciduous trees, usually [Quercus robur], [Betula pendula] or [Betula pubescens ssp. czerepanovii], accompanied by an undergrowth formed by lichens and dwarf, matted, ericoid shrubs. A number of subunits can be distinguished with species cortèges similar to those of conifer taiga forests of unit G3.B4 or of deciduous woods of unit G1.8, in particular, G1.81 and G1.821, or of unit G1.91721.

Boreonemoral heath-grass mixed forests	Forests of the boreonemoral transition zone between taiga and temperate lowland deciduous forests in which conifers, [Picea abies], [Picea obovata], [Pinus sylvestris], [Abies sibirica], share the main canopy with deciduous trees, mostly [Quercus robur], but also [Betula pendula], [Betula pubescens] or [Betula pubescens ssp. czerepanovii], and sometimes, in the extreme southwest of the region, [Fagus sylvatica], accompanied by an undergrowth formed by ericoid shrubs and grasses, in particular, [Deschampsia cespitosa]. A number of subunits can be distinguished with species cortèges similar to those of conifer taiga forests of units G3.A1, G3.B1 or G3.B2, or of deciduous woods of unit G1.8, in particular, G1.81 and G1.821, of units G1.621, G1.918, or G1.91722.
Boreonemoral herb-rich mixed forests	Forests of the boreonemoral transition zone between taiga and temperate lowland deciduous forests in which conifers, [Picea abies], [Picea obovata], [Pinus sylvestris], [Abies sibirica], share the main canopy with deciduous trees, mostly [Quercus robur], but also [Betula pendula] or [Betula pubescens ssp. czerepanovii], accompanied by an undergrowth rich in forbs, ferns and mesophile grasses. A number of subunits can be distinguished with species cortèges similar to those of conifer taiga forests of units G3.A2-G3.A4, G3.B3 or of deciduous woods of units G1.A141, G1.918, G1.91724- G1.91726.
Mixed Scots pine - birch woodland	[Pinus sylvestris] woodland south of the taiga (G3.4) intimately mixed with [Betula] woodland (G1.9).
Mixed Scots pine - beech woodland	[Pinus sylvestris] woodland south of the taiga (G3.4) intimately mixed with [Fagus] woodland (G1.6).
Mixed fir - spruce - beech woodland	Forests in which [Fagus sylvatica] in western and central Europe or other [Fagus] species including [Fagus orientalis] in southeastern Europe and Pontic Asia (G1.6), is associated in the main canopy with fir [Abies] spp. and/or spruce [Picea] spp. (G3.1), sometimes with an admixture of other conifers, in particular, pines [Pinus] spp. Characteristic of the montane level of the major European mountains south of the boreal zone.
Mixed Scots pine - acidophilous oak woodland	[Pinus sylvestris] woodland south of the taiga (G3.4) intimately mixed with acidophilous [Quercus] woodland (G1.8).
Subcontinental nemoral pine - oak forests	Acidophilous forests in which [Quercus robur] and/or [Quercus petraea] are associated in the main canopy with [Pinus sylvestris], characteristic of sandy substrates and granitic arenas of subcontinental climate regions in the High-Palatinate, the Erzgebirge, the Vogtland, the southern Saxony hills, the western, northern and eastern Bohemian basin, Brandenburg, Poland, the western Ukraine and Lithuania, and of siliceous bedrock, gravels, loams, moraines, with shallow, often podsolised soils, on relatively dry, often south-facing slopes and hilltops of the collinar and submontane levels of the Bohemian quadrangle, the Carpathians, the eastern Alps and their associated plateaux.
Northeastern pine-oak forests	Acidophilous [Quercus robur], [Quercus petraea] and [Pinus sylvestris] forests of Brandenburg, Poland, the western Ukraine and Lithuania, most characteristic of diluvial sands in regions of subcontinental climate.

Northeastern bilberry-smallreed pine-oak forests	Mesophile acidophilous [Quercus robur], [Quercus petraea] and [Pinus sylvestris] forests of Brandenburg, northern Poland and Lithuania, characteristic of the more mesotrophic, well-drained sites within the range of the northeastern "[Pino-Quercetum]", with [Juniperus communis], [Vaccinium myrtillus], [Vaccinium vitis-idaea], [Calluna vulgaris], [Chimaphila umbellata], [Trientalis europaea], [Melampyrum pratense], [Peucedanum oreoselinum], [Scorzonera humilis], [Pyrola chlorantha], [Danthonia decumbens], [Deschampsia flexuosa], [Anthoxanthum odoratum], [Luzula multiflora], [Luzula pilosa], [Dicranum] spp., [Polytrichum] spp.
Northeastern aspen pine-oak forests	Mixed forest stands of [Quercus robur], [Populus tremula], [Pinus sylvestris], [Betula pendula], [Betula pubescens], characteristic of podsols and gley soils with high water table, within the range of the "[Pino-Quercetum]"; they have an impoverished species composition with little representation of the [Querco-Fagetea] and no thermophilous species; common or characteristic are [Juniperus communis], [Frangula alnus], [Vaccinium myrtillus], [Trientalis europaea], [Lysimachia vulgaris], [Maianthemum bifolium], [Luzula pilosa], [Calamagrostis canescens].
Cowberry pine-oak forests	Acidophilous forests of [Quercus robur], [Quercus petraea] and [Pinus sylvestris] on sandy substrates and granitic arenas of subcontinental climate regions in the High-Palatinate, the Vogtland, Thuringe, the Erzgebirge, the southern Saxony hills, the western, northern and eastern Bohemian basin, with an undergrowth of [Vaccinium myrtillus], [Vaccinium vitis-idaea], [Calluna vulgaris], [Deschampsia flexuosa], [Melampyrum pratense], [Luzula luzuloides]. and sometimes [Polygala chamaebuxus], [Lembotropis nigricans], ([Cytisus nigricans]), [Genista tinctoria], [Genista germanica], [Molinia arundinacea].
Sheep fescue pine-oak forests	Open woods of [Quercus robur], [Quercus petraea] and [Pinus sylvestris] on eolian sands of Moravia and the Elbe valley of Bohemia, with an acidophilous or subacidophilous, subxerophilous, subthermophilous species cortège comprising numerous rare or theatened species. Characteristic species include [Corynephorus canescens], [Agrostis vinealis], [Festuca ovina], [Festuca psammophila], [Festuca vaginata], [Carex humilis], [Armeria elongata] and, in Moravia, [Dianthus pontederae], [Achillea collina].
Continental nemoral pine - oak forests	Forests of the eastern part of the nemoral forest zone of western Eurasia in which [Quercus robur] is associated in the main canopy with [Pinus sylvestris], distributed in southern Belarus, the northern Ukraine and middle European Russia, most abundant in the upper Dnieper-Pripyat-Berezina Polesian basin, with smaller areas of occurrence on the Central Russian Plateau and the Pre-Volgan Plateau, extending south into the wooded steppe and steppe regions, in particular, along the Donetz.
Mixed non-riverine deciduous and coniferous woodland	Mixed non-riverine woodland without a significant [Pinus] component, comprising elements of [Fagus], [Betula], [Populus tremula] or [Sorbus aucuparia] (G1.6 or G1.9) together with [Abies] and [Picea] woodland (G3.1).

Mixed deciduous woodland with [Cupressaceae] or [Taxaceae]	Mixed non-riverine woodland without a significant [Pinus] component, comprising elements of meso- and eutrophic [Quercus], [Carpinus], [Fraxinus], [Acer], [Tilia], [Ulmus] and related woodland (G1.A) together with [Cupressaceae] or [Taxaceae] woodland (G3.9).
Mixed woodland with [Cupressaceae], [Taxaceae] and evergreen oak	Mediterranean evergreen oak woodland (G2.1) in combination with [Cupressaceae] or [Taxaceae] woodland (G3.9).
Mixed mediterranean pine - thermophilous oak woodland	Mediterranean and thermo-Atlantic forests of thermophilous pines (G3.7) in combination with deciduous or semideciduous thermophilous [Quercus] species or by other southern trees such as [Carpinus orientalis], [Castanea sativa] or [Ostrya carpinifolia] (G1.7).
Mixed Scots pine - thermophilous oak woodland	Forests or woods of sub-Mediterranean climate regions and supra-Mediterranean altitudinal levels, and of western Eurasian steppe and substeppe zones, in which deciduous or semideciduous thermophilous [Quercus] species, or sometimes [Carpinus] spp., [Ostrya carpinifolia], share the main canopy with [Pinus sylvestris], [Pinus pallasiana], [Pinus salzmannii], [Pinus nigra], thermophilous pines, junipers or cypresses. They constitute pine-oak facies of thermophilous deciduous woodland (G1.7).
Mixed Black pine ([Pinus nigra]) - evergreen oak woodland	Mediterranean evergreen oak woodland (G2.1) in combination with [Pinus nigra] woodland (G3.5).
Mixed mediterranean pine - evergreen oak woodland	Mediterranean evergreen oak woodland (G2.1) in combination with lowland to montane mediterranean pine woodland (excluding woodland with significant [Pinus nigra]) (G3.7)
Mixed forestry plantations	Mixed plantations of coniferous and deciduous species where at least one constituent is exotic or outside its natural range, or if composed of native species then planted in clearly unnatural stands.
Lines of trees, small anthropogenic woodlands, recently felled woodland, early-stage woodland and coppice	Stands of trees greater than 5 m in height or with the potential to achieve this height, either in more or less continuous narrow strips or in small (less than about 0.5 ha) plantations or small (less than about 0.5 ha) intensively-managed woods. Woodland and coppice that is temporarily in a successional or non-woodland stage but which can be expected to develop into woodland in the future. Excludes parkland (E7.1, E7.2).
Lines of trees	More or less continuous lines of trees forming strips within a matrix of grassy or cultivated land or along roads, typically used for shelter or shading. Lines of trees differ from hedgerows (FA) in being composed of species that can grow to at least 5 m in height and are not regularly cut down to a height below 5 m.
Small broadleaved deciduous anthropogenic woodlands	Plantations and small intensively-managed woods of deciduous broadleaved trees less than about 0.5 ha in area. If evergreen broadleaved species are present, they have a lower canopy cover than deciduous species.
Small broadleaved evergreen anthropogenic woodlands	Plantations and small intensively-managed woods of broadleaved evergreen trees less than about 0.5 ha in area. If deciduous broadleaved species are present, they have a lower canopy cover than evergreen species.

Small coniferous anthropogenic woodlands	Plantations and small intensively-managed woods of coniferous trees less than about 0.5 ha in area. If broadleaved species present, they have canopy cover less than 25%.
Small mixed broadleaved and coniferous anthropogenic woodlands	Plantations and small intensively-managed woods less than about 0.5 ha in area, with mixed of coniferous and broadleaved trees. The proportion of conifers is in the range 25-75%.
Early-stage natural and semi-natural woodlands and regrowth	Early stages of woodland regrowth or newly-colonizing woodland composed predominantly of young individuals of high-forest species that are still less than 5 m in height. Includes young native woodland replanted with indigenous trees and naturally-colonizing stands of non-native trees.
Deciduous scrub woodland	Early stages of deciduous tall forest regrowth or colonization composed predominantly of young individuals of tall forest species.
Mixed scrub woodland	Early stages of mixed tall forest regrowth or colonization composed predominantly of young individuals of tall forest species.
Coniferous scrub woodland	Early stages of conifer forest regrowth or colonization composed predominantly of young individuals of tall forest species.
Raised bog pre-woods	Parts of raised bogs colonised by shrubs or small trees of [Pinus rotundata], [Pinus sylvestris var. turfosa], [Picea abies], [Betula pubescens], [Betula carpatica], eventually leading to bog woods of units G3.D or G3.E.
Coppice and early-stage plantations	Woodland treated as coppice without standards. Plantations with a dominant canopy of young trees that are still less than 5 m in height. Plantations of dwarf trees or shrubs cultivated for wood or small-tree production, with a regular whole-plant harvesting regime, including short-rotation [Salix] beds for biomass production, Christmas tree crops, tree nurseries.
Coppice	Regrowth stages of woodland treated in coppice without standards.
Early-stage broadleaved deciduous plantations	Early stages of plantations of dwarf broadleaved deciduous trees or shrubs cultivated for wood or small tree production, including tree nurseries.
Early-stage broadleaved evergreen plantations	Early stages of plantations of dwarf broadleaved evergreen trees or shrubs cultivated for wood or small tree production, including tree nurseries.
Early-stage coniferous plantations	Early stages of plantations of dwarf coniferous trees or shrubs cultivated for wood or small tree production, including tree nurseries.
Early-stage mixed broadleaved and coniferous plantations	Early stages of plantations of dwarf mixed broadleaved and coniferous trees or shrubs cultivated for wood or small tree production, including tree nurseries.
Trees planted for early whole-tree harvesting	Plantations of dwarf trees or shrubs cultivated for wood or small tree production, with a regular whole-plant harvesting regime, including, among others, osier beds, Christmas tree crops, tree nurseries.
Recently felled areas	Land that recently has supported deciduous or coniferous woodland after the trees have been clear-felled or burnt. Includes woodland with successional vegetation dominated by tall herbs, grasses or shrubs, provided that these will soon be overtopped by a tree canopy.
Recently felled areas, formerly broadleaved trees	Recently felled broadleaved woods, in lowlands, uplands and mountain areas. First successional phases are characterised by the communities of alliances [Atropion] and [Carici piluliferae-Epilobion angustifolii].

Recently felled areas, formerly coniferous trees	Recently felled coniferous woods, mostly in mountain areas. First successional phases are characterised by the communities of alliances [Atropion] and [Carici piluliferae-Epilobion angustifolii].
Recently felled areas, formerly mixed broadleaved and coniferous trees	Recently felled mixed broadleaved and coniferous woods. First successional phases are characterised by the communities of alliances [Atropion] and [Carici piluliferae-Epilobion angustifolii].
Herbaceous clearings	Short-lived herbaceous communities colonizing recent clearings.
Willowherb and foxglove clearings	Communities of acid soils with raw humus, composed of [Epilobium angustifolium], [Digitalis purpurea], [Digitalis grandiflora], [Senecio sylvaticus], [Calamagrostis epigejos], [Carex pilulifera].
Burdock and deadly nightshade clearings	Formations of mull soils, with [Arctium nemorosum], [Atropa bella-donna], [Bromus ramosus], [Hypericum hirsutum], [Fragaria vesca], [Stachys alpina], [Digitalis lutea].
Shrubby clearings	Formations of [Salix caprea], [Sambucus nigra], [Sambucus racemosa], [Sorbus aucuparia], [Rubus] spp. succeeding the herbaceous formations in the regrowth of clearings.
Inland unvegetated or sparsely vegetated habitats	Non-coastal habitats with less than 30% vegetation cover (other than in crevices of rocks, screes or cliffs) which are dry or only seasonally wet (with the water table at or above ground level for less than half of the year). Subterranean non-marine caves and passages including underground waters and disused underground mines. Habitats characterised by the presence of permanent snow and surface ice other than marine ice bodies.
Terrestrial underground caves, cave systems, passages and waterbodies	Natural caves, cave systems, underground waters and subterranean interstitial spaces. Caves and their associated waters harbour varied, but paucispecific, communities of animals, fungi and algae that are restricted to them (troglobiont organisms), or are physiologically and ecologically capable of conducting their entire life cycle within them (troglophile organisms), or are dependent on them for part of the life cycle (subtroglophile organisms). Underground waters not associated with caves (stygon) and interstitial spaces harbour distinctive faunas.
Cave entrances	The exterior part of caves, including the twilight zone where light penetrating from the outer world is sufficient to permit human vision. In Western Carpathians vegetation of alliance [Erysimo wittmanii-Hackelion deflexae] occurs, with species such as [Campanula rapunculoides], [Cortusa matthioli] and [Hackelia deflexa].
Cave interiors	The interior part of caves, lacking light, with or without troglobiont or troglophile organisms. Excludes dark underground passages (H1.3).
Troglobiont vertebrate caves	Caves harbouring communities that include troglobic amphibians or fish, limited worldwide to a very small number of highly distinctive organisms, mostly relict forms of extremely limited distribution, including 15 species of amphibians, limited to North America and Europe, and about 38 species of fishes belonging to 13 families, notably, Cyprinidae, Gobiidae, Bythitidae, Pimelodidae, Characidae, Cobitidae, Amblyopsidae, Clariidae, Ictaluridae, Trichomycteridae, Ophidiidae, Synbranchidae. Palaearctic representatives include a unique amphibian, as well as cyprinids and gobiid fishes.
Olm caves	Caves of the Adriatic karst system of Italy, Slovenia, Croatia and Montenegro, harbouring the relict amphibian [Proteus anguinus], the most remarkable of all troglobiont vertebrates.

Troglobiont fish caves	Caves harbouring communities that include troglobic fish, limited in the Palaearctic region to representatives of the Cyprinidae and Gobiidae.
Subtroglophile vertebrate caves	No description available.
Continental subtroglophile vertebrate caves	Caves of the main Eurasian and African landmasses essential to parts of the life-cycle of vertebrate subtroglophiles (elective periodic trogloxenes).
Insular subtroglophile vertebrate caves	Caves of the islands of Eurasia and North Africa essential to parts of the life-cycle of vertebrate subtroglophiles (elective periodic trogloxenes).
Troglobiont invertebrate caves	Caves harbouring communities that include no troglobiont amphibians or fish, but include troglobiont invertebrates, limited worldwide to a relatively small number of species belonging to a limited number of groups, and including remarkable relict species. In the Palaearctic region, the majority are situated in the northern Mediterranean basin and the peri-Pontic region. Gastropoda, Opiliones, Chilopoda (Lithobiidae), Collembol, Coleoptera (Bathysciinae and Trechinae subfamilies) among the terrestrial faunas, Turbellaria, Gastropoda and Urodela, among the aquatic faunas, are characteristic of their communities, and essentially restricted to caves of temperate regions.
Troglobiont invertebrate temperate caves	Caves under normally oxygenated, buffered microclimates, dry, humidified by seeps or crossed by permanent or temporary watercourses, but not retaining glaciers, and harbouring communities of troglobiont invertebrates, often including remarkable relict species.
Troglobiont invertebrate ice caves	Caves under normally oxygenated, buffered microclimates, harbouring communities of troglobiont invertebrates, and in which past and present conditions permit the retention of glaciers; they are rare, known in particular from the Carpathians of Romania and Slovakia, the Alps and the Jura.
Troglobiont invertebrate hydrothermal caves	Caves under normally oxygenated, buffered microclimates, warmed and humidified by geothermal waters, and harbouring communities of troglobiont invertebrates.
Troglobiont invertebrate sulphur caves	Deoxygenated, relatively warm caves, with atmospheres rich in carbon dioxide and sulphur vapour or methane and hydrogen sulfide, harbouring relict thermophile faunas of highly distinctive troglobiont and stygobiont invertebrates.
Troglophile invertebrate caves	Caves harbouring communities that include no troglobiont organisms, but include troglophile invertebrates. Generally, they are caves crossed by watercourses or with rich trophic substratum, excavated in limestone afforested zones.
Subtroglophile invertebrate caves	Caves essential to parts of the life-cycle (quiescence period) of invertebrate subtroglophiles (elective periodic trogloxenes), such as Lepidoptera, Diptera, Hymenoptera, Coleoptera; in general they are stably cool (or warm) and humid caves.
Caves without vertebrates or invertebrates	Caves, often small and dry, devoid of significant troglobiont or troglophile zoocoenoses, and not harbouring significant subtroglophiles.
Dark underground passages	Cavities within cave systems that are much longer than wide or high and may join larger cavities.

Lava tubes	Caves formed in lava flows by open-ended tubes or passages resulting from the cooling of the surface whose molten interior continued to flow. Near the coast, they may contain salt water not connected to the sea and be colonized by specialized (anchihaline) communities.
Icelandic lava tubes	Lava tubes of Iceland.
Macaronesian lava tubes	Lava tubes of of the Azores, the Canary Islands and the Cape Verde Islands. The very large tube created by the volcano La Corona of Lanzarote harbours unique communities of invertebrates, in particular, the decapod crustacean [Munidopsis polymorpha], endemic to that locality, and several crustaceans of the genus [Speleonectes].
Tethyan lava tubes	Lava tubes of the Mediterranean Basin and of western Asia, including Etna, Vesuvius, the Phlegrean Fields, Ischia, the Lipari Islands, Pantelleria, the Aegean archipelago, Nemrut Dag in eastern Turkey, Damavand in northern Iran, Taftan in southern Iran, the volcanoes of Syria.
Underground standing waterbodies	Undergound waterbodies, without perceptible flow, which may be permanent or temporary, and may or may not be part of a cave system.
Permanent underground standing waterbodies	No description available.
Temporary underground standing waterbodies	No description available.
Underground running waterbodies	Undergound waterbodies, with perceptible flow, which may be permanent or temporary, and may or may not be part of a cave system.
Permanent underground running waterbodies	No description available.
Temporary underground running waterbodies	No description available.
Disused underground mines and tunnels	Artificial underground spaces. They may constitute important substitution habitats for cave-dwelling bats and for significant subterranean invertebrates such as crustaceans, planarians etc.

Screens	Accumulations of boulders, stones, rock fragments, pebbles, gravels or finer material, of non-aeolian depositional origin, unvegetated, occupied by lichens or mosses, or colonized by sparse herbs or shrubs. Included are screens and scree slopes produced by slope processes, moraines and drumlins originating from glacial deposition, sandar, eskers and kames resulting from fluvio-glacial deposition, block slopes, block streams and block fields constructed by periglacial depositional processes of downslope mass movement, ancient beach deposits constituted by former coastal constructional processes. Deposits originating from aeolian depositional processes (dunes) or from eruptive volcanic activity are not included; they are included in H5 and H6 respectively. High mountain, boreal and mediterranean unstable screes are colonized by highly specialised plant communities. They or their constituting species may also inhabit moraines and other depositional debris accumulations in the same areas. A very few communities form in lowland areas elsewhere.
Cold siliceous screes	Noncalcareous screes of the mountains and uplands of the boreal zone, developed on siliceous substrates including basic to ultrabasic igneous or metamorphic substrates. Included are the screes of northern Europe including Iceland.
Cold limestone screes	Unstable, gravelly, humus-poor, highly calcareous screes of the subalpine, low alpine and middle alpine levels of boreal and arctic mountains. Characteristic plants are [Arenaria norvegica] and a number of endemic species or species of restricted range, including [Arenaria humifusa], [Arenaria pseudofrigida], [Artemisia norvegica], [Papaver] species of the [Papaver radicatum] group, [Papaver relictum], [Papaver laestadianum], [Braya linearis].
Temperate-montane acid siliceous screes	Siliceous screes of high altitudes and cool sites in mountain ranges of the nemoral zone, including the Alps, Pyrenees and Caucasus.
Alpine siliceous screes	Siliceous, cool, damp screes of the subalpine and alpine levels of Alps, Carpathians, Pyrenees and Corsica with [Androsace alpina], [Achillea nana], [Oxyria digyna], [Geum reptans], [Saxifraga bryoides], [Ranunculus glacialis], [Linaria alpina], [Oreochloa disticha], [Silene acaulis]. Vegetation of alliance [Androsacion alpinae].
Mountain sorrel screes	Stabilised silicate screes, poor in humus, of the Alpine system, the Pyrenees and Corsica, characterized by [Oxyria digyna] and with [Cerastium uniflorum], [Doronicum clusii], [Doronicum grandiflorum], [Poa laxa].
Alpine mountain sorrel screes	Siliceous, cool, damp [Oxyria digyna] screes of the subalpine and alpine levels of the Alps.
Southwestern Alpine mountain sorrel screes	Siliceous, cool, damp screes restricted to the southwestern Alps, comprising the endemic species [Viola valderia] and [Thlaspi limosellifolium].
Pyrenean mountain sorrel screes	Stabilised silicate screes of the Pyrenees.
Corsican mountain sorrel screes	Silicate [Oxyria digyna] screes of high mountains of Corsica.
Carpathian mountain sorrel screes	Silicate [Oxyria digyna] screes of the Tatras and the high southeastern Carpathians.

Rhodopide mountain sorrel screes	Silicate [Oxyria digyna] screes of the high Rila and Pirin mountains, with [Poa cenisia ssp. contracta], [Geum reptans], [Satureja alpina], [Pedicularis verticillata], [Armeria alpina], [Luzula spicata], [Bellardiochloa violacea].
Rock jasmine screes	Communities of silicate screes of the high alpine and nival levels of the central Alps dominated by [Androsace alpina] or [Androsace wulfeniana].
Brown woodrush screes	Humid, humus-rich silicate screes of the Alps, the Carpathians and the Rhodopides, on slopes long-covered with snow, carpeted by the alpine woodrush, [Luzula alpinopilosa], accompanied by a cortège that constitutes an ecological variant of the snow patch communities of unit 36.1114, characterized by a stronger representation of scree species of the [Androsasetalia].
Alpine woodrush screes	Humid, humus-rich silicate screes of the Alps, on slopes long-covered with snow, carpeted by the alpine woodrush, [Luzula alpinopilosa], accompanied by a cortège that constitutes an ecological variant of the snow patch communities of unit 36.1114, characterized by a stronger representation of scree species of the [Androsasetalia].
Carpathian woodrush screes	[Luzula alpinopilosa ssp. obscura] ([Luzula alpinopilosa] = [Luzula spadicea]) of the siliceous high Tatras and of the alpine level of the high southeastern Carpathians.
Rhodopide woodrush screes	Screes colonized by communities dominated by [Luzula alpinopilosa] ([Luzula spadicea]) and [Festuca picta] ([Festuca picturata], [Festuca violacea ssp. picta]), characteristic of slopes with prolonged snow-cover of Vitosha, Rila and Pirin.
Cold silicate block screes	Communities of ferns and brambles, including [Gymnocarpium dryopteris] ([Dryopteris disjuncta]), [Cryptogramma crispa], [Athyrium distentifolium], [Dryopteris dilatata], [Cystopteris fragilis], colonizing nonstablized, shady subalpine silicate screes of the Alpine system with a high proportion of large blocks.
Carpatho-Balkanic saxifrage-speedwell-ragwort screes	Stony silicate screes of the alpine level of the eastern Carpathian system and the high mountains of the Balkan peninsula, with [Saxifraga carpathica], [Saxifraga pedemontana ssp. cymosa], [Saxifraga adscendens], [Veronica baumgartenii].
Rhodopide ragwort screes	Stony silicate screes of the alpine level of the Pirin with [Senecio doronicum] ([Senecio glaberrimus], [Senecio transylvanicus], [Senecio rochelianus]).
Carpathian saxifrage-speedwell acidophilous screes	Stony silicate screes of the alpine level of the eastern Carpathian system.
Painted fescue screes	[Festuca picta] screes of the siliceous high Tatras, the high mountains of the eastern Carpathian system, the Rhodopides.
Medio-European upland siliceous screes	Siliceous screes of hills of western and central Europe, with [Epilobium collinum], [Galeopsis segetum], [Acetosella vulgaris], [Dalanum ladanum], [Petasites albus], [Tussilago farfara], [Senecio viscosus], [Anarrhinum bellidifolium], [Cryptogramma crispa]. Upland siliceous screes, often resulting from quarry activity, and colonised by very impoverished forms of the Alpine communities, usually rich in mosses, lichens and sometimes ferns, notably [Cryptogramma crispa], or pioneer psammophilous grasses, are included. Vegetation of alliance [Galeopsion segetum].

Temperate-montane calcareous and ultra-basic screes	Calcareous and calcschist screes of high altitudes and cool sites in mountain ranges of the nemoral zone, including the Alps, Pyrenees and Caucasus. Usually sparse vegetation cover, unstabile, on steep slopes.
Alpine calcschist screes	Calcareous slate slope communities of the Alps, with [Draba hoppeana], [Campanula cenisia], [Saxifraga biflora], [Herniaria alpina], [Trisetum spicatum].
Alpine pennycress screes	Unstable, hard limestone and dolomite coarse screes of the alpine and nival levels of the Alps, with [Thlaspi rotundifolium], [Papaver rhaeticum], [Papaver sendtneri], [Viola cenisia], [Linaria alpina], [Arabis alpina].
Fine calcareous screes	Fine-element calcareous screes of the alpine, subalpine and high montane levels of the Alps and neighbouring ranges.
Butterbur screes	High montane and subalpine, relatively humid, fine limestone and marl screes, with [Petasites paradoxus], [Valeriana montana], [Gypsophila repens].
Mountain hawkbit screes	Damp, marlo-calcareous screes of the alpine level of the Alps.
Carpathian calcareous screes	Calcareous screes of the Carpathians, represented by diverse communities of mostly very local occurrence, often with significant endemic species.
West Carpathian calcareous screes	Calcareous screes of high altitudes of the Tatras, with [Cerastium latifolium], [Cerastium tatrae], [Arabis alpina], [Hutchinsia alpina], [Sedum atratum], [Cystopteris montana].
East Carpathian calcareous screes	Calcareous screes of the eastern Carpathian system.
Rhodopide calcareous screes	Screes of the Rhodope Mountains, with [Morina persica], [Sideritis scardica].
Acid siliceous screes of warm exposures	Siliceous screes of warm exposures in mountain ranges of the nemoral zone, including the Alps, Pyrenees and Caucasus, and of Mediterranean mountains, hills and lowlands and, locally, of warm, sunny middle European upland or lowland sites.
Pyreneo-Alpine thermo-siliceous screes	Siliceous screes of warm slopes of the subalpine level of the Alps and of the alpine and subalpine levels of the Pyrenees, usually composed largely of big stones or boulders, with [Senecio leucophyllus], [Taraxacum pyrenaicum], [Galeopsis pyrenaica], [Xatardia scabra], [Armeria alpina].
Oro-Cantabrian siliceous screes	Siliceous screes of the Cordillera Cantabrica; floristically rich formations of the "dark" screes of the Cordillera are related to those under unit H2.64, though somewhat intermediate towards H2.54; other more species-poor ones, characterised by [Trisetum hispidum] and [Rumex suffruticosus], belong to the latter.
Ibero-Pyrenean acidophile fern screes	Fern-dominated chaotic boulder fields of the altimontane, subalpine and oro-mediterranean zones of siliceous Iberian mountains, in particular, of the Pyrenees.
Carpetano-Iberian siliceous screes	Screes of the Cordillera Central, the Iberian Range, the Leonese mountains, with [Linaria saxatilis], [Linaria alpina], [Digitalis purpurea var. carpetana], [Senecio pyrenaicus ssp. carpetanus], [Rumex suffruticosus], [Santolina oblongifolia], [Conopodium bunioides], [Reseda gredensis].
Nevadan siliceous screes	Siliceous screes of the high levels of the Sierra Nevada, very rich in endemics.

Nevadan foxglove screes	Screes at the subsummital levels of the Sierra Nevada, between 1900 and 2900 metres, with [Senecio tournefortii var. granatensis], [Digitalis purpurea var. nevadensis], [Cirsium gregarium], [Solidago virgaurea ssp. alpestris], [Holcus caespitosus], [Crepis oporinoides], [Eryngium glaciale], [Linaria aeruginea var. nevadensis].
Nevadan violet screes	Screes of the summital region of the Sierra Nevada, at around 2800-3000 metres, with a very sparse community formed by [Viola crassiuscula], [Linaria glacialis], [Rhynchosinapis cheiranthos ssp. nevadensis], [Ranunculus glacialis], [Ranunculus parnassifolius], [Saxifraga oppositifolia], [Papaver suaveolens], [Holcus caespitosus], [Crepis oporinoides] and, in more stabilised areas, [Erigeron frigidus].
Central Mediterranean siliceous screes	Siliceous screes of the Italian peninsula, of Corsica, Sardinia, Sicily and their associated islands.
Anatolian siliceous screes	Screes of the mountains and steppe hills of the mediterranean and sub-Mediterranean regions of Anatolia.
Calcareous and ultra-basic screes of warm exposures	Calcareous and calcschist screes of warm exposures in mountain ranges of the nemoral zone, including the Alps, Pyrenees and Caucasus, and of Mediterranean mountains, hills and lowlands and, locally, of warm, sunny middle European upland or lowland sites.
Peri-Alpine thermophilous screes	Mostly coarse, unstablized, dry, sunny calcareous screes of the montane and subalpine levels of the Alps and of the uplands and lowlands of Central Europe. Vegetation of alliances [Stipion calamagrostis] and [Arabidion alpinae].
Rough-grass screes	[Achnatherum calamagrostis] screes of warmer, lower parts of Alpine valleys and of the southwestern outer Alps.
Submontane calcareous screes	Forb- or fern-dominated sunny calcareous screes of the montane or collinar levels of peri-Alpine ranges, particularly characteristic of the Jura, locally also of the middle European Hercynian ranges and of the southern Alpine periphery.
Hemp-nettle screes	Species-poor pioneer communities of warm sunny calcareous screes of the Jura, the Alpine system, the Carpathians and the middle European Hercynian ranges, dominated by [Galeopsis angustifolia].
French sorrel screes	Species-poor open pioneering communities of dry calcareous screes of the low to moderate altitudes of the Alpine system, the Jura and the middle European Hercynian ranges, dominated by [Rumex scutatus], often with [Silene vulgaris ssp. glareosa], [Silene hayekiana], [Hieracium bifidum].
Limestone fern screes	Open to closed fern swards of [Gymnocarpium robertianum] colonizing often slightly damp, more or less calcareous screes of the Jura and the middle European Hercynian ranges.
Vincetoxicum screes	Species-rich thermophile pioneer scree communities of natural and anthropogenic station of the Alpine system, the Jura, the middle European Hercynian ranges, in particular, the Hautes Fagnes, and their vicinity, dominated by [Vincetoxicum hirundinaria], often with [Brachypodium pinnatum], [Anthericum ramosum], [Knautia dipsacifolia] ([Knautia sylvatica]), [Calamagrostis varia], [Campanula rapunculoides], [Galium album], [Origanum vulgare].

Paris Basin screes	Calcareous screes of the Paris basin and its periphery, with [Leontodon hyoseroides], [Sisymbrium supinum], [Linaria supina], [Galeopsis angustifolia] and many rare or endemic plants, including [Viola hispida] (endangered endemic), [Galium timeroyi ssp. fleurotii], [Iberis violetii], [Iberis durandii], [Biscutella neustriaca].
Cevenno-Provençal screes	Supra-Mediterranean screes of Mediterranean southern France, common in the coastal ranges of the Marseille region (Allauch, Carpiagne, Puget, Marseilleveyre), rare on the Sainte-Baume, also represented in the Cévennes, with [Arenaria provincialis] ([Gouffeia arenarioides]), [Ptychotis heterophylla], [Linaria supina], [Centranthus ruber], [Centranthus lecoqii], [Crucianella latifolia].
Pyrenean calcareous screes	Calcareous screes of the Pyrenees.
Oro-Cantabrian calcareous screes	Basiphile screes of the Cordillera Cantabrica.
Iberian calciphile fern screes	Fern-dominated chaotic boulder fields of the altimontane, subalpine and oro-mediterranean zones of calcareous Iberian mountains, in particular, of the Cordillera Cantabrica.
Southern Iberian calcareous screes	Screes of the calcareous Baetic mountains of southern and southeastern Iberia.
Central Mediterranean calcareous screes	Calcareous screes of the Italian peninsula, of Corsica, Sardinia, Sicily and their associated islands.
Eastern Mediterranean limestone screes	Limestone screes of high mountains of southern Albania, mainland Greece, the Peloponnese, the Aegean, with [Drypis spinosa], [Ranunculus brevifolius], [Senecio thapsoides], [Aethionema saxatile]. They can contain synanthropic species like [Geranium robertianum ssp. purpureum], [Centranthus calcitrapa], [Mercurialis annua], [Theligonum cynocrambe] and [Thlaspi perfoliatum].
Eastern Mediterranean serpentine screes	Serpentine screes of high mountains of southern Albania and mainland Greece, less widespread than the limestone screes of unit H2.68, restricted to serpentines of the northern Pindus and of Mount Olympus.
Cyprian screes	Limestone and ophiolite screes of Cyprus, in particular, limestone and ophiolite screes of the Troodos range, limestone screes of the Kyrenia range, flysch, sandstone and conglomerate screes of the Kythrean formation. Endemic plants include [Alyssum troodi], of Troodos serpentine substrates, [Hedysarum cyprium] and [Salvia veneris] of the Kythrean formation.
Illyrian montane calcareous screes	Calcareous screes of the alpine, subalpine and, locally, montane levels of the Dinarides, the Pelagonides and the Moeso-Macedonian mountains.
Illyrian fern screes	[Dryopteris villarii]-dominated formations of calcareous screes of the east Adriatic mountains, widespread in the Dinarides and Pelagonides, with [Doronicum columnae], [Ligusticum dinaricum], [Scrophularia bosniaca].
Illyrian butterbur screes	[Petasites paradoxus]-dominated formations of the foot and grooves of calcareous scree slopes of the Dinarides and Pelagonides.
Illyrian drypis screes	Screes of the Dinarides and northern Hellenides dominated by [Drypis spinosa ssp. linnaena], of more sub-Mediterranean affinities than the communities of units 61.511 and 61.512, with [Cardamine carnosa].

Illyrian candytuft screes	Wind-exposed, snow-free calcareous screes of the Dinarides, with [Bunium alpinum], [Iberis pruitii], [Thymus acicularis], [Degenia velebitica].
Illyrian toadflax screes	High-altitude calcareous screes of the Dinarides, in particular of the Prenj in Herzegovina and the Durmitor in Montenegro, with [Moehringia ciliata], [Papaver kerneri], [Poa minor].
Illyrian mouse-ear screes	Calcareous screes of the Dinara and Velebit, with [Cerastium dinaricum], [Euphorbia capitulata], [Thlaspi dinaricum], [Rumex scutatus], [Valeria montana], [Achillea clavennae], [Arabis scopoliana].
Illyrian geranium screes	Calcareous screes of the Piva basin of Montenegro, with [Corydalis ochroleuca], [Moehringia muscosa], [Geranium macrorrhizum], [Saxifraga rotundifolia].
Pelagonide toadflax-valerian screes	Calcareous screes of the Pelagonides of the F.Y.R. of Macedonia and Albania, in particular, of the Korab range, with [Valeriana bertisceae], [Sedum magellense], [Lamium bifidum], [Hieracium bifidum], [Ranunculus seguieri].
Illyrian sub-Mediterranean screes	Thermophile calcareous screes of the upper mesomediterranean and supra-Mediterranean [Orno-Quercetum ilicis] and [Ostryo-Carpinion adriaticum] levels of the Triestine Karst, Istria, Balkan Peninsula, including the Dalmatian coast, Montenegro and Albania. Typical species: [Dianthus petraeus], [Corydalis ochroleuca], [Peltaria alliacea], [Drypis spinosa ssp. jacquiniana], [Malcolmia serbica], [Galium corrudifolium], [Teucrium chamaedrys], [Geranium robertianum].
Illyrian montane serpentine screes	Serpentine screes of the montane level of the Dinarides of Balkan Peninsula (Albania, Bosnia-Herzegovina, Serbia) with abundant [Achnatherum calamagrostis], harbouring the endemics [Halacsya sendtneri], [Scrophularia tristis], [Alyssum markgrafii], [Linaria rubioides], [Stachys chrysophaea]. The shrub [Cotinus coggygria] often grows in such sites.
Illyrian [Achnatherum calamagrostis] screes	[Achnatherum calamagrostis] screes of the Balkan Peninsula (Albania, Montenegro, Serbia) and in particular, of the Piva basin, southeastern representatives of the peri-Alpine [Stipion calamagrostidis] screes of unit H2.611.
Anatolian calcareous screes	Screes of the mountains and steppe hills of the mediterranean and sub-Mediterranean regions of Anatolia.
Inland cliffs, rock pavements and outcrops	Unvegetated, sparsely vegetated, and bryophyte- or lichen-vegetated cliffs, rock faces and rock pavements, not presently adjacent to the sea, and not resulting from recent volcanic activity. Parts of seacliffs free from the influence of wave or wind transported marine salt are included. Rock accumulations resulting from depositional processes are excluded and listed under H2 or H5.
Acid siliceous inland cliffs	Dry non-calcareous inland cliffs. Specific plant associations colonize montane and Mediterranean cliffs. Most of the subdivisions refer to them. Northern lowland cliffs usually support fragments of other less specialized communities.

Middle European montane siliceous cliffs	Siliceous cliff and rock communities of the northwestern, northern, eastern and central Alps, the Pyrenees, the western Carpathians, the middle European Hercynian ranges, the Jura. Vegetation of alliances [Androsacion vandelii], [Asplenion septentrionalis] and [Hypno-Polypodion vulgaris], with the most typical species [Acetosella vulgaris], [Aurinia saxatilis], [Polypodium vulgare], [Woodsia ilvensis], [Primula minima], [Ranunculus alpestris], [Saxifraga bryoides], [Silene acaulis].
Middle European high-altitude siliceous cliffs	Siliceous cliff and rock communities of the alpine and subalpine levels of the northwestern, northern, eastern and central Alps, with outliers in the Dinarides, of the Massif Central and of the Pyrenees.
Hercynio-Alpine montane and collinar siliceous cliffs	Siliceous cliff and rock communities of the montane level of the middle European Hercynian ranges, the Jura, the Alps and their periphery, of Atlantic regions of the European continent and the British Isles, with [Saxifraga sponhemica], [Biscutella laevigata], [Asplenium septentrionale], [Asplenium adiantum-nigrum], [Asplenium billotii], [Asplenium foreziense].
Hercynio-Alpine serpentine cliffs	Serpentine cliff and rock communities of the middle European Hercynian ranges and their periphery, of northern Styria, Low-Austria and the Burgenland, with [Asplenium adulterinum], [Asplenium cuneifolium], [Asplenium x alternifolium], [Cheilanthes marantae].
Carpathian montane siliceous cliffs	Siliceous cliff communities of Alpine affinities of the Carpathians, formed principally by bryophytes and ferns.
Oro-Iberian siliceous cliffs	Siliceous cliff and rock communities of high altitudes of Iberian mountains.
Ibero-Carpetanian siliceous cliffs	Siliceous cliff and rock communities of the Cordillera Cantabrica, the Iberian Range, the Cordillera Central and the Leonese mountains, with [Hieracium pallidum ssp. graniticum], [Murbeckiella boryi ssp. boryi], [Murbeckiella boryi ssp. herminii], [Saxifraga willkommiana], [Spergula viscosa ssp. pourretii].
Nevadan siliceous cliffs	Siliceous cliff and rock communities of the Sierra Nevada, with [Saxifraga nevadensis], [Sedum brevifolium], [Centranthus nevadensis].
Southwestern Alpine siliceous cliffs	Siliceous cliff and rock communities of the Maritime, Ligurian and Cottian Alps, with [Saxifraga pedemontana].
Cyrno-Sardinian montane and alpine cliffs	Siliceous cliff and rock communities of the mountains of Corsica and Sardinia, distributed from the supra-Mediterranean to the alpine level, with [Potentilla crassinervia], [Armeria leucocephala], [Silene requienii], [Saxifraga pedemontana ssp. cervicornis]. Supra-Mediterranean and montane communities have [Amelanchier ovalis ssp. rhamnoides], cryomediterranean, subalpine and alpine communities have [Festuca sardoa], [Phyteuma serratum], [Helechryssum frigidum], [Aquilegia bernardii], [Leucanthemum corsicum], [Scabiosa corsica], upper alpine communities are characterized by the presence of [Draba dubia], [Asplenium viride], [Draba loiseleurii], [Erigeron paolii] and the absence of thermophile species.
Helleno-Carpatho-Balkanic campion siliceous cliffs	Siliceous cliff communities rich in Dacio-Balkanic endemics of the subalpine level of the eastern Carpathian system and the mountains of the Balkan peninsula, including the Dinarides, the Balkan Range, the Moeso-Macedonian mountains, the Pelagonides and the Rhodopides, of relict character.

Southern Carpathian campion siliceous cliffs	Endemic siliceous cliff communities of the alpine and subalpine levels of the Southern Carpathians.
Carpatho-Balkano-Rhodopide campion siliceous cliffs	Siliceous cliff communities of the Paring mountains in the Southern Carpathians, of the Balkan Range and of the Rhodopides, in particular, of the Rila and the Pirin, with [Silene lerchenfeldiana], [Potentilla haynaldiana], [Saxifraga juniperifolia ssp. juniperifolia] ([Saxifraga pseudosancta]), [Saxifraga pedemontana ssp. cymosa], [Rhodiola rosea] ([Sedum rosea]), [Dianthus henteri], [Minuartia bulgarica], [Haberlea rhodopensis], [Symphyandra wanneri], [Carex kitaibeliana] ([Carex laevis]), [Juncus trifidus], [Sesleria coerulans], [Festuca airoides], [Poa nemoralis], [Asplenium trichomanes], [Cystopteris fragilis].
Pelagonide campion siliceous cliffs	Siliceous cliff communities of the Pelagonides of the F.Y.R. of Macedonia and northern Greece.
Peri-Pyrenean montane siliceous cliffs	Montane siliceous cliff and rock communities of the Cévennes, the eastern and central Pyrenees and the Catalonian hills, with [Asarina procumbens] ([Antirrhinum asarina]), [Sedum hirsutum], [Centaurea pectinata], [Sempervivum arvernense], [Dianthus graniticus], [Saxifraga clusii], [Saxifraga hypnoides].
Western Iberian siliceous cliffs	Siliceous cliff and rock communities of the meso-Mediterranean level of western Iberia, with [Cheilanthes tinaei], [Cheilanthes hispanica].
West Mediterranean thermophile siliceous cliffs	Siliceous cliff and rock communities of the thermo-Mediterranean, mesomediterranean and lower supra-Mediterranean levels of Provence, Corsica and eastern Spain, mostly constituted by ferns, in particular, of genus [Cheilanthes] (including [Cosentinia]) in xeric sunny situations, of genera [Asplenium] and [Polypodium] in more shady locations, accompanied by species of genus [Dianthus], in particular, [Dianthus sylvestris ssp. siculus], [Dianthus sylvestris ssp. godronianus].
Lowland northern- and middle-European siliceous cliffs	Siliceous cliff and rock communities of low hills of northern and middle nemoral Europe.
Boreal siliceous cliffs	Rock and cliff crevice communities of granites, gneisses and acidic rocks of the boreal and arctic zones of the Palaearctic domaine.
Bare siliceous inland cliffs	Siliceous rocks and cliffs of lowlands, hills and mountains of non-desert regions of the Palaearctic. Their lichen communities are composed of external crustose lichens ([Rhizocarpon]), navel lichens ([Umbilicaria]) and fruticose lichens ([Ramalina], [Cornicularia], [Rhizoplaca]).
High altitude and arctic siliceous cliffs	Siliceous rocks, cliffs and nunataks of non-desert arctic regions and of the nival, or aeolian, level of mountains of the Palaearctic.
Mountain siliceous cliffs	Siliceous rocks and cliffs of the alpine to montane levels of high mountains of the mediterranean, nemoral, boreonemoral and boreal zones of the Palaearctic, harbouring specialised alpine chasmophyte communities.
Boreo-nemoral and boreal siliceous cliffs	Siliceous rocks and cliffs of lowlands, hills and low mountains of the boreonemoral and boreal zones of the Palaearctic, harbouring specialised boreal fissure communities.
Nemoral low altitude siliceous cliffs	Siliceous rocks and cliffs of lowlands, hills and low mountains of the nemoral zone of the Palaearctic, harbouring impoverished, paucispecific, fissure communities.

Mediterranean siliceous cliffs	Siliceous rocks and cliffs of lowlands, hills and low mountains of the Mediterranean region, harbouring specialised Mediterranean chasmophyte communities.
Disused siliceous quarries	Permanently or temporarily unworked sites or parts of sites of open-sky extractive activities.
Basic and ultra-basic inland cliffs	Dry, calcareous inland cliffs. Specific plant associations colonize montane and Mediterranean cliffs. Most of the subdivisions refer to them. Northern lowland cliffs usually support fragments of other less specialized communities.
Tyrrheno-Adriatic eumediterranean calcicolous chasmophyte communities	Calcareous cliff and rock communities of the mediterranean level of mainland Spain, of the Balaearics, of the thermo- and meso-mediterranean levels of mainland France, of Corsica and Sardinia, of peninsular Italy, of Sicily and associated islands, of the Adriatic coastal regions of the Balkan peninsula.
Petrarch-spleenwort cliffs	Calcareous and dolomitic cliff and rock communities of the Mediterranean hills and mountains of Spain, from Catalonia to the Serrania de Ronda, and of the thermo- and lower meso-Mediterranean levels of the Balearics, the coastal chains of Provence and Bas-Languedoc, of the southern Cévennes, of Corsica and Sardinia, with [Asplenium petrarchae], [Phagnalon sordidum], [Sarcocapnos enneaphylla], [Biscutella frutescens], [Hieracium stelligerum], [Lavatera maritima], [Campanula macrorhiza], [Melica minuta], [Melica bauhinii].
Southeastern Iberian chasmophyte communities	Calcareous cliff and rock communities of the arid southeastern regions of Spain, with large shrubs; [Scabiosa saxatilis], [Teucrium buxifolium], [Rhamnus lycioides ssp. borgiae] are characteristic.
Balearic calcareous chasmophyte communities	Calcareous cliff and rock communities of the Balearics, with many endemics, including [Brassica balearica] and [Helichrysum rupestre var. cambessedesii].
Insular cabbage cliffs	Calcareous rock communities of the mesomediterranean level of Corsica, Sardinia and Pantellaria, with [Brassica insularis], [Ruta graveolens], [Stachys glutinosa].
West-Mediterranean polypode cliffs	Cool, shaded calcareous cliff and rock communities of the west Mediterranean regions, formed mostly of bryophytes and ferns, including [Polypodium cambricum ssp. australe] ([Polypodium australe]), and with [Selaginella denticulata].
Sicilo-Italic [Dianthus] cliffs	Calcareous cliff and rock communities of the thermo- and mesomediterranean levels of Sicily, the Egadi Islands, the Maltese Islands, southern Calabria, southern Tyrrhenian Italy, rich in large subshrubby plants, with [Dianthus rupicola], [Iberis semperflorens], [Lithodora rosmarinifolia], [Antirrhinum siculum], [Brassica rupestris], [Brassica incana], [Scabiosa limonifolia], [Pimpinella anisoides], [Seseli bocconi ssp. bocconi], [Silene fruticosa], [Asperula rupestris], [Cymbalaria pubescens], [Odontites bocconei], all of them endemic to these communities or having in them their area of greatest diffusion.
Illyrian chasmophyte communities	Calcareous cliff and rock communities of the Adriadic meso-mediterranean zone of northeastern Italy and the Balkan peninsula. Some of them grade into maritime cliff communities of unit 18.221.

Istrio-Triestine karst chasmophyte communities	Cliff communities of the karst region of northeastern Italy and northern Istria with [Campanula pyramidalis], [Cheiranthus cheiri], [Teucrium flavum], [Euphorbia wulfenii], [Micromeria thymifolia], harbouring the very rare, threatened endemics [Centaurea kartschiana] and [Moehringia tommasinii].
Karst knapweed cliffs	Cliff communities of the karst region of northeastern Italy, with the very rare Triestine endemic [Centaurea kartschiana], and with [Erysimum cheiri] ([Cheiranthus cheiri]), [Campanula pyramidalis], [Teucrium flavum], [Sesleria juncifolia].
Istrio-Triestine spurge cliffs	Cliff communities of the karst region of northeastern Italy and Slovenia, with [Campanula pyramidalis], [Micromeria thymifolia], [Sesleria juncifolia], [Teucrium flavum] and [Euphorbia wulfenii].
Istrio-Triestine moehringia cliffs	Cliff communities of the karst region of northeastern Italy, southwestern Slovenia and extreme northwestern Croatia, in the Vena Mountains between Val Rosandra and Buzet, harbouring the rare, threatened [Moehringia tommasinii], known from a very restricted number of stations within an exiguous region, one of them in Italy.
Liburnian chasmophyte communities	Calcareous cliff and rock communities of the Adriadic meso-mediterranean coast lands of the northern Dalmatian coast, in part constituting the upper levels of sea-cliffs of unit 18.2219.
Dalmatian knapweed cliffs	Calcareous cliff and rock communities of the Dalmatian islands of Rab and Pag with the endemic [Centaurea dalmatica].
Austrian viper's grass cliffs	Calcareous cliff and rock communities of the Dalmatian archipelago with [Scorzonera austriaca], [Sesleria juncifolia], [Seseli pallasii], [Alyssum robertianum].
Liburnian meadow rue-bellflower cliffs	Calcareous cliff and rock communities of the central and southern Velebit coast lands, with [Campanula fenestrellata], in part constituting the upper levels of sea-cliffs of unit 18.2219.
Dalmatian chasmophyte communities	Calcareous cliff and rock communities of the Adriadic meso-mediterranean coast lands of the central Dalmatian coast, in part constituting the upper levels of sea-cliffs of unit 18.221A.
Raguse knapweed cliffs	Calcareous cliff and rock communities of the Dalmatian mesomediterranean zone, with the endemic [Centaurea ragusina] and [Convolvulus cneorum].
Moltkia cliffs	Calcareous cliff and rock communities of the central and southern parts of the Dalmatian mesomediterranean zone, with [Moltkia petraea].
[Centaurea cuspidata] cliffs	Calcareous cliffs of the southern Biokovo coastlands of central Dalmatia, with [Inula] spp., [Centaurea cuspidata], [Seseli tomentosum].
Vardean chasmophyte communities	Calcareous cliff and rock communities of the Adriadic meso-mediterranean coast lands of the southern Dalmatian coast, in part constituting the upper levels of sea-cliffs of unit 18.221B, in particular, communities dominated by [Putoria calabrica].
Dalmatian fern-navelwort cliffs	Calcareous cliff and rock communities of the Dalmatian mesomediterranean zone, widespread on rocks and man-made structures, with [Umbilicus horizontalis] and asplenioid ferns.
Central Pyrenean calcicolous chasmophyte communities	Calcareous cliff and rock communities of the central and eastern Pyrenees, with [Saxifraga media], [Saxifraga longifolia], [Saxifraga aretioides], [Potentilla alchimilloides], [Potentilla nivalis], [Ramonda myconi], [Asperula hirta].

Liguro-Apennine calcicolous chasmophyte communities	Calcareous cliff and rock communities of the Maritime Alps and northern Apennines, with [Saxifraga lingulata], [Primula marginata], [Primula allionii], [Phyteuma charmelii], [Phyteuma villarsii], [Silene campanula], [Potentilla saxifraga], [Ballota frutescens].
Western mediterraneo-montane chasmophyte communities	Cliff and rock communities of the supra- and oro-Mediterranean levels of calcareous Iberian mountains, of the central Apennines and of the calcareous mountains of the large Tyrrhenian islands.
Ibero-montane cinquefoil cliffs	Cliff and rock communities of the supra- and oro-Mediterranean levels of calcareous Iberian mountains.
Oro-Cantabrian calcareous cliffs	Calcareous cliff and rock communities of the Cantabrian Cordillera and a few other northwestern Iberian ranges, with [Asperula hirta], [Asplenium viride], [Erinus alpinus], [Globularia repens], [Hypericum nummularium], [Rhamnus pumilus], [Saxifraga aretioides].
Baetic calcareous cliffs	Calcareous cliff and rock communities of high altitudes of Baetic and sub-Baetic ranges of eastern Andalusia, with [Linaria verticillata], [Potentilla caulescens], [Saxifraga camposii], [Saxifraga erioblasta], [Teucrium rotundifolium], [Silene boryi].
Valencian calcareous cliffs	Shady calcareous cliff and rock communities of Valencian mountains.
Alpine and sub-mediterranean chasmophyte communities	Calcareous cliff and rock communities of the Alps and the Carpathians, of lesser satellite ranges and of sub-Mediterranean areas of the northern Tyrrhenian periphery. Dominant species include ferns [Asplenium ruta-muraria], [Asplenium trichomanes], [Asplenium viride], [Cystopteris fragilis], [Gymnocarpium robertianum], vascular plants (e.g.[Saxifraga paniculata]) and mosses.
Alpine calcareous cliff heliophile communities	Well-lit calcareous cliff and rock communities of the Alps and neighbouring regions, including upper Provence, upper Languedoc, the pre-Pyrenees and Corbières, the Catalonian mountains, with [Potentilla caulescens], [Potentilla clusiana], [Potentilla nitida], [Primula auricula], [Hieracium humile], [Cardaminopsis petraea], [Androsace helvetica], [Minuartia rupestris].
Middle-European calcareous fern cliffs	Communities of shady, cool, often moist rockfaces of the Alps and neighbouring regions, of the Carpathians, of the Jura, the Hercynian ranges, the British Isles, with many ferns, including [Cystopteris fragilis], [Cystopteris regia], [Asplenium viride], [Asplenium scolopendrium], [Asplenium trichomanes], and with [Carex brachystachys].
Carpathian calcareous cliff heliophile communities	Rock-crack communities of sunny rock faces of the alpine and subalpine levels of the Carpathians.
Hellenic eumediterranean calcicolous chasmophyte communities	Calcareous cliff and rock communities of the thermo- and meso-Mediterranean zones of mainland Greece and Albania, up to the [Abies cephalonica] belt, with [Campanula versicolor], [Campanula rupestris], [Sideritis roeseri], [Stachys candida], [Hypericum vesiculosum], [Asperula arcadiensis], [Galium boryanum], [Centaurea pelia], [Alkanna graeca], [Alyssum orientale], [Linaria microcalyx], [Onosma frutescens], [Inula candida], [Centranthus ruber], [Silene congesta], [Teucrium flavum].

Aegeo-east-Mediterranean basiphile chasmophyte communities	Calcareous and ultra-basic cliff and rock communities of Crete, the Aegean archipelagoes, Cyprus, the Mediterranean coastlands of Anatolia and the Levant. They constitute one of the most diverse and endemic-rich groups of cliff communities.
Southern Hellenic cinquefoil cliffs	Calcareous cliff and rock communities of high altitudes of the Peloponnese, Giona and Parnassus, with [Silene auriculata], [Achillea umbellata], [Campanula rupicola], [Saxifraga sibthorpii], [Saxifraga marginata], [Saxifraga spruneri], [Minuartia stellata], [Valeriana olenaea], [Satureja parnassica], [Rosa glutinosa], [Viola poetica], [Edraianthus parnassicus], [Campanula aizoon].
Central Hellenic cinquefoil cliffs	Calcareous and ultra-basic cliff and rock communities of the high altitudes of the central and northern Pindus and of the Thessalian Olympus system. Vegetation of the alliance [Saxifragion scardici] with species [Saxifraga scardica], [Saxifraga glabella], [Campanula oreadum], [Arabis bryoides], [Potentilla deorum], and of alliance [Galion dagenii] with species [Galium dagenii], [Edraianthus graminifolius], [Asplenium fissum], [Aubrietea gracilis], [Achillea clavennae], [Satureja parnassica].
Illyrio-Helleno-Balkanic cinquefoil cliffs	Calcareous cliff communities of the Dinarides, the southwestern foothills of the eastern Carpathian system, the Balkan Range, the Pelagonides, the Rhodopides, formed by often narrowly endemic species of Illyro-Balkanic affinities.
Helleno-Balkanic calcicolous chasmophyte communities	Calcareous cliff communities of the Balkan Range, the Pelagonides and the Rhodopides.
Pelagonide calcicolous chasmophyte communities	Calcareous cliffs of the Pelagonides of northern Greece, the F.Y.R. of Macedonia and of Albania, in particular of the Kapina, the Galicica, the Bistra, the Korab, the Jakupica, the Voras-Nidze, the Vermion, with [Ramondia nathaliae], [Campanula formanekiana], [Alyssoides utriculata], [Jurinea consanguinea], [Micromeria cristata].
Rhodopide calcicolous chasmophyte communities	Calcareous cliff communities of the Rhodopides.
Pirin calcicolous chasmophyte communities	Calcareous cliff communities of the Pirin and the Slavianka with [Leontopodium alpinum ssp. nivale], [Potentilla apennina ssp. stoianovii], [Kernera saxatilis], [Campanula cochlearifolia var. pirinica], [Saxifraga ferdinandi-coburgi], [Saxifraga luteoviridis], [Papaver degenii], [Aster alpinus var. dolomiticus], [Brassica jordanoffii], [Danthoniastrum compactum], [Festuca pirinica], [Sesleria rigida], [Sesleria korabensis], [Pinus heldreichii] and, in the Slavianka, [Viola delphinantha], [Convolvulus boissieri].
Rila calcicolous chasmophyte communities	Calcareous cliff communities of the Rila, of very limited extent.

Rhodope calcicolous chasmophyte communities	Calcareous cliff communities of the Rhodopes with [Campanula orphanidea] ([Petkovia orphanidea]), [Saxifraga stribrnyi], [Scabiosa rhodopensis], [Sideritis scardica], [Seseli rhodopeum], [Haberlea rhodopensis], [Morina persica], [Trachelium jacquinii ssp. rumelianum] ([Trachelium rumelianum]), [Campanula lanata], [Sesleria rigida], [Ceterach officinarum].
Balkan Range calcicolous chasmophyte communities	Calcareous cliff communities of the Balkan Range.
Balkan range ramonda cliffs	Very rare and restricted [Ramonda serbica] communities of cliffs of the foothills of the western Balkan range.
Vrachansky karst chasmophyte communities	Calcareous cliff communities of the Vrachaanska mountains in the western Balkan Range, developed around 1400 metres of altitude, with [Festuca balcanica ssp. balcanica], [Festuca xanthina], [Achnatherum calamagrostis], [Juniperus sabina], [Daphne oleoides], [Syringa vulgaris], [Saxifraga rocheliana], [Polygala murbeckii].
Dinaro-Carpathian calcicolous chasmophyte communities	Calcareous cliff communities of the Dinarides and the southwestern foothills of the eastern Carpathian system.
Moist Dinaric calcicolous chasmophyte communities	Communities of humid cliffs of the northern Dinarides, subjected to tufa formation, with [Carex brachystachys], [Valeriana elongata], [Aster bellidiastrum], [Campanula cochlearifolia ssp. croatica].
Balkano-Illyrian shaded calcicolous chasmophyte communities	Communities of shady, cool, often moist rockfaces of the Dinarides and neighbouring regions, Balkano-Illyrian vicariant of the [Cystopteridion] communities of unit 62.152, widespread at the montane beech level, with many ferns, including [Cystopteris montana], [Asplenium ruta-muraria], [Asplenium trichomanes], and with [Corydalis ochroleuca], [Moehringia muscosa], [Cardaminopsis croatica], [Saxifraga rotundifolia], [Campanula justiniana].
Lowland middle European calcareous cliff communities	Calcareous cliff and rock communities of the plains and hills of nemoral northern and middle Europe, very species-poor, usually occupying small surfaces within the environment of more extensive communities of units E1.1 or E1.29.
Boreal calcareous cliff communities	Calcareous cliff and rock communities of the boreal and arctic zones of the Palaearctic domaine.
Mediterraneo-Anatolian calcicolous chasmophyte communities	Calcareous cliff and rock communities of the eastern Mediterranean hinterland and of mediterranean and sub-Mediterranean Anatolia.
Bare limestone inland cliffs	Limestone rocks and cliffs of lowlands, hills and mountains of non-desert regions of the Palaearctic. Their lichen communities are composed of internal crustose lichens ([Protoblastenia], [Verrucaria], [Petractis], [Polyblastia]), external crustose lichens ([Caloplaca], [Xanthoria]) or gelatinous ([Collema]) and foliose ([Dermatocarpon]) lichens.
High altitude and arctic limestone cliffs	Limestone rocks, cliffs and nunataks of non-desert arctic regions and of the nival, or aeolian, level of mountains of the Palaearctic.

Mountain limestone cliffs	Limestone rocks and cliffs of the alpine to montane levels of high mountains of the mediterranean, nemoral, boreonemoral and boreal zones of the Palaearctic, harbouring specialised alpine chasmophyte communities.
Boreo-nemoral and boreal limestone cliffs	Limestone rocks and cliffs of lowlands, hills and low mountains of the boreonemoral and boreal zones of the Palaearctic, harbouring specialised boreal fissure communities, including near vertical surfaces of alvars of the eastern Fenno-Scandian boreonemoral zone occupied by epilithic lichen communities of unit 62.32, associated with debris swards, calcareous grasslands and paucispecific nemoral fissure communities of units 34.1151, 34.317 and 62.1B1.
Nemoral low altitude limestone cliffs	Limestone rocks and cliffs of lowlands, hills and low mountains of the nemoral zone of the Palaearctic, harbouring impoverished, paucispecific, fissure communities.
Mediterranean limestone cliffs	Limestone rocks and cliffs of lowlands, hills and low mountains of the Mediterranean region, harbouring specialised Mediterranean chasmophyte communities.
Disused chalk and limestone quarries	Permanently or temporarily unworked sites or parts of sites of open-sky extractive activities.
Boreal and arctic serpentine and basaltic cliff communities	Serpentine and basalt cliff and rock communities of the boreal and arctic zones of the Palaearctic domaine.
Bare inland basaltic and ultra-basic cliffs	Basic or ultra-basic non-calcareous rocks and cliffs of lowlands, hills and mountains of non-desert regions of the Palaearctic, including basalts, gabbros, dolerites, andesites, ultramafites (serpentines, peridotites).
High altitude and arctic basaltic and ultra-basic cliffs	Basic or ultra-basic non-calcareous rocks, cliffs and nunataks of non-desert arctic regions and of the nival, or aeolian, level of mountains of the Palaearctic.
Mountain basaltic and ultra-basic cliffs	Basic or ultra-basic non-calcareous rocks and cliffs of the alpine to montane levels of high mountains of the mediterranean, nemoral, boreonemoral and boreal zones of the Palaearctic, harbouring specialised alpine chasmophyte communities.
Boreo-nemoral and boreal basaltic and ultra-basic cliffs	Basic or ultra-basic non-calcareous rocks and cliffs of the boreonemoral and boreal zones of the Palaearctic, harbouring specialised boreal fissure communities.
Nemoral low altitude basaltic and ultra-basic cliffs	Basic or ultra-basic non-calcareous rocks and cliffs of lowlands, hills and low mountains of the nemoral zone of the Palaearctic.
Mediterranean basaltic and ultra-basic cliffs	Basic or ultra-basic non-calcareous rocks and cliffs of lowlands, hills and low mountains of the Mediterranean region.
Temperate serpentine and basaltic cliff communities	Ultra-basic serpentinic rocks of the Balkan peninsula and Central Europe. They belong to the most dry and warm habitats. Typical species are [Halacsya sendtneri], [Potentilla mollis] and ferns [Asplenium cuneifolium], [Notholaena marantae], [Asplenium trichomanes]. In high-mountain cliffs of southeast Europe [Silene serbica], [Jovibarba heuffelii var. kopaonikensis], [Edraianthus jugoslavicus var. subalpinus], [Festuca panciciana], [Sedum serpentini] occur. The frequency of endemic species is quite high.

Mediterranean serpentine and basaltic cliff communities	No description available.
Macaronesian inland cliffs	Inland cliffs of the Canary Islands, Madeira and the Azores, extremely rich in endemic species of both plants and animals, including vertebrates (the endangered [Pterodroma madeira]). The genus [Aeonium] is particularly representative.
Wet inland cliffs	Very wet, dripping, overhanging or vertical rocks of hills, mountains and Mediterranean lowlands.
Mediterranean wet inland cliffs	Wet inland cliffs of Mediterranean regions, with a specialised vegetation formed by [Adiantum capillus-veneris], mosses, [Borago pygmaea], [Pinguicula grandiflora ssp. coenocantabrica], [Pinguicula hirtiflora], [Samolus valerandi], [Hypericum hircinum], [Dittrichia viscosa], [Ficus carica], [Blackstonia perfoliata], [Carex distans] and others.
Northern wet inland cliffs	Wet inland cliffs of middle European hills and mountains. They are often colonised by unique plant assemblages, the components of which are, however, equally characteristic of other habitats; notable among such species are [Saxifraga paniculata], [Alchemilla glabra], [Viola palustris], [Phegopteris connectilis], [Aurinia saxatilis], [Dianthus nitidus].
Almost bare rock pavements, including limestone pavements	More or less level surfaces of rock exposed by glacial erosion, by weathering processes, or by aeolian scouring, bare or colonized by mosses, algae or lichens. The hard rock surface may be exposed or partially covered by erosional rock debris, in particular, those produced by frost weathering, heaving, thrusting or cracking. Included are rock surfaces in karst landscapes, rock dome tops, whaleback, roche moutonné, flyggberg and rock basin formations of periglacial areas, golec and felsenmeer formations, level surfaces of dykes and old lava flows. Vascular plant communities may colonize cracks and weathered surfaces.
Pavements, rock slabs, rock domes	Bare or sparsely vegetated more or less level surfaces of rock of lowlands, hills and mountains of non-desert regions of the Palaearctic exposed by erosion or weathering processes, physiognomically dominated by hard rock surfaces or indigenous erosional rock debris.
Limestone pavements	More or less level surfaces of calcareous rock of lowlands, hills and mountains of non-desert regions of the Palaearctic, including karstic pavements, lapi,s, with their clints and grikes.
Weathered rock and outcrop habitats	Rocks and outcrops colonized by pioneer communities, especially of [Crassulaceae]. The substrates are mostly siliceous, occurring in the alpine or montane levels of higher mountains of the nemoral zone. The communities are dominated by succulent [Sempervivum arachnoideum ssp. arachnoideum], [Sempervivum arachnoideum ssp. tomentosum], [Sempervivum montanum ssp. montanum], [Sempervivum montanum ssp. stiriacum], [Sempervivum wulfenii], [Jovibarba arenaria], [Sedum montanum], [Sedum anglicum ssp. pyrenaicum], [Sedum sexangulare], [Sedum album], [Sedum annuum], [Saxifraga aspera], accompanied by [Silene rupestris], [Scleranthus polycarpos], [Veronica fruticans], [Thymus praecox ssp. polytrichus], [Viola tricolor ssp. saxatilis], by small crucifers, lichens and mosses.

Bare weathered rock and outcrop habitats	No description available.
Sparsely vegetated weathered rock and outcrop habitats	Rocks and outcrops colonised by pioneer communities, especially of [Crassulaceae]. Vegetation of the alliance [Sedo-Scleranthion biennis]. Substrates are mostly siliceous, occurring in the upland and montane levels of the nemoral zone. The communities are dominated by succulent [Sempervivum], [Jovibarba] and [Sedum] species accompanied by [Silene rupestris], [Erophila verna], [Scleranthus polycarpos], [Veronica fruticans], [Thymus praecox ssp. polytrichus], [Viola tricolor ssp. saxatilis], by small crucifers, lichens and mosses [Polytrichum piliferum] and [Racomitrium canescens].
Snow or ice-dominated habitats	High mountain zones and high latitude land masses occupied by glaciers or by perennial snow. They may be inhabited by algae and invertebrates.
Snow packs	Near-permanent snow packs, in particular in avalanche corridors.
Ice caps and true glaciers	Permanent and near-permanent ice. Includes ice sheets, ice caps, cirque glaciers, valley glaciers, and small ice masses (glacierets) that are either permanent or persist for a few years.
Ice sheets and ice caps	Dome-like ice masses unconstrained by topography, together with their outlet glaciers. They are characteristic of arctic regions. The largest ice sheet in the northern hemisphere is that of Greenland. Smaller ice sheets and ice caps occur in Iceland, Jan Mayen, Spitsbergen, southern Norway, Franz Josef Land, Severnaya Zemlya and the islands of the De-Longa group.
Cirque and valley glaciers	Glaciers constrained by topography, including cirque glaciers, valley glaciers, mountain glaciers, piedmont glaciers. They are characteristic, in particular, of the large mountain ranges of the Alpine system, occurring also in arctic regions, notably on Novaya Zemlya, in the subpolar and polar Urals, in the east Siberian mountains and, locally, in Iceland.
Glacierets	Small ice masses, permanent, or with an existence of a few years, derived in particular from snow-drifting, avalanches, or ice deposition in cold-bottom karst dolines.
Rock glaciers and unvegetated ice-dominated moraines	Mixtures of ice and rocks in which the rocks ride on top of the ice (rock glaciers), or form ridges or mounds of morainic material containing buried ice (ice-core moraines), or are in the process of losing the ice to become glacial moraines. Excludes unvegetated glacial moraines where ice is no longer dominant (H5.2).
Rock glaciers	Glacier-like tongues of angular talus extending out from a cirque and slowly moving downslope under the effect of gravity and of underlying, fully covered, interstitial ice.
Ice-core moraines	Fairly large ridges or mounds of morainic material containing buried ice, originating from till deposited on former glacier ice or from morainic material deposited on a snow bank, adjacent to the ice front.
Unvegetated glacial moraines in the process of formation	No description available.
Miscellaneous inland habitats with very sparse or no vegetation	Miscellaneous bare habitats, including glacial moraines, freeze-thaw features, inland sand dunes, burnt ground and trampled areas. Vegetation, if present, is dominated by algae, lichens or bryophytes, with vascular plants absent or very sparse.

Fjell fields and other freeze-thaw features with very sparse or no vegetation	Bare or very sparsely vegetated terrain in which freeze-thaw cycles result in patterned ground with much rock debris. Excludes moss- and lichen-dominated fjell-field (E4.2).
Fjell fields with very sparse or no vegetation	No description available.
Glacial moraines with very sparse or no vegetation	Glacial moraines that have lost their ice and which have not yet revegetated. Excludes moraines where ice is still dominant (H4.3).
Unvegetated young glacial moraines	No description available.
Sparsely vegetated glacial moraines	No description available.
Sparsely- or un-vegetated habitats on mineral substrates not resulting from recent ice activity	Accumulations of sand, boulders, stones, rock fragments, pebbles or gravels, unvegetated, occupied by lichens or mosses, or colonized by sparse herbs or shrubs. Included are inland dunes, moraines and drumlins originating from glacial deposition, sandar, eskers and kames resulting from fluvio-glacial deposition, block slopes, block streams and block fields constructed by periglacial depositional processes of downslope mass movement, ancient beach deposits constituted by former coastal constructional processes. Excludes mobile screes (H2) and deposits originating from eruptive volcanic activity (H6).
Clay and silt with very sparse or no vegetation	No description available.
Stable sand with very sparse or no vegetation	No description available.
Lacustrine dunes	No description available.
Lake Geneva lacustrine dunes	Unique dunes of the Savoie shore of Lake Geneva (Excenevex).
Boreo-lacustrine dunes	Lacustrine inland dunes of the northern boreal region, in particular, of Lake Inari in Finland.
Inland non-lacustrine dunes	No description available.
Icelandic inland dunes	Inland dunes, unvegetated or colonized by species-poor grassland communities dominated by [Leymus arenarius] or [Festuca cryophila], with [Equisetum boreale], [Silene uniflora], [Silene maritima], [Armeria maritima].
Gravel with very sparse or no vegetation	No description available.
Shallow rocky soils with very sparse or no vegetation	No description available.

Boulder fields	Accumulations of boulders, stones and rock fragments which are bare or colonised by lichens or mosses, or by sparse herb- or shrub-dominated communities. Included are block slopes, block streams and block fields constructed by periglacial depositional processes of downslope mass movement, and ancient beach deposits constituted by former coastal constructional processes. Weathered rock outcrops are classified as H3.6.
Dry organic substrates with very sparse or no vegetation	Unvegetated raw humus that is not the result of burning.
Burnt areas with very sparse or no vegetation	Burnt ground that has not yet developed cover of vascular plants. Excludes recently burnt woodland (G5.8).
Unvegetated recently burnt ground	No description available.
Sparsely vegetated burnt areas	No description available.
Trampled areas	Bare ground resulting from trampling by humans or by other vertebrates including birds.
Unsurfaced pathways	No description available.
Recent volcanic features	Hard rock surfaces, rock jumbles, loose material deposits, soils, water bodies resulting from recent or present volcanic activity, unvegetated, occupied by lichens or mosses, or colonized by specialised, relatively sparse herb- or shrub-dominated communities.
Active volcanic features	Orifices in volcanic areas emitting hot or cold gases and vapours. Their very extreme environment is colonized by highly distinct communities with few species. Included are steam vents (fumaroles), vapour and hot sulphurous gas vents (solfatares), paint pots, porridge pots and mud volcanoes, as well as cold carbon dioxide, methane and nitrogen vents (mofettes), that emit directly into the open atmosphere. Excludes marine (A6.9) and subterranean (H1.4) vents.
Italian fumaroles	Fumaroles of the major area of active volcanism of the western Mediterranean basins, located on the Italian peninsula and its small islands, in particular those of Isola d'Ischia, with communities that include [Cyperus polystachyos]; other gas vent manifestations of the same region of volcanism are listed in the next two sections.
Sicilian fumaroles	Fumaroles of Sicily and its nearshore islands, in particular of Mount Etna and the Lipari islands.
Pantelleria fumaroles	Fumaroles of Pantelleria. Their walls, mouth and immediate vicinity are colonized by a succession of microvegetation composed of bryophytes, ferns and a few angiosperms. Constituting plants include the endemic moss [Calymperes sommieri], sole Mediterranean representative of a tropical genus, as well as [Radiola linoides], [Kickxia cirrhosa], [Trifolium angustifolium], [Centaurium maritimum].
Macaronesian fumaroles	Fumaroles of the Canary Islands and the Azores.

Icelandic solfataras	Fumaroles and solfataras of Iceland, surrounded by very sparse communities on warm, acid and clayey soils under a humid, warm microclimate, comprising Cyanophycea carpets in the immediate vicinity of the vent, hepatica belts farther out, first of the small [Riccia bifurca] and [Fossombronia dumortieri], then of the more robust [Preissia quadrata], finally, vascular plant assemblies in which [Ophioglossum azoricum], [Sagina procumbens], [Plantago major var. pygmaea] are prominent. Vast expanses of sulphur-poisoned ground in the general vicinity of the solfataras are almost devoid of vegetation, with a few vascular plants in less poisoned areas, in particular, [Achillea millefolium].
East Mediterranean fumaroles and solfataras	Fumaroles and solfataras of the areas of active volcanism of the eastern Mediterranean basins, in particular, of the Aegean and the Levantine Sea.
Peri-Alpine fumaroles, solfataras and mofettes	Gas vents, fumaroles, solfataras, mofettes, related to late Tertiary volcanism of the western Alpine system, its periphery, its satellite mountain complexes and its interior basins, including the Pyrenees, the Alps, the Carpathians, and, notably, the Eastern Carpathians, the Jura, the Dinarides, the Hellenides, the Hercynian ranges, the Iberian mountains, the Atlas, the Taurus. Included in particular are the extensive mofette systems of Bohemia and of the mountains constituting the Bohemian Quadrangle, in particular, those of the bogs of Soos, in the Cheb district of western Bohemia.
Western Asian fumaroles and solfataras	Gas vents, fumaroles, solfataras, mofettes of the Caucasus and of western Asian mountains and plateaux, in particular, of the slopes of the Nemrut Dag in Turkey and of the Damavand and Taftan in Iran.
Inactive recent volcanic features	Features of active volcanoes where emissions of hot or cold gases are absent. Includes barren lava flows, fields of volcanic ash and summits of dormant volcanoes.
Teide violet community	Summital zone of the Teide volcano of Tenerife, above (2700) 3000 metres, colonized by very open communities of [Viola cheiranthifolia], [Silene nocteolens] and [Argyranthemum teneriffae].
Etna summital communities	Summital zone of Mount Etna, above the level of hedgehog heaths, between 2500 metres and the summit, where a very dispersed pioneer community is formed by endemics, notably [Rumex aetnensis], [Senecio aetnensis], [Anthemis aetnensis], [Hypochoeris robertia].
Western Asian orovolcanic communities	Summital zone of very high volcanoes of western Asia, in particular, of Nemrut Dag in eastern Turkey, Damavand in northern Iran, Taftan in southern Iran, with [Polygonum radicosum], [Crepis demavendi], [Artemisia melanolipis], [Carex pseudofoetida].

Barren lava fields and flows	Hard or porous rocky surfaces and chaotic rock jumbles formed by solidified lava flows originating from volcanoes and fissures of the Palaearctic domaine, unvegetated, occupied by lichens or mosses, or colonized by specialised, relatively sparse herb- or shrub-dominated communities. They are restricted to the Mid-Atlantic ridge and its associated fracture zones, in Iceland and the Macaronesian islands, responsible for a large proportion of the volume of recent lava in the world, to the collision zones and constructive margins of southern Eurasia, in the Mediterranean and Tethyan basins along the folds of the Alpine system, to the Red Sea rim, on the Arabian peninsula, and to the western Pacific rim and island arcs. A range of surface characteristics is presented by lava of differing composition, viscosity and gas content, including pahoehoe or ropy lava, aa, scoria, pumice and pillow lava. A gradient of increasing acidity and viscosity extends from basalts through andesites and dacites to rhyolites.
Barren Icelandic lava flows	Lava flows, fields, dykes, necks, domes, cones of Iceland devoid of vegetation or sparsely vegetated by algae, lichens and mosses, which constitute the first stage of colonisation, with covers of up to 20-40%. The main constituents of the vegetation are the lichens [Stereocaulon vesubianum], [Stereocaulon alpinum], [Stereocaulon arcticum], [Alectoria ochroleuca], [Cladonia pyxidata], [Lecidea] spp., [Lecanora] spp. and the mosses [Grimmia] spp., [Andreaea rupestris], [Andreaea obovata], [Racomitrium canescens], [Polytrichum] spp. accompanied by a very few vascular plants, including [Festuca richardsonii], [Thymus praecox ssp. arcticus], [Poa subcaerulea].
Barren Macaronesian lava flows	Lava flows, fields, dykes, necks, domes, cones of the Azores, the Canary Islands and the Cape Verde Islands, unvegetated, occupied by usually discontinuous communities dominated by algae, lichens or mosses, sometimes colonized by very sparse vascular plants. Barren lava fields of Fuerteventura, Lobos and Lanzarote are the main habitat of the endemic and vulnerable Canary Shrew, [Crocidura canariensis].
Barren Tethyan lava flows	Lava flows, fields, dykes, necks, domes, cones of the volcanoes of the Mediterranean Basin and of western Asia, unvegetated, occupied by usually discontinuous communities dominated by algae, lichens, notably [Stereocaulon vesubianum], or mosses, sometimes colonized by very sparse vascular plants.
Volcanic ash and lapilli fields	Exposed deposits of pyroclastic rocks, fragmental volcanic material blown into the atmosphere by explosive activity, including ash, lapilli, bombs, peles hair, or of detritic pumice and scoriae, together with the pioneer assemblies of specialised species that may colonize them.
Regularly or recently cultivated agricultural, horticultural and domestic habitats	Habitats maintained solely by frequent tilling or arising from recent abandonment of previously tilled ground such as arable land and gardens. Includes tilled ground subject to inundation. Excludes lawns and sports fields (E2.6), shrub orchards (FB), tree nurseries (G5.7) and tree-crop plantations (G3.F etc.).

Arable land and market gardens	Croplands planted for annually or regularly harvested crops other than those that carry trees or shrubs. They include fields of cereals, of sunflowers and other oil seed plants, of beets, legumes, fodder, potatoes and other forbs. Croplands comprise intensively cultivated fields as well as traditionally and extensively cultivated crops with little or no chemical fertilisation or pesticide application. Faunal and floral quality and diversity depend on the intensity of agricultural use and on the presence of borders of natural vegetation between fields.
Intensive unmixed crops	Cereal and other crops grown on large, unbroken surfaces in open field landscapes.
Large-scale intensive unmixed crops (>25ha)	No description available.
Medium-scale intensive unmixed crops (1-25ha)	No description available.
Small-scale intensive unmixed crops (<1ha)	No description available.
Mixed crops of market gardens and horticulture	Intensive cultivation of vegetables, flowers, small fruits, usually in alternating strips of different crops. Includes allotments and small-scale market gardens.
Large-scale market gardens and horticulture	No description available.
Small-scale market gardens and horticulture, including allotments	No description available.
Arable land with unmixed crops grown by low-intensity agricultural methods	Traditionally and extensively cultivated crops, in particular, of cereals, harbouring a rich and threatened flora of field weeds including [Agrostemma githago], [Centaurea cyanus], [Legousia speculum-veneris], [Chrysanthemum segetum], [Calendula arvensis], [Adonis] spp., [Consolida] spp., [Nigella] spp., [Papaver] spp.
Inundated or inundatable croplands, including rice fields	Inundated or inundatable fields used for the cultivation of rice ([Oryza sativa]). When not too heavily treated, they may provide substitution habitats for some wetland faunal elements, in particular, birds, including ducks, rails and herons.
Bare tilled, fallow or recently abandoned arable land	Fields abandoned or left to rest, and other interstitial spaces on disturbed ground. Set-aside or abandoned arable land with forbs planted for purposes of soil protection, stabilization, fertilisation or reclamation. Abandoned fields are colonised by numerous pioneering, introduced or nitrophilous plants. They sometimes provide habitats that can be used by animals of open spaces.
Bare tilled land	No description available.
Fallow un-inundated fields with annual weed communities	Communities of segetal, pioneering, introduced or nitrophilous plants colonising fallow fields, disused farmland, vinyards, neglected flower beds and abandoned gardens of the Palaearctic region.
Fallow un-inundated fields with annual and perennial weed communities	Communities of arable weeds, pioneering, introduced or nitrophilous plants colonising fallow fields, disused farmland, vineyards, neglected flower beds and abandoned gardens.

Fallow inundated fields with annual weed communities	No description available.
Fallow inundated fields with annual and perennial weed communities	No description available.
Cultivated areas of gardens and parks	Cultivated areas of small-scale and large-scale gardens, including kitchen gardens, ornamental gardens and small parks in city squares. Excludes allotment gardens (I1.2).
Large-scale ornamental garden areas	Cultivated areas of large-scale recreational gardens. The vegetation, usually composed mainly of introduced species or cultivars, can nevertheless include many native plants and supports a varied fauna when not intensively managed. Large-scale gardens are treated as habitat complexes (X23).
Park flower beds, arbours and shrubbery	Plantations of ornamental forbs or shrubs constituting elements of urban parks.
Botanical gardens	No description available.
Small-scale ornamental and domestic garden areas	Cultivated areas of ornamental gardens and small parks beside houses or in city squares. Kitchen gardens in the immediate vicinity of dwelling places. Excludes allotment gardens (I1.2). Small gardens are treated as habitat complexes (X22, X24, X25).
Ornamental garden areas	Areas of land adjoining a house, planted with ornamental grass, shrubs, trees, flower beds.
Subsistence garden areas	Areas of land used for the cultivation of fruit, vegetables, fruit trees or other domestic crops in the immediate vicinity of a dwelling.
Small parks and city squares	No description available.
Recently abandoned garden areas	Abandoned flowerbeds and vegetable plots in gardens are rapidly colonized by abundant weeds (E5.1).
Constructed, industrial and other artificial habitats	Primarily human settlements, buildings, industrial developments, the transport network, waste dump sites. Includes highly artificial saline and non-saline waters with wholly constructed beds or heavily contaminated water (such as industrial lagoons and saltworks) which are virtually devoid of plant and animal life. Excludes disused underground mines (H1.7).
Buildings of cities, towns and villages	Buildings in built-up areas where buildings, roads and other impermeable surfaces occupy at least 30% of the land. Includes agricultural building complexes where the built area exceeds 1 ha.
Residential buildings of city and town centres	Buildings in urban areas where buildings, roads and other impermeable surfaces occupy at least 80% of the land, and with continuous or nearly continuous buildings, which may be houses, flats or buildings occupied for only part of the day.
Residential buildings of villages and urban peripheries	Residential buildings in suburbs and villages where buildings and other impermeable surfaces occupy between 30% and 80% of the land area.
Urban and suburban public buildings	Buildings with public access, such as hospitals, schools, churches, cinemas, government buildings, shopping complexes and other places of public resort.

Urban and suburban industrial and commercial sites still in active use	Buildings in sites with current industrial or commercial use. Includes office blocks, factories, industrial units, large (greater than 1 ha) greenhouse complexes, large animal-rearing batteries and large farm units.
Urban and suburban commercial units	No description available.
Urban and suburban factories	No description available.
Disused constructions of cities, towns and villages	Disused factories, houses, offices, factories or other buildings; these structures would, while in use, have been classified as J1.1, J1.2, J1.3 or J1.4.
Urban and suburban derelict spaces	No description available.
Urban and suburban construction and demolition sites	Non-rural sites in which buildings are being constructed or demolished; this land, when in use, would have been or will be classified as J1.1, J1.2, J1.3 or J1.4.
High density temporary residential units	Residential buildings that are not intended to be present for more than 10 years.
Low density buildings	Buildings in rural and built-up areas where buildings, roads and other impermeable surfaces are at a low density, typically occuping less than 30% of the ground. Excludes agricultural building complexes where the built area exceeds 1 ha (J1.4).
Scattered residential buildings	Houses or flats in areas where buildings, roads and other impermeable surfaces are at a low density.
Rural public buildings	Rural buildings with public access, such as government buildings, schools, shops or places of worship.
Rural industrial and commercial sites still in active use	Rural buildings used for industry, offices, warehousing etc. Excludes high concentrations of buildings on sites greater than 1 ha (J1.4).
Rural commercial units	No description available.
Rural industrial sites	No description available.
Agricultural constructions	Structures dispersed within the rural or natural environment established for the purpose of agricultural activities, permanent or temporary residences, small-scale commercial, artisanal or industrial activities, recreation, research, environmental protection. They include isolated greenhouses, animal shelters, harvest-drying structures, sheds and huts, field and pasture enclosures. Excludes high concentrations of buildings on sites greater than 1 ha (J1.4).
Agricultural buildings (not isolated)	No description available.
Isolated agricultural buildings	No description available.
Greenhouses	No description available.
Constructed boundaries	Walls and fences in areas where buildings are at low density. Includes sea walls.
Fences	No description available.
Field walls	No description available.
Sea walls	No description available.

Disused rural constructions	Disused constructions that while in use would have been classified as J2.1, J2.2, J2.3 or J2.4.
Derelict spaces of disused rural constructions	No description available.
Rural construction and demolition sites	Rural sites in which buildings are being constructed or demolished.
Extractive industrial sites	Sites in which minerals are extracted. Includes quarries, open-cast mines and active underground mines. Excludes disused underground mines (H1.7).
Active underground mines	Artificial underground spaces. They may constitute important substitution habitats for cave-dwelling bats and for significant subterranean invertebrates such as crustaceans, planarians etc. Excludes disused mines (H1.7).
Active opencast mineral extraction sites, including quarries	Areas used for open-sky mining and quarrying activities and presently in operation.
Recently abandoned above-ground spaces of extractive industrial sites	Disused sites that were formerly quarries or open-cast mines of type J3.2.
Transport networks and other constructed hard-surfaced areas	Includes roads, car parks, railways, paved footpaths and hard-surfaced areas of airports, water ports and recreational areas.
Disused road, rail and other constructed hard-surfaced areas	Disused land that when in use was of type J4.2, J4.3, J4.4, J4.5 or J4.6. Such land can be colonised by herbaceous weed vegetation (E5.1) or by trees (G5.6).
Road networks	Road surfaces and car parks, together with the immediate highly-disturbed environment adjacent to roads, which may consist of roadside banks or verges.
Rail networks	Railway tracks, and the immediate highly-disturbed environment adjacent to railways, which may consist of banks or verges.
Airport runways and aprons	In airports, hard surfaces other than buildings.
Hard-surfaced areas of ports	In ports, hard surfaces other than buildings.
Pavements and recreation areas	Paved areas, city squares and hard-surfaced recreation areas where the traffic is on foot or if wheeled then does not use the hard-surfaced area as a route.
Constructed parts of cemeteries	Hard-surfaced areas within cemeteries.
Highly artificial man-made waters and associated structures	Inland artificial waterbodies with wholly-constructed beds or heavily contaminated water, and their associated conduits and containers. Includes saltworks by the coast. Excludes man-made but semi-natural waterbodies (C1, C2, C3).
Highly artificial saline and brackish standing waters	Highly artificial inland saline or brackish waterbodies with no perceptible flow, together with their associated containers. Includes saltworks with active or recently abandoned salt-extraction evaporation basins.

Saline and brackish industrial lagoons and canals	Inland artificial saltwater bodies.
Saltworks	Active or recently abandoned salt-extraction evaporation basins. Habitats equivalent to subunits of A2.5, C1.5, or D6.1may develop.
Highly artificial saline and brackish running waters	Highly artificial inland saline or brackish waterbodies with perceptible flow.
Highly artificial non-saline standing waters	Artificial watercourses and basins, together with their associated containers, holding fresh water with no perceptible flow. Includes ponds and lakes with completely man-made substrate, water storage tanks, intensively managed fish ponds, and standing waterbodies of extractive industries.
Ponds and lakes with completely man-made substrate	Artificial freshwater basins used for the needs of navigation, industrial activities, recreation or ornamentation outside of city parks.
Intensively managed fish ponds	No description available.
Water storage tanks	No description available.
Standing waterbodies of extractive industrial sites with extreme chemistry	No description available.
Highly artificial non-saline running waters	Artificial watercourses and basins, together with their associated containers, carrying fresh water with perceptible flow. Includes sewers, running discharges from extractive industrial sites, subterranean artificial watercourses, and channels with completely man-made substrate. Excludes fountains and cascades.
Non-saline water channels with completely man-made substrate	No description available.
Sewers	No description available.
Running discharges from extractive industrial sites with extreme chemistry	No description available.
Subterranean artificial watercourses	No description available.
Highly artificial non-saline fountains and cascades	Artificial watercourses and basins, together with their associated containers, with fresh water that spurts or splashes.
Waste deposits	Tips, landfill sites and slurries produced as byproducts, usually unwanted, of human activity.
Household waste and landfill sites	Sites used for disposal of household waste, including landfill sites that may be used for several types of waste.
Non-agricultural organic waste	Sewage waste, sewage slurries.
Sewage works and sludge beds	Sewage treatment plants and their basins.
Solid organic waste	No description available.

Agricultural and horticultural waste	Dung heaps, slurry lagoons, decaying straw, dumps of unwanted produce.
Solid agricultural and horticultural waste	No description available.
Liquid agricultural wastes (manure)	No description available.
Industrial waste	Heaps, tips and mounds formed as byproducts of industrial activities. Includes slag heaps, mine waste, dumped quarry waste, and mineral wastes resulting from chemical processes.
Mining slag heaps	No description available.
Industrial scrap and detritus heaps	No description available.
Waste resulting from building construction or demolition	Dumps of building waste when not forming a part of construction or demolition sites, or when so large as to constitute a separate habitat.
Habitat complexes	The listed habitat complexes represent preliminary draft proposals. They have not been subjected to rigorous scrutiny to ensure consistency. Some complex habitats have been listed above (e.g. valley mires D2.1).
Estuaries	Downstream part of a river valley, subject to the tide and extending from the limit of brackish waters. River estuaries are coastal inlets where there is generally a substantial freshwater influence. The mixing of freshwater and sea water and the reduced current flows in the shelter of the estuary lead to deposition of fine sediments, often forming extensive intertidal sand and mud flats. In addition to herbs, they can also be colonised by shrubs creating thickets (e.g. [Tamarix] spp.). Where the tidal currents are faster than flood tides, most sediments deposit to form a delta at the mouth of the estuary. Baltic river mouths, considered as an estuary subtype, have brackish water and no tide, with helophytic wetland vegetation and luxurious aquatic vegetation in shallow water areas. Littoral and sublittoral habitat types typical of estuaries are included in A2 and A5, although many other habitat types including tidal rivers may occur in estuaries. Includes Transitional waters as defined by the Water Framework Directive.
Saline coastal lagoons	Lagoons are expanses of shallow coastal salt water, of varying salinity and water volume, wholly or partially separated from the sea by sand banks or shingle, or, less frequently, by rocks. Salinity may vary from brackish water to hypersalinity depending on rainfall, evaporation and through the addition of fresh seawater from storms, temporary flooding of the sea in winter or tidal exchange. With or without vegetation of seagrasses or charophytes. Habitat types typical of lagoons are included in A5, although many other habitat types may also occur in lagoons.

Brackish coastal lagoons	Lagoons are expanses of shallow coastal salt water, of varying salinity and water volume, wholly or partially separated from the sea by sand banks or shingle, or, less frequently, by rocks. Fully saline coastal lagoons are classified as X02. Flads and gloes, considered a Baltic variety of lagoons, are small, usually shallow, more or less delimited water bodies still connected to the sea or cut off from the sea very recently by land upheaval. Characterised by well-developed reedbeds and luxuriant submerged vegetation and having several morphological and botanical development stages in the process whereby sea becomes land. Mediterranean lagoons may host the [Ruppietum] community with halophytic vegetation, while at sites with a fresh water supply, plant communities of [Juncetum] and [Phragmitetum] can develop. [Sarcocornia perennis] and [Arthrocnemum macrostachyum] may occur here.
Raised bog complexes	Raised bogs are highly oligotrophic, strongly acidic, domed peatlands, whose peat is composed mainly of sphagnum remains and whose surface derives moisture and nutrients only from rainfall (ombrotrophic). Raised bog complexes may include elements of the main mire surface (D1.1) comprising a complex of low hummocks, small pools and their associated vegetation, together with larger pools (C1.46), a marginal lagg (C1.47), pre-woods (G5.64) and other associated habitat types.
Snow patches	Areas that retain late-lying snow, including vegetated and unvegetated areas. Vegetated habitat types typical of snow patches are included in E4.1 and (rarely) F2.1, and unvegetated snow patches in H4.1.
Crops shaded by trees	Crops, meadows or pastures developed under orchards or other cultivated tree plantations. The component habitat types may include elements of I1, E2.6 and FB.
Intensively-farmed crops interspersed with strips of natural and/or semi-natural vegetation	'Intensively-grown crops interspersed with strips of natural and/or semi-natural vegetation. The semi-natural vegetation, which may consist of ruderal and pioneer species colonising uncultivated land, may be allowed to develop on broad headlands at arable field margins.
Pasture woods (with a tree layer overlying pasture)	Pasture woods are the products of historic land management systems, and represent a vegetation structure rather than being a particular plant community. Typically this structure consists of large, open-grown or high forest trees (often pollards) at various densities, in a matrix of grazed grassland, heathland and/or woodland floras. This habitat is most common in southern Britain, but scattered examples occur throughout the UK. Outgrown wood-pasture and mature high forest remnants occur in northern and central Europe, but the number and continuity of ancient (veteran) trees with their associated distinctive saproxylic (wood-eating) fauna and epiphytic flora are more abundant in Britain than elsewhere. Component habitat types include beech and yew woodland (G1.6 and G3.97), heathland (F4) and dry acid grassland (E1.7). A range of native species usually predominates amongst the old trees but there may be non-native species which have been planted or regenerated naturally.

Mosaic landscapes with a woodland element (bocages)	Landscapes consisting of a network of small linear, insular and semi-insular wooded habitats, tree-lines, hedgerows, closely interwoven with grassy or cultivated habitats. Component habitat types may include elements of G5, FA, E2 and I1. Characteristic of the British Isles, southern Fennoscandia, the Germano-Baltic plain, the northern piedmont of the Alps, western France, Galicia, Romania.
Large parks	Large, varied green spaces within towns and cities, usually > 5ha. They may include small woods (G5), mown lawns (E2.64), water bodies (which may be semi-natural or artificial), flower beds and shrubberies (I2.1), and semi-natural grassland or woodland enclaves.
Land sparsely wooded with broadleaved deciduous trees	Land in which the woodland element comprises broadleaved deciduous trees, with a canopy cover less than 5%.
Land sparsely wooded with broadleaved evergreen trees	Land in which the woodland element comprises broadleaved evergreen trees, with a canopy cover less than 5%.
Land sparsely wooded with coniferous trees	Land in which the woodland element comprises coniferous trees, with a canopy cover less than 5%.
Land sparsely wooded with mixed broadleaved and coniferous trees	Land in which the woodland element comprises mixed broadleaved and coniferous trees, with a canopy cover less than 5%.
Wooded steppe	The transition zone between forests and the middle Eurasian, Irano-Anatolian or Saharo-Mediterranean steppes, occurring in a vast swath extending from Pannonia to the Far East, south of and inland from the boreal and nemoral forest belts, in regions of reduced summer humidity, as well as in areas adjacent to, or under the influence of the Mediterranean and warm-temperate humid zones, represented by a macromosaic of steppe and connected, contiguous, disjunct or widely spaced woodland stands, the latter usually with a very developed grassy understorey, or by a scattering of trees within a steppe environment. The forest elements are often located on porous or slightly raised ground, valley sides or slopes, the grasslands occupying less well drained soils and lower places. Component habitat types include those of E1.2 in combination with G1.7.
Wooded tundra	The transition zone between taiga and tundra, characterised by a scattering of stunted coniferous trees or deciduous shrubs within a tundra environment, or by a macromosaic of tundra with scattered islands of forest, or by forest with scattered treeless tundra patches. They occur in a broad belt, up to several hundreds of kilometres wide, across the north of the Eurasian continent and in a narrow ecotone in Siberian mountains. Component habitat types include those of F1 in combination with G3.A, G3.B, G3.C or G4.2.

Treeline ecotones	Formations of the timberline of mountains, in which subalpine forests give way to alpine or boreal heaths and scrubs, or to alpine grasslands; they are characterised by a scattering of stunted, gnarled trees punctuating an alpine shrub or grassland environment, by a macromosaic of alpine shrub and grass formations with scattered islands of forest, or by open or clear forest with an undergrowth composed of alpine elements such as ericaceous shrubs. They occupy a narrow belt, varying in altitudinal location according to latitude, exposure and other climatic or edaphic conditions. Component habitats include those of F2 and E4.
Small city centre non-domestic gardens	Small gardens or other green spaces, usually < 0.5 ha, often partitioned by walls, located inside city blocks and completely or almost completely surrounded by continuous architectural structures (J1.1). May include mown lawns and flower beds (I2.2), native or ornamental trees.
Large non-domestic gardens	Large non-domestic gardens or other green spaces, more restricted in area and diversity than large parks (X11), typically 0.5 - 5 ha. Usually located within urban areas and completely or almost completely surrounded by continuous architectural structures (J1.1) or roads (J4.1). May include mown lawns and flower beds (I2.23), native or ornamental trees.
Domestic gardens of city and town centres	Domestic gardens, usually small in area, usually < 0.5 ha, often with very mixed species-rich flora and fauna (crops, lawns, shrubs, flowerbeds etc., frequently interspersed with paths and small buildings) in close proximity to human dwellings, urban green spaces (usually species-poor) and parks. The component habitat types comprise combinations of several level 1 units.
Domestic gardens of villages and urban peripheries	Domestic gardens, usually small in area, usually < 0.5 ha, often with very mixed species-rich flora and fauna (crops, lawns, shrubs, flowerbeds etc., frequently interspersed with paths and small buildings) in close proximity to human dwellings, agricultural land, natural or semi-natural habitats. The component habitat types comprise combinations of several level 1 units.
Salt lake islands	Permanently or usually emergent features of inland saline lakes and of permanent or temporary saline lakes or ponds.
Bentho-pelagic habitats	Habitats developed at the interface between the benthic substrate and water. A combination of habitat types from A1 to A6 with those from A7.
COASTAL AND HALOPHYTIC HABITATS	
Open sea and tidal areas	

Sandbanks which are slightly covered by sea water all the time	Sublittoral sandbanks, permanently submerged. Water depth is seldom more than 20 m below Chart Datum. Non-vegetated sandbanks or sandbanks with vegetation belonging to the [Zosteretum marinae] and [Cymodoceion nodosae]. Plant text: [Zostera marina], free living species of the [Corallinaceae] family. In Baltic Sea also [Potamogeton pectinatus], [Ruppia cirrhosa] and [Tolypella nidifica]. Vertebrate text: Important wintering habitat for many bird species, in particular [Melanitta nigra] but also [Gavia stellata] and [Gavia arctica]. Resting places for seals. Invertebrate text: Invertebrate communities of sandy sublittoral (e.g. polychaetes).
Posidonia beds (Posidonion oceanicae)	Beds of [Posidonia oceanica] (Linnaeus) Delile characteristic of the infralittoral zone of the Mediterranean (depth: ranging from a few dozen centimetres to 30 - 40 metres). On hard or soft substrate, these beds constitute one of the main climax communities. They can withstand relatively large variations in temperature and water movement, but are sensitive to desalination, generally requiring a salinity of between 36 and 39 per 1000. Plant text: [Posidonia oceanica]. Vertebrate text: Fishes - [Epinephelus guaza], [Hippocampus ramulosus]. Invertebrate text: Molluscs - #[Pinna nobilis]; echinoderms - [Asterina pancerii], [Paracentrotus lividus].
Estuaries	Downstream part of a river valley, subject to the tide and extending from the limit of brackish waters. River estuaries are coastal inlets where, unlike 'large shallow inlets and bays' there is generally a substantial freshwater influence. The mixing of freshwater and sea water and the reduced current flows in the shelter of the estuary lead to deposition of fine sediments, often forming extensive intertidal sand and mud flats. Where the tidal currents are faster than flood tides, most sediments deposit to form a delta at the mouth of the estuary. Baltic river mouths, considered as an estuary subtype, have brackish water and no tide, with large wetland vegetation (helophytic) and luxurious aquatic vegetation in shallow water areas. Plant text: Benthic algal communities, [Zostera] beds e.g. [Zostera noltii] ([Zosteretea]) or vegetation of brackish water: [Ruppia maritima] (= [R. rostellata] ([Ruppietea])); [Spartina maritima] ([Spartinetea]); [Sarcocornia perennis] ([Arthrocnemetea]). Both species of fresh water and brackish water can be found in Baltic river mouths
Mudflats and sandflats not covered by seawater at low tide	Sands and muds of the coasts of the oceans, their connected seas and associated lagoons, not covered by sea water at low tide, devoid of vascular plants, usually coated by blue algae and diatoms. They are of particular importance as feeding grounds for wildfowl and waders. Note: Eelgrass communities (Palaearctic 11.3) are included in this habitat type.

Coastal lagoons	Lagoons are expanses of shallow coastal salt water, of varying salinity and water volume, wholly or partially separated from the sea by sand banks or shingle, or, less frequently, by rocks. Salinity may vary from brackish water to hypersalinity depending on rainfall, evaporation and through the addition of fresh seawater from storms, temporary flooding of the sea in winter or tidal exchange. With or without vegetation from [Ruppietea maritimae], [Potametea], [Zosteretea] or [Charetea] (CORINE91: 23.21 or 23.22). Flads and gloes, considered a Baltic variety of lagoons, are small, usually shallow, more or less delimited water bodies still connected to the sea or have been cut off from the sea very recently by land upheaval. Characterised by well-developed reedbeds and luxuriant submerged vegetation and having several morphological and botanical development stages in the process whereby sea becomes land. Salt basins and salt ponds may also be considered as lagoons, providing they had their origin on a transformed natural old lagoon or on a saltmarsh, and are characterised by a minor impact from e
Large shallow inlets and bays	Large indentations of the coast where, in contrast to estuaries, the influence of freshwater is generally limited. These shallow indentations are generally sheltered from wave action and contain a great diversity of sediments and substrates with a well developed zonation of benthic communities. These communities have generally a high biodiversity. The limit of shallow water is sometimes defined by the distribution of the [Zosteretea] and [Potametea] associations. Several physiographic types may be included under this category providing the water is shallow over a major part of the area: embayments, fjards, rias and voes. Plant text: [Zostera] spp., [Ruppia maritima], [Potamogeton] spp. (e.g. [Potamogeton pectinatus], [Potamogeton praelongus]), benthic algae. Invertebrate text: Benthic invertebrate communities.
Reefs	Submarine, or exposed at low tide, rocky substrates and biogenic concretions, which arise from the sea floor in the sublittoral zone but may extend into the littoral zone where there is an uninterrupted zonation of plant and animal communities. These reefs generally support a zonation of benthic communities of algae and animals species including concretions, encrustations and corallogenic concretions. In northern Baltic areas, the upper shallow water filamentous algal-zone with great annual succession is normally well developed on gently sloping shores. [Fucus vesiculosus] is submerged at depth of 0.5-6 m in the sublittoral zone. A red algae zone occurs below the Fucus zone at depths of about 5 to 10 m. Plant text: Brown algae (species of the [Fucus], [Laminaria] and [Cystoseira] genus, [Pilayella littoralis]), red algae (e.g. species of the [Corallinaceae], [Ceramiceae] and [Rhodomelaceae] families), green algae. Other plant species: [Dictyota dichotoma], [Padina pavonica], [Halopteris scoparia], [Laurencia obtusa], [Hypnea musciformis], [Dasycladus claveformis], [Acetabularia mediterranea]. Invertebrate text: M

Submarine structures made by leaking gases	Spectacular submarine complex structures, consisting of rocks, pavements and pillars up to 4 m high. These formations are due to the aggregation of sandstone by a carbonate cement resulting from microbial oxidation, mainly methane. The methane most likely originated from the microbial decomposition of fossil plant materials. The formations are interspersed with gas vents that intermittently release gas. These formations shelter a highly diversified ecosystem with brightly coloured species. Invertebrate text: Porifera - [Cliona celata]; Anthozoa - [Metridium senile], [Tealia felina], [Alcyonium digitatum]; Polychaeta - [Pomatoceros triqueter], [Dodocaceria concharum]; Gastropoda - [Cingula striata], [Alvania punctura], [Rissoa albella], [Rissoa parva]; Decapoda - [Porcellana longicornis], [Cancer pagurus]; Echinodermata - [Ophiothrix fragilis].
Sea cliffs and shingle or stony beaches	
Annual vegetation of drift lines	Formations of annuals or representatives of annuals and perennials, occupying accumulations of drift material and gravel rich in nitrogenous organic matter ([Cakiletea maritimae] p.). Plant text: [Cakile maritima], [Salsola kali], [Atriplex] spp. (particularly [Atriplex glabriuscula]), [Polygonum] spp., [Euphorbia peplis], [Mertensia maritima], [Elymus repens], [Potentilla anserina], and, particularly in Mediterranean formations, [Glaucium flavum], [Matthiola sinuata], [Matthiola tricuspidata], [Euphorbia paralias], [Eryngium maritimum]. In Cyprus this habitat includes endemics such as [Taraxacum aphrogenes] & [Taraxacum hellenicum].
Perennial vegetation of stony banks	Perennial vegetation of the upper beaches of great shingle banks, formed by [Crambe maritima], [Honkenya peploides] and other perennial species. A wide range of vegetation types may be found on large shingle structures inland of the upper beach. On more mature, stable, shingle coastal forms of grassland, heath and scrub vegetation may develop. Some areas of unusual vegetation dominated by lichens and bryophytes are found on more mature shingle. Subtypes: Pal. 17.31 - Baltic sea kale communities: Elymo-Crambetum Pal. 17.32 - Channel sea kale communities: Lathyro-Crambetum Pal. 17.33 - Atlantic sea kale communities: Crithmo-Crambetum Plant text: [Crambe maritima], [Honkenya peploides], [Leymus arenarius] (Pal.:17.31), [Lathyrus japonicus] (Pal.:17.32), [Crithmum maritimum] (Pal.:17.33).

Vegetated sea cliffs of the Atlantic and Baltic Coasts	Vegetated cliffs exhibit a complex pattern of variation reflecting the degree of maritime exposure, geology and geomorphology, biogeographical provenance and pattern of human management. Typically, on the most exposed cliffs there is a zonation from crevice and ledge communities of the steepest slopes beside the sea ([Crithmo-Armerietalia], Géhu 1964) through to closed maritime grasslands on upper cliff slopes, cliff tops and cliff ledges where there is deeper accumulation of soils ([Silenion maritimae], Malloch 1973). Further inland and on more sheltered cliffs, these grade into a complex assemblage of maritime and paramaritime types of heath, calcareous grassland, acid grassland, therophyte, tall herb, scrub and wind-pruned woodland vegetation, each enriched by floristic elements characteristic of coastal habitats. On soft coasts with much active movement, complex assemblages of maritime and non-maritime vegetation occur. Plant text: [Crithmum maritimum], [Armeria maritima], [Limonium] spp., [Brassica oleracea], [Silene maritima], [Cochlearia officinalis], [Plantago maritima],
Vegetated sea cliffs of the Mediterranean coasts with endemic Limonium spp	Vegetated cliffs and rocky shores of the Mediterranean, of the Mediterraneo-temperate eastern Atlantic (south-western Iberia) and of the Black Sea. [Crithmo-Limonietalia] Plant text: [Crithmum maritimum], [Plantago subulata], [Silene sedoides], [Sedum litoreum], [Limonium] spp., [Armeria] spp., [Euphorbia] spp., [Daucus] spp., [Asteriscus maritimus]. Many [Limonium] species, in particular, are endemic of extremely local occurrence.
Vegetated sea cliffs with endemic flora of the Macaronesian coasts	Aerohaline communities of the sea-cliffs of the Canaries and Madeira ([Frankenio-Astidamietalia latifoliae]); communities of the sea-cliffs of the Azores ([Festucion petraeae]) dominated by the endemic [Festuca petraea]. Plant text: Pal.:18.23 - [Crithmum maritimum], [Astydamia latifolia], [Schizogyne sericea], [Andryala glutinosa], [Plantago coronopus], [Tolpis fruticosa], [Aizoon canariense], [Campylanthus salsoloides], [Limonium pectinatum], [Frankenia ericifolia], [Reichardia ligulata], [Argyranthemum frutescens], [Lotus] spp., [Asplenium marinum]. Pal.:18.24 - [Festuca petraea], [Plantago coronopus], [Daucus carota ssp. azorica], [Azorina vidalii], [Euphorbia azorica], [Lotus subbiflorus], [Polypogon maritimus], [Asplenium marinum], [Frankenia] spp.
Atlantic and continental salt marshes and salt meadows	

Salicornia and other annuals colonizing mud and sand	Formations composed mostly or predominantly of annuals, in particular Chenopodiaceae of the genus [Salicornia] or grasses, colonising periodically inundated muds and sands of marine or interior salt marshes. [Thero-Salicornietea], [Frankenietea pulverulentae], [Saginetea maritimae]. Subtypes: Pal. 15.11 - Glasswort swards ([Thero-Salicornietalia]): annual glasswort ([Salicornia] spp., [Microcnemum coralloides]), seablite ([Suaeda maritima]), or sometimes salwort ([Salsola] spp.) formations colonising periodically inundated muds of coastal saltmarshes and inland salt-basins. Pal. 15.12 - Mediterranean halo-nitrophilous pioneer communities ([Frankenion pulverulentae]): formations of halo-nitrophilous annuals ([Frankenia pulverulenta], [Suaeda splendens], [Salsola soda], [Cressa cretica], [Parapholis incurva], [P. strigosa], [Hordeum marinum], [Sphenopus divaricatus]) colonising salt muds of the Mediterranean region, susceptible to temporary inundation and extreme drying. Pal. 15.13 - Atlantic sea-pearlwort communities ([Saginion maritimae]): formations of annual
Spartina swards (Spartinion maritimae)	Perennial pioneer grasslands of coastal salt muds, formed by [Spartina] or similar grasses. subtypes: Pal. 15.21 - Flat-leaved cordgrass swards: perennial pioneer grasslands of coastal salt muds, dominated by flat-leaved [Spartina maritima], [Spartina townsendii], [Spartina anglica], [Spartina alterniflora]. Pal. 15.22 - Rush-leaved cordgrass swards: perennial pioneer grasslands of southern Iberian coastal salt muds, dominated by the junciform-leaved [Spartina densiflora]. Plant text: Pal.:15.21 - [Spartina maritima], [Spartina alterniflora] Pal.:15.22 - [Spartina densiflora].
Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	Salt meadows of Baltic, North Sea, English Channel and Atlantic shores. [Aster tripolium] can be present or abundant in most subdivisions. Plant text: Pal.:15.31 - [Puccinellia maritima]; Pal.:15.32 - [Halimione portulacoides], [Halimione pedunculata], [Aster tripolium]; Pal.:15.33 - [Armeria maritima], [Glaux maritima], [Plantago maritima], [Frankenia laevis], [Artemisia maritima], [Festuca rubra], [Agrostis stolonifera], [Juncus gerardi], [Carex extensa], [Blysmus rufus], [Eleocharis] spp.; Pal.:15.34 - [Spergularia marina], [Puccinellia distans], [Puccinellia fasciculata], [Puccinellia retroflexa], [Puccinellia maritima], [Triglochin maritima], [Potentilla anserina], [Halimione portulacoides]; Pal.:15.35 - [Elymus pycnanthus] (= [Agropyron pungens]) or [Elymus repens]; Pal.:15.36 - [Atriplex littoralis], [Atriplex hastata], [Beta maritima], [Matricaria maritima].
Inland salt meadows	Non-coastal natural salt basins made up of different habitat types consisting of zones of seepage of saline water, running or stagnant saline water, with typical halophilous vegetation and of reed beds at the edge of brackish waters. Plant text: [Aster tripolium], [Atriplex hastata], [Elymus atherica] (= [Elymus pungens], [Elymus pycnanthus]), [Halimione pedunculata], [Juncus gerardi], [Plantago maritima], [Puccinellia distans], [Salicornia] spp., [Spergularia salina], [Suaeda maritima], [Triglochin maritima].
Mediterranean and thermo-Atlantic salt marshes and salt meadows	

Mediterranean salt meadows (Juncetalia maritimi)	Various mediterranean communities of the [Juncetalia maritimi]. subtypes : Pal. 15.51 - tall rush saltmarshes dominated by [Juncus maritimus] and/or J. acutus Pal. 15.52 - short rush, sedge and clover saltmarshes ([Juncion maritimi]) and humid meadows behind the littoral, rich in annual plant species and in Fabacea ([Trifolion squamosi]) Pal. 15.53 - mediterranean halo-psammophile meadows ([Plantaginion crassifoliae]) Pal. 15.54 - Iberian salt meadows ([Puccinellion fasciculatae]) Pal. 15.55 - halophilous marshes along the coast and the coastal lagoons ([Puccinellion festuciformis]) Pal. 15.57 - humid halophilous moors with the shrubby stratum dominated by [Artemisia coerulescens] ([Agropyro-Artemision coerulescentis]) Cyprus subtypes - Halophytic vegetation periodically inundated by saline or bracking water. Plant text: [Juncus maritimus], [Juncus acutus], [Carex extensa], [Aster tripolium], [Plantago cornuti], [Scorzonera parviflora] (15.51); [Hordeum nodosum], [Hordeum maritimum], [Trifolium squamosum], [Trifolium michelianum], [Alopecurus bulbosus], [Carex divisa], [Ranunculus ophiogl
Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	Perennial vegetation of marine saline muds (schorre) mainly composed of scrubs, essentially with a Mediterranean-Atlantic distribution ([Salicornia], [Limonium vulgare], [Suaeda] and [Atriplex] communities) and belonging to the [Sarcocornetea fruticosi] class. Plant text: [Halimione portulacoides], [Inula crithmoides], [Suaeda vera] and shrubby [Sarcocornia]. Vegetation of low topographic level ([Sarcocornetea]): [Sarcocornia perennis], [Sarcocornia alpini], [Sarcocornia fruticosa], [Arthrocnemum macrostachyum] (= [Arthrocnemum glaucum]), [Halocnemum strobilaceum]. Vegetation of high topographic level ([Limonietalia confusi]): [Limonium virgatum], [Limonium diffusum], [Limonium ferulaceum], [Limonium densissimum], [Limonium girardianum], [Limonium bellidifolium], [Limonium gmelinii], [Aeluropus littoralis], [Aster tripolium], [Limoniastrum monopetalum], [Artemisia gallica].
Halo-nitrophilous scrubs (Pegano-Salsoletea)	Halo-nitrophilous scrubs (matorrals) belonging to the [Pegano-Salsoletea] class, typical of dry soils under arid climates, sometimes including taller, denser brushes. Plant text: [Peganum harmala], [Artemisia herba-alba], [Lycium intricatum], [Capparis ovata], [Salsola vermiculata], [Salsola genistoides], [Salsola oppositifolia], [Suaeda pruinosa], [Atriplex halimus], [Atriplex glauca], [Camphorosma monspeliaca], [Haloxylon articulatum].
Salt and gypsum inland steppes	

Mediterranean salt steppes (Limonietalia)	Associations rich in perennial, rosette-forming [Limonium] spp. or esparto grass ([Lygeum spartum]), occupying, along Mediterranean coasts and on the fringes of Iberian salt basins, soils temporarily permeated (though not inundated) by saline water and subject to extreme summer drying, with formation of salt efflorescence. Characteristic syntaxa are [Limonietalia], [Arthrocnemetalia], [Thero-Salicornietalia] and [Saginetalia maritimae]. The following syntaxa correspond to regional varieties of this habitat type; [Arthrocnemetalia]: [Suaedion braunblanquetii] (continental Iberian peninsula), [Arthrocnemion glauci]. [Limonietalia]: [Limonion catalaunico-viciosoi] (Aragon), [Lygeo-Limonion furfuracei] (SE Iberian peninsula), [Lygeo-Lepidion cardamines] (Castilla-La-Mancha). [Thero-Salicornietalia]: [Microcnemion coralloidis] (continental Iberian peninsula), [Salicornion patulae]. [Saginetalia maritimae]: [Frankenion pulverulentae], [Thero-Suaedion]. Plant text: [Halopeplis amplexicaulis], [Hymenolobus procumbens], *[Limonium] spp., [Lygeum spartum], [Microcnemion coralloides], [Salicornia patula], [Senecio auricula], [Sphen
Iberian gypsum vegetation (Gypsophiletalia)	Garrigues occupying gypsum-rich soils of the Iberian peninsula, usually very open and floristically characterised by the presence of numerous gypsophilous species, among which [Gypsophila struthium], [Gypsophila hispanica], [Centaurea hyssopifolia], [Teucrium libanitis], [Ononis tridentata], [Lepidium subulatum], [Herniaria fruticosa], [Reseda stricta], [Helianthemum squamatum]. They are often rich in thymes ([Thymus]), germanders ([Teucrium]), rockroses ([Helianthemum]), composites ([Centaurea], [Jurinea], [Santolina], [Frankenia]). Characteristic syntaxa are [Lepidion subulati], [Gypsophilion hispanicae] and [Thymo-Teucrion verticillati]. Plant text: [Centaurea hyssopifolia], [Gypsophila hispanica], [Gypsophila struthium], [Helianthemum squamatum], [Herniaria fruticosa], [Lepidium subulatum], [Ononis tridentata], [Reseda stricta], [Teucrium libanitis].
Pannonic salt steppes and salt marshes	Salt steppes, salt pans, saltmarshes and shallow salt lakes, which are highly influenced by pannonic climate with extreme temperatures and aridity in summer. The enrichment of salt in the soil is due to high evaporation of ground water during Summer. These habitat types are partly of natural origin and partly under distinct influence of cattle grazing. The halophytic vegetation consists of plant communities on dry saltpans and steppes, humid salt meadows and annual plant communities of periodically flooded salt lakes with typical zonation. Plant text: [Artemisia santonicum], [Suaeda corniculata], [Suaeda pannonica], [Lepidium crassifolium], [Puccinellia peisonis], [Aster tripolium], [Salicornia prostrata], [Camphorosma annua], [Plantago tenuiflora], [Juncus gerardi], [Plantago maritima], [Cyperus pannonicus], [Pholiurus pannonicus], [Festuca pseudovina]. Vertebrate text: Mammals: +[Microtus oeconomus mehelyi], #[Spermophilus citellus]; birds: [Botaurus stellaris], [Platalea leucorodia], [Porzana parva], [Ixobrychus minutus], [Acrocephalus melanopogon], [Aythya nyroca], [Ardea purpurea], [Panurus biarmicus]. In
Boreal Baltic archipelago, coastal and landupheaval areas	

Baltic esker islands with sandy, rocky and shingle beach vegetation and sublittoral vegetation	Glaciofluvial islands consisting mainly of relatively well sorted sand, gravel or less commonly of till. May also have scattered stones and boulders. The vegetation of esker islands is influenced by the brackish water environment and often by the ongoing land upheaval which cause a succession of different vegetation types. Several rare vegetation types (heaths, sands and gravel shores) and threatened species occur. Plant text: [Artemisia campestris], [Cakile maritima], [Calluna vulgaris], [Empetrum nigrum], [Honkenya peploides], [Juniperus communis], [Lathyrus japonicus ssp. maritimus], [Leymus arenarius], [Pinus sylvestris], [Potamogeton filiformis], [Potamogeton pectinatus], [Potamogeton perfoliatus], [Myriophyllum sibiricum], [Salsola kali. Algae: Ceramium tenuicorne], [Chorda filum], [Chara aspera], [Cladophora glomerata], [Fucus vesiculosus], [Pilayella littoralis] Invertebrate text: Insects- [Athetis lepigone], [Simyra albovenosa], [Actebia praecox]. Molluscs- [Cerastoderma glaucum], [Mya arenaria].
Boreal Baltic islets and small islands	Groups of skerries, islets or single small islands, mainly in the outer archipelago or offshore areas. Composed of Precambrian, metamorphic bedrock, till or sediment. The vegetation of boreal Baltic islets and small islands is influenced by the brackish water environment, the ongoing land upheaval (in areas with intense land upheaval) and the climate conditions. The vegetation types are influenced by wind, dry weather, salt and many hours of sunlight. Land-upheaval causes a succession of different vegetation types. Bare bedrock is common. A lot of small islands have no trees. The vegetation is usually very sparse and consists often of mosaic-like pioneer vegetation communities. In some islands the species are favored by nitrogenous excrement from birds. Many of the plants are xerophytic and lichens are common. Temporary or permanent rockpools are common and these are inhabited by a variety of aquatic plant and animal species. Boreal Baltic islets and small islands are important nesting sites for birds and resting sites for seals. The surrounding sublittoral vegetation is also included in the type 1620. Plant t
Boreal Baltic coastal meadows	Coastal meadows, mostly with low growing plant communities in the geolittoral zone, sometimes interspersed with salt patches, salinity is low (brackish water), tide hardly exists but influence from land upheaval occurs. Most of the areas were traditionally used for mowing or grazing, thus enlarging the areas and keeping the vegetation low, rich in vascular plants and suitable for nesting waders. Characteristically the vegetation occurs in distinct zones, with saline vegetation closest to the sea. Plant text: [Agrostis stolonifera], [Blysmus rufus], [Bolboschoenus maritimus], [Calamagrostis stricta], [Carex nigra], [Carex paleacea], [Centaurium littorale], [Centaurium pulchellum], [Eleocharis uniglumis], [Eleocharis parvula], [Festuca rubra], [Juncus gerardi], [Odontites litoralis], [Ophioglossum vulgatum], [Plantago maritima], [Puccinellia distans ssp. borealis], [Salicornia europaea], [Spergularia salina], [Triglochin maritima]. Specially on the shores of the Gulf of Bothnia some phytogeographically interesting arctic relict species occur e.g. [Primula sibirica] and some endemic taxa (races). Boreal species: [Alisma wahlenb

Boreal Baltic sandy beaches with perennial vegetation	Sheltered to exposed gently sloping sand beaches influenced by wave action, but less influenced by tides than on the Atlantic coast, giving a higher representation of perennial plant species. Sand beaches along the Finnish and Swedish Baltic coast are relatively uncommon and usually small. Occasional stones or boulders may be scattered along the beach. The vegetation is often sparse and large areas of bare sand are common especially in the part closest to the shore. Sand-binding plants are common. The insect fauna on sand beaches is conspicuous. Drift belts of organic matter are often present. Plant text: [Ammophila arenaria], [Lathyrus japonicus ssp. maritimus], [Leymus arenarius], [Atriplex littoralis], [Salsola kali], [Crambe maritima], [Honkenya peploides], [Cakile maritima], [Elytrigia juncea ssp. boreoatlantica] Vertebrate text: Birds- [Charadrius hiaticula], [Calidris temminckii] (in Sweden only in the northern part). Invertebrate text: Insects- [Sphingonotus coerulans], [Catoptria fulgidella], [Chomoderus affinis], [Psylloides marcida],
Boreal Baltic narrow inlets	Long and narrow bays in the Boreal Baltic sea area, which are partly separated from the open sea by a submerged sill. These inlets consist usually of soft mud. The salinity varies depending on the freshwater contribution or the salinity value of the Baltic Sea. The low tidal range and low salinity of the Baltic Sea creates an ecology that is different from that of the North Atlantic coasts. Plant text: [Ceratophyllum demersum], [Hippuris vulgaris], [Myriophyllum spicatum], [Phragmites australis], [Potamogeton perfoliatus], [Sagittaria sagittifolia], [Schoenoplectus lacustris], [Schoenoplectus tabernaemontani]. Algae:[Cladophora aegagropila], [Nitellopsis obtusa] Vertebrate text: Birds: [Anas crecca], [Anas platyrhynchos], [Circus aeruginosus], [Cygnus olor], [Podiceps cristatus] Invertebrate text: Insects: [Chironomus plumosus]. Crustaceans- [Monoporeia affinis] Molluscs: [Macoma balthica], [Nucula tenuis], [Syndosmya nitida], [Thyasira flexuosa]. Polychaeta- [Maldane sarsi]. Sponges: [Axinella rugosa], [Phakellia] spp., [Mycale lingua], [Polymastica] spp., [Vosmeria] spp.
COASTAL SAND DUNES AND INLAND DUNES	
Sea dunes of the Atlantic, North Sea and Baltic coasts	
Embryonic shifting dunes	Formations of the coasts of the Atlantic, the North Sea, the Baltic Sea and the Mediterranean, representing the first stages of dune construction, constituted by ripples or raised sand surfaces of the upper beach or by a seaward fringe at the foot of the tall dunes. Plant text: Pal.:16.2111 - [Elymus farctus] ([Agropyron junceum]), [Leymus arenarius], [Honkenya peploides]; Pal.:16.2112 - [Sporobolus pungens], [Euphorbia peplis], [Otanthus maritimus], [Medicago marina], [Anthemis maritima], [Anthemis tomentosa], [Eryngium maritimum], [Pancratium maritimum].

Shifting dunes along the shoreline with Ammophila arenaria ('white dunes')	Mobile dunes forming the seaward cordon or cordons of dune systems of the coasts of the North Sea, the Baltic, and the Atlantic (Pal.:16.2121), the Mediterranean (Pal.:16.2122) and the Canary Islands (Pal.:16.2123). [Ammophilion arenariae, Zygophyllion fontanesii]. Plant text: Pal.:16.2121 - [Ammophila arenaria], [Eryngium maritimum], [Euphorbia paralias], [Calystegia soldanella], [Otanthus maritimus], [Leymus arenarius]; Pal.:16.2122 - [Ammophila arenaria], [Echinophora spinosa], [Eryngium maritimum], [Euphorbia paralias], [Cutandia maritima], [Medicago marina], [Anthemis maritima]; Pal.:16.2123 - [Zygophyllum fontanesii], [Euphorbia paralias], [Polycarpaea nivea], [Cyperus capitatus], [Ononis natrix], *[Convolvulus caput-medusae], [Polygonum maritimum], *[Androcymbium psammophilum].
Fixed coastal dunes with herbaceous vegetation ('grey dunes')	Fixed dunes, stabilised and colonised by more or less closed perennial grasslands and abundant carpets of lichens and mosses, from the Atlantic coasts (and the English Channel) between the Straits of Gibraltar and Cap Blanc Nez, and the shores of the North Sea and the Baltic. In the case of the thermo-Atlantic coast, it is logical to include [Euphorbio-Helichrysion] (Pal. 16.222 - thermo Atlantic as far as Brittany), [Crucianellion maritimae] (Pal. 16.223 - Strait of Gibraltar as far as the southern Atlantic near Cape Prior in Galicia). Subtypes Pal. 16.221: Northern grey dunes: fixed dunes of the Baltic, North Sea, Channel and northern Atlantic, with grass communities and vegetation from [Galio-Koelerion albescentis] ([Koelerion albescentis]), [Corynephorion canescentis] p., [Sileno conicae-Cerastion semidecandri]. Pal. 16.222: Biscay grey dunes ([Euphorbio-Helichrysion stoechadis]): dunes on stabilised humus soil infiltrated by dwarf bushes, of Brittany and the coast of the Bay of Biscay, with [Helichrysum stoechas], [Artemisia campestris] and [Ephedra distachya]. Pal. 16.223: Thermo-Atlantic grey dunes ([Cruci
Decalcified fixed dunes with Empetrum nigrum	Decalcified dunes colonised by [Empetrum nigrum] heaths, of the German, Danish, Scottish, Finnish, Swedish and Dutch (Friesian) coasts. Syntaxa associated to this habitat type: [Empetrion nigri, Calluno Genistion pilosae] p., [Ericion tetralicis] p. The term "fixed" should be taken to mean the opposite of "shifting". The psychrophilic coastal association [Carici trinervis-Callunetum vulgaris] de Foucault & Gehu 1978 may be included here. Plant text: [Carex arenaria], [Empetrum nigrum], [Genista tinctoria], [Pyrola rotundifolia].
Atlantic decalcified fixed dunes (Calluno-Ulicetea)	Decalcified dunes of France, Belgium and Britain, colonised by heaths of the alliances [Calluno-Genistion] or [Ulicion minoris], and of Iberia, colonised by heaths of the alliance [Ericion umbellatae]. Plant text: [Calluna vulgaris], [Carex arenaria], [Carex trinervis], [Erica ciliaris], [Erica cinerea], [Erica scoparia], [Festuca vasconcensis], [Pseudarrhenatherum longifolium (Arrhenatherum thorei)], [Ulex australis].
Dunes with Hippophaë rhamnoides	Sea-buckthorn formations of forest colonisation in both dry and humid dune depressions, mostly in Denmark, Germany, the Netherlands, Belgium, Britain and Ireland. Plant text: [Hippophae rhamnoides].

Dunes with Salix repens ssp argentea (Salicion arenariae)	[Salix repens] communities ([Salicion arenariae]), colonising wet dune slacks. Following the lowering of the ground water table or accumulation of drift sand, these communities may develop into mesophilous communities as the [Pyrolo-Salicetum] (with [Pyrola rotundifolia], [Viola canina], [Monotropa hypopitys]) or, into xerophilous [Salix] communities (with [Carlina vulgaris], [Thalictrum minus]) or into [Salix repens] communities with [Mesobromion] elements. Plant text: [Salix repens ssp. argentea] (i.e. [Salix arenaria]).
Wooded dunes of the Atlantic, Continental and Boreal region	Natural or semi-natural forests (long established) of the Atlantic, Continental and Boreal region coastal dunes with a well developed woodland structure and an assemblage of characteristic woodland species. It corresponds to oak groves and beech-oak groves with birch ([Quercion robori-petraeae]) on acid soils, as well as forests of the [Quercetalia pubescenti-petraeae] order. Pioneer stages are open forests with [Betula] spp. and [Crataegus monogyna], mixed forests with [Fraxinus excelsior], [Quercus robur], [Ulmus minor] and [Acer pseudoplatanus] or, in wet dune slacks, pioneer forests with [Salix alba] which develop into humid mixed forests or marsh forests. On southern atlantic coasts, it mainly corresponds to mixed [Pinus pinaster-Quercus ilex] forests, forests of [Quercus suber] and [Quercus robur] or forest stage with [Quercus robur] or [Quercus pubescens]. On Baltic coasts also pioneer forests of [Alnus] spp. or [Pinus sylvestris]. Plant text: Plant species are highly varied and depend on local site conditions. Associated habitats: This habitat type includes semi-natural forests with a typical unde
Humid dune slacks	Humid depressions of the dunal systems. Humid dune-slacks are extremely rich and specialised habitats very threatened by the lowering of water tables. Subtypes: Pal. 16.31: Dune-slack pools ([Charetum tomentosae], [Elodeetum canadense], [Hippuridetum vulgaris], [Hottonietum palustris], [Potametum pectinati]): freshwater aquatic communities (cf. Pal. 22.4) of permanent dune-slack water bodies. Pal. 16.32: Dune-slack pioneer swards ([Juncenion bufonii] p.: [Gentiano-Erythraeetum littoralis], [Hydrocotylo-Baldellion]): pioneer formations of humid sands and dune pool fringes, on soils with low salinity. Pal. 16.33: Dune-slack fens: calcareous and, occasionally, acidic fen formations (cf. Pal. 54.2, 54.4, in particular 54.21, 54.2H, 54.49), often invaded by creeping willow, occupying the wettest parts of dune-slacks. Pal. 16.34: Dune-slack grasslands: humid grasslands and rushbeds (see Pal. 37.31, 37.4) of dune-slacks, also often with creeping willows ([Salix rosmarinifolia], [Salix arenaria]).
Machairs (* in Ireland)	Machairs only have priority status in Ireland. Complex habitat comprised of a sandy coastal plain resulting partially from grazing and/or rotational cultivation, in an oceanic location with a cool, moist climate. The wind blown sand has a significant percentage of shell derived material, forming a lime rich soil with pH values normally greater than 7. Vegetation is herbaceous, with a low frequency of sand binding species. Plant text: [Cochlearia scotica], [Dactylorhiza fuchsii ssp. hebridensis], [Euphrasia marshallii], [Festuca rubra], [Galium verum], [Lotus corniculatus], [Plantago lanceolata], [Poa pratensis], [Trifolium repens].

Sea dunes of the Mediterranean coast	
Crucianellion maritimae fixed beach dunes	Fixed dunes of the western and central Mediterranean, of the Adriatic, of the Ionian Sea and North Africa with [Crucianella maritima], [Pancratium maritimum]. Plant text: [Crucianella maritima], [Pancratium maritimum].
Dunes with Euphorbia terracina	Coastal dune grassland communities of the Aegean and Levantine Sea, with, among others, [Euphorbia terracina], [Silene nicaeensis], [Ephedra distachya] and [Silene subconica]. Plant text: [Euphorbia terracina], [Ephedra distachya], [Silene nicaeensis], [Silene subconica].
Malcolmietalia dune grasslands	Associations with many small annuals and often abundant ephemeral spring bloom, with [Malcolmia lacera], [Malcolmia ramosissima], [Evax astericiflora], [Evax lusitanica], [Anthyllis hamosa], [Linaria pedunculata], of deep sands in dry interdunal depressions of the Mediterranean coasts of Iberia, southern France, Italy and of the Atlantic coasts of southern Iberia. They are dunal representatives of Pal. 35.4. Plant text: [Malcolmia lacera], [Malcolmia ramosissima], [Evax astericiflora], [Evax lusitanica], [Anthyllis hamosa], [Linaria pedunculata].
Brachypodietalia dune grasslands with annuals	Dunal formations of 6220 - Pseudo-steppe with grasses and annuals of the ([Thero-Brachypodietea]) : Meso- and thermo-Mediterranean xerophile, mostly open, short-grass perennial grasslands rich in therophytes; therophyte communities of oligotrophic soils on base-rich, often calcareous substrates. Plant text: [Brachypodium] spp.
Coastal dunes with Juniperus spp	Juniper formations [Juniperus turbinata ssp. turbinata] (=[Juniperus lycia], [Juniperus phoenicea ssp. lycia]), [Juniperus macrocarpa], [Juniperus navicularis] (=[Juniperus transtagana], [Juniperus oxycedrus ssp. transtagana]), [Juniperus communis]] of Mediterranean and thermo-Atlantic coastal dune slacks and slopes ([Juniperion lyciae]). [Juniperus communis] formations of calcareous dunes of Jutland and the communities of [J. phoenicea ssp. lycia] in Rièges woods in the Camargue. Plant text: [Juniperus turbinata ssp. turbinata], [Juniperus macrocarpa], [Juniperus navicularis], [Juniperus communis], [Juniperus oxycedrus].
Cisto-Lavenduletalia dune sclerophyllous scrubs	Sclerophyllous or lauriphyllus scrubs established on dunes of the Mediterranean and Warm-Temperate Humid regions. Codes of Pal. 32 may be used in addition to Pal. 16.28 to precise the habitat. Also similar sclerophyllous dune vegetation included in Pal. 16.28 of the [Pistacio-Rhamnetalia] and [Cisto-Micromeritia].
Wooded dunes with Pinus pinea and/or Pinus pinaster	Coastal dunes colonised by Mediterranean and Atlantic thermophilous pines, corresponding to the substitution facies or in some stations climax formations of evergreen oak of artificial origin ([Quercetalia ilicis] or [Ceratonio-Rhamnetalia]). Plant text: [Pinus pinea], [Pinus pinaster], [Pinus halepensis], [Juniperus macrocarpa], [Juniperus turbinata ssp. turbinata].
Inland dunes, old and decalcified	

Dry sand heaths with Calluna and Genista	Dunes of the North Sea and Baltic plains, formed of quartzic sands originating in redeposited and reworked glacial drift and outwash. They are highly siliceous in the Netherlands, northern Belgium and northwestern Germany, progressively slightly less oligotrophic and with a more continental cortège in northeastern Germany, Poland and eastern Baltic plain. The dune systems, particularly the large ones, harbour a unique ensemble of interacting communities and harbour many specialised and restricted organisms. They have considerably regressed and the remaining examples are fragile and often threatened. Vegetation is dominated by heaths with [Calluna] and [Genista]. Plant text: [Calluna vulgaris], [Genista anglica], [Genista pilosa].
Dry sand heaths with Calluna and Empetrum nigrum	Coastal non-dunal [Calluna vulgaris] and [Empetrum nigrum] heaths of the North Sea and the Baltic, formed on quartzic sands originating in redeposited and reworked glacial drift and outwash. Plant text: [Calluna vulgaris], [Empetrum nigrum].
Inland dunes with open Corynephorus and Agrostis grasslands	Open formations found on inland dunes with dry siliceous soils, of Atlantic, sub-Atlantic and Mediterraneo-montane distribution, often species-poor and with a strong representation of annuals. It includes formations of unstable Germano-Baltic fluvio-glacial inland sands with [Corynephorus canescens], [Carex arenaria], [Spergula morisonii], [Teesdalia nudicaulis] and carpets of fruticose lichens ([Cladonia], [Cetraria]) (Pal. 64.11) and other grasslands of more stabilised Germano-Baltic fluvio-glacial inland dune systems with [Agrostis] spp. and [Corynephorus canescens] or other acidophilous grasses (Pal. 64.12). Plant text: Pal.:64.11 - [Corynephorus canescens], [Carex arenaria], [Spergula morisonii], [Teesdalia nudicaulis], [Cladonia], [Cetraria]; Pal.:64.12 - [Agrostis] spp., [Corynephorus canescens].
Pannonic inland dunes	Inland dunes of the Pannonic plain and of neighbouring basis. In former days widely distributed as a result of hay harvesting and grazing. Good examples exist in mosaics of different habitats with open sand, dune lichen communities, pioneer swards with many therophytes, open and closed swards. Only these habitat complexes should be considered under this title. For steppes and meadow-steppes on stabilised sand or sandy soils, not associated with dune complexes, see habitat 6260. Plant text: [Cladonia convoluta], [Cladonia furcata], [Corynephorus canescens], [Thymus serpyllum], [Viola tricolor ssp. tricolor], [Cerastium semidecandrum], [Spergula morisonii], [Alyssum montanum ssp. gmelinii], [Bassia laniflora], [Cynodon dactylon].
FRESHWATER HABITATS	
Standing water	

Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	Shallow oligotrophic waters with few minerals and base poor, with an aquatic to amphibious low perennial vegetation belonging to the [Littorelletalia uniflorae] order, on oligotrophic soils of lake and pond banks (sometimes on peaty soils). This vegetation consists of one or more zones, dominated by [Littorella], [Lobelia dortmanna] or [Isoetes], although not all zones may not be found at a given site. Plant text: [Isoetes lacustris], [Isoetes echinospora], [Littorella uniflora], [Lobelia dortmanna], [Deschampsia setacea], [Subularia aquatica], [Juncus bulbosus], [Pilularia globulifera], #[Luronium natans], [Potamogeton polygonifolius]; in the Boreal region also [Myriophyllum alterniflorum], [Drepanocladus] spp., [Warnstorfia] spp. and [Fontinalis] spp.
Oligotrophic waters containing very few minerals generally on sandy soils of the West Mediterranean, with Isoetes spp	Dwarf amphibious vegetation of oligotrophic waters with few minerals, mostly on sandy soils of the Mediterranean region and some irradiations in the thermo-Atlantic sector, and belonging to the [Isoeto-Nano-Juncetea]. Plant text: High level - [Isoetes velata], [Isoetes setacea], [Pilularia minuta], #[Marsilea strigosa]; low level - [Isoetes histrix], [Isoetes durieui], [Serapias] spp. ([Serapion]). Vertebrate text: In the Atlantic region, such lakes can shelter glacial relict species, e.g. fish such as [Salvelinus alpinus].
Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoeto-Nanojuncetea	Subtypes: Pal. 22.12 x 22.31: Aquatic to amphibious short perennial vegetation, oligotrophic to mesotrophic, of lake, pond and pool banks and water-land interfaces belonging to the [Littorelletalia uniflorae] order. Pal. 22.12 x 22.32: amphibious short annual vegetation, pioneer of land interface zones of lakes, pools and ponds with nutrient poor soils, or which grows during periodic drying of these standing waters: [Isoeto-Nanojuncetea] class. These two units can grow together in close association or separately. Characteristic plant species are generally small ephemerophytes. Plant text: Pal. 22.12 x 22.31: [Littorella uniflora], #[Luronium natans], [Potamogeton polygonifolius], [Pilularia globulifera], [Juncus bulbosus ssp. bulbosus], [Eleocharis acicularis], [Sparganium minimum]. Pal. 22.12 X 22.32: #[Lindernia procumbens], [Elatine] spp., [Eleocharis ovata], [Juncus tenageia], [Cyperus fuscus], [Cyperus flavescens], [Cyperus michelianus], [Limosella aquatica], [Schoenoplectus supinus], [Scirpus setaceus], [Juncus bufonius], [Centaurium pulchellum], [Centunculus minimus], [Cicendia filiformis].
Hard oligo-mesotrophic waters with benthic vegetation of Chara spp	Lakes and pools with waters fairly rich in dissolved bases (pH often 6-7) (Pal. 22.12) or with mostly blue to greenish, very clear, waters poor (to moderate) in nutrients, base-rich (pH often >7.5) (Pal. 22.15). The bottom of these unpolluted water bodies are covered with charophyte, [Chara] and [Nitella], algal carpets. In the Boreal region this habitat type includes small calcareous-rich oligo-mesotrophic gyttja pools with dense [Chara] (dominating species is [Chara strigosa]) carpets, often surrounded by various eutrophic fens and pine bogs. Plant text: The bottom of these unpolluted water bodies are covered with charophyte, [Chara] spp. and [Nitella] spp., algal carpets. In the Boreal region this habitat type includes small calcareous-rich oligo-mesotrophic gyttja pools with dense [Chara] spp. (dominating species is [Chara strigosa]) carpets, often surrounded by various eutrophic fens and pine bogs.

Natural eutrophic lakes with Magnopotamion or Hydrocharition -type vegetation	Lakes and ponds with mostly dirty grey to blue-green, more or less turbid, waters, particularly rich in dissolved bases (pH usually > 7), with free-floating surface communities of the [Hydrocharition] or, in deep, open waters, with associations of large pondweeds ([Magnopotamion]). Plant text: [Hydrocharition] - [Lemna] spp., [Spirodela] spp., [Wolffia] spp., [Hydrocharis morsus-ranae], [Stratiotes aloides], [Utricularia australis], [Utricularia vulgaris], #[Aldrovanda vesiculosa], ferns ([Azolla]), liverworts ([Riccia] spp., [Ricciocarpus] spp.);[Magnopotamion] - [Potamogeton lucens], [Potamogeton praelongus], [Potamogeton zizii], [Potamogeton perfoliatus].
Natural dystrophic lakes and ponds	Natural lakes and ponds with brown tinted water due to peat and humic acids, generally on peaty soils in bogs or in heaths with natural evolution toward bogs. pH is often low, 3 to 6. Plant communities belong to the order [Utricularietalia]. Plant text: [Utricularia] spp, [Rhynchospora alba], [R. fusca], [Sparganium minimum], [Sphagnum] species. In the Boreal region also [Nuphar lutea], [Nuphar pumila], [Carex lasiocarpa], [Carex rostrata], [Nymphaea candida], [Drepanocladus] spp., [Warnstorfia trichophylla], [Warnstorfia procera]. Animal text: [Odonata] (dragonflies and damselflies).
Mediterranean temporary ponds	Very shallow temporary ponds (a few centimetres) which exist only in winter or late spring, with flora mainly composed of Mediterranean therophytic and geophytic species belonging to the alliances [Isoetion], [Nanocyperion flavescentis], [Preslion cervinae], [Agrostion salmanticae], [Heleochloion] and [Lythrion tribracteati]. Plant text: Flora mainly composed of Mediterranean therophytic and geophytic species belonging to the alliances [Isoetion], [Nanocyperion flavescentis], [Preslion cervinae], [Agrostion salmanticae], [Heleochloion] and[Lythrion tribracteati]. Plants: [Agrostis pourretii], [Centaurium spicatum], [Chaetopogon fasciculatus], [Cicendia filiformis], [Crypsis aculeata], [Crypsis alopecuroides], [Crypsis schoenoides], [Cyperus flavescens], [Cyperus fuscus], [Cyperus michelianus], [Damasonium alisma], [Elatine macropoda], [Eryngium corniculatum], [Eryngium galioides], [Exaculum pusillum], [Fimbristylis bisumbellata], [Glinus lotoides], [Gnaphalium uliginosum], [Illecebrum verticillatum], #[Isoetes boryana], [Isoetes delilei], [Isoetes duriei], [Isoetes heldreichii], [Isoetes histrix], #[Isoetes ma
Turloughs	Temporary lakes principally filled by subterranean waters and particular to karstic limestone areas in Ireland. Most flood in the autumn and then dry up between April and July. However, some may flood at any time of the year after heavy rainfall and dry out again in a few days; others, close to the sea, may be affected by the tide in summer. These lakes fill and empty at particular places. The soils are quite variable, including limestone bedrock, marls, peat, clay and humus, while aquatic conditions range from ultra oligotrophic to eutrophic. The vegetation mainly belongs to the alliance [Lolio Potentillion anserinae] Tx. 1947, but also [Caricion davallianae] Klika 1934. Plant text: [Cinclidotus fontinaloides], [Fontinalis antipyretica] ([Bryophyta]). Invertebrate text: [Tanymastix stagnalis] (wet phase) and the beetles [Agonum lugens], [Agonum livens], [Badister meridionalis], [Blethisa multipunctata] and[Pelophila borealis] (dry phase). The animals listed should not be regarded as characteristic in any strict sense; both fauna and flora of turloughs are characteristic of intermittently flooded zones.

Running water - sections of water courses with natural or semi-natural dynamics (minor, average and major beds) where the water quality shows no significant deterioration	
Fennoscandian natural rivers	Boreal and hemiboreal natural and near-natural river systems or parts of such systems containing nutrient-poor water. The water level shows great amplitude, up to 6 m during the year. Especially during the spring, the water level is high. The water-dynamics can vary and contain waterfalls, rapid streams, calm water, and small lakes adjacent to the river. The water erosion causes a higher amount of nutrients towards the river-mouth, where the sedimentation starts. In higher levels the rivers are characterized of great, very cold water flows, coming from glaciers, deep snowbeds and large snow-covered areas in mire- and woodlands. In addition the water surface in placid river sections is frozen to ice every winter. Those circumstances create ecosystems unique to this part of Europe. Plant text: [Salix daphnoides], [Myricaria germanica], [Taraxacum crocodes], [Cinna latifolia], [Sagittaria natans x sagittifolia], [Matteuccia struthiopteris], [Stellaria nemorum ssp. nemorum], [Sparganium glomeratum], [Carex aquatilis], [Hygrohypnum ochraceum]. Vertebrate text: Fish- # [Salmo salar], #[Salmo salar m. sebago], [Salmo t
Alpine rivers and the herbaceous vegetation along their banks	Subtypes: Pal. 24.221: Open assemblages of herbaceous or suffrutescent pioneering plants, rich in alpine species, colonising gravel beds of streams with an alpine, summer-high, flow regime, formed in northern boreal and lower Arctic mountains, hills and sometimes lowlands, as well as in the alpine and subalpine zones of higher, glaciated, mountains of more southern regions, sometimes with abyssal stations at lower altitudes ([Epilobion fleischeri] p.). Pal. 24.222: Open or closed assemblages of herbaceous or suffrutescent pioneering plants, colonising, within the montane or submontane levels, gravel beds of streams with an alpine, summer-high, flow regime, born in high mountains ([Epilobion fleischeri] p., [Calamagrostion pseudophragmitis]). Plant text: Pal. 24.22: [Epilobion fleischeri] p. Pal. 24.221: [Astragalus sempervirens], [Dryas octopetala], [Epilobium fleischeri], [Gypsophila repens], [Racomitrium canescens], [Rumex scutatus], [Saxifraga aizoides], [Saxifraga bryoides], [Saxifraga caerulea], [Trifolium pallescens]. Pal. 24.222: [Calamagrostion pseudophragmitis], [Chondrilla
Alpine rivers and their ligneous vegetation with Myricaria germanica	Communities of low shrubby pioneers invading the herbaceous formations of Pal. 24.221 and Pal. 24.222 on gravel deposits rich in fine silt, of mountain and northern boreal streams with an alpine, summer-high, flow regime. [Myricaria germanica] and [Salix] spp. are characteristic ([Salici-Myricarietum]). Plant text: [Myricaria germanica] and [Salix] spp. ([Salix elaeagnos], [Salix purpurea ssp. gracilis], [Salix daphnoides], [Salix nigricans]) are characteristic ([Salici-Myricarietum]).

Alpine rivers and their ligneous vegetation with Salix elaeagnos	Thickets or woods of, among others, [Salix] spp., [Hippophae rhamnoides], [Alnus] spp., [Betula] spp., on stream gravels of mountain and northern boreal streams with an alpine, summer-high, flow regime. Formations of [Salix elaeagnos], [Salix purpurea ssp. gracilis], [Salix daphnoides], [Salix nigricans] and [Hippophae rhamnoides] of higher gravel shoals in Alpine and peri-Alpine valleys. Plant text: Thickets or woods of, among others, [Salix] spp., [Hippophae rhamnoides], [Alnus] spp., [Betula] spp., on stream gravels of mountain and northern boreal streams with an alpine, summer-high, flow regime. Formations of [Salix elaeagnos], [Salix purpurea ssp. gracilis], [Salix daphnoides], [Salix nigricans] and [Hippophae rhamnoides] of higher gravel shoals in Alpine and peri-Alpine valleys, with outposts in and around the Carpathians and the Dinarids.
Constantly flowing Mediterranean rivers with Glaucium flavum	Communities colonising gravel deposits of rivers with a Mediterranean, summer-low, flow regime, with formations of the [Glaucion flavi]. Plant text: [Myricaria germanica], [Erucastrum nasturtiifolium], [Glaucium flavum], [Oenothera biennis].
Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	Water courses of plain to montane levels, with submerged or floating vegetation of [Ranunculion fluitantis] and [Callitricho-Batrachion] (low water level during Summer) or aquatic mosses Plant text: Submerged or floating vegetation of [Ranunculion fluitantis] and [Callitricho-Batrachion] (low water level during Summer) or aquatic mosses. [Ranunculus saniculifolius], [Ranunculus trichophyllus], [Ranunculus fluitans], [Ranunculus peltatus], [Ranunculus penicillatus ssp. penicillatus], [Ranunculus penicillatus ssp. pseudofluitantis], [Ranunculus aquatilis], [Myriophyllum] spp., [Callitriche] spp., [Sium erectum], [Zannichellia palustris], [Potamogeton] spp., [Fontinalis antipyretica].
Rivers with muddy banks with Chenopodion rubri pp and Bidention pp vegetation	Muddy river banks of plain to submontane levels, with annual pioneer nitrophilous vegetation of the [Chenopodion rubri] p.p. and the [Bidention] p.p. alliances. During the spring and at the beginning of the summer, corresponding sites look like muddy banks without any vegetation (late development in the year). If the conditions are not favourable, this vegetation has a weak development or could be completely absent. Plant text: [Chenopodium rubrum], [Bidens frondosa], [Xanthium] sp., [Polygonum lapathifolium].
Constantly flowing Mediterranean rivers with Paspalo-Agrostidion species and hanging curtains of Salix and Populus alba	Nitrophilous annual and perennial grass and sedge formations of the alluvial banks of great Mediterranean rivers, with [Paspalum paspalodes], [Paspalum vaginatum], [Polypogon viridis] (= [Agrostis semiverticillata]), [Cyperus fuscus], and hanging curtains of [Salix] and [Populus alba]. Plant text: Nitrophilous annual and perennial grass and sedge formations of the alluvial banks of great Mediterranean rivers, with [Paspalum paspalodes], [Paspalum vaginatum], [Polypogon viridis] (= [Agrostis semiverticillata]), [Cyperus fuscus], and hanging curtains of [Salix] and [Populus alba].

Intermittently flowing Mediterranean rivers of the Paspalo-Agrostidion	Intermittently flowing Mediterranean rivers with the [Paspalo-Agrostidion] communities. They correspond to the rivers Pal. type 24.53, but with the particularity of an interrupted flow and a dry bed during a part of the year. The bed of the river can be completely dry or left with some pools. Plant text: [Polygonum amphibium], [Ranunculus fluitans], [Potamogeton natans], [Potamogeton nodosus], [Potamogeton pectinatus].
TEMPERATE HEATH AND SCRUB	
Northern Atlantic wet heaths with Erica tetralix	Humid, peaty or semi-peaty heaths, other than blanket bogs, of the Atlantic and sub-Atlantic domains. Plant text: [Erica tetralix].
Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	Hygrophilous heaths of areas with a temperate oceanic climate, on semi peaty or dried out soils, with surface minerals in the case of peaty soils (hydromor), with vegetation of the alliances [Genistion micrantho-anglicae] and [Ulicion minoris]: [Ulici minoris-Ericetum ciliaris], [Ulici gallii-Ericetum mackaianae], [Ulici minoris-Ericetum tetralicis] (Schwickerath 1933 Tuxen 1937), [Cirsio filipenduli-Ericetum ciliaris]. Plant text: [Centaurea uliginosa], [Erica ciliaris], [Erica mackaiana], [Erica tetralix], [Euphorbia polygaliphylla], [Genista anglica], [Genista carpetana], [Genista micrantha], [Sphagnum] spp., [Ulex minor var. lusitanicus]. Vegetation of the alliances [Genistion micrantho anglicae] and [Ulicion minoris]: [Ulici minoris Ericetum ciliaris], [Ulici gallii Ericetum mackaianae, Ulici minoris Ericetum tetralicis] (Schwickerath 33 Tuxen 37), [Cirsio filipenduli Ericetum ciliaris].
European dry heaths	Mesophile or xerophile heaths on siliceous, podsolic soils in moist Atlantic and sub-Atlantic climates of plains and low mountains of Western, Central and Northern Europe. The following subtypes are included: Pal. 31.21 Submontane [Vaccinium-Calluna] heaths. [Calluno-Genistion pilosae] p. ([Vaccinion vitis-idaeae] p.): [Vaccinio myrtilli-Callunetum] s.l. i.a. Heaths rich in [Vaccinium] spp., usually with [Calluna vulgaris], of the northern and western British Isles, the Hercynian ranges and the lower levels of the Alps, the Carpathians, the Pyrenees and the Cordillera Cantabrica. Pal. 31.22 Sub-Atlantic [Calluna-Genista] heaths. [Calluno-Genistion pilosae] p. Low [Calluna] heaths often rich in [Genista], mostly of the Germano-Baltic lowlands. Similar formations occurring in British upland areas, montane zones of high mountains of the western Mediterranean basin and high rainfall Adriatic influenced areas are most conveniently listed here. Pal. 31.23 Atlantic [Erica-Ulex] heaths. [Ulicenion minoris]; [Daboecenion cantabricae] p.; [Ulicion
Dry Atlantic coastal heaths with Erica vagans	Coastal heaths of temperate areas with [Erica vagans] and [Ulex europaeus] on well drained soil, other than cushiony maritime formations Plant text: [Erica vagans], [Ulex europaeus].

Endemic macaronesian heaths	Ericaceous formations (low and medium tall stages) of the Atlantic isles. [Andryalo-Ericetalia]: [Fayo-Ericion arboreae], [Telino-Adenocarpion foliolosae] (Canary); [Calluno-Ulicetalia]: [Daboecion azoricae], [Ericetum azoricae], [Daphno-Ericetum azoricae] (Azores). Plant text: [Adenocarpus foliolosus], [Calluna vulgaris], [Chamaecytisus proliferus ssp. proliferus], #[Cistus chinamadensis], [Cletura arborea], [Daboecia azorica], [Erica arborea], [Erica maderensis], [Erica platycodon], #[Erica scoparia ssp. azorica], [Ilex canariensis], [Juniperus brevifolia], [Laurus azorica], [Luzula purpureosplendens], [Lysimachia azorica], [Myrica faya], [Pteridium aquilinum], [Teline canariensis], [Teline splendens], [Teline stenopetala], [Thymus caespititius], [Vaccinium cylindraceum].
Alpine and Boreal heaths	Small, dwarf or prostrate shrub formations of the alpine and subalpine zones of the mountains of Eurasia dominated by ericaceous species, [Dryas octopetala], dwarf junipers, brooms or greenweeds; [Dryas] heaths of the British Isles and Scandinavia. The following subtypes are included: Pal. 31.41 Alpide dwarf ericoid wind heaths. [Loiseleurio-Vaccinion]. Very low, single-stratum, carpets of trailing azalea, [Loiseleuria procumbens], prostrate [Vaccinium] spp. or other prostrate ericoid shrublets, accompanied by lichen, of high windswept, mostly snowfree, localities in the alpine belt of the high mountains of the Alpine system. Pal. 31.42 Acidocline alpenrose heaths. [Rhododendro-Vaccinion]. [Rhododendron] spp.-dominated heaths of acid podsols in the Alps, the Pyrenees, the Dinarids, the Carpathians, the Balkan Range, the Pontic Range, the Caucasus and the Himalayan system, often with [Vaccinium] spp., sometimes with dwarf pines. Pal. 31.43 Mountain dwarf juniper scrub. [Juniperion nanae], [Pino-Juniperion sabinae] p., [Pino-Cytision purgantis] p. Usually dense formations of prostrate junipers of the
Bushes with Pinus mugo and Rhododendron hirsutum (Mugo-Rhododendretum hirsuti)	[Pinus mugo] formations usually with [Rhododendron] spp. of the dry eastern inner Alps, the northern and southeastern outer Alps, the southwestern Alps and the Swiss Jura, the eastern greater Hercynian ranges, the Carpathians, the Apennines, the Dinarides and the neighbouring Pelagonides, the Pirin, the Rila and the Balkan Range. Plant text: [Pinus mugo], [Rhododendron hirsutum], [Rhododendron ferrugineum], [Rhodothamnus chamaecistus].
Sub-Arctic Salix spp scrub	Subarctic and boreo-alpine willow formations of the Scottish Highlands, the mountains of Iceland and the mountains of Scandinavia (often along streams) and similar communities in the Alps, Pyrenees, Cantabrian Mountains, Carpathians, and associated massifs. Subtypes : Pal. 31.6211 - Alpigenous small willow brush Subalpine, alpine and occasionally montane brushes and low scrubs of the Alps, the Apennines, the Jura and the western great Hercynian ranges, dominated by small shrubby (generally 0.5-2 metre tall) [Salix] species. Pal. 31.6214 - Pyreneo-Cantabric willow brush Subalpine, alpine and occasionally montane [Salix] dominated brushes and low scrubs of the Pyrenees and the Cordillera Cantabrica. Pal. 31.6215 - Hercynio-Carpathian willow brush Subalpine, alpine and occasionally montane [Salix] dominated brushes and low scrubs of the Carpathians and the eastern Hercynian ranges of the Sudeten ([Salicetum lapponum], [Salici silesiacae-Betuletum carpaticae] (part), [Piceo-Salicetum silesiacae] (i.a.)). Pal. 31.622 - Boreo-Alpine willow brush Subarctic willow formations of the

Endemic oro-Mediterranean heaths with gorse	Primary cushion heaths of the high, dry mountains of the Mediterranean and Irano-Turanian regions, with low, cushion-forming, often spiny shrubs, such as [Acantholimon], [Astragalus], [Erinacea], [Vella], [Bupleurum], [Ptilotrichum], [Genista], [Echinospartum], [Anthyllis] and various composites and labiates; secondary, zoogenic cushion heaths of the same regions, either downslope extensions of the high-altitude formations, and dominated by the same species, or specifically montane or steppic, often [Genista]-dominated in the Mediterranean region. The following subtypes are included: Pal. 31.71 Pyrenean hedgehog-heaths. [Junipero-Genistetum horridae]. [Echinospartum horridum] formations of dry slopes of the supra-Mediterranean zone of the southern Pyrenees; accompanying the dense, spiny cushions are [Juniperus hemisphaerica], [Buxus sempervirens], [Ononis fruticosa], [Arctostaphylos uva-ursi ssp. crassifolia] and [Pinus sylvestris]. Pal. 31.72 Cordilleran hedgehog-heaths. [Cytiso oromediterranei-Echinospartetum barnadesii], [Echinosparto pulviniformis-Cytisetum oromediterranei], [Teucrii salviastri-
SCLEROPHYLLOUS SCRUB (MATORRAL)	
Sub-Mediterranean and temperate scrub	
Stable xero-thermophilous formations with Buxus sempervirens on rock slopes (Berberidion pp)	Stable xero-thermophilous and calcicolous scrubs dominated by [Buxus sempervirens], of hill and montane levels. These formations correspond to xero-thermophilous [Buxus] thickets with their fringe associations of the [Geranion sanguinei] alliance on calcareous or siliceous substratum. They also constitute the natural woodland edge of calcareous dry forests rich with [Buxus]. In the euro-siberian region, the more open formations are rich in sub-Mediterranean plant species. Syntaxa: [Berberidion] p.p., [Amelanchiero-Buxion] Plant text: [Buxus sempervirens, Prunus spinosa, Prunus mahaleb, Cornus mas, Crataegus] spp., [Berberis vulgaris, Ligustrum vulgare, Viburnum lantana, Amelanchier ovalis, Geranium sanguineum, Dictamnus albus].
Mountain Cytisus purgans formations	[Cytisus purgans]-dominated formations of higher levels (upper montane, subalpine, oro-Mediterranean) of south-western European mountains, on superficial soils, often associated with dwarf juniper scrubs (Pal. 31.43) or hedgehog-heaths (Pal. 31.7), and physiognomically reminiscent of the latter.[Pino-Cytision purgantis] p., [Genistion polygaliphyllae] p. Plant text: [Cytisus] ([Genista]) [purgans].
Juniperus communis formations on heaths or calcareous grasslands	Formations with [Juniperus communis] of plain to montane levels. They mainly correspond to phytodynamic succession of the following types of vegetation: a) generally, mesophilous or xerophilous calcareous and nutrient poor grasslands, grazed or let lie fallow, of the [Festuco-Brometea] and [Elyno-Seslerietea]. b) more rarely, heathlands of the [Calluno vulgaris-Ulicetea minoris] (Pal. 31.2). Plant text: [Juniperus communis, Crataegus] spp., [Rosa] spp., [Prunus spinosa]. For mesophilous or xerophilous calcareous and nutrient poor grasslands, grazed or let lie fallow - typical species of the [Festuco-Brometea] and [Elyno-Seslerietea]. For heathlands - [Calluna vulgaris, Vaccinium myrtillus, Empetrum nigrum, Erica tetralix, Deschampsia flexuosa, Nardus stricta].

Cistus palhinhae formations on maritime wet heaths	Low brush and garrigue formations of the dolomitic tableland, karsts, sands and terra-rosas of the vicinity of Cape San Vicente (Portugal), rich in endemics ([Ulicetum erinacei, Genisto triacanthi-Cistetum palhinhae]). Plant text: [#Biscutela vicentina, #Cistus palhinhae, Genista hirsuta ssp. algarbiensis, Genista triacanthus, Juniperus turbinata, Serratula monardii var. algarbiensis, Sideritis arborescens ssp. lusitanica, Teucrium vincentinum, Ulex erinaceus].
Mediterranean arborescent matorral	
Arborescent matorral with Juniperus spp	Mediterranean and sub-Mediterranean evergreen sclerophyllous bush and scrub organized around arborescent junipers. Mixed dominance can be indicated by combination of Palaearctic codes. Subtypes: Pal. 32.131: Arborescent matorral dominated by [Juniperus oxycedrus] s.l. Pal. 32.132: Arborescent matorral dominated by [Juniperus phoenicea] s.l. Pal. 32.133: Arborescent matorrals of Greece, Anatolia and the Near East, dominated by [Juniperus excelsa] or [Juniperus foetidissima]. Pal. 32.134: Mediterranean formations dominated by [Juniperus communis]. Pal. 32.135: Formations derived from Pal. 42.A5, limited to the Peloponnese and Asia Minor. Pal. 32.136: Formations derived from Pal. 42.A2 Plant text: [Juniperus oxycedrus, Juniperus phoenicea, Juniperus foetidissima, Juniperus excelsa, Juniperus communis, Juniperus drupacea, Juniperus thurifera].
Arborescent matorral with Zyziphus	Pre-desert deciduous brush of [Periploca laevigata, Lycium intricatum, Asparagus stipularis, Asparagus albus, Withania frutescens] with tall [Zyziphus lotus], confined to the arid Iberian South-west under a xerophytic thermo-Mediterranean bio-climate; corresponds to the mature phase or climax of climatophile and edapho-xero-psammophile vegetation series ([Periplocion angustifoliae]: [Ziziphetum loti, Zizipho-Maytenetum europaei, Mayteno-Periplocetum]). Plant text: [Lycium intricatum, Asparagus stipularis, Asparagus albus, Calicotome intermedia, Chamaerops humilis, Maytenus senegalensis ssp. europaeus, Periploca laevigata ssp. angustifolia, Phlomis purpurea ssp. almeriensis, Rhamnus oleoides ssp. angustifolia, Withania frutescens, Zyziphus lotus].
Arborescent matorral with Laurus nobilis	Humid arborescent matorral with tall laurel ([Laurus nobilis]). The syntaxa of the Spanish types are: [Quercetea ilicis, Querco-Oleion sylvestris]: [Viburno tini-Fraxinetum orni lauretosum nobilis] (southern mountains of Valencia); [Quercion ilicis]:[Lauro-Quercetum ilicis] facies of [Laurus nobilis] (from the Asturias to the Basque Country). Plant text: [Arbutus unedo, Ceratonia siliqua, Fraxinus ornus, Laurus nobilis, Olea europaea var. sylvestris, Phillyrea latifolia, Quercus ilex, Rubia peregrina ssp. longifolia, Smilax aspera var. altissima, Viburnum tinus].
Thermo-Mediterranean and pre-steppe brush	
Laurus nobilis thickets	Lower facies of [Laurus nobilis] thickets described under 32.18 code (5230) in the Annex I, generally of humid or fresh stations. Plant text: [Laurus nobilis].

Low formations of Euphorbia close to cliffs	Low formations of [Helichrysum] ([Helichrysum italicum ssp. microphyllum, Helichrysum italicum ssp. italicum]) with spurges ([Euphorbia pithyusa], i.a.), [Pistacia lentiscus, Camphorosma monspeliaca, Artemisia densiflora] or [Thymelaea passerina, Thymelaea hirsuta, Thymelaea tartonraira] of the immediate vicinity of sea cliffs, forming the transition between cliff vegetation or clifftop phryganas and thermo-Mediterranean scrub. Plant text: [Helichrysum italicum ssp. microphyllum, Helichrysum italicum ssp. talicum, Euphorbia pithyusa, Pistacia lentiscus, Camphorosma monspeliaca, Artemisia densiflora, Thymelaea passerina, Thymelaea hirsuta, Thymelaea tartonraira].
Thermo-Mediterranean and pre-desert scrub	Scrub formations characteristic of the thermo-Mediterranean zone. Included here are those formations, for the most part indifferent to the siliceous or calcareous nature of the substrate, that reach their greatest extension or optimal development in the thermo-Mediterranean zone. Also included are the numerous, strongly characterised, thermophile formations endemic to the south of the Iberian peninsula, mostly thermo-Mediterranean but sometimes meso-Mediterranean; in their great local diversity they are a western counterpart of, and sometimes approach in appearance, the mostly eastern Mediterranean phryganas, which, however, on account of their strong structural singularity, are listed separately under Pal. 33. (5410). Subtypes : Pal. 32.21G - [Genista fasselata] brush Brushes dominated by the tall, spiny [Genista fasselata] of very restricted distribution in the eastern Mediterranean basin. Pal. 31.8B5p - Xerophilous [Crataegus azarolus var. aronia] scrub. Low to medium height scrub of the semi-arid zone of Cyprus characterised by [Crataegus azarolus var. aronia] with an abundance of herbs and grasses
Phrygana	
West Mediterranean clifftop phryganas (Astragalo-Plantaginetum subulatae)	Rare, extremely local and isolated, cushion-forming thermo-Mediterranean sclerophyllous associations of clifftops and adjacent areas dispersed along the coasts of Provence, Cap Corse, the Straits of Bonifacio, Catalonia (Cabo de Creus) and extreme south-western Portugal (Cabo de São Vicente), characterised by the presence of [Astragalus massiliensis] or [Anthyllis hermanniae], variously accompanied by [Thymelaea hirsuta, Helichrysum italicum, Plantago subulatum, Armeria ruscinonensis]. Plant text: [Astragalus massiliensis, Anthyllis hermanniae, Thymelaea hirsuta, Helichrysum italicum, Plantago subulatum, Armeria ruscinonensis].

Sarcopoterium spinosum phryganas	Low, thorny formations of hemispherical shrubs of the coastal thermo-Mediterranean zone of Aegean islands, of mainland Greece and the Ionian islands, of coastal Anatolia, much more widespread and diverse than the western Mediterranean formations. Plant text: [Sarcopoterium spinosum, Centaurea spinosa, Satureja thymbra, Thymus capitatus, Genista acanthoclada, Anthyllis hermanniae, Euphorbia acanthothamnos, Stachys spinosa, Ballota pseudodictamnus, Ballota acetabulosa, Erica manipuliflora, Rhamnus oleoides, Lithospermum hispidulum, Fumana arabica, Fumana thymifolia, Cistus creticus, Cistus parviflorus, Cistus salvifolius, Pistacia lentiscus, Teucrium brevifolium, Teucrium divaricatum, Teucrium polium, Calicotome villosa, Micromeria graeca, Micromeria juliana, Micromeria nervosa, Salvia triloba, Ononis spinosa, Helichrysum italicum ssp. microphyllum, Helichrysum italicum ssp. italicum, Phagnalion graecum].
Endemic phryganas of the Euphorbio-Verbascion	Cushion-forming thermo-Mediterranean sclerophyllous formations, often thorny and summer deciduous. The following subtypes are included: Pal. 33.4 - Mid-elevation phryganas of Crete: varied formations of supra- and oro- Mediterranean levels of Crete resulting from the broad contact between phryganas and hedgehog-heaths (Pal. 32.7), with [Euphorbia acanthothamnos, Verbascum spinosum, Berberis cretica, Phlomis cretica, Satureja biroi, Sideritis syriaca, Hypericum empetrifolium, Origanum microphyllum, Micromeria juliana, Helichrysum italicum ssp. microphyllum, Genista acanthoclada]. Pal. 33.5 - [Hypericum] phryganas: extremely rare, local colonies of hemispherical shrubs of [Hypericum aegyptiacum] forming open phryganas on calcareous rocks by the sea in the Ionian islands, western Crete, Sardinia and Lampedusa. Pal. 33.6 - Italian [Sarcopoterium] phryganas: very local, impoverished [Sarcopoterium spinosum] formations of Capo St. Elia (southern Sardinian coast) and of the Gulf of Taranto (Puglia, Calabria). Pal.33.7 - Sardinian [Genista acanthoclada] phrygana: very local [Genista acanthocl
NATURAL AND SEMI-NATURAL GRASSLAND FORMATIONS	
Natural grasslands	
Rupicolous calcareous or basophilic grasslands of the Alysso-Sedion albi	Open xero-thermophile pioneer communities on superficial calcareous or soils rich in bases (basic volcanic substrates), dominated by annuals and succulents of the [Alysso alyssoidis-Sedion albi] Oberdorfer & Müller in Müller 1961. Plant text: [Alyssum alyssoides, Arabis recta, Cerastium] spp., [Hornungia petraea, Jovibarba] spp., [Poa badensis, Saxifraga tridactylites, Sedum] spp., [Sempervivum] spp., [Teucrium botrys].
Xeric sand calcareous grasslands	Dry, frequently open grasslands on more or less calciferous sand with a subcontinental centre of distribution ([Koelerion glaucae, Sileno conicae-Cerastion semidecandri, Sedo-Cerastion] p.). Plant text: [Allium schoenoprasum, Alyssum montanum ssp. gemelinii, Astragalus arenarius, Cardaminopsis arenosa, Carex ligerica, Carex praecox, Dianthus deltoides, Euphorbia seguierana, Festuca psammophila, Gypsophila fastigiata, Helichrysum arenarium, Herniaria glabra, Koelerion glauca, Petrorhagia prolifera, Sedum reflexum, Silene chlorantha].

Calaminarian grasslands of the Violetalia calaminariae	Generally open natural or semi-natural grasslands 1) on natural rock outcrops, rich in heavy metals (e.g. zinc, lead), 2) river gravels and shingles, 3) on old terrils or spoil heaps around mines. These open grasslands are characterised by a highly specialised flora, with subspecies and ecotypes adapted to heavy metals. The threatened endemic taxa are generally absent from the pioneer vegetation of younger terrils. This pioneer vegetation is not considered to be a priority. Plant text: [Viola calaminaria] and metallophyte races of [Thlaspi caerulescens, Armeria maritima, Minuartia verna, Silene vulgaris, Festuca ophioliticola, Cochleria alpina] sensu lato.
Siliceous Pyrenean Festuca eskia grasslands	Subalpine and lower alpine closed mesophile [Festuca eskia] grasslands of north-facing slopes (ubacs) and depressions in the Pyrenees with [Arnica montana, Ranunculus pyrenaeus, Selinum pyrenaeum, Trifolium alpinum, Campanula barbata, Gentiana punctata, Leucorchis albida, Phyteuma betonicifolium]. Plant text: [Festuca eskia] grasslands of north-facing slopes (ubacs) and depressions in the Pyrenees with [Arnica montana, Ranunculus pyrenaeus, Selinum pyrenaeum, Trifolium alpinum, Campanula barbata, Gentiana punctata, Leucorchis albida, Phyteuma betonicifolium].
Siliceous alpine and boreal grasslands	Boreo-alpine formations of the higher summits of mountains in the Alps and Scandanavia with outliers elsewhere such as the Tatra, with [Juncus trifidus, Carex bigelowii], mosses and lichens. Also included are associated snowbed communities. Plant text: [Juncus trifidus, Carex bigelowii, Cassiope tetragona].
Oro-Iberian Festuca indigesta grasslands	Thermophile, open, stripped and garland fescue grasslands of siliceous upper slopes and summits of the high Mediterranean mountains of the Iberian peninsula, locally extending into the Euro-Siberian domain in the subalpine level of the Cantabrian mountains ([Festucetalia indigestae]). Plant text: [Festuca indigesta].
Alpine and subalpine calcareous grasslands	Alpine and subalpine grasslands of base-rich soils, with [Dryas octopetala, Gentiana nivalis, Gentiana campestris, Alchemilla hoppeana, Alchemilla conjuncta, Alchemilla flabellata, Anthyllis vulneraria, Astragalus alpinus, Aster alpinus, Draba aizoides, Globularia nudicaulis, Helianthemum nummularium ssp. grandiflorum, Helianthemum oelandicum ssp. alpestre, Pulsatilla alpina ssp. alpina, Phyteuma orbiculare, Astrantia major, Polygala alpestris] (Pal. 36.41 to 36.43) of mountain ranges such as the Alps, Pyrenees, Carpathians and Scandinavia. Also included are the grasslands of the subalpine (oro-Mediterranean) and alpine levels of the highest mountains of Corsica (Pal. 36.37), and the Mesophile, closed, short turfs of the subalpine and alpine levels of the southern and central Apennines, developed locally above treeline, on calcareous substrates (Pal. 36.38). Can also include associated snow-patch communities (e.g. [Arabidion coeruleae]). Subtypes: Pal. 36.41 Closed calciphile alpine grasslands: Mesophile, mostly closed, vigorous, often grazed or mowed, grasslands on deep
Macaronesian mesophile grasslands	Secondary grasslands of the highest levels of the Atlantic islands. Plant text: [Holcus rigidus, Festuca jubata, Deschampsia foliosa, Ranunculus cortusifolius, Rumex azoricus, Cardamine caldeirarum, Dryopteris azorica, Dryopteris crispifolia, Euphrasia grandiflora, Lactuca watsoniana, Senecio malvifolius, Tolpis azorica, Bellis azorica, Sanicula azorica, Ammi] spp.

Semi-natural dry grasslands and scrubland facies	
Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	Dry to semi-dry calcareous grasslands of the [Festuco-Brometea]. This habitat is formed on the one hand by steppic or subcontinental grasslands ([Festucetalia valesiacae]) and, on the other, by the grasslands of more oceanic and sub-Mediterranean regions ([Brometalia erecti]); in the latter case, a distinction is made between primary [Xerobromion] grasslands and secondary (semi-natural) [Mesobromion] grasslands with [Bromus erectus]; the latter are characterised by their rich orchid flora. Abandonment results in thermophile brushwood with an intermediate stage of thermophile fringe vegetation ([Trifolio-Geranietea]). Only considered as a priority habitat on "important orchid sites", by which one should understand the sites that are important on the basis of one or more of the following three criteria: (a) the site hosts a rich suite of orchid species (b) the site hosts an important population of at least one orchid species considered not very common on the national territory (c) the site hosts one or several orchid species considered to be rare, very rare or exceptional on the national territory. Pl
Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea	Meso- and thermo-Mediterranean xerophile, mostly open, short-grass annual grasslands rich in therophytes; therophyte communities of oligotrophic soils on base-rich, often calcareous substrates. Perennial communities - [Thero-Brachypodietea, Thero-Brachypodietalia]: [Thero-Brachypodion. Poetea bulbosae]: [Astragalo-Poion bulbosae] (basiphile), [Trifolio-Periballion] (silicolous). Annual communities - [Tuberarietea guttatae] Br.-Bl. 1952 em. Rivas-Martínez 1978, [Trachynietalia distachyae] Rivas-Martínez 1978: [Trachynion distachyae] (calciphile), [Sedo-Ctenopsion] (gypsophile), [Omphalodion commutatae] (dolomitic and silico-basiphile). Plant text: [Brachypodium distachyum, Brachypodium retusum].
Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	Closed, dry or mesophile, perennial [Nardus] grasslands occupying siliceous soils in Atlantic or sub-Atlantic or boreal lowland, hill and montane regions of middle and northern Europe and western Iberia. Vegetation highly varied, but the variation is characterised by continuity. [Nardetalia]: Pal. 35.1-[Violo-Nardion] ([Nardo-Galion saxatilis, Violion caninae]); Pal. 36.31- [Nardion]. Species-rich sites should be interpreted as sites which are remarkable for a high number of species. In general, the habitats which have become irreversibly degraded through overgrazing should be excluded. Plant text: [Antennaria dioica, Arnica montana, Campanula barbata, Carex ericetorum, Carex pallescens, Carex panicea, Festuca ovina, Galium saxatile, Gentiana pneumonanthe, Hypericum maculatum, Hypochoeris maculata, Lathyrus montanus, Leontodon helveticus, Leucorchis albida, Meum athamanticum, Nardus stricta, Pedicularis sylvatica, Platanthera bifolia, Polygala vulgaris, Potentilla aurea, Potentilla erecta, Veronica officinalis, Viola canina]. Invertebrate text: [Miramella alpina].

Sub-Pannonic steppic grasslands	Steppic grasslands, dominated by tussock-grasses, chamaephytes and perennials of the alliance [Festucion vallesiacae] and related syntaxa. These xerothermal communities are developed on southern exposed slopes with AC-soils on rocky substrate and on clay-sandy sedimentation layers enriched with gravels. They are partially of natural, partially of anthropogenic origin. Plant text: [Festuca valesiaca, Allium flavum, Gagea pusilla, Hesperis tristis, Iris pumila, Ranunculus illyricus, Teucrium chamaedrys, Medicago minima, Globularia cordifolia, Helianthemum canum, Poa badensis, Scorzonera austriaca, Potentilla arenaria, Seseli hippomarathrum, Alyssum alyssoides, Artemisia austriaca, Chrysopogon gryllus, Astragalus austriacus, Astragalus excapus, Astragalus onobrychis, Oxytropis pilosa, Daphne cneorum, Iris humilis ssp. arenaria, Carex humilis, Festuca rupicola, Stipa capillata, Stipa joannis, Botriochloa ischaemum].
Pannonic loess steppic grasslands	Grassland communities of the Pannonic region, rich in perennial grasses and herbs on loess deposits. Originally expanding over large areas, nowadays restricted to specific land forms like loess ridges formed by fluviatile erosion and accumulation. Plant text: [Artyemisia pontica, Astragalus vesicarius, Astragalus austriacus, Astragalus onobrychis, Crambe tataria, Nonea pulla, Salvia nemorosa, Ornithogalum pannonicum, Agropyron pectinatum, Phlomis tuberosa, Bromus inermis, Festuca rupicola, Falcaria vulgaris, Peucedanum alsaticum, Elymus hispidus, Chamaecytisus supinus, Achillea pannonica].
Pannonic sand steppes	Formations dominated by medium or tall perennial tuft-forming grasses or suffrutescents, with lacunar ground cover, together with their associated therophyte communities developed on mobile or fixed sands (alluvial sands, subfossil dune systems) within the range of the Pannonic steppes (Pal. 34.91), thus in the Pannonic basin and the areas of preponderant influence of its communities. Plant text: [Festuca vaginata, Helichrysum arenarium, Dianthus serotinus, Gypsophila fastigiata, Gypsophila paniculata, Koeleria glauca, Alyssum montanum ssp.gmelinii, Bassia laniflora, Centaurea scabiosa] ssp.[sadleriana, Centaurea jacea] ssp.[angustifolia, Erysimum diffusum, Stipa capillata, Stipa pulcherrima, Cynodon dactylon, Festuca pseudovina]. Invertebrate text: [Gampsocleis glabra, Myrmeleotettrix antennatus, *Callimorpha quadripunctaria, Cletis maculosa, Zygaena laeta, Zygaena punctum, Scythris kasyi].

Fennoscandian lowland species-rich dry to mesic grasslands	The habitat type occurs in the Fennoscandian lowland varying from dry to mesic grasslands mainly on siliceous substrates. The vegetation is formed by long-term continuous grazing and/or mowing. No fertilisation may occur. Species composition varies in different geographical areas, on different soils and moisture regimes and different management regimes. Includes habitats which are still traditionally used and also recently abandoned habitats with a species-rich grassland vegetation. The habitat often supports species-rich vascular plant communities. Several endangered fungi-species also occur. Plant text: Plants- [Agrostis capillaris, Alchemilla spp., Antennaria dioica, Anthoxanthum odoratum, Bistorta vivipara, Botrychium spp., Dianthus deltoides, Euphrasia spp., Festuca ovina, F. rubra, Galium verum, Gentianella campestris, Gymnademia conopsea, Hypochoeris maculata, Leontodon hispidus, Lychnis viscaria, Plantago lanceolata, Primula veris, Ranunculus polyanthemos, Succisa pratensis]. Fungi- [Hygrocybe spp., Geoglossum spp., Entoloma spp].
Nordic alvar and precambrian calcareous flatrocks	Nordic alvar and Precambrian calcareous flatrocks are very species-rich ecosystems, with an ecological character strongly influenced by winter climatic conditions. When a thin soil layer exists, it is often frozen to ice and covered with snow. Plants and animals have special adaptations to these conditions. For example the invertebrates must have strategies for overwintering. Annual freezing and thawing give rise to movements at the soil surface creating small patches of bare soil occupied by annual plants, a number of which are rare. The flat rocks may be covered with a thin layer of soil, which is the product of weathering of the underlying rock. The flora and fauna is very rich on species and many of them are rare. On Öland the Nordic alvar represents a subtype with dominating [Helianthemum oelandicum] and other endemic species. The ground is covered with a 5-30 cm deep crumbling soil. The inclination is near zero and the draining process is extremely slow. Freeze-thaw action creates soil polygons with a characteristic patterning of vegetation. In Nordic
Sclerophillous grazed forests (dehesas)	
Dehesas with evergreen Quercus spp	A characteristic landscape of the south-western quadrant of the Iberian peninsula in which crops, pasture land or Meso-Mediterranean arborescent matorral, in juxtaposition or rotation, are shaded by a fairly closed to very open canopy of native evergreen oaks ([Quercus suber, Quercusilex, Quercus rotundifolia, Quercus coccifera]). It is an important habitat of raptors, including the threatened Iberian endemic eagle [Aquila adalberti], of the crane [Grus grus], of large insects and their predators and of the endangered felid *[Lynx pardinus]. Plant text: [Quercus suber, Quercus ilex, Quercus rotundifolia, Quercus coccifera]. Vertebrate text: [Aquila adalberti], [Grus grus], [Lynx pardinus].
Semi-natural tall-herb humid meadows	

Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	[Molinia] meadows of plain to montane levels, on more or less wet nutrient poor soils (nitrogen, phosphorus). They stem from extensive management, sometimes with a mowing late in the year or, they correspond to a deteriorated stage of draining peat bogs. Subtypes: Pal. 37.311: on neutro-alkaline to calcareous soils with a fluctuating water table, relatively rich in species ([Eu-molinion]). The soil is sometimes peaty with a summer drying. Pal. 37.312: on more acid soils of the [Junco-Molinion] ([Juncion acutiflori]) except species-poor meadows or on degraded peaty soils. Plant text: Pal. 37.311 - [Molinia coerulea, Dianthus superbus, Selinum carvifolia, Cirsium tuberosum, Colchicum autumnale, Inula salicina, Silaum silaus, Sanguisorba officinalis, Serratula tinctoria, Tetragonolobus maritimus]; Pal. 37.312 - [Viola persiciflora, Viola palustris, Galium uliginosum, Cirsium dissectum, Crepis paludosa, Luzula multiflora, Juncus conglomeratus, Ophioglossum vulgatum, Inula britannica, Lotus uliginosus, Dianthus
Mediterranean tall humid grasslands of the Molinio-Holoschoenion	Mediterranean humid grasslands of tall grasses and rushes widespread in the entire Mediterranean basin, extending along the coasts of the Black Sea, particularly in dunal systems. Plant text: [Scirpus holoschoenus] ([Holoschoenus vulgaris]), [Agrostis stolonifera, Agrostis reuteri, Galium debile, Molinia caerulea, Briza minor, Melica cupanii, Cyperus longus, Linum tenue, Trifolium resupinatum, Schoenus nigricans, Peucedanum hispanicum, Carex mairii, Juncus maritimus, Juncus acutus, Asteriscus aquaticus, Hypericum tomentosum, Hypericum tetrapterum, Inula viscosa, Oenanthe pimpinelloides, Oenanthe lachenalii, Eupatorium cannabinum, Prunella vulgaris, Pulicaria dysenterica, Tetragonolobus maritimus, Orchis laxiflora, Dactylorhiza elata, Succisa pratensis, Sonchus maritimus ssp. aquatilis, Silaum silaus, Sanguisorba officinalis, Serratula tinctoria, Genista tinctoria, Cirsium monspessulanum, Cirsium pyrenaicum, Senecio doria, Dorycnium rectum, Erica terminalis, Euphorbia pubescens, Lysimachia ephemerum].
Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	Subtypes: Pal. 37.7: Wet and nitrophilous tall herb edge communities, along water courses and woodland borders belonging to the [Glechometalia hederaceae] and the [Convolvuletalia sepium] orders ([Senecion fluviatilis, Aegopodion podagrariae, Convolvulion sepium, Filipendulion]). Pal. 37.8: Hygrophilous perennial tall herb communities of montane to alpine levels of the [Betulo-Adenostyletea] class. Plant text: Pal. 37.7: [Glechoma hederacea, Epilobium hirsutum, Senecio fluviatilis, Filipendula ulmaria, Angelica archangelica, Petasites hybridus, Cirsium oleraceum, Chaerophyllum hirsutum, Aegopodium podagraria, Alliaria petiolata, Geranium robertianum, Silene dioica, Lamium album, Lysimachia punctata, Lythrum salicaria, Crepis paludosa] Pal. 37.8: [Aconitum lycoctonum] ([Aconitum vulparia]), [Aconitum napellus, Geranium sylvaticum, Trollius europaeus, Adenostyles alliariae, Peucedanum ostruthium, Cicerbita alpina, Digitalis grandiflora, Calamagrostis arundinacea, Cirsium helenioides].

Alluvial meadows of river valleys of the Cnidion dubii	Alluvial meadows with natural dynamic of flooding belonging to the [Cnidion dubii] alliance, under continental to subcontinental climatic conditions. Plant text: [Cnidium dubium] ([C. venosum]), [Viola persicifolia, Scutellaria hastifolia, Allium angulosum Oenanthe lachenalii, Gratiola officinalis, Carex praecox var. suzae, Juncus atratus, Lythrum virgatum].
Northern boreal alluvial meadows	Along large rivers with placid river sections which are frozen every winter, the type is affected by flooding in spring. The traditional management as hay meadows has usually ceased. Type includes areas that are not yet severely overgrown with trees and bushes. Plant text: [Carex acuta, C. aquatilis, C. canescens, Calamagrostis purpurea, Convallaria majalis, Deschampsia cespitosa, Elymus fibrosus, E. mutabilis, Festuca ovina, Equisetum fluviatile, Galium boreale, Molinia caerulea, Nardus stricta, Phalaris arundinacea, Salix triandra, Solidago virgaurea, Thalictrum simplex ssp. boreale, Trollius europaeus].
Mesophile grasslands	
Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	Species-rich hay meadows on little to moderately fertilised soils of the plain to submontane levels, belonging to the [Arrhenatherion] and the [Brachypodio-Centaureion nemoralis] alliances. These extensive grasslands are rich in flowers and are not reaped before flowering of the grasses and than only one or two times per year. Plant text: [Arrhenatherum elatius, Trisetum flavescens ssp. flavescens, Pimpinella major, Centaurea jacea, Crepis biennis, Knautia arvensis, Tragopogon pratensis, Daucus carota, Leucanthemum vulgare, Alopecurus pratensis, Sanguisorba officinalis, Campanula patula, Leontodon hispidus, Leontodon nudicaulis, Linum bienne, Oenanthe pimpinelloides, Rhinanthus lanceolatus, Malva moschata, Serapias cordigera].
Mountain hay meadows	Species-rich mesophile hay meadows of the montane and subalpine levels (mostly above 600 metres) usually dominated by [Trisetum flavescens] and with [Heracleum sphondylium, Viola cornuta, Astrantia major, Carum carvi, Crepis mollis, Crepis pyrenaica, Bistorta major], ([Polygonum bistorta]), [Silene dioica, Silene vulgaris, Campanula glomerata, Salvia pratensis, Centaurea nemoralis, Anthoxanthum odoratum, Crocus albiflorus, Geranium phaeum, Geranium sylvaticum, Narcissus poeticus, Malva moschata, Valeriana repens, Trollius europaeus, Pimpinella major, Muscari botryoides, Lilium bulbiferum, Thlaspi caerulescens, Viola tricolor ssp. subalpina, Phyteuma halleri, Phyteuma orbiculare, Primula elatior, Chaerophyllum hirsutum] and many others. Plant text: [Trisetum flavescens] and with [Heracleum sphondylium, Viola cornuta, Astrantia major, Carum carvi, Crepis mollis, Crepis pyrenaica, Bistorta major] ([Polygonum bistorta]), [Silene dioica, Silene vulgaris, Campanula glomerata, Salvia pratensis, Centaurea nemoralis, Anthoxanthum odoratum, Crocus albiflorus, Geranium

Fennoscandian wooded meadows	A vegetation complex consisting of small copses of deciduous trees and shrubs and patches of open meadows. Ash ([Fraxinus excelsior]), birch ([Betula pendula, B. pubescens]) and [Quercus robur, Tilia cordata, Ulmus glabra or Alnus incana] are the common tree species. Nowadays very few areas are managed but traditionally these areas were managed by a combination of raking, hay-cutting, grazing of grassland and pollarding or lopping of trees. Species-rich vegetation complexes with rare and threatened meadow species and well developed epiphytic flora of mosses and lichens are characteristic. Many threatened species preferring old pollarded deciduous trees of semi-open habitats occur. The habitat type includes managed areas and overgrown areas with old pollarded or lopped deciduous trees. The type does not include abandoned meadows being invaded by trees. Plant text: Trees- [Fraxinus excelsior, Betula pendula, B. pubescens, Quercus robur, Tilia cordata, Ulmus glabra, Alnus incana]. Vascular plants- [Briza media, Corylus avellana, Cotoneaster scandinavicus, Crataegus spp., Cypripediu
RAISED BOGS AND MIRES AND FENS	
Sphagnum acid bogs	
Active raised bogs	Acid bogs, ombrotrophic, poor in mineral nutrients, sustained mainly by rainwater, with a water level generally higher than the surrounding water table, with perennial vegetation dominated by colourful Sphagna hummocks allowing for the growth of the bog ([Erico-Sphagnetalia magellanici, Scheuchzerietalia palustris] p., [Utricularietalia intermedio-minoris] p., [Caricetalia fuscae] p.). Typically, pools may be present in western United Kingdom, Ireland, Finland and Sweden. The term "active" must be taken to mean still supporting a significant area of vegetation that is normally peat forming, but bogs where active peat formation is temporarily at a standstill, such as after a fire or during a natural climatic cycle e.g., a period of drought, are also included. Plant text: Erico-Sphagnetalia magellanici - [Andromeda polifolia, Carex pauciflora, Cladonia] spp., [Drosera rotundifolia, Eriophorum vaginatum, Odontoschisma sphagni, Sphagnum magellanicum, Sphagnum imbricatum, Sphagnum fuscum, Vaccinium oxycoccos]; in the Boreal
Degraded raised bogs still capable of natural regeneration	These are raised bogs where there has been disruption (usually anthropogenic) to the natural hydrology of the peat body, leading to surface desiccation and/or species change or loss. Vegetation on these sites usually contains species typical of active raised bog as the main component, but the relative abundance of individual species is different. Sites judged to be still capable of natural regeneration will include those areas where the hydrology can be repaired and where, with appropriate rehabilitation management, there is a reasonable expectation of re-establishing vegetation with peat-forming capability within 30 years.

Blanket bogs (* if active bog)	Extensive bog communities or landscapes on flat or sloping ground with poor surface drainage, in oceanic climates with heavy rainfall, characteristic of western and northern Britain and Ireland. In spite of some lateral water flow, blanket bogs are mostly ombrotrophic. They often cover extensive areas with local topographic features supporting distinct communities [Erico-Sphagnetalia magellanici]: [Pleurozio purpureae-Ericetum tetralicis, Vaccinio-Ericetum tetralicis] p.; [Scheuchzerietalia palustris] p., [Utricularietalia intermedio-minoris] p., [Caricetalia fuscae] p]. Sphagna play an important role in all of them but the cyperaceous component is greater than in raised bogs. Only active bogs are considered to have priority status. The term "active" must be taken to mean still supporting a significant area of vegetation that is normally peat forming. Subtypes in the British Isles: Pal. 52.1 - Hyper-Atlantic blanket bogs of the western coastlands of Ireland, western Scotland and its islands, Cumbria, Northern Wales; bogs locally
Transition mires and quaking bogs	Peat-forming communities developed at the oligotrophic to mesotrophic water surfaces, with characteristics intermediate between soligenous and ombrogenous types. They present a large and diverse range of plant communities. In large peaty systems, the most prominent communities are swaying swards, floating carpets or quaking mires formed by medium-sized or small sedges, associated with sphagnum or brown mosses. They are generally accompanied by aquatic and amphibious communities. In the Boreal region this habitat type includes minerotrophic fens that are not part of a larger mire complex, open swamps and small fens in the transition zone between water (lakes, ponds) and mineral soil. These mires and bogs belong to the [Scheuchzerietalia palustris] order (oligotrophic floating carpets among others) and to the [Caricetalia fuscae] order (quaking communities). Oligotrophic water-land interfaces with [Carex rostrata] are included. Plant text: [Eriophorum gracile, Carex chordorrhiza, Carex lasiocarpa, Carex diandra, Carex rostrata, Carex limosa, Scheuchzeria palustris,
Depressions on peat substrates of the Rhynchosporion	Highly constant pioneer communities of humid exposed peat or, sometimes, sand, with [Rhynchospora alba, Rhynchospora fusca, Drosera intermedia, Drosera rotundifolia, Lycopodiella inundata], forming on stripped areas of blanket bogs or raised bogs, but also on naturally seep- or frost-eroded areas of wet heaths and bogs, in flushes and in the fluctuation zone of oligotrophic pools with sandy, slightly peaty substratum. These communities are similar, and closely related, to those of shallow bog hollows (Pal. 51.122) and of transition mires (Pal. 54.57). Plant text: [Rhynchospora alba, Rhynchospora fusca, Drosera intermedia, Drosera rotundifolia, Lycopodiella inundata].

Fennoscandian mineral-rich springs and springfens	Springs and springfens are characterized by continuous flow of groundwater. The water is cold, of even temperature, and rich in oxygen and minerals, due to the rapid percolation. Springs may have a basin where the water wells up and an adjacent outflow with typical vegetation. In springfens the water seeps up through the ground and the accumulated peat, enhancing the growth of specialised vegetation. Since the water originates from deeper layers, these springs often have running water during the winter even if the surrounding areas are frozen and snow-covered. The invertebrate fauna is often very specialised to this habitat and the flora rich in northern species. Plant text: Plants- [Cardamine amara, Chrysosplenium spp., Carex appropinquata, C. capillaris, C. paniculata, Epilobium hornemanni, E. davuricum, E. laestadii, E. alsinifolium, Montia fontana, Poa alpigena, P. remota, P. trivialis, Ranunculus lapponicus, R. hyperboreus, Stellaria alsine, S. calycantha, S. nemorum]. Bryophytes- [Brachythecium rivulare, Bryum weigelii, B. pseudotriquetrum, B. schleicheri, Calliergon giganteum, C. sar
Calcareous fens	
Calcareous fens with Cladium mariscus and species of the Caricion davallianae	[Cladium mariscus] beds of the emergent-plant zones of lakes, fallow lands or succession stage of extensively farmed wet meadows in contact with the vegetation of the [Caricion davallianae] or other [Phragmition] species [Cladietum marisci] (Allorge 1922) Zobrist 1935]. Plant text: [Cladium mariscus, #Kostelezkia pentacarpos].
Petrifying springs with tufa formation (Cratoneurion)	Hard water springs with active formation of travertine or tufa. These formations are found in such diverse environments as forests or open countryside. They are generally small (point or linear formations) and dominated by bryophytes ([Cratoneurion commutati]). Plant text: [Arabis soyeri, Cochlearia pyrenaica] (in sites with heavy metals), [Pinguicula vulgaris, Saxifraga aizoides]. Mosses: [Catoscopium nigritum, Cratoneuron commutatum, Cratoneuron commutatum var. falcatum, Cratoneuron filicinum, Eucladium verticillatum, Gymnostomum recurvirostrum]. In the Boreal region also [Carex appropinquata, Epilobium davuricum, Juncus triglumis, Drepanocladus vernicosus, Philonotis calcarea, Scorpidium revolvens, Scorpidium cossoni, Cratoneuron decipiens, Bryum pseudotriquetrum].
Alkaline fens	Wetlands mostly or largely occupied by peat- or tufa-producing small sedge and brown moss communities developed on soils permanently waterlogged, with a soligenous or topogenous base-rich, often calcareous water supply, and with the water table at, or slightly above or below, the substratum. Peat formation, when it occurs, is infra-aquatic. Calciphile small sedges and other [Cyperaceae] usually dominate the mire communities, which belong to the [Caricion davallianae], characterised by a usually prominent "brown moss" carpet formed by [Campylium stellatum, Drepanocladus intermedius, D. revolvens, Cratoneuron commutatum, Acrocladium cuspidatum, Ctenidium molluscum, Fissidens adianthoides, Bryum pseudotriquetrum] and others, a grasslike growth of [Schoenus nigricans, S. ferrugineus, Eriophorum latifolium, Carex davalliana, C. flava, C. lepidocarpa, C. hostiana, C. panicea, Juncus subnodulosus, Scirpus cespitosus, Eleocharis quinqueflora], and a very rich herbaceous flora including [Tofieldia calyculata, Dactylorhiza incarnata, D. traunsteineri, D.

Alpine pioneer formations of the Caricion bicoloris-atrofuscae	Alpine, peri-Alpine and northern British communities colonising neutral to slightly acid gravelly, sandy, stony, sometimes somewhat argilous or peaty substrates soaked by cold water, in moraines and on edges of springs, rivulets, glacial torrents of the alpine or subalpine levels, or on alluvial sands of pure, cold, slow-flowing rivers and calm backwaters. Permanent or continued soil frost over a long period is essential for the existence of this habitat type. Low vegetation composed principally of species of [Carex] and [Juncus] ([Caricion bicoloris-atrofuscae]). Plant text: [Carex atrofusca, Carex bicolor, Carex maritima, Carex microglochin, Carex vaginata, Juncus alpinoarticulatus, Juncus arcticus, Juncus castaneus, Juncus triglumis, Kobresia simpliciuscula, Typha lugdunensis, Typha minima, Typha shuttleworthii, Tofieldia pusilla]. Invertebrate text: [#Vertigo geyeri, #Vertigo genesii].
Boreal mires	
Aapa mires	Mire complexes in southern, middle and northern boreal zones characterised by minerotrophic fen vegetation in the central parts of the complexes. Hydrotopographical mire-units are: mixed mires, string-fens, flark-fens, unraised [Sphagnum fuscum]-bogs, unpatterned topogenous or soligenous lawn-, carpet or mud-bottom fens. Poor [Sphagum] fens are the most common vegetation types whilst brown moss fens can be common in some regions. In prealpine areas in Sweden and in hill regions of Kainuu and Kuusamo in eastern Finland, sloping fens (>5 grades) are typical variants of aapa mires. They occur rarely also in the Suomenselkä water divide region in western Finland as well in Lapland. In the mire margins, pine mires and spruce swamps and mires on thin peat of different types dominate. In some limited areas with calcareous bedrock rich fens dominate in the complexes. Plant text: [Chamaedaphne calyculata, Empetrum nigrum] (s.lato),[Betula nana, Tricophorum cespitosum, Eriophorum vaginatum, Eriophorum russeolum, Carex rostrata, Carex lasiocarpa, Carex rotundata, Carex
Palsa mires	Mire complexes in the northern boreal, orohemiarctic and alpine regions, where the climate is slightly continental and the mean annual temperature is below -1°. The mires are mainly minerotrophic, excluding the palsas, which are peat mounds with sporadic permafrost. The palsas are usually 2-4 metres high, but up to 7 metres high palsas have been found in Finland and Sweden. Plant text: [Eriophorum russeolum, Carex rotundata, Carex saxatilis, Empetrum nigrum ssp. hermaphroditum, Ledum palustre, Betula nana, Vaccinium microcarpum]. Mosses: [Dicranum elongatum]. Lichens: [Ochrolechia] spp., [Cladonia] spp., [Cladina] spp.
ROCKY HABITATS AND CAVES	
Scree	

Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	This habitat consists of: a) communities of siliceous scree of the superior montane level to the snow level, growing on more or less moving "cryoclastic systems" with variable granulometry and belonging to the [Androsacetalia alpinae] order. b) vegetation of the montane level of the west and centre of Europe growing on screes sometimes of artificial origin (extraction of materials). It consists of alpine communities often rich in bryophytes, lichens and sometimes in ferns ([Cryptogramma crispa]), belonging to the [Galeopsietalia] order. Plant text: a) [Androsacetalia alpinae]: [Androsacae alpina, Achillea nana, Oxyria digyna, Geum reptans, Saxifraga bryoides, Ranunculus glacialis, Linaria alpina, Cerastium uniflorum, Doronicum clusii, Doronicum grandiflorum, Poa laxa, Viola valderia, Luzula alpinopilosa, Cryptogramma crispa]; b) [Galeopsietalia ladani]: [Galeopsis ladanum ssp. ladanum, Anarrhinum bellidiflorum, Cryptogramma crispa, Athyrium alpestre].
Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	Calcshist, calcareous, or marl screes of the montane to alpine levels under cold climates, with the associations respectively of [Drabion hoppeanae, Thlaspion rotundifolii] and [Petasition paradoxi]. Plant text: [Drabion hoppeanae] (calcschist screes) : [Draba hoppeana, Artemisia genipi, Campanula cenisia, Saxifraga biflora, Herniaria alpina, Trisetum spicatum ssp. ovatipaniculatum]; [Thlaspion rotundifolii] (calcareous scree): [Thlaspi rotundifolium, Hutchinsia alpina, Papaver rhaeticum, Galium villarsi, Berardia subacaulis, Viola cenisia, Arabis alpina]; [Petasition paradoxi, Morina persica, Sideritis scardica] (marl screes): [Petasites paradoxus, Gypsophila repens, Valeriana montana, Leontodon hyoseroides].
Western Mediterranean and thermophilous scree	Screes of warm exposures in the Alps and the Pyrenees, of calcareous substrates in the Pyrenees, of Mediterranean mountains, hills and lowlands and, locally, of warm, sunny middle European upland or lowland sites. The vegetation belongs to the [Androsacetalia alpinae] p., [Thlaspietalia rotundifolii] p., [Stipetalia calamagrostis] and [Polystichetalia lonchitis] orders. The following subtypes are included: Pal. 61.31 Peri-Alpine thermophilous screes. [Stipion calamagrostidis, Leontodontion hyoseroidis]. Mostly coarse, unstabilised, sunny calcareous screes of the montane and subalpine levels of the Alps and of the uplands and lowlands of western and central middle Europe. Pal. 61.32 Provençal screes. [Pimpinello-Gouffeion]. Screes of Mediterranean southern France, with [Gouffeia arenarioides, Ptychotis heterophylla, Linaria supina, Centranthus ruber, Crucianella latifolia]. Pal. 61.33 Pyreneo-Alpine thermo-siliceous screes. [Senecion leucophyllae, Taraxacion pyrenaici]. Siliceous screes of warm slopes of the subalpine level of the Alps and of the alpine and subalpine levels of the Pyrenees, u

Eastern Mediterranean screes	Screes of the high Greek mountains with vegetation of the [Drypetalia spinosae] order. Subtypes: Pal. 61.41 Greek limestone screes. [Drypion spinosae] ([Silenion caesiae]). Formations of the higher mountains of Greece (Pindus, Olympus, Parnassus, Giona, Taygetos, Kilini), with [Drypis spinosa, Ranunculus brevifolius, Senecio thapsoides, Aethionema saxatile]. Pal. 61.42 Greek serpentine screes.[Campanulion hawkinsonianae]. Less widespread formations restricted to serpentines of the Pindus, with [Campanula hawkinsoniana, Arenaria serpentini, Cardamine glauca, Viola magellensis, Alyssum scardicum, Silene haussknechtii]. Plant text: Pal. 61.41 - [Drypis spinosa, Ranunculus brevifolius, Senecio thapsoides, Aethionema saxatile]; Pal. 61.42 - [Campanula hawkinsoniana, Arenaria serpentini, Cardamine glauca, Viola magellensis, Alyssum scardicum, Silene haussknechtii].
Medio-European upland siliceous screes	Siliceous screes of hills of western and central Europe, with [Epilobium collinum, Galeopsis segetum, Senecio viscosus, Anarrhinum bellidifolium, Cryptogramma crispa]. Upland siliceous screes, often resulting from quarry activity, and colonised by very impoverished forms of the Alpine communities, usually rich in mosses, lichens and sometimes ferns, notably [Cryptogramma crispa], are included, but should not be taken into account. Plant text: [Epilobium collinum, Galeopsis segetum, Senecio viscosus, Anarrhinum bellidifolium, Cryptogramma crispa].
Medio-European calcareous scree of hill and montane levels	Calcareous or marly screes of the hill and montane levels extending into mountainous regions (subalpine and alpine), often in dry, warm stations in associations with [Stipetalia calamagrostis]. Calcareous screes of the Paris Basin, and more precisely the calcareous fine screes of the thermo-medio European plains irradiating into the lower valley of the Seine ([Leontodontion hyoseroidis]) may be included here. Plant text: [Achnatherum calamagrostis, Dryopteris robertiana] (=[Gymnocarpium robertianum]), [Galeopsis angustifolia, Petasites paradoxus, Rumex scutatus].
Rocky slopes with chasmophytic vegetation	
Calcareous rocky slopes with chasmophytic vegetation	Vegetation of fissures of limestone cliffs, in the mediterranean region and in the euro-siberian plain to alpine levels, belonging essentially to the [Potentilletalia caulescentis] and [Asplenietalia glandulosi] orders. Two levels may be identified: a) thermo- and meso-Mediterranean ([Onosmetalia frutescentis]) with [Campanula versicolor, Campanula rupestris, Inula attica, Inula mixta, Odontites luskii]; b) montane- oro-Mediterranean ([Potentilletalia speciosae], including [Silenion aurticulatae, Galion degenii] and [Ramondion nathaliae]). This habitat type presents a great regional diversity, with many endemic plant species (indicated under Plants). Plant text: Pal. 62.11 - Western Mediterranean communities ([Asplenion petrarchae]): [Asplenium petrarchae, Asplenium trichomanes ssp. pachyrachis, Cheilanthes acrostica, Melica minuta, Hieracium stelligerum, Erodium petraeum]; Mesotherm shady fern groups of the supra-Mediterranean level ([Polypodion australis]): [Polypodium cambricum ssp. australe, Saxifraga corbariensis], #[Asplenium jahandiezii, Asplenium sagittatum, Pteris cretica, Asplenium

Siliceous rocky slopes with chasmophytic vegetation	Vegetation of fissures of siliceous inland cliffs, which presents many regional subtypes, described under Plants. Plant text: Pal. 62.21 - Alpine siliceous cliff vegetation (Pyrenees and Alps) and of Hercynian system and its periphery ([Androsacion vandellii]): [Androsace vandellii, Saxifraga retusa ssp. retusa, Saxifraga aspera, Phyteuma scheuchzeri, Primula hirsuta, Eritrichium nanum]; Communities of montane level of Pyrenees and Cevennes ([Asarinion procumbentis]: includes Pal. 62.26): [Asarina procumbens, Dianthus graniticus, Saxifraga continentalis, Saxifraga prostii, Anarrhinum bellidifolium]; Saxicolous communities of the plain to hill levels under Middle European climate ([Asplenion septentrionalis]) and communities of the plain level under oceanic climate ([Asplenion billotii-Umbilicarion rupestre]: Pal. 62.29 is included): [Asplenium septentrionale, Asplenium adiantum-nigrum, Asplenium billotii, Asplenium foreziense, Asplenium onopteris]. - Hercynian serpentine cliffs ([Asplenion cuneifolii]): [Asplenium cuneifolium, Asplenium alternifolium, Asplenium adulterinum]. Pal. 62.22 - high altitud
Siliceous rock with pioneer vegetation of the Sedo-Scleranthion or of the Sedo albi-Veronicion dillenii	Pioneer communities of the [Sedo-Scleranthion] or the [Sedo albi-Veronicion dillenii] alliances, colonising superficial soils of siliceous rock surfaces. As a consequence of drought, this open vegetation is characterised by mosses, lichens and [Crassulaceae]. Plant text: [Sedo-Scleranthion]: [Sempervivum arachnoideum, Sempervivum montanum, Sedum annuum, Silene rupestris, Veronica fruticans]; [Sedo albi-Veronicion dillenii]: [Veronica verna, Veronica dillenii, Gagea bohemica, Gagea saxatiles, Riccia ciliifera]; plant species belonging to the two syntaxa: [Allium montanum, Sedum acre, Sedum album, Sedum reflexum, Sedum sexangulare, Scleranthus perennis, Rumex acetosella]. Mosses: [Polytrichum piliferum, Ceratodon purpureus].
Limestone pavements	Regular blocks of limestone known as "clints" with loose flags separated by a network of vertical fissures known as "grykes" or "shattered pavements", containing more loose limestone rubble. The rock surface is almost devoid of overlying soils (considerably less than 50% cover) except for some patches of shallow skeletal or loessic soils, although more extensive areas of deeper soil occasionally occur; sometimes there is encroachment of peat. This morphology offers a variety of microclimates allowing the establishment of complex vegetation consisting of a mosaic of different communities. The fissures provide a cold humid microclimate where shade-tolerant vascular plants such as [Geranium robertianum] and [Ceterach officinale] occur, as well as formations of herbaceous species typical of calcareous woodland; the small pockets of soil are occupied by communities of [Mesobromion] (e.g. [Seslerio-Mesobromenion]); heath and scrub also occur (e.g. [Corylo-Fraxinetum]). Apart from the species rich areas of scrub (generally [Prunetalia spinosae]), the ecosystem is maintained by grazing
Other rocky habitats	

Caves not open to the public	Caves not open to the public, including their water areas and flows, hosting specialised or high endemic species, or that are of paramount importance for the conservation of Annex II species (e.g. bats, amphibians). Plant text: Mosses only (e.g.[Schistostega pennata]) and algal carpets at the entry of caves. Vertebrate text: Very specialised and highly endemic cavernicolous fauna. It includes underground relic forms of a fauna which has been diversified outside. With regard to vertebrates, caves constitute hibernation sites for most European bat species, among which many are threatened (see Annex II). Several species can live together in the same cave. Caves also shelter some very rare amphibious species like #[Proteus anguinus] and several species of the #[Speleomantes] genus. Invertebrate text: Very specialised and highly endemic cavernicolous fauna. It includes underground relic forms of a fauna which has been diversified outside. This fauna is mainly composed of invertebrates which exclusively live in caves and underground waters. The cavernicolous terrestrial invertebrates are mainly coleoptera, belongir
Fields of lava and natural excavations	Sites and products of recent volcanic activity harbouring distinct biological communities. The following subtypes are included: Pal. 66.1 Teide violet community. [Violetea cheiranthifoliae]. Very open formation of the summit of the Teide volcano of Tenerife, above (2700) 3000 metres, with [Viola cheiranthifolia] and a few individuals of [Silene nocteolens] and [Argyranthemum teneriffae]. Pal. 66.2 Etna summital communities Communities of Mount Etna, above the limit of hedgehog heaths. Pal. 66.3 Barren lava fields Almost bare lava formations of other volcanoes, and of lower altitudes on Etna and Teide, colonised by, besides communities related to ones covered in other sections, lichens (e.g. [Stereocaulon vesubianum]) and invertebrates. Pal. 66.4 Volcanic ash and lapilli fields Pal. 66.5 Lava tubes Caves formed by hollow basaltic tubes resulting from the cooling of the surface of lava flows whose molten interior continued to flow. The very large tube created by the volcano La Corona of Lanzarote harbours unique communities of invertebrates, in particular, the decapod crustacean [Munidopsis polymorp
Submerged or partially submerged sea caves	Caves situated under the sea or opened to it, at least at high tide, including partially submerged sea caves. Their bottom and sides harbour communities of marine invertebrates and algae.
Permanent glaciers	Rock and true glaciers.
FORESTS	
Forests of Boreal Europe	

Western Taïga	Natural old forests as well as those young forest stages naturally developing after fire. Natural old forests represent climax or late succession stages with slight human impact or without any human impact. Present natural old forests are only minor remnants of those originally occurring in Fennoscandia. With intensive forestry, which is carried out practically throughout the countries, the main features of natural old forests disappear, i.e. the considerable amount of dead and rotten wood, the great variation in tree age and length and species composition, the trees from previous generations, the more stable microclimate. Old natural forests are habitats of many threatened species, especially bryophytes, lichens, fungi, and invertebrates (mostly beetles). Some of the present old natural forests have human impact, but in spite of that they maintain many characteristics of the natural forests. Because of the important role of fire, burned forest areas, and their young succession stages, have been naturally common in the boreal region. Nowadays they are extremely rare because of the efficient fire pro
Fennoscandian hemiboreal natural old broad-leaved deciduous forests Quercus, Tilia, Acer, Fraxinus or Ulmus) rich in epiphytes	The hemiboreal natural old broad-leaved deciduous forest forms a transition between the Western Taiga and the nemoral forests. The most common tree species are [Quercus robur, Ulmus spp., Fraxinus excelsior, Tilia cordata or Acer platanoides]. There is typically a considerable amount of dead wood and a long continuity of woodland cover on the sites. The species-diversity of lichens, fungi, insects and soil organisms is high. In many cases the forests have previously been used for grazing or mowing. Plant text: Trees- [Quercus robur, Ulmus spp., Fraxinus excelsior, Tilia cordata or Acer platanoides]. Vascular plants- [Allium ursinum, Anemone nemorosa, Corylus avellana, Dentaria bulbifera, Hepatica nobilis, Lathyrus vernus, Mercurialis perennis, Milium effusum, Poa nemoralis, Polygonatum multiflorum]. Bryophytes- [Antitrichia curtipendula, Homalia trichomanoides, Orthotrichum spp., Porella platyphylla, Zygodon] spp. Fungi- [Auricularia mesenterica, Ganoderma lipsiense, Dichomitus campestris, Mycena galericulata, Tricholoma album, T. sulphureum]. Lichens- [Arthonia vinosa, Biatorella n
Natural forests of primary succession stages of landupheaval coast	This type includes different types of deciduous, coniferous and mixed natural thickets and forests developed on land upheaval coasts of the Baltic sea. Characteristic for these habitats are stages of primary succession from shore grassland vegetation to climax forests or various wetland types. Also soil stratification is underdeveloped, although podsol soils are otherwise typical for boreal forest. The youngest pioneer forests near the sea are often low or tall herb deciduous forests, thickets or swamps. Vegetation succession can also proceed from willow swamps through forest swamps to mires. Alder and birch are dominant in the tree layer and willows are often common in the shrub layer. Grasses are abundant. Further inland the influence of the sea is weakened, the soils are often poor in nutrients and coniferous forests are typical. Pine, and often also spruce, dominates the tree layer and dwarf shrubs dominate in the field layer. In the bottom layer mosses are common, but in many areas lichens are abundant. Plant text: Due to varying habitat types the species composition is very variable: [Alnus glutinosa, A. incana, Betula p

Nordic subalpine/subarctic forests with Betula pubescens ssp czerepanovii	Forests dominated by [Betula pubescens ssp. czerepanovii] (mountain birch), occurring and often dominating the subalpine belt of the Scandinavian mountain (fell) chain (”Fjällen”). Occur also in isolated northern Fennoscandian fells and in gently sloping or flat subarctic (hemiarctic) uplands, particularly in N Finland. Due to different ecological characteristics, vegetation varies from poor lichen and dwarf shrub dominated types to those rich in tall-herbs. Plant text: Poor types: [Cladonia spp., Dicranum spp., Empetrum hermaphroditum, Hylocomium splendens, Linnaea borealis, Pleurozium schreberi, Stereocaulon paschale, Trientalis europaea,. Vaccinium myrtillus]. Rich types: [Aconitum lycoctonum, Cicerbita alpina, Cornus suecica, Geranium sylvaticum, Gymnocarpium dryopteris, Hierochloë odorata, Melica nutans, Rubus saxatilis, Trollius europaeus].
Fennoscandian herb-rich forests with Picea abies	This type occurs in areas of brown forest earth with mull, often in low-lying areas, ravines and slopes with fine sediment and good water regime. The succession of this vegetation type normally leads to the dominance of spruce in the tree layer, although the broad-leaved trees often comprise a significant element. Tall herbs and ferns dominate, but the species composition varies greatly between northern, southern and western Fennoscandia. The forests are characterized by distinct layers of vegetation. The bottom layer is covered unevenly by bryophytes, the field layer is dominated by herbs and grasses, the bush and tree layers are well developed including a variety of species. Several vegetation types have been described, the main groups being dry, mesic and moist grass-herb forests. Sometimes ground water is flowing near the ground surface, which give rise to a specific species rich ”wet-forest” flora and invertebrate fauna. Plant text: Vascular plants- [Actaea spicata, A. erythrocarpa, Botrychium virginianum, Calypso bulbosa, Carex remota, Cicerbita alpina, Crepis paludosa, # Cypripedium calceolus, Diplazium sib
Coniferous forests on, or connected to, glaciofluvial eskers	This type includes Fennoscandian conifer forests found on or close to eskers. The top of an esker is often characterized by Pinus sylvestris and the slopes sometimes by Picea abies, although deciduous species may occur. Eskers are glaciofluvial gravel and sand formations which consist of relatively sorted material, often forming ridges over 20 meters high. In terms of ecological site factors they are more variable than the surrounding forest on flatter ground. In particular the microclimate differs notably between shaded and sunny slopes. Thus aspect and slope inclination, which reflect the effects of solar radiation and soil and air temperatures are important ecological factors. As a result of ecological characteristics, vegetation on sunny esker slopes is often relatively rich in species and particularly contains many leguminous plants as well as some eastern steppe plant species. Plant text: [Antennaria dioeca, Anthyllis vulneraria ssp. fennica, Astragalus alpinus, Brachypodium pinnatum, Calamagrostis arundinacea, Carex ericetorum, C. pediformis, Dianthus arenarius, Fragaria vesca, Hierochloë australis, Hypochoeris ma

Fennoscandian wooded pastures	A vegetation complex in which the tree layer varies from sparse forest to small copses of trees and shrubs and patches of open grassland. These habitats have a representative mosaic of copses of trees (usually deciduous trees) and grassland with a long continuity of grazing. The tree layer consists either of deciduous broad-leaved species such as [Quercus robur, Fraxinus excelsior, Tilia cordata, Betula spp., Alnus incana] or conifers ([Picea abies, Pinus sylvestris]). Particularly in Sweden there are pastures with old, large oaks. A rich assemblage of threatened lichens, fungi, and invertebrates are associated with the bark and dead or decaying wood. The type also includes (particularly in Finland) deciduous forests established after slash-and-burn cultivation, that was a characteristic feature of the former land use in Finland. Plant text: [Agrostis capillaris, Alnus incana, Antennaria dioica, Botrychium spp., Campanula persicifolia, Coeloglossum viride, Fragaria vesca, Geranium sylvaticum, Melampyrum cristatum, Prunella vulgaris, Ranunculus polyanthemos, Succisa pratensis, Veronica chamaedrys, V. c
Fennoscandian deciduous swamp woods	Deciduous swamps are under permanent influence of surface water and usually flooded annually. They are moist or wet, wooded wetlands with some peat formation, but the peat layer is usually very thin. Ash ([Fraxinus excelsior]) in the hemiboreal zone and black alder ([Alnus glutinosa]) reaching the middle boreal zone are typical tree species. Gray alder ([Alnus incana]), silver birch ([Betula pubescens]) and willows ([Salix] spp.) are also common. A mosaic of patches with different water level and vegetation is typical for the type. Around the tree stems are small hummocks, but wet flooded surfaces are dominant. Plant text: Vascular plants- [Carex caespitosa, C. diandra, C. disperma, C. elongata, C. loliacea, C. rhynchospora, C. tenuiflora, Calamagrostis canescens, C. chalybea, C. stricta, Calla palustris, Glyceria lithuanica, Iris pseudacorus, Lycopus europaeus, Lysimachia thyrsiflora, Lythrum salicaria, Solanum dulcamara, Thelypteris palustris]. Mosses- [Calliergon cordifolium, Helodium blandowii, Pseudobryum cinclidioides, Spagnum squarrosum, S. teres, S. fimbriatum, S. riparium].
Forests of Temperate Europe	
Luzulo-Fagetum beech forests	[Fagus sylvatica] and, in higher mountains, [Fagus sylvatica-Abies alba] or [Fagus sylvatica-Abies alba-Picea abies] forests developed on acid soils of the medio-European domain of central and northern Central Europe, with [Luzula luzuloides, Polytrichum formosum] and often [Deschampsia flexuosa, Calamagrostis villosa, Vaccinium myrtillus, Pteridium aquilinum]. The following subtypes are included: Pal. 41.111 Medio-European collinar woodrush beech forests. Acidophilous [Fagus sylvatica] forests of the lesser Hercynian ranges and Lorraine, of the collinar level of the greater Hercynian ranges, the Jura and the Alpine periphery, of the western sub-Pannonic and the intra-Pannonic hills, not or little accompanied by spontaneous conifers, and generally with an admixture of [Quercus petraea], or in some cases [Quercus robur], in the canopy. Pal. 41.112 Medio-European montane woodrush beech forests. Acidophilous forests of [Fagus sylvatica, Fagus sylvatica] and [Abies alba] or [Fagus sylvatica, Abies alba] and [Picea abies] of the montane and high-montane levels of the greater Hercynian ranges, from the Vosge

Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	Beech forests with [Ilex], growing on acid soils, of the plain to montane levels under humid Atlantic climate. The acid substrate corresponds to alterations of acid rocks or to silt with silex more or less degraded or, to old alluvial deposits. The soils are of acid brown type, leaching or with an evolution towards podsol type. The humus is of moder to dysmoder type. These beech forests present different varieties: a) sub-Atlantic beech-oak forests of the plains and hill levels with [Ilex aquifolium] b) hyper-Atlantic beech-oak forests of the plains and hill levels with [Ilex] and [Taxus], rich in epiphytes c) pure beech forests or acidophilous beech-fir forests of the montane level, with [Ilex aquifolium] in the field layer. Plant text: [Ilex aquifolium, Taxus baccata, Ruscus aculeatus, Deschampsia flexuosa, Hieracium sabaudum, Hieracium umbellatum, Pteridium aquilinum, Vaccinium myrtillus, Lonicera periclymenum, Melampyrum pratense, Teucrium scorodonia, Holcus mollis].
Asperulo-Fagetum beech forests	[Fagus sylvatica] and, in higher mountains, [Fagus sylvatica-Abies alba] or [Fagus sylvatica-Abies alba-Picea abies] forests developed on neutral or near-neutral soils, with mild humus (mull), of the medio-European and Atlantic domains of Western Europe and of central and northern Central Europe, characterised by a strong representation of species belonging to the ecological groups of [Anemone nemorosa], of [Lamiastrum] ([Lamium])[galeobdolon], of [Galium odoratum] and [Melica uniflora] and, in mountains, various [Dentaria] spp., forming a richer and more abundant herb layer than in the forests of 9110 and 9120. The following subtypes are included: Pal. 41.131 Medio-European collinar neutrophilous beech forests Neutrocline or basicline [Fagus sylvatica] and [Fagus sylvatica-Quercus petraea-Quercus robur] forests of hills, low mountains and plateaux of the Hercynian arc and its peripheral regions, of the Jura, Lorraine, the Paris basin, Burgundy, the Alpine piedmont, the Carpathians and a few localities of the North Sea-Baltic plain. Pal. 41.132 Atlantic neutrophile beech forests Atlantic beech and beech-oak forests w
Medio-European subalpine beech woods with Acer and Rumex arifolius	[Fagus sylvatica] woods usually composed of low, low-branching trees, with much sycamore ([Acer pseudoplatanus]), situated near the tree limit, mostly in low mountains with oceanic climate of Western Europe and of central and northern Central Europe. The herb layer is similar to that of the forests of 9130 or locally of 9110 and contains elements of the adjacent open grasslands. Plant text: [Fagus sylvatica, Acer pseudoplatanus, Rumex arifolius].

Medio-European limestone beech forests of the Cephalanthero-Fagion	Xero-thermophile [Fagus sylvatica] forests developed on calcareous, often superficial, soils, usually of steep slopes, of the medio-European and Atlantic domaines of Western Europe and of central and northern Central Europe, with a generally abundant herb and shrub undergrowth, characterized by sedges ([Carex digitata, Carex flacca, Carex montana, Carex alba]), grasses ([Sesleria albicans, Brachypodium pinnatum]), orchids ([Cephalanthera] spp., [Neottia nidus-avis, Epipactis leptochila, Epipactis microphylla]) and thermophile species, transgressive of the [Quercetalia pubescenti-petraeae]. The bush-layer includes several calcicolous species ([Ligustrum vulgare, Berberis vulgaris]) and [Buxus sempervirens] can dominate. The following subtypes are included: Pal. 41.161 Middle European dry-slope limestone beech forests Middle European sedge and orchid beech woods of slopes with reduced water availability. Pal. 41.162 North-western Iberian xerophile beech woods [Fagus sylvatica] forests of relatively low precipitation zones of the southern ranges of the Pais Vasco and of superficially dry calcareous soil
Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	Forests of [Quercus robur] (or [Quercus robur] and [Quercus petraea]) on hydromorphic soils or soils with high water table bottoms of valleys, depressions or in the vicinity of riparian forests). The substrate corresponds to silts, clayey and silt-laden colluvions, as well as to silt-laden alterations or to siliceous rocks with a high degree of saturation. Forests of [Quercus robur] or natural mixed forests composed of [Quercus robur, Quercus petraea, Carpinus betulus] and [Tilia cordata]. [Endymion non-scriptus] is absent or rare. Plant text: [Quercus robur, Carpinus betulus, Acer campestre, Tilia cordata, Stellaria holostea, Carex brizoides, Poa chaixii, Potentilla sterilis, Dactylis polygama, Ranunculus nemorosus, Galium sylvaticum].
Galio-Carpinetum oak-hornbeam forests	[Quercus petraea-Carpinus betulus] forests of regions with sub-continental climate within the central European range of [Fagus sylvatica], dominated by [Quercus petraea] (Pal. 41.261). Also included are related lime-oak forests of eastern and eastern-central European regions with a continental climate, east of the range of [F. sylvatica] (Pal. 41.262). Plant text: Pal. 41.261 - Quercus petraea, Carpinus betulus, Sorbus torminalis, S. domestica, Acer campestre, Ligustrum vulgare, Convallaria majalis, Carex montana, C. umbrosa, Festuca heterophylla; Pal. 41.262 - Quercus petraea, Quercus robur, Tilia cordata, Acer platanoides, Carpinus betulus.
Tilio-Acerion forests of slopes, screes and ravines	Mixed forests of secondary species ([Acer pseudoplatanus, Fraxinus excelsior, Ulmus glabra, Tilia cordata]) of coarse scree, abrupt rocky slopes or coarse colluvions of slopes, particularly on calcareous, but also on siliceous, substrates ([Tilio-Acerion] Klika 1955). A distinction can be made between one grouping which is typical of cool and humid environments (hygroscopic and shade tolerant forests), generally dominated by the sycamore maple ([Acer pseudoplatanus]) - sub-alliance [Lunario-Acerenion], and another which is typical of dry, warm screes (xero-thermophile forests), generally dominated by limes ([Tilia cordata, Tilia platyphyllos]) - sub-alliance [Tilio-Acerenion]. Plant text: [Lunario-Acerenion] - [Acer pseudoplatanus, Actaea spicata, Fraxinus excelsior, Helleborus viridis, Lunaria rediviva, Taxus baccata, Ulmus glabra]. [Tilio-Acerenion] - [Carpinus betulus, Corylus avellana, Quercus] spp., [Sesleria varia, Tilia cordata, Tilia platyphyllos].

Old acidophilous oak woods with Quercus robur on sandy plains	Subtypes: Pal. 41.51 - Acidophilous forests of the Baltic-North Sea plain, composed of [Quercus robur, Betula pendula] and [Betula pubescens], often mixed with [Sorbus aucuparia] and [Populus tremula], on very oligotrophic, often sandy (or moraine) and podsolised or hydromorphic soils; the bush layer, poorly developed, includes [Frangula alnus]; the herb layer is formed by [Deschampsia flexuosa] and other grasses and herbs of acid soils (sometimes includes [Molinia caerulea]), and is often invaded by bracken. Forests of this type often prevail in the northern European plain and occupy more limited edaphic enclaves. Syntaxa: [Querco-Betuletum, Molino-Quercetum, Trientalo-Quercetim roboris]. Pal. 41.54 - Forests of [Quercus robur] and, sporadically [Quercus pyrenaica] or hybrids, on podsols, with a herb layer formed by the group of [Deschampsia flexuosa], with [Molinia caerulea] and [Peucedanum gallicum]. Syntaxa: [Peucedano-Quercetum roboris]. Plant text: [Quercus robur, Betula pendula, Betula pubescens, Sorbus aucuparia, Populus tremula].
Old sessile oak woods with Ilex and Blechnum in the British Isles	Acidophilous [Quercus petraea] woods of Britain and Ireland, with low, low-branched, trees, with many ferns, mosses, lichens and evergreen bushes. The following subtypes are included: Pal. 41.531 Irish sessile oak woods [Quercus petraea] woods of Ireland, particularly rich in evergreen bushes, including [Arbutus unedo]. Pal. 41.532 British sessile oak woods Acidophilous [Quercus petraea] woods of western Britain, mostly found in Scotland, Wales, Northern England and South Western England. Plant text: [Quercus petraea, Ilex aquifolium, Blechnum] ssp.
Thermophilous Fraxinus angustifolia woods	Non-alluvial, non-ravine formations dominated by [Fraxinus angustifolia], often mixed with [Quercus pubescens] or [Quercus pyrenaica]. The following subtypes are included: Pal. 41.861 Sicilian narrow-leaved ash woods [Fraxinus angustifolia] woods of western Sicily. Pal. 41.862 Iberian narrow-leaved ash woods [Fraxinus angustifolia] woods of the Iberian peninsula. Plant text: Dominated by [Fraxinus angustifolia], often mixed with [Quercus pubescens] or [Quercus pyrenaica].
Caledonian forest	Relict, indigenous pine forests of [Pinus sylvestris var. scotica], endemic in the central and north eastern Grampians and the northern and western Highlands of Scotland and associated [Betula] and [Juniperus] woodlands of northern character within this area. They are mostly open and have a ground layer rich in ericaceous species and bryophytes, in particular [Hylocomium splendens], and often harbouring abundant [Deschampsia flexuosa, Goodyera repens, Listera cordata, Corallorhiza trifida, Linnaea borealis, Trientalis europaea, Pyrola minor, Moneses uniflora, Orthilia secunda]. The dominant trees are: [Sorbus aucuparia, Betula pubescens, Betula pendula, Juniperus communis, Ilex aquifolium, Populus tremula]. Plant text: [Corallorhiza trifida, Deschampsia flexuosa, Goodyera repens, Linnaea borealis, Listera cordata, Moneses uniflora, Orthilia secunda, Pinus sylvestris var. scotica, Pyrola minor, Trientalis europaea]. Bryophytes : [Hylocomium splendens, Pleurozium schreberi].

Bog woodland	Coniferous and broad-leaved forests on a humid to wet peaty substrate, with the water level permanently high and even higher than the surrounding water table. The water is always very poor in nutrients (raised bogs and acid fens). These communities are generally dominated by [Betula pubescens, Frangula alnus, Pinus sylvestris, Pinus rotundata] and [Picea abies], with species specific to bogland or, more generally, to oligotrophic environments, such as [Vaccinium] spp., [Sphagnum] spp., [Carex] spp. [Vaccinio-Piceetea]: [Piceo-Vaccinienion uliginosi] ([Betulion pubescentis, Ledo-Pinion]) i.a]. In the Boreal region, also spruce swamp woods, which are minerotrophic mire sites along margins of different mire complexes, as well as in separate strips in valleys and along brooks. Subtypes : Pal. 44.A1 - Sphagnum birch woods Pal. 44.A2 - Scots pine mire woods Pal. 44.A3 - Mountain pine bog woods Pal. 44.A4 - Mire spruce woods In most of the Irish sites, these forests represent sub types of raised bogs, generally degraded and invaded by commercial forestry species; however, those stands dominated by [Betula pubescens]
Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	Riparian forests of [Fraxinus excelsior] and [Alnus glutinosa], of temperate and Boreal Europe lowland and hill watercourses (Pal. 44.3: [Alno-Padion]); riparian woods of [Alnus incanae] of montane and submontane rivers of the Alps and the northern Apennines (Pal. 44.2: [Alnion incanae]); arborescent galleries of tall [Salix alba, Salix fragilis] and [Populus nigra], along medio-European lowland, hill or submontane rivers (Pal. 44.13: [Salicion albae]). All types occur on heavy soils (generally rich in alluvial deposits) periodically inundated by the annual rise of the river (or brook) level, but otherwise well-drained and aerated during low-water. The herbaceous layer invariably includes many large species ([Filipendula ulmaria, Angelica sylvestris, Cardamine] spp., [Rumex sanguineus, Carex] spp., [Cirsium oleraceum]) and various vernal geophytes can occur, such as [Ranunculus ficaria, Anemone nemorosa, Anemone ranunculoides, Corydalis solida]. This habitat includes several subtypes: ash-alder woods of springs and their rivers (Pal. 44.31 [Carici remotae-Fraxinetum]); ash-alder woods of fast-flowing
Riparian mixed forests of Quercus robur, Ulmus laevis and Ulmus minor, Fraxinus excelsior or Fraxinus angustifolia, along the great rivers (Ulmenion minoris)	Forests of hardwood trees of the major part of the river bed, liable to flooding during regular rising of water level or, of low areas liable to flooding following the raising of the water table. These forests develop on recent alluvial deposits. The soil may be well drained between rising or remain wet. Following the hydric regime, the dominant woody species belong to [Fraxinus, Ulmus] or [Quercus] genus. The undergrowth is well developed. Plant text: [Quercus robur, Ulmus laevis, Ulmus minor, Ulmus glabra, Fraxinus excelsior, Fraxinus angustifolia, Populus nigra, Populus canescens, Populus tremula, Alnus glutinosa, Prunus padus, Humulus lupulus, Vitis vinifera ssp. sylvestris, Tamus communis, Hedera helix, Phalaris arundinacea, Corydalis solida, Gagea lutea, Ribes rubrum].

Pannonic woods with Quercus petraea and Carpinus betulus	Forests with [Quercus petraea] and [Carpinus betulus] of the plains and low hills of south eastern central Europe on varied soil types (both calcareous and siliceous substrates). The shrub- and herb layer are dominated by subcontinental and sub-Mediterranean plant species. They occur in shady, humid valleys and slopes, particularly on deep soils but also on hill tops with shallow, oligotrophic substrates. Syntaxa include, [Primulo veris-Carpinetum, Fraxino pannonici-Carpinetum]. Plant text: [Carex pilosa, Euphorbia amigdaloides, Symphytum tuberosum, Dentaria bulbifera, Glechoma hirsuta, Festuca heterophylla, Carpinus betulus, Quercus petrae, Quercus robur, Tilia cordata, Euonymus verrucosus, Acer campestre, Sorbus torminalis, Galium sylvaticum, Viola mirabilis, Gagea spathacea. Acer tataricum, Galanthus nivalis, Galium schultesii, Helleborus dumetorum, H. purpurascens, Isopyrum thalictroides, Knautia drymeia, Quercus cerris, Scilla drunensis, Staphylea pinnata, Symphytum tuberosum, Vinca minor].
Pannonian woods with Quercus pubescens	Xerophyle oak woods of the periphery and hills of the Pannonic plain dominated by [Quercus pubescens] on extremely dry, southern exposed locations on shallow, calcareous soils. Because of these extreme site conditions, the woods are often fragmentary and low-growing, sometimes only shrubby. The herb layer is rich in species and often contains xerothermic species from dry grasslands or forest fringes. Occasionally [Tilia platyphyllos] and [Fraxinus excelsior] can become dominant. Plant text: [Quercus pubescens, Quercus cerris, Fraxinus ornus, Sorbus domestica, Sorbus torminalis, Colutea arborescens, Cornus mas, Pyrus pyraster, Arabis pauciflora, Arabis turrita, Buglossoides purpurcaerulea, Campanula bononiensis, Carex michelii, Euphorbia polychroma, Lactuca quercina, Limodorum abortivum, Melittis melissophyllum, Orchis purpurea, Potentilla alba, Potentilla micrantha, Pulmunaria mollis ssp. mollis, Tanacetum corymbosum, Viola suavis, Euphorbia angulata]. Associated habitats: White-oak woods often form mosaics with dry grasslands.
Euro-Siberian steppic woods with Quercus spp	Xero-thermophile oak woods of the plains of southeastern Europe. The climate is very continental, with high changes of temperature. The substrate consists of 'Loess' (Chernozem soils). [Quercus robur, Quercus cerris] and [Quercus pubescens] dominate in the treelayer of this habitat type, which is rich in continental stepic vegetation elements and geophytes of the [Aceri tatarici-Quercion] Zólyomi 1957. Plant text: [Quercus cerris, Quercus pubescens, Quercus robur, Quercus petraea, Acer campestre, Sorbus torminalis, Cornus sanguinea, Crataegus monogyna, Euonymus verrucosus, Ligustrum vulgare, Prunus spinosa, Pyrus pyraster, Rhamnus catharticus, Ulmus minor, Buglossoides purpurocaerulea, Carex michelii, Dactylis polygama, Geum urbanum, Lathryrus niger, Polygonatum latifolium, Pulmonaria mollis] spp. [mollis, Tanacetum corymbosum, Vincetoxicum hirundinaria].
Taxus baccata woods of the British Isles	[Taxus baccata] woods with [Sorbus aria] or [Mercurialis perennis] of dry valleys and scarps of the Chalk of southeast England, very locally of the Durham Magnesium limestone, Morecambe Bay and elsewhere. They also occur in the forest of Muckross (Killarney, Ireland). Plant text: [Buxus sempervirens, Ilex aquifolium, Mercurialis perennis, Sorbus aria, Taxus baccata].

Mediterranean deciduous forests	
Apeninne beech forests with Taxus and Ilex	Thermophilous beech forests, highly fragmented and harbouring many endemics, with [Taxus baccata] and [Ilex aquifolium] ([Geranio nodosi-Fagion, Geranio striati-Fagion]). This habitat type includes: Monte Gargano Foresta Umbra, rich in [Taxus baccata] (Pal. 41.181); silicicolous beech forests of the Aspromonte range of Calabria with [Taxus baccata, Populus tremula, Sorbus aucuparia] and [Betula pendula] (Pal. 41.185); Relict beech forests of the Madonie, Nebrodi and, very locally, the monti Peloritani, with [Ilex aquifolium, Daphne laureola, Crataegus monogyna] and [Prunus spinosa] (Pal. 41.186). Plant text: [Fagus sylvaticus, Ilex aquifolium, Taxus baccata].
Apennine beech forests with Abies alba and beech forests with Abies nebrodensis	Beech forests of the hill level, on sites colder than those of Pal. 41.181, highly fragmented and harbouring many endemics, with [Abies alba] and [Abies nebrodensis] ([Geranio nodosi-Fagion, Geranio striati-Fagion]). Relict beech forests of the Madonie, Nebrodi and, very locally, the monti Peloritani, with [Ilex aquifolium, Daphne laureola, Crataegus monogyna] and [Prunus spinosa] (Pal. 41.186); isolated beech forests of Mount Etna, at the southern limit of the range of the species (Pal. 41.187). Plant text: [Abies alba, *Abies nebrodensis, Fagus sylvatica].
Galicio-Portuguese oak woods with Quercus robur and Quercus pyrenaica	[Quercus pyrenaica] -dominated forests ([Quercion robori-pyrenaicae]). Subtypes: Pal. 41.61 Central Iberian [Quercus pyrenaica] forests: Supra- and sometimes meso-Mediterranean [Quercus pyrenaica] forests of western Iberia, the Leonese interior, the Cordillera Central, the Iberian Range, the Montes de Toledo and the Sierra Morena. Pal. 41.62 Cantabrian [Quercus pyrenaica] forests: [Melampyro pratense-Quercetum pyrenaicae, Linario triornithophorae-Quercetum pyrenaicae] [Quercus pyrenaica] formations of medio-European character, of the collinar and montane levels of the Cantabrian chain and its satellite ranges west to the Sierra de Picos de Ancares in Galicia, characteristic of areas with comparatively low precipitation, in the rain shadow of the coastward ranges or the interior oro-Cantabrian hills. Pal. 41.63 Maestrazgan [Quercus pyrenaica] forests: [Cephalanthero rubrae-Quercetum pyrenaicae] [Quercus pyrenaica] forests of the sub-Mediterranean siliceous enclaves of the Maestrazgo and eastern Catalonian ranges, reduced to a very few relicts in the Penagolosa and

Quercus faginea and Quercus canariensis Iberian woods	Iberian and North African forests and woods dominated by [Quercus faginea], [Quercus canariensis] or [Quercus afares]. The humid formations of south-western Iberia (Pal. 41.772 and 41.773) are forest types of unique character in Europe and of extreme biological importance. Subtypes: Pal. 41.771 Spanish [Quercus faginea] forests: [Spiraeo obovatae-Quercetum fagineae, Cephalanthero longifoliae-Quercetum fagineae, Violo wilkommii-Quercetum fagineae, Daphno latifoliae-Aceretum granatensis, Fraxino orni-Quercetum fagineae] Xero-mesophile [Quercus faginea] formations of slopes and plateaux of middle elevations of the Spanish Meseta and associated ranges. Pal. 41.772 Portuguese [Quercus faginea] forests: [Arisaro-Quercetum fagineae] Humid, epiphyte-clad, dense, relict [Quercus faginea] forests of Portugal, restricted to a very few isolated localities. Pal. 41.773 Andalusian [Quercus canariensis] forests: [Rusco hypophylli-Quercetum canariensis] Humid and hyper-humid, luxuriant [Quercus canariensis] forests of the sierras of extreme southern Spain, limited to the Aljibe and a very few
Quercus trojana woods	Supra-Mediterranean, and occasionally meso-Mediterranean woods dominated by the semideciduous [Quercus trojana] or its allies ([Quercetum trojanae]). Subtypes: Pal. 41.781 Helleno-Balkanic Trojan oak woods: Usually low formations dominated by [Quercus trojana], often with junipers or maples, of Macedonia, Thrace and Thessaly, north to Herzegovina, Montenegro, Albania and the Vardar valley of Paeonia. Pal. 41.782 Apulian Trojan oak woods: Relict woods, sometimes of considerable height, of [Quercus trojana] and [Quercus pubescens], often with an admixture of [Quercus ilex] and its associated vegetation (Murge: e.g. bosco delle Pianelle, foresta Gaglione). Plant text: [Quercus trojana].
Castanea sativa woods	Supra-Mediterranean and sub-Mediterranean [Castanea sativa]-dominated forests and old established plantations with semi-natural undergrowth. Plant text: [Castanea sativa].
Hellenic beech forests with Abies borisii-regis	[Fagus sylvatica] forests with reduced medio-European character and high endemism, characterised by the presence of [Abies borisii-regis, Doronicum caucasicum, Galium laconicum, Lathyrus venetus, Helleborus cyclophyllus] ([Fagion hellenicum]). Plant text: [Fagus sylvatica, Abies borisii-regis].
Quercus frainetto woods	[Fagus sylvatica] or [Fagus moesiaca] forests, more thermophile than those of Pal. 41.19 and 41.1A, occurring in the transition zone between the supra-Mediterranean and montane levels, characterised by the presence of numerous species of the [Quercion frainetto]. Plant text: [Fagus sylvatica, Quercus frainetto].
Cupressus forests (Acero-Cupression)	Montane forests of the Mediterranean basin, dominated by [Cupressus sempervirens, Cupressus atlantica] or [Cupressus dupreziana] ([Acero-Cupression]). Plant text: [Cupressus sempervirens].

Salix alba and Populus alba galleries	Riparian forests of the Mediterranean basin dominated by [Salix alba, Salix fragilis] or their relatives (Pal. 44.141). Mediterranean and Central Eurasian multi-layered riverine forests with [Populus] spp., [Ulmus] spp., [Salix] spp., [Alnus] spp., [Acer] spp., [Tamarix] spp., [Juglans regia], lianas. Tall poplars, [Populus alba, Populus caspica, Populus euphratica] ([Populus diversifolia]), are usually dominant in height; they may be absent or sparse in some associations which are then dominated by species of the genera listed above (Pal. 44.6). Plant text: [Salix alba, Populus alba].
Riparian formations on intermittent Mediterranean water courses with Rhododendron ponticum, Salix and others	Distinctive, relict thermo- and meso-Mediterranean alder galleries of deep, steep-sided valleys of the sierras of the Campo de Gibraltar and of southern Portugal, with [Rhododendron ponticum ssp. baeticum, Frangula alnus ssp. baetica, Arisarum proboscideum] and a rich fern community including [Pteris incompleta, Diplazium caudatum], #[Culcita macrocarpa] (Pal. 44.52). Relict [Betula parvibracteata] riparian galleries limited to two stations of the Montes de Toledo (Cordillera Oretana), one in the Sierra de Rio Frio where a unique gallery of about 20 km in length survives, the other at the spring of the Estena. The dominant species, an extremely narrow endemic, is accompanied by [Myrica gale, Frangula alnus, Salix atrocinerea, Galium broterianum, Scilla ramburei] (Pal. 44.54). Plant text: [Rhododendron ponticum ssp. baeticum, Frangula alnus ssp. baetica, Arisarum proboscideum, Betula parvibracteata].
Platanus orientalis and Liquidambar orientalis woods (Platanion orientalis)	Forests and woods, for the most part riparian, dominated by [Platanus orientalis] (oriental plane) or [Liquidambar orientalis] (sweet gum), belonging to the [Platanion orientalis] alliance. Subtypes: Pal. 44.71 Oriental plane woods ([Platanion orientalis]): Forests of [Platanus orientalis]. Pal. 44.711 Helleno-Balkanic riparian plane forests: [Platanus orientalis] gallery forests of Greek and southern Balkanic watercourses, temporary rivers and gorges; they are distributed throughout the mainland and archipelagos, colonising poorly stabilised alluvions of large rivers, gravel or boulder deposits of permanent or temporary torrents, spring basins, and particularly, the bottom of steep, shady gorges, where they constitute species-rich communities. The accompanying flora may include [Salix alba, Salix elaeagnos, Salix purpurea, Alnus glutinosa, Cercis siliquastrum, Celtis australis, Populus alba, Populus nigra, Juglans regia, Fraxinus ornus, Alnus glutinosa, Crataegus monogyna, Cornus sanguinea, Ruscus aculeatus, Vitex agnus-castus, Nerium oleander, Rubus] spp., [Rosa sempervirens, Hedera helix, Clematis vitalb
Southern riparian galleries and thickets (Nerio-Tamaricetea and Securinegion tinctoriae)	Tamarisk, oleander, chaste tree galleries and thickets and similar low ligneous formations of permanent or temporary streams and wetlands of the thermo-Mediterranean zone and south-western Iberia, and of the most hygromorphic locations within the Saharo-Mediterranean and Saharo-Sindian zones. Plant text: [Nerium oleander, Vitex agnus-castus, Tamarix] spp., [Securinega tinctoria, Prunus lusitanica, Viburnum tinus]. Pal. 44.811 [Dittrichia viscosa, Saccharum ravennae, Arundo donax, Rubus ulmifolius] Pal. 44.82 Among the few associated plants, are the lianas [Bryonia cretica, Tamus communis] and the endemic [Clematis campaniflora]. [Pyrus bourgaeana] may transgress from neighbouring communities. Pal. 44.84 Tall scrub with [Frangula alnus, Salix atrocinerea, Salix salvifolia] and [Myrica gale] Pal. 44.83 [Prunus lusitanica] and [Viburnum tinus].

Mediterranean sclerophyllous forests	
Aegean Quercus brachyphylla woods	Stands of [Quercus brachyphylla], often associated with [Quercus macrolepis] or [Quercus ilex]. Plant text: [Quercus brachyphylla].
Olea and Ceratonia forests	Thermo-Mediterranean or thermo-Canarian woodland dominated by arborescent [Olea europaea ssp. sylvestris, Ceratonia siliqua, Pistacia lentiscus, Myrtus communis] or, in the Canary Islands, by [Olea europaea ssp. cerasiformis] and [Pistacia atlantica]. Subtypes: Pal. 45.11 Wild olive woodland: [Olea europaea ssp. sylvestris] - dominated formations. A climax olive forest, with [Ceratonia siliqua] and [Pistacia lentiscus] exists on the north flank of Djebel Ichkeul in northern Tunisia. Elsewhere, the communities most resembling olive forest are found in southern Andalusia ([Tamo communis-Oleetum sylvestris]: extinct?), in Menorca ([Prasio majoris-Oleetum sylvestris]), Sardinia, Sicily, Calabria, Crete. Pal. 45.12 Carob woodland: [Ceratonia siliqua] - dominated formations, often with [Olea europaea ssp. sylvestris] and [Pistacia lentiscus]. The most developed examples, some truly forest-like, are to be found in Tunisia, on the slopes of the Djebel, where they constitute carob-dominated facies of the wild olive woodlands (45.11), in Mallorca ([Cneoro tricocci-Ceratonietum siliquae]), in eastern Sardinia, in southeas
Quercus suber forests	West-Mediterranean silicicolous forests dominated by [Quercus suber], usually more thermophile and hygrophile than Pal. 45.3. Subtypes: Pal. 45.21 Tyrrhenian cork-oak forests: [Quercion suberis] Mostly meso-Mediterranean [Quercus suber] forests of Italy, Sicily, Sardinia, Corsica, France and northeastern Spain. They are most often degraded to arborescent matorral (Pal. 32.11). Pal. 45.22 South-western Iberian cork-oak forests: [Quercion fagineo-suberis] [Quercus suber] forests, often with [Quercus faginea] or [Quercus canariensis], of the south-western quadrant of the Iberian peninsula. Pal. 45.23 North-western Iberian cork-oak forests: Very local, exiguous [Quercus suber] enclaves in the [Quercus pyrenaica] forest area of the valleys of the Sil and of the Mino (Galicia). Pal. 45.24 Aquitanian cork-oak woodland: Isolated [Quercus suber]-dominated stands occurring either as a facies of dunal pine-cork oak forests or in a very limited area of the eastern Landes. Plant text: [Quercus suber].
Quercus ilex and Quercus rotundifolia forests	Forests dominated by [Quercus ilex] or [Quercus rotundifolia], often, but not necessarily, calcicolous. Subtypes: Pal. 45.31 Meso-Mediterranean holm-oak forests: Rich meso-Mediterranean formations, penetrating locally, mostly in ravines, into the thermo-Mediterranean zone. They are often degraded to arborescent matorral (Pal. 32.11), and some of the sub- types listed no longer exist in the fully developed forest state relevant to Pal. category 45; they have nevertheless been included, both to provide appropriate codes for use in Pal. 32.11, and because restoration may be possible. Pal. 45.32 Supra-Mediterranean holm-oak forests: Formations of the supra-Mediterranean levels, often mixed with deciduous oaks, [Acer] spp. or [Ostrya carpinifolia]. Pal. 45.33 Aquitanian holm-oak woodland: Isolated [Quercus ilex]-dominated stands occurring as a facies of dunal pine-holm oak forests. Pal. 45.34 [Quercus rotundifolia] woodland: Iberian forest communities formed by [Quercus rotundifolia]. Generally, even in mature state, less tall, less luxuriant and drier than the fully developed forests that can be constituted by the closely

Quercus macrolepis forests	Woods dominated by the semideciduous [Quercus macrolepis], often fairly open, of the mostly meso-Mediterranean zone. Subtypes: Pal. 41.791 Hellenic valonia oak woods: [Quercus macrolepis] formations of continental Greece and its archipelagos, as well as of adjacent Albania; well developed forests exist, in particular, in the Ionian islands and on Lesbos; more modified, grove-like, stands, exist on the maritime slopes of the low mountains bordering the gulf of Arta and in western Etolia, in the northwestern Peloponnese, in Thessaly, in Attica, in Thrace. Pal. 41.792 Apulian valonia oak woods: Relict [Quercus macrolepis] formations of Salento (Tricase). Plant text: [Quercus macrolepis].
Macaronesian laurel forests (Laurus, Ocotea)	Humid to hyper-humid, mist-bound, luxuriant, evergreen, lauriphyllous forests of the cloud belt of the Macaronesian islands, extremely rich in floral and faunal species, among which many are restricted to these communities ([Pruno-Lauretalia]). Genera such as [Picconia, Semele, Gesnouinia, Lactucosonchus, Ixanthus] are entirely endemic to these communities, while others, such as [Isoplexis, Visnea] and [Phyllis], reach in them their maximum development; in addition, each of the formations of the various archipelagos harbours distinctive endemic species. This habitat type includes: Lauriphyllous forests of the Azores (subtype 45.61 [Ericetalia azorica] p.), where the humid forests of the coastal areas ([Myrico-Pittosporietum undulati] p.) have been totally or almost totally degraded, largely invaded by the introduced Australian [Pittosporum undulatum]; a better representation survives of the hyper-humid forests ([Culcito-Juniperion brevifoliae] p.) of higher elevations. Lauriphyllous forests of Madeira (subtype 45.62 [Pruno-Lauretalia
Palm groves of Phoenix	Woods, often riparian, formed by the two endemic palm trees, [Phoenix theophrasti] and [Phoenix canariensis]. The palm groves of Crete are restricted to damp sandy coastal valleys; they include the extensive forest of Vai, where the luxuriant palm growth is accompanied by a thick shrubby undergrowth rich of [Nerium oleander], and about four other smaller coastal groves, notably on the south coast of the prefectorate of Rethimnon. The Canarian palm groves are mostly characteristic of the bottom of barrancos and of alluvial soils, below 600 metres; particularly representative examples are found at Fragata, Maspalomas and Barranco de Tirajana in the Gran Canary, Valle Gran Rey in La Gomera, Masca in Ténériffe and Brena Alta in La Palma Plant text: [Phoenix canariensis], #[Phoenix theophrasti]. The palm groves of Crete include the extensive forest of Vai, where the luxuriant palm growth is accompanied by a thick shrubby undergrowth rich in [Nerium oleander].
Forests of Ilex aquifolium	Communities dominated by arborescent [Ilex aquifolium], relict of various forests with a field layer rich in [Ilex] and sometimes with [Taxus] (Pal. 42.A7), of the supra-Mediterranean level on various substrates. These woods correspond to the senescence stage of a forest with a undergrowth with [Taxus] and [Ilex] (belonging among others to the [Ilici-Quercetum ilicis]), after the fading of the tree layer. They generally form patches inside or outside forests. Plant text: [Ilex aquifolium].
Temperate mountainous coniferous forests	

Acidophilous Picea forests of the montane to alpine levels (Vaccinio-Piceetea)	Subalpine and alpine conifer forests (dominated by [Picea abies] and [Picea orientalis]). Subtypes: Pal. 42.21 Alpine and Carpathian subalpine spruce forests. [Piceetum subalpinum]. [Picea abies] forests of the lower subalpine level, and of anomalous stations in the montane level, of the outer, intermediate and inner Alps; in the latter, they are often in continuity with the montane spruce forests of 42.22. The spruces are often stunted or columnar; they are accompanied by an undergrowth of decidedly subalpine affinities. [Picea abies] forests of the lower subalpine level of the Carpathians. Pal. 42.22 Inner range montane spruce forests. Piceetum montanum. [Picea abies] forests of the montane level of the inner Alps, characteristic of regions climatically unfavourable to both beech and fir. Analogous [Picea abies] forests of the montane and collinar levels of the inner basin of the Slovakian Carpathians subjected to a climate of high continentality. Pal. 42.23 - Hercynian subalpine spruce forests Subalpine [Picea abies] forests of high Hercynian ranges . Pal. 42.25 - Peri-Alpine spruce forests Spontaneous [Picea abies] formati
Alpine Larix decidua and/or Pinus cembra forests	Forests of the subalpine and sometimes montane levels, dominated by [Larix decidua] or [Pinus cembra]; the two species may form either pure or mixed stands, and may be associated with [Picea abies] or [Pinus uncinata]. Subtypes: Pal. 42.31 Eastern Alpine siliceous larch and arolla forests. [Larici-Cembretum]. Subalpine [Larix decidua, Pinus cembra], or [Larix decidua-Pinus cembra] forests of the eastern and central Alps, mostly of the inner ranges, usually on siliceous substrates, with an often species-poor undergrowth comprising [Vaccinium myrtillus, Rhododendron ferrugineum, Calamagrostis villosa, Luzula albida]. Pal. 42.32 Eastern Alpine calcicolous larch and arolla forests. [Laricetum, Larici-Cembretum Rhododendretosum hirsuti]. Subalpine and montane [Larix decidua, Larix decidua - Picea abies, Pinus cembra] or [Larix decidua-Pinus cembra] forests of the eastern and central Alps, mostly of the outer ranges, on calcareous substrates, with a usually species-rich undergrowth including [Erica herbacea, Polygala chamaebuxus, Rhododendron hirsutum] or [Pinus mugo]. Pal. 42.35 - Carpathian larch a
Subalpine and montane Pinus uncinata forests (* if on gypsum or limestone)	Only considered a priority habitat if on gypsum or limestone. Mountain pine forests ([Pinus uncinata]), usually open and with a very developed shrubby understory, of the subalpine and montane levels; on limestone, gypsum or siliceous substrate in a cool or thermophile situation depending on the region. Sometimes mixed with [Pinus sylvestris], more rarely with [Larix] spp.-[Pinus cembra]. Two major types: Pal. 42.41 - mountain pine forests of the western outer Alps, the Jura and Pyrenean ubacs, developed on siliceous or decalcified soils of the subalpine level with a predominately ericaceous undergrowth comprising [Rhododendron ferrugineum] ([Rhododendro-Vaccinion] p.); Pal. 42.42 - xerocline mountain pine forests of the inner Alps, of the western outer Alps and the Jura, and of Pyrenean adrets, accompanied by a shrubby undergrowth in which [Rhododendron ferrugineum] is absent or rare ([Junipero-Pinion] p., [Erico-Pinion] p.) Plant text: [Arctostaphylos alpinus, Arctostaphylos uva-ursi, Astrantia minor, Calluna vulgaris, Coronilla vaginalis, Cotoneaster integerrimus, Crepis alpestris, Daphne striata, Deschampsia
Mediterranean and Macaronesian mountainous coniferous forests	

Southern Apennine Abies alba forests	Relict [Abies alba] woods associated with the beech forests of the [Geranio versicolori-Fagion]. Plant text: [Abies alba].
Abies pinsapo forests	Forests and stands of the endemic [Abies pinsapo] of the supra-meso-Mediterranean level. Calcicolous forests; ultra basic serpentine outcroppings. Plant text: [Abies pinsapo].
(Sub-) Mediterranean pine forests with endemic black pines	Forests of the montane-Mediterranean level, on dolomitic substrate (high tolerance to magnesium), dominated by pines of the [Pinus nigra] group, often with a dense structure. Subtypes: Pal. 42.61 Alpino-Apennine [Pinus nigra] forests: [Pinus nigra] s.s. forests of the eastern Italian, Austrian and Slovenian Alps and of the Apennines. Pal. 42.62 Western Balkanic [Pinus nigra] forests: [Pinus nigra ssp. nigra] of the Dinarides, the Pelagonides; [Pinus dalmatica] forests of the Dalmatian coastal areas Pal. 42.63 Salzmann's pine forests: [Pinus salzmannii] forests of Spain (Pyrenees, northern Iberian Range, sierra de Gredos, serrania de Cuenca, Maestrazgo, sierras de Cazorla, Segura and Alcaraz, calcareous periphery of the Sierra Nevada) and the Causses. Pal. 42.64 Corsican laricio pine forests: [Pinus laricio] forests of the mountains of Corsica (1000 to 1800 m) on granitic soils. Pal. 42.65 Calabrian laricio pine forests: [Pinus laricio var. calabrica] forests of the Sila (Sila Greca, Sila Grande, Sila Piccola), the Aspromonte and Etna. Pal. 42.66 Pallas's pine forests: montane forests of [Pinus pallasiana] of Greece and the Balk
Mediterranean pine forests with endemic Mesogean pines	Mediterranean and thermo-Atlantic woods of thermophilous pines, mostly appearing as substitution or paraclimactic stages of forests of the [Quercetalia ilicis] or [Ceratonio-Rhamnetalia]. Long-established plantations of these pines, within their natural area of occurrence, and with an undergrowth basically similar to that of paraclimactic formations, are included. Subtypes: Pal. 42.81 Maritime pine forests: Forests and plantations of [Pinus pinaster ssp. atlantica] of south-western France and the western Iberian peninsula. Pal. 42.82 Mesogean pine forests: Forests of [Pinus pinaster ssp. pinaster] (=[Pinus mesogeensis]) of the western Mediterranean, mostly in siliceous meso-Mediterranean, upper meso-Mediterranean and supra-Mediterranean situations of Spain, Corsica, southeastern France, northwestern Italy, Sardinia and Pantelleria. Pal. 42.821 Iberian mesogean pine forests: [Pinus pinaster] forests of the Iberian peninsula, appearing mostly as substitution communities of [Quercus rotundifolia, Quercus pyrenaica] or, locally, [Quercus suber, Quercus faginea] woodlands. Pal. 42.822 Corbières mesogean pine fores

Canary Island endemic pine forests	Forests of endemic [Pinus canariensis], of the dry montane level at around 800 to 2000 metres (locally down to 500 and up to 2500 metres) in Tenerife, La Palma, Gran Canaria and Hierro, with [Chamaecytisus proliferus, Adenocarpus foliolosus, Cistus symphytifolius, Lotus campylocladus, Lotus hillebrandii, Lotus spartioides, Daphne gnidium, Juniperus cedrus, Micromeria] spp; these forests, of which well-preserved examples have become rare, are the only habitat of [Fringilla teydea, Dendrocopos major canariensis and D. m. thanneri]. Subtypes: Pal. 42.91 Canary pine-rockrose forests: Climax [Pinus canariensis] forests within the main zone of altitudinal occurrence, with an undergrowth characterised and often dominated by [Cistus symphytifolius] and comprising [Chamaecytisus proliferus, Lotus campylocladus, Lotus hillebrandii, Lotus spartioides, Juniperus cedrus, Bystropogon origanifolius, Argyranthemum adauctum]. Pal. 42.92 Canary pine-dry scrub forests: Formations of dry, south-facing slopes in the lower part of the [Pinus canariensis] belt, transitional towards juniper
Endemic forests with Juniperus spp	Medium altitude forest formations dominated by [Juniperus] spp. Subtypes: Pal. 42.A2 Spanish juniper woods ([Juniperon thuriferae]): Forest formations dominated by [Juniperus thuriferae] of Spain (calcareous substrates in the supra-Mediterranean levels of the Iberian Range and neighbouring plateaux, often with [Pinus sylvestris, Pinus salzmannii, Juniperus hemisphaerica] and [Berberis hispanica]; enclaves on the periphery of and within the Sierra de Guadarrama, occurring both on rare local limestone deposits and in a few siliceous stations; dry, warm, rocky, calcareous southern slopes of the Cordillera Cantabrica, between the Rio Pisuerga and the Rio Luna, with [Juniperus nana, Juniperus sabina, Berberis vulgaris ssp. cantabrica, Rhamnus alpinus, Viburnum lantana]; gypsiferous soils of the Ebro basin, with [Rhamnus lycioides]; clay soils of the Campo de Montiel; Sierra Taibilla), southern France (Montagne de Rie); warm calcareous supra-Mediterranean slopes of the south-western Alps, in Drôme, Hautes-Alpes and Alpes-de-Haute-Provence, between 700 and 1200 metres; warm calcareous supra-
Tetraclinis articulata forests	Xero thermophile forests of Arbor vitae ([Tetraclinis articulata]); [Periplocion angustifoliae: Arisaro Tetraclinidetum articulatae, Mayteno Periplocetum angustifoliae]. Scrub formed by [T. articulata] should also be considered a part of this habitat. Plant text: [Asparagus albus, Asparagus stipularis, Arisarum vulgare, Brachypodium retusum, Chamaerops humilis, Lavandula dentata, Lithodora fruticosa, Periploca laevigata, Rhamnus lycioides, Tetraclinis articulata, Teucrium carthaginense, Thymus glandulosus].

Mediterranean Taxus baccata woods	Woods dominated by [Taxus baccata], often with [Ilex aquifolium], of very local occurrence. This habitat type may have two origins: senescent phase of a beech wood or beech-fir wood, made up of clusters of [Taxus] after the fall of the tall species, surrounded by layered stands of beech-yew; residual [Taxus] stand with disappearance of the tall species, both above and in the proximity of [Taxus]. Subtypes: Pal. 42.A72 Corsican yew woods: Formations of [Taxus baccata, Ilex aquifolium, Buxus sempervirens] restricted to cool, montane areas in the Tenda range, the San Pedrone range and the Cap Corse mountains. Pal. 42.A73 Sardinian yew woods: [Taxus baccata] and [Ilex aquifolium] woods of the Catena del Marghine and the Mount Limbara system. In the north and centre of Portugal there are Taxus baccata relicts, sometimes in small isolated formations (Serras do Gerês and Estrela), that may be included in this habitat type. Plant text: [Buxus sempervirens, Ilex aquifolium, Mercurialis perennis, Sorbus aria, Taxus baccata].
Littoral rock and other hard substrata	Littoral rock includes habitats of bedrock, boulders and cobbles which occur in the intertidal zone (the area of the shore between high and low tides) and the splash zone. The upper limit is marked by the top of the lichen zone and the lower limit by the top of the laminarian kelp zone. There are many physical variables affecting rocky shore communities - wave exposure, salinity, temperature and the diurnal emersion and immersion of the shore. Wave exposure is most commonly used to characterise littoral rock, from 'extremely exposed' on the open coast to 'extremely sheltered' in enclosed inlets. Exposed shores tend to support faunal-dominated communities of barnacles and mussels and some robust seaweeds. Sheltered shores are most notable for their dense cover of fucoid seaweeds, with distinctive zones occurring down the shore. In between these extremes of wave exposure, on moderately exposed shores, mosaics of seaweeds and barnacles are more typical.
High energy littoral rock	Extremely exposed to moderately exposed or tide-swept bedrock and boulder shores. Extremely exposed shores dominated by mussels and barnacles, occasionally with robust fucoids or turfs of red seaweed. Tide-swept shores support communities of fucoids, sponges and ascidians on the mid to lower shore. Three biological subtypes have been described: Communities on very exposed to moderately exposed upper and mid eulittoral bedrock and boulders dominated by the mussel [Mytilus edulis], barnacles [Chthamalus] spp. and/or [Semibalanus balanoides] and the limpets [Patella] spp. (A1.11); red and brown seaweeds able to tolerate the extreme conditions of exposed rocky shores, primarily the physical stresses caused by wave action (A1.12), and tide-swept shores in more sheltered areas (such as narrow channels in sea loch) with canopy forming fucoids and a rich filter-feeding community (A1.15).

[Mytilus edulis] and barnacles on very exposed eulittoral rock	On very exposed to exposed rocky shores the eulittoral zone, particularly the mid and lower shore, is typically characterised by patches of small individuals of the mussel [Mytilus edulis] interspersed with patches of the barnacle [Semibalanus balanoides] and individuls of the limpet [Patella vulgata]. Amongst the mussels small individuals of red seaweeds including [Ceramium] spp., [Corallina officinalis] and [Mastocarpus stellatus] can be found. The foliose red seaweeds [Porphyra umbilicalis] and [Palmaria palmata] are commonly found as epiphytes on [M. edulis] where they can form luxuriant growths. The abundance of the red seaweeds generally increases down the shore and in the lower eulittoral they may form a distinct zone in which mussels or barnacles are scarce (FR, Coff.Coff or Him). Where [M. edulis] occurs on steep rock, red seaweeds are scarce and restricted to the lower shore. The whelk [Nucella lapillus] and a few winkles such as [Littorina] spp. can occur where cracks and crevices provide a refuge in the rock. Fucoids are generally absent, although some non-vesiculate [Fucus vesiculosus] may
[Chthamalus] spp. and [Lichina pygmaea] on steep exposed upper eulittoral rock	Areas of steep and vertical rock in the upper eulittoral on very exposed to moderately exposed shores characterised by tufts of the dark brownish lichen [Lichina pygmaea] and the barnacles [Chthamalus montagui] and [Chthamalus stellatus], although long-established patches of [L. pygmaea] ultimately exclude barnacles. The rigid branching thallus of [L. pygmaea] provides an ideal habitat for the bivalve [Lasaea adasoni], the winkles [Littorina saxatilis] and [Melarhaphe neritoides]. The anemone [Actinia equina] and the mussel [Mytilus edulis] are confined to moist cracks and crevices, while the limpet [Patella vulgata] is found on the open bedrock. In the south-west the top shell [Gibbula umbilicalis] can be found on [L. pygmaea]. On the north-east coast this biotope does not have [Chthamalus] spp., [L. pygmaea] being the most important characterising species on these sites. Situation: The band of [L. pygmaea] lies between the [Verrucaria maura] zone (Ver.B or Ver.Ver) above and the barnacle-[P. vulgata] zone (Sem) below. Other upper shore biotopes (Ver.B or Ver.Ver) may contain occasional patches of [L. p
[Semibalanus balanoides], [Fucus vesiculosus] and red seaweeds on exposed to moderately exposed eulittoral rock	Exposed and moderately exposed upper and mid eulittoral bedrock characterised by the barnacle [Semibalanus balanoides], the limpet [Patella vulgata] and the whelk [Nucella lapillus] with a sparse community of seaweeds. Turfs of the wrack [Fucus vesiculosus] can be present on the more horizontal parts of the shore though usually in low abundance (Occasional). Individuals of [F. vesiculosus] can lack the characteristic twin air bladders due to environmental stress (i.e. wave exposure). A sparse seaweed community consisting of foliose red seaweeds such as [Osmundea pinnatifida] and [Mastocarpus stellatus] are usually present along with the [Corallina officinalis] and the green seaweed [Enteromorpha intestinalis]. The algal community is usually restricted to fissures and cracks in the bedrock surface. Moist cracks and crevices also provide a refuge for small individuals of the mussel [Mytilus edulis] and the winkles [Littorina saxatilis] and [Littorina littorea]. These crevices can also be occupied by encrusting coralline algae and the anemone

[Semibalanus balanoides], [Patella vulgata] and [Littorina] spp. on exposed to moderately exposed or vertical sheltered eulittoral rock	Very exposed to sheltered mid to upper eulittoral bedrock and large boulders characterised by dense barnacles [Semibalanus balanoides] and the limpet [Patella vulgata]. The community has a relatively low diversity of species though occasional cracks and crevices in the rock can provide a refuge for small individuals of the mussel [Mytilus edulis], the winkle [Littorina] spp. and the whelk [Nucella lapillus]. Seaweeds are usually not found in high numbers though fissures and crevices in the bedrock can hold a sparse algae community, though patches of the red seaweed [Osmundea pinnatifida] can be present throughout the zone. On some shores the olive green lichen [Verrucaria mucosa] can be present in some abundance (Frequent). Records should not be assigned to this species impoverished biotope if there is a significant number or abundance of seaweeds. Situation: On very exposed to exposed shores [Chthamalus] spp. (see Cht.Cht for geographical variation) often forms a distinct white band above a darker band of [S. balanoides] in the mid eulittoral zone. Alternatively, found above Sem are the black lichen [Verru
[Fucus distichus] and [Fucus spiralis] f. [nana] on extremely exposed upper eulittoral rock	Extremely exposed gently or steeply sloping upper shore bedrock which supports a mixture of the wracks [Fucus distichus] and [Fucus spiralis f. nana], the latter often at the top of the zone. On some sites [F. distichus] dominates and [F. spiralis] is not present. Other seaweeds normally found on exposed coasts are common in this biotope. These include ephemeral species such as the foliose red [Porphyra umbilicalis] and the green [Enteromorpha] spp. The winkles [Melarhaphe neritoides] and [Littorina saxatilis] can be found grazing on the bedrock or on the fucoids, while red crusts of [Hildenbrandia rubra] and the mussel [Mytilus edulis] are restricted to moist cracks and crevices. A sparse covering of the black lichens [Verrucaria maura] and [Verrucaria mucosa] can be found in the upper part of this biotope competing for space with barnacle [Semibalanus balanoides] and the limpet [Patella vulgata]. This biotope is very rare and restricted to the far north and west coasts. Situation: This mixed band of [F. distichus] and [F. spiralis f. nana] is generally found between the [Verrucaria maura] and [Porphyra] spp. zone (Ver.Ver or Ver
[Corallina officinalis] on exposed to moderately exposed lower eulittoral rock	Very exposed to moderately exposed lower eulittoral rock that supports a dense turf of the red seaweed [Corallina officinalis], often on wave surged rocky slopes. There is usually a low abundance of other turf-forming red seaweeds including [Lomentaria articulata], [Mastocarpus stellatus], [Palmaria palmata] and [Osmundea] [pinnatifida]. Other seaweeds that occur in low abundance includes the wrack [Himanthalia elongata], [Laminaria digitata] while the brown seaweed [Leathesia difformis] can be found growing on and around the other seaweeds. The green seaweeds [Enteromorpha intestinalis], [Ulva lactuca] and [Cladophora rupestris] are present as well. A number of invertebrates are present on the bedrock underneath the coralline turf, including the barnacle [Semibalanus balanoides], the mussel [Mytilus edulis], the sponges [Halichondria panicea] and [Hymeniacidon perleve], the anemone [Actinia equina] and the limpets [Patella ulyssiponensis] and [Patella vulgata]. The brown seaweed [Bifurcaria bifurcata] and the barnacle [Balanus perforatus] may occur in the extreme south-west. Two

[Himanthalia elongata] and red seaweeds on exposed lower eulittoral rock	Exposed to moderately exposed lower eulittoral bedrock characterised by the wrack [Himanthalia elongata] with a dense turf of red seaweeds beneath. [H. elongata] may occur on tide-swept, sheltered shores in sea lochs (e.g. Loch Maddy). The wrack [Fucus serratus] is normally present as well. The predominant red seaweeds are usually [Mastocarpus stellatus], [Osmundea pinnatifida], [Corallina officinalis] and [Palmaria palmata] that tend to grow over a crust of the pink coralline algae [Lithothamnion] spp. Any patches between the algal turf may be colonised by barnacles [Semibalanus balanoides], or [Balanus perforatus] in the south-west, and by the limpet [Patella vulgata]. Pits and crevices in the rock often provide a refuge for the whelk [Nucella lapillus], the winkle [Littorina] spp. and small individuals of the mussel [Mytilus edulis]. Besides the dominant seaweeds there are a number of other red, brown and green seaweeds present. These include species such as the red seaweeds [Dumontia contorta], [Lomentaria articulata, Porphyra] spp., the kelp [Laminaria digitata] and the green seaweeds [Enteromorpha
Coralline crusts and crustaceans on mobile boulders or cobbles in surge gullies	Highly mobile and scoured boulders and cobbles found on cave and gully floors and which often appear bare. Where there is sufficient light and stability, however, the boulders are encrusted by coralline algal crusts. Barnacles [Balanus crenatus] and keelworms [Pomatoceros triqueter] may survive in areas protected from severe abrasion. Crabs such as [Cancer pagurus] and [Carcinus maenas] may occur, often beneath and between the rocks, along with the gastropod [Calliostoma zizyphinum]. The anemone [Actinia equina] may be present in low numbers. Situation: The slightly less-scoured walls often found above this biotope in caves and gullies are generally characterised by a similar, but richer community of scour-tolerant [Balanus crenatus], [Pomatoceros triqueter], coralline crusts and spirorbid worms (CC.BalPom). This impoverished biotope may form an intermediate between barren gravel and slightly more stable larger pebbles and cobbles which are covered by algae that are often found in the mouths of caves (FoSwCC). Temporal variation: Winter storms periodically mobilise the boulders and cobbles, causing abrasion t
Atlantic and Mediterranean high energy circalittoral rock	Occurs on extremely wave-exposed to exposed circalittoral bedrock and boulders subject to tidal streams ranging from strong to very strong. Typically found in tidal straits and narrows. The high energy levels found within this habitat complex are reflected in the fauna recorded. Sponges such as [Pachymatisma johnstonia], [Halichondria panicea], [Esperiopsis fucorum] and [Myxilla incrustans] may all be recorded. Characteristic of this habitat complex is the dense 'carpet' of the hydroid [Tubularia indivisa]. The barnacle [Balanus crenatus] is recorded in high abundance on the rocky substrata. On rocky outcrops, [Alcyonium digitatum] is often present.

[Balanus crenatus] and [Tubularia indivisa] on extremely tide-swept circalittoral rock	This biotope typically occurs on upward-facing, extremely tide-swept, circalittoral bedrock, boulders and cobbles found in a broad spectrum of wave-exposures. It is characterised by a few species that are capable of maintaining a foothold in strong tides. These species either form a flat, adherent crust in the case of the barnacle [Balanus crenatus], or have strong attachment points and are flexible, bending with the tide, such as the turf of the hydroid [Tubularia indivisa]. Other species able to tolerate these very strong tides, or just situated slightly out of the main force of the current, include the sponge [Halichondria panicea], the robust hydroid [Sertularia argentea] and current-tolerant anemones such as [Sagartia elegans], [Urticina felina] and [Metridium senile]. Mobile species such as the starfish [Asterias rubens], the crab [Cancer pagurus] and the whelk [Nucella lapillus] may also be present. Situation: This biotope is typically occurs in deep, very tide-swept straights, sounds and narrows with a bedrock/boulder/cobble slope. Kelp forest (LhypT) occurs in shallower wa
[Tubularia indivisa] and cushion sponges on tide-swept turbid circalittoral bedrock	This variant is typically found on the vertical and upper faces of strongly tide-swept, exposed circalittoral bedrock and boulders. It is commonly associated with areas where turbidity levels are high for much of the year, for example, around Anglesey and the Lleyn Penisula. From afar, this variant appears as a dense carpet of [Tubularia indivisa] covering tide-swept gully walls, floors and boulders. [T. indivisa] is frequently observed growing through sheets of sponges such as [Myxilla incrustans] and [Halichondria panicea] as well as through dense patches of the barnacle [Balanus crenatus] and tubes of the amphipod [Jassa] spp. Several other species of sponge appear to be tolerant of the high turbidity in areas where this variant occurs, many of which are common in other biotopes. These include [Esperiopsis fucorum], [Pachymatisma johnstonia], [Hemimycale columella], [Dysidea fragilis] and [Clathrina coriacea]. Robust hydroids (other than [T. indivisa]) such as [Nemertesia antennina] and [Sertularia argentea] occur in patches. The anemones [Urticina felina], [Actinothoe sphyrodeta] and [Sagartia elegans] are typica
[Alcyonium digitatum] with dense [Tubularia indivisa] and anemones on strongly tide-swept circalittoral rock	This variant is typically found on exposed circalittoral bedrock and boulders in sounds, narrows and around tide-swept promontories in accelerated tidal streams. It is dominated by aggregations of dead man's fingers [Alcyonium digitatum], and dense clumps or continuous cover of the robust hydroid [Tubularia indivisa], particularly on prominent ledges and ridges. Anemones such as [Sagartia elegans], [Urticina felina], [Metridium senile], [Actinothoe sphyrodeta] and [Corynactis virdis] form a prominent component of the community. Occasionally, massive sponges such as [Pachymatisma johnstonia] and [Esperiopsis fucorum] may be present. Encrusting species such as the polychaete [Pomatoceros triqueter] and the barnacle [Balanus crenatus] may be dotted around the rocks, and the top shell [Calliostoma zizyphinum] may also be observed. Clumps of the bryozoan [Flustra foliacea] are occasionally seen. The starfish [Asterias rubens] may be seen amongst a patchy turf of [Crisia denticulata] and the bryozoan [Alcyonidium diaphanum]. This variant may also be found on tideswept wrecks and other artificial sustratum. Situation

[Phakellia ventilabrum] and axinellid sponges on deep, wave-exposed circalittoral rock	This biotope typically occurs on the upper faces of deep (commonly below 30m depth), wave-exposed circalittoral rock subject to negligible tidal streams. Although it occurs in exposed and very exposed conditions, at such depth, the turbulent wave action appears to have a much-attenuated effect on the fauna compared with shallower depths. As the majority of records are from depths between 30-50+ m, slightly deeper than the depths of most surveys, it is possible that this biotope is more widespread than the available dataset indicates. The sponge component of this biotope is the most striking feature, with similar species to the bryozoan and erect sponge biotope complex (BrErSp) although in this case, the sponges [Phakellia ventilabrum], [Axinella infundibuliformis], [Axinella dissimilis] and [Stelligera stuposa] dominate. Other sponge species frequently found on exposed rocky coasts are also present in low to moderate abundance. These include [Cliona celata], [Polymastia boletiformis], [Haliclona viscosa], [Pachymatisma
Mixed turf of bryozoans and erect sponges with [Dysidia fragilis] and [Actinothoe sphyrodeta] on tide-swept wave-exposed circalittoral rock	This variant typically occurs on exposed and moderately wave-exposed bedrock and boulders subject to a variety of tidal regimes (from strong through to weak). It is found mainly in the 10-20m depth range and does not usually occur deeper than 30 m. It therefore often straddles the upper circalittoral and lower infralittoral. It often has a light covering of silt and sand may be in the vicinity. Sponges form a dominant part of this variant, although cover usually appears patchy, with no single species dominating. Species present include [Dysidea fragilis], [Pachymatisma johnstonia], [Esperiopsis fucorum], [Hemimycale columella], [Cliona celata], [Stelligera rigida], [Polymastia boletiformis], [Stelligera stuposa], [Raspailia ramosa], [Tethya aurantium], [Polymastia mamillaris] and [Axinella dissimilis]. Tufts of large hydroids such as [Nemertesia antennina], frequently recorded on the tops of outcrops and boulders, stand out more clearly than the understorey of finer hydroid and bryozoan turf such as [Aglaophenia pluma], [Bugula flabellata], [Bugula plumosa], crisiids, [Cellaria sinuosa] and [Bugula turbinata]. Other bryozoans such a
[Eunicella verrucosa] and [Pentapora foliacea] on wave-exposed circalittoral rock	This variant typically occurs on wave-exposed, steep, circalittoral bedrock, boulder slopes and outcrops, subject to varying tidal streams. This silty variant contains a diverse faunal community, dominated by the seafan [Eunicella verrucosa], the bryozoan [Pentapora foliacea] and the cup coral [Caryophyllia smithii]. There are frequently numerous [Alcyonium digitatum], and these may become locally abundant under more tide-swept conditions. [Alcyonium glomeratum] may also be present. A diverse sponge community is usually present, including numerous erect sponges; species present include [Cliona celata], [Raspailia ramosa], [Raspailia hispida], [Axinella dissimilis], [Stelligera stuposa], [Dysidea fragilis] and [Polymastia boletiformis]. [Homaxinella subdola] may be present in the south west. A hydroid/bryozoan turf may develop in the understorey of this rich sponge assemblage, with species such as [Nemertesia antennina], [Nemertesia ramosa], crisiids, [Alcyonidium diaphanum] and [Bugula plumosa]. The sea cucumber [Holothuria forskali] may be locally abundant, feeding on the silty deposits

Mixed turf of bryozoans and erect sponges with [Sagartia elegans] on tide-swept ciraclittoral rock	This variant is typically found on wave-exposed circalittoral bedrock and boulders, on steep slopes and upper faces in moderate tidal streams. This species-rich biotope is characterised by a dense sponge, hydroid and bryozoan turf and frequent [Alcyonium digitatum]. There are frequently large growths of [Cliona celata] and [Pachymatisma johnstonia]. Other species present in this diverse sponge community include [Polymastia boletiformis], [Haliclona viscosa], [Polymastia mamilliaris], [Scypha ciliata], [Hemimycale columella] and [Dysidea fragilis]. Axinellid sponges such as [Stelligera stuposa] and [Raspailia ramosa] may be present in low abundance, and are usually more abundant in deeper water. A dense hydroid turf forms a significant part of this biotope, with tufts of large hydroids such as [Nemertesia antennina] and [Nemertesia ramosa] frequently recorded. Other hydroid turf component species include [Halecium halecinum], [Aglaophenia tubulifera] and [Abietinaria abietina]. Anemones are also well represented, with species such as [Urticina felina], [Sagartia elegans]
[Corynactis viridis] and a mixed turf of crisiids, [Bugula], [Scrupocellaria], and [Cellaria] on moderately tide-swept exposed circalittoral rock	This biotope typically occurs on wave-exposed, vertical or steep, circalittoral bedrock or large boulders, usually subject to moderate or strong tidal streams. It is characterised by dense aggregations of the anemone [Corynactis viridis] and the cup coral [Caryophyllia smithii] intermixed with a short bryozoan turf of one or more [Crisia] spp., [Scrupocellaria] spp., [Bugula] spp. and [Cellaria] spp. Occasionally, this turf obscures the underlying [C. virdis] and [C. smithii]. Cushion and encrusting sponges, particularly [Pachymatisma johnstonia], [Cliona celata], [Esperiopsis fucorum] and [Dysidea fragilis], are present in moderate amounts at many sites. The axinellid sponges [Stelligera] spp. and [Raspailia] spp. are less frequently recorded. Clumps of large hydroids such as [Nemertesia antennina] and [Nemertesia ramosa] as well as the soft coral [Alcyonium digitatum] and the bryozoan [Alcyonidium diaphanum] may be found covering the hard substratum. The anemones [Actinothoe sphyrodeta] and [Sagartia elegans] are typically present in low numbers, while the hard `coral' [Pentapora foliacea
[Polyclinum aurantium] and [Flustra foliacea] on sand-scoured tide-swept moderately wave-exposed circalittoral rock	This variant is typically found on the upper face of moderately exposed, moderately tide-swept, circalittoral bedrock or boulders. Sand and silt are periodically re-suspended in the water column, resulting in scour-tolerant species being characteristic of these areas. There is a dense covering of the scour-resistant bryozoan [Flustra foliacea] attached to the bedrock plains and boulders. The colonial ascidian [Polyclinum aurantium] commonly covers the rock surface at most locations within this biotope - itself incorporating sand grains into its surface to give it the appearance of sandy rock nodules. Other ascidians that may occur in this crust are the flat, encrusting colonial [Botrylloides leachi], [Botryllus schlosseri] and the colonial ascidian [Clavelina lepadiformis], although in varying quantities at each location. A short turf of other bryozoans such as [Alcyonidium diaphanum], [Bugula plumosa] and [Bugula flabellata] occur amongst the ascidians. Other species found in this biotope are the sponges [Cliona celata], [Leucosolenia botryoides] and [Scypha ciliata],

[Flustra foliacea], small solitary and colonial ascidians on tide-swept circalittoral bedrock or boulders	This sub-biotope is typically found on the upper faces of exposed to moderately exposed, tide-swept, scoured, circalittoral bedrock or boulders. It most frequently occurs between 10-20m water depth. The biotope is characteristically dominated by dense [Flustra foliacea] with a variety of slightly scour/silt-tolerant species forming a dense turf. This turf is primarily composed of bryozoans ([Alcyonidium diaphanum], [Bugula flabellata], [Bugula plumosa], [Bicellariella ciliata]) and hydroids ([Tubularia indivisa], [Nemertesia antennina], [Sertularia argentea], [Hydrallmania falcata], [Abietinaria abietina]). Where space permits, barnacles such as [Balanus crenatus] may be found encrusting on the rock surface. There may also be occasional crusts formed by the polychaete [Sabellaria spinulosa], especially where the rock is most influenced by sand. Anthozoans which may be observed include [Urticina felina], [Sagartia elegans], whilst the soft coral [Alcyonium digitatum] may be recorded on the tops of boulders and bedrock ridges. A range of small solitary and colonial ascidians may be seen, including [Polycarpa scuba],
[Flustra foliacea] and [Haliclona oculata] with a rich faunal turf on tide-swept circalittoral mixed substrata	This biotope is typically found on exposed slopes of silty cobble and pebble subject to strong to moderate tidal streams. From afar, large 'finger' growths of the sponge [Haliclona oculata] occur amongst a rich faunal turf of hydroids and bryozoans with [Flustra foliacea] prominent. The dense faunal turf growing on the cobbles is composed of the bryozoans [F. foliacea], [Alcyonidium diaphanum] and [Crisia eburnea] and sporadic occurrences of the hydroids [Nemertesia antennina], [Hydrallmania falcata], [Tubularia larynx], [Rhizocaulus verticillatus] and [Halecium halecinum]. Caprellid shrimps may be observed within this faunal turf. The hard substratum frequently has a dense covering of the sponge [H. oculata] and occasionally [Esperiopsis fucorum], while the softer gravely/sand between the cobbles provides a habitat for anemones such as [Urticina felina] and [Cerianthus lloydii]. The nudibranch [Janolus cristatus] may be seen preying on the faunal turf and the fan worm [Sabella pavonia] is occasionally seen amongst the cobbles. The soft coral [Alcyonium digitatum] is often attached to the upp
[Molgula manhattensis] with a hydroid and bryozoan turf on tide-swept moderately wave-exposed circalittoral rock	This biotope is typically found on slightly sand-scoured, tide-swept, moderately exposed circalittoral bedrock and cobbles. It is commonly recorded from the shallower reaches of the circalittoral around depths from 5m to 15m BCD, as it occurs mostly in very turbid waters. From afar, the physical characteristics are usually silted bedrock reefs and cobble, interspersed with patches of clean sand, causing a scour effect on the rock. Dense aggregations of the ascidian [Molgula manhattensis] form a silty mat on the rock and there is a sparse hydroid and bryozoan turf. A hydroid turf, composed of [Nemertesia antennina], [Halecium beanii], [Hydrallmania falcata], [Sertularella gaudichaudi], [Tubularia indivisa] and [Alcyonium digitatum], in varying amounts, occurs at most sites on the tops of boulders and ridges. A bryozoan turf is also present, but not usually dense and includes [Flustra foliacea], [Alcyonidium diaphanum], [Electra pilosa] and the crust-forming bryozoan [Conopeum reticulum]. The polychaete [Lanice conchilega] thrives in the sandy patches which often occur between the rock ridges. The scour effect tend

Atlantic and Mediterranean moderate energy circalittoral rock	Mainly occurs on exposed to moderately wave-exposed circalittoral bedrock and boulders, subject to moderately strong and weak tidal streams. This habitat type contains a broad range of biological subtypes, from echinoderms and crustose communties (A4.21) to Sabellaria reefs (A4.22) and circalittoral mussel beds (A4.24).
[Caryophyllia smithii], sponges and crustose communities on wave-exposed circalittoral rock	This biotope typically occurs on the upper and vertical faces of wave-exposed, moderately strong to weakly tide-swept, circalittoral bedrock or boulders, with a water depth range of 20-30m. This often silty biotope has a typically sparse fauna, appearing grazed, and is characterised by common cup corals [Caryophyllia smithii], frequent [Alcyonium digitatum] and occasional urchins [Echinus esculentus]. There may be occasional large growths of the sponge [Cliona celata], [Haliclona viscosa], [Pachymatisma johnstonia] and the axinellid sponge [Stelligera stuposa]. Echinoderms form a prominent feature of the fauna within this biotope, with species such as [Marthasterias glacialis], [Asterias rubens], [Luidia ciliaris], [Henricia oculata], [Holothuria forskali], [Antedon bifida] and [Aslia lefevrei] present. Bryozoan crusts such as [Parasmittina trispinosa] and encrusting red algae cover the rock/boulder surface. The bryozoan [Porella compressa] may also be recorded occasionally. Isolated clumps of hydroids feature species such as [Nemertesia antennina], [Nemertesia ramosa], [Abietinaria abietina], [Halecium halecinum] and [Sertularella gay
[Urticina felina] and sand-tolerant fauna on sand-scoured or covered circalittoral rock	This biotope typically occurs on tide-swept circalittoral bedrock, rock adjacent to mobile sand/gravel in gullies, and cobbles on gravel and sand, characterised by scour-tolerant robust species. Although many of these species are found on subtidal rock, they tend to occur in larger numbers in these highly sand-influenced conditions. The dominant species by far is the anemone [Urticina felina] which commonly occurs on rocks at the sand-rock interface, where the scour levels are at a maximum and few species can tolerate this abrasion. The sponge [Ciocalypta penicillus] is also very characteristic of shifting sand-covered rock. This biotope is only occasionally recorded as a separate entity, because its extent is typically restricted to a very narrow band of rock at the sediment interface. Only occasionally does it cover a large extent of rock (e.g. where the wave action is strong enough to cause sand abrasion well up the rock face or where the rock is low-lying). More often, this scoured zone is recorded as part of whatever biotope occurs on the nearby hard substrata. Other species (which are able to survive, and bene

[Flustra foliacea] on slightly scoured silty circalittoral rock	This variant is typically found on the upper faces of moderately wave-exposed circalittoral bedrock or boulders subjected to moderately strong tidal streams. These rocky patches may be interspersed with gravelly sand patches, causing a scouring effect. From afar, the variant appears dominated by the bryozoan [Flustra foliacea]. [Alcyonium digitatum] may also be seen attached to the rocky substratum. Under closer inspection, the white tubes of the polychaete [Pomatoceros triqueter] may be observed on the rock and boulders, especially on vertical faces. There may be sandy/gravelly patches in between the boulders colonised by the anemone [Urticina felina]. The regular occurrence of large numbers of the sea urchin [Echinus esculentus] in this biotope may be responsible for grazing the faunal and algal turf, thus keeping species richness relatively low. Other echinoderms that may be seen include the ubiquitous starfish [Asterias rubens] and the common brittlestar [Ophiothrix fragilis]. Sparse clumps of the hydroids [Thuiaria thuja], [Abietinaria abietina], [Nemertesia antennina] and [Tubularia indivisa] are
[Alcyonium digitatum], [Pomatoceros triqueter], algal and bryozoan crusts on wave-exposed circalittoral rock	This variant is typically found on the vertical, steep and upper faces of wave-exposed circalittoral bedrock or boulders subject to varying amounts of current. The variant has a very grazed, sparse appearance, dominated only by the presence of [Alcyonium digitatum] and large expanses of encrusting red alage and bryozoan crusts particularly ([Parasmittina trispinosa]). The sparse appearance can be attributed to the frequently observed sea urchin [Echinus esculentus]. The polychaete [Pomatoceros triqueter] can be locally abundant, and may in some cases cover far more rock surface than [A. digitatum], especially on vertical faces. Clumps of robust hydroids such as [Abietinaria abietina] occur occasionally. Other species present include the echinoderms [Asterias rubens], [Henricia sanguinolenta], [Ophiothrix fragilis], the anemone [Urticina felina], [Calliostoma zizyphinum] and [Cancer pagurus]. Situation: Shallower than this biotope, dense kelp forest is typically found, containing species such as [Laminaria hyperborea] and [Alaria esculentus]. Occasionally, this biotope may be found on rocky outcrops su
[Alcyonium digitatum] with [Securiflustra securifrons] on tide-swept moderately wave-exposed circalittoral rock	This variant is typically found on the upper and vertical faces of moderately wave-exposed circalittoral bedrock subject to moderately strong to weak tidal streams. The rock surface is dominated by [Alcyonium digitatum] and the bryozoan [Securiflustra securifrons]. The rock between these species appears fairly sparse and grazed, with expanses of encrusting red algae. The sea urchin [Echinus esculentus] is frequently seen, and in collaboration with the light attenuating effects of depth, is probably the principal reason for the lack of algal turf. Other species found include the hydroids [Abietinaria abietina], [Nemertesia antennina], [Thuiaria thuja], the bryozoans [Cellepora pumicosa], [Parasmittina trispinosa], [Flustra foliacea], [Alcyonidium diaphanum] and other bryozoan crusts. Encrusting species such as the polychaete [Pomatoceros triqueter] and the barnacle [Balanus balanus] are frequently observed. Other species present include [Asterias rubens], [Antedon bifida], [Ophiura albida], [Ophiothrix fragilis], [Caryophyllia smithii], [Urticina felina], [Clavelina lepadiformis], [Calliostoma zizphinium]

Faunal and algal crusts with [Pomatoceros triqueter] and sparse [Alcyonium digitatum] on exposed to moderately wave-exposed circalittoral rock	This variant is typically found on the upper faces of exposed and moderately exposed circalittoral bedrock or boulders subjected to moderately strong to weak tidal streams. From afar, the seabed has a rather sparse, grazed appearance, reminiscent of a brittlestar bed after the brittlestars have moved elsewhere. The rocky substratum is generally covered with encrusting red algae and the white, calcareous tubes of the polychaete [Pomatoceros triqueter], dotted with the abundant urchin [Echinus esculentus]. Under closer inspection, [Alcyonium digitatum] are usually seen attached to the rocky surface underneath rock overhangs and large boulders. Although they may be recorded as abundant or common in some areas, their relatively small size means that their biomass is generally lower than in other biotopes. Sparse clumps of robust hydroids such as [Abietinaria abietina] are frequently observed, and bryozoan crusts such as [Parasmittina trispinosa] are occasionally seen. Echinoderms such as the brittlestars [Ophiothrix fragilis] and [Ophiocomina nigra], and the crab [Cancer pagurus] may be seen within c
Ross worm reefs on circalittoral rock	This habitat type occurs on moderately wave-exposed, circalittoral bedrock, boulders and cobbles subject to moderately strong tidal streams. It is characterised by dense crusts of the polychaete [Sabellaria spinulosa] covering the substratum. Other fauna present in many cases reflects the biotopes found on nearby rock, so to a certain extent, is quite variable. Species typically present include the bryozoans [Flustra foliacea], [Alcyonidium diaphanum] and [Pentapora foliacea], the hydroid [Nemertesia antennina], the sponges [Tethya aurantium] and [Phorbas fictitius], the anemones [Urticina felina] and [Sagartia elegans], and the ascidians [Distomus variolosus], [Polycarpa pomaria] and [Polycarpa scuba]. The barnacle [Balanus crenatus], the polychetes [Pomatoceros triqueter] and [Salmacina dysteri], the starfish [Crossaster papposus], and [Alcyonium digitatum] may also be recorded.
[Sabellaria spinulosa] encrusted circalittoral rock	This biotope is typically found encrusting the upper faces of wave-exposed and moderately wave-exposed circalittoral bedrock, boulders and cobbles subject to strong/moderately strong tidal streams in areas with high turbidity. The crusts formed by the sandy tubes of the polychaete worm [Sabellaria spinulosa] may even completely cover the rock, binding the substratum together to form a crust. A diverse fauna may be found attached to, and sometimes obscuring the crust, often reflecting the character of surrounding biotopes. Bryozoans such as [Flustra foliacea], [Pentapora foliacea] and [Alcyonidium diaphanum], anemones such as [Urticina felina] and [Sagartia elegans], the polychaete [Pomatoceros triqueter], [Alcyonium digitatum], the hydroid [Nemertesia antennina] and echinoderms such as [Asterias rubens] and [Crossaster papposus] may all be recorded within this biotope. There are two variants. The first (Sspi.ByB) contains significant cover of barnacles ([Balanus crenatus]) and bryozoans. The second (Sspi.As) has a dense turf of didemnid ascidians as well as scour-tolerant bryozoans such as [F.

[Sabellaria spinulosa], didemnid and small ascidians on tide-swept moderately wave-exposed circalittoral rock	This variant is typically found on tide-swept, moderately wave-exposed circalittoral bedrock, boulders and cobbles subject to slight sand-scour. It occurs predominantly in the lower circalittoral. This variant normally appears as a bedrock/boulder outcrop or reef with a dense crust of the polychaete [Sabellaria spinulosa] and a dense turf of didemnid ascidians and scour-tolerant bryozoans such as [Flustra foliacea], [Pentapora foliacea] and [Cellaria] species. There may be discreet clumps of [Alcyonium digitatum] and sparse sponges such as [Tethya aurantium] and [Phorbas fictitius]. Patchy occurrences of the small ascidians [Polycarpa scuba], [Polycarpa pomaria] and [Distomus variolosus] may be present on the tops of rocks and boulders whilst in crevices between, the anemone [Urticina felina] may be found. Species such as [Asterias rubens], [Crossaster papposus], the serpulid worm [Salmacina dysteri] and the anemone [Sagartia elegans] are occasionally seen on the rock surface. This variant has been recorded from the Lleyn Peninsula, the Skerries and around Pembrokeshire in Wales.
Communities on soft circalittoral rock	This habitat type occurs on moderately wave-exposed, circalittoral soft bedrock subject to moderately strong tidal streams. As this complex is found in highly turbid water conditions, the circalittoral zone may begin at the low water mark, due to poor light penetration. This complex is dominated by the piddock [Pholas dactylus]. Other species typical of this complex include the polychaete [Polydora] and [Bispira volutacornis], the sponges [Cliona celata] and [Suberites ficus], the bryozoan [Flustra foliacea], [Alcyonium digitatum], the starfish [Asterias rubens], the mussel [Mytilus edulis] and the crab [Necora puber] and [Cancer pagurus]. Foliose red algae may also be present. Please note: in areas subject to very high turbidity, biotopes within this habitat type may occur in the infralittoral and even the littoral zone.
Piddocks with a sparse associated fauna in sublittoral very soft chalk or clay	This biotope occurs on circalittoral soft rock, such as soft chalk or clay, most often in moderately exposed tide-swept conditions. As soft chalk and firm clay are often too soft for sessile filter-feeding animals to attach and thrive in large numbers, an extremely impoverished epifauna results on upward-facing surfaces, although vertical faces may be somewhat richer. The rock is sufficiently soft to be bored by bivalves. Species vary with location, but [Pholas dactylus] is the most widespread borer and may be abundant. Other species present may include the sponges [Dysidea fragilis] and [Suberites carnosus] and the polychaete [Bispira volutacornis]. Foliose red algae may be present on the harder, more stable areas of rock. Mobile fauna often include the crabs [Necora puber] and [Cancer pagurus]. Situation: Subtidal chalk reefs or clay outcrops, mostly known from south-east England.

[Polydora] sp. tubes on moderately exposed sublittoral soft rock	Large patches of chalk and soft limestone are occasionally covered entirely by [Polydora] sp. tubes to the exclusion of almost all other species. This tends to occur in highly turbid conditions and spans the infralittoral and circalittoral in limestone areas such as the Great and Little Ormes (North Wales) and Gower (South Wales). It is even present on the lower shore in the Severn estuary. The boring form of the sponge [Cliona celata] often riddles the surface layer of the stone. Other sponges present include [Halichondria panicea], [Haliclona oculata] and [Hymeniacidon perleve]. [Polydora] sp. also frequently occurs in small patches as part of other biotopes (e.g. FluCoAs). Other species present include [Alcyonium digitatum], [Sarcodictyon roseum], the hydroids [Halecium halecinum], [Abietinaria abietina] and [Tubularia indivisa], the ascidians [Clavelina lepadiformis], [Botryllus schlosseri] and [Morchellium argus], the anemones [Urticina felina], [Metridium senile] and [Sagartia elegans] and the bryozoans [Flustra foliacea] and a crisiid turf. The
Mussel beds on circalittoral rock	This habitat type occurs on moderately wave-exposed upper circalittoral bedrock subject to strong or moderately strong tidal streams. This complex is characterised by dense aggregations of the mussels [Mytilus edulis] or [Musculus discors] carpeting the underlying substrata. Sponges that may be recorded in this complex are [Scypha ciliata], [Tethya aurantium], [Pachymatisma johnstonia], [Dysidea fragilis] and [Cliona celata]. A sparse hydroid/bryozoan turf composed primarily of [Nemertesia antennina], [Alcyonidium diaphanum] and [Flustra foliacea] is often recorded. Anemones present are [Urticina felina] and [Sagartia elegans]. Other species recorded are the crabs [Cancer pagurus], [Carcinus maenas] and [Necora puber], the starfish [Crossaster papposus] and [Asterias rubens], and [Alcyonium digitatum] and in this upper circalittoral complex, algae species such as [Dictyota dichotoma], [Cryptopleura ramosa] and [Plocamium cartilagineum].
[Mytilus edulis] beds with hydroids and ascidians on tide-swept exposed to moderately wave-exposed circalittoral rock	This biotope typically occurs on the upper faces of tide-swept circalittoral bedrock, boulders and mixed substrata exposed to varying amounts of wave action. The mussel [Mytilus edulis] forms dense beds, to the exclusion of other species. The starfish [Asterias rubens] is frequently recorded, and it predates heavily on the mussels. Occasionally, the anemone [Urticina felina] may be seen within crevices in the rock or on gravel patches. Crabs such as [Necora puber] and [Carcinus maenas] may be seen on the rock or mussels whilst fauna observed in crevices typically consists of the lobster [Homarus gammarus] and the crab [Cancer pagurus]. The anemone [Sargatia elegans] can be seen attached to bedrock and cobbles, whereas the barnacle [Balanus crenatus] may be seen attached to the mussels themselves.

[Musculus discors] beds on moderately exposed circalittoral rock	This biotope typically occurs on the upper faces of moderately exposed, moderately tide-swept bedrock, boulders and cobbles in slightly silty conditions. The mussel [Musculus discors] occurs in dense mats and occasionally completely coats all available surfaces. There is also often a layer of pseudofaeces, forming a thick, silty matrix. A relatively diverse fauna of cushion and branching sponges is often present on rocky outcrops and other hard substratum that is free of mussels. These include [Tethya aurantium], [Scypha ciliata], [Pachymatisma johnstonia], [Dysidea fragilis], [Cliona celata] and [Stelligera stuposa]. There may be isolated clumps of silt-tolerant bryozoans such as [Flustra foliacea] and [Bugula plumosa]. Various species may be observed on top of the mussels, including [Asterias rubens], [Crossaster papposus] and the brittlestar [Ophiura albida]. Occasional [Alcyonium digitatum] and clumps of the hydroid [Nemertesia antennina] are found attached to rocky outcrops and boulders whilst the anemone [Urticina felina] may be seen in crevices in the rock or on gravely patches between boulders. Colonial a
Cushion sponges and hydroids on turbid tide-swept sheltered circalittoral rock	This biotope is found in variable salinity environments and tends to occur on the upper faces of circalittoral bedrock and boulders, in sheltered sites subject to moderately strong tidal streams. This biotope is characterised by aggregations of cushion sponges such as [Hymeniacidon perleve], [Halichondria panicea], [Halichondria bowerbanki] and [Cliona celata], other sponges ([Leucosolenia botryoides] and [Suberites ficus]) along with occasional hydroid tufts of [Nemertesia antennina], [Nemertesia ramosa] and [Plumularia setacea]. Other species that may be present include the colonial ascidians [Clavelina lepadiformis] and [Morchellium argus], [Dendrodoa grossularia], the anemones [Metridium senile] and [Sagartia troglodytes], the barnacle [Balanus crenatus], [Asterias rubens], [Carcinus maenas] and [Bugula plumosa]. Two variants of this biotope have been recorded: CuSpH.VS and CuSpH.As.
[Halichondria bowerbanki], [Eudendrium arbusculum] and [Eucratea loricata] on reduced salinity tide-swept circalittoral mixed substrata	This biotope typically occurs on circalittoral mixed substrata (bedrock, boulders, cobbles, pebbles and gravel) in the moderately strong, tide-swept narrows near the entrance of Loch Etive, although not in the extremely tide-swept Falls of Lora. This sea loch is unique in having a substantial freshwater input from the surrounding moorland, yielding the most brackish, large sea loch in Scotland. Large growths of the brackish-tolerant sponge [Halichondria bowerbanki] cover the cobble and boulder seabed, interspersed with [Mycale lobata], the hydroid [Eudendrium arbusculum] and the bryozoan [Alcyonidium diaphanum] which are particularly characteristic of these conditions. Tufts of the bryozoan [Eucratea loricata] are occasional in most areas. Other species recorded include [Carcinus maenas], [Asterias rubens], [Crossaster papposus], [Buccinum undatum], [Pagurus berhardus], [Henricia] spp., [Onchidoris bilamellata] and [Palio dubia], tolerant of the low salinity, are found in the circalittoral throughout this area. Ascidians such as [Ascidiella scabra]
Atlantic and Mediterranean low energy circalittoral rock	Occurs on wave-sheltered circalittoral bedrock and boulders subject to mainly weak/very weak tidal streams. The biotopes identified within this habitat type are often dominated by encrusting red algae, brachiopods ([Neocrania anomala]) and ascidians ([Ciona intestinalis] and [Ascidia mentula]).

Brachiopod and ascidian communities on circalittoral rock	This habitat type occurs on the wave-sheltered, circalittoral bedrock and boulders subject to weak tidal streams. The biotopes within this complex are typically found in the Scottish sealochs (with the exception of A4.312, recorded off Ireland) and are characterised by brachipod and ascidian communities. Ascidians often recorded in this complex are [Ciona intestinalis], [Ascidia mentula], [Ascidia virginea] and [Clavelina lepadiformis]. The brachiopod [Neocrania anomala] is also characteristic of the biotopes within this complex recorded in Scottish sealochs. The polychaete [Pomatoceros triqueter], the saddle oyster [Pododesmus patelliformis], the cup coral [Caryophyllia smithii] and encrusting red algae are frequently recorded on the rocky substrata. Echinoderms such as the brittlestars [Ophiothrix fraglis], [Ophiocomina nigra] and [Ophiura albida], the starfish [Asterias rubens], [Crossaster papposus] and [Henricia oculata], the crinoid [Antedon bifida] and the urchin [Echinus esculentus] are all found in this complex. Other species present include
Solitary ascidians, including [Ascidia mentula] and [Ciona intestinalis], on wave-sheltered circalittoral rock	This biotope predominantly occurs on the upper faces of wave-sheltered (often sealochs) circalittoral bedrock, boulder and cobble slopes with little tidal flow. Apart from the solitary ascidians [Ciona intestinalis] and [Ascidia mentula], this biotope has a rather barren, pink appearance (due to the encrusting red algae), possibly due to grazing pressure from the sea urchin [Echinus esculentus]. Other organisms found encrusting the rocky surface include the polychaete [Pomatoceros triqueter] and the cup coral [Caryophyllia smithii]. Other species occasionally encountered include [Alcyonium digitatum], [Asterias rubens], [Pagurus berhardus], [Crossaster papposus], [Antedon bifida] and [Metridium senile]. Crustaceans such as [Munida rugosa] and [Cancer pagurus] may be recorded in crevices. Two variants of this biotope exist: AmenCio.Ant and AmenCio.Bri. AmenCio.Bri occurs where is a dense carpet of brittlestars which sometimes completely cover the rocky substratum. Species present include [Ophiothrix fragilis], [Ophiocomina nigra] and [Ophiura albida]. Temporal variation: The abundance of [C. intestinalis] tends to flu
[Antedon] spp., solitary ascidians and fine hydroids on sheltered circalittoral rock	This biotope is typically found on silty boulder or rock slopes, in the sheltered parts of sealochs, subject to weak or very weak tidal currents. The seabed consists of smooth, silty bedrock or boulders, often as outcrops on mixed muddy sediment. There are often small vertical faces on the sides of rock ridges, and at few sites, there may be more extensive steep or vertical bedrock. In sharp contrast to the barren, grazed appearance of AmenCio.Ant, the species composition of AntAsH is quite diverse, although no one phyla dominates. A wide range of encrusting species may be found, including the brachiopod [Neocrania anomala], the saddle oyster [Pododesmus patelliformis], encrusting red algae and polychaetes ([Pomatoceros triqueter] and [Protula tubularia]). Other conspicuous species include crinoids on the tops of boulders ([Antedon bifida], commoner in shallower water and [Antedon petasus], commoner in deeper water), scattered solitary and colonial ascidians ([Ascidia mentula], [Ascidia virginea], [Corella parallelogramma], [Clavelina lepadiformis] and [Ciona intestinalis]) and tufts of fine hydroids

[Neocrania anomala] and [Protanthea simplex] on sheltered circalittoral rock	This biotope typically occurs in full to variable salinity conditions on very wave-sheltered circalittoral bedrock and boulder slopes subject to negligible tidal streams (this tends to be in the landward, very sheltered basins of fjordic sealochs). This biotope is characterised by often dense populations of the anemone [Protanthea simplex], growing on the silty bedrock. The underlying rock surfaces are usually covered by encrusting red algae, the polychaete [Pomatoceros triqueter], the brachiopods [Neocrania anomala] and [Terebratulina retusa], the saddle oyster [Pododesmus patelliformis] and the polychaete [Sabella pavonina]. Scattered colonies of [Alcyonium digitatum] and the hydroid [Bougainvillia ramosa] may occasionally be recorded. A diverse range of ascidians including [Ciona intestinalis], [Ascidia mentula], [Corella parallelogramma], [Ascidia virginea], [Polycarpa pomaria] and [Dendrodoa grossularia] are also occasionally recorded. Echinoderms such as the common brittlestar [Ophiothrix fragilis] are frequently reported with their arms protruding from crevices in the rock, whilst the sta
Communities of circalittoral caves and overhangs	Caves and overhanging rock in the circalittoral zone, away from significant influence of strong wave action (compare A3.71). This habitat may be colonised by a wide variety of species, with sponges such as [Dercitus bucklandi], anemones [Parazoanthus] spp. and the cup corals [Caryophyllia inornatus], [Hoplangia durotrix] and others particularly characteristic.
Sponges, cup corals and anthozoans on shaded or overhanging circalittoral rock	This biotope occurs on shaded and overhanging rock, such as on cave walls and ceilings although there are very few records of caves in conditions not subject to wave surge (i.e. deeper circalittoral habitats) and almost all are different in species composition. There are also a few examples of similar communities on very deep (70-100 m+) upward-facing rock (in Loch Hourn) and more may be found through the use of ROVs. These often species-rich habitats are almost invariably adjacent to well-mixed turbulent water. Characteristic species include the sponges [Stryphnus ponderosus], [Dercitus bucklandi], [Chelonaplysilla noevus], [Pseudosuberites] sp. and [Spongosorites] sp., the anemones [Parazoanthus] spp., the cup corals [Leptopsammia pruvoti], [Hoplangia durotrix], [Caryophyllia inornatus] and the soft coral [Parerythropodium coralloides]. [Thymosia guernei] is sometimes present. This biotope is likely to need further splitting with further data and analysis. Situation: Subtidal rocky coasts.

[Ascidiella aspersa] on circalittoral artificial substrata	Sheltered artificial substrata (such as discarded fishing nets or scrap metal on muddy sediment plains), sometimes subject to variable salinity, with high numbers of the ascidian [Ascidiella aspersa] which is capable of rapidly colonising hard substrata. Other species that are quickly able to take advantage of such substrata include the dahlia anemone [Urticina felina] and the plumose anemone [Metridium senile]. The edible crab [Cancer pagurus], the velvet swimming crab [Necora puber] and the shore crab [Carcinus maenas] may occasionally be found hiding under the discarded nets, lobster pots or anchor chains. Situation: As a fouling community, this biotope may be found throughout the circalittoral zone in coastal waters. It may be more prevalent around harbours, moorings, and fishing grounds where suitable substratum is available. In situations where wave exposure or tidal stream increase, biotopes dominated by bryozoans and/or robust hydroids (EcCr) may arise. Temporal variation: A gradual development of more long-lived species is expected, where the artificial substrata are of a more permanent nature (e.g. wooden or co
Sublittoral sediment	Sediment habitats in the sublittoral near shore zone (i.e. covering the infralittoral and circalittoral zones), typically extending from the extreme lower shore down to the edge of the bathyal zone (200 m). Sediment ranges from boulders and cobbles, through pebbles and shingle, coarse sands, sands, fine sands, muds, and mixed sediments. Those communities found in or on sediment are described within this broad habitat type.
Sublittoral coarse sediment	Coarse sediments including coarse sand, gravel, pebbles, shingle and cobbles which are often unstable due to tidal currents and/or wave action. These habitats are generally found on the open coast or in tide-swept channels of marine inlets. They typically have a low silt content and a lack of a significant seaweed component. They are characterised by a robust fauna including venerid bivalves.
Sublittoral coarse sediment in variable salinity (estuaries)	Clean gravels that occur in the upper reaches of marine inlets, especially estuaries, where water movement is sufficiently strong to remove the silt content of the sediment. The habitat typically lacks a significant seaweed component and is characterised by a sparse but very robust brackish-water tolerant fauna.
Dense [Lanice conchilega] and other polychaetes in tide-swept infralittoral sand and mixed gravelly sand	Dense beds of [Lanice conchilega] occur in coarse to medium fine gravelly sand in the shallow sublittoral, where there are strong tidal streams or wave action. Several other species of polychaete also occur as infauna e.g. [Spiophanes bombyx], [Scoloplos armiger], [Chaetozone setosa] and [Magelona mirabilis]. Lanice beds are found in a wide range of habitats including muddier mixed sediment. The dense [Lanice] biotope (LGS.Lan) on certain lower shores may be a littoral extension of the current biotope. The presence of [L. conchilega] in high numbersmay, over time, stabilise the sediment to the extent where a more diverse community may develop (Wood, 1987). Possibly as a result of this, there is a high level of variation with regard the infauna found in SCS.SLan. It is likely that a number of sub-biotopes may subsequently be identified for this biotope. Offshore from the Wash and the North Norfolk coast [Lanice] beds are often found intermixed with [Sabellaria spinulosa] beds in muddier mixed sediment, particularly in the channels between the shallow sandbanks, which are so prevalent in this area (IECS, 1995; NRA

[Halcampa chrysanthellum] and [Edwardsia timida] on sublittoral clean stone gravel	Periodically (seasonally?) disturbed sublittoral stone gravel with small pebbles characterised by the presence of the anemones [Halcampa chrysanthellum] and [Edwardsia timida]. Associated species are often typical of a hydroid/bryozoan turf with polychaetes such as [Pomatoceros] spp. encrusting larger pebbles and low numbers of syllid and phyllodocid polychaetes living interstitially. In some areas this biotope may also contain opportunistic red seaweeds and infauna such as [Sabella pavonina]. It should be noted that this habitat may show considerable variation in community composition and it is possible that it is a sub-biotope of other gravel biotopes. Situation: This biotope tends to occur at the entrance to marine inlets where tidal currents are moderately strong. Temporal variation: The faunal composition and species richness of this biotope may vary seasonally as a result of disturbance from increased wave or tidal action.
Circalittoral coarse sediment	Tide-swept circalittoral coarse sands, gravel and shingle generally in depths of over 15-20m. This habitat may be found in tidal channels of marine inlets, along exposed coasts and offshore. This habitat, as with shallower coarse sediments, may be characterised by robust infaunal polychaetes, mobile crustacea and bivalves. Certain species of sea cucumber (e.g. [Neopentadactyla]) may also be prevalent in these areas along with the lancelet [Branchiostoma lanceolatum].
[Neopentadactyla mixta] in circalittoral shell gravel or coarse sand	Sublittoral plains of clean, shell, maerl and / or stone gravels or sometimes coarse sands, with frequent [Neopentadactyla mixta]. [Pecten maximus] may occur occasionally along with [Lanice conchilega]. Other epifaunal species may include [Ophiura albida, Pagurus] spp. and [Callionymus] spp. These sediments may be thrown into dunes by wave action or tidal streams. Widespread species such as [Cerianthus lloydii] and [Chaetopterus variopedatus] are present in many examples of this biotope. Scarcely recorded species such as [Molgula oculata], [Ophiopsila annulosa] and [Amphiura securigera] may also be found. [O. annulosa] only occurs in records from the south-west of the British Isles. It should be noted that [Neopentadactyla] may exhibit periodicity in its projection out of, and retraction into, the sediment (Picton 1993).This biotope may be an epibiotic overlay of the biotope MedLumVen. Situation: This biotope may occur adjacent to maerl beds and to some extent in the lower infralittoral where some seaweeds may occur in low abundances.
Branchiostoma lanceolatum in circalittoral coarse sand with shell gravel	Gravel and coarse sand with shell gravel often contains communities of robust venerid bivalves (SCS.MedLumVen). Shallower examples, such as the biotope presented here, may support a significant population of [Branchiostoma lanceolatum]. Other conspicuous infauna may include [Echinocyamus pusillus], [Glycera lapidum], [Polygordius, Pisione remota] and [Arcopagia crassa] (in the south of UK). Sessile epifauna are typically a minor component of this community. This biotope has been described from a limited number of records and as such may need revising when further data become available. This biotope is related to the 'Boreal Offshore Gravel Association' and 'Deep [Venus] Community' described by other workers (Ford 1923; Jones 1951), and may also be closely allied (the same?) as the '[Venus fasciata]' community of Cabioch (Glemarec 1973). This biotope may be an epibiotic overlay of the biotope SCS.MoeVen or SCS.MedLumVen.

[Pomatoceros triqueter] with barnacles and bryozoan crusts on unstable circalittoral cobbles and pebbles	This biotope is characterised by a few ubiquitous robust and/or fast growing ephemeral species which are able to colonise pebbles and unstable cobbles and slates which are regularly moved by wave and tidal action. The main cover organisms tend to be restricted to calcareous tube worms such as [Pomatoceros triqueter] (or [P. lamarcki)], small barnacles including [Balanus crenatus] and [Balanus balanus], and a few bryozoan and coralline algal crusts. Scour action from the mobile substratum prevents colonisation by more delicate species. Occasionally in tide-swept conditions tufts of hydroids such as [Sertularia argentea] and [Hydrallmania falcata] are present. This biotope often grades into SMX.FluHyd which is characterised by large amounts of the above hydroids on stones also covered in [Pomatoceros] and barnacles. The main difference here is that SMX.FluHyd, seems to develop on more stable, consolidated cobbles and pebbles or larger stones set in sediment in moderate tides. These stones may be disturbed in the winter and therefore long-lived and fragile species are not found. Situation: This
Sublittoral sand	Clean medium to fine sands or non-cohesive slightly muddy sands on open coasts, offshore or in estuaries and marine inlets. Such habitats are often subject to a degree of wave action or tidal currents which restrict the silt and clay content to less than 15%. This habitat is characterised by a range of taxa including polychaetes, bivalve molluscs and amphipod crustacea.
Infralittoral mobile sand in variable salinity (estuaries)	Very mobile sand in areas of strong tidal currents and variable salinity. No stable community is able to develop within this extremely mobile and abrasive habitat. The fauna encountered in this habitat consists of epifaunal crustaceans or relatively low numbers of robust species, such as the isopod [Eurydice pulchra] or [Mesopodopsis slabberi]. The polychaete [Capitella capitata] may occur frequently in some areas. Other taxa such as the polychaetes [Eteone] spp. and [Arenicola marina], the mysid [Neomysis integer] and the amphipods [Bathyporeia] spp. and [Haustorius arenarius] may also be washed in from adjacent communities. This biotope is found in tidal channels of estuaries and areas where water movement keeps silt and mud in suspension, and excludes even the more robust infauna. If oligochaetes, polychaetes and bivalves are present in any numbers within this habitat type then care must be taken to avoid the inclusion of juvenile or spat recruitment counts which may mask the presence of this biotope. This is particularly relevant as sampling usually occurs at slack water periods when settleme

[Palmaria palmata] on very exposed to moderately exposed lower eulittoral rock	Very exposed to moderately exposed lower eulittoral rock which supports a pure stand of dulse [Palmaria palmata] as a dense band or in large patches above the main kelp zone. [P. palmata] favours shaded or overhanging rock and often forms a band at the top of overhanging rock. Relatively low abundance of other seaweeds, such as the red seaweed [Porphyra umbilicalis] or the green seaweeds [Enteromorpha intestinalis], [Ulva lactuca] and [Cladophora rupestris] may also occur in this biotope although [P. palmata] always dominates. On the rock underneath the seaweed turf are the barnacle [Semibalanus balanoides] and the limpet [Patella vulgata and the olive-green lichen] Verrucaria mucosa. Sites should only be recorded as Pal where [P. palmata] forms a distinct band or occurs in large patches on the shore. Situation: This biotope is found below the biotopes dominated by the [P. vulgata, S. balanoides], the wrack [Fucus distichus] or [E. intestinalis] (Sem; Fdis; Ent). It is found above biotopes dominated by the kelp [Alaria esculenta] and [Laminaria digitata] (Ala.Ldig; Ldig.Ldig). Temporal variation: It is likely that the [P. pa
[Mastocarpus stellatus] and [Chondrus crispus] on very exposed to moderately exposed lower eulittoral rock	Exposed to moderately exposed lower eulittoral vertical to almost horizontal bedrock characterised by a dense turf of [Mastocarpus stellatus] and [Chondrus crispus] (either together or separately). Beneath these foliose seaweeds the rock surface is covered by encrusting coralline algae and the barnacle [Semibalanus balanoides], the limpet [Patella vulgata] and spirorbid polychaetes. Other seaweeds including the red [Lomentaria articulata] and [Osmundea pinnatifida], [Palmaria palmata], [Corallina officinalis] and coralline crusts. The wrack [Fucus serratus] and the green seaweeds [Enteromorpha intestinalis] and [Ulva lactuca] may also be present though usually at a low abundance[]. Although both [M. stellatus] and [C. crispus] are widespread in the lower eulittoral and the sublittoral fringe, they occur only infrequently in a distinct band, or in large enough patches, to justify separation from Fser.R. Consequently, where only small patches of these species occur within a larger area of mixed red algal turf, then records should be assigned to more general mixed red algal turf biotope (Coff; Him). [M. ste
[Osmundea pinnatifida] on moderately exposed mid eulittoral rock	Exposed to moderately exposed lower eulittoral rock characterised by extensive areas or a distinct band of [Osmundea pinnatifida] and [Gelidium pusillum] (either together or separately). This community usually occurs on shores on which a fucoid canopy is reduced in extent, or even absent. Other turf-forming red seaweeds, such as [Corallina officinalis, Mastocarpus stellatus], [Ceramium] spp. and [Callithamnion hookeri] may be present, although [O. pinnatifida] always dominate. On flatter, more sheltered shores, [Osmundea hybrida] may also occur. Small patches of bare rock amongst the algal turf are occupied by barnacles [Semibalanus balanoides], the limpet [Patella vulgata], the whelk [Nucella lapillus] and small individuals of the mussel [Mytilus edulis]. The winkles [Littorina littorea] and [Littorina saxatilis] can be present on the rock or among the seaweeds. A variation of this biotope has been described for the chalk platforms in Kent where extensive turfs of [G. pusillum] occur in the mid eulittoral above the main [O. pinnatifida] zone. Situation: This biotope can be found below barnacles [S. balanoides

[Ceramium] sp. and piddocks on eulittoral fossilised peat	Outcrops of fossilised peat in the eulittoral are soft enough to allow a variety of piddocks such as [Barnea candida] and [Petricola pholadiformis] to bore into them. The surface of the peat can be characterised by a dense algal mat, predominantly the red seaweed [Ceramium] spp. and with the green seaweeds [Ulva lactuca] and [Enteromorpha intestinalis]. Damp areas in the algal mat are covered by aggregations of the polychaetes [Lanice conchilega] and [Polydora] sp. The crabs [Carcinus maenas] and [Cancer pagurus] occur in crevices in the peat. Small pools on the peat may contain hydroids, such as [Obelia longissima] and [Kirchenpaueria pinnata], the brown alga [Dictyota dichotoma] and the crustacean [Crangon crangon]. Description derived largely from sites in north Norfolk and this community could possibly be found on other "soft" substrata. Further records of this community are required in order to validate the description.
[Ascophyllum nodosum], sponges and ascidians on tide-swept mid eulittoral rock	Very sheltered to extremely sheltered areas of mid eulittoral rock that are subject to strong to moderate tidal streams, such as the narrows in sea lochs, and characterised by the wrack [Ascophyllum nodosum]. The wracks [Fucus vesiculosus] and [Fucus serratus] are occasionally present. The increased water movement encourages a rich associated fauna including several filter-feeding groups. These include the sponges [Leucosolenia] spp., [Grantia compressa, Halichondria panicea] and [Hymeniacidon perleve] which frequently occur on steep and overhanging faces of boulders and bedrock. It also includes the sea squirts [Dendrodoa grossularia] and [Ascidiella scabra], which occur on steep surfaces and beneath boulders. Hydroids such as the pink [Clava multicornis] can form colonies on [A. nodosum] while [Dynamena pumila] is more often found on [F. vesiculosus] or [F. serratus]. Underneath the canopy formed by the brown seaweeds is a diverse community of the red seaweeds [Gelidium pusillum], [Chondrus crispus], [Lomentaria articulata], [Membranoptera alata] and coralline crusts, but the green seav
[Fucus serratus], sponges and ascidians on tide-swept lower eulittoral rock	Sheltered to extremely sheltered lower eulittoral bedrock, boulders and cobbles that are subject to increased tidal water movement and characterised by the wrack [Fucus serratus] and a rich assemblage of filter-feeding fauna. This community is encouraged by the increased water movement. It includes species such as the sponges [Halichondria panicea] and [Hymeniacidon perleve], which occur frequently on steep and overhanging faces. Underneath the [F. serratus] canopy is a diverse flora of foliose red seaweeds including [Mastocarpus stellatus], [Lomentaria articulata], [Membranoptera alata] and [Chondrus crispus]. The green seaweeds [Cladophora] spp., [Enteromorpha intestinalis] and [Ulva lactuca] and the wrack [Ascophyllum nodosum] are present though usually in small numbers. On the rock underneath the seaweed canopy, species such as the limpet [Patella vulgata], the barnacles [Semibalanus balanoides] and [Balanus crenatus] and the whelk [Nucella lapillus] can be found though in lower abundance than higher up the shore. Also present on the rock are the tube-forming polychaetes [Pomatoceros trique

[Fucus serratus] with sponges, ascidians and red seaweeds on tide-swept lower eulittoral mixed substrata	Sheltered lower shore boulders, cobbles and pebbles on muddy sediments that are subject to enhanced tidal water movement and characterised by a species rich community. Dominant species include the sponges [Halichondria panicea] and [Hymeniacidon perleve], the sea squirts [Ascidiella aspera], [Ascidiella scabra], [Styela clava] and [Botryllus schlosseri]. A number of filamentous red seaweeds including [Halurus flosculosus], [Ceramium] spp., [Gracilaria gracilis, Polysiphonia fucoides] and foliose seaweeds [Mastocarpus stellatus] and [Chondrus crispus] are usually present. The brown seaweed [Dictyota dichotoma] and the wrack [Fucus serratus] with colonies of the hydroid [Dynamena pumila], and [Ectocarpus] sp. may be found on more stable substrata. Boulders and large cobbles provide substrata for the top shell [Gibbula cineraria], the whelk [Nucella lapillus] and barnacles such as [Semibalanus balanoides, Balanus crenatus], or in areas with variable salinity [Elminius modestus], and the tube-forming polychaete [Pomatoceros triqueter]. Patches of sand or mud are often characterised
Moderate energy littoral rock	Moderately exposed shores (bedrock, boulders and cobbles) characterised by mosaics of barnacles and fucoids on the mid and upper shore; with fucoids and red seaweed mosaics on the lower shore. Where freshwater or sand-scour affects the shore ephemeral red or green seaweeds can dominate. Other shores support communities of mussels and fucoids in the mid to lower shore. Two biological subtypes have been described: barnacles and fucoids (A1.21) and mussels and fucoids (A1.22).
Barnacles and fucoids on moderately exposed shores	Moderately exposed rocky shores characterised by a mosaic of fucoids and barnacles on bedrock and boulders, where the extent of the fucoid cover is typically less than the blanket cover associated with sheltered shores. Other species are normally present as well in this habtat including the winkle [Littorina littorea], the whelk [Nucella lapillus] and the red seaweed [Mastocarpus stellatus]. Beneath the band of yellow and grey lichens at the top of the shore is a zone dominated by the wrack [Pelvetia canaliculata], scattered barnacles, while the black lichen [Verrucaria maura] covers the rock surface (A1.211). Below, on the mid shore the wrack [Fucus vesiculosus] generally forms a mosaic with the barnacle [Semibalanus balanoides] and the limpet [Patella vulgata] (A1.213). Finally, the wrack [Fucus serratus], dominates the lower shore, while a variety of red seaweeds can be found underneath the[F. serratus] canopy (A1.214). A number of variants have been described: lower shore bedrock and boulders characterised by mosaics of [F. serratus] and turf-forming red seaweeds (A1.2141); where the density of [F. serratus] is gre

[Pelvetia canaliculata] and barnacles on moderately exposed littoral fringe rock	Exposed to moderately exposed steep, lower littoral fringe rock and mixed substrata characterised by the wrack [Pelvetia canaliculata] and sparse barnacles [Chthamalus montagui] and [Semibalanus balanoides]. On sheltered shores the biotope is restricted to vertical faces. The limpet [Patella vulgata] and the wrack [Fucus spiralis] are usually present as well. [P. canaliculata] typically overgrows a crust of the black lichen [Verrucaria maura] or on occasion [Verrucaria mucosa], in contrast to the red crust [Hildenbrandia rubra] on very sheltered shores. The winkle [Littorina saxatilis] is frequently present underneath the fronds of [P. canaliculata]. Some geographical variation are present and southern and western shores are typically characterised by the barnacle [C. montagui] or [Chthamalus stellatus] while [S. balanoides] dominates on northern and eastern shores. On mixed substrata the barnacle [Elminius modestus] may be present. Situation: PelB is generally found below the [V. maura] and barnacle zone (Ver.B; Ver.Ver). On exposed shores PelB is found above the biotope dominated by [F. spiralis] (Fspi) or the mussel
[Fucus vesiculosus] and barnacle mosaics on moderately exposed mid eulittoral rock	Exposed to moderately exposed mid eulittoral bedrock and boulders are frequently characterised by a mosaic of the barnacle [Semibalanus balanoides] and the wrack [Fucus vesiculosus]. The limpet [Patella vulgata] and the whelk [Nucella lapillus] are typically present, whilst the anemone [Actinia equina] and small individuals of the mussel [Mytilus edulis] are confined to crevices. Underneath the [F. vesiculosus] is a community of red seaweeds, including [Corallina officinalis, Mastocarpus stellatus] and [Osmundea pinnatifida], usually with the winkles [Littorina littorea] and [Littorina] spp. present. Opportunistic seaweeds such as [Enteromorpha intestinalis] may occur in patches recently cleared on the rock or growing on the [M. edulis]. Situation: On exposed shores FvesB is found below the black lichen [Verrucaria maura] and sparse barnacles biotope (Ver.B) and/or below the [Chthamalus] spp. and [P. vulgata] biotopes (Cht.Cht). FvesB is found above the biotope dominated by the wrack [Himanthalia elongata] (Him) or the red seaweed biotopes (Coff; R). FvesB forms an intermediate along the wave exposure gradient betwe
[Fucus serratus] on moderately exposed lower eulittoral rock	Lower eulittoral bedrock and stable boulders on moderately exposed to sheltered shores with a canopy of the wrack [Fucus serratus] and an associated fauna consisting of the limpet [Patella vulgata], the barnacle [Semibalanus balanoides], the whelk [Nucella lapillus], the anemone [Actinia equina] and the sponge [Halichondria panicea]. Green seaweeds such as [Enteromorpha intestinalis] and [Ulva lactuca] are usually present among/beneath the [F. serratus] canopy. Three variants of this biotope are described. These are: [F. serratus] with red seaweeds (Fser.R) and [F. serratus] with under-boulder communities (Fser.Bo) with sponges. Lastly, a [F. serratus] and piddocks community on soft rock has been identified (Fser.Pid). Dense [F. serratus] with fewer red seaweeds occurs on more sheltered shores (Fserr). Situation: Above the [F. serratus] biotope on moderately exposed bedrock shores is the [Fucus vesiculosus] and/or [S. balanoides] and [P. vulgata] dominated biotopes (Sem; Sem.FvesR; FvesB). On more sheltered shores are biotopes dominated by the wracks [F. vesiculosus] and [Ascophyllum nodosum] (Fv

[Fucus serratus] and red seaweeds on moderately exposed lower eulittoral rock	Moderately exposed lower eulittoral bedrock characterised by mosaics of the wrack [Fucus serratus] and turf-forming red seaweeds including [Osmundea pinnatifida], [Mastocarpus stellatus] or [Corallina officinalis]. The hydroid [Dynamena pumila] can occur in dense populations on the [F. serratus] fronds whilst the sponge [Halichondria panicea] can cover the bedrock beneath. Underneath the canopy a number of other red seaweeds may be present including [Palmaria palmata], [Lomentaria articulata],[Membranoptera alata] and [Chondrus crispus]. Green seaweeds such as [Cladophora rupestris], [Enteromorpha intestinalis] and [Ulva lactuca] are present though usually in small numbers. In addition, such shores provide a greater number of permanently damp refuges between the stones and underneath the seaweed canopy. Within these micro-habitats species such as the limpet [Patella vulgata], the barnacle [Semibalanus balanoides] or the whelk [Nucella lapillus] can be found in lower abundance than higher up the shore. If a few boulders are present then the winkle [Littorina littorea] and the crab [Carcinus maenas]
[Fucus serratus] and under-boulder fauna on exposed to moderately exposed lower eulittoral boulders	Exposed to moderalety exposed lower eulittoral boulders with the wrack [Fucus serratus] community of a high species richness as the presence of the boulders increases the micro-habitat diversity. The upper surfaces of the boulders are colonised by a very similar fauna to the other [F. serratus] biotopes, including species such as the limpet [Patella vulgata], the whelk [Nucella lapillus], the anemone [Actinia equina] and the barnacle [Semibalanus balanoides]. The shaded sides of the boulders are, depending on environmental conditions, often colonised by a variety of foliose red seaweeds, including [Mastocarpus stellatus], [Lomentaria articulata], [Osmundea pinnatifida], [Palmaria palmata] and [Chondrus crispus]. Coralline algae such as [Corallina officinalis] and coraline crusts, as well as the green seaweeds [Enteromorpha intestinalis] and [Ulva lactuca], can be found underneath the [F. serratus] canopy or in patches on the boulders. The species composition underneath the boulders varies considerably depending on the underlying substratum. On muddy shores the fauna living under the boulders may be limited to a
[Fucus serratus] and piddocks on lower eulittoral soft rock	The lower eulittoral zone on soft rock shores (e.g. chalk) characterised by the wrack [Fucus serratus]. Much of the community associated with this biotope is the same as the biotope Fserr.FS, but certain taxa are specific to the soft underlying substrata. Rock-boring fauna including the piddocks [Barnea] spp., [Pholas dactylus] and [Hiatella arctica] can occur in dense aggregations. Burrowing polychaetes such as [Polydora] spp. can also occur in high numbers only visible due to their long, slender palps waving in the water as they occupy holes in the top few centimetres of the rock. A dense red algal turf occurs beneath the [F. serratus] and includes [Gelidium pusillum], [Osmundea pinnatifida, Palmaria palmata], [Lomentaria articulata] and [Rhodothamniella floridula], but also calcareous algae such as [Corallina officinalis] and coralline crusts including the red-violet encrusting algae [Phymatolithon lenormandii] are present. Infaunal taxa such as various amphipods may be common amongst the seaweeds. The empty piddock holes may provide a refuge for species such as the anemone [Actinia equina] and the mussel [Mytilus

[Rhodothamniella floridula] on sand-scoured lower eulittoral rock	Lower eulittoral and sublittoral fringe bedrock and boulders subject to mild sand-scouring characterised by a canopy of the wracks [Fucus serratus] or [Fucus vesiculosus], beneath which a mat of the sand-binding red seaweed [Rhodothamniella floridula] occurs. These mats can form distinct areas without [F. serratus]. The small hummocks of [R. floridula] also contain a diversity of other red seaweeds tolerant of sand scour, e.g. [Palmaria palmata, Chondrus crispus], coralline crusts and [Mastocarpus stellatus]. The brown seaweed [Cladostephus spongiosus] or the ephemeral green seaweed [Enteromorpha intestinalis], [Ulva lactuca] or [Cladophora rupestris] may occur. The hydroid [Dynamena pumila] can form colonies on the [F. serratus] fronds. The barnacle [Semibalanus balanoides], the limpet [Patella vulgata], the anemone [Actinia equina] and the polychaete [Pomatoceros triqueter] may be present where bedrock are available along with a few winkles such as [Littorina littorea]. In addition, polychaetes and amphipods may burrow into the [R]. [floridula] mat, while the mussel [Mytilus edulis] is restricted to
Mussels and fucoids on moderately exposed shores	Mid and lower eulittoral exposed to moderately exposed bedrock, often with nearby sediment, may be densely covered by large individuals of the mussel [Mytilus edulis]. Three biotopes have been described: In the mid eulittoral, the mussels may form a band or large patches with scattered bladder wrack [Fucus vesiculosus] (A1.221). In the lower eulittoral a range of red seaweeds including [Mastocarpus stellatus] and [Palmaria palmata] occur amongst the mussels (in higher abundance than the mid eulittoral) (A1.222). Clay outcrops in the mid to lower eulittoral may be bored by a variety of piddocks including [Pholas dactylus], [Barnea candida] and [Petricola pholadiformis], while the surface is characterised by small clumps of the mussel [M. edulis], the barnacle [Elminius modestus] and the winkle [Littorina littorea] (A1.223). Ephemeral green seaweeds such as [Enteromorpha intestinalis] and [Ulva lactuca] commonly occur on the shells of the mussels. Barnacles are common on both the mussel valves and on patches of bare rock, where the limpet [Patella vulgata] is found as well, often at high abundance. The whelk [Nu
[Mytilus edulis] and [Fucus vesiculosus] on moderately exposed mid eulittoral rock	Mid eulittoral exposed to moderately exposed bedrock, often with nearby sediment, covered by a dense band or large patches of the mussel [Mytilus edulis]. The community often supports scattered [Fucus vesiculosus] and occasional foliose red seaweeds such as [Porphyra umbilicalis, Osmundea pinnatifida, Mastocarpus stellatus], [Palmaria palmata] or the calcareous algae [Corallina officinalis] . The ephemeral green seaweeds [Enteromorpha intestinalis] and [Ulva lactuca] commonly occur on the shells of the mussels. The barnacle [Semibalanus balanoides] is common on both the mussel valves and on patches of bare rock, where the limpet [Patella vulgata] also can be found. The whelk [Nucella lapillus] and the winkle [Littorina littorea] can be found within the mussel bed. Situation: Above this biotope is a [M. edulis] and [S. balanoides] dominated biotope (Sem) or a [F. vesiculosus] dominated biotope (FvesB). In the lower eulittoral zone below MytFves is a biotope dominated by the wrack [Fucus serratus, M. edulis] and a higher diversity of red seaweeds (MytFR; Fser.R).

[Mytilus edulis], [Fucus serratus] and red seaweeds on moderately exposed lower eulittoral rock	Lower eulittoral moderately exposed bedrock covered by a dense community of large individuals of the mussel [Mytilus edulis], often with a scarce covering of the wrack [Fucus serratus] and red seaweeds. The red seaweeds may include [Palmaria palmata], [Mastocarpus stellatus], [Ceramium] spp., [Audouinella] spp. and [Chondrus crispus]. Ephemeral green seaweeds such as [Enteromorpha intestinalis] and [Ulva lactuca] commonly occur on the shells of the mussels. The barnacle [Semibalanus balanoides] is common on both the mussel valves and on patches of bare rock, where the limpet [Patella vulgata] is also found, often at high abundance. The whelk [Nucella lapillus] and the winkle [Littorina littorea] occur within the mussel bed, as well as the polychaete [Pomatoceros triqueter] and the crab [Carcinus maenas]. The anemone [Actinia equina] is present in cracks and crevices. These moist areas can be overgrown by coralline crusts. Situation: Above this biotope on sand influenced shores is a [M. edulis] and [F. vesiculosus] dominated biotope (MytFves). In the sublittoral fringe below MytFR is a biotope dominated by
[Mytilus edulis] and piddocks on eulittoral firm clay	Clay outcrops in the mid to lower eulittoral which are bored by a variety of piddocks including [Pholas dactylus], [Barnea candida] and [Petricola pholadiformis]. The surface of the clay is characterised by small clumps of the mussel [Mytilus edulis], the barnacle [Elminius modestus] and the winkle [Littorina littorea]. Seaweeds are generally sparse on the clay, although small patches of the red seaweeds [Mastocarpus stellatus], [Halurus flosculosus] and [Ceramium] spp. can occur, usually attached to loose-lying cobble or mussel shells. Also the green seaweeds [Enteromorpha] spp. and [Ulva lactuca] may be present. The sand mason [Lanice conchilega] can sometimes be present in the clay, while the shore crab [Carcinus maenas] is present as well. More data are required to validate this description. Situation: MytPid can usually be found beneath a [M. edulis] or barnacle and [Littorina] spp.-dominated biotope (Myt.Myt; BLitX). It is found above a [Laminaria digitata] and piddocks-dominated biotope (Ldig.Pid). Temporal variation: The [C.
Low energy littoral rock	Sheltered to extremely sheltered rocky shores with very weak to weak tidal streams are typically characterised by a dense cover of fucoid seaweeds which form distinct zones (the wrack [Pelvetia canaliculata] on the upper shore through to the wrack [Fucus serratus] on the lower shore). Where salinity is reduced (such as at the head of a sea loch or where streams run across the shore) [Fucus ceranoides] may occur. Fucoids also occur on less stable, mixed substrata (cobbles and pebbles on sediment) although in lower abundance and with fewer associated epifaunal species; beds of mussels [Mytilus edulis] are also common. In summer months, dense blankets of ephemeral green and red seaweeds can dominate these mixed shores. Two biological subtypes have been described: Dense blankets of fucoid seaweeds dominating sheltered, fully marine littoral rocky shores (A1.31) and fucoids dominating variable salinity rocky shores (A1.32).

[Pelvetia canaliculata] on sheltered littoral fringe rock	Lower littoral fringe bedrock or stable boulders and mixed substrata in sheltered to extremely sheltered conditions characterised by a dense cover of the wrack [Pelvetia canaliculata]. The biotope may be present in localised sheltered patches on moderately exposed shores. [P. canaliculata] overgrows a crust of black lichens [Verrucaria maura] or the non-calcified red algae [Hildenbrandia rubra] on very sheltered shores. Individuals of the wrack [Fucus spiralis] can usually be found among the [P. canaliculata] and/or in lower part of the biotope. This biotope lacks the density of barnacles found amongst the [P. canaliculata] on more exposed shores. The winkle [Littorina saxatilis] occurs, as do a variety of amphipods. The red alga [Catenella caespitosa] can be present especially in more shaded areas while the green seaweed [Enteromorpha] spp. can be present in moist areas. Situation: This biotope is found in the lower littoral fringe on sheltered shores below biotopes dominated by [V. maura] (Ver.Ver) and above biotopes
[Fucus spiralis] on sheltered upper eulittoral rock	Sheltered upper eulittoral bedrock is typically characterised by a band of the spiral wrack [Fucus spiralis] overlying the black lichen [Verrucaria maura]. Underneath the fronds of [F. spiralis] and the occasional [Pelvetia canaliculata] is a community consisting of the limpet [Patella vulgata], the winkles [Littorina saxatilis] and [Littorina littorea] and the barnacle [Semibalanus balanoides]. The rock surface can often be covered by the red crust [Hildenbrandia rubra]. During the summer months the ephemeral green seaweed [Enteromorpha intestinalis] can be common. Two variants have been described: Upper eulittoral bedrock characterised by [F. spiralis], the black lichen [Verrucaria maura] and the olive green lichen [Verrucaria mucosa] (Fspi.FS). Upper eulittoral mixed substrata characterised by [F. spiralis] with occasional clumps of the wrack [Pelvetia canaliculata] (Fspi.X). Note that a [F. spiralis] biotope in variable salinity conditions (FspiVS) has also been descibed. Situation: This zone usually lies below a zone dominated by the wrack [Pelvetia
[Fucus vesiculosus] on moderately exposed to sheltered mid eulittoral rock	Moderately exposed to very sheltered mid eulittoral bedrock and large boulders characterised by a dense canopy of the wrack [Fucus vesiculosus] (Abundant to Superabundant). Beneath the seaweed canopy the rock surface has a sparse covering of the barnacle [Semibalanus balanoides] and the limpet [Patella vulgata]. The mussel [Mytilus edulis] is confined to pits and crevices. A variety of winkles including [Littorina littorea] and [Littorina saxatilis] can be found grazing on the fucoid fronds. The whelk [Nucella lapillus] is found beneath the seaweed canopy. In areas of localised shelter the wrack [Ascophyllum nodosum] may occur, though never at high abundance. The crab [Carcinus maenas] may be present in pools or among the boulders. Two variants have been described: Bedrock and large boulders (Fves.FS) and mixed substrata (Fves.X). Please notice that a [F. vesioculosus] biotope subject to variable salinity (FvesVS) has been identified. Situation: This biotope usually occurs between the wrack [Fucus spiralis] (Fspi) and the [Fucus serratus] (Fserr) zones; both of these fucoids may

[Fucus vesiculosus] on mid eulittoral mixed substrata	Sheltered and very sheltered mid eulittoral pebbles and cobbles lying on sediment in fully marine conditions typically characterised by the wrack [Fucus vesiculosus]. The wrack [Ascophyllum nodosum] can occasionally be found on larger boulders while the barnacle [Semibalanus balanoides] and the limpet [Patella vulgata] also can be present on the cobbles with the whelk [Nucella lapillus] preying on the barnacles and on the mussel [Mytilus edulis]. Winkles, particularly [Littorina littorea] and [Littorina obtusata], commonly graze the biofilm on the seaweeds, while [Littorina saxatilis] can be found in crevices. Ephemeral seaweeds such as [Enteromorpha intestinalis] may be present in this biotope. The sediment between patches of hard substrata often contains the polychaete [Arenicola marina] or the polychaete [Lanice conchilega], while a variety of gastropods and the crab [Carcinus maenas] occur on and under cobbles. Situation: Fves.X can be found below the biotope dominated by the wrack [Fucus spiralis] (Fspi.X) or a community dominated by [S. balanoides], [P. vulgata] and [L. littorea] (BLitX). It is found above a comm
[Ascophyllum nodosum] on very sheltered mid eulittoral rock	Sheltered to extremely sheltered mid eulittoral rock with the wrack [Ascophyllum nodosum]. The red seaweed [Polysiphonia lanosa] is often found growing as an epiphyte on the [A. nodosum] fronds while disturbed areas among the [A. nodosum] is colonised by the wrack [Fucus vesiculosus] and the green seaweed [Enteromorpha intestinalis].e barnacle [Semibalanus balanoides], the limpet [Patella vulgata] and [Littorina littorea] can all be found on the bedrock underneath the [A. nodosum] canopy along with coralline crusts. The whelk [Nucella lapillus] can be found preying on the barnacles and limpets. Three variants of this biotope are described. These are: full salinity (Asc.FS), mixed substrata (Asc.X) and the loose lying growth form [A. nodosum] ecad [mackaii] found on very sheltered shores (Asc.mac). To other biotopes has been identified as well tide-swept (AscT) and variabel salinity (AscVS). Situation: This biotope is usually found between the wrack [Fucus spiralis] (Fspi) and [F. serratus] dominated biotopes (Fserr), although on some shores a narrow zone of [F. vesiculosus] (Fves) may occur immedia
[Ascophyllum nodosum] on full salinity mid eulittoral rock	Bedrock, stable boulders and cobbles in the mid-eulittoral zone of moderately exposed to extremely sheltered shores, in fully marine conditions, characterised by a dense canopy of the wrack [Ascophyllum nodosum]. Another wrack [Fucus vesiculosus] may in some places co-dominate the canopy. The hydroid [Dynamena pumila] can form colonies on the wracks [F. vesiculosus] and [Fucus serratus]. Variations in the ratio of [A. nodosum] and [F. vesiculosus] in the overlying canopy have little effect on the under-storey species. Beneath the canopy are a diverse array of filamentous and foliose red seaweeds, including [Mastocarpus stellatus, Chondrus crispus, Gelidium pusillum] and coralline crusts. The filamentous red seaweed [Polysiphonia lanosa] is usually present on [A. nodosum] as an epiphyte. A few green seaweeds including [Cladophora rupestris] and [Enteromorpha] spp. are also present in moderate to low densities. On the bedrock and boulders beneath the seaweed canopy is a fauna including the barnacle [Semibalanus balanoides], the limpet [Patella vulgata], tube-forming

[Ascophyllum nodosum] on full salinity mid eulittoral mixed substrata	Sheltered to extremely sheltered full salinity mixed substrata (cobbles, boulders and pebbles on sediment) characterised by a canopy formed by a mosaic of the wracks [Ascophyllum nodosum] and [Fucus vesiculosus]. The red seaweed [Polysiphonia lanosa] can often be found as an epiphyte on the [A. nodosum]. The mussel [Mytilus edulis] often occurs in clumps, and provides further suitable substrata for the attachment of fucoids and red and green seaweeds such as [Polysiphonia] spp. and [Enteromorpha intestinalis] or the barnacle [Semibalanus balanoides]. Winkles are common and [Littorina littorea] and [Littorina obtusata/mariae] may occur in high densities, while species such as the limpet [Patella vulgata], the crab [Carcinus maenas] and the whelk [Nucella lapillus] may occur on and around the boulders. Gammarids can be found underneath the boulders or among the seaweeds, while tube-forming spirorbids are found on the boulders, shells or on the [F. vesiculosus]. Infaunal species including the polychaetes [Arenicola marina] and [Lanice conchilega] may occur in the sediment between the c
[Fucus serratus] on full salinity sheltered lower eulittoral rock	Sheltered lower eulittoral rock subject to fully marine conditions characterised by a dense canopy of the wrack [Fucus serratus]. There is a wide range of associated species found on the surface of the rock underneath the canopy, including the barnacle [Semibalanus balanoides], limpets [Patella vulgata], winkles [Littorina littorea], and even mussels [Mytilus edulis] can be present in cracks and crevices. These species are usually found in higher abundance further up on the shore. There may also be a number of other seaweeds present, including the red [Corallina officinalis] and [Mastocarpus stellatus], the wrack [Fucus vesiculosus] and the green [Enteromorpha intestinalis], [Ulva lactuca] or [Cladophora rupestris], though these usually are present in low numbers if present at all. The sponge [Halichondria panicea] can be present underneath the [F. serratus] canopy in moist cracks or minor overhangs. Polychaetes such as [Pomatoceros triqueter] and [Spirorbis] spp. are present in their white calcareous tubes on the rock. Situation: This biotope usually occurs immediately below a [Fucus vesiculosus]-barnacle
[Fucus serratus] on full salinity lower eulittoral mixed substrata	Sheltered to extremely sheltered full salinity lower eulittoral mixed substrata with dense stands of the wrack [Fucus serratus]. The crab [Carcinus maenas] and a large number of winkles such as [Littorina littorea] and [Littorina obtusata/mariae] can be found amongst the pebbles and cobbles as well as large individuals of the mussel [Mytilus edulis], commonly occurring in clumps. On these mussels and on larger cobbles are the barnacle [Semibalanus balanoides] and the limpet [Patella vulgata]. Red algae such as coralline crusts including [Lithothamnion] spp. and the tube-forming polychaetes [Pomatoceros triqueter] and [Spirorbis] spp. can be found on cobbles and boulders. [Spirorbis] spp. can also be found on the [F. serratus] fronds. Sediment in the spaces between the loose substrata may support infauna including the polychaete [Arenicola marina]. The red seaweed [Mastocarpus stellatus] and the wrack [Ascophyllum nodosum] can occur in patches, while the green seaweeds [Enteromorpha intestinalis] and [Cladophora] spp. can be found among the mussels and underneath the [F. serratus] ca

[Ascophyllum nodosum] and [Fucus vesiculosus] on variable salinity mid eulittoral rock	Very sheltered to extremely sheltered mid eulittoral bedrock, boulders or cobbles subject to variable salinity characterised by an impoverished community dominated by a mixture of the wracks [Ascophyllum nodosum] and [Fucus vesiculosus]. Underneath the canopy are a few green seaweeds including [Enteromorpha intestinalis] and [Cladophora] spp., while the red seaweed [Polysiphonia lanosa] can be found as an epiphyte on [A. nodosum]. On the rock and among the boulders are the winkles [Littorina littorea] and [Littorina saxatilis], the crab [Carcinus maenas], the barnacles [Semibalanus balanoides] and [Elminius modestus] and even the occasional mussel [Mytilus edulis]. Among the seaweeds and underneath the boulders a variety of gammarids can be found. Situation: This biotope usually lies below the [Fucus spiralis] biotope (Fspi.VS) or the [Fucus ceranoides] dominated biotopes (Fcer) and above the variable salinity [F. serratus] dominated biotope (Fserr.VS), although on some shores a narrow zone of [F. vesiculosus] (Fves) may occur immediately above the [A. nodosum]. With increasing w
[Ascophyllum nodosum] ecad. [mackaii] beds on extremely sheltered mid eulittoral mixed substrata	Extremely sheltered mid shore mixed substrata, usually subject to variable salinity due to freshwater runoff, which support beds of the non-attached growth form of the wrack [Ascophyllum nodosum] ecad [mackaii]. Cobbles and other hard substrata are often characterised by the normal form of [A. nodosum] with the red seaweed [Polysiphonia lanosa] growing as an epiphyte and other fucoids such as [Fucus vesiculosus]. The loose mats of [A. nodosum] ecad [mackaii] provide a cryptic and humid habitat for mobile species including gammarids, the crab [Carcinus maenas] and the winkles [Littorina littorea, Littorina obtusata] and [Littorina saxatilis]. The barnacle [Semibalanus balanoides] and the mussel [Mytilus edulis] are commonly attached to pebbles and cobbles on the sediment, while the infauna may contain the polychaetes [Arenicola marina] and [Lanice conchilega]. NB: This biotope is a BAP-habitat. Situation: Occurs in extremely sheltered conditions at the heads of Scottish sea lochs (but is also known from other sheltered areas). Temporal variation: [A. nodosum ecad mackaii] develops initially from bro
[Fucus serratus] and large [Mytilus edulis] on variable salinity lower eulittoral rock	Areas of very sheltered lower eulittoral rock or mixed substrata subject to variable salinity, which support an impoverished community dominated by the wrack [Fucus serratus]. The hydroid [Dynamena pumila] can form colonies on the [F. serratus] and clumps of large individuals of the mussel [Mytilus edulis] may be present on the bedrock beneath. The canopy of [F. serratus] is not usually as dense as in the other [F. serratus] dominated biotopes due the presence of the wracks [Ascophyllum nodosum] and [Fucus vesiculosus], which are better adapted to the variable salinity. A few red seaweeds are present which includes the species [Mastocarpus stellatus], [Chondrus crispus] and coralline crusts. Underneath the canopy is a sparse fauna consisting of barnacles [Semibalanus balanoides, Balanus crenatus] and [Elminius modestus], the limpet [Patella vulgata] or the occasional presence of the winkles [Littorina obtusata] and [Littorina mariae] and the crab [Carcinus maenas]. The tube-forming polychaetes [Pomatoceros triqueter] or spirorbid polychaetes can be found. In areas (such as the Scottish sea loc

Communities of littoral rockpools	Rockpools occur where the topography of the shore allows seawater to be retained within depressions in the bedrock producing 'pools' on the retreat of the tide. As these rockpool communities are permanently submerged they are not directly affected by height on the shore and normal rocky shore zonation patterns do not apply. For this reason rockpools have been dealt with as a separate habitat type, apart from the scheme of wave exposure and shore height. Four main rockpool biotopes have been described, and although it is accepted that an enormous variety of rockpool communities exist, it is hoped that these biotope descriptions are broad enough to adequately encompass most types. It would be meaningless to include the characterising species in a description at the habitat type level. Rockpools on the upper shore which are subject to rainwater influence and wide fluctuations in temperature are included in A1.42. Shallow rockpools in the mid to upper shore characterised by encrusting coralline algae and [Corallina officinalis]
Coralline crust-dominated shallow eulittoral rockpools	Shallow and smaller rockpools throughout the eulittoral zone in a wide range of wave exposures characterised by a covering of encrusting coralline algae on which [Corallina officinalis] often forms a dense turf. The bottom of these pools can be covered in coarse gravel and cobbles. These 'coralline' pools have a striking appearance as they are dominated by red seaweeds. Foliose red seaweeds found in these pools include [Mastocarpus stellatus, Chondrus crispus] and the filamentous [Ceramium nodulosum]. The ephemeral green seaweeds [Cladophora rupestris, Ulva lactuca] and [Enteromorpha] spp. can also occur in high abundance. The pools may hold large numbers of grazing molluscs, particularly the winkle [Littorina littorea] (which often occur in exceptionally high densities in upper shore pools) and the limpet [Patella vulgata]. Gastropods may graze these pools to such an extent that they is devoid of any foliose red seaweeds, and the flora are reduced to encrusting coralline algae and large numbers of gastropods. Large brown seaweeds are generally absent. Within the pools, pits and crevices are of
Coralline crusts and [Paracentrotus lividus] in shallow eulittoral rockpools	Shallow and relatively small rockpools throughout the eulittoral zone on very exposed to exposed shores, characterised by a covering of encrusting coralline algae on which [Corallina officinalis] forms a dense turf. The bottom of these pools can be covered in coarse gravel and cobbles. In south and west Ireland these coralline pools may be dominated by the sea urchin [Paracentrotus lividus] and the seaweed diversity is generally low due to the grazing pressure of [P. lividus], the top shells [Gibbula cineraria] and [Gibbula umbilicalis], and winkles such as [Littorina littorea]. Within the pools, pits and crevices are often occupied by the anemone such as [Actinia equina] and [Anemonia viridis] and small individuals of the mussel [Mytilus edulis]. The siphonous green seaweed [Codium] spp. can also be present along with the wrack [Himanthalia elongata] and the brown seaweed [Leathesia difformis] and the filamentous red seaweed [Ceramium] spp. The barnacle [Semibalanus balanoides] is either absent or occurs at low abundance in these rockpools, presumably due to the grazing pressure on the larval sta

[Bifurcaria bifurcata] in shallow eulittoral rockpools	Eulittoral rockpools in south-west Britain on very exposed to moderately exposed shores dominated by the brown seaweed [Bifurcaria bifurcata] and encrusting coralline algae and [Corallina officinalis]. Kelps are present and include the species [Laminaria digitata], [Laminaria saccharina] and the wrack [Himanthalia elongata]. Underneath the canopy formed by these species is a high diversity of red seaweeds including the foliose species [Chondrus crispus], [Palmaria palmata], [Osmundea pinnatifida] and [Mastocarpus stellatus]. Other red seaweeds include [Gastroclonium ovatum], [Ceramium nodulosum], [Calliblepharis jubata] and [Mesophyllum lichenoides]. The green seaweeds [Ulva lactuca] and [Enteromorpha intestinalis] occur where space allows. Often found in small cracks and crevices are the anemones [Actinia equina] and [Anemonia viridis], while the limpet [Patella vulgata] can be found on the rock surface. Coarse gravel, cobbles and mobile boulders often cover the bottom of these rockpools, where [Gibbula umbilicalis] can be found. Situation: Rockpools throughout the eulittoral to the upper littoral fr
[Cystoseira] spp. in eulittoral rockpools	Eulittoral rockpools on exposed to moderately exposed south-western shores dominated by the brown alga [Cystoseira] spp. (including [Cystoseira tamariscifolia]), coralline crusts and [Corallina officinalis]. These pools generally support dense red algal growth comprising: [Ceramium] spp., [Calliblepharis jubata], [Chondrus crispus], [Osmundea pinnatifida] and [Gelidium latifolium]. Wracks such as [Himanthalia elongata] and the epiphytic brown seaweed [Colpomenia peregrina] are present while the kelp [Laminaria digitata] can occupy the deeper parts of the pool. The green seaweeds [Enteromorpha intestinalis] and [Ulva lactuca] are usually present as well. The pools usually contain some sand and pebbles at the base of the pool while spirorbid polychaetes and [Pomatoceros] spp. build their tubes on any small boulders present. In addition, these pools can support high numbers of grazing gastropods including the top shells [Gibbula cineraria] and [Gibbula umbilicalis] but also the limpet [Patella vulgata], while sponges such [Hymeniacidon perleve] and [Halichondria panicea] can be found overgrowing the small b
Fucoids and kelp in deep eulittoral rockpools	Deep or larger rockpools in the mid to lower eulittoral zone on exposed to moderately exposed shores characterised by the wrack [Fucus serratus] and the kelp [Laminaria digitata] and the red seaweed [Corallina officinalis] while encrusting coralline algae cover the rock surface. Other large brown seaweeds, including the kelp [Laminaria saccharina] and [Halidrys siliquosa] may also occur. A wide variety of filamentous and foliose seaweeds occur beneath the brown algal canopy. The species includes the red seaweeds [Palmaria palmata], [Chondrus crispus, Mastocarpus stellatus, Ceramium nodulosum] and [Dumontia contorta], but green seaweeds such as [Enteromorpha intestinalis], [Ulva lactuca] and [Cladophora rupestris] can be present as well. Algal-free vertical and overhanging faces often support the sponge [Halichondria panicea] and anemones including [Actinia equina] and [Urticina felina]. Grazing molluscs including the limpet [Patella vulgata], the top shell [Gibbula cineraria] and the winkle [Littorina littorea] are present on the rock surface while the mussel [Mytilus edulis] can be found in cracks and crevi

[Sargassum muticum] in eulittoral rockpools	Shallow rockpools throughout the eulittoral zone on exposed to moderately exposed shores dominated by the brown seaweed [Sargassum muticum] and the red seaweed [Corallina officinalis]. Other brown seaweeds, including the kelp [Laminaria saccharina, Laminaria digitata] and the wrack [Fucus serratus] may occur along with [Dictyota dichotoma], but [S. muticum] always dominates. Underneath the canopy is a rich red seaweed community which includes both foliose and filamentous species such as [Palmaria palmata], [Chondrus crispus], [Lomentaria articulata], [Osmundea pinnatifida], [Ceramium] spp. and [Dumontia contorta]. Encrusting coralline algae and [Hildenbrandia rubra] often cover the rock surface. The foliose green seaweed [Ulva lactuca] is usually present in high abundance growing on the mobile gravel and boulders on the bottom of the rockpools, often along with other ephemeral green seaweeds such as [Cladophora rupestris] and [Enteromorpha intestinalis]. The winkle [Littorina littorea], the limpet [Patella vulgata] and the top shells [Gibbula cineraria] and [Gibbula
Seaweeds in sediment-floored eulittoral rockpools	Rockpools with sediment (mud, sand, gravel) floors support distinct communities of scour-tolerant seaweeds. Deep pools with sediment are similar to FK, and are typically dominated by fucoids and kelp ([Fucus serratus], [Laminaria digitata], [Laminaria saccharina] and [Saccorhiza polyschides]). Areas of hard substrata near to the interface with the sediment are, however, characterised by a range of sand-tolerant seaweeds such as [Furcellaria lumbricalis], [Polyides rotundus], [Ahnfeltia plicata] and [Rhodochorton purpureum] (compare with FK). [Chorda filum] may occur attached to pebbles and shells embedded within the sediment while the top shell [Gibbula cineraria] can be found underneath or among the pebbles. In pools with large areas of sand, infaunal species such as [Arenicola marina] and [Lanice conchilega] often occur. The seagrass [Zostera] spp. may occur in some pools where stable sand is present. Shallow rockpools with cobble and pebble floors, often with an underlying layer of sediment, support red algal tufts consisting of coralline crust, [Corallina officinalis], [Chondrus crispus], [Ma
Hydroids, ephemeral seaweeds and [Littorina littorea] in shallow eulittoral mixed substrata pools	Shallow pools on mixed cobbles, pebbles, gravel and sand characterised by abundant hydroids. Species present may include [Obelia geniculata], [O. dichotoma], [O. longissima], [Sertularia cupressina], [Tublaria indivisa] and [Thuiaria thuja]. The difficulty in identifying hydroids suggests many more species may be also be present. Other species typically found in this biotope include ephemeral green algae ([Enteromorpha] spp. and [Ulva] sp.), red algae ([Chondrus crispus] and Coralline algae) and the winkle [Littorina littorea]. Within the pools, patches of sand may be occupied by the lugworm [Arenicola marina] and sand mason worms [Lanice conchilega]. These pools are often associated with mussel beds (MytX), with [Mytilus edulis] frequently recorded within the pools. Barnacles ([Semibalanus balanoides] and [Elminius modestus]) and the keel worm [Pomatoceros triqueter] may be attached to shells and small stones. Mobile species typical of rock pool habitats, such as [Crangon crangon] and [Pomatoschistus minutus] will also be found within the pool.

Green seaweeds (Enteromorpha spp. and Cladophora spp.) in shallow upper shore rockpools	Rockpools in the littoral fringe or upper eulittoral zone subject to widely fluctuating temperatures and salinity are characterised by ephemeral green alga of the genus [Enteromorpha], along with [Cladophora] spp. and [Ulva lactuca]. Due to the physical stress imposed on these upper shore pools, grazing molluscs such as the limpet [Patella vulgata] and the winkles [Littorina littorea] and [Littorina saxatilis] are generally in lower abundance than eulittoral pools, allowing the green seaweeds to proliferate under reduced grazing pressures. The bright orange copepod [Tigriopus fulvus] is tolerant of large salinity fluctuations and may occur in large numbers in these upper shore pools, along with gammarid amphipods. Situation: Rockpools throughout the upper eulittoral and lower littoral fringe in bedrock. Temporal variation: Fluctuations especially in the abundance of the green seaweeds will occur due to marked changes in salinity and temperature during the year. [Enteromorpha intestinalis] can often be bleached during the summer.
Communities of littoral caves and overhangs	Where caves and overhangs occur on rocky shores, the shaded nature of the habitat diminishes the amount of desiccation suffered by biota during periods of low tides which allows certain species to proliferate. In addition, the amount of scour, wave surge, sea spray and penetrating light determines the unique community assemblages found in upper, mid and lower shore caves and overhangs on the lower shore. Biotopes from the surrounding shore such as A1.111, A1.113 or any of the fucoid communities occasionally extend into cave entrances. A1.113 often extends some way into the cave. Other open shore biotopes may also be found within caves, such as the green seaweed [Prasiola stipitata] on cave roofs where birds roost (B3.112), and localised patches of green algae where freshwater seepage influences the rock (A1.451). Rockpools containing encrusting coralline algae (A1.411), fucoids and kelp (A1.412) and hydroids and littorinid molluscs may occur also on the floor of cave entrances. The cave biotope descriptions are largely based on data obtained from surveys of Berwickshire caves (ERT,2000), chalk c
Sponges and shade-tolerant red seaweeds on overhanging lower eulittoral bedrock and in cave entrances	Overhanging shaded bedrock on the open lower shore and at the entrance to inner reaches of caves (where light availability permits), which is not subject to appreciable wave-surge, characterised by a shade-tolerant red seaweed community. It includes foliose species such as [Plumaria plumosa, Palmaria palmata, Mastocarpus stellatus, Membranoptera alata] and [Osmundea pinnatifida], but [Lomentaria articulata] and coralline crusts are usually present as well. The foliose green seaweed [Ulva lactuca] can be present. The rock surface often supports dense populations of calcareous tube-forming polychaetes [Spirorbis] spp. and [Pomatoceros] spp., while sponges such as [Grantia compressa], [Halichondria panicea] and [Hymeniacidon perleve] can be common. The hydroid [Dynamena pumila] (normally found on fucoids) hangs in distinct form from overhanging rock. Colonies of the ascidian [Botryllus schlosseri] can be found on the rock, along with the mussel [Mytilus edulis] and the barnacles [Semibalanus balanoides] and [Balanus perforatus] (the latter may occur at high densities in the south

Sponges, bryozoans and ascidians on deeply overhanging lower shore bedrock or caves	Overhanging, and shaded vertical, bedrock on the lower shore and in lower shore caves, which is not subject to appreciable wave-surge, characterised by crusts of bryozoans including [Umbonula littoralis], sponges such as [Grantia compressa], [Halichondria panicea, Scypha ciliata] and [Hymeniacidon perleve] and the ascidian [Botryllus schlosseri]. On overhangs, the hydroid [Dynamena pumila] hangs in distinct form from overhanging rock. The barnacles [Balanus crenatus], [Balanus perforatus] (sometimes at high densities) and [Semibalanus balanoides], and the calcareous tube-forming polychaetes [Spirorbis] spp. and [Pomatoceros triqueter] can be present as well. Certain species which are generally confined to the sublittoral, including the anemones [Metridium senile] and [Corynactis viridis], may be found in the lower shore caves and overhangs. Littoral species such as [Actinia equina] are also present. The only algae present are coralline crusts. The list of characterising species partly reflects the variation in the species composition between individual overhangs and caves although this biotop
[Enteromorpha] spp. on freshwater-influenced and/or unstable upper eulittoral rock	Upper shore hard substratum that is relatively unstable (e.g. soft rock) or subject to considerable freshwater runoff is typically very species poor and characterised by a dense mat of [Enteromorpha] spp., though [Ulva lactuca] can occur as well. It occurs in a wider zone spanning from the supralittoral down to the upper eulittoral, across a wide range of wave exposures range. This biotope is generally devoid of fauna, except for occasional limpets [Patella vulgata], winkles [Littorina littorea] or [Littorina saxatilis] and barnacles [Semibalanus balanoides]. Situation: This band of green seaweeds is usually found above a zone dominated by a mixture [Enteromorpha] spp. and [Porphyra] spp. (EntPor) or a [Fucus spiralis] or [Fucus ceranoides] zone (Fspi; Fcer), and may replace the [Pelvetia canaliculata] zone (PelB). It can be found below a zone dominated by yellow and grey lichens. In very sheltered areas the seagrass [Ruppia maritima] can be found above this biotope while different wracks such as [Fucus] spp. can dominate the zone below (Rup; Asc; Fspi). Temporal variation: Seasonal fluctuations in the abunda
[Porphyra purpurea] or [Enteromorpha] spp. on sand-scoured mid or lower eulittoral rock	Exposed and moderately exposed mid-shore bedrock and boulders occurring adjacent to areas of sand which significantly affects the rock. As a consequence of sand-abrasion, wracks such as [Fucus vesiculosus] or [Fucus spiralis] are scarce and the community is typically dominated by ephemeral red or green seaweeds, particularly the foliose red seaweed [Porphyra purpurea] and green seaweeds such as [Enteromorpha] spp. Under the blanket of ephemeral seaweeds, the barnacles [Semibalanus balanoides] or [Elminius modestus] and the limpet [Patella vulgata] may occur in the less scoured areas, along with the occasional winkles [Littorina littorea] and [Littorina saxatilis]. Few other species are present. Situation: Usually found below the species impoverished biotope dominated by [Enteromorpha] spp. (Ent) and above the [F. spiralis] zone (Fspi). It may replace the zone dominated by the wrack [Pelvetia canaliculata] (PelB). In areas where sand abrasion is less severe, the sand-binding red alga [Rhodothamniella floridula] occurs with other sand-tolerant seaweeds and the wrack [Fucus serratus] (Rho),

Littoral sediment	Littoral sediment includes habitats of shingle (mobile cobbles and pebbles), gravel, sand and mud or any combination of these which occur in the intertidal zone. Littoral sediment is defined further using descriptions of particle sizes - mainly gravel (16-4 mm), coarse sand (4-1 mm), medium sand (1-0.25 mm), fine sand (0.25-0.063 mm) and mud (less than 0.063 mm) and various admixtures of these (and coarser) grades - muddy sand, sandy mud and mixed sediment (cobbles, gravel, sand and mud together). Littoral sediments support communities tolerant to some degree of drainage at low tide and often subject to variation in air temperature and reduced salinity in estuarine situations. Very coarse sediments tend to support few macrofaunal species because these sediments tend to be mobile and subject to a high degree of drying when exposed at low tide. Finer sediments tend to be more stable and retain some water between high tides, and therefore support a greater diversity of species. Medium and fine sand shores usually support a range of oligochaetes, polychaetes, and burrowing crustaceans, and even more st
Littoral coarse sediment	Littoral coarse sediments include shores of mobile pebbles, cobbles and gravel, sometimes with varying amounts of coarse sand. The sediment is highly mobile and subject to high degrees of drying between tides. As a result, few species are able to survive in this environment. Beaches of mobile cobbles and pebbles tend to be devoid of macroinfauna, while gravelly shores may support limited numbers of crustaceans, such as [Pectenogammarus planicrurus]. Situation: Littoral coarse sediments are found along relatively exposed open shores, where wave action prevents finer sediments from settling. Coarse sediments may also be present on the upper parts of shores where there are more stable, sandy biotopes on the lower and mid shore. Temporal variation: The sediment particle size structure may vary seasonally, with relatively finer sediments able to settle during calmer conditions in summer. Where the sediment grain size is very large (at the interface between sediment and boulder shores), cobbles may be mobile during exposed winter conditions, but stable enough during summer months to support limited juvenile rocky sh
Barren littoral shingle	Shingle or gravel shores, typically with sediment particle size ranging from 4 - 256 mm, sometimes with some coarse sand mixed in. This biotope is normally only found on exposed open coasts in fully marine conditions. Such shores tend to support virtually no macrofauna in their very mobile and freely draining substratum. The few individuals that may be found are those washed into the habitat by the ebbing tide, including the occasional amphipod or small polychaete. Situation: BarSh often extends over the whole shore, sometimes extending into the subtidal zone. BarSh may occur on the upper shore above BarSa, and in moderately exposed conditions, above AmSco on the lower shore. Tal may occur on the same shore as BarSh, where driftlines of algae and other debris accumulate on the upper shore. Temporal variation: There may be a temporary cover of the green seaweeds [Enteromorpha] spp. or [Ulva] spp. during periods of stability in the summer.

[Pectenogammarus planicrurus] in mid shore well-sorted gravel or coarse sand	Shores of well-sorted gravel with a predominant particle size of 4.0 mm but ranging between 3 and 6 mm support dense populations of the amphipod [Pectenogammarus planicrurus]. Material finer than 2 mm reduces the ability of the amphipod to survive. The amphipod is tolerant of variable salinity, although a preference for a specific salinity regime has not been determined. As this habitat is regularly under-surveyed, its distribution is unclear. Situation: The biotope is often associated with the lee side (wind or tide) of obstacles such as rock outcrops and groynes; this may be due to the deposition of algal debris, shelter from wave action or degree of sorting due to localised tidal flow around the obstacle (most likely a combination of the first and last influence).
Littoral sand and muddy sand	Shores comprising clean sands (coarse, medium or fine-grained) and muddy sands with up to 25% silt and clay fraction. Shells and stones may occasionally be present on the surface. The sand may be duned or rippled as a result of wave action or tidal currents. Littoral sands exhibit varying degrees of drying at low tide depending on the steepness of the shore, the sediment grade and the height on the shore. The more mobile sand shores are relatively impoverished (A2.22), with more species-rich communities of amphipods, polychaetes and, on the lower shore, bivalves developing with increasing stability in finer sand habitats (A2.23). Muddy sands (A2.24), the most stable within this habitat complex, contain the highest proportion of bivalves. Situation: A strandline of talitrid amphipods (A2.211) typically develops at the top of the shore where decaying seaweed accumulates. Fully marine sandy shores occur along stretches of open coast, whilst muddy sands are often present in more sheltered lower estuarine conditions and may be subject to some freshwater influence. Temporal variation: Littoral sandy s
Talitrids on the upper shore and strandline	A community of sandhoppers (talitrid amphipods) may occur on any shore where driftlines of decomposing seaweed and other debris accumulate on the strandline. The biotope occurs most frequently on medium and fine sandy shores, but may also occur on a wide variety of sediment shores composed of muddy sediment, shingle and mixed substrata, or on rocky shores. The decaying seaweed provides cover and humidity for the sandhopper [Talitrus saltator]. In places on sand that regularly accumulate larger amounts of weed, [Talorchestia deshayesii] is often present. Oligochaetes, mainly enchytraeids, can occur where the stranded debris remains damp as a result of freshwater seepage across the shore or mass accumulation of weed in shaded situations. On shingle and gravel shores and behind saltmarshes the strandline talitrid species tend to be mainly [Orchestia] species. Abundances of the characterising species tend to be highly patchy. Two characterising species lists are presented below. They are derived from two sets of data, which were analysed separately. The first shows data from infaunal

[Mytilus edulis] and [Fabricia sabella] in littoral mixed sediment	Pebbles, gravel, sand and shell debris with mud in sheltered Firths with a strandline of fucoid algae. The fauna is characterised by juvenile mussels [Mytilus edulis], often in very high numbers. The nemertean worm [Lineus] spp. may be abundant and oligochaetes are common. Polychaetes such as [Pygospio elegans], [Scoloplos armiger] and [Fabricia sabella] may be present in high densities. [Fabricia sabella] is typically found amongst algal holdfasts and between cobbles on rocky shores. The bivalves [Macoma balthica] and [Cerastoderma edule], typical of muddy sediments, characterise the community. The validity of this biotope is uncertain, as the only available data, from the Dornoch Firth and the Moray Firth, are poor. Its position within the classification, as a strandline community, is also very uncertain, but there is not enough information available for a better description or classification at this stage. Situation: Occurs on sheltered shores of the Dornoch Firth and Moray Firth.
Barren littoral coarse sand	Freely-draining sandy beaches, particularly on the upper and mid shore, which lack a macrofaunal community due to their continual mobility. Trial excavations are unlikely to reveal any macrofauna in these typically steep beaches on exposed coasts. Oligochaetes, probably mainly enchytraeids, and the isopod [Eurydice pulchra] may be found in extremely low abundances, but if present in any quantity should be classed as Ol or AmSco.Eur. Burrowing amphipods ([Bathyporeia] spp.) may be present on very rare occasions. Occasionally, other species may be left behind in low abundance by the ebbing tide. Situation: BarSa may occur on the mid and/or lower shore below BarSh in exposed conditions. In moderately exposed conditions, and where BarSa occurs on the upper shore, a range of relatively more species-rich clean sand communities may occur on the mid and lower shore. These include AmSco, Ol, and Po, depending on the degree of wave exposure and sediment mobility. Tal may occur on the same shore as BarSa, where driftlines of algae and other debris accumulate on the upper shore.
Oligochaetes in variable salinity littoral mobile sand	A species-poor community of oligochaetes occurring in estuarine conditions where sands and gravel are associated with the lower shore river channel in estuaries. The sediment is relatively coarse and mobile due to strong river flow and subject to variable salinity. There is usually very little mud in the sediment. Oligochaetes, including enchytraeid oligochaetes, constitute the infaunal assemblage. Nemerteans may be present, and nematodes may be frequent. Situation: Ol.VS occurs in channels of very fast flowing river mouths at the bottom of otherwise sheltered estuarine shores. In this situation, biotopes under the MEST and UEST biotope complexes may be present above the river channel. Tal may be found on the upper shore where driftlines of decomposing seaweed and other debris accumulate.

Amphipods and [Scolelepis] spp. in littoral medium-fine sand	Mobile clean sandy beaches on exposed and moderately exposed shores, with sediment grain sizes ranging from medium to fine, often with a fraction of coarser sediment. The sediment contains little or no organic matter, and usually no anoxic layer is present at all. It tends to be well-drained, retaining little water at low tide, though the sediment of the AmSco.Pon sub-biotope may remain damp throughout the tidal cycle. These beaches usually occur under fully marine conditions, though the AmSco.Eur sub-biotope may occur under moderately exposed lower estuarine conditions. The mobility of the sediment leads to a species-poor community, dominated by polychaetes, isopods and burrowing amphipods. [Scolelepis] spp. can tolerate well-drained conditions, and are often present in well-draining, coarser sand. Burrowing amphipods that often occur in this biotope include [Bathyporeia] spp., [Pontocrates arenarius], and [Haustorius arenarius]. The isopod [Eurydice pulchra] is also often present. On semi-exposed beaches with a moderate tide range where there is a marked high-shore berm, there can be a marked s
[Eurydice pulchra] in littoral mobile sand	Well-draining beaches of medium- to fine-grained mobile sand, often (but not always) well sorted. Occasionally, a small fraction of coarse sand may be present. The biotope generally occurs on exposed open coasts, but sometimes in estuarine conditions, supporting populations of the isopod [Eurydice pulchra] and burrowing amphipods which frequently include [Bathyporeia pilosa] and [Haustorius arenarius]. The degree of drainage appears to be a critical factor in determining the presence of polychaetes, with only [Scolelepis squamata] capable of tolerating the well-drained sediments of this biotope. This biotope has two facies: drying upper and mid shore sands, and highly mobile lower shore and shallow sublittoral sand bars. Where this biotope occurs in estuarine conditions, [H. arenarius] is often highly abundant. Situation: AmSco.Eur may occur on the mid and upper shore together with AmSco.Sco, below Ol, or above Amsco.Pon and the Po communities. Under more exposed, open conditions, AmSco.Eur may be restricted to the lower part of the shore, with Ol, barren sand (BarSa) or barren shingle (BarSh) on the upp
[Pontocrates arenarius] in littoral mobile sand	Mainly on the mid and lower shore on wave-exposed or moderately wave-exposed coasts of medium and fine sand, sometimes with a fraction of coarse sand, which remains damp throughout the tidal cycle and contains little organic matter. The sediment is often rippled and typically lacks an anoxic sub-surface layer. The infauna is dominated by burrowing amphipods, most notably [Pontocrates arenarius], as well as [Bathyporeia pelagica, Haustorius arenarius] and the isopod [Eurydice pulchra]. The polychaete fauna is poor, dominated by [Scolelepis squamata], which tolerates the exposed and mobile sediment conditions. The presence of polychaetes may be seen as coloured burrows running down from the surface of the sediment. Situation: This biotope may be present on the lower shore, where BarSa, AmSco.Eur, or AmSco.Sco are present higher up. Where AmSco.Pon occurs on the mid shore in relatively sheltered conditions, Po may be present on the lower shore. Tal may be present where driftlines of fucoids and other debris occur on the upper shore. Temporal variation: This biotope may change to AmSco.

Polychaetes in littoral fine sand	Moderately exposed or sheltered beaches of medium and fine, usually clean, sand, though the sediment may on rare occasions contain a small silt and clay fraction. The sediment is relatively stable, remains damp throughout the tidal cycle, and contains little organic matter. It is often rippled and typically lacks an anoxic sub-surface layer. Where an anoxic layer is present, it occurs at a depth below 10 cm and tends to be patchy. The biotope occurs mainly on the lower part of the shore, and relatively frequently on the mid shore. It is only rarely present above mid shore level, except where coastal defences cause backwash onto the upper shore. Conditions are usually fully marine, though the biotope can also occur in open lower estuarine conditions. The infaunal community is dominated by a range of polychaete species such as [Nephtys cirrosa], [Paraonis fulgens], [Spio] spp., [Pygospio elegans], [Ophelia rathkei] and [Scoloplos armiger]. The presence of polychaetes may be seen as coloured burrows running down from the surface of the sediment, and [Arenicola marina] casts may be present on the sediment surface. The an
Polychaete/bivalve-dominated muddy sand shores	Muddy sand or fine sand, often occurring as extensive intertidal flats on open coasts and in marine inlets. The sediment generally remains water-saturated during low water. The habitat may be subject to variable salinity conditions in marine inlets. An anoxic layer may be present below 5 cm of the sediment surface, sometimes seen in the worm casts on the surface. The infauna consists of a diverse range of amphipods, polychaetes, bivalves and gastropods. Situation: Muddy sand communities are found predominantly on the mid and lower shore, though they may span the entire intertidal. Fine sand or mobile sand communities may be present on the upper shore with muddy sand communities present lower down. In sheltered mid estuarine conditions, muddy sand communities may be present on the upper part of the shore with mid estuarine muddy shore communities (A2.31) lower down.
[Macoma balthica] and [Arenicola marina] in muddy sand shores	Muddy sand or fine sand, often occurring as extensive intertidal flats both on open coasts and in marine inlets. The sediment is often compacted, with a rippled surface, areas of standing water, and generally remains water-saturated during low water. Scattered stones, cobbles and boulders with attached fucoids may be present. An anoxic layer is usually present within 5cm of the sediment surface and is often visible in worm casts. The habitat may be subject to variable salinity conditions in marine inlets. The species assemblage is characterised by the lugworm [Arenicola marina] and the Baltic tellin [Macoma balthica]. The polychaetes [Scoloplos armiger] and [Pygospio elegans] are typically superabundant and common, respectively. Oligochaetes, probably mainly [Tubificoides benedii] and [T. pseudogaster], may be common, and the cockle [Cerastoderma edule] may be abundant. Situation: MacAre has broad transition areas with CerPo and HedMac, which tends to occur lower down on the shore.

[Cerastoderma edule] and polychaetes in littoral muddy sand	Extensive clean fine sand or muddy sand shores with abundant cockles [Cerastoderma edule]. The community consists of the polychaetes [Eteone longa], [Scoloplos armiger], [Pygospio elegans], [Spio filicornis] and [Capitella capitata], the crustaceans [Bathyporeia sarsi], [Bodotria arenosa arenosa] and [Crangon crangon], the spire shell [Hydrobia ulvae], as well as the cockle [C. edule] and the baltic tellin [Macoma balthica]. This biotope carries commercially viable stocks of [C. edule], and it is therefore possible to find areas of this habitat where the infauna may have been changed through recent cockle dredging. Cockle dredging can result in a reduced bivalve abundance and reduced densities of some polychaete species, including [P. elegans] (Moore, 1991). At the outer edges of large flats, there may be a zone between the cockle beds and more exposed sands, where there are fewer cockles and [B. sarsi] is the commoner species. Situation: The community is found mainly on the mid and lower shore where the sediment is water-saturated most of the time. Where it occurs in muddy sand, CerPo has br
[Bathyporeia pilosa] and [Corophium arenarium] in littoral muddy sand	Wave-sheltered, mainly upper and mid shore flats of medium to fine sand, often muddy sand. The salinity, although predominantly recorded as variable, probably varies little from fully marine in these broad estuaries. The infauna is characterised by the amphipods [Bathyporeia pilosa], [Corophium arenarium] and [C. volutator], and the spire shell [Hydrobia ulvae]. Polychaetes and bivalves are limited in their abundance and variety, though the Baltic tellin [Macoma balthica] may occur. Tidal streams may be strong during spring tides, accounting for the presence of amphipods [B. pilosa] that are more commonly associated with open coast sandflats. Situation: This biotope is typically found higher up the shore than sandflats with the cockle [Cerastoderma edule] (CerPo) in the large sandy estuaries of the west coast of England and Wales. In moderately exposed conditions, BatCare can occur on the mid shore below Tal and/or BarSa. In more sheltered conditions, BatCare may occur above NhomMacStr.
[Lanice conchilega] in littoral sand	This biotope usually occurs on flats of medium fine sand and muddy sand, most often on the lower shore but sometimes also on waterlogged mid shores. The sand may contain a proportion of shell fragments or gravel. Lan can also occur on the lower part of predominantly rocky or boulder shores, where patches of sand or muddy sand occur between scattered boulders, cobbles and pebbles. Conditions may be tide-swept, and the sediment may be mobile, but the biotope usually occurs in areas sheltered from strong wave action. The sediment supports dense populations of the sand mason [Lanice conchilega]. Other polychaetes present are tolerant of sand scour or mobility of the sediment surface layers and include the polychaetes [Anaitides mucosa], [Eumida sanguinea], [Nephtys hombergii], [Scoloplos armiger], [Aricidea minuta], [Tharyx] spp. and [Pygospio elegans]. The mud shrimp [Corophium arenarium] and the cockle [Cerastoderma edule] may be abundant. The baltic tellin [Macoma balthica] may be present. On boulder shores, and where pebbles and cobbles are mixed in with lower shore tide-swept sand

Littoral mud	Shores of fine particulate sediment, mostly in the silt and clay fraction (particle size less than 0.063 mm in diameter), though sandy mud may contain up to 40% sand (mostly very fine and fine sand). Littoral mud typically forms extensive mudflats, though dry compacted mud can form steep and even vertical structures, particularly at the top of the shore adjacent to saltmarshes. Little oxygen penetrates these cohesive sediments, and an anoxic layer is often present within millimetres of the sediment surface. Littoral mud can support communities characterised by polychaetes, bivalves and oligochaetes. Most muddy shores are subject to some freshwater influence, as most of them occur along the shores of estuaries. Mudflats on sheltered lower estuarine shores can support a rich infauna, whereas muddy shores at the extreme upper end of estuaries and which are subject to very low salinity often support very little infauna. Situation: Muddy shores are principally found along the shores of estuaries where there is enough shelter from wave action to allow fine sediment to settle. Muddy shores may also be present in shelte
Polychaete/bivalve-dominated mid estuarine mud shores	Mid estuarine shores of fine sediment, mostly in the silt and clay fraction (particle size less than 0.063 mm in diameter), though sandy mud may contain up to 40% sand (mostly very fine and fine sand). Littoral mud typically forms extensive mudflats, though dry compacted mud can form steep and even vertical structures, particularly at the top of the shore adjacent to saltmarshes. Little oxygen penetrates these cohesive sediments, and an anoxic layer is often present within millimetres of the sediment surface. Most mid estuarine muddy shores are subject to some freshwater influence, though at some locations more or less fully marine conditions may prevail. Mid estuarine muds support rich communities characterised by polychaetes, bivalves and oligochaetes. Situation: Principally along mid estuarine shores. The mid estuarine communities may also be present in sheltered inlets, straits and embayments which are not part of major estuarine systems, though usually there is some freshwater influence. Temporal variation: [Enteromorpha] spp. and [Ulva lactuca] may form mats on the surface of the mud during the summer mo
[Hediste diversicolor] and [Macoma balthica] in littoral sandy mud	Mainly mid and lower shore sandy mud or mud in lower estuaries, sheltered bays and marine inlets, often subject to variable salinity. The main characterising species are the ragworm [Hediste diversicolor], the baltic tellin [Macoma balthica], and the oligochaetes [Tubificoides benedii] and [T. pseudogaster]. Further polychaetes that are often common or abundant include [Pygospio elegans], [Streblospio shrubsolii], [Tharyx killariensis], [Aphelochaeta marioni], [Capitella capitata] and [Manayunkia aestuarina]. The oligochaete [Heterochaeta costata] and the mud shrimp [Corophium volutator] may be abundant. The spire shell [Hydrobia ulvae] is often common. Other species which occur in a significant proportion of samples include the polychaetes [Eteone longa] and [Nephtys hombergii], and bivalves such as the cockle [Cerastoderma edule] and [Abra tenuis]. The sand gaper [Mya arenaria] is superabundant in about a quarter of the samples for this biotope. [M. arenaria] is probably present in a higher proportion of areas of this biotope, but may be missed in core samples due to its size. Situation: Hed

[Hediste diversicolor], [Macoma balthica] and [Scrobicularia plana] in littoral sandy mud	Mainly mid shore mud or sandy mud subject to variable salinity on sheltered estuarine shores. Typically, the sediment is wet in appearance and has an anoxic layer below 1 cm depth. The surface of the mud has the distinctive 'crow's foot' pattern formed by the peppery furrow shell [Scrobicularia plana]. The infauna is additionally characterised by a range of polychaete and bivalve species, including the ragworm [Hediste diversicolor], [Pygospio elegans], [Streblospio shrubsolii], [Tharyx killariensis] and the baltic tellin [Macoma balthica]. Oligochaetes, most notably [Tubificoides benedii], and the spire shell [Hydrobia ulvae] may be abundant. Other species that sometimes occur in this biotope are the cockle [Cerastoderma edule], the sand gaper [Mya arenaria] and the polychaetes [Eteone longa] and [Nephtys hombergii]. Situation: HedMacScr may occur on the same shores as NhomMacStr, HedMac, NhomAph, Hed.Str and Hed.Cvol. Higher up on the shore, and/or further towards the head of the estuary, Hed.Ol may occur, changing to Tben at the upper extreme of the estuary. Temporal variation: [Enteromorpha] spp
Polychaete/oligochaete-dominated upper estuarine mud shores	Upper estuarine sandy mud and mud shores, in areas with significant freshwater influence. Littoral mud typically forms mudflats, though dry compacted mud can form steep and even vertical structures, particularly at the top of the shore adjacent to saltmarshes. Little oxygen penetrates these cohesive sediments, and an anoxic layer is often present within millimetres of the sediment surface. The upper estuarine mud communities support few infaunal species and are principally characterised by a restricted range of polychaetes and oligochaetes. Situation: There are three oligochaete dominated upper estuarine mud biotopes. Of these three, A2.321 occurs the furthest towards the mid estuary, and possibly lower on the shore than the other two. A2.323 is the most extreme upper estuarine biotope, occurring at the head of estuaries where there is no strong river flow and hence conditions are very sheltered, and there is a very strong freshwater influence. Further towards the mid estuary, this biotope may occur at the top of the shore, with A2.3223 and A2.321 further down the shore. Temporal variation: [Ent
Littoral mixed sediments	Shores of mixed sediments ranging from muds with gravel and sand components to mixed sediments with pebbles, gravels, sands and mud in more even proportions. By definition, mixed sediments are poorly sorted. Stable large cobbles or boulders may be present which support epibiota such as fucoids and green seaweeds more commonly found on rocky and boulder shores. Mixed sediments which are predominantly muddy tend to support infaunal communities which are similar to those of mud and sandy mud shores. Situation: It is probable that there are broad transition areas between areas of mudflat or sandy mudflat, and mixed sediment biotopes where the sediment consists principally of mud but has significant proportions of gravel and sand mixed in. Gravelly mud may occur in patches on mudflats. Similarly, there is unlikely to be an easily defined boundary between areas of mixed sediment with stable cobbles and boulders, and boulder fields which fall into the rocky shore category.

Coastal saltmarshes and saline reedbeds	Angiosperm-dominated stands of vegetation, occurring on the extreme upper shore of sheltered coasts and periodically covered by high tides. The vegetation develops on a variety of sandy and muddy sediment types and may have admixtures of coarser material. The character of the saltmarsh communities is affected by height up the shore, resulting in a zonation pattern related to the degree or frequency of immersion in seawater.
Littoral sediments dominated by aquatic angiosperms	Dominants are [Eleocharis acicularis], [Eleocharis parvula], [Zostera] spp.
[Zostera noltii] beds in littoral muddy sand	Mid and upper shore wave-sheltered muddy fine sand or sandy mud with narrow-leafed eel grass [Zostera noltii] at an abundance of frequent or above. It should be noted that the presence of [Z. noltii] as scattered fronds does not change what is otherwise a muddy sand biotope. Exactly what determines the distribution of [Z. noltii] is not entirely clear. It is often found in small lagoons and pools, remaining permanently submerged, and on sediment shores where the muddiness of the sediment retains water and stops the roots from drying out. An anoxic layer is usually present below 5 cm sediment depth. The infaunal community is characterised by the polychaetes [Scoloplos armiger, Pygospio elegans] and [Arenicola marina], oligochaetes, the spire shell [Hydrobia ulvae], and the bivalves [Cerastoderma edule] and [Macoma balthica]. The green algae [Enteromorpha] spp. may be present on the sediment surface. The characterising species lists below give an indication both of the epibiota and of the sediment infauna that may be present in intertidal seagrass beds. The biotope is described in more deta
Littoral biogenic reefs	The Littoral Biogenic Reefs habitat contains two biological subtypes, littoral [Sabellaria] reefs (A2.71) and mixed sediment shores with mussels (A2.72), encompassing the littoral biotope dominated by the honeycomb worm [Sabellaria alveolata], and littoral [Mytilus edulis]-dominated communities. [S. alveolata] can form honeycomb reefs on mid to lower shore on exposed coasts, where there is a plentiful supply of sediment. The underlying substratum may consist primarily of rock or stable cobbles and boulders, or of cobbles and boulders on sand. Mixed sediment shores characterised by beds of adult mussels [Mytilus edulis] occur principally on mid and lower eulittoral mixed substrata (mainly cobbles and pebbles on muddy sediments) in a wide range of exposure conditions. In high densities the mussels bind the substratum and provide a habitat for many infaunal and epifaunal species. Temporal variation: [S. alveolata] reefs may be susceptible to storm damage in the winter, although they can regenerate remarkably quickly in a season as long as some adults are left as they facilitate the larval settlement. [S. alve

Littoral honeycomb worm reefs	The sedentary polychaete [Sabellaria alveolata] (honeycomb worm) builds tubes from sand and shell. On exposed shores, where there is a plentiful supply of sediment, [S. alveolata] can form honeycomb reefs on boulders and low-lying bedrock on the mid to lower shore. These [S. alveolata] reefs are quite distinct from the mosaic of seaweeds and barnacles or red seaweeds (A1.2) generally associated with moderately exposed rocky shores though many of the same species are present. These include the anemone [Actinia equina], the barnacles [Semibalanus balanoides] and [Elminius modestus], the limpet [Patella vulgata], the top shell [Gibbula cineraria] and the winkle [Littorina littorea]. The whelk [Nucella lappilus] and the mussel [Mytilus edulis] is also present on the boulders whereas the polychaete [Lanice conchilega] is restricted to the associated sediment areas. Scour resistent red seaweeds including [Palmaria palmata, Corallina ifficinalis, Mastocarpus stellatus, Chondrus crispus, Ceramium nodulosum, Osmundea pinnatifida, Polysiphonia] spp. and coralline crusts can also be present where suitable substrata exs
Honeycomb worm reefs on sand-abraded eulittoral rock	Exposed to moderately exposed bedrock and boulders in the eastern basin of the Irish Sea (and as far south as Cornwall) characterised by reefs of the polychaete [Sabellaria alveolata]. The sand based tubes formed by [S. alveolata] form large reef-like hummocks, which serve to stabilise the boulders and cobbles. Other species in this biotope include the barnacles [Semibalanus balanoides] and [Elminius modestus] and the limpet [Patella vulgata], the winkle [Littorina littorea], the mussel [Mytilus edulis] and the whelk [Nucella lapillus]. The anemone [Actinia equina] and the crab [Carcinus maenas] can be present in cracks and crevices on the reef. Low abundance of seaweeds tend to occur in areas of eroded reef. The seaweed diversity can be high and may include the foliose red seaweeds [Palmaria palmata], [Mastocarpus stellatus], [Osmundea pinnatifida, Chondrus crispus] and some filamentous species e.g. [Polysiphonia] spp. and [Ceramium] spp. Coralline crusts can occur in patches. Wracks such as [Fucus vesiculosus], [Fucus serratus] and the brown seaweed [Cladostephus spongiosus] may occur a
Mussel beds on littoral sediments	Dense aggregations of [Mytilus edulis] on the mid and lower shore, on mixed substrata (mainly cobbles and pebbles on fine sediments), on sand, or on sheltered muddy shores. In high densities the mussels bind the substratum and provide a habitat for many infaunal and epifaunal species. The wrack [Fucus vesiculosus] is often found attached to either the mussels or cobbles and it can be abundant. The mussels are often encrusted with the barnacles [Semibalanus balanoides], [Elminius modestus] or [Balanus crenatus]. Where boulders are present they can support the limpet [Patella vulgata]. The winkles [Littorina littorea] and [L. saxatilis] and small individuals of the crab [Carcinus maenas] are common amongst the mussels, whilst areas of sediment may contain the lugworm [Arenicola marina], the sand mason [Lanice conchilega], the cockle [Cerastoderma edule], and other infaunal species. The characterising species list shown below is based on data from epifaunal sampling only. Three sub-biotopes are recognised for this biotope, distinguished principally on the basis of the sediment type associated with

Barnacles and [Littorina] spp. on unstable eulittoral mixed substrata	The eulittoral zone, particularly the mid shore zone, of sheltered to extremely sheltered mixed substrata shores is often characterised by flat banks or scards of cobbles and pebbles (on sediment) which are either too small or unstable to support a seaweed community. The boulders and larger cobbles are usually colonised by the barnacles [Semibalanus balanoides] or in areas with variable salinity [Elminius modestus] and often dense aggregations of the winkles [Littorina littorea] and [Littorina saxatilis] are present as well. Between the cobbles and pebbles the mussel [Mytilus edulis] occasionally occurs, but always at low abundance. Juvenile crabs [Carcinus maenas] and gammarids may occur between and underneath the pebbles and cobbles. Brown seaweeds are rare, although the wrack [Fucus vesiculosus] may occasionally occur on larger cobbles and small boulders in the mid and upper shore zones. Ephemeral green seaweeds such as [Enteromorpha intestinalis] may also be present. Shallow pools and patches of standing water may occur in low-lying areas and may contain amphipods and filam
Ephemeral green and red seaweeds on variable salinity and/or disturbed eulittoral mixed substrata	Eulittoral mixed substrata (pebbles and cobbles overlying sand or mud) that are subject to variations in salinity and/or siltation, characterised by dense blankets of ephemeral green and red seaweeds. The main species present are [Enteromorpha intestinalis], [Ulva lactuca] and [Porphyra] spp., along with colonial diatoms covering the surface of the substratum. Small numbers of other species such as barnacles [Semibalanus balanoides] and [Elminius modestus] are confined to any larger cobbles and pebbles or on the shells of larger individuals of the mussel [Mytilus edulis]. The crab [Carcinus maenas] and the winkle [Littorina littorea] can be present among the boulders, cobbles and seaweeds, while gammarids can be found in patches underneath the cobbles. In common with the other biotopes found on mixed substrata, patches of sediment are typically characterised by infaunal species including bivalves, for example, [Cerastoderma edule] and the polychaete [Arenicola marina] and the polychaete [Lanice conchilega]. Situation: This biotope is found primarily on enclosed (estuarine) stony
Atlantic and Mediterranean high energy infralittoral rock	Rocky habitats in the infralittoral zone subject to exposed to extremely exposed wave action or strong tidal streams. Typically the rock supports a community of kelp [Laminaria hyperborea] with foliose seaweeds and animals, the latter tending to become more prominent in areas of strongest water movement. The depth to which the kelp extends varies according to water clarity, exceptionally (e.g. St Kilda) reaching 45 m. The sublittoral fringe is characterised by dabberlocks [Alaria esculenta].

Kelp with cushion fauna and/or foliose red seaweeds	Rocky habitats in the infralittoral zone subject to exposed to extremely exposed wave action or strong tidal streams. Typically the rock supports a community of kelp [Laminaria hyperborea] with foliose seaweeds and animals, the latter tending to become more prominent in areas of strongest water movement (A3.113, A3.115 and A3.1152). The depth to which the kelp extends varies according to water clarity, exceptionally (e.g. St Kilda) reaching 45 m. In some areas, there may be a band of dense foliose seaweeds (reds or browns) below the main kelp zone (A3.116). The sublitttoral fringe is characterised by dabberlocks [Alaria esculenta] (A3.111). In very strong wave action the sublittoral fringe [A. esculenta] zone extends to 5 to 10 m depth, whilst at Rockall [A. esculenta] replaces [L. hyperborea] as the dominant kelp in the infralittoral zone (A3.112). Situation: Very exposed rocky coasts, from low water to depths up to 45m. Temporal variation: Winter storms may remove patches of kelp, and fast-growing annuals may form a temporary forest (A3.122).
[Alaria esculenta] on exposed sublittoral fringe bedrock	Exposed sublittoral fringe bedrock with an [Alaria esculenta] forest and an encrusting fauna of the mussel [Mytilus edulis] and barnacles such as [Semibalanus balanoides]. The kelp [Laminaria digitata] can be part of the canopy. Underneath the canopy are red seaweeds such as [Mastocarpus] stellatus and [Palmaria palmata], while encrusting coralline red algae such as [Lithothamnion graciale] covers the rock surface. The limpet [Patella vulgata] can be found grazing the rock surface, while the whelk Nucella lapillus is preying on the limpets, barnacles and mussels. Two variants of this biotope are described. In more wave exposed conditions [Laminaria digitata] is absent and the rock surface is often characterised by dense patches of mussels (Ala.Myt). In slightly less exposed sites the [A. esculenta] is mixed with [L. digitata] (Ala.Ldig). Situation: This biotope is found in the sublittoral fringe on exposed shores, typically occupying the extreme lower shore down to 1 or 2 m depth, although it can also extend down to 15 m depth
[Alaria esculenta], [Mytilus edulis] and coralline crusts on very exposed sublittoral fringe bedrock	Very exposed sublittoral fringe bedrock characterised by the kelp [Alaria esculenta] and dense patches of small individuals of the mussel [Mytilus edulis], both of which grow over a dense cover of encrusting coralline algae. Foliose red seaweeds may also be present, but the species composition and their abundance vary between sites. Species such as [Corallina officinalis] occur widely. The kelp [Laminaria digitata] is usually absent, although stunted plants may be present at a few sites. The limpet [Patella vulgata] and the barnacle [Semibalanus balanoides] are often common. Patches of anthozoans and the hydroid [Tubularia] spp. occur in more wave-surged areas. In extremely exposed areas the [A. esculenta] zone can extend as deep as 15 m, where it has less [S. balanoides], [M. edulis] and greater densities of [Tubularia] spp. (e.g. Barra and shallow areas of Rockall). Situation: This biotope is most commonly found beneath the mussel-barnacle zone (MytB) of very exposed shores and above the upper infralittoral [Laminaria hyperborea] forest (LhypR or LhypFa). It is at the extremely wave-surged sites, such a

[Alaria esculenta] and [Laminaria digitata] on exposed sublittoral fringe bedrock	Exposed sublittoral fringe bedrock characterised by a mixture of the kelps [Laminaria digitata] and [Alaria esculenta] with an understorey of red seaweeds including [Palmaria palmata] and [Corallina officinalis] with encrusting coralline algal on the rock surface. Anthozoans such as [Halichondria panicea], the mussel [Mytilus edulis] and the barnacle [Semibalanus balanoides] can be found attached in cracks and crevices. The limpets [Patella vulgata] or on southern shores [Patella ulyssiponensis] can be found in their characteristic "scars" grazing the biofilm/algal crusts on the rock surface, while the limpet [Helcion pellucidum] is restricted to grazing the kelp fronds. Colonies of the bryozoan [Electra pilosa] can cover the red seaweeds [Mastocarpus stellatus] and [Chondrus crispus] or the rock surface. Situation: Ala.Ldig represents an intermediate on the wave exposure gradient, with pure stands of [A. esculenta] (Ala.Myt) being found on more exposed shores and pure [L. digitata] (Ldig) on more sheltered shores. This biotope usually occurs immediately above a sublittoral [Laminaria hyperborea] fore
[Alaria esculenta] forest with dense anemones and crustose sponges on extremely exposed infralittoral bedrock	This biotope has only been recorded from Rockall, where [Alaria esculenta] appears to replace [Laminaria hyperborea] as the dominant kelp forest species on the extremely wave-exposed steep and vertical rock, a zone that extends from 14 m down to 35 m. Beneath the [A. esculenta] canopy, the rock surface is covered by a dense turf of anthozoans such as [Sagartia elegans], [Phellia gausapata] and [Corynactis viridis], encrusting sponges and coralline algae. The gastropod [Margarites helicinus] can be found grazing on the kelp fronds, whereas the crab [Cancer pagurus] can be found among the kelp stipes. The bryozoan [Tubularia indivisa] also occur, but it does not form such a dense turf as in more shallow waters, while the ascidian [Botryllus leachi] is found encrusting the large brown seaweeds. [Cryptopleura ramosa] is the dominant red seaweed on horizontal surfaces. The kelp [Laminaria digitata] is reported to occur mixed with [A. esculenta] on the nearby Helen's reef. Situation: Above the AlaAnSC zone (about 5 m to 13 m) [A. esculenta] still dominates, but it resembles more closely the typical sublitt
[Laminaria hyperborea] forest with a faunal cushion (sponges and polyclinids) and foliose red seaweeds on very exposed infralittoral rock	Very exposed and exposed, but wave-surged, upper infralittoral bedrock and massive boulders characterised by a dense forest of the kelp [Laminaria hyperborea] with a high diversity of seaweeds and invertebrates. The shallowest kelp plants are often short or stunted, while deeper plants are taller with heavily epiphytised stipes with foliose red seaweeds such as [Delesseria sanguinea], [Cryptopleura ramosa] or [Plocamium cartilagineum] or even the brown seaweed [Dictyota dichotoma]. Also found on the stipes or on the rock below the canopy are red seaweeds including [Phycodrys rubens], [Kallymenia reniformis], [Callophyllis laciniata, Caryophyllia smithii], and [Corallina officinalis], while encrusting coralline algae can cover any bare patches of rock. At some sites the red seaweeds can be virtually mono-specific, while at other sites show considerable variation containing a dense mixed turf of a large variety of species. The red seaweed [Odonthalia dentata] can be present in the north. The faunal and floral under-storey is generally rich in species due, in part, to the relatively low urchin-grazing pressure in such s

Sparse [Laminaria hyperborea] and dense [Paracentrotus lividus] on exposed infralittoral limestone	This biotope is known from only one location, the Aran Islands, Co. Galway. Here, a limestone platform between 3 m and 6 m of depth is dominated by a dense population of the urchin [Paracentrotus lividus], which heavily graze and burrow into the soft limestone. So intense is the grazing pressure that the rock appears completely bare, except for a coralline algal crust and occasional [Laminaria hyperborea] and [Saccorhiza polyschides]. The anthozoans [Sagartia elegans] and [Corynactis viridis] are also present, though at low abundance. The grazed kelp also extends deeper to 20 to 25 m further offshore. (Only one CB record within this biotope). Situation: This rare biotope has only been recorded from one location and the neighbouring biotopes were not fully surveyed. In deeper water (30-40m) there is PhaAxi.
[Laminaria hyperborea] with dense foliose red seaweeds on exposed infralittoral rock	Very exposed to exposed infralittoral bedrock or large boulders characterised by the kelp [Laminaria hyperborea], beneath which is a dense turf of foliose red seaweeds. Three variations of this biotope are described: the upper infralittoral kelp forest (LhypR.Ft), the kelp park below (LhypR.Pk) and a third type of kelp forest, confined to southern England, that is characterised by a mixture of [L. hyperborea] and [Laminaria ochroleuca] (LhypR.Loch). The fauna of these biotopes is markedly less abundant than kelp forests in areas of greater wave surge (LhypFa); sponges, anthozoans and polyclinid ascidians may be present, though never at high abundance. Beneath the under-storey of red seaweeds, the rock surface is generally covered with encrusting coralline algae.
[Laminaria hyperborea] forest with dense foliose red seaweeds on exposed upper infralittoral rock	Very exposed to exposed upper infralittoral bedrock or large boulders characterised by a dense forest of the kelp [Laminaria hyperborea]. On the rock surface beneath the kelp canopy is a dense turf of red foliose seaweeds including [Cryptopleura ramosa], [Plocamium cartilagineum], [Phycodrys rubens] and [Callophyllis laciniata] as well as encrusting coralline algae and the foliose brown seaweed [Dictyota dichotoma]. The red algal turf can be virtually mono-specific, dominated by stands of [P. cartilagineum], [C. ramosa] or [Heterosiphonia plumosa], [Kallymenia reniformis] or in the north, [Odonthalia dentata]. Other sites may contain a dense mixed turf of these and other species. The dense turf is due, in part, to the relatively low grazing pressure from the urchin [Echinus esculentus] in such shallow exposed conditions. The shallowest kelp plants are often short or stunted, while deeper plants are taller and the stipes are heavily epiphytised by red seaweeds such as [Delesseria sanguinea] and [Membranoptera alata]. The bryozoan [Electra pilosa] can form colonies on the foliose red seaweeds, while the bryozoan [Memb

[Laminaria hyperborea] park with dense foliose red seaweeds on exposed lower infralittoral rock	Very exposed to exposed lower infralittoral bedrock or large boulders characterised by a kelp park of [Laminaria hyperborea] with a dense turf of foliose red seaweeds and encrusting coralline algae. These red seaweeds dominate kelp stipes and bedrock in a similar abundance and composition to the upper infralittoral kelp forest, the most commonly occurring species being [Callophyllis laciniata], [Cryptopleura ramosa], [Plocamium cartilagineum], [Kallymenia reniformis], [Delesseria sanguinea], [Phycodrys rubens], [Hypoglossum hypoglossoides], [Heterosiphonia plumosa] and [Bonnemaisonia asparagoides]. In addition, moderate to high abundance of foliose brown seaweeds, such as [Dictyota dichotoma] are more common than in the kelp forest above. More upper circalittoral fauna occur in the park than in the kelp forest, such as the cup-coral [Caryophyllia smithii]. Some species more often present in the kelp park than the forest include the anthozoan [Alcyonium digitatum] and the featherstar [Antedon bifida]. The urchin [Echinus esculentus], the gastropods [Gibbula cineraria] and [Calliostoma zizyphinu
Foliose red seaweeds on exposed lower infralittoral rock	A dense turf of foliose red seaweeds on exposed or moderately exposed lower infralittoral rock, generally, at or below the lower limit of the kelp. Most of the red seaweeds are common to the kelp zone above, while the faunal component of the biotope is made up of species that are found either in the kelp zone or the animal-dominated upper circalittoral below. Foliose species commonly present include [Dilsea carnosa], [Hypoglossum hypoglossoides, Schottera nicaeensis], [Cryptopleura ramosa] and [Delesseria sanguinea]. The red seaweed species composition varies considerably; at some sites a single species may dominate (particularly [Plocamium cartilagineum]). Small filamentous red seaweeds can be found here as well. These include species such as [Heterosiphonia plumosa, Brongniartella byssoides]. As well as a varied red seaweed component, this biotope may also contain occasional kelp plants and patches of the brown foliose seaweed [Dictyota dichotoma]. Coralline crusts covers the bedrock beneath the seaweeds. The fauna generally comprises low-encrusting forms such as the tubeworms [Pomat
Foliose red seaweeds with dense [Dictyota dichotoma] and/or [Dictyopteris membranacea] on exposed lower infralittoral rock	A dense turf of foliose red seaweeds mixed with a dense turf of the foliose brown seaweeds [Dictyota dichotoma] and/or [Dictyopteris membranacea] on exposed and moderately exposed lower infralittoral rock, generally at or below the lower limit of the kelp zone. In some areas the lower infralittoral is subject to a moderate amount of scour from nearby sand. [D. dichotoma] is relatively tolerant of such scour and in such areas a zone forms with other sand-tolerant seaweeds. [D. membranacea] is confined to south-western coasts. Typically brown seaweeds dominate the seabed or are at least in equal abundance to the red seaweeds, some of which may also form dense stands such as [Plocamium cartilagineum], [Calliblepharis ciliata, Cryptopleura ramosa, Bonnemaisonia asparagoides], [Heterosiphonia plumosa, Delesseria sanguinea] and [Brongniartella byssoides]. The urchin [Echinus esculentus] can be found grazing the rock surface which can be covered in coralline algae. The anthozoans [Caryophyllia smithii] and [Alcyonium digitatum] are usually present in this biotope along with the tube-building v

Sediment-affected or disturbed kelp and seaweed communities	Infralittoral rock habitats, subject to disturbance through mobility of the substratum (boulders or cobbles) or abrasion/covering by nearby coarse sediments or suspended particulate matter (sand). The associated communities can be quite variable in character, depending on the particular conditions, which prevail. The typical [Laminaria hyperborea] and red seaweed communities of stable open coast rocky habitats (A3.21) are replaced by those, which include more ephemeral species or those tolerant of sand and gravel abrasion. As such [Laminaria saccharina], [Saccorhiza polyschides] or [Halidrys siliquosa] may be prominant components of the community.
[Laminaria saccharina] and/or [Saccorhiza polyschides] on exposed infralittoral rock	A forest or park of the fast-growing, opportunistic kelps [Laminaria saccharina] and/or [Saccorhiza polyschides] often occurs on seasonally unstable boulders or sand/pebble scoured infralittoral rock. The substratum varies from large boulders in exposed areas to smaller boulders and cobbles in areas of moderate wave exposure or nearby bedrock. In these cases, movement of the substratum during winter storms prevents a longer-lived forest of [Laminaria hyperborea] from becoming established. This biotope also develops on bedrock where it is affected by its close proximity to unstable substrata. Other fast-growing brown seaweeds such as [Desmarestia viridis], [Desmarestia aculeata, Cutleria multifida] and [Dictyota dichotoma] are often present. Some [L. hyperborea] plants may occur in this biotope, but they are typically small since the plants do not survive many years. The kelp stipes are usually epiphytised by red seaweeds such as [Delesseria sanguinea] and [Phycodrys rubens]. Other red seaweeds present beneath the kelp canopy include [Plocamium cartilagineum, Nitophyllum punctatum], [Callo
[Saccorhiza polyschides] and other opportunistic kelps on disturbed upper infralittoral rock	Exposed low-lying reefs in the sublittoral fringe or upper infralittoral (generally above 5m depth), mainly in the southwest and west, dominated by the kelp [Saccorhiza polyschides]. This opportunistic coloniser replaces [Laminaria digitata] or [Laminaria hyperborea] as the dominant kelp, following 'disturbance' of the canopy. This may be the result of storms, when loose sediment and even cobbles or boulders are mobilised, scouring most seaweeds and animals from the surrounding rock. As [S. polyschides] is essentially a summer annual (occasionally it lasts into a second year), it is also particularly common close to rock/sand interfaces which become too scoured during winter months to prevent the longer-living kelps from surviving. As a result of the transient nature of this biotope, its composition is varied; it may contain several other kelp species, including [L. digitata], [Laminaria saccharina] and [Alaria esculenta], at varying abundances. [Laminaria] spp. sporelings can also be a prominent feature of the site. Beneath the kelp, (scour-tolerant) red seaweeds including [Corallina officinalis], [Kallymenia renifor

[Laminaria saccharina], [Chorda filum] and dense red seaweeds on shallow unstable infralittoral boulders and cobbles	Seasonally disturbed unstable boulders and cobbles in very shallow water dominated by the fast-growing brown seaweed [Chorda filum] together with the kelp [Laminaria saccharina]. The brown seaweed [Desmarestia aculeata] is also typical of this disturbed environment as well encrusting coralline algae and brown crusts. Beneath the prolific growth of [C. filum], red and brown seaweeds densely cover many of the boulders, cobbles and pebbles. Other sediment-tolerant seaweeds such as species from the Ectocarpales (brown filamentous seaweeds) and the red seaweeds [Chondrus crispus], [Phyllophora pseudoceranoides], [Dilsea carnosa] and [Corallina officinalis] is normally present. Other red seaweeds which can be found here include [Chondria dasyphylla], [Brongniartella byssoides], [Polysiphonia elongata], [Ceramium nodolosum], [Cystoclonium purpureum, Heterosiphonia plumosa], [Rhodomela confervoides] and [Plocamium cartilagineum]. The brown seaweeds [Punctaria] sp. and [Cladostephus spongiosus] are generally present. The faunal component of this biotope is typically sparse - the
Mixed kelps with scour-tolerant and opportunistic foliose red seaweeds on scoured or sand-covered infralittoral rock	Bedrock and boulders, often in tide-swept areas, that are subject to scouring or periodic burial by sand, characterised by a canopy of mixed kelps such as [Laminaria saccharina], [Laminaria hyperborea] and [Saccorhiza polyschides] and the brown seaweed [Desmarestia aculeata]; there may also be an understorey of foliose seaweeds that can withstand scour such as [Plocamium cartilagineum, Chondrus crispus, Dilsea carnosa], [Callophyllis laciniata] as well as the filamentous [Heterosiphonia plumosa] and the foliose brown seaweed [Dictyota dichotoma]. The perennial red seaweed [Brongniartella byssoides] re-grows in the summer months. The [L. hyperborea] stipes often support a growth of epiphytes, such as [Delesseria sanguinea], [Phycodrys rubens] and [Cryptopleura ramosa]. The scour can reduce the rock surface to bare coralline crusts at times; sponge crusts and the colonial ascidian [Botryllus schlosseri] can also grow on the stipes and holdfasts. The faunal diversity on the rock is usually low and restricted to robust, low-profile animals such as the tube-building polychaete [Pomatoceros triquet
[Halidrys siliquosa] and mixed kelps on tide-swept infralittoral rock with coarse sediment	Tide-swept boulders and cobbles, often with a mobile component to the substrata (pebbles, gravel and sand), characterised by dense stands of the brown seaweed [Halidrys siliquosa]. It is can be mixed with the foliose brown seaweed [Dictyota dichotoma] and kelp such as [Laminaria saccharina] and [Laminaria hyperborea]. Below the canopy is an undergrowth of red seaweeds that are tolerant of sand-scour such as [Phyllophora crispa, Phyllophora pseudoceranoides, Rhodomela confervoides, Corallina officinalis] and [Chondrus crispus]. Other red seaweeds such as [Plocamium cartilagineum], [Calliblepharis ciliata], [Cryptopleura ramosa], [Delesseria sanguinea], [Heterosiphonia plumosa, Dilsea carnosa, Hypoglossum hypoglossoides] and [Brongniartella byssoides] may be locally abundant, particularly in the summer months. There may be a rich epibiota on [H. siliquosa], including the hydroid [Aglaophenia pluma], ascidians such as [Botryllus schlosseri]. There is generally a sparse faunal component colonising the boulders and cobbles, comprising the tube-building polychaete [Pomatoceros

[Polyides rotundus], [Ahnfeltia plicata] and [Chondrus crispus] on sand-covered infralittoral rock	Low-lying rock surrounded by mobile sand and often subject to burying by the sand, with a turf of resilient red seaweeds [Chondrus crispus, Polyides rotundus] and [Ahnfeltia plicata] typically protruding through the sand on the upper surfaces of the rock. Other scour-tolerant seaweeds include [Rhodomela confervoides], [Phyllophora pseudoceranoides], [Phyllophora crispa, Furcellaria lumbricalis], [Gracilaria gracilis], [Ceramium rubrum, Plocamium cartilagineum, Heterosiphonia plumosa, Cryptopleura ramosa] and [Dilsea carnosa]. Coralline crusts typically cover the rock, while scattered individuals of the brown seaweeds [Halidrys siliquosa, Cladostephus spongiosus], [Dictyota dichotoma] and [Laminaria saccharina] can be present. The large anthozoan [Urticina felina] can occur in this biotope but there are few other conspicuous animals. Situation: This biotope occurs on shallow sand-covered rock, often below bedrock and boulders supporting kelp forest, which is above the effect of, sand scour (Lhyp) or abutting sand-scoured kelp on bedrock (XKScrR). It may also be found adjacent to the shallow kelp and
Atlantic and Mediterranean moderate energy infralittoral rock	Predominantly moderately wave-exposed bedrock and boulders, subject to moderately strong to weak tidal streams. On the bedrock and stable boulders there is typically a narrow band of kelp [Laminaria digitata] in the sublittoral fringe which lies above a [Laminaria hyperborea] forest and park. Associated with the kelp are communities of seaweeds, predominantly reds and including a greater variety of more delicate filamentous types than found on more exposed coasts (cf. A3.11).
[Laminaria digitata] on moderately exposed sublittoral fringe rock	Exposed to moderately exposed sublittoral fringe rock characterised by the kelp [Laminaria digitata] with coralline crusts covering the rock beneath the kelp canopy. Foliose red seaweeds such as [Palmaria palmata, Membranoptera alata, Chondrus crispus] and [Mastocarpus stellatus] are often present along with the calcareous [Corallina officinalis]. The brown seaweed [Fucus serratus] and the green seaweeds [Cladophora rupestris] and [Ulva lactuca] can be present as well. The sponge [Halichondria panicea] can be found among the kelp holdfasts or underneath overhangs. Also present on the rock are the tube building polychaete [Pomatoceros triqueter], the gastropods [Patella vulgata] and [Gibbula cineraria]. The bryozoan [Electra pilosa] can form colonies on especially [C. crispus, M. stellatus] and [F. serratus] while the hydroid [Dynanema pumila] are more common on the kelp. Three variants of this biotope are described: [L. digitata] forest on rocky shores (Ldig.Ldig). [L. digitata] on boulder shores (Ldig.Bo) and soft rock supporting [L. digitata], such as the chalk found in south-east England (Ld

[Laminaria digitata] on moderately exposed sublittoral fringe bedrock	Exposed to sheltered sublittoral fringe bedrock dominated by a dense canopy of [Laminaria digitata], often with a wide range of filamentous and foliose red seaweeds beneath. The most frequently occurring red seaweeds are [Palmaria palmata], [Corallina officinalis], [Mastocarpus stellatus], [Chondrus crispus, Lomentaria articulata] and [Membranoptera alata]. Generally the rocky substratum is covered by encrusting coralline algae, on which occasional limpets [Patella vulgata] and topshells [Gibbula cineraria] graze. A wide variety of fauna occurs, some of the most commonly occurring species being the sponge [Halichondria panicea] and the tube-building polychaete [Pomatoceros triqueter]. Kelp holdfasts provide a refuge for a varied assemblage of species such as sponges and the limpet [Helcion pellucidum], while encrusting bryozoans such as [Electra pilosa] more often are found on the fronds of foliose red seaweeds. Solitary ascidians may be locally abundant where overhanging or vertical rock occurs, while the hydroid [Dynamena pumila] can be abundant on [Fucus serratus] and [Laminaria] sp. fronds. On expo
[Laminaria digitata] and under-boulder fauna on sublittoral fringe boulders	This [Laminaria digitata] biotope is found predominantly on moderately exposed boulder shores and occasionally also on exposed or sheltered shores. Upper surfaces of the boulders are colonised by dense [L. digitata] though other kelp such as [Laminaria hyperborea] and [Laminaria saccharina] or the wrack [Fucus serratus] can be present at lower abundance. The kelp fronds can be colonised by the bryozoan [Membranipora membranacea]. Beneath the kelp canopy are a variety of red seaweeds such as [Mastocarpus stellatus], [Chondrus crispus], [Palmaria palmata], [Membranoptera alata], [Corallina officinalis] and coralline crusts. Green seaweeds include [Cladophora rupestris] and [Ulva lactuca]. Where space is available beneath the boulders (i.e. they are not buried in sediment) there may be a rich assemblage of animals. Characteristic species include the crabs [Porcellana platycheles], [Pisidia longicornis] and juvenile [Cancer pagurus]. Also present beneath the boulders are often high densities of the barnacle [Balanus crenatus], the tube-building polychaete [Pomatoceros triqueter], spirorbid worms, the po
[Laminaria digitata] and piddocks on sublittoral fringe soft rock	Soft rock, such as chalk, in the sublittoral fringe characterised by [Laminaria digitata] and rock-boring animals such as piddocks [Barnea candida] and [Pholas dactylus], the bivalve [Hiatella arctica] and worms [Polydora] spp. Beneath the kelp forest, a wide variety of foliose red seaweeds occur such as [Palmaria palmata], [Chondrus crispus], [Membranoptera alata] and [Halurus flosculosus]. Filamentous red seaweeds often present are [Polysiphonia fucoides] and [Ceramium nodulosum], while coralline crusts cover available rock surface. The bryozoan [Membranipora membranacea] and the hydroid [Dynanema pumila] can form colonies on the kelp fronds, while the bryozoan [Electra pilosa] more often occur on the foliose red seaweeds. Empty piddock burrows are often colonised by the polychaete [Sabellaria spinulosa] or in more shaded areas the sponges [Halichondria panicea] and [Hymeniacidon perleve]. The undersides of small chalk boulders are colonised by encrusting bryozoans, colonial ascidians and the tube-building polychaete [Pomatoceros lamarcki]. The boulders and any

[Laminaria hyperborea] forest, foliose red seaweeds and a diverse fauna on tide-swept upper infralittoral rock	Exposed to moderately exposed, tide-swept bedrock and boulders, with dense [Laminaria hyperborea] forest, characterised by a rich under-storey and stipe flora of foliose seaweeds. The kelp stipes support epiphytes such as [Callophyllis laciniata, Corallina officinalis, Cryptopleura ramosa, Membranoptera alata], and [Phycodrys rubens]. At some sites, instead of being covered by red seaweeds, the kelp stipes are heavily encrusted by the ascidians [Botryllus schlosseri] and in the south-west [Distomus variolosus]. Epilithic seaweeds ([Dilsea carnosa], [Hypoglossum hypoglossoides], [Delesseria sanguinea, Plocamium cartilagineum], [Brongniartella byssoides], and [Dictyota dichotoma]) and crustose seaweeds commonly occur beneath the kelp. The kelp fronds are often covered with growth of the hydroid [Obelia geniculata] or the bryozoan [Membranipora membranacea]. Although these species are also found in most kelp forests, in this biotope they are particularly dense. On the rock surface, a rich fauna comprising of the sponges [Pachymatisma johnstonia], [Halichondria panicea], [Esperiopsis fucorum]
[Laminaria hyperborea] park with hydroids, bryozoans and sponges on tide-swept lower infralittoral rock	Exposed to moderately wave-exposed, strongly tide-swept, rock with [Laminaria hyperborea] park characterised by a rich under-storey and stipe flora of foliose seaweeds such as [Phycodrys rubens], [Plocamium cartilagineum], [Hypoglossum hypoglossoides, Kallymenia reniformis], [Cryptopleura ramosa] and [Delesseria sanguinea]. The red seaweed [Heterosiphonia plumosa] can be present. The foliose brown seaweed [Dictyota dichotoma] and coralline crust are often present as well. Amongst the red seaweeds is a rich fauna comprising sponges ([Pachymatisma johnstonia], [Stelligera rigida], [Esperiopsis fucorum] and [Dysidea fragilis]), anthozoans ([Alcyonium digitatum] and [Caryophyllia smithii]), hydroids ([Aglaophenia pluma] and [Nemertesia antennina]), colonial ascidians ([Clavelina lepadiformis] and [Morchellium argus]) and bryozoans such as [Electra pilosa]. Both the flora and fauna of this biotope are similar to the wave exposed kelp park (LhypR.Pk), but LhypT.Pk has a greater faunal component including the barnacle [Balanus crenatus], the echinoderm [Asterias rubens] and the crab [Necor
[Laminaria hyperborea] and foliose red seaweeds on moderately exposed infralittoral rock	Moderately exposed infralittoral bedrock and boulders characterised by a canopy of the kelp [Laminaria hyperborea] beneath which is an under-storey of foliose red seaweeds and coralline crusts. Some red seaweeds can be found as epiphytes on the kelp stipes and include [Delesseria sanguinea] and [Phycodrys rubens]. Other red seaweeds present include the [Plocamium cartilagineum, Callophyllis laciniata, Cryptopleura ramosa] and the brown seaweeds [Dictyota dichotoma] and [Cutleria multifida]. The kelp fronds can be colonised by the hydroid [Obelia geniculata] or the bryozoans [Membranipora membranacea]. The echinoderm [Antedon bifida], the ascidian [Clavelina lepadiformis], the tube-building polychaete [Pomatoceros triqueter], the anthozoans [Alcyonium digitatum] and [Urticina felina] can be found on the rock beneath the canopy. Mobile species often present include the gastropods [Gibbula cineraria] and [Calliostoma zizyphinum] and the echinoderms [Echinus esculentus] and [Asterias rubens]. Five variants has been described: Kelp forest (Lhyp.Ft), kelp park (Lhyp.Pk), grazed kelp forest (L

[Laminaria hyperborea] forest and foliose red seaweeds on moderately exposed upper infralittoral rock	Moderately exposed upper infralittoral bedrock and boulders characterised by a dense forest of [Laminaria hyperborea] with dense foliose red seaweeds beneath the canopy. These include [Callophyllis laciniata], [Plocamium cartilagineum], [Cryptopleura ramosa] and [Delesseria sanguinea]. Kelp stipes are usually covered in a rich mixture of red seaweeds of which [Palmaria palmata], [Phycodrys rubens] and [Membranoptera alata] are often present. Small kelp plants can also be found on the larger kelp stipes. Kelp fronds may be covered with a hydroid growth of [Obelia geniculata] or the bryozoans [Membranipora membranacea] and [Electra pilosa]. The kelp holdfasts can be colonised by bryozoans [Scrupocellaria] spp. and/or crisiids and colonial ascidians such as [Botryllus schlosseri]. The rock surface between the kelp plants is generally covered by encrusting coralline algae, often with sponge crusts [Halichondria panicea]. Small vertical surfaces within the kelp forest generally lack kelp plants, instead being characterised by foliose red seaweeds such as [Dictyota dichotoma], the anthozoans [Alcyonium c
[Laminaria hyperborea] park and foliose red seaweeds on moderately exposed lower infralittoral rock	Below the dense kelp forest (Lhyp.Ft) on moderately exposed lower infralittoral bedrock and boulders, the kelp thins out to form a park. Beneath the kelp, the rock and kelp stipes are covered by an often dense turf of foliose red seaweeds such as [Callophyllis laciniata], [Plocamium cartilagineum], [Delesseria sanguinea, Hypoglossum hypoglossoides, Cryptopleura ramosa, Callophyllis laciniata] and [Phycodrys rubens]. Coralline crusts are often present on the rock surface. Many species of red seaweed found in this biotope occur at greater abundance in the shallower kelp forest. Other seaweeds, such as the red seaweeds [Bonnemaisonia asparagoides] and [Hypoglossum hypoglossoides] as well as the brown seaweed [Dictyota dichotoma] are more abundant in this zone than the upper infralittoral. The faunal component of this biotope is similar to that found below the kelp in the upper infralittoral zone and include the hydroid [Obelia geniculata], the ascidian [Clavelina lepadiformis], the anthozoans [Urticina felina, Alcyonium digitatum] and [Caryophyllia smithii], the tube-building polychaete [Pomatoceros triqueter
Grazed [Laminaria hyperborea] forest with coralline crusts on upper infralittoral rock	Exposed to moderately exposed [Laminaria hyperborea] forest is in some areas intensely grazed by the urchin [Echinus esculentus]. The rock surface lacks a significant turf of foliose seaweeds and generally looks bare, though encrusting algae cover the rock. In addition to these encrusting coralline algae, non-calcareous crusts such as [Cruoria pellita] and brown algal crusts also occur. The kelp stipes may or may not be grazed; in the most extremely grazed areas, the stipes are also devoid of seaweeds. More usually, however, the stipes offers a refuge from grazing, and are characterised by dense turfs of red seaweeds, especially [Phycodrys rubens, Callophyllis laciniata, Plocamium cartilagineum] and [Delesseria sanguinea]. The hydroid [Obelia geniculata] and the bryozoan [Membranipora membranacea] colonise the kelp fronds. On the rock itself certain brown seaweeds such as [Cutleria multifida] may persist in this grazed environment. Fast-growing species such as the kelp [Laminaria saccharina] may be present at sites recovering from grazing, opportunistically colonising the rock surfaces tha

Grazed [Laminaria hyperborea] park with coralline crusts on lower infralittoral rock	Exposed to moderately exposed [Laminaria hyperborea] kelp park in some areas is intensively grazed by the urchin [Echinus esculentus]. The rock surface lacks a significant turf of foliose seaweeds and generally looks bare, though coralline algal crusts and some grazing-resistant animals such as the tube-building polychaete [Pomatoceros triqueter] cover it. The kelp stipes may or may not be grazed; in the most extremely grazed areas, the stipes are also devoid of seaweeds. More usually, however, the stipes offers a refuge from grazing, and are characterised by dense turfs of red seaweeds, especially [Phycodrys rubens] and [Delesseria sanguinea]. Brown seaweeds present include [Cutleria multifida, Laminaria saccharina] and [Dictyota dichotoma]. The fauna within a grazed kelp park is also relatively sparse, though some species will survive in cracks and crevices or under boulders including the ascidian [Clavelina lepadiformis]. The encrusting bryozoan [Parasmittina trispinosa] and the anthozoans [Alcyonium digitatum], [Urticina felina] and [Caryophyllia smithii] often characterise vertical or ove
[Sabellaria spinulosa] with kelp and red seaweeds on sand-influenced infralittoral rock	[Laminaria hyperborea] kelp forest on shallow infralittoral bedrock and boulders characterised by encrustations of [Sabellaria spinulosa] tubes which cover much of the rock, together with sand-tolerant red seaweeds such as [Phyllophora pseudoceranoides, Dilsea carnosa] and [Polysiphonia elongata] and [Polysiphonia fucoides]. Red seaweeds such as [Plocamium cartilagineum] and [Delesseria sanguinea] may also be found beneath the kelp canopy, although typically low in abundance. They can be colonised by the ascidian [Botryllus schlosseri]. The cowrie [Trivia arctica] can also be found here. Much of the available rock is covered with encrusting coralline algae together with patches of the encrusting sponge [Halichondria panicea] and the anthozoan [Urticina felina]. More mobile fauna include the echinoderms [Asterias rubens, Henricia sanguinolenta, Echinus esculentus], and [Ophiothrix fragilis], the gastropod [Gibbula cineraria] and the hermit crab [Pagurus bernhardus]. The scouring effect of mobile sand adjacent to the rock maintains a reduced underflora and fauna compared to the association of species fou
[Laminaria digitata], ascidians and bryozoans on tide-swept sublittoral fringe rock	Sheltered bedrock, boulders and cobbles that are subject to moderate to strong tidal water movement characterised by dense [Laminaria digitata], coralline crusts and sponges such as [Halichondria panicea]. Other seaweeds present include the foliose red [seaweeds Chondrus crispus, Palmaria palmata, Cryptopleura ramosa] and [Mastocarpus stellatus] as well as the calcareous [Corallina officinalis]. Green seaweeds present include [Ulva lactuca, Enteromorpha intestinalis] and [Cladophora rupestris]. The increased water movement encourages several filter-feeding faunal groups to occur. The sponges [Leucosolenia] spp., [Scypha ciliata] and [Hymeniacidon perleve] frequently occur on steep and overhanging rock faces. The bryozoans [Electra pilosa], [Membranoptera membranipora] and [Alcyonidium hirsutum] encrust the kelp and other foliose seaweeds. In addition, ascidians such as [Ascidiella scabra], [Dendrodoa grossularia] and colonial ascidians [Botryllus byssoides] and [Botryllus leachi] often thrive in this environment encrusting both the rock and the seaweeds. The tube-building polychaete

[Laminaria saccharina] with foliose red seaweeds and ascidians on sheltered tide-swept infralittoral rock	Sheltered, tide-swept rock in south-western Britain tends to be restricted to estuarine conditions, where variable salinity and increased turbidity have a significant effect on the biota. Due to the turbidity of the water, the infralittoral zone is restricted to very shallow depths. Unlike the tide-swept channels in sealochs, which support a mixed kelp canopy, the rock in these estuaries is characterised by [Laminaria saccharina] alone, occurring in relatively low abundance (Frequent). The brown alga [Desmarestia ligulata] can occur in this biotope, though never dense, along with the non-native brown seaweed [Sargassum muticum]. Beneath the sparse kelp, cobbles and boulders, often surrounded by sediment, are encrusted by fauna and often a dense turf of red seaweed. The foliose red seaweeds associated with this biotope include [Callophyllis laciniata], [Nitophyllum punctatum], [Kallymenia reniformis], [Gracilaria gracilis], [Gymnogongrus crenulatus], [Hypoglossum hypoglossoides], [Rhodophyllis divaricata], [Chylocladia verticillata], [Cryptopleura ramosa] and [Erythroglossum laciniatum] as well as the filar
Filamentous red seaweeds, sponges and [Balanus crenatus] on tide-swept variable-salinity infralittoral rock	Tide-swept infralittoral rock subject to variable salinity and turbid waters occurs in the mid to upper reaches of the rias of south-west Britain, where riverine freshwater input reduces the salinity. Very shallow rock under these conditions is characterised by a covering of filamentous red seaweed such as [Callithamnion] spp., [Antithamnion] spp., [Ceramium] spp., [Griffithsia devoniensis], [Pterothamnion plumula] and [Polysiphonia fucoides], as well as the filamentous green seaweed [Cladophora] spp. Foliose red seaweeds such as [Hypoglossum hypoglossoides], [Cryptopleura ramosa] and [Erythroglossum laciniatum] commonly occur, as does the foliose green seaweed [Ulva lactuca]. Although [Laminaria saccharina] is often present it is usually in very low abundance (Occasional). The fluctuating salinity limits the number of species able to exist in this habitat. The animal community is dominated by the sponges [Halichondria panicea] and [Hymeniacidon perleve] and the barnacle [Balanus crenatus]. The ascidians [Clavelina lepadiformis] and [Dendrodoa grossularia] can be locally abundant at some sites. The crab
Atlantic and Mediterranean low energy infralittoral rock	Infralittoral rock in wave and tide-sheltered conditions, supporting silty communities with [Laminaria hyperborea] and/or [Laminaria saccharina] (A3.31). Associated seaweeds are typically silt-tolerant and include a high proportion of delicate filamentous types. In turbid-water estuarine areas, the kelp and seaweeds (A3.32) may be replaced by animal-dominated communities (A3.36) whilst stable hard substrata in lagoons support distinctive communities (A3.34).

Mixed [Laminaria hyperborea] and [Laminaria saccharina] on sheltered infralittoral rock	Mixed [Laminaria hyperborea] and [Laminaria saccharina] on bedrock and boulders in sheltered infralittoral habitats. Typically subject to weak tidal streams and rather silty conditions. Beneath the kelp is an associated under-storey flora of foliose red seaweeds including [Plocamium cartilagineum, Cryptopleura ramosa] and [Callophyllis laciniata] as well as the brown seaweeds [Dictyota dichotoma], [Cutleria multifida] and [Desmarestia aculeata]. The stipes of [L. hyperborea] may be densely covered with red seaweeds such as [Phycodrys rubens] and [Delesseria sanguinea] as well as the solitary ascidian [Clavelina lepadiformis] and the featherstar [Antedon bifida]. The fronds are often epiphytised by the hydroid [Obelia geniculata] and the bryozoan [Membranipora membranacea]. Beneath the kelp canopy, the faunal component is generally less diverse than the more exposed kelp forests, dominated by the echinoderms [Echinus esculentus] and [Asterias rubens], but the tops shells [Gibbula cineraria] and [Calliostoma zizyphinum] can be common as well. The crab [Necora puber] and the
Mixed [Laminaria hyperborea] and [Laminaria saccharina] forest on sheltered upper infralittoral rock	Sheltered, often silted, upper infralittoral bedrock and boulder slopes with mixed kelps [Laminaria hyperborea] and [Laminaria saccharina] and red seaweeds beneath. The kelp at these sheltered sites often has large `cape-form' fronds, which form a dense canopy over the seabed and are often epiphytised by the hydroid [Obelia geniculata] and the bryozoan [Membranipora membranacea]. Beneath the kelp, red seaweeds such as [Delesseria sanguinea] and [Cryptopleura ramosa] occur on top of encrusting coralline algae. Often, a dense algal turf of [Bonnemaisonia hamifera] (tetrasporophyte) carpets the rock. The stipes of [L. hyperborea] may be densely covered with seaweeds such as [Phycodrys rubens], [Plocamium cartilagineum] and [Porphyropsis coccinea]. There can also be a prominent faunal component on the stipes including the solitary ascidian [Clavelina lepadiformis] and the colonial ascidian [Botryllus schlosseri]. Brown seaweeds, occurring here in low abundance, include [Dictyota dichotoma]. The kelp [Saccorhiza polyschides] may also occur but rarely in equal abundance to [L.
Mixed [Laminaria hyperborea] and [Laminaria saccharina] park on sheltered lower infralittoral rock	Sheltered silted, bedrock and boulders with a park of mixed [Laminaria hyperborea] and [Laminaria saccharina]. Both kelp species are sparse in the park (Frequent). Beneath the often 'cape-form' kelp canopy, foliose red seaweeds such as [Delesseria sanguinea, Cryptopleura ramosa], [Heterosiphonia plumosa] and [Brongniartella byssoides] are often present at high densities on the silted rock. Other red seaweeds such as encrusting coralline algae, [Phycodrys rubens, Callophyllis laciniata, Bonnemaisonia asparagoides] and [Plocamium cartilagineum] can be present. Other brown seaweeds include [Dictyota dichotoma] and [Desmarestia aculeata]. The animal component of this biotope is generally richer than the upper infralittoral mixed kelp forest (LhypLsac.Ft). A variety of hydroids such as [Obelia geniculata] grow epiphytically on the kelp fronds along with the bryozoan [Membranipora membranacea]. The echinoderm [Antedon bifida] and ascidians such as [Clavelina lepadiformis] attach to the kelp stipes, above the silted rock. The rock itself supports anthozoans such as [Caryophyllia smithii] and [Ur

[Laminaria saccharina] on very sheltered infralittoral rock	Very sheltered infralittoral rock dominated by the kelp [Laminaria saccharina]. Typically very silty and often with few associated seaweeds due to siltation, grazing or shading from the dense kelp canopy. The most commonly occurring red seaweeds are [Delesseria sanguinea], [Phycodrys rubens, Bonnemaisonia hamifera] and coralline crusts. In addition to the kelp the brown seaweed [Chorda filum] and Ectocarpaceae are often present. As well as lacking [Laminaria hyperborea], the Lsac biotopes have fewer foliose and filamentous red seaweed species by comparison to LhypLsac biotopes. A depauperate assemblage of animals is present (by comparison to Lhyp.Ft and Lhyp.Pk) predominantly consisting of the encrusting polychaetes [Pomatoceros triqueter], the crabs [Carcinus maenas] and [Pagurus bernhardus] and the ubiquitous gastropod [Gibbula cineraria]. The echinoderms [Antedon bifida], starfish [Asterias rubens], brittlestar [Ophiothrix fragilis] and urchin [Echinus esculentus] occur in low abundance. Ascidians are commonly found in all the Lsac biotopes, but
[Laminaria saccharina] and [Laminaria digitata] on sheltered sublittoral fringe rock	Sheltered bedrock and boulders in the sublittoral fringe characterised by a mixed canopy of the kelp [Laminaria digitata] (usually in its broad-fronded cape-form) and [Laminaria saccharina] - both species are generally Frequent or greater. Beneath the kelp canopy, the understorey of red seaweeds often includes [Chondrus crispus, Dumontia contorta, Bonnemaisonia hamifera] and [Plocamium cartilagineum]. The surface of the rock is usually covered with encrusting coralline algae as well as non-calcified red crusts and the tube-building polychaete [Pomatoceros triqueter]. The brown seaweeds [Chorda filum], Ectocarpaceae and [Fucus serratus] can be present along with the green seaweeds [Ulva lactuca] and [Enteromorpha intestinalis]. Patches of the sponge [Halichondria panicea] can frequently be found in cracks and crevices. Beneath and between boulders a variety of mobile crustaceans such as [Carcinus maenas], the gastropod [Gibbula cineraria] and the starfish [Asterias rubens] are common. Situation: Where hard substrata occur on the shore, this biotope will be found below the [F. serratus] zone (Fser.Fse
[Laminaria saccharina] forest on very sheltered upper infralittoral rock	Sheltered to extremely sheltered sublittoral fringe and infralittoral bedrock, boulders and cobbles characterised by a dense canopy of the kelp [Laminaria saccharina]. In such sheltered conditions, a distinct sublittoral fringe is not always apparent and this biotope can therefore extend from below the [Fucus serratus] zone (Fserr) into the upper infralittoral zone, though there may be a mixed [L. saccharina] and [Laminaria digitata] zone (Lsac.Ldig) in between. There is a relatively low species diversity and species density due to a combination of heavy siltation of the habitat and the lack of light penetrating through the dense kelp canopy. Only a few species of red seaweeds are present compared with Lsac.Ldig or LhypLsac. The most commonly occurring red seaweeds are [Delesseria sanguinea], [Phycodrys rubens], [Bonnemaisonia hamifera] and coralline crusts. Brown seaweeds are also sparse and generally comprise [Chorda filum] and ectocarpoids. At extremely sheltered sites, where there is a heavy silt cover on the rock and the kelp fronds, the sub-flora is reduced to a few specialised species

[Laminaria saccharina] park on very sheltered lower infralittoral rock	Silty bedrock or boulders with a [Laminaria saccharina] park (often the cape-form). Beneath the canopy, the rock is covered by encrusting coralline algae, and the urchin [Echinus esculentus] is often present. Due to the amount of silt cover on the rock and the reduced light intensity beneath the broad-fronded kelp, only a few red seaweeds typically survive, the most common species being [Phycodrys rubens], [Delesseria sanguinea], [Bonnemaisonia] spp. and [Brongniartella byssoides]. The brown seaweeds [Dictyota dichotoma] and [Cutleria multifida] may be present in low abundance. Compared to the kelp forest zone above (Lsac.Ft) both the kelp and other seaweeds are sparse (Occasional). The most conspicuous animals are large solitary ascidians, particularly [Ascidia mentula] and [Ciona intestinalis], together with the smaller [Clavelina lepadiformis]. In general, the faunal component of this biotope is similar to other sheltered kelp biotopes and includes a variety of mobile crustaceans such [Carcinus maenas] and [Pagurus bernhardus], the keelworm [Pomatoceros] spp., terebellid worms, echinoc
Grazed [Laminaria saccharina] with [Echinus], brittlestars and coralline crusts on sheltered infralittoral rock	Coralline encrusted rock with scattered tufts of red seaweed and a relatively high abundance of grazing echinoderms which typically include the urchin [Echinus esculentus] and/or the brittlestars [Ophiothrix fragilis] or [Ophiocomina nigra]. The rock often looks bare, with few conspicuous species present although [Laminaria saccharina] may occur it is generally in low abundance (Rare or Occasional). The red seaweeds, reduced to small tufts through grazing, include [Phycodrys rubens], [Delesseria sanguinea] and [Brongniartella byssoides] and although these seaweeds also occur in Lsac.Pk they are far less frequent in this biotope. Brown seaweeds, such as [Desmarestia viridis], [Chorda filum] and [Cutleria multifida], may be present. Grazing molluscs, such as [Gibbula cineraria] and can be common. Under-boulder habitats can harbour the crabs Necora puber and [Pagurus bernhardus], terebellid polychaetes and the polychaete [Pomatoceros] spp. with ascidians [Ascidia mentula]. and [Clavelina lepadiformis] on the open rock along with the echinoderm [Asterias rubens] and the hydroids [Kirchenpauria pir
[Codium] spp. with red seaweeds and sparse [Laminaria saccharina] on shallow, heavily-silted, very sheltered infralittoral rock	Very shallow, heavily-silted infralittoral rock characterised by dense stands of [Codium] spp., together with silt-tolerant red seaweeds, the green seaweed [Ulva] spp. and often only a sparse covering of the kelp [Laminaria saccharina]. This biotope appears to have a restricted distribution, being known at present only from the sheltered voes of Shetland, some Scottish lagoons and from the harbours of south-west England. These locations suggest the habitat is likely to be subject to reduced salinity conditions (although the habitat data indicate mostly fully marine records). Dense [Codium] spp. can occur at very sheltered sites, on cobbles or boulders, often in dense patches interspersed with filamentous red seaweeds [Bonnemaisonia hamifera], [Antithamnionella spirographidis] and [Ceramium] spp. Where sediment is present the red seaweed [Polyides rotundus] is commonly found along the rock-sediment interface, and the sponge [Dysidea fragilis] often occurs on the rock. Other red seaweeds that may be present include [Chondrus crispus], [Callophyllis laciniata], [Gelidium latifolium], [Corallina officinalis] and cora

[Laminaria saccharina] and [Psammechinus miliaris] on variable salinity grazed infralittoral rock	Sheltered bedrock, boulders and cobbles, in areas of reduced salinity, with kelp [Laminaria saccharina], and depauperate coralline-encrusted rock supporting few foliose seaweeds but many grazing urchins [Psammechinus miliaris] and [Echinus esculentus]. The coralline crusts are typically [Lithothamnion glaciale], while the brown crusts can be [Pseudolithoderma extensum]. Encrusting polychaetes [Pomatoceros triqueter], resistant to the grazing, are also present on most of the rock. The grazing fauna are a significant component of this biotope; large numbers of [P. miliaris] are typically present, although where absent the brittlestar [Ophiothrix fragilis] may occur. Other grazers prevalent on the rock include the chiton [Tonicella marmorea], the limpet [Tectura testudinalis] and the gastropod [Gibbula cineraria]. A combination of grazing pressure and lowered salinity maintains a low diversity of species in this biotope, with foliose and filamentous seaweeds generally absent or reduced to small tufts by grazing. In stark contrast to the range of seaweeds present in the [L. saccharina] forests (Lsac.Ft) the only red sea
[Laminaria saccharina] with [Phyllophora] spp. and filamentous green seaweeds on variable or reduced salinity infralittoral rock	Shallow infralittoral bedrock or boulder slopes, in reduced or low salinity conditions, characterised by the kelp [Laminaria saccharina] with dense stands of silted filamentous green seaweeds and red seaweeds [Phyllophora crispa], [Phyllophora pseudoceranoides] and [Phycodrys rubens]. The filamentous green seaweeds e.g. [Chaetomorpha melagonium] and [Cladophora] spp. can form a blanket cover amongst the [L. saccharina] in the upper zone, which is under greater influence of freshwater input. In deeper water the green seaweeds are replaced by red seaweed [Phyllophora] spp. or [Polysiphonia fucoides] which may form a distinct sub-zone in the biotope. Coralline crust can be present. The solitary ascidians [Corella parallelogramma] and [Ascidiella scabra] are often epiphytic on the seaweed (particularly [Phyllophora] spp.) and dominate the animal community along with the starfish [Asterias rubens]. The small ascidian [Dendrodoa grossularia], the barnacle [Balanus crenatus] and the tube-building polychaete [Pomatoceros triqueter] occur on the rock surface. More mobile species include the crab [Carcinus mae
Submerged fucoids, green or red seaweeds (low salinity infralittoral rock)	Very shallow submerged rocky habitats in lagoons, subject to reduced or permanently low salinity conditions. These particular conditions lead to a variety of seaweed-dominated communities, which include fucoids and green filamentous species. The fucoids, more typical of intertidal habitats, penetrate into the subtidal under the reduced salinity conditions which are not tolerated by kelps.

Mixed fucoids, [Chorda filum] and green seaweeds on reduced salinity infralittoral rock	Permanently submerged mixed fucoids on rock in lagoons. The main species are the wracks [Fucus serratus] and [Fucus vesiculosus], but the brown seaweeds [Chorda filum], [Ascophyllum nodosum] and Ectocarpaceae can be present as well. Red seaweeds are normally present and include [Mastocarpus stellatus, Polyides rotundus, Chondrus crispus, Ceramium] spp. and coralline crusts. A variety of green seaweeds is also present and include [Enteromorpha] spp., while dense patches of [Cladophora rupestris] may occur on vertical rock faces. The faunal component is restricted to the mussel [Mytilus edulis], the polychaete [Arenicola marina] and the crab [Carcinus maenas]. Opossum shrimps Mysidae can be present as well. The kelp [Laminaria saccharina] is absent, possibly due to the low salinity conditions. Situation: Nearby rock often supports similar biotopes of submerged fucoids (AscSpAs and FcerEnt) or where salinity is further reduced ProtFur can occur. Slightly deeper rock often supports [Laminaria saccharina] (Lsac.Ft), usually surrounded by more extensive areas of
[Ascophyllum nodosum] and epiphytic sponges and ascidians on variable salinity infralittoral rock	Dense subtidal stands of [Ascophyllum nodosum], heavily epiphytised by sponges and ascidians in lagoon-like habitats. The wracks [Fucus vesiculosus] and [Fucus serratus] can be present along with the brown seaweed [Chorda filum] and the red seaweed [Polyides rotundus]. The crab [Carcinus maenas] can be present between the [A. nodosum] holdfasts along with the shrimps Mysidae. Situation: Nearby rock often supports similar biotopes of submerged fucoids and green seaweeds (FChoG). Slightly deeper rock often supports [Laminaria saccharina] (Lsac.Ft), usually surrounded by more extensive areas of sediment. Seagrass beds thrive well in the muddy sand of these lagoons and often cover large areas. They include both [Ruppia maritima] and [Zostera marina] (Rup and Zmar).
[Polyides rotundus] and/or [Furcellaria lumbricalis] on reduced salinity infralittoral rock	Bedrock and boulders characterised by a dense turf of the red seaweeds [Polyides rotundus] and/or [Furcellaria lumbricalis], often with a dense mat of filamentous brown and green seaweeds including Ectocarpaceae and [Cladophora] spp. Other red seaweeds presents include [Chondrus crispus, Gracilaria gracilis] and coralline crusts as well as the odd brown seaweed [Chorda filum] or [Laminaria] spp. Associated with these seaweeds are a variety of ascidians including [Clavelina lepadiformis, Ascidiella aspersa, Ascidiella scabra] and [Ciona intestinalis] as well as the anemones [Anemonia viridis] and [Actinia equina] and the sponge [Halichondria panicea]. More mobile fauna include the starfish [Asterias rubens], the crab [Carcinus maenas], the hermit crab [Pagurus bernhardus], the opossum shrimps Mysidae and the gastropod [Littorina littorea]. Attached to the rock or cobbles are spirorbid polychaetes and the mussel [Mytilus edulis]. Please notice that part of this diversity is due to large differences between sites. Situation: Nearby rock (AscSpAs and FChoG) and seagrass [Ruppia maritima] dominating much of the surroun
[Fucus ceranoides] and [Enteromorpha] spp. on low salinity infralittoral rock	Permanently submerged lagoon fringes with dense communities of the wrack [Fucus ceranoides] and the green seaweed [Enteromorpha] spp. There is typically a very limited associated biota due to low salinity conditions, and may include the opossum shrimps Mysidae and the freshwater/brackish gastropod [Potamopyrgus antipodarum].

Faunal communities on variable or reduced salinity infralittoral rock	Shallow subtidal rocky habitats which support faunal-dominated communities, with seaweed communities only poorly developed or absent. In some sealochs dense mussel [Mytilus edulis] beds (A3.361) develop in tide-swept channels, whilst upper estuarine rocky habitats in the south-west coast rias may support particular brackish-water tolerant faunas (A3.362; A3.363).
Mussel beds on reduced salinity infralittoral rock	This biotope occur in shallow, often tide-swept, reduced salinity conditions. Dense beds of the mussel [Mytilus edulis] with the occasional barnacle [Balanus crenatus]. A wide variety of epifaunal colonisers on the mussel valves, including seaweeds, hydroids and bryozoans can be present. Predatory starfish [Asterias rubens] can be very common in this biotope. This biotope generally appears to lack large kelp plants, although transitional examples containing mussels and kelps plants may also occur. More information needed to validate this description. Situation: Occurs in tide-swept entrance channels in very enclosed basins of sealochs where the basins are typically of lowered salinity. Also occurs in very sheltered subtidal rock (often vertical) in lagoons.
[Cordylophora caspia] and [Electra crustulenta] on reduced salinity infralittoral rock	Shallow sublittoral rock in the upper estuary of one of the south-west inlets (Tamar) with very high turbidity and therefore no seaweeds. The brackish-water hydroid [Cordylophora caspia] and small colonies of the encrusting bryozoan [Electra crustulenta] and a few [Balanus crenatus] characterise this biotope. More information required to validate this description.
[Hartlaubella gelatinosa] and [Conopeum reticulum] on low salinity infralittoral mixed substrata	Upper estuarine mixed hard substrata colonised by very sparse communities of animals with low species richness and with a few seaweeds in very shallow water. In the Tamar estuary the hydroid [Hartlaubella gelatinosa] and bryozoan [Conopeum reticulum] are found on stones. In the River Dart the bryozoan [Bowerbankia imbricata] is most abundant. The mussel [Mytilus edulis], the crab [Carcinus maenas] and the hydroid [Obelia dichotoma] can be present. A similar brackish-water rocky biotope is recorded from the Bann Estuary, Northern Ireland. There are considerable differences in species composition between sites, but all occur in brackish turbid-water conditions. More information required to validate this description.
Robust faunal cushions and crusts in surge gullies and caves	Infralittoral rocky habitats subject to strong wave surge conditions, as found in surge gullies and shallow caves, and typically colonised by faunal communities of encrusting or cushion sponges, colonial ascidians, short turf-forming bryozoans, anthozoans, barnacles and, where there is sufficient light, red seaweeds. These features usually consist of vertical bedrock walls, occasionally with overhanging faces, and support communities which reflect the degree of wave surge they are subject to, and any scour from mobile substrata on the cave/gully floors. The larger cave and gully systems, such as found in Shetland, Orkney, the Western Isles and St Kilda, typically show a marked zonation from the entrance to the rear of the gully/cave as wave surge increases and light reduces. This is reflected in communities of anthozoans, ascidians, bryozoans and red seaweeds near the entrance, leading to sponge crust-dominated communities and finally barnacle and spirorbid worm communities in the most severe surge conditions. Gully/cave floors usually have mobile boulders, cobbles, pebbles or coarse sediment. The mobile nature of the

Foliose seaweeds and coralline crusts in surge gully entrances	This biotope is found on steep wave-surged entrances to gullies and caves and on unstable boulders in the entrance to caves and gullies. The rock may be abraded by the movement of the boulders and cobbles in heavy surge and tends to be dominated by dense foliose seaweeds that grow rapidly in the calmer summer months. Beneath the foliose seaweeds the rock surface is typically covered with coralline crusts, which are longer-lived, and tolerant of abrasion. The flora of this biotope is relatively varied, depending upon the amount of light and degree of abrasion or rock mobility with red seaweeds such as [Cryptopleura ramosa], [Plocamium cartilagineum], [Odonthalia dentata], [Callophyllis laciniata], [Phycodrys rubens], [Hypoglossum hypoglossoides], [Phyllophora crispa] and [Corallina officinalis]. The brown seaweed [Dictyota dichotoma] also occurs in these conditions, since it is tolerant of some sand scour. During the summer months small fast-growing kelp plants can arise in this biotope, although the mobility of the substratum prevents the kelp from forming a kelp forest. Dense swathes of very youn
Anemones, including [Corynactis viridis,] crustose sponges and colonial ascidians on very exposed or wave surged vertical infralittoral rock	Vertical very exposed and exposed bedrock gullies, tunnels and cave entrances subject to wave-surge dominated by sponge crusts such as [Clathrina coriacea, Myxilla incrustans, Pachymatisma johnstonia] and [Halichondria panicea] and anthozoans such as [Sagartia elegans, Urticina felina, Alcyonium digitatum, Corynactis viridis] and dwarf [Metridium senile] generally dominate the area; the anthozoans often appearing to protrude through the sponge layer. There may be dense aggregations of the hydroid [Tubularia] [indivisa], the cup coral [Caryophyllia smithii] and the colonial ascidians [Botrylloides leachi] and [Polyclinum aurantium]. There may be a short crisiid turf, interspersed with [Scrupocellaria reptans]. Encrusting coralline algae may occur on well-illuminated rock faces. The echinoderms [Asterias rubens], [Marthasterias glacialis], [Echinus esculentus], [Antedon bifida] and [Ophiothrix fragilis], the topshell [Calliostona zizphinum] and the calcareous tubeworm [Pomatoceros triqueter] may also be present on the rock face. The crabs [Cancer pagurus] and [Necora puber] may also b
[Dendrodoa grossularia] and [Clathrina coriacea] on wave-surged vertical infralittoral rock	Vertical or overhanging infralittoral rock subject to considerable wave-surge, especially in the middle or back of caves but also in gullies and tunnels, and dominated by dense sheets of the ascidian [Dendrodoa grossularia], together with variable quantities of the sponge [Clathrina coriacea]. At some sites [D. grossularia] forms continuous sheets, with few other species present. Other sponges such as [Esperiopsis fucorum], [Pachymatisma johnstonia], [Leucosolenia botryoides], [Scypha ciliata] and [Halichondria panicea] regularly occur in this biotope, though generally at low abundance. Other ascidians, especially [Polyclinum aurantium], [Diplosoma] spp. and other didemnids may also occur, though only [P. aurantium] is ever as abundant as [D. grossularia]. Being characteristically found in the middle or towards the backs of the caves mean that there is generally insufficient light to support any foliose seaweeds, although encrusting coralline algae are not uncommon. More scoured areas may also contain the anemone [Urticina felina], whilst [Sagartia elegans] is often present in low numbers. Mobile fauna are often

Crustose sponges on extremely wave-surged infralittoral cave or gully walls	Walls, or massive boulders, in caves or gullies that are subject to severe wave-surge and characterised by extensive thin crusts of the sponge [Halichondria panicea] with smaller patches of other sponges such as [Esperiopsis fucorum] or [Clathrina coriacea]. Small turfs of robust hydroids, such as [Diphasia rosacea] and [Ventromma halecioides], and patches of the barnacle [Balanus crenatus], coralline crusts and tube-building spirorbid polychaetes may be present. The starfish [Henricia] spp., the brittlestar [Ophiopholis aculeata] and the crabs [Cancer pagurus] and [Necora puber] can be present. The anemones [Sagartia elegans], [Urticina felina] and [Actinia equina] can be found in cracks and crevices or under boulders. The mussel [Mytilus edulis] may be present in low densities. Situation: This surge-tolerant biotope of low-growing fauna is typically confined to the mid or rear section of caves (or the narrowest part of gullies) where the wave-surge is intensified. It generally abuts the less surged ascidian-sponge communities (CrSpAsAn, DenCcor and CrSpAsDenB). A highly scoured zone of barnacles and calc
Coralline crusts in surge gullies and scoured infralittoral rock	Scoured rock in wave-surged caves, tunnels or gullies often looks rather bare, and may be characterised by a limited scour-tolerant fauna of [Balanus crenatus] and/or [Pomatoceros triqueter] with spirorbid polychaetes. In areas where sufficient light is available and scour is severe, encrusting coralline algae and non-calcareous crusts cover the rock surface, giving a pink appearance. This biotope most commonly occurs at the bottom of walls in caves and gullies, where abrasion by cobbles and stones is severe, especially during winter. In some gullies, extreme scouring and abrasion produces a narrow band of bare coralline algal crust at the very bottom of the walls, with a band of [P. triqueter] and/or [B. crenatus] immediately above. Other scour-tolerant species, such as encrusting bryozoans may also be common. Crevices and cracks in the rock provide a refuge for sponge crusts such as [Halichondria panicea] and occasional anemones [Urticina felina] and [Sagartia elegans]. More mobile fauna is usually restricted to the
[Balanus crenatus] and/or [Pomatoceros triqueter] with spirorbid worms and coralline crusts on severely scoured vertical infralittoral rock	Severely scoured bedrock in wave-surged caves, tunnels or gullies often looks rather bare, and may be characterised by a limited scour-tolerant fauna of [Balanus crenatus] and/or [Pomatoceros triqueter] with spirorbid polychaetes. In areas where sufficient light is available, encrusting coralline algae and non-calcareous crusts cover the rock surface, giving a pink appearance. This biotope most commonly occurs at the bottom of walls in caves and gullies, where abrasion by cobbles and stones is severe, especially during winter. In some gullies, extreme scouring and abrasion produces a narrow band of bare coralline algal crust at the very bottom of the walls, with a band of [P. triqueter] and or [B. crenatus] immediately above. In some caves extreme wave surge at the back of the cave leads to a zone of this biotope which may also be dominated solely by sprorbids or by the barnacle [Verruca stroemia]. Other scour-tolerant species, such as encrusting bryozoans may also be common. Crevices and cracks in the rock provide a refuge for sponge crusts, small [Mytilus edulis] and occasional [Actinia equina], [Urticina felina] and [Saga

[Nephtys cirrosa] and [Macoma balthica] in variable salinity infralittoral mobile sand	Mobile sand in variable salinity conditions where tidal currents create an unstable shifting habitat. Characteristic species include the polychaetes [Nephtys cirrosa] and [Scoloplos armiger] along with amphipods of the genus [Bathyporeia] and [Haustorius arenarius]. The bivalve [Macoma balthica] may occur in more stable examples of this biotope, although not in the abundances found in the NhomMac. The biotope contains relatively few species, each typically in low to moderate abundance. It is found in tidal channels with moderate tidal streams. Care should be taken in identification of this biotope due to the presence juveniles and species washed in during slack water.
[Neomysis integer] and [Gammarus] spp. in fluctuating low salinity infralittoral mobile sand	Upper estuary mobile fine muddy sands with very low fluctuating salinity characterised by the mysid shrimp [Neomysis integer] (see Arndt 1991) and amphipods of the genus [Gammarus] spp. This habitat has a rather sparse infauna and species such as [N. integer] will most likely be found on the sediment surface or just above it whilst [Gammarus] may be under loose weed, stones or other detritus on the sediment surface. The harsh physicochemical regime imposed by such environmental conditions in the upper estuary leads to a relatively impoverished community but high densities of the mobile, salinity-tolerant, crustaceans can occur. The biotope is found in the transitional zone between freshwater and brackish environments, relying on the decreased freshwater input during the summer for penetration of the brackish species up-stream. As such this biotope may also contain elements of freshwater communities. Situation: It may be found in conjunction with SMuVS.LhofTtub, although it lacks appreciable numbers of oligochaetes. Temporal variation: Numbers of [Neomysis] may to fluctuate on a seasona
Infralittoral mobile clean sand with sparse fauna	Medium to fine sandy sediment in shallow water, often formed into dunes, on exposed or tide-swept coasts often contains very little infauna due to the mobility of the substratum. Some opportunistic populations of infaunal amphipods may occur, particularly in less mobile examples in conjunction with low numbers of mysids such as [Gastrosaccus spinifer], the polychaete [Nephtys cirrosa] and the isopod [Eurydice pulchra]. Sand eels [Ammodytes] sp. may occasionally be observed in association with this biotope (and others). This biotope is more mobile than SSA.NcirBat and may be closely related to LSa.BarSa on the shore. Common epifaunal species such as [Pagurus bernhardus], [Liocarcinus depurator], [Carcinus maenas] and [Asterias rubens] may be encountered and are the most conspicuous species present.

[Nephtys cirrosa] and [Bathyporeia] spp. in infralittoral sand	Well-sorted medium and fine sands characterised by [Nephtys cirrosa] and [Bathyporeia] spp. (and sometimes [Pontocrates] spp.) which occur in the shallow sublittoral to at least 30 m depth. This biotope occurs in sediments subject to physical disturbance, as a result of wave action (and occasionally strong tidal streams). The magelonid polychaete [Magelona mirabilis] may be frequent in this biotope in more sheltered, less tideswept areas whilst in coarser sediments the opportunistic polychaete [Chaetozone setosa] may be commonly found. The faunal diversity of this biotope is considerably reduced compared to less disturbed biotopes (such as FfabMag) and for the most part consists of the more actively-swimming amphipods. Sand eels [Ammodytes] sp. may occasionally be observed in association with this biotope (and others) and spionid polychaetes such as [Spio filicornis] and [S. martinensis] may also be present. Occasional [Lanice conchilega] may be visible at the sediment surface. Temporal variation: Stochastic recruitment events in the [Nephtys cirrosa] populations may be very important to the population
[Sertularia cupressina] and [Hydrallmania falcata] on tide-swept sublittoral sand with cobbles or pebbles	Shallow sands with cobbles and pebbles, exposed to strong tidal streams, with conspicuous colonies of hydroids, particularly [Hydrallmania falcata] and to a lesser extent [Sertularia cupressina] and [S. argentea]. These hydroids are tolerant to periodic submergence and scour by sand. Both diving and dredge surveys will easily record this biotope. [Flustra foliacea, Balanus crenatus] and [Alcyonidium diaphanum] may also occur on the more stable cobbles and pebbles, with [Urticina felina] and occasional [Lanice conchilega] present in the sand. Infaunal components of the other biotopes in the SSA or SCS complex may occur in this biotope as may elements of the 'Venus' associations; indeed, this biotope may be at one extreme of the spectrum of such associations (E.I.S. Rees pers. comm. 1997) and this biotope may be best considered an epibiotic overlay.
Infralittoral muddy sand	Non-cohesive muddy sand (with 5% to 20% silt/clay) in the infralittoral zone, extending from the extreme lower shore down to more stable circalittoral zone at about 15-20 m. The habitat supports a variety of animal-dominated communities, particularly polychaetes ([Magelona mirabilis], [Spiophanes bombyx] and [Chaetozone setosa]), bivalves ([Fabulina fibula] and [Chamelea gallina]) and the urchin [Echinocardium cordatum].
[Echinocardium cordatum] and [Ensis] spp. in lower shore and shallow sublittoral slightly muddy fine sand	Sheltered lower shore and shallow sublittoral sediments of sand or muddy fine sand in fully marine conditions, support populations of the urchin [Echinocardium cordatum] and the razor shell [Ensis siliqua] or [Ensis ensis]. Other notable taxa within this biotope include occasional [Lanice conchilega], [Pagurus] and [Liocarcinus] spp. and [Asterias rubens]. This biotope has primarily been recorded by epifaunal dive, video or trawl surveys where the presence of relatively conspicuous taxa such as E. cordatum and Ensis spp. have been recorded as characteristic of the community. However, these species, particularly [E. cordatum] have a wide distribution and are not necessarily the best choice for a characteristic taxa (Thorson, 1957). Furthermore, detailed quantitative infaunal data for this biotope is often rather scarce, possibly as a result of survey method as remote grab sampling is likely to under-estimate deep-burrowing species such as [Ensis] sp. (Warwick & Davis 1977). Consequently, it may be better to treat this biotope as an epibiotic overlay which is likely to overlap a number of other biotopes such as Ffab

[Fabulina fabula] and [Magelona mirabilis] with venerid bivalves and amphipods in infralittoral compacted fine muddy sand	In stable, fine, compacted sands and slightly muddy sands in the infralittoral and littoral fringe, communities occur that are dominated by venerid bivalves such as [Chamelea gallina]. This biotope may be characterised by a prevalence of [Fabulina fabula] and [Magelona mirabilis] or other species of [Magelona (e.g. [M. filiformis)]. Other taxa, including the amphipod [Bathyporeia] spp. and polychaetes such as [Chaetozone setosa], [Spiophanes bombyx] and [Nephtys] spp. are also commonly recorded. In some areas the bivalve [Spisula elliptica] may also occur in this biotope in low numbers. The community is relatively stable in its species composition, however, numbers of [Magelona] and [F. Fabulina] tend to fluctuate. Around the Scilly Isles numbers of [F. fabulina] in this biotope are uncommonly low whilst these taxa are often found in higher abundances in muddier communities (presumably due to the higher organic content). Consequently it may be better to revise this biotope on the basis of less ubiquitous taxa such as key amphipod species (E.I.S. Rees pers. comm. 2002) although more data is required to
Circalittoral muddy sand	Circalittoral non-cohesive muddy sands with the silt content of the substratum typically ranging from 5% to 20%. This habitat is generally found in water depths of over 15-20 m and supports animal-dominated communities characterised by a wide variety of polychaetes, bivalves such as [Abra alba] and [Nucula nitidosa], and echinoderms such as [Amphiura] spp and [Ophiura] spp., and [Astropecten irregularis]. These circalittoral habitats tend to be more stable than their infralittoral counterparts and as such support a richer infaunal community.
[Abra alba] and [Nucula nitidosa] in circalittoral muddy sand or slightly mixed sediment	Non-cohesive muddy sands or slightly shelly/gravelly muddy sand characterised by the bivalves [Abra alba] and [Nucula nitidosa]. Other important taxa include [Nephtys] spp., [Chaetozone setosa] and [Spiophanes bombyx] with [Fabulina fabula] also common in many areas. The echinoderms [Ophiura albida] and [Asterias rubens] may also be present. The epibiotic biotope EcorEns may overlap this biotope. This biotope is part of the [Abra] community defined by Thorson (1957) and the infralittoral etage described by Glemarec (1973).
Deep circalittoral sand	Offshore (deep) circalittoral habitats with fine sands or non-cohesive muddy sands. Very little data is available on these habitats however they are likely to be more stable than their shallower counterparts and characterised by a diverse range of polychaetes, amphipods, bivalves and echinoderms.
Sublittoral mud	Sublittoral mud and cohesive sandy mud extending from the extreme lower shore to offshore, circalittoral habitats. This biotope is predominantly found in sheltered harbours, sealochs, bays, marine inlets and estuaries and stable deeper/offshore areas where the reduced influence of wave action and/or tidal streams allow fine sediments to settle. Such habitats are often by dominated by polychaetes and echinoderms, in particular brittlestars such as [Amphiura] spp. Seapens such as [Virgularia mirabilis] and burrowing megafauna including [Nephrops norvegicus] are common in deeper muds. Estuarine muds tend to be characterised by infaunal polychaetes and oligochaetes.

[Polydora ciliata] and [Corophium volutator] in variable salinity infralittoral firm mud or clay	Variable salinity clay and firm mud characterised by a turf of the polychaete [Polydora ciliata] along with the amphipod [Corophium volutator]. Other important taxa include the polychaetes [Pygospio elegans], [Hediste diversicolor, Streblospio shrubsolii] and the oligochaete [Tubificoides benedii]. [P. ciliata] also occurs in high densities elsewhere (see MCR.Pol) and may be a specific feature of the Humber Estuary in these conditions. This biotope occurs only in very firm mud and clay and possibly submerged relict saltmarsh with a high detrital content. It is characterised, and can be separated from other biotopes, by a combination of the sediment characteristics and the very high density of [Polydora ciliata]. In some areas, such as the Humber estuary, cyclical behaviour with regard its characteristic taxa has been reported with either [P. ciliata] or [C. volutator] increasing in dominance at the expense of the other (Gameson 1982). It is possible that changes in water quality or the sediment regime may be responsible for this.
[Aphelochaeta marioni] and [Tubificoides] spp. in variable salinity infralittoral mud	Variable salinity cohesive muddy sediment (sometimes with some coarser material) dominated by the polychaete [Aphelochaeta marioni] (or other [Aphelochaeta] species e.g. [A. amplivasatus]) and the oligochaete [Tubificoides] spp. These taxa are generally accompanied by [Nephtys hombergii] whilst the polychaetes [Capitella capitata] and [Melinna palmata] may also occur in high numbers in some areas. Other members of the cirratulid polychaete group e.g. [Caulleriella zetlandica]. and [Tharyx] spp[]. may also occur in high numbers, sometimes replacing [A. marioni] as the dominant polychaete. However, there is still inconsistency in the identification of the cirratulid group which is further compounded by fragmentation during sample processing. This biotope is very common in stable muddy environments and may extend from reduced salinity to fully marine conditions. Situation: This biotope may also be found in conjunction with MacAbr.
[Nephtys hombergii] and [Tubificoides] spp. in variable salinity infralittoral soft mud	Variable salinity soft infralittoral mud and sandy mud characterised by the polychaete [Nephtys hombergii] and oligochaetes of the genus [Tubificoides]. Other characterising species that may be present are the polychaetes [Streblospio shrubsolii] and [Aphelochaeta marioni], and the cumacean [Diastylis rathkei typica]. Situation: The biotope is found in areas of silt deposition in soft and sandy muds but may not form a stable habitat. It may be found adjacent to AphTubi, separated by the abundance of [Aphelochaeta marioni] and its more cohesive sediments

[Capitella capitata] and [Tubificoides] spp. in reduced salinity infralittoral muddy sediment	Reduced or variable salinity muddy sediment characterised by the [Capitella capitata] species complex with a relatively low species richness. Large numbers of the oligochaetes [Tubificoides] spp. may be found in conjunction with [C. capitata], along with other species such as [Marenzellaria] sp, [Macoma balthica], [Arenicola marina] and [Eteone longa]. In some estuaries this biotope may also include high numbers of the polychaete [Ophryotrocha]. This biotope usually has a moderate organic content, and is found away from tidal channels in estuaries. The presence of dense [Capitella] has classically been associated with organically enriched and physically disturbed habitats in the marine environment (Warren 1977; Pearson & Rosenberg 1978) and areas of higher organic loads in estuaries will typically fall into the biotope Cap. Where Capitella is less abundant and accompanied by other typical estuarine species the dominance of Capitella may be associated with other natural factors including the occurrence of a competitive refuge for [C. capitata] in the reduced-salinity environment (Wolff 1973).
Oligochaetes in variable or reduced salinity infralittoral muddy sediment	Reduced or variable salinity muddy and sandy mud sediments characterised by oligochaetes, particularly of the genus [Tubificoides] or from the group Enchytraeidae. The abundance of the oligochaetes may vary by several orders of magnitude but very few other species will be present. Organic loading and poor water-exchange within the sediment lead to anoxic conditions which may explain the low species richness within this biotope. Situation: This biotope is found towards the edges of tidal channels in estuaries where current velocities allow deposition of silt and the establishment of an infaunal community. The biotope may occur downstream of SMU.LhofTtub, differentiated by the absence of the freshwater species, and adjacent to more mobile and sandier biotopes in the tidal channels.
[Limnodrilus hoffmeisteri], [Tubifex tubifex] and [Gammarus] spp. in low salinity infralittoral muddy sediment	Upper estuary muddy sediments with very low fluctuating salinity, characterised by the oligochaetes [Limnodrilus hoffmeisteri] and [Tubifex tubifex]. Other taxa may include [Marenzelleria wireni], [Gammarus zaddachi], [Paranais litoralis] and [Heterochaeta costata]. The biotope contains elements of both freshwater and brackish communities. Situation: This biotope is found in the transitional zone between the freshwater and brackish environments where tidal currents are sufficiently reduced to allow the deposition of fine silt and the establishment of an infaunal community. It may be found adjacent to NeoGam away from the stronger tidal streams. Temporal variation: The position of this biotope in the estuary may vary seasonally depending on freshwater input (Gameson, 1982).
Infralittoral fluid mobile mud	Fluid mobile mud suspended and deposited on each tide. In areas with very high quantities of suspended particulate material in the water column it may become deposited around slack water when tidal currents fall. This can form fluid mud layers up to several metres thick (Warwick & Uncles 1980) becoming a transient habitat in its own right. Species present within this biotope will be those washed in from other communities such as [Nephtys hombergii] or [Capitella capitata]. This biotope may be under-recorded due to sampling problems, and also where sediment descriptions are absent from field data. Situation: It may be found adjacent to; OIVS, NhomTubi and to some extent AphTubi.

[Nephtys hombergii] and [Macoma balthica] in infralittoral sandy mud	Near-shore shallow sandy muds and muds, and sometimes mixed sediments, may be characterised by the presence of the polychaete [Nephtys hombergii] and the bivalve [Macoma balthica]. [Abra alba], and [Nucula nitidosa] may also be important although they may not necessarily occur simultaneously or in high numbers. Other taxa include [Spiophanes bombyx], Lagis koreni], and [Echinocardium cordatum]. In some areas [Scoloplos armiger] and [Crangon crangon] may also be present. The community appears to be quite stable (Dewarumez [et al]. 1992) and the substratum is typically rich in organic content. This community has been included in the 'Boreal Offshore Muddy Sand Association' of Jones (1950) and is also described by several other authors (Petersen 1918; Cabioch & Gla‡on 1975). A similar community may occur in deep water in the Baltic (Thorson 1957). This biotope may occur in slightly reduced salinity estuarine conditions where [Mya] sp. may become a significant member of the community (Thorson 1957). Situation: The community may occur in small patches or swathes in
[Capitella capitata] in enriched sublittoral muddy sediments	The polychaete [Capitella capitata] (agg.) a widely-occurring, opportunist species complex that is particularly associated with organically enriched and polluted sediments (Warren 1977; Pearson & Rosenberg 1978) where it may be superabundant. In very polluted/disturbed areas only [Capitella], Nematodes and occasional [Malacoceros fuliginosus] may be found whilst in slightly less enriched areas and estuaries species such as [Tubificoides], [Cirriformia tentaculata], [Pygospio elegans] and [Polydora ciliata] may also be found. In some areas e.g. the Tees estuary, high numbers of the polychaete [Ophryotrocha] may also be present. Cap may become established as a result of anthropogenic activities such as fish farming and sewerage effluent but may also occur with natural enrichment as a result of, for example, coastal bird roosts. This biotope may also occur to some extent in the intertidal and in estuaries. Situation: This biotope typically occurs in marine inlets, embayments or estuaries where organic enrichment allows [C. capitata] to out compete other taxa, although the species may also occur in enriched muddy coastal sediment
[Arenicola marina] in infralittoral mud	In very shallow, extremely sheltered, very soft muds [Arenicola marina] may form very conspicuous mounds and casts. This biotope may also contain synaptid holothurians such as [Labidoplax media] and [Leptosynapta bergensis] or [L. inhaerens]. However these species may be under recorded (possibly due to periodicity in feeding) and are not considered characteristic of this biotope. Other conspicuous fauna may include [Carcinus maenas], [Asterias rubens] and [Pagurus bernhardus] whilst the scallop [Pecten maximus] and the turret shell [Turritella] [communis] may also be present in some areas. Situation: This biotope typically occurs in waters shallower than about 5 m in sheltered basins of sealochs and lagoons that may be partially separated from the open sea by tidal narrows or rapids. Temporal variation: Sediment surfaces may become covered by a diatom film at certain times of the year

[Philine aperta] and [Virgularia mirabilis] in soft stable infralittoral mud	Physically very stable muds, occasionally with small stones, with a high proportion of fine material (typically greater than 80 %) may contain the opisthobranch [Philine aperta] and the seapen [Virgularia mirabilis]. These muds typically occur in shallow water down to about 12-15 m where significant seasonal variation in temperature is presumed to occur. This habitat is restricted to the most sheltered basins in, for example, sealochs. Although most records suggest full salinity conditions are prevalent, some sites may be subject to variable salinity. [Philine aperta] is the most characteristic species of this habitat, occurring in high densities at many sites, whilst [Virgularia mirabilis], a species found more widely in muddy sediments, appears to reach its highest densities in this shallow mud but may not be present in all examples of this biotope. Other conspicuous species found in this shallow muddy habitat include [Cerianthus lloydii], [Pagurus bernhardus], [Sagartiogeton] spp. and [Hydractinia echinata]. Burrowing crustacean megafauna, characteristic
[Ocnus planci] aggregations on sheltered sublittoral muddy sediment	Dense aggregations of [Ocnus planci [?brunneus]] on various substrata, typically muddy but occasionally with stones or shells, in sheltered conditions such as sealochs. [Philine aperta] also characterises this biotope but is present in lower abundances than in PhiVir. Other associated species vary but are typical of very sheltered muddy habitats and include the ophiuroids [Ophiura] spp. and [Ophiothrix fragilis]. [Melanella alba], which parasitises holothurians, has been found in large numbers at one site.
[Beggiatoa] spp. on anoxic sublittoral mud	Sublittoral soft anoxic mud, often in areas with poor water exchange with the open sea, can have a conspicuous bacterial mat covering of [Beggiatoa] spp. The anoxia may be a result of natural conditions of poor water exchange in some sealochs (and many Scandinavian fjords) or artificially under fish farm cages from nutrient enrichment. The fauna is normally impoverished at such sites, with few elements of the infaunal communities present in other muddy biotopes. Scavenging species such as [Asterias rubens] and [Carcinus maenas] are typically present where the habitat is not too anoxic along with occasional [Arenicola marina] but in extreme conditions of anoxia little survives other than the [Beggiatoa]. The polychaete [Ophiodromus flexuosus] occurs in high densities at the interface between oxygenated and deoxygenated sediments (in Norwegian fjords).

[Virgularia mirabilis] and [Ophiura] spp. with [Pecten maximus] on circalittoral sandy or shelly mud	Circalittoral fine sandy mud may contain [Virgularia mirabilis] and [Ophiura] spp. A variety of species may occur, and species composition at a particular site may relate, to some extent, to the proportions of the major sediment size fractions. Several species are common to most sites including [Virgularia mirabilis] which is present in moderate numbers, [Ophiura albida] and [Ophiura ophiura] which are often quite common, and [Pecten maximus] which is usually only present in low numbers. [Virgularia mirabilis] is usually accompanied by occasional [Cerianthus lloydii], [Liocarcinus depurator] and [Pagurus bernhardus]. [Amphiura chiajei] and [Amphiura filiformis] may occur in some examples of this biotope. Polychaetes and bivalves are generally the main components of the infauna, although the nemerteans, [Edwardsia claparedii], [Phoronis muelleri] and [Labidoplax buski] may also be widespread. Of the polychaetes [Goniada maculata], [Nephtys incisa], [Minuspio cirrifera], [Chaetozone setosa], [Notomastus latericeus] and [Owenia fusiformis] are often the most widespread species whilst [Myrtea spinifera], [Lucinom
[Virgularia mirabilis] and [Ophiura] spp. with [Pecten maximus], hydroids and ascidians on circalittoral sandy or shelly mud with shells or stones	Circalittoral fine sandy mud with shell gravel and notable quantities of shells or small stones scattered over the sediment surface. These sediments, like SMU.VirOphPmax, may contain [Virgularia mirabilis, Pecten maximus] and [Ophiura] spp. but shells and small stones scattered over the sediment surface provided sufficient stable substrata for a variety of sessile epifaunal species to occur. Of these the hydroids [Kirchenpaueria pinnata], [Nemertesia antennina] and [Nemertesia ramosa] are most common with solitary ascidians such as [Corella parallelogramma] and [Ascidia mentula] also present. The anemone [Cerianthus lloydii] is often found in the sediment together with occasional [Lanice conchilega]. The serpulids [Protula tubularia], [Serpula vermicularis] and [Pomatoceros triqueter] and the barnacles [Balanus balanus] and [Balanus crenatus] are also often present on pebbles and shells. [Munida rugosa] are occasionally found under larger stones. All these species are typical of more rocky habitats in such sheltered conditions. As with SMU.VirOphPmax this biotope is primarily
Seapens and burrowing megafauna in circalittoral fine mud	Plains of fine mud at depths greater than about 15 m may be heavily bioturbated by burrowing megafauna; burrows and mounds may form a prominent feature of the sediment surface with conspicuous populations of seapens, typically [Virgularia mirabilis] and [Pennatula phosphorea]. The burrowing crustacea present typically include [Nephrops norvegicus], which is frequently recorded from surface observations although grab sampling may fail to sample this species. Indeed, some forms of sampling may also fail to indicate seapens as characterising species. This biotope also seems to occur in deep offshore waters in the North Sea, where densities of [Nephrops norvegicus] may reach 68 per 10 m2 (see Dyer [et al]. 1982, 1983), and the Irish Sea. The burrowing anemone [Cerianthus lloydii] and the ubiquitous epibenthic scavengers [Asterias rubens], [Pagurus bernhardus] and [Liocarcinus depurator] are present in low numbers in this biotope whilst the brittlestars [Ophiura albida] and [Ophiura ophiura] are sometimes present, but are much more common in slightly coarser sediments. Low numbers of the anemone [Pachycerianthu

Seapens, including [Funiculina quadrangularis], and burrowing megafauna in undisturbed circalittoral fine mud	Deep muds, especially in sealochs, support forests of the nationally scarce [Funiculina quadrangularis], in addition to populations of the seapens [Virgularia mirabilis] and [Pennatula phosphorea]. The sediment is usually extensively burrowed by crustaceans, the most common of which is [Nephrops norvegicus], but [Calocaris macandreae] and [Callianassa subterranea] may also be present (the latter is likely to be under-recorded by grab sampling because it is deep burrowing). The burrowing anemone [Cerianthus lloydii] is present in low numbers in this biotope and the rare anemone [Pachycerianthus multiplicatus] may also be found occasionally. [Amphiura] spp. are also often present in high densities.
[Brissopsis lyrifera] and [Amphiura chiajei] in circalittoral mud	Mud in deep offshore, or shallower stable nearshore, waters can be characterised by the urchin [Brissopsis lyrifera] and the brittle star [Amphiura chiajei]. Where intense benthic dredge fishing activity occurs, populations of the indicator species, [Brissopsis lyrifera] may be depressed, although broken tests may still remain (E.I.S. Rees pers. comm. 1997; M. Costello pers. comm. 1997). Low numbers of the seapen [Virgularia mirabilis] may be found in many examples of this biotope. In addition, in certain areas of the UK such as the northern Irish Sea, this community may also contain [Nephrops norvegicus] and can consequently be the focus for fishing activity (Mackie, Oliver & Rees 1995). Infaunal species in this community are similar to those found in SpnMeg and include the polychaetes [Nephtys hystricis], [Pectinaria belgica], [Glycera] spp. and [Lagis koreni] and the bivalves [Myrtea spinifera] and [Nucula sulcata]. This community is the 'Boreal Offshore Mud Association' and '[Brissopsis - Chiajei]' communities described by other workers (Petersen 1918; Jones 1950).
Deep circalittoral mud	In mud and cohesive sandy mud in the offshore circalittoral zone, typically below 50-70 m, a variety of faunal communities may develop, depending upon the level of silt/clay and organic matter in the sediment. Communities are typically dominated by polychaetes but often with high numbers of bivalves such as [Thyasira] spp., echinoderms and foraminifera.
[Ampharete falcata] turf with [Parvicardium ovale] on cohesive muddy sediment near margins of deep stratified seas	Dense stands of [Ampharete falcata] tubes which protrude from muddy sediments, appearing as a turf or meadow in localised areas. These areas seem to occur on a crucial point on a depositional gradient between areas of tide-swept mobile sands and quiescent stratifying muds. Dense populations of the small bivalve [Parvicardium ovale] occur in the superficial sediment. Other infauna in this diverse biotope includes [Lumbrineris scopa], [Levinsenia] sp., [Prionospio steenstrupi], [Diplocirrus glaucus] and [Praxillella affinis] although a wide variety of other infaunal species may also be found. Both the brittlestars [Amphiura filiformis] and [Amphiura chiajei] may be present together with [Nephrops norvegicus] in higher abundance than the BlyrAchi or AfilEcor biotopes. Substantial populations of mobile epifauna such as [Pandalus montagui] and smaller fish also occur, together with those that can cling to the tubes, such as [Macropodia] spp. A similar turf of worm tubes formed by the maldanid polychaete [Melinna cristata] has been recorded from Northumberland (Buchanan 1963). Nephrops trawling may severely dama

Foraminiferans and [Thyasira] spp. in deep circalittoral soft mud	In deep water and soft muds of Boreal and Arctic areas, a community dominated by foraminiferans and the bivalve [Thyasira] sp. (e.g. [T. croulinensis and T. pygmaea]) may occur (Thorson 1957; Künitzer [et al]. 1992). Foraminiferans such as [Saccammina], [Psammosphaera], [Haplophragmoides], [Crithionina] and [Astorhiza] are important components of this community with dead tests numbering thousands per m2 (see Stephen 1923; McIntyre 1961) and sometimes visible from benthic photography (Mackie, Oliver & Rees 1995). It is likely that a community dominated by [Astorhiza] in fine sands in the Irish Sea may be another distinct biotope (E.I.S. Rees pers. comm. 2002). Polychaetes, e.g. [Paraonis gracilis], [Myriochele heeri], [Spiophanes kroyeri], [Tharyx] sp., [Lumbrineris tetraura], are also important components of this biotope. These communities appear to have no equivalent on the continental plateau further south (Glemarec 1973) but are known from the edge of the Celtic Deep in the Irish Sea (Mackie, Oliver & Rees 1995). The benthos in these offshore areas has been shown to be princip
[Styela gelatinosa], [Pseudamussium septemradiatum] and solitary ascidians on sheltered deep circalittoral muddy sediment	This biotope is known only from deep water in Loch Goil (Clyde sealochs) in fine mud at 65 m with terrigenous debris. Large numbers of solitary ascidians, including [Styela gelatinosa], [Ascidia conchilega], [Corella parallelogramma] and [Ascidiella] spp., are characteristic of this biotope together with the bivalve [Pseudamussium septemradiatum]. Terebellid worms, the bivalve [Abra alba] and the polychaete [Glycera tridactyla] may also occur. It is possibly an ice age relict biotope.
Sublittoral mixed sediments	Sublittoral mixed (heterogeneous) sediments found from the extreme low water mark to deep offshore circalittoral habitats. These habitats incorporate a range of sediments including heterogeneous muddy gravelly sands and also mosaics of cobbles and pebbles embedded in or lying upon sand, gravel or mud. There is a degree of confusion with regard nomenclature within this complex as many habitats could be defined as containing mixed sediments, in part depending on the scale of the survey and the sampling method employed. The BGS trigon can be used to define truly mixed or heterogeneous sites with surficial sediments which are a mixture of mud, gravel and sand. However, another 'form' of mixed sediment includes mosaic habitats such as superficial waves or ribbons of sand on a gravel bed or areas of lag deposits with cobbles/pebbles embedded in sand or mud and these are less well defined and may overlap into other habitat or biological subtypes. These habitats may support a wide range of infauna and epibiota including polychaetes, bivalves, echinoderms, anemones, hydroids and Bryozoa. M
[Aphelochaeta] spp. and [Polydora] spp. in variable salinity infralittoral mixed sediment	In sheltered muddy mixed sediments in estuaries or marine inlets with variable or reduced/low salinity communities characterised by [Aphelochaeta marioni] and [Polydora ciliata] may be present. Other important taxa may include the polychaetes [Nephtys hombergii], [Caulleriella zetlandica] and [Melinna palmata], tubificid oligochaetes and bivalves such as [Abra nitida]. Conspicuous epifauna may include members of the bivalve family Cardiidae (cockles) and the slipper limpet [Crepidula fornicata]. This biotope is often found in polyhaline waters.

[Crepidula fornicata] and [Mediomastus fragilis] in variable salinity infralittoral mixed sediment	Variable salinity mixed sediment characterised by the slipper limpet [Crepidula fornicata] and the polychaetes [Mediomastus fragilis] and [Aphelochaeta marioni]. Other numerically important taxa include the oligochaetes [Tubificoides benedii], syllids such as [Exogone] [naidina] and [Sphaerosyllis], and [Nephtys hombergii]. [Lepidonotus squamatus] and [Scoloplos armiger] may also be common. Shell debris and cobbles are colonised by the ascidians [Ascidiella aspersa], [Ascidiella scabra], [Molgula] sp. and [Dendrodoa grossularia] (the ascidians may not be recorded adequately by remote infaunal survey techniques). Situation: This biotope occurs in the lower estuary where currents allow a stable environment to develop. It is associated with oyster beds and relict oyster beds, (Ost) in southern England and Wales. It may be found adjacent to or in conjunction with AphTubi and AphPol. It may be associated with VsenAsquAps and possibly form a component of SundAasp.
Infralittoral mixed sediments	Shallow mixed (heterogeneous) sediments in fully marine or near fully marine conditions, supporting various animal-dominated communities, with relatively low proportions of seaweeds. This habitat may include well mixed muddy gravelly sands or very poorly sorted mosaics of shell, cobbles and pebbles embedded in mud, sand or gravel. Due to the quite variable nature of the sediment type, a widely variable array of communities may be found, including those characterised by bivalves (A5.433, A5.431, and A5.435), polychaetes (A5.432) and file shells (A5.434). This has resulted in many species being described as characteristic of this habitat type all contributing only a small percentage to the overall similarity (see below). This habitat type may also include a newly proposed [Chaetopterus] biotope (Rees pers com.) recently found in the eastern English Channel. This biotope is characterised by an undescribed [Chaetopterus] sp. and small [Lanice conchilega]. Further sampling is need in order to assess and fully characterise this potential biotope. As a result, the Chaetopterus biotope has not been included in th
[Venerupis senegalensis], [Amphipholis squamata] and [Apseudes latreilli] in infralittoral mixed sediment	Sheltered muddy sandy gravel and pebbles in marine inlets, estuaries or embayments with variable salinity or fully marine conditions, support large populations of the pullet carpet shell [Venerupis senegalensis] with the brittlestar [Amphipholis squamata] and the tanaid [Apseudes latreilli]. This biotope may be found at a range of depths from 5m to 30m although populations of [V. senegalensis] may also be found on the low shore. Other common species within this biotope include the gastropod [Calyptraea chinensis], a range of amphipod crustacea such as [Corophium sextonae] and [Maera grossimana] and polychaetes such as [Mediomastus fragilis], [Melinna palmata], [Aphelochaeta marioni], [Syllids] and tubificid oligochaetes. Many of the available records for this biotope are from southern inlets and estuaries such as Plymouth Sound and Milford Haven but [V. senegalensis] has a much wider distribution and it should be noted that northern versions of this biotope may a have a much lower species diversity than reported here.

[Limaria hians] beds in tide-swept sublittoral muddy mixed sediment	Mixed muddy gravel and sand often in tide-swept narrows in the entrances or sills of sealochs with beds or 'nests' of [Limaria hians]. The [Limaria] form woven 'nests' or galleries from byssus and fragments of seaweeds so that the animals themselves cannot be seen from above the seabed. [Modiolus modiolus] sometimes occur at the same sites lying over the top of the [Limaria] bed. Other fauna associated with this biotope include echinoderms ([Ophiothrix fragilis], [Ophiocomina nigra] and [Asterias rubens]), [Buccinum undatum], mobile crustaceans (e.g. [Pagurus bernhardus]), [Alcyonium digitatum] and hydroids such as [Plumularia setacea], [Kirchenpaueria pinnata] and [Nemertesia] spp. Sometimes red seaweeds such as [Phycodrys rubens] occur if the beds are in shallow enough water.
Oyster beds on shallow sublittoral muddy mixed sediment	Dense beds of the oyster [Ostrea edulis] can occur on muddy fine sand or sandy mud mixed sediments. There may be considerable quantities of dead oyster shell making up a substantial portion of the substratum. The clumps of dead shells and oysters can support large numbers of [Ascidiella aspersa] and [Ascidiella scabra]. Sponges such as [Halichondria bowerbanki] may also be present. Several conspicuously large polychaetes, such as [Chaetopterus variopedatus] and terebellids, as well as additional suspension-feeding polychaetes such as [Myxicola infundibulum] and [Sabella pavonina] may be important in distinguishing this biotope, whilst the Opisthobranch [Philine aperta] may also be frequent in some areas. A turf of seaweeds such as [Plocamium cartilagineum], [Nitophyllum punctatum] and [Spyridia filamentosa] may also be present. This biotope description may need expansion to account for oyster beds in England.
[Cerianthus lloydii] and other burrowing anemones in circalittoral muddy mixed sediment	Circalittoral plains of sandy muddy gravel may be characterised by burrowing anemones such as [Cerianthus lloydii]. Other burrowing anemones such as [Cereus pedunculatus], [Mesacmaea mitchellii] and [Aureliania heterocera] may be locally abundant. Relatively few conspicuous species are found in any great number in this biotope but typically they include ubiquitous epifauna such as [Asterias rubens], [Pagurus bernhardus] and [Liocarcinus depurator] with occasional terebellid polychaetes such as [Lanice conchilega] and also the clam [Pecten maximus]. [Ophiura albida] may be frequent in some areas, and where surface shell or stones are present ascidians such as [Ascidiella aspersa] may occur in low numbers.

Sparse [Modiolus modiolus], dense [Cerianthus lloydii] and burrowing holothurians on sheltered circalittoral stones and mixed sediment	Pebbles and cobbles on mud or muddy gravel in sealochs with frequent [Cerianthus lloydii] and occasional [Modiolus modiolus]. Large burrowing holothurians may include [Psolus phantapus], [Paracucumaria hyndmani], [Thyonidium commune], [Thyone fusus] and [Leptopentacta elongate]. Many of these species only extend their tentacles above the sediment surface seasonally and are likely to be under recorded by epifaunal surveys. Other more conspicuous characterising taxa include [Pagurus bernhardus], [Asterias rubens], and [Buccinum undatum]. This biotope is well developed in the Clyde sealochs, although many examples are rather species-poor. Some examples in south-west Scottish sealochs have greater quantities of boulders and cobbles and therefore have a richer associated biota (compared with other sheltered [Modiolus] bed biotopes such as ModHAs). Examples in Shetland are somewhat different in having the cucumber [Cucumaria frondosa] amongst sparse [Modiolus] beds and a slightly different balance in abundance of other species; for example the brittlestar [Ophiopholis
Deep circalittoral mixed sediments	Offshore (deep) circalittoral habitats with slightly muddy mixed gravelly sand and stones or shell. This habitat may cover large areas of the offshore continental shelf although there is relatively little data available. Such habitats are often highly diverse with a high number of infaunal polychaete and bivalve species. Animal communities in this habitat are closely related to offshore gravels and coarse sands and in some areas populations of the horse mussel Modiolus modiolus may develop in these habitats (see A5.622).
Sublittoral macrophyte-dominated sediment	This habitat type includes maerl beds, seaweed dominated mixed sediments (including kelps such as [Laminaria saccharina] and filamentous/foliose red and green algae), seagrass beds, and lagoonal angiosperm communities. These communities develop in a range of habitats from exposed open coasts to lagoons and are found in a variety of sediment types and salinity regimes.
[Phymatolithon calcareum] maerl beds in infralittoral clean gravel or coarse sand	Maerl beds characterised by [Phymatolithon calcareum] in gravels and sands. Associated epiphytes may include red algae such as [Dictyota dichotoma, Halarachnion ligulatum], [Callophyllis laciniata], [Cryptopleura ramosa], [Brongniartella byssoides] and [Plocamium cartilagineum]. Algal species may be anchored to the maerl or to dead bivalve shells amongst the maerl. Polychaetes, such as [Chaetopterus variopedatus], [Lanice conchilega], [Kefersteinia cirrata], [Mediomastus fragilis, Chone duneri, Parametaphoxus fultoni] and [Grania] may be present. Gastropods such as [Gibbula cineraria], [Gibbula magus], [Calyptraea chinensis] [Dikoleps pusilla] and [Onoba aculeus] may also be present. [Liocarcinus depurator] and [Liocarcinus corrugatus] are often present, although they may be under-recorded; it would seem likely that robust infaunal bivalves such as [Circomphalus casina], [Mya truncata], [Dosinia exoleta] and other venerid bivalves are more widespread than available data currently suggests. It seems likely that stable wave-sheltered maerl beds with low currents may be separable from SMP.Pcal; having a generally thinner laye

[Phymatolithon calcareum] maerl beds with red seaweeds in shallow infralittoral clean gravel or coarse sand	Upper infralittoral maerl beds characterised by [Phymatolithon calcareum] in gravels and sand with a wide variety of associated red seaweeds. These algae typically include [Dictyota dichotoma], [Plocamium cartilagineum], [Phycodrys rubens], [Chondrus crispus], [Halarachnion ligulatum], [Chylocladia verticillata], [Hypoglossum hypoglossoides] and [Nitophyllum punctum]. These species are not restricted to maerl beds but their abundance on maerl beds differentiates this biotope from Pcal.Nmix. Anthozoans and echinoderms are much less common in this biotope than in Pcal.Nmix, which typically occurs deeper than Pcal.R.
[Phymatolithon calcareum] maerl beds with [Neopentadactyla mixta] and other echinoderms in deeper infralittoral clean gravel or coarse sand	Lower infralittoral maerl beds characterised by [Phymatolithon calcareum] in gravels and sand with a variety of associated echinoderms. The echinoderm [Neopentadactyla mixta] is frequently observed in this biotope. Other echinoderms such as [Echinus esculentus], [Ophiura albida] and rarely [Luidia ciliaris] may also be present. Red seaweed such as [Plocamium cartilagineum] may be present but at a much lower abundance than in Pcal.R and with fewer species present. Other, more ubiquitous echinoderms such as [Asterias rubens] may also be found in low numbers throughout Pcal biotopes.
[Lithothamnion glaciale] maerl beds in tide-swept variable salinity infralittoral gravel	Upper infralittoral tide-swept channels of coarse sediment in full or variable salinity conditions support distinctive beds of [Lithothamnion glaciale] maerl 'rhodoliths'. [Phymatolithon calcareum] may also be present as a more minor maerl component. Associated fauna and flora may include species found in other types of maerl beds (and elsewhere), e.g. [Pomatoceros triqueter], [Cerianthus lloydii], [Sabella pavonina], [Chaetopterus variopedatus], [Lanice conchilega], [Mya truncata], [Plocamium cartilagineum] and [Phycodrys rubens]. Lgla, however, also has a fauna that reflects the slightly reduced salinity conditions, e.g. [Psammechinus miliaris] is often present in high numbers along with other grazers such as chitons and [Tectura] spp. [Hyas araneus], [Ophiothrix fragilis], [Ophiocomina nigra] and the brown seaweed [Dictyota dichotoma] are also typically present at sites. In Scottish lagoons this biotope may show considerable variation but the community falls within the broad description defined here. Situation: This biotope can often be found at the upper end of Scottish sealochs where the variable s
[Lithophyllum fasciculatum] maerl beds on infralittoral mud	Shallow, sheltered infralittoral muddy plains with [Lithophyllum fasciculatum] maerl. This rarely recorded maerl species forms flattened masses or balls several centimetres in diameter (Irvine & Chamberlain 1994). Lfas may be found on mud and muddy gravel mixed with shell. Species of anemone typical of sheltered conditions may be found in association, for example, [Anthopleura ballii], [Cereus pedunculatus] and [Sagartiogeton undatus]. Polychaetes such as [Myxicola infundibulum] and terebellids, also characteristic of sheltered conditions, may be present as may hydroids such as [Kirchenpaueria pinnata]. Occasional [Chlamys varia] and [Thyone fuscus] are present in all records of this biotope and red seaweeds such as [Plocamium cartilagineum], [Calliblepharis jubata] and [Chylocladia verticillata] are often present.

[Lithothamnion corallioides] maerl beds on infralittoral muddy gravel	Live maerl beds in sheltered, silty conditions which are dominated by [Lithothamnion corallioides] with a variety of foliose and filamentous seaweeds. Live maerl is at least common but there may be noticeable amounts of dead maerl gravel and pebbles. Other species of maerl, such as [Phymatolithon calcareum] and [Phymatolithon purpureum], may also occur as a less abundant component. Species of seaweed such as [Dictyota dichotoma], [Halarachnion ligulatum]. and [Ulva] spp. are often present, although are not restricted to this biotope, whereas [Dudresnaya verticillata] tends not to occur on other types of maerl beds. The anemones [Anemonia viridis] and [Cerianthus lloydii], the polychaetes [Notomastus latericeus] and [Caulleriella alata], the isopod [Janira maculosa] and the bivalve [Hiatella arctica] are typically found in SMP.Lcor where as [Echinus esculentus] tends to occur more in other types of maerl. The seaweeds [Laminaria saccharina] and [Chorda filum] may also be present in some habitats. Lcor has a south-western distribution in Britain and Ireland. Sheltered, stable, fully saline maerl beds
Kelp and seaweed communities on sublittoral sediment	Shallow sublittoral sediments which support seaweed communities, typically including the kelp [Laminaria saccharina], the bootlace weed [Chorda filum] and various red and brown seaweeds, particularly filamentous types. The generally sheltered nature of these habitats enables the seaweeds to grow on shells and small stones which lie on the sediment surface; some communities develop as loose-lying mats on the sediment surface.
Mats of [Trailliella] on infralittoral muddy gravel	Dense loose-lying beds of the '[Trailliella]' phase of [Bonnemaisonia hamifera] may occur in extremely sheltered shallow muddy environments. Beds of this alga are often 10 cm thick but may reach 100 cm at some sites. Other loose-lying algae may also occur such as [Audouinella floridula, Phyllophora crispa] and species of [Derbesia]. Often the mud is gravelly or with some cobbles and may be black and anoxic close to the sediment surface. This biotope is widely distributed in lagoons, sealochs and voes but should only be described as SMP.Tra when a continuous mat is found. It is likely that the infaunal component of this biotope may be considerably modified by the overwhelming quantity of loose-lying algae.
Loose-lying mats of [Phyllophora crispa] on infralittoral muddy sediment	Infralittoral muddy sand and sandy mud, sometimes with some shells or pebbles, and a dense, loose-lying cover of [Phyllophora crispa]. This biotope occurs in very sheltered conditions such as those found in sealochs and voes. SMP.Pcri is similar to other biotopes described with dense, loose-lying algae but has been less frequently recorded, and from the few records available, appears to occur in slightly deeper infralittoral waters primarily between 10m to 30m and typically in fully saline waters. The seaweeds in this biotope may be epiphytised by ascidians such as [Ascidiella aspera]. Kelp such as [Laminaria saccharina] and red seaweeds including [Plocamium cartilagineum] may be present in some areas. The scallops [Pecten maximus] and [Aequipecten opercularis] may also be found occasionally in this biotope and [Trailliella]/[Bonnemaisonia hamifera] may also be present but not at the levels found in SMP.Tra.

Filamentous green seaweeds on low salinity infralittoral mixed sediment or rock	Shallow muddy sediments, often with boulders, cobbles and pebbles around the edges of lagoons, or other areas that are exposed to wide salinity variations are unsuitable for colonisation by many species. Such areas may be colonised by a dense blanket of ephemeral green algae such as [Enteromorpha] spp., [Chaetomorpha linum], [Cladophora liniformis] or [Rhizoclonium riparium]. This biotope may also contain some red seaweeds, such as [Furcellaria lumbricalis], but always at low abundance (compare with PolFur). Amongst the filamentous green algae, grazing molluscs and solitary ascidians may be present. Infauna may typically include [Corophium volutator], [Heterochaeta costata], [Tubificoides benedeni] and other taxa suited for low/variable salinity environments.
[Zostera marina]/[angustifolia] beds on lower shore or infralittoral clean or muddy sand	Expanses of clean or muddy fine sand and sandy mud in shallow water and on the lower shore (typically to about 5 m depth) can have dense stands of [Zostera marina/angustifolia] [Note: the taxonomic status of [Z. angustifolia] is currently under consideration]. In Zmar the community composition may be dominated by these [Zostera] species and therefore characterised by the associated biota. Other biota present can be closely related to that of areas of sediment not containing [Zostera marina], for example, [Laminaria saccharina], [Chorda filum] and infaunal species such as [Ensis] spp. and [Echinocardium cordatum] (e.g. Bamber 1993). From the available data it would appear that a number of sub-biotopes may be found within this biotope dependant on the nature of the substratum and it should be noted that sparse beds of [Zostera marina] may be more readily characterised by their infaunal community. For example, coarse marine sands with seagrass have associated communities similar to MoeVen, SLan or Glap whilst muddy sands may have infaunal populations related to EcorEns, AreISa and FfabMag. Mudc
[Ruppia maritima] in reduced salinity infralittoral muddy sand	In sheltered brackish muddy sand and mud, beds of [Ruppia maritima] and more rarely [Ruppia spiralis] may occur. These beds may be populated by fish such as [Gasterosteus aculeatus] which is less common on filamentous algal-dominated sediments. Seaweeds such as [Chaetomorpha] spp., [Enteromorpha] spp., [Cladophora] spp., and [Chorda filum] are also often present in addition to occasional fucoids. In some cases the stoneworts [Lamprothamnium papulosum] and [Chara aspera] occur. Infaunal and epifaunal species may include mysid crustacea, the polychaete [Arenicola marina], the gastropod [Hydrobia ulvae], the amphipod [Corophium volutator] and oligochaetes such as [Heterochaeta costata]. In some areas [Zostera marina] may also be interspersed with the [Ruppia] beds.
Angiosperm communities in reduced salinity	Beds of submerged or slightly emergent vascular vegetation of brackish seas, sea inlets, estuaries, permanent pools of mud or sand flats, and coastal lagoons.

Vegetation of brackish waters dominated by [Phragmites australis]	Permanently low salinity muds or peaty muddy sands with some gravel which supports [Phragmites australis] reed beds. These reed beds are often found in enclosed water bodies influenced by freshwater inflow and may have notable quantities of decaying reed material. The substratum may be mixtures of mud, peaty mud, sand and some gravel. Filamentous green algae and charaphytes such as [Lamprothamnium papulosum] and [Chara aspera] may also be found in association with this biotope as well as a the freshwater quillwort [Myriophyllum] spp. The infaunal component of this biotope is poorly known. This biotope is further described as NVC type S4 (Rodwell 1995).
Sublittoral biogenic reefs	This habitat type includes polychaete reefs, bivalve reefs (e.g. mussel beds) and cold water coral reefs. These communities develop in a range of habitats from exposed open coasts to estuaries, marine inlets and deeper offshore habitats and may be found in a variety of sediment types and salinity regimes.
[Sabellaria spinulosa] on stable circalittoral mixed sediment	The tube-building polychaete [Sabellaria spinulosa] at high abundances on mixed sediment. These species typically forms loose agglomerations of tubes forming a low lying matrix of sand, gravel, mud and tubes on the seabed. The infauna comprises typical sublittoral polychaete species such as [Protodorvillea kefersteini], [Pholoe synophthalmica], [Harmothoe] spp, [Scoloplos armiger], [Mediomastus fragilis], [Lanice conchilega] and cirratulids, together with the bivalve [Abra alba], and tube building amphipods such as [Ampelisca] spp. The epifauna comprise a variety of bryozoans including [Flustra foliacea], [Alcyonidium diaphanum] and [Cellepora pumicosa], in addition to calcareous tubeworms, pycnogonids, hermit crabs and amphipods. The reefs formed by [Sabellaria] consolidate the sediment and allow the settlement of other species not found in adjacent habitats leading to a diverse community of epifaunal and infauna species. The development of such reefs is assisted by the settlement behaviour of larval [Sabellaria] which are known to selectively settle in areas of suitable sediment and particularly o
[Serpula vermicularis] reefs on very sheltered circalittoral muddy sand	Large clumps (mini 'reefs') of the calcareous tubes of [Serpula vermicularis], typically attached to stones on muddy sediment in very sheltered conditions in sealochs and other marine inlets. A rich associated biota attached to the calcareous tube may include [Esperiopsis fucorum], thin encrusting sponges, and the ascidians [Ascidiella aspersa], [Ascidia mentula], [Dendrodoa grossularia] and [Diplosoma listerianum]. The echinoderms [Ophiothrix fragilis] and [Psammechinus miliaris] and the queen scallop ([Aequipecten opercularis]) are also found throughout this biotope. In shallow water dense [Phycodrys rubens] may grow on the 'reefs'. This biotope has been recorded in the U.K. from Loch Creran, where these reefs have been well studied (Moore 1996), and Loch Sween, where they are reported to have deteriorated. The only other known sites for this biotope are Salt Lake, Cliffden and Killary Harbour, Co. Galway.

Sublittoral mussel beds on sediment	Sublittoral mussel beds comprised of either the horse mussel [Modiolus modiolus] or the common mussel [Mytilus edulis]. These communities may be sublittoral extensions of littoral reefs or exist independently. Found in a variety of habitats ranging from sheltered estuaries and marine inlets to open coasts and offshore areas they may occupy a range of substrata, although due to the stabilising effect such communities have on the substratum muddy mixed sediments are typical. A diverse range of epibiota and infauna often exists in these communities.
[Modiolus modiolus] beds with hydroids and red seaweeds on tide-swept circalittoral mixed substrata	[Modiolus] beds on mixed substrata (cobbles, pebbles and coarse muddy sediments) in moderately strong currents or wave exposed areas, typically on the open coast but also in tide-swept channels of marine inlets. [Ophiothrix fragilis] are often common in this biotope along with the calcareous tubes of [Pomatoceros triqueter], anemones such as [Alcyonium digitatum] and [Urticina felina] and hydroids such as [Abietinaria abietina] and [Sertularia argentea]. [Buccinum undatum] may also be important and in some areas the clam [Chlamys varia] may be frequent but not in the same abundances as in ModCvar. Little information on the infaunal component is given here although it is likely that it is very rich and may highlight more subtle differences in the [Modiolus] biotopes. This biotope is typified by examples off the north-west Lleyn Peninsula in N Wales and off Co. Down, Northern Ireland.
[Modiolus modiolus] beds on open coast circalittoral mixed sediment	Muddy gravels and coarse sands in deeper water of continental seas may contain venerid bivalves with beds of [Modiolus modiolus]. The clumping of the byssus threads of the [M. modiolus] creates a stable habitat that attracts a very rich infaunal community with a high density of polychaete species including [Glycera lapidum], [Paradoneis lyra], [Aonides paucibranchiata], [Laonice bahusiensis], [Protomystides bidentata], [Lumbrineris] spp., [Mediomastus fragilis] and syllids such as [Exogone] spp. and [Sphaerosyllis] spp. Bivalves such as [Spisula elliptica], [Timoclea ovata] and other venerid species are also common. Brittlestars such as [Amphipholis squamata] may also occur with this community. This biotope is very similar to SMX.PoVen and the 'boreal off-shore gravel association' and the 'deep Venus community' described by previous workers (Ford 1923; Jones 1951). Similar [Modiolus] beds (though with a less diverse infauna) on open coast stable boulders, cobbles and sediment are described under MCR.ModT.

[Modiolus modiolus] beds with fine hydroids and large solitary ascidians on very sheltered circalittoral mixed substrata	Beds or scattered clumps of [Modiolus modiolus] in generally sheltered conditions with only slight tidal movement. Typically occurs in sealochs and the Shetland voes. Brittlestars [Ophiothrix fragilis] and [Ophiocomina nigra], as well as [Ophiopholis aculeata] are often frequent, sometimes forming a dense bed as described in OphMx. The queen scallop [Aequipecten opercularis] is often present in moderate abundances. Large solitary ascidians ([Ascidiella aspersa], [Corella parallelogramma, Dendrodoa grossularia]) and fine hydroids ([Kirchenpaueria pinnata]) are present attached to the mussel shells. Decapods such as hermit crabs ([Pagurus bernhardus]) and spider crabs ([Hyas araneus]) are typically present. Coralline algal crusts may be found on the mussel shells, with some red seaweeds in shallower water such as [Phycodrys rubens]. Little information on the infaunal component is given here although it is likely that it is very rich and may highlight more subtle differences in the [Modiolus] biotopes.
[Modiolus modiolus] beds with [Chlamys varia], sponges, hydroids and bryozoans on slightly tide-swept very sheltered circalittoral mixed substrata	Dense [Modiolus modiolus] beds, covered by hydroids and bryozoans, on soft gravelly, shelly mud with pebbles in areas of slight or moderate tidal currents. The variable scallop ([Chlamys varia]) is frequently found in large numbers amongst the [Modiolus] shells. Hydroids such as [Halecium] spp. and [Kirchenpaueria pinnata] and ascidians such as [Ascidiella aspersa], [Corella parallelogramma] and [Ciona intestinalis] may be found attached to pebbles or mussel shells. The echinoderms [Ophiothrix fragilis] and [Antedon bifida] are often frequent in this biotope as is the encrusting polychaete [Pomatoceros triqueter]. Similar communities have been found on cobble and pebble plains in stable, undisturbed conditions in some sealochs, although not all these examples have [Modiolus] beds.
[Mytilus edulis] beds on sublittoral sediment	Shallow sublittoral mixed sediment, in fully marine coastal habitats or sometimes in variable salinity conditions in the outer regions of estuaries, are characterised by beds of the common mussel [Mytilus edulis]. Other characterising infaunal species may include the amphipod [Gammarus salinus] and oligochaetes of the genus [Tubificoides]. The polychaetes [Harmothoe] spp., [Kefersteinia cirrata] and [Heteromastus filiformis] are also important. Epifaunal species in addition to the [M. edulis] include the whelks [Nucella lapillus] and [Buccinum undatum], the common starfish [Asterias rubens] the spider crab [Maja squinado] and the anemone [Urticina felina]. Relatively few records are available for this biotope and it is possible that as more data is accumulated separate estuarine and fully marine sub-biotopes may be described. Further clarification may also be required with regard to the overlap between littoral and sublittoral mussel beds and with regard to mussel beds biotopes on hard substratum.

Circalittoral [Lophelia pertusa] reefs	Reefs of the coral [Lophelia pertusa], typically supporting a range of other biota. [Lophelia] reefs are generally found in areas of elevated current. The coral provides a 3 dimensional structure and a variety of microhabitats that provide shelter and a surface of attachment for other species. Boring sponges, anemones, bryozoans, gorgonians including [Paragorgia arborea], [Paramuricea placomus], [Primnoa resedaeformis], polychaetes, barnacles, squat lobsters ([Munida sarsi]) and bivalves have all been recorded within and among the corals (Wilson, 1979; Mortensen et al., 1995) Other hard corals such as [Madrepora oculata] and [Solenosmilia variabilis] may also be present. Mobile species present include the redfish ([Sebastes viviparous] and [Sebastes marinus]), Ling ([Molva molva]) and tusk ([Brosme brosme]) (Husebo et al., 2002). Situation: In British waters [Lophelia] reefs have been found on fine silt sediment and rock on the continental slope, on rock on the continental shelf, and on other hard structures such as the legs of oil platforms.
Chrysophyceae and Haptophyceae on vertical upper littoral fringe soft rock	Orange, brownish or blackish gelatinous bands of algae at high tide and supralittoral levels on open cliff faces and on upper walls and ceilings at entrances and to the rear of upper and mid-shore hard and soft rock (chalk) caves. This dark brown band consists of an assemblage of Haptophyceae such as [Apistonema] spp., [Pleurochrysis carterae] and the orange [Chrysotila lamellosa], but other genera and species of Chrysophyceae, Haptophyceae and Prasinophyceae are likely to be present as well. Species such as [Entodesmis maritima] and [Thallochrysis littoralis] and the filamentous green alga [Epicladia perforans] are often associated with [Apistonema] spp. and the latter can form a green layer beneath the [Apistonema] spp. Associated with this splash zone algal community is an assemblage of animals of terrestrial origin, with red mites, insects and centipedes commonly found. These species descend into the community as the tide falls and retreat as the tide rises. The most common truly 'marine' species is the small winkle [Melarhaphe neritoides]. Situation: This description is partly based on a Th
Marine habitats	Marine habitats are directly connected to the oceans, i.e. part of the continuous body of water which covers the greater part of the earth's surface and which surrounds its land masses. Marine waters may be fully saline, brackish or almost fresh. Marine habitats include those below spring high tide limit (or below mean water level in non-tidal waters) and enclosed coastal saline or brackish waters, without a permanent surface connection to the sea but either with intermittent surface or sub-surface connections (as in lagoons). Rockpools in the supralittoral zone are considered as enclaves of the marine zone. Includes marine littoral habitats which are subject to wet and dry periods on a tidal cycle including tidal saltmarshes; marine littoral habitats which are normally water-covered but intermittently exposed due to the action of wind or atmospheric pressure changes; freshly deposited marine strandlines characterised by marine invertebrates. Waterlogged littoral saltmarshes and associated saline or brackish pools above the mean water level in
Mediterranean communities of upper mediolittoral rock	The distributions and types of species in this habitat are profoundly affected by the submersion variability determined by wave action, and by irregularities in the sea level caused by atmospheric pressure and wind.

Association with [Bangia atropurpurea]	This facies is characterised by a continuous belt of the red alga [Bangia atropurpurea].
Association with [Porphyra leucosticta]	This facies is characterised by a continuous belt of the red alga [Porphyra leucosticta].
Association with [Nemalion helminthoides] and [Rissoella verruculosa]	This facies is characterised by a continuous belt of the two red algae species [Nemalion helminthoides] and [Rissoella verruculosa].
Association with [Lithophyllum papillosum] and [Polysiphonia] spp.	This facies is characterised by a continuous belt of the red algae species [Lithophyllum papillosum] and [Polysiphonia] spp.
Hydrolittoral mixed sediment substrata: dominated by macrophyte vegetation	No description available.
Geolittoral wetlands and meadows: reed, rush and sedge stands	No description available.
Geolittoral wetlands and meadows: reed, rush and sedge stands: natural stands	No description available.
Geolittoral wetlands and meadows: reed, rush and sedge stands: harvested stands	No description available.
Mainland Atlantic [Zostera noltii] or [Zostera angustifolia] meadows	Formations of [Zostera noltii] or [Zostera angustifolia] of the Atlantic, North Sea and Baltic shores of continental Europe and of its continental shelf islands.
Macaronesian [Zostera noltii] meadows	Very local [Zostera noltii] formations of Fuerteventura and Lanzarote.
Mediterranean [Zostera noltii] beds	Sparse meadows formed on muddy sands of the upper part of the infralittoral zone of Mediterranean coasts. This association is found in euryhaline and eurythermal waters and is characterised by the dwarf eel-grass [Zostera noltii] and the alga [Giraudya sphacelarioides].
Mediterranean [Zostera hornemanniana] beds	Formations of the Mediterranean endemic [Zostera hornemanniana], vicariant of [Zostera marina], often confined to coastal lagoons, recorded also from the Istrio-Dalmatian archipelago.
Pontic [Zostera marina] and [Zostera noltii] meadows	[Zostera marina] and [Zostera noltii] formations of Black Sea shores, particularly luxuriant in the limans of the northern Black Sea and the Azov Sea.
[Ruppia maritima] on lower shore sediment	Proposed new unit. No description available.

[Eleocharis] beds	Emergent [Eleocharis parvula] or [Eleocharis acicularis] formations of brackish seas, sea inlets, estuaries, permanent pools of mud or sand flats, and coastal lagoons, occurring in the open sea only in the Baltic, limited to coastal waterbodies elsewhere, and very rare.
[Eleocharis parvula] beds	Emergent [Eleocharis parvula]-dominated formations of brackish seas, sea inlets, estuaries, permanent pools of mud or sand flats, and coastal lagoons. They occur in the open sea only in the inner Baltic, in particular in middle Sweden, southern Finland and Estonia; they are very rare elsewhere, noted in particular on a few points of the coasts of Norway and in closed limans of the northern Black Sea and Azov Sea coasts, probably extinct in France and Germany.
Bothnian [Eleocharis acicularis] beds	Emergent [Eleocharis acicularis]-dominated formations of the open Baltic in the Gulf of Bothnia (Bothnia Sea, Bothnia Bay) and the Gulf of Finland.
Methane seeps in littoral sediments	Proposed new unit. No description available.
Turf of articulated [Corallinaceae] on exposed to sheltered infralittoral bedrock and boulders	Proposed new unit. No description available.
Mediterranean communities of infralittoral algae very exposed to wave action	This community is characterised by the presence of many photophilic algae covering hard bottoms in wave exposed areas.
Overgrazing facies with incrustant algaes and sea urchins	This facies is characterised by a low coverage of algae due to grazing by sea urchins.
Association with [Cystoseira amentacea] (var. [amentacea], var. [stricta], var. [spicata])	This association is characterised by the brown alga [Cystoseira amentacea], [Cystoseira amentacea var. stricta] and [Cystoseira amentacea var. spicata], living in pure, rough waters with strong luminosity.
Facies with [Vermetus] spp.	This facies is characterised by an high presence of vermetids building a continous belt called a "trottoir".
Facies with [Mytilus galloprovincialis]	This facies characterised by the dominance of the mollusc bivalve [Mytilus galloprovincialis] is typical of areas with high levels of organic input.
Association with [Corallina elongata] and [Herposiphonia secunda]	This association with the red algae [Corallina elongata] and [Herposiphonia secunda] is typical of the upper infralittoral with strong wave action and strong luminosity.
Association with [Corallina officinalis]	This association with the red alga [Corallina officinalis] is typical in the upper horizon of the infralittoral in areas with strong luminosity and sheltered waters.
Association with [Schottera nicaeensis]	This association is characterised by the red alga [Schottera nicaeensis] living in pure, rough waters with strong luminosity.
Encrusting algal communities	Proposed new unit. No description available.

Frondose algal communities (other than kelp)	Proposed new unit. No description available.
[Cystoseira] spp. on exposed infralittoral bedrock and boulders	Proposed new unit. No description available.
Mediterranean communities of infralittoral algae moderately exposed to wave action	This community is characterised by the presence of many photophilic algae covering hard bottoms in moderately exposed areas.
Association with [Codium vermilara] and [Rhodymenia ardissonei]	This association of the green alga [Codium vermilara] and the red alga [Rhodymenia ardissonei] populates the middle horizon of the infralittoral zone, with low light and hydrodynamics.
Association with [Dasycladus vermicularis]	This association with the green alga [Dasycladus vermicularis] populates the middle horizon of the infralittoral zone with low light and hydrodynamics.
Association with [Alsidium helminthochorton]	This association is the red alga [Alsidium helminthochorton], which is typical of the upper horizon of the infralittoral zone with weak light and hydrodynamics.
Association with [Cystoseira tamariscifolia] and [Saccorhiza polyschides]	This facies is characterised by presence of the brown algae [Cystoseira tamariscifolia] and [Saccorhiza polyschides]. It is possible to find this association on seabottoms exposed to high currents (e.g. Strait of Messina, Strait of Alboran, etc.)
Association with [Gelidium spinosum v. hystrix]	This association is characterised by the high abundance of the red alga [Gelidium spinosum var. hystrix].
Association with [Lobophora variegata]	This association is characterised by the high abundance of the brown alga [Lobophora variegata].
Association with [Ceramium rubrum]	This association is characterised by the high abundance of the red alga [Ceramium virgatum] (ex [Ceramium rubrum]).
Facies with [Cladocora caespitosa]	This facies is characterised by the abundance of the Mediterranean coral [Cladocora caespitosa].
Association with [Cystoseira brachycarpa]	This association is characterised by the brown alga [Cystoseira brachycarpa].
Association with [Cystoseira crinita]	This association is characterised by the brown alga [Cystoseira crinita], living in pure, rough waters with strong luminosity.
Association with [Cystoseira crinitophylla]	This association is characterised by the brown alga [Cystoseira crinitophylla].
Association with [Cystoseira sauvageauana]	This association is characterised by the brown alga [Cystoseira sauvageauana].
Association with [Cystoseira spinosa]	This association is characterised by the brown alga [Cystoseira spinosa].
Association with [Sargassum vulgaris]	This association is characterised by the brown alga [Sargassum vulgare], living in pure, rough waters with strong luminosity.

Association with [Dictyopteris polypodioides]	This association is characterised by the brown alga [Dictyopteris polypodioides], living in pure, rough waters with strong luminosity.
Association with [Calpomenia sinuosa]	This association is characterised by the brown alga [Colpomenia sinuosa].
Association with [Rhodymenia ardissonei] and [Rhodophyllis divaricata]	This association is characterised by a mixed cover of the two red algae [Rhodymenia ardissonei] and [Rhodophyllis divaricata].
Facies with [Astroides calycularis]	This facies is characterised by the madreporian [Astroides calycularis] and is typical of the western Mediterranean pre-coralligenous zone.
Association with [Flabellia petiolata] and [Peyssonnelia squamaria]	This association is characterised by a mixed cover of the green alga [Flabellia petiolata] and the red alga [Peyssonnelia squamaria] and is typical of semi-sciaphilous (shaded) hard bottoms.
Association with [Halymenia floresia] and [Halarachnion ligatatum]	This association is characterised by a mixed cover of the two red algae [Halymenia floresia] and [Halarachnion ligulatum] and is typical of semi-sciaphilous (shaded) hard bottoms.
Association with [Peyssonnelia rubra] and [Peyssonnelia] spp.	This association is characterised by a mixed cover of the red algae [Peyssonnelia rubra] and other members of the genus [Peyssonnelia] spp. and is typical of semi-sciaphilous (shaded) hard bottoms.
Faunal communities on moderate energy infralittoral rock	Added by CEH to accommodate level 5 units proposed at Southampton workshop
[Halopteris filicina] with coralline crusts on moderately exposed infralittoral rock	Proposed new unit. No description available.
Association with [Stypocaulon scoparium] (=[Halopteris scoparia])	This association is characterised by the brown alga [Stypocaulon scoparium], living in pure, sheltered waters with strong luminosity.
Association with [Trichosolen myura] and [Liagora farinosa]	This association is characterised by the green alga [Trichosolen myura] and the red alga [Liagora farinosa], also called "soft spaghettiweed".
Association with [Cystoseira compressa]	This association is characterised by the brown alga [Cystoseira compressa].
Association with [Pterocladiella capillacea] and [Ulva laetevirens]	This association is characterised by a vegetation with the red alga [Pterocladiella capillacea] and the green alga [Ulva laetevirens]. It is found in areas with mixed salinity.
Facies with large Hydrozoa	This facies is characterised by the high presence of large Hydrozoa (e.g. [Aglaophenia] spp. and [Eudendrium] spp.).

Association with [Pterothamnion crispum] and [Compsothamnion thuyoides]	This association is characterised by a mixed vegetation of the red algae [Pterothamnion crispum] and [Compsothamnion thuyoides].
Faunal communities on low energy infralittoral rock	Added by CEH to accommodate level 5 units proposed at Southampton workshop
[Codium elisabethae], [Halopteris filicina] and coralline crusts on sheltered infralittoral bedrock	Proposed new unit. No description available.
Mediterranean coralligenous communities moderately exposed to hydrodynamic action	This habitat is present in the Mediterranean on hard rocky and/or biogenic horizontal substrata formed by coralligenous formations developed within sedimentary beds that are well supplied by currents, up to 100 metres in depth, in clear waters with moderate hydrodynamic action. Coralligenous concretions are found on rock faces or on rocks where calcareous algae can build biogenic constructions.
Association with [Cystoseira zosteroides]	This association is characterised by the high abundance of the brown alga [Cystoseira zosteroides]. The association can include in its higher levels both sciaphilous and photophilous species such as the brown algae [Phyllariopsis brevipes], [Arthrocladia villosa], and others.
Association with [Cystoseira usneoides]	This association characterised by the brown alga [Cystoseira usneoides] is present in relatively deep rocky areas crossed by currents.
Association with [Cystoseira dubia]	This association characterised by the brown alga [Cystoseira dubia] occurs on hard substrata subject to weak hydrodynamics and relatively strong sedimentation.
Association with [Cystoseira corniculata]	This association characterised by the brown alga [Cystoseira corniculata] occurs on hard substrata in the circalittoral zone.
Association with [Sargassum] spp.	This association characterised by the abundance of the brown algae [Sargassum] spp. occurs on hard substrata, simultaneously relatively deep and well-lit, in oligotrophic conditions.
Association with [Mesophyllum lichenoides]	This association characterised by the red alga [Mesophyllum lichenoides] occurs on hard substrata with strong deep currents.
Algal bioconcretion with [Lithophyllum frondosum] and [Halimeda tuna]	This association characterised by the red encrusting alga [Lithophyllum strictaeforme] ([Lithophyllum frondosum]) and the green alga [Halimeda tuna] is present on coralligenous horizontal formations developing within sedimentary beds affected by sea bottom currents.
Association with [Laminaria ochroleuca]	This association characterised by the brown alga [Laminaria ochroleuca] occurs on hard or detritic substrata composed by sparse rocks located at 30 - 100 metres depth in areas affected by strong currents and the Atlantic influx (e.g. Strait of Messina, Sea of Alboran, Algerian coasts).
Facies with [Eunicella cavolinii]	This facies is characterised by the high density of colonies of the gorgonian (sea-fan) [Eunicella cavolinii].
Facies with [Eunicella singularis]	This facies is characterised by the high density of colonies of the gorgonian (sea-fan) [Eunicella singularis].

Facies with [Paramuricea clavata]	This facies is characterised by the high density of colonies of the gorgonian (red sea-fan) [Paramuricea clavata].
Facies with [Parazoanthus axinellae]	This facies is characterised by the high density of the cnidarian (sea anemone) [Parazoanthus axinellae].
Coralligenous platforms	These are coralligenous horizontal formations developing within sedimentary beds subject to currents, at up to at least 100 metres depth in clear waters.These formations are not usually built on rock substrata but result from the active development of constructor organisms (e.g. calcified algae, hard-skeleton invertebrates) from scattered elements on loose beds, shells, stones, and graves.
Faunal communities on deep moderate energy circalittoral rock	These communities populate hard substrata with low hydrodynamics and strong sedimentation.
Mediterranean coralligenous communities sheltered from hydrodynamic action	Coralligenous concretions are found on rock faces or on rocks where calcareous algae can build biogenic constructions. These communities are present in the Mediterranean on hard rocky and/or biogenic substrata at 10 - 100 metres depth with low hydrodynamic action.
Association with [Rodriguezella strafforelli]	This association populates hard poorly-lit substrata, in a sheltered environment, at about 25-45 metres depth.
Facies with [Lophogorgia sarmentosa]	This facies is characterised by the high density of colonies of the gorgonian (sea-fan) [Lophogorgia sarmentosa].
Faunal communities on deep low energy circalittoral rock	Added by CEH to accommodate level 5 units proposed at Southampton workshop
Caves and overhangs with [Parazoanthus axinellae]	This facies, characterised by the colonial sea anemone [Parazoanthus axinellae], occurs on hard bottoms affected by very rough water and relatively dim light. Found attached to rocks and sponges in open coast rocky habitats, it is often observed on vertical faces or beneath overhangs, at 6-100m depth.
Caves and overhangs with [Corallium rubrum]	This facies, characterised by the high presence of the cnidarian (red coral) [Corallium rubrum], occurs on walls of caves and/or cavities with coralligenous concretions and semi-dark overhangs. The vertical distribution of this facies occurs from 10 to 200 metres depth.
Caves and overhangs with [Leptopsammia pruvoti]	This facies with the madreporian (yellow coral) [Leptopsammia pruvoti] occurs on hard substrata at the entrance to caves and under overhangs.
Caves and ducts in total darkness (including caves without light or water movement at upper levels)	This habitat occurs in very large submerged cavities especially present in drowned karstic networks, isolated little cavities and microcavities in heaps of stones and within certain concretions. The caves in total darkness are enclaves of the aphotic area in the littoral area. These habitats present extremely original environmental conditions, close to those found on the continental slope. The two most important ecological factors are the absence of light, which rules out photosynthetic organisms, and the confined space.
Bubbling reefs in the sublittoral euphotic zone	No description available.

Bubbling reefs in the sublittoral euphotic zone with little or no macrophyte vegetation	No description available.
Bubbling reefs in the sublittoral euphotic zone dominated by macrophyte vegetation	No description available.
Bubbling reefs in the aphotic zone	No description available.
Baltic level gravel bottoms of the infralittoral photic zone with little or no macrophyte vegetation	No description available.
Baltic gravel banks of the infralittoral photic zone	No description available.
Association with rhodolithes in coarse sands and fine gravels mixed by waves	This association occurs on coarse sands and fine gravels subjected to strong hydrodynamic action. Calcareous algae are attached to a small mineral or organic surface and then grow in successive layers to form rhodolithes of more or less nodulous shape and varying size.
Facies with [Gouania wildenowi]	This facies is characterised by the abundance of the little clingfish [Gouania willdenovii] that live in shallow waters.
Baltic shell gravel bottoms in the infralittoral photic zone	No description available.
Greenland cockle [Serripes] in shallow coarse sand (influenced by warm low-salinity melt water) of the Arctic	Proposed new unit. No description available.
Scallops on shell gravel and sand with some sand scour	Proposed new unit. No description available.
Baltic gravel bottoms of the aphotic zone	No description available.
Baltic shell gravel bottoms of the aphotic zone	No description available.
Baltic level sandy bottoms of the infralittoral photic zone with little or no macrophyte vegetation	No description available.

Baltic sand bars of the infralittoral photic zone	No description available.
Baltic sand banks of the infralittoral photic zone	No description available.
[Macoma balthica] in brackish environment (seasonally ice-covered)	Proposed new unit. No description available.
Mediterranean communities of fine sands in very shallow waters	These assemblages occur in very shallow water with seabottoms characterised by fine sands, usually with homogenous granulometry and of terrigenous origin.
Facies with [Lentidium mediterraneum]	This facies is present in shallow water and is characterised by the mollusc bivalve [Lentidium mediterraneum].
Mediterranean communities of well sorted fine sands	This biocenosis often occupies vast areas along low coasts and in the bottoms of wide bays at depths 2 - 25 metres.The characteristic species are pelecypod molluscs (e.g. [Donax venustus], [Tellina pulchella], [Tellina planata], [Cardium tuberculatum]), gastropods (e.g. [Nassa mutabilis] and [Neverita josephina]), crustaceans (e.g. [Crangon crangon] and [Iphinoe josephina]) and small fish (e.g. [Gobius microps], [Callionymus belenus], [Solea solea] and [Trachinus draco]).
[Turritella] in muddy sands	Proposed new unit. No description available.
[Ervillia castanea] beds in infralittoral sand	Proposed new unit. No description available.
Medium to very fine sand, 100-120 m, with polychaetes [Spiophanes kroyeri], [Amphipectene auricoma], [Myriochele] sp., [Aricidea wassi] and amphipods [Harpinia antennaria]	Proposed new unit. No description available.
Baltic sandy bottoms of the aphotic zone	No description available.
Mediterranean communities of superficial muddy sands in sheltered waters	These habitats are located in protected coves, in sheltered environments, where a substrate consisting of a muddy-sandy sediment, sometimes mixed with a small amount of gravel, occurs. Depth is mostly around 1 metre, rarely more than 3 metres. These shallow areas are characterised by very variable environmental conditions and may present facies with epiflora or major developments of filtering or burrowing species.

Facies with [Callianassa tyrrhena] and [Kellia corbuloides]	This facies of superficial muddy sands in sheltered waters is characterised by the dominance of the ghost shrimp [Callianassa tyrrhena] and the bivalve mollusc [Kellia corbuloides].
Facies with fresh water resurgences with [Cerastoderma glaucum] and [Cyathura carinata]	This facies, typical of fresh water springs, is characterised by the bivalve mulluscs [Cerastoderma glaucum] and [Cyathura carinata].
Facies with [Loripes lacteus], [Tapes] spp.	This facies is characterised by the bivalve molluscs [Loripes lacteus] and [Tapes] spp.
Association with [Caulerpa prolifera] on superficial muddy sands in sheltered waters	This facies is characterised by the green alga [Caulerpa prolifera] and is present in the warmest areas.
Facies of hydrothermal oozes with [Cyclope neritea] and nematodes	These facies are characterised by the gastropod [Cyclope neritea] and some species of nematodes. The facies are present between 3 - 15 metres depth with high hydrothermal activity.
Baltic brackish water sublittoral muddy biocenoses influenced by varying salinity	No description available.
Baltic muds of the infralittoral photic zone with little or no macrophyte vegetation	No description available.
Boreal Baltic narrow inlets with soft mud substrate	No description available.
[Astarte crenata] beneath high salinity cold polar water	Proposed new unit. No description available.
Oligochaetes in mobile mud	Proposed new unit. No description available.
Silty sediments > 140 m with polychaetes [Lumbrineris fragilis], [Levinsenia gracilis] and amphipods [Eriopisa elongata]	Proposed new unit. No description available.
[Spiochaetopterus] beneath high salinity Atlantic water	Proposed new unit. No description available.
[Macoma calcarea] in deep-water soft clayey mud	Proposed new unit. No description available.
Baltic muddy bottoms of the aphotic zone	No description available.

Mediterranean communities of muddy detritic bottoms	This biocenosis develops in areas where a detritus bottom is covered with mud formed by terrigenous deposits from rivers. The sediment is a very muddy sand or sandy mud, or even a rather compacted mud, rich in shell debris or valocanic fragments (scoriae); sedimentation is slow enough to allow the development of sessile epifauna. Gravel, sand and mud are mixed in varying quantities, but mud always predominates.
Facies with [Ophiothrix quinquemaculata]	This facies is exclusive to the muddy detritic biocenosis and is characterised by an unusual community of the brittlestar [Ophiothrix quinquemaculata] ([Ophiuroidea]). This species in some places forms an extremely dense population which is almost 90% ophiuran.
Mediterranean communities of coastal terrigenous muds	The sediment is always pure mud, more or less clayey, almost always of fluvial origin. Such coarse debris as may be deposited is quickly covered, with the result that no epifauna develops.
Facies of soft muds with [Turritella tricarinata communis]	This facies is characterised by presence of the gastropod [Turritella tricarinata].
Facies of sticky muds with [Virgularia mirabilis] and [Pennatula phosphorea]	This facies is characterised by the soft corals [Virgularia mirabilis] and [Pennatula phosphorea] on sticky muddy bottoms.
Facies of sticky muds with [Alcyonium palmatum] and [Stichopus regalis]	This facies is characterised by the soft coral [Alcyonium palmatum] and the echinoderm [Stichopus regalis] on sticky muddy bottoms.
Baltic level mixed sediment bottoms of the infralittoral photic zone with little or no macrophyte vegetation	No description available.
Sandy mixed sediment with [Alcyonidium diaphanum]	Proposed new unit. No description available.
Baltic mixed sediment bottoms of the aphotic zone	No description available.
Mediterranean animal communities of coastal detritic bottoms	These communities occur on a substratum whose nature varies widely and depends largely on the typology of the nearby coast and of nearby infralittoral formations. This implies that substrata can sometimes be gravels and sands originating from predominant local rocks, sometimes shell debris from various molluscs, sometimes debris from branched bryozoans or debris of dead and more or less corroded [Melobesiae] spp. The interstices between these various components are partially filled by a greater or lesser proportion of sand and mud.
Association with rhodolithes on coastal detritic bottoms	This association characterised by "balls" of calcareous encrusting algae occurs on coastal detritic bottoms.

Association with [Peyssonnelia rosa-marina]	This association on coastal detritic bottoms is characterised by the abundance of the red alga [Peyssonnelia rosa-marina].
Association with [Arthrocladia villosa]	This association on coastal detritic bottoms is characterised by the abundance of the brown alga [Arthrocladia villosa].
Association with [Osmundaria volubilis]	This association on coastal detritic bottoms is characterised by the abundance of the brown alga [Osmundaria volubilis].
Association with [Kallymenia patens]	This association on coastal detritic bottoms is characterised by the abundance of the red alga [Kallymenia patens].
Association with [Laminaria rodriguezii]	This association on coastal detritic bottoms is characterised by the abundance of the brown alga [Laminaria rodriguezii].
Facies with [Ophiura texturata]	This facies is characterised by the high abundance of the Echinoderm [Ophiura texturata].
Facies with Synascidies	This facies is characterised by the frequent presence of tunicate colonial ascidians or "Synascidies".
Facies with large Bryozoa	This facies is characterised by the frequent presence of big colonies of arborescent bryozoans, unattached or fixed to small substrata.
Mediterranean communities of shelf-edge detritic bottoms	These communities are present in detritic bottoms with abundance of dead shells, bryozoans and coral skeletons.
Facies with [Neolampas rostellata]	This facies is characterised by the high abundance of the sea urchin [Neolampas rostellata].
Facies with [Leptometra phalangium]	This facies is characterised by the high abundance of the crynoid [Leptometra phalangium].
Association with rhodolithes in coarse sands and fine gravels under the influence of bottom currents	This facies is characterised by the presence of small calcareous algae species exposed to strong bottom currents.
Facies with [Ficopomatus enigmaticus]	The characteristic species of this association is the Annelid [Ficopomatus enigmaticus].
Association with [Gracilaria] spp.	This association is characterised by the red algae belonging to the genus [Gracilaria].
Association with [Chaetomorpha linum] and [Valonia aegagropila]	This association is characterised by the green algae [Chaetomorpha linum] and [Valonia aegagropila].
Association with [Halopitys incurva]	This association is characterised by the red alga [Halopitys incurvus].
Association with [Ulva laetevirens] and [Enteromorpha linza]	This association is characterised by the green algae [Ulva laetevirens] and [Enteromorpha linza].
Association with [Cystoseira barbata]	This association is characterised by the brown alga [Cystoseira barbata].

Association with [Lamprothamnium papulosum]	This association is characterised by the foxtail stonewort (charophyte) [Lamprothamnium papulosum]. [Lamprothamnium papulosum] is a rare, brackish water stonewort growing to a height of up to 40 cm with regular whorls of slender cylindrical branches each with several spine-like bracts which give the plant a furry appearance. The foxtail stonewort has a sporadic distribution around the coast of Europe from Norway to the Iberian Peninsula. In the Mediterranean it extends eastwards to Tunisia and Sicily with isolated records from Cyprus and the Black Sea.
Association with [Cladophora echinus] and [Rytiphloea tinctoria]	The characteristic species of this association are the green alga [Cladophora echinus] and the red alga [Rytiphloea tinctoria].
[Cymodocea] beds	Formations of [Cymodocea nodosa] of the Atlantic shores of southern Iberia, northwestern Africa and the Macaronesian Islands.
Macaronesian [Cymodocea] beds	Formations of [Cymodocea nodosa] or [Cymodocea] and [Caulerpa] spp., in particular [Caulerpa prolifera], occupying large surfaces, on sandy substrates at depths of 1-15 metres, around the Macaronesian Islands.
Lusitanian [Cymodocea] beds	Formations of [Cymodocea nodosa] of the southernmost Atlantic coasts of the Iberian peninsula.
Mediterranean [Cymodocea] beds	[Cymodocea nodosa] formations of the Mediterranean, permanently submerged in waters down to 10 metres deep, often in sheltered areas behind [Posidonia] reefs, monospecific or associated with either the alga [Caulerpa prolifera] or the phanerogam [Halophila stipulacea].
Association with [Cymodocea nodosa] on well sorted fine sands	This association, characterised by the seagrass [Cymodocea nodosa], lives on soft bottoms formed by well sorted fine sands and can constitute a local facies with epiflora.
Association with [Cymodocea nodosa] on superficial muddy sands in sheltered waters	This association is characterised by the seagrass [Cymodocea nodosa] and is present when the water is actively renewed and there is no trace of desalination.
[Halophila] beds	Deep water colonies of [Halophila] spp. or [Thalassia] spp. of the Mediterranean and the Macaronesian Atlantic.
Canary Island [Halophila] beds	[Halophila decipiens] colonies of Tenerife, at depths between 10 and 14 metres.
Mediterranean [Halophila] beds	The facies characterised by the seagrass [Halophila stipulacea] lives on soft bottoms with fine sands that are fairly enriched by fine particles. Colonies of [Halophila stipulacea] have invaded the Mediterranean as a result of the opening of the Suez Canal; they have been reported from continental Greece, the Cyclades, Crete, Rhodes, Samos, the Maltese Islands.
[Zostera] beds in infralittoral sediments	Beds of seagrass ([Zostera marina] or [Ruppia] spp.) in shallow sublittoral sediments. These communities are generally found in extremely sheltered embayments, marine inlets, estuaries and lagoons, with very weak tidal currents. They may inhabit low, variable and full salinity marine habitats. Whilst generally found on muds and muddy sands they may also occur in coarser sediments, particularly marine examples of [Zostera] communities.

Association with [Zostera noltii] in euryhaline and eurythermal environment	No description available.
Association with [Zostera marina] in euryhaline and eurythermal environment	This association is found in euryhaline and eurythermal waters and it is characterised by the eel-grass [Zostera marina].
Association with [Zostera noltii] on superficial muddy sands in sheltered waters	No description available.
[Ruppia] and [Zannichellia] communities	Beds of seagrass ([Zostera marina] or [Ruppia] spp.) in shallow sublittoral sediments. These communities are generally found in extremely sheltered embayments, marine inlets, estuaries and lagoons, with very weak tidal currents. They may inhabit low, variable and full salinity marine habitats. Whilst generally found on muds and muddy sands they may also occur in coarser sediments, particularly marine examples of [Zostera] communities.
Middle European [Ruppia] and [Zannichellia] communities	Submerged beds of [Ruppia maritima], [Ruppia cirrhosa], [Zannichellia pedicellata], [Chara] spp., [Tolypella nidifica] of brackish seas, sea inlets, estuaries, permanent pools of mud or sand flats, and coastal lagoons of Atlantic, North Sea and Baltic coasts of boreal and temperate Europe.
Tethyan marine [Ruppia] communities	Submerged beds of [Ruppia maritima] or [Ruppia cirrhosa] and of [Chara] spp. of sea inlets, estuaries, permanent pools of mud or sand flats, and coastal lagoons of the Mediterranean, the Black Sea and the subtropical Atlantic, north to southwestern Iberia, south to 27øN.
[Posidonia] beds	This assemblage is characterised by the presence of the marine seagrass (phanerogam) [Posidonia oceanica]. This species is endemic to the Mediterranean and constitutes characteristic formations called Posidonia meadows, located between the surface and up to 50 metres depth.
Ecomorphosis of striped [Posidonia oceanica] meadows	The striped [Posidonia oceanica] meadows facies is found at depth 0 - 5 metres. It appears as fairly narrow ribbons that can be several dozen metres long. These ribbons are separated by stretches of dead mat colonised by [Cymodocea nodosa] and/or [Caulerpa] spp.
Ecomorphosis of "barrier-reef" [Posidonia oceanica] meadows	This ecomorphosis can be found in [Posidonia oceanica] beds present in sheltered bays. The vertical growth of the rhizomes leads to the raising of the mat, thus enabling the meadow to reach the surface.
Facies of dead "mattes" of [Posidonia oceanica] without much epiflora	This facies is characterised by a dead mat of [Posidonia oceanica] without macro-epiflora.
Association with [Caulerpa prolifera] on [Posidonia] beds	This facies is characterised by the presence of the green alga [Caulerpa prolifera] in association with the [Posidonia oceanica] bed.

Association with [Potamogeton pectinatus]	Low and variable salinity infralittoral mud with beds of [Potamogeton pectinatus]. Other associated species are broadly similar to that of Rup, with blankets of filamentous green algae such as [Enteromorpha intestinalis], [Cladophora liniformis] and [Rhizoclonium riparium]. The grazing gastropod [Potamopyrgus antipodarum] is found in this biotope and juvenile [Mytilus edulis] have been observed settled on [Potamogeton] leaves and amongst the algae. The nationally scarce charaphyte [Lamprothamnium papulosum] may be found to some extent in this biotope but more often in neighbouring habitats (see Plaza & Sanderson 1997). Mysids, trout ([Salmo trutta]), and sticklebacks [Gasterosteus aculeatus] can be found swimming amongst the vegetation. [Mya arenaria] may be found in some examples of this biotope, but the infaunal component of this biotope requires further investigation but is likely to contain oligochaetes, [Arenicola marina], [Corophium volutator] and [Gammarus] spp.
Vegetation of brackish waters dominated by [Ranunculus baudotii]	[Ranunculus] spp.-dominated communities developed in shallow-waters of very low salinity of coastal lagoons, coastal basins and coastal waters of the Palaearctic region, including the Atlantic, North Sea, Baltic Sea, Mediterranean Sea and Black Sea. The most widespread characteristic species is [Ranunculus baudotii]. Locally, other crowfoots may be typical, as, in particular, in the Gulf of Bothnia, [Ranunculus trichophyllus] ([Ranunculus confervoides]).
[Hiatella arctica] beds on silty clay with small pebbles and shells	Proposed new unit. No description available.
Baltic mussel beds in the infralittoral photic zone	Communities of Atlantic, Baltic and Mediterranean mussel beds.
Baltic mussel beds in the infralittoral photic zone with little or no macrophyte vegetation	No description available.
Baltic mussel beds of the infralittoral photic zone dominated by macrophyte vegetation	No description available.
Seeps and vents in sublittoral sediments	No description available.
Freshwater seeps in sublittoral sediments	No description available.
Methane seeps in sublittoral sediments	No description available.
Oil seeps in sublittoral sediments	No description available.
Vents in sublittoral sediments	No description available.
Periodically and permanently anoxic sublittoral muds	No description available.

Deep-sea bed	The sea bed beyond the continental shelf break. The shelf break occurs at variable depth, but is generally over 200 m. The upper limit of the deep-sea zone is marked by the edge of the shelf. Includes areas of the Mediterranean Sea which are deeper than 200 m but not of the Baltic Sea which is a shelf sea. Excludes caves in the deep sea which are classified in A4.71 irrespective of depth.
Deep-sea rock and artificial hard substrata	Deep-sea benthic habitats with substrates predominantly of bedrock, immobile boulders or artificial hard substrates.
Deep-sea bedrock	No description available.
Deep-sea artificial hard substrata	No description available.
Deep-sea manganese nodules	No description available.
Boulders on the deep-sea bed	No description available.
Deep-sea mixed substrata	Deep-sea benthic habitats with substrates predominantly of mixed particle size or gravel. Includes habitats with mobile substrates of biogenic origin but no longer living, and of allochthonous material such as macrophyte debris. Deep-sea habitats with living biogenic substrates are included in A6.6.
Deep-sea lag deposits	No description available.
Deep-sea biogenic gravels (shells, coral debris)	No description available.
Deep-sea calcareous pavements	No description available.
Communities of allochthonous material	No description available.
Communities of macrophyte debris	No description available.
Deep-sea sand	Deep-sea benthic habitats with substrates predominantly of sand.
Communities of bathyal detritic sands with [Grypheus vitreus]	These communities are characterised by detritic sand substrata and by the abundant presence of the brachiopod [Grypheus vitreus].
Deep-sea muddy sand	Deep-sea benthic habitats with substrates predominantly of muddy sand.
Deep-sea mud	Bathyal and abyssal benthic habitats with substrates predominantly of yellowwish or blue-grey mud, relatively consistent, whose population is extremely sparse. This biocoenosis is characterised by constant homothermy and an almost total absence of light.
Mediterranean communities of bathyal muds	This biocenosis is characterised by a constant homothermy of around 13° C and an almost total absence of light. The granulometry and thickness of the sediment is not homogeneous. It is present, generally, at depths of 150 - 250 metres. The faunal composition is characterised by foraminifera, sponges, polychaetes, echinoderms and crustaceans.

Facies of sandy muds with [Thenea muricata]	This facies is characterised by sandy muds populated by the mollusc [Thenea muricata].
Facies of fluid muds with [Brissopsis lyrifera]	This facies is characterised by sandy muds populated by the echinoderm [Brissopsis lyrifera].
Facies of soft muds with [Funiculina quadrangularis] and [Apporhais seressianus]	This facies, present on the upper part of the continental slope, is characterised by sandy muds in which the cnidarian [Funiculina quadrangularis] and the gastropod [Apporhais serresianus] are present.
Facies of compact muds with [Isidella elongata]	This facies is present at the base of the continental slope and bathyal plain and is characterised by compact muds in which the cnidarian [Isidella elongata] is present.
Communities of abyssal muds	These are the communities populating the muddy seabottoms of the abyssal zone.
Deep-sea bioherms	A bioherm is a mound, dome, or reef-like mass of rock that is composed almost exclusively of the remains of sedentary marine organisms and is embedded in rock of different physical character. This habitat type includes deep-sea coral reefs (A6.61) and sponge beds (A6.62).
Deep-sea sponge aggregations	Deep sea sponge aggregations are principally composed of sponges from two classes: [Hexactinellida] and [Desmospongia]. They are known to occur between water depths of 250 m to 1300 m (Bett & Rice, 1992), where the water temperature ranges from 4-10°C and there is moderate current velocity (0.5 knots). Deep sea sponge aggregations may be found on soft substrata or hard substrata, such as boulders and cobbles which may lie on sediment. Iceberg plough-mark zones provide an ideal habitat for sponges because stable boulders and cobbles, exposed on the seabed, provide numerous attachment/settlement points (B. Bett, pers comm.). However, with 3.5 kg of pure siliceous spicule material per m2 reported from some sites (Gubbay, 2002), the occurrence of sponge fields can alter the characteristics of surrounding muddy sediments. Densities of occurrence are hard to quantify, but sponges in the class [Hexactinellida] have been reported at densities of 4-5 per m2, whilst ‘massive’ growth forms of sponges from the class [Desmospongia] have been reported at densities of 0.5 to 1 per m2 (B. Bett, pers comm.). Deep
Facies with [Pheronema grayi]	This facies is characterised by the presence of the sponge [Pheronema grayi].

Communities of deep-sea corals	The only community described is [Lophelia pertusa], a cold water, reef-forming coral, which has a wide geographic distribution ranging from 55°S to 70°N, where water temperatures typically remain between 4-8°C. These reefs are generally subject to moderate current velocities (0.5 knots). The majority of records occur in the north-east Atlantic. The extent of [L. pertusa] reefs varies, with examples off Norway several km long and more than 20 m high. These reefs occur within a depth range of 200 - >2000 m on the continental slope, and in shallower waters in Norwegian fjords and Swedish west coast. In Norwegian waters, [L. pertusa] reefs occur on the shelf and shelf break off the western and northern parts on local elevations of the sea floor and on the edges of escarpments. The biological diversity of the reef community is approximately three times as high as the surrounding soft sediment (ICES, 2003), suggesting that these cold-water coral reefs may be biodiversity hotspots. Characteristic species include other hard corals, such as [Madrepora oculata] and [Solenosmilia variabilis], the redfish [Seb
Permanently submerged flanks of oceanic islands	No description available.
Seamounts, knolls and banks	Seamounts are defined as undersea mountains, with a crest that rises more than 1,000 m above the surrounding sea floor (Menard, 1964 in Rogers, 1994). Seamounts can be a variety of shapes, but are generally conical with a circular, elliptical or more elongate base. Seamounts are volcanic in origin, and are often associated with seafloor 'hot-spots'; thinner areas of the earth's crust where magma can escape. Seamounts, often with a slope inclination of up to 60°, provide a striking contrast to the surrounding 'flat' abyssal plain. Their relief has profound effects on the surrounding oceanic circulation, with the formation of trapped waves, jets, eddies and closed circulations known as Taylor columns (Taylor, 1917 in Rogers, 1994). Seamounts occur frequently within the OSPAR Maritime Area. Analysis of narrow beam bathymetric data by the US Naval Oceanographic office from 1967-1989 identified more than 810 seamounts within the North Atlantic. The majority occur along the Mid-Atlantic ridge between Iceland and the Hayes fracture zone (Gubbay, 2002). The enhanced currents that occur around seamounts provide idea
Summit communities of seamount, knoll or bank within euphotic zone	No description available.
Summit communities of seamount, knoll or bank within the mesopelagic zone, i.e. interacting with diurnally migrating plankton	No description available.
Deep summit communities of seamount, knoll or bank (i.e. below mesopelagic zone)	No description available.

Flanks of seamount, knoll or bank	No description available.
Base of seamount, knoll or bank	No description available.
Moat around base of seamount, knoll or bank	No description available.
Oceanic ridges	No description available.
Communities of ridge flanks	No description available.
Communities of ridge axial trough (i.e. non-vent fauna)	No description available.
Oceanic ridge without hydrothermal effects	Benthic communities occupying raised features of the deep sea-floor; they include assemblages colonizing active or nonactive constructive midocean ridges, as well as those developed on asismic ridges, but with the exception of hydrothermal communities.
Abyssal hills	No description available.
Canyons, channels, slope failures and slumps on the continental slope	No description available.
Active downslope channels	No description available.
Inactive downslope channels	No description available.
Alongslope channels	No description available.
Turbidites and fans	No description available.
Deep-sea trenches	Benthic communities of the oceanic trenches, deep elongated subduction troughs of the ocean floor.
Deep-sea reducing habitats	No description available.
Seeps in the deep-sea bed	No description available.
Cold seep benthic communities of hadal zone	Highly distinctive benthic communities of large bivalves, sponges and bryozoans, inhabiting the vicinity of oceanic methane-laden seeps, mostly localized in subduction trenches.
Gas hydrates in deep-sea	No description available.
Cetacean and other carcasses on the deep-sea bed	No description available.
Deep-sea bed influenced by hypoxic water column	No description available.
Isolated ‘oceanic’ features influenced by hypoxic water column	No description available.

Vents in the deep sea	Hydrothermal vents occur along spreading ridges (such as the mid-Atlantic ridge), subduction zones, fracture zones and back-arc basins (Gage & Tyler, 1991), and are caused by seawater penetrating the upper levels of the Earth's crust through channels formed in cooling lava flows, reacting chemically with hot basalt in the Earth's crust and then rising back to the sea-bed to vent as superheated water containing compounds such as sulphides, metals, CO2 and methane (Tunnicliffe et al, 1998 in Gubbay, 2002). The water may trickle out from cracks and crevices on the seabed as hot springs (5-250°C), or as very concentrated jets of superheated water (270-380°C). As these concentrated jets of water cool, minerals dissolved in the water precipitate out in black clouds, giving them their common name of 'black smokers'. At lower temperatures, sulphides are mostly precipitated within the rocks, making the venting fluids appear cloudier. These are known as 'white smokers' (Gage & Tyler, 1991). Hydrothermal vent fields cover relatively small areas of the seabed in water depths of 850 - 4000 m. The biological comm
Active vent fields	No description available.
Inactive vent fields	No description available.
Pelagic water column	The water column of shallow or deep sea, or enclosed coastal waters. Note that because of the strong temporal nature of the pelagic environment, the water column at a given location will be classified differently at different times of the year.
Neuston	The interface between air and sea water, inhabited by communities of minute or microscopic organisms.
Temporary neuston layer	No description available.
Permanent neuston layer	No description available.
Completely mixed water column with reduced salinity	A water column which is completely and actively mixed, and influenced by freshwater so that the salinity is reduced relative to the adjacent fully marine seawater. This habitat type is usually found in relatively shallow, coastal situations, and is the result of river inflow or ice melt. Note that some discretion should be used in the interpretation of "adjacent", for example in the Baltic Sea, "adjacent" fully marine seawater is reached only in the Kattegat.
Completely mixed water column with reduced salinity and short residence time	No description available.
Baltic outer unenclosed seasonally stratified coastal water	No description available.
Completely mixed water column with reduced salinity and medium residence time	No description available.
Baltic inner unenclosed seasonally stratified coastal water	No description available.

Completely mixed water column with reduced salinity and long residence time	No description available.
Water body of Baltic eutrophic coastal lakes	No description available.
Water body of Baltic mesotrophic coastal lakes	No description available.
Water body of Baltic eutrophic glo-lakes	No description available.
Water body of Baltic mesotrophic glo-lakes	No description available.
Completely mixed water column with full salinity	A water column which is completely and actively mixed, not influenced by freshwater, so that the salinity is the same as that in adjacent seawater. This habitat type is usually found in relatively shallow, coastal situations, without river inflow or ice melt.
Completely mixed water column with full salinity and short residence time	No description available.
Completely mixed water column with full salinity and medium residence time	No description available.
Completely mixed water column with full salinity and long residence time	No description available.
Partially mixed water column with reduced salinity and medium or long residence time	A water column which is unmixed or only partially mixed because the depth of the water body is greater than the depth of mixing. Salinity is reduced relative to the adjacent fully marine seawater. This habitat type is usually found in deeper coastal water situations and is the result of river inflow or ice melt. Note that some discretion should be used in the interpretation of “adjacent”, for example in the Baltic Sea, “adjacent” fully marine seawater is reached only in the Kattegat. Medium residence time is defined as changing over time preiods greater than daily and up to about 14 days (based on the time required for the phytoplankton population to double) and long residence time lasting longer than 14 days.
Partially mixed water column with reduced salinity and medium residence time	No description available.
Partially mixed water column with reduced salinity and long residence time	No description available.

Unstratified water column with reduced salinity	A water column which is unmixed or only partially mixed because the depth of the water body is greater than the depth of mixing, and with short residence time, defined as changing diurnally. Salinity is reduced relative to the adjacent fully marine seawater. This habitat type is usually found in deeper coastal water situations and is the result of river inflow or ice melt. Note that some discretion should be used in the interpretation of “adjacent”, for example in the Baltic Sea, “adjacent” fully marine seawater is reached only in the Kattegat. Unstratified water columns have very weak or no horizontal or vertical gradients.
Euphotic (epipelagic) zone in unstratified reduced salinity water	No description available.
Mesopelagic zone in unstratified reduced salinity water	No description available.
Bathypelagic zone in unstratified reduced salinity water	No description available.
Abyssopelagic zone in unstratified reduced salinity water	No description available.
Vertically stratified water column with reduced salinity	A water column which is unmixed or only partially mixed because the depth of the water body is greater than the depth of mixing, and with short residence time, defined as changing diurnally. Salinity is reduced relative to the adjacent fully marine seawater. This habitat type is usually found in deeper coastal water situations and is the result of river inflow or ice melt. Note that some discretion should be used in the interpretation of “adjacent”, for example in the Baltic Sea, “adjacent” fully marine seawater is reached only in the Kattegat. This habitat type shows pronounced vertical stratification (e.g. caused by seasonal temperature changes, river discharge influence or ice-melt). The subtypes are separated at level 4 by the cause and degree of persistence of the gradient – e.g. seasonal temperature gradients or persistent salinity gradients.
Water column with ephemeral thermal stratification and reduced salinity	No description available.
Water column with seasonal thermal stratification and reduced salinity	No description available.
Water column with permanent thermal stratification and reduced salinity	No description available.
Water column with ephemeral halocline and reduced salinity	No description available.

Water column with seasonal halocline and reduced salinity	No description available.
Water column with permanent halocline and reduced salinity	No description available.
Baltic offshore deep water above the halocline	No description available.
Baltic offshore deep water below the halocline	No description available.
Water column with ephemeral oxygen stratification and reduced salinity	No description available.
Water column with seasonal oxygen stratification and reduced salinity	No description available.
Water column with permanent oxygen stratification and reduced salinity	No description available.
Fronts in reduced salinity water column	A water column which is unmixed or only partially mixed because the depth of the water body is greater than the depth of mixing, and with short residence time, defined as changing diurnally. Salinity is reduced relative to the adjacent fully marine seawater. This habitat type is usually found in deeper coastal water situations and is the result of river inflow or ice melt. Note that some discretion should be used in the interpretation of “adjacent”, for example in the Baltic Sea, “adjacent” fully marine seawater is reached only in the Kattegat. Horizontal gradients give rise to fronts, which are separated at level 4 by the degree of persistence of the stratification.
Ephemeral fronts in reduced salinity water column	No description available.
Seasonal fronts in reduced salinity water column	No description available.
Persistent fronts in reduced salinity water column	No description available.
Unstratified water column with full salinity	A water column which is unmixed or only partially mixed because the depth of the water body is greater than the depth of mixing. Salinity is the same as that in adjacent seawater. Unstratified water columns have very weak or no horizontal or vertical gradients.
Euphotic (epipelagic) zone in unstratified full salinity water	No description available.

Mesopelagic zone in unstratified full salinity water	Waters situated over the continental slope, the steep descent from the continental shelf to the ocean bottom, an area where upwellings, water mixing or shearing and other anomalies often develop.
Bathypelagic zone in unstratified full salinity water	No description available.
Abyssopelagic zone in unstratified full salinity water	Waters beyond the continental shelf. They occupy the greatest part of the Arctic and Atlantic oceans, the Mediterranean Sea, the Ligurian Sea, the Tyrrhenian Sea, the Ionian Sea, as well as the central part of the Aegean Sea, the Black Sea, the southern Adriatic Sea, the eastern part of the northern North Sea. They are absent from the Baltic Sea.
Vertically stratified water column with full salinity	A water column which is unmixed or only partially mixed because the depth of the water body is greater than the depth of mixing. Salinity is the same as that in adjacent seawater. This habitat type shows pronounced vertical stratification (e.g. caused by atmospheric temperature). The subtypes are separated at level 4 by the cause and degree of persistence of the gradient – e.g. seasonal temperature gradients or persistent salinity gradients.
Water column with ephemeral thermal stratification and full salinity	No description available.
Water column with seasonal thermal stratification and full salinity	No description available.
Water column with permanent thermal stratification and full salinity	No description available.
Water column with ephemeral halocline and full salinity	No description available.
Water column with seasonal halocline and full salinity	No description available.
Water column with permanent halocline and full salinity	No description available.
Water column with ephemeral oxygen stratification and full salinity	No description available.
Water column with seasonal oxygen stratification and full salinity	No description available.
Water column with permanent oxygen stratification and full salinity	No description available.

Anoxic water column in water with permanent oxygen stratification and full salinity	No description available.
Fronts in full salinity water column	A water column which is unmixed or only partially mixed because the depth of the water body is greater than the depth of mixing. Salinity is the same as that in adjacent seawater. Horizontal gradients give rise to fronts, which are separated at level 4 by the degree of persistence of the stratification – ephemeral such as eddies, gyres and upwellings; seasonal upwellings; or persistent water mass interfaces.
Ephemeral fronts in full salinity water column	No description available.
Seasonal fronts in full salinity water column	No description available.
Persistent fronts in full salinity water column	No description available.
Ice-associated marine habitats	Sea ice, icebergs and other ice-associated marine habitats.
Sea ice	Ice formations floating on sea water, usually constituting an incomplete cover, variable in form and structure, unstable and dynamic under the influence of surface air and water currents.
Seasonal pack-ice	Semi-continuous ice sheets forming on the sea for part of the year, characteristic of the Arctic Ocean, the Norwegian Sea, Bothnia Bay, the Bothnia Sea, and coastal areas of the Åland Sea, the Gulf of Finland and the Gulf of Riga, exceptional in other areas.
Permanent pack-ice	Semicontinuous ice sheets covering the sea throughout the year, limited to the Arctic Ocean.
Ice floes	Discontinuous formations of floating ice blocks, rafts and hummocks detached from the sea pack, remaining after the break-up of seasonal ice packs or drifting to more southern regions.
Freshwater ice	Floating and drifting blocks of ice detached from coastal glaciers (H4.2). These are separated by size at level 4.
Large tabular iceberg	Proposed new habitat type (CEH, May 2001), qualifying previous unspecified 'icebergs'.
Medium iceberg	Proposed new habitat type (CEH, May 2001), qualifying previous unspecified 'icebergs'.
Small iceberg	Proposed new habitat type (CEH, May 2001), qualifying previous unspecified 'icebergs'.
Bergy bit	Proposed new habitat type (CEH, May 2001), qualifying previous unspecified 'icebergs'.
Growler	Proposed new habitat type (CEH, May 2001), qualifying previous unspecified 'icebergs'.
Brine channels	During freezing of seawater, salt is rejected from the ice crystals. The remaining brine solution forms a three-dimensional network of tubes and channels with typical diameters of 200 µm within the ice matrix. Despite the harsh environmental conditions (low light intensities, low temperature, high salinity), a specialised community has developed and adapted to live within the brine channel system. Minute unicellular algae like diatoms are the dominant primary producers.

Brine channels in first year ice	No description available.
Brine channels in multi-year ice	No description available.
Under-ice habitat	The boundary layer between sea ice and the water column with special abiotic (e.g. temperature, salinity) and biotic (e.g. food resources) factors, which also vary with season and region. This habitat is colonized by autochthonous under-ice amphipods ([Apherusa glacialis], [Onisimus] spp., [Gammarus wilkitzkii]), which live directly at the ice underside and complete their entire life-cycle here, and allochthonous sub-ice fauna, organisms originating either from the ice interior or the pelagic realm, which are found in this boundary layer temporarily, e.g. for feeding or during certain life stages. There is some evidence that the first metres below the ice are strongly stratified, particularly during the melt period in summer. Source: http://www.awi-bremerhaven.de/Climate/WorkingGroups/ofis/ARK-19-1/sea-ice-biology.htm.
Under-ice habitat in first-year ice	No description available.
Under-ice habitat in multi-year ice	No description available.
Mediterranean communities of lower mediolittoral rock very exposed to wave action	These communities are located in the lower horizon of the mediolittoral rock and result from the concomitance of three components: high waves, variations in atmospheric pressure, and variations in wind and tide. The dominant aspect, however, is the constant humidity of the substratum.
Association with [Lithophyllum byssoides]	This association is characterised by the red alga species [Lithophyllum byssoides] (ex [Lithophyllum lichenoides]). This is one of the most important bio-constructors of the Mediterranean "trottoir", particularly important because of its high aesthetic interest and its conservation value.
Facies with [Pollicipes cornucopiae]	This facies is very rare in Mediterranean. The characteristic species is the Cirriped (Barnacle) [Pollicipes pollicipes] ([Pollicipes cornucopiae]), living on rocky walls in areas with pure waters exposed to extremely rough waves.
Association with [Titanoderma trochanter]	This association is characterised by the red alga [Titanoderma trochanter] (ex [Lithophyllum trochanter]).
Association with [Tenarea undulosa]	This association is characterised by the red alga [Lithophyllum tortuosum] (ex [Tenarea undulosa]).
Mediterranean communities of lower mediolittoral rock moderately exposed to wave action	These communities are located in the lower horizon of the mediolittoral rock and result from the concomitance of three components: moderate waves, variations in atmospheric pressure and wind and tide, if present. The dominant aspect, however, is the constant humidity of the substratum.
Association with [Ceramium ciliatum] and [Corallina elongata]	This association is characterised by the red algae [Ceramium ciliatum] and [Corallina elongata].

[Neogoniolithon brassica-florida] concretion	The characteristic species of this biocoenosis is the red alga [Neogoniolithon brassica-florida]. When present, this biocoenosis occupies the borders of the lower mediolittoral where the action of waves is very strong.
Association with [Gelidium] spp	This association is characterised by the dominance of red algae belonging to the genus [Gelidium].
Pools and lagoons sometimes associated with [Vermetus] spp. (infralittoral enclave)	This habitat is characterised by a high variability in ecological conditions. It is sometimes characterised by facies with sessile gastropod vermetids located in the middle level of the sea water. It forms well-developed vermetid platforms in Sicily, Corsica and in the eastern Mediterranean basin.
Association with [Fucus virsoides]	The characteristic species of this association is the brown alga [Fucus virsoides]. When present, this assemblage occupies the entire mediolittoral zone. Its presence is related to significant tides and relatively cool, unsalted, eutrophic waters and it is peculiar to areas with these characteristics.
Red algal turf in lower eulittoral, sheltered from wave action	Proposed new level 4 unit. More information required.
Mediterranean communities of lower mediolittoral rock sheltered from wave action	These communities are located in the sheltered lower horizon of the mediolittoral rock and result from the concomitance of three components: little wave action, variations in atmospheric pressure and wind and tide. The dominant aspect is the constant humidity of the substratum.
Association with [Enteromorpha compressa]	'This is an association of polluted waters characterised by the green alga species [Ulva compressa] (ex [Enteromorpha compressa]).
Hydrolittoral soft rock	No description available.
Hydrolittoral soft rock: level bottoms with little or no macrophyte vegetation	No description available.
Hydrolittoral soft rock: level bottoms dominated by macrophyte vegetation	No description available.
Hydrolittoral soft rock: reefs	No description available.
Hydrolittoral solid rock (bedrock)	No description available.
Hydrolittoral solid rock (bedrock): level bottoms with little or no macrophyte vegetation	No description available.
Hydrolittoral solid rock (bedrock): level bottoms dominated by macrophyte vegetation	No description available.

Hydrolittoral solid rock (bedrock): reefs	No description available.
Hydrolittoral hard clay	No description available.
Hydrolittoral hard clay: level bottoms with little or no macrophyte vegetation	No description available.
Hydrolittoral mussel beds	No description available.
Hydrolittoral mussel beds: with little or no macrophyte vegetation	No description available.
Hydrolittoral mussel beds: dominated by macrophyte vegetation	No description available.
Hydrolittoral peat	No description available.
Communities of rockpools in the supralittoral zone	Rockpools in the littoral fringe or upper eulittoral zone subject to widely fluctuating temperatures and salinity due to rainwater influence are characterised by ephemeral green alga of the genus [Enteromorpha], along with [Cladophora] spp. and [Ulva lactuca].
Brackish permanent pools in the geolittoral zone	No description available.
Eutrophic brackish permanent pools in the geolittoral zone	No description available.
Mesotrophic brackish permanent pools in the geolittoral zone	No description available.
Oligotrophic brackish permanent pools in the geolittoral zone	No description available.
Association with [Phymatolithon lenormandii] and [Hildenbrandia rubra]	The characteristic species of this association are the red algae [Phymatolithon lenormandii] and [Hildenbrandia rubra]. This assemblage lives under the red alga [Lithophyllum byssoides] (ex [Lithophyllum lichenoides]) edge and at the entrance to mediolittoral caves.
Mediterranean communities of mediolittoral coarse detritic bottoms	These biocenoses consist mainly of detritus-feeding species which draw their nourishment from decaying vegetation and miscellaneous debris caught up in the shingle. It is characterised by two crustaceans, the amphipod [Gammarus olivii] and the isopod [Sphaeroma serratum]. These communities are exposed to alternating water submersion and emersion because of variations in the water level, and they are frequently moistened by wavelets.
Facies of banks of dead leaves of [Posidonia oceanica] and other phanerogams	This facies is characterized by the accumulation of plant debris made up mostly of dead [Posidonia oceanica] leaves and/or other marine phanerogams species (e. g. [Cymodocea nodosa], [Zostera noltii], etc.)

Hydrolittoral stony substrata	No description available.
Hydrolittoral stony substrata: level bottoms with little or no macrophyte vegetation	No description available.
Hydrolittoral stony substrata: reefs	No description available.
Hydrolittoral gravel substrata	No description available.
Hydrolittoral gravel substrata: level bottoms with little or no macrophyte vegetation	No description available.
Hydrolittoral gravel substrata: banks	No description available.
Mediterranean communities of mediolittoral sands	Mediolittoral sands are characterised by the annelids [Ophelia radiata] and [Nerine cirratulus], the isopod crustacean [Eurydice affinis] and the pelecypod mollusc [Mesodesma corneum]. Coarse sands encourage the settlement of [Ophelia radiata], and fine sands that of [Nerine cirratulus], while [Mesodesma corneum] often avoids calcareous sands.
Facies with [Ophelia bicornis]	This facies of the mediolittoral sands is characterised by the abundance of the annelid polychaete [Ophelia bicornis].
Hydrolittoral sandy substrata	No description available.
Hydrolittoral sandy substrata: level bottoms with little or no macrophyte vegetation	No description available.
Hydrolittoral sandy substrata: bars	No description available.
Hydrolittoral sandy substrata: banks	No description available.
Saltmarsh pools	No description available.
Saltmarsh creeks	No description available.
Erosion faces with [Carcinus maenas]	Proposed new unit. No description available.
Hydrolittoral muddy substrata	No description available.
Hydrolittoral muddy substrata: with little or no macrophyte vegetation	No description available.
Hydrolittoral mixed sediment substrata	No description available.

Hydrolittoral mixed sediment substrata: with little or no macrophyte vegetation	No description available.
Saltmarsh driftlines	The top level of saltmarsh, not covered by all tides. Vigorous [Atriplex] spp., [Beta vulgaris], [Elymus] spp., [Matricaria maritima] may be fertilized by drift decomposition.
Atlantic saltmarsh and drift rough grass communities	Nitrophilous tall grass communities of Atlantic saltmarshes, green beaches and beach drift accumulations, dominated by [Elymus pycnanthus] ([Agropyron pungens]), [Elymus repens], [Festuca arundinacea] or sometimes tall perennial forbs.
Atlantic saltmarsh driftline annual communities	Annual formations of pioneers colonizing driftlines forming within Atlantic saltmarshes, with [Atriplex littoralis], [Atriplex hastata], [Beta maritima], [Matricaria maritima].
Mediterranean saltmarsh driftlines	Communities of annuals forming on accumulations of organic debris in saltmarshes and saline depressions of the Mediterranean and thermo-Atlantic coasts and of endoreic basins of the Mediterranean interior, in particular, of mediterranean Iberia, with [Atriplex hastata], [Suaeda splendens], [Suaeda maritima], [Bassia hirsuta], [Salsola soda], [Rumex pulcher].
[Elymus pycnanthus] with [Suaeda vera] or [Inula crithmoides] saltmarsh driftlines	No description available.
[Elymus repens] saltmarsh driftlines	No description available.
[Suaeda vera] saltmarsh driftlines	No description available.
Coastal dune rose thickets	Naturalized planted [Rosa rugosa] thickets planted for stabilization of shifting sandy soils. Shrubs low (0.3–0.8 m height) and dense. Sparser thickets include species of the [Ammophiletea] class.
Coastal dunes covered with planted dwarf mountain pine woodland	Very dense [Pinus mugo] scrubland planted for stabilization of shifting sand dunes, particularly in the Curonian Spit (SE coast of the Baltic Sea).
[Suaeda vera] - [Limonium binervosum] saltmarsh driftlines	No description available.
[Spergularia marina] - [Puccinellia distans] saltmarsh driftlines	No description available.
[Frankenia laevis] - [Halimione portulacoides] saltmarsh driftlines	No description available.
[Inula crithmoides] on saltmarshes	No description available.
[Sagina maritima] ephemeral salt marsh in sand	No description available.

Upper saltmarshes	Salt scrubs with [Arthrocnemum], [Halocnemum], [Suaeda]. Stands, sometimes rather open of [Juncus acutus], [Juncus maritimus]. Numerous other salt-tolerant species, some communities being quite species-rich.
Atlantic and Baltic brackish saltmarsh communities	Communities of saltmarshes of the Atlantic and its connected seas developed in areas of varying salinity and humidity, such as estuaries, in coastal basins with fresh water input and along brackish seashores, such as those of the inner Baltic.
Pearlwort-saltmarsh grass swards	Communities of saltmarshes of the Atlantic, North Sea and Baltic coasts of Europe, from the Iberian peninsula to Scandinavia, developed in areas of varying salinity and humidity, in particular, in estuarine saltmarshes, in saltmarsh inner basins, in dike-enclsoed saltmarshes, with [Spergularia marina], [Puccinellia distans], [Puccinellia fasciculata], [Puccinellia retroflexa], [Puccinellia maritima], [Triglochin maritima], [Potentilla anserina] and [Halimione portulacoides].
Baltic [Carex paleacea] swards	Formations of the brackish shores of the inner Baltic, dominated by [Carex paleacea], with [Eleocharis uniglumis] and [Agrostis stolonifera], accompanied by [Triglochin maritima].
Baltic [Carex mackenziei] swards	Communities of brackish lower shores of the northern and eastern Baltic dominated by [Carex mackenziei].
Baltic salt basin [Agrostis]-[Triglochin] swards	Baltic [Agrostis stolonifera]-[Triglochin palustris] formations of depressions submitted to marine salt precipitation.
Baltic [Deschampsia bottnica] swards	Communities of the lower levels of the brackish marshes of the Gulf of Bothnia, characteristic of exposed coasts, dominated by the endemic [Deschampsia cespitosa ssp. bottnica] ([Deschampsia bottnica]).
Mediterranean [Juncus maritimus] and [Juncus acutus] saltmarshes	Beds of tall [Juncus maritimus], [Juncus rigidus] ([Juncus maritimus var. arabicus], [Juncus arabicus]) or [Juncus acutus] of saline grounds of Mediterranean and thermo-Atlantic coastlands and of endoreic interior basins of mediterranean Iberia and mediterranean North Africa, forming, in particular, in periodically inundated depressions , where they may associate with [Carex extensa], [Iris spuria], [Gladiolus communis], [Aster tripolium], [Sonchus maritimus], [Sonchus crassifolius] or other elements of units 15.52 and 15.54, and in sandy dunal depressions, where they may alternate with stands of [Schoenus nigricans] or other formations of unit 15.53.
Mediterranean short [Juncus], [Carex], [Hordeum] and [Trifolium] saltmeadows	Humid meadows of low vegetation dominated by [Juncus gerardi], [Carex divisa], [Carex extensa], [Schoenus nigricans], [Triglochin maritima], [Hordeum marinum] or [Trifolium] spp. and [Lotus] spp. of the edges of brackish lagoons of Mediterranean and thermo-Atlantic coasts of Europe, western Asia and North Africa.
Mediterranean [Elymus] or [Artemisia] stands	Formations of [Elymus] or [Artemisia] fringing Mediterranean and interior Iberian saline wetlands.
Mediterranean [Juncus subulatus] beds	Medium-tall [Juncus subulatus] beds, often forming facies within [Arthrocnemum] scrubs of Mediterranean and thermo-Atlantic coasts.

Mediterranean saltmarsh scrubs	Low shrubby expanses of woody glassworts, seablites, sea purslanes or [Halocnemum], characteristic of temporarily inundated saltmarshes of Mediterranean coasts, southwestern Iberian and northwestern African Atlantic coasts and interior Iberian basins. They can be further subdivided according to dominant species, generally associated with patterns of inundation. [Cistanche lutea] characterises many southern formations.
Creeping glasswort mats	Low shrubby carpets of prostrate [Arthrocnemum perenne] of wettest areas of coastal marshes of Mediterranean, southwestern Iberian and northwestern African Atlantic coasts.
Shrubby glasswort thickets	Stands of robust [Arthrocnemum fruticosum], capable of forming extensive low, dense thickets in coastal marshes of Mediterranean, southwestern Iberian and northwestern African Atlantic coasts.
Glaucous glasswort thickets	Shrubby formations of [Arthrocnemum glaucum]. Along northern Mediterranean shores, they often occupy somewhat drier sites such as shell banks in saline lagoons; in the North African coastal marshes of Cyrenaica, Tripolitana, Tunisia, Algeria and Morocco, they constitute the only [Arthrocnemum] formations.
Shrubby seablite thickets	Shrubby formations of [Suaeda vera] occupying drier elevations of coastal saltmarshes of Mediterranean, southwestern Iberian and northwestern African Atlantic coasts.
Interior Iberian salt scrubs	Formations of woody glassworts and seablites of Iberian interior salt basins.
Interior woody seablite scrubs	[Suaeda pruinosa] ([Suaeda fruticosa var. brevifolia]) formations of Iberian interior salt basins.
Interior glaucous glasswort scrubs	[Arthrocnemum glaucum] formations of Iberian interior salt basins.
Interior creeping glasswort scrubs	[Arthrocnemum perenne] formations of Iberian interior salt basins.
Mediterranean sea-purslane-woody glasswort scrubs	[Halimione portulacoides]-rich facies within [Arthrocnemum] communities of coastal saltmarshes of Mediterranean, southwestern Iberian and northwestern African Atlantic coasts.
Mediterranean [Halocnemum] scrub	Salt scrubs of Mediterranean coastal saltmarshes dominated by [Halocnemum strobilaceum], characteristic of arid African coasts, with a few outposts on dry coasts of European peninsulas and islands. Formations of the desert coasts of the Sinai Mediterranean and the Red Sea and of endoreic basins of the Anatolian and North African transition regions between Mediterranean and desert or steppe zones are included under units 15.A and 15.C.
Atlantic salt scrubs	Sea purslane, glasswort and seablite scrubs of northern Atlantic and North Sea coasts.
Silver scrubs	Shrubby [Halimione portulacoides] communities of middle levels of Atlantic schorres.
Atlantic creeping glasswort mats	[Arthrocnemum perenne]-dominated formations of the British Isles, the Atlantic coasts of France and of Iberia, except for the extreme southwest of the peninsula.
Atlantic shrubby seablite scrubs	[Suaeda vera]-dominated formations of the British Isles, where they are limited to the coast of Norfolk, and of the Atlantic coasts of France and of Iberia, except for the extreme southwest of the peninsula.
Atlantic shrubby glasswort scrubs	[Arthrocnemum fruticosum]-dominated formations of the Atlantic coasts of France and of Iberia, except for the extreme southwest of the peninsula.

Mediterranean [Limoniastrum] scrubs	Formations of often large, silver-glaucous shrubs of [Limoniastrum monopetalum] with showy pink flowers in late spring, of drier parts of Mediterranean and Iberian saltmarshes, distributed locally in North Africa, the Iberian peninsula, the southern Italian peninsula, western Sicily, Lampedusa, Sardinia and Crete.
Canary Island saltmarsh scrubs	Low shrubby expanses of woody glassworts, seablites, sea purslanes or [Zygophyllum], characteristic of temporarily inundated saltmarshes of Canary Island coasts.
Mid-upper saltmarshes and saline and brackish reed, rush and sedge beds	Closed saltmarsh meadows, more species-rich than in low-mid saltmarsh, dominated by graminoids [Blysmus rufus], [Carex extensa], [Festuca rubra], [Juncus gerardi], [Puccinellia] spp.; also [Armeria maritima], [Artemisia maritima], [Frankenia laevis]. Marine saline or brackish beds of [Hippuris tetraphylla], [Juncus maritimus], [Phragmites australis].
Atlantic upper shore communities	Often relatively species-rich, grassy, flowery formations characteristic of the upper levels of the salt meadows of the Atlantic and its connected seas, with [Armeria maritima], [Glaux maritima], [Plantago maritima], [Frankenia laevis], [Artemisia maritima], [Festuca rubra], [Agrostis stolonifera], [Juncus gerardi], [Carex extensa], [Blysmus rufus], [Eleocharis] spp. Similar communities occupying the lower levels of brackish meadows, in particular of the Baltic, are included, while formations restricted to brackish conditions are listed under unit 15.34. The dominance of various species induces distinctive facies, the most important of which are individualised in subunits.
Atlantic [Juncus gerardii] saltmeadows	Often species-rich, closed, flowery, upper level salt meadows of the Atlantic and its connected seas, dominated by, or rich in, [Juncus gerardi]. [Glaux maritima] can dominate facies, forming thick carpets, in particular, in pioneer situations.
Atlantic [Plantago maritima] saltmeadows	Communities of upper saltmarshes of the Atlantic, the North Sea and the Baltic, dominated by [Plantago maritima] or [Plantago maritima] and [Bupleurum tenuissimum].
Atlantic [Festuca rubra]-[Agrostis stolonifera] swards	Upper saltmarsh communities of the Atlantic and its connected seas dominated by, or rich in, [Festuca rubra] and [Agrostis stolonifera].
Atlantic thrift swards	Communities of salt meadows of the Atlantic and its connected seas dominated by, or rich in, [Armeria maritima].
Atlantic [Carex distans] beds	Communities of Atlantic salt meadows dominated by [Carex distans].
Atlantic [Carex extensa] saltmeadows	Upper saltmarsh communities of the Atlantic and its connected seas dominated by, or rich in, [Carex extensa].
Atlantic sea lavender meadows	Upper saltmarsh communities of the Atlantic and its connected seas dominated by, or rich in, [Limonium vulgare].
Atlantic [Blysmus] salt meadows	Upper saltmarsh communities of the Atlantic and its connected seas dominated by, or rich in, [Blysmus rufus].
Atlantic [Eleocharis] salt meadows	Atlantic saltmarsh or brackish marsh communities dominated by [Eleocharis uniglumis] or [Eleocharis palustris], associated with [Agrostis stolonifera] or [Carex paleacea]. They constitute a common upper shore community in Scotland; they are also very prevalent on the lower levels of the brackish marshes of the Baltic, east and north of southeastern Sweden and Estonia; in western Scandinavia they are restricted to estuaries and fjord heads. They occur on saline littorals in Iceland.

Atlantic [Juncus maritimus] beds	Saltmarsh communities of the Atlantic, the North Sea and the southern Baltic, dominated by, or rich in, [Juncus maritimus], with [Oenanthe lachenalii] and, locally, in Poland in particular, [Samolus valerandi], mostly characteristic of the upper shore, in moderately salty or brackish conditions, of the sandy-clayey transition to green beaches, also occurring, in the southern Baltic, on brackish lower shores.
Atlantic sea wormwood salt meadows	Atlantic saltmarsh communities dominated by, or rich in, [Artemisia maritima].
Atlantic [Potentilla anserina] carpets	Upper saltmarsh communities of the Atlantic and its connected seas dominated by, or rich in, [Potentilla anserina], including both [Potentilla anserina ssp. anserina], and, in Fennoscandia, Iceland and Greenland, [Potentilla anserina ssp. egedii].
Atlantic sea-heath communities	Atlantic upper saltmarsh communities of the English Channel and the Franco-Iberian coasts of the Atlantic, with an isolated station on Anglesey, dominated by, or rich in, [Frankenia laevis], associated with [Limonium] spp., in particular with [Limonium lychnidifolium] in France, or [Limonium vulgare] in southern England, characteristic of the sandy transition zone between saltmarshes and dunes.
Atlantic upper schorre sea aster beds	Atlantic upper schorre communities dominated by [Aster tripolium].
Atlantic strawberry clover swards	Atlantic upper saltmarsh communities dominated by [Trifolium fragiferum].
Atlantic black sedge salt meadows	Atlantic upper saltmarsh communities dominated by [Carex nigra].
Scandinavian bogrush shore communities	Upper and middle saltmarsh communities of the Baltic and the northwest Atlantic, dominated by [Schoenus nigricans] or [Schoenus ferrugineus], with [Molinia caerulea] and [Campylium polygamum], developed on calcareous substrates.
Northern [Agrostis-Festuca-Leontodon] communities	Upper shore swards of northern Norway, Iceland and the Faeroes dominated by [Agrostis stolonifera], [Festuca rubra], [Plantago maritima] and [Leontodon autumnalis].
Fenno-Scandian [Calamagrostis stricta]-sedge swards	Upper saltmarsh tall graminoid communities of the Gulf of Bothnia and the northern Atlantic coasts of Scandinavia, south of Finnmark, dominated by [Calamagrostis stricta], [Carex aquatilis], [Carex juncella], [Eriophorum angustifolium], rich in arctic halophytes, transitional towards fens which form flood belts near fresh water. This unit is replaced northwards by the truly arctic formations of unit 15.B26.
Baltic [Carex scandinavica] swards	Communities of the middle levels of exposed shores of the southern Baltic dominated by [Carex scandinavica] ([Carex serotina ssp. pulchella], "[Carex pulchellum]", [Carex oederi ssp. pulchella], [Carex viridula var. pulchella]), characteristic, in particular, of southeastern Sweden.

Mediterranean halo-psammophile meadows	Drier, dense formations of sandy soils at the foot of dunes, or between dunes and lagoons of the Mediterranean and thermo-Atlantic coasts of Europe and North Africa, and of the endoreic interior basins of Mediterranean Iberia, with [Plantago crassifolia], [Schoenus nigricans], [Juncus littoralis], [Spartina versicolor] ([Spartina patens], [Spartina juncea]), [Elymus elongatus], [Inula crithmoides], all of which may dominate and form physiognomically distinct, sometimes almost monospecific, facies.
Upper shore arctic salt meadows	Coastal saltmarshes of the upper shores of arctic Eurasia and Greenland submitted to winter sea ice.
Sulphurous arctic salt meadows	Communities of the arctic coasts of Eurasia developed in brackish water on sulphurous gleys, in particular, [Hippuris tetraphylla] beds of brackish shores of Finnmark and northern Iceland.
[Juncus maritimus] mid-upper saltmarshes	No description available.
[Juncus maritimus] mid-upper saltmarshes with [Triglochin maritima]	No description available.
[Eleocharis uniglumis] mid-upper saltmarshes	No description available.
[Blysmus rufus] mid-upper saltmarshes	No description available.
Mid-upper saltmarshes: [Artemisia maritima] with [Festuca rubra], or open canopy of [Artemisia maritima] and [Halimione]	No description available.
[Festuca rubra] mid-upper saltmarshes	No description available.
Mid-upper saltmarshes: sub-communities of [Festuca rubra] with [Agrostis stolonifera], [Juncus gerardi], [Puccinellia maritima], [Glaux maritima], [Triglochin maritima], [Armeria maritima] and [Plantago maritima]	No description available.
Marine saline beds of [Phragmites australis]	No description available.

Low-mid saltmarshes	Saltmarshes with more or less closed angiosperm vegetation. Included are grassy salt meadows dominated by [Puccinellia festuciformis] or [Aeluropus littoralis] in the Mediterranean and by [Puccinellia maritima] in northern Europe. Also characteristic are [Glaux maritima], [Halimone portulacoides], [Limonium vulgare], [Plantago maritima].
Atlantic saltmarsh grass lawns	Communities of the lower and middle schorre of the shores of the Atlantic ocean and connected seas with an overwhelming dominance of [Puccinellia maritima], often in almost monospecific stands forming bright green lawns characteristic, in particular, of pioneer stages of the lowest levels and of intensely grazed areas.
Atlantic lower shore communities	Communities of the lower part of the coastal saltmarshes of the Atlantic and its connected seas codominated by [Puccinellia maritima] and other physiognomically important species.
Sea purslane-saltmarsh grass meadows	Communities of the lower part of the coastal saltmarshes of the Atlantic and its connected seas codominated by [Puccinellia maritima] and [Halimione portulacoides].
Sea aster-saltmarsh grass meadows	Communities of the lower part of the coastal saltmarshes of the Atlantic and its connected seas codominated by [Puccinellia maritima] and [Aster tripolium].
Glasswort-saltmarsh grass meadows	Communities of the lower part of the coastal saltmarshes of the Atlantic and its connected seas codominated by [Puccinellia maritima], annual [Salicornia] spp. and [Suaeda maritima].
Atlantic stalked orache beds	Formations dominated by the rare, threatened [Halimione pedunculata], developing very locally in the [Puccinellion maritimae] of Denmark, Germany, Poland, the Netherlands, Belgium and France, extinct in the British Isles.
[Pelvetia]-saltmarsh grass meadows	Species-poor salt meadows restricted to the shores of northern Norway and southwestern Iceland in the vicinity of the Reykjanes peninsula, codominated by [Puccinellia maritima] and the brown alga [Pelvetia canaliculata], accompanied by [Agrostis stolonifera].
[Catabrosa]-saltmarsh grass meadows	Salt meadows of Iceland and northern Norway, mostly of the lower shore, dominated by [Puccinellia maritima], with [Catabrosa aquatica], [Carex mackenziei], [Carex subspathacea], [Stellaria crassifolia], [Glaux maritima], [Gentianella detonsa].
[Glaux]-saltmarsh grass meadows	Communities of the lower part of the coastal saltmarshes of the Atlantic and its connected seas codominated by [Puccinellia maritima] and [Glaux maritima].
[Plantago]-saltmarsh grass meadows	Communities of the lower part of the coastal saltmarshes of the Atlantic and its connected seas codominated by [Puccinellia maritima] and [Plantago maritima].
[Limonium]-saltmarsh grass meadows	Communities of the lower part of the coastal saltmarshes of the Atlantic and its connected seas codominated by [Puccinellia maritima] and [Limonium vulgare], characteristic of undrained depressions on lightly grazed salt meadows of the Netherlands and the British Isles.
Mediterranean coastal-saltmarsh grass swards	Dense formations of perennial halophile grasses, in particular, [Puccinellia festuciformis] ([Puccinellia palustris]) or [Aeluropus littoralis], of Mediterranean coasts and their coastal lagoons.
Lower shore arctic salt meadows	Species-poor communities of the lower shores of arctic Eurasia and Greenland, submitted to winter sea ice.
[Halimione portulacoides] low-mid saltmarshes	No description available.

[Puccinellia maritima] low-mid saltmarshes	No description available.
Sub-communities of [Puccinellia maritima] saltmarsh with [Limonium vulgare] and [Armeria maritima]; [P. maritima] with [Glaux maritima] co-dominant in species-poor vegetation; [Puccinellia maritima] with [Plantago maritima] and/or [Armeria maritima]	No description available.
Annual [Salicornia], [Suaeda] and [Puccinellia maritima] low-mid saltmarshes	No description available.
Pioneer saltmarshes	Saltmarshes at the lowest level of non-aquatic angiosperms; vegetation open and very species-poor, typically with [Salicornia] spp. or [Spartina] spp., less often with [Arthrocnemum] spp., [Aster tripolium], [Sagina maritima], [Salsola kali] or [Suaeda] spp.
[Salicornia], [Suaeda] and [Salsola] pioneer saltmarshes	Annual glasswort ([Salicornia] spp., [Microcnemum coralloides]), seablite ([Suaeda] spp.), or sometimes saltwort ([Salsola] spp.), formations colonizing periodically inundated muds of coastal saltmarshes and inland salt-basins of the Palaearctic.
Biocenosis of beaches with slowly-drying wracks under glassworts	This biocoenosis is characterised by annual glassworts ([Salicornia] spp., [Microcnemum coralloides]), seablites ([Suaeda] spp.), or sometimes saltworts ([Salsola] spp.), formations colonizing periodically inundated muds of coastal saltmarshes and inland salt-basins of the Palaearctic.
[Suaeda maritima] pioneer saltmarshes	No description available.
[Salicornia] spp. pioneer saltmarshes	Mud, often consolidated with coarse sand or gravel, on the extreme upper shore with [Salicornia] spp. plants forming a pioneer saltmarsh community. This habitat typically occurs in very sheltered estuarine conditions. Usually a reduced marine fauna is present which may include the amphipod [Corophium volutator], the ragworm [Hediste (Nereis) diversicolor] and often the mud snail [Hydrobia ulvae]. The fucoid alga [Pelvetia canaliculata] may be found on hard substrata, consolidated mud or lying unattached. This community is equivalent to saltmarsh community SM8 in the National Vegetation Classification (Rodwell).
[Salicornia veneta] swards	Endemic, threatened [Salicornia veneta] swards of long-inundated muds of basins of the Venice lagoon.

Black Sea annual [Salicornia], [Suaeda] and [Salsola] saltmarshes	Annual glasswort ([Salicornia] spp., [Microcnemum coralloides]), seablite ([Suaeda] spp.) and saltwort ([Salsola] spp.) solonchak formations, colonizing periodically inundated muds of Black Sea coastal saltmarshes and of inland salt-basins of central Eurasian and Irano-Anatolian steppe and cold desert zones. Annual glasswort communities of salt steppes and saltmarshes of areas of extreme continentality within the boreal zone of Siberia.
Low-shore Mediterranean glasswort swards	Glasswort swards occupying long-inundated basins of coastal saltmarshes of the western Mediterranean basin, including those of Spain, southern continental France, the Gulf of Tarento, Corsica, Sardinia and Sicily, with Atlantic representatives in southwestern Europe, between southern Brittany and central Portugal, dominated by the reddening tetraploid glasswort [Salicornia emerici].
Mediterranean coastal halo-nitrophilous pioneer communities	Formations of halo-nitrophilous annuals ([Frankenia pulverulenta], [Suaeda splendens], [Salsola soda], [Cressa cretica], [Parapholis incurva], [Parapholis strigosa], [Hordeum marinum], [Sphenopus divaricatus], [Polypogon maritimus], [Spergularia] spp., [Vella annua]) colonizing salt muds of Mediterranean and thermo-Atlantic coastal regions, of Iberian and North African endoreic basins, susceptible to temporary inundation and extreme drying; they are more species-rich or richer in non-chenopodids than the communities of unit 15.113; they are particularly developed in the Iberian peninsula, secondarily in the large Mediterranean islands, in coastal regions and endoreic basins of North Africa, in southern Italy and Mediterranean France; they occur as irradiations on thermo-Atlantic coasts, notably on the Atlantic coast of France. Somewhat similar communities occur in the steppe zones of Eurasia and their regions of influence, as well as in Saharo-Mediterranean steppes of North Africa; they are included in units 15.14 and 15.15.
Atlantic [Sagina maritima] communities	Formations of annual pioneers occupying sands subject to variable salinity and humidity, on the coasts, in the dunal systems and in the saltmarshes of the Atlantic, the North Sea and the Baltic. They are usually limited to small surfaces and best developed in the zone of contact between dune and saltmarsh. Characteristic species include [Sagina maritima], [Sagina nodosa], [Cochlearia danica], [Gentiana uliginosa], [Centaurium littorale], [Bupleurum tenuissimum].
Flat-leaved [Spartina] swards	Perennial pioneer grasslands of coastal salt muds dominated by flat-leaved [Spartina maritima] ([Spartina stricta]), [Spartina townsendii], [Spartina anglica], [Spartina alterniflora], distributed along Atlantic and North Sea coasts of middle Europe north to Denmark and south to northwestern Iberia, with outposts on the Atlantic coast of Africa around Tangier, Rabat and Cap Blanc, extending east to the Danish archipelago and with isolated areas of occurrence in the Mediterranean basin, located in the northern Adriatic, in the Venice Lagoon and nearby coasts, from the mouth of the Po to Trieste and Slovenia, and in estuaries of the coasts of northwestern Africa.
[Spartina anglica] pioneer saltmarshes	No description available.

[Spartina alterniflora] with [Spartina anglica], [Puccinellia maritima] and [Aster tripolium]	No description available.
[Spartina maritima] pioneer saltmarshes	No description available.
[Spartina densiflora] swards	Perennial pioneer grasslands of southern Iberian coastal salt muds, dominated by the junciform-leaved [Spartina densiflora].
Rayed [Aster tripolium] pioneer saltmarshes	No description available.
[Aster tripolium] var. [discoides] pioneer saltmarshes	No description available.
[Arthrocnemum perenne] pioneer saltmarshes, sometimes with [Halimione], [Puccinellia] and [Suaeda]	No description available.
Hydrolittoral stony substrata: level bottoms dominated by macrophyte vegetation	No description available.
Hydrolittoral gravel substrata: level bottoms dominated by macrophyte vegetation	No description available.
Hydrolittoral sandy substrata: level bottoms dominated by macrophyte vegetation	No description available.
Hydrolittoral muddy substrata: dominated by macrophyte vegetation	No description available.

Sponges, shade-tolerant red seaweeds and [Dendrodoa grossularia] on wave-surged overhanging lower eulittoral bedrock and caves	Overhanging bedrock on the lower shore, at cave entrances, to and on inner walls of caves, subject to wave surge and low light levels, and characterised by a high density of small groups of the solitary ascidian [Dendrodoa grossularia]. The sponges [Grantia compressa], [Halichondria panicea] and [Hymeniacidon perleve] are common on the rock surface, while the hydroid [Dynamena pumila] (normally found on fucoids) hangs in distinct form from overhanging rock. Found on the rock surface are the calcareous tube-forming polychaetes [Spirorbis] spp. and [Pomatoceros] spp. along with the barnacles [Semibalanus balanoides]. The anemone [Actinia equina] thrives in the permanently damp pits and crevices. Where sufficient light is available a sparse community of shade-tolerant red seaweeds. These include [Membranoptera alata], [Lomentaria articulata, Audouinella] spp. and coralline crusts. Situation: This biotope is found on lower shore overhangs and on the entrances and inner walls of lower shore caves, and usually dominates the available habitat. It is generally found above the BarCv biotope and may e
Sparse fauna (barnacles and spirorbids) on sand/pebble-scoured rock in littoral caves	Upper to lower shore sand- or pebble-scoured cave walls characterised by an impoverished faunal assemblage which may include bryozoan crusts, scattered sponges [Halichondria panicea], barnacles such as [Semibalanus balanoides] or often large [Balanus crenatus and] the limpet [Patella vulgata]. The isopod [Ligia oceanica] may seek refuge in crevices in the rock, and due to the decreased effect of desiccation in these damp caves, other species such as the anemone [Actinia equina] and spirorbid polychaetes are able to extend further up the shore than normally found on open rock. The lower section of the wall which is subject to greatest scour may be characterised by a band of [Pomatoceros] [triqueter] and spirorbid tube-forming polychaetes. In wave sheltered conditions, this biotope may extend to the cave ceiling. The rear of caves on the lower shore may support only sparse fauna consisting of spirorbid polychaetes and barnacles such as [Chthamalus montagui] with scattered [Pomatoceros] sp., scattered bryozoan and coralline crusts and in the south-west, occasional [Sabellaria alveolata]. S
Barren and/or boulder-scoured littoral cave walls and floors	Mid and upper shore mobile boulders/cobbles on cave floors and the lower reaches of cave walls which are subject to scour are generally devoid of macro-fauna and flora. However, where light is available around the cave entrances, encrusting coralline algae may cover the rock and boulder surfaces. In some instances they may support sparse fauna such as the limpet [Patella] spp. and the winkle [Littorina saxatilis]. Situation: This biotope is situated on the floor, or at the base of cave walls, often with a zone of ScrFa above (where the scouring effect of boulders is less). In areas of extreme wave exposure this zone will extend high up the sides of the cave and in less wave-exposed conditions where the effects of scouring are reduced, some fauna may be present. At the entrances and 2-3 metres into upper shore caves, a zone of Sem may occur above the BarCv, becoming a zone of VmucHil further into the cave. In mid shore caves, BarCv is above by a zone of ScrFa (sparse fauna), and in caves on the lower shore, the surge-tolerant SR.Den may occur above this zone. Temporal variation: In calme

Faunal crusts on wave-surged littoral cave walls	The inner walls of caves, predominantly in the mid shore in wave-surged conditions dominated by barnacles [Semibalanus balanoides], and [Verruca stroemia], with patches of encrusting sponges such as [Halichondria panicea] and [Grantia compressa] and occasional patches of the mussel [Mytilus edulis]. Increased moisture allows a denser faunal population than ScrFa to develop within the cave. The limpet [Patella vulgata] and spirorbid tube-forming polychaetes can be present. The hydroid [Dynamena pumila] and anemones such as [Metridium senile] and [Actinia equina] may occur towards the lower reaches of the cave. Where a dense faunal turf of barnacles or bryozoan crusts covers the cave walls, the biotope can also extend to cover the ceiling and may be accompanied by the bryozoan [Alcyonidium diaphanum]. Variations of this biotope may occur in mid and lower shore scoured caves in south Wales the rock is dominated by dense [Sabellaria alveolata]. In south-west England the rock can be completely covered by the barnacle [Balanus perforatus]. There may be a variation in the species composition
[Caryophyllia smithii], [Swiftia pallida] and large solitary ascidians on exposed or moderately exposed circalittoral rock	This variant typically occurs on exposed to moderately wave-exposed, circalittoral bedrock and boulders rock subject to mainly weak tidal streams and has a thin layer of silt present. It is found predominantly from 10-30m water depth. From afar, this biotope is mostly distinguished by the frequently occurring seafan [Swiftia pallida], encrusting red algae and the abundant cup coral [Caryophyllia smithii]. This biotope has quite an impoverished appearance, compared with SwiLgAs which has a strong sponge component. Other species present are typically in low abundance. Echinoderms such as [Echinus esculentus], [Antedon bifida], [Antedon petasus], [Leptometra celtica], [Marthasterias glacialis], [Luidia ciliaris] and [Asterias rubens] may be recorded. Large hydroids such as [Nemertesia antennina] and [Nemertesia ramosa] may occasionally be seen in isolated clumps on the tops of boulders and rocky outcrops. The anthozoan [Parazoanthus anguicomus] may be recorded. Bryozoans such as [Parasmittina trispinosa] and [Porella compressa] are occasionally observed. The polychaete [Pomatoceros triqueter] may be ob
[Caryophyllia smithii], [Swiftia pallida] and [Alcyonium glomeratum] on wave-sheltered circalittoral rock	This variant typically occurs on sheltered, ridged, circalittoral bedrock or boulders subject to only weak tidal streams, but may be found in somewhat more exposed conditions. It is found in water depths ranging from 15m to 32m. Commonly occurring [Swiftia pallida] characterises this heavily silted biotope along with [Caryophyllia smithii] and frequent [Alcyonium glomeratum]. Under the silt, bryozoan crusts such as [Parasmittina trispinosa] may be found. There is a strong echinoderm component to the community, with the tentacles of [Aslia lefevrei] frequently seen protruding from crevices in the ridged bedrock. [Holothuria forskali] is often seen on the upper faces of boulders and bedrock. [Marthasterias glacialis], [Asterias rubens], [Echinus esculentus], [Henricia oculata] and [Luidia ciliaris] may also be present. A sparse hydroid turf may also be present, with species such as [Polyplumaria frutescens], [Halecium halecinum] and [Nemertesia antennina]. In addition, there may be anthozoans such as [Isozoanthus sulcatus] and [Corynactis viridis]. The sponge [Suberites carnosus] is typi

[Caryophyllia smithii] and [Swiftia pallida] on circalittoral rock	This biotope is typically found on the upper and vertical faces of very exposed through to wave-sheltered circalittoral bedrock and boulders, which are typically subject to weak tidal streams. It is characterised by dense aggregations of the cup coral [Caryophyllia smithii] and the sea fan [Swiftia pallida] on the silty substratum. Under the silt, bryozoan crusts such as [Parasmittina trispinosa] and encrusting red algae may be seen. This biotope may have a grazed appearance, perhaps attributable to the frequently occurring [Echinus esculentus]. There may be a sparse hydroid turf present, with species such as [Nemertesia antennina], [Nemertesia ramosa] and [Halecium halecinum] present. The soft corals [Alcyonium glomeratum] and [Alcyonium digitatum] may be present on the tops of boulders along with the crinoids [Antedon petasus] and [Antedon bifida]. Other echinoderms occasionally observed include the starfish [Marthasterias glacialis], [Asterias rubens] and [Luidia ciliaris]. Sponges feature only occasionally in this biotope, including species such as [Cliona celata]. The bryozoan [Porella compressa] may also be recorde
[Sabellaria spinulosa] with a bryozoan turf and barnacles on silty turbid circalittoral rock	This variant is typically found encrusting the upper faces of exposed and moderately exposed circalittoral rock and mixed substrata, subject to strong and moderately strong currents and high turbidity levels. The crusts formed by the sandy tubes of the polychaete worm [Sabellaria spinulosa] may completely cover the rock, binding gravel and pebbles together. A diverse fauna may be found attached to this crust, and in many cases reflects the character of nearby biotopes. There is normally considerable variation in the associated fauna encountered. There may be a sparse bryozoan turf ([Flustra foliacea], [Alcyonidium diaphanum], [Bicellariella ciliata], [Bugula plumosa] and [Vesicularia spinosa]) attached to the [Sabellaria] crust and available rocky substrata. Other scour-tolerant species such as [Urticina felina] are occasionally observed. Clumps of robust hydroids such as [Tubularia indivisa], [Nemertesia antennina], [Hydrallmania falcata] and [Halecium halecinum] may also be observed. Other species which may be present include the polychaete [Pomatoceros triqueter], [Balanus crenatus], [Asterias rubens]
[Tubularia indivisa] on tide-swept circalittoral rock	This biotope is typically found on the vertical and upper faces of strongly tide-swept, wave-exposed circalittoral bedrock and boulders. It is characterised by a dense carpet of the robust hydroid [Tubularia indivisa]. The barnacle [Balanus crenatus], where present, is recorded as common. The accompanying species in the community are determined by tidal stream strength. On the more sheltered sides of headlands, where tidal streams are accelerated, sponges such as [Pachymatisma johnstonia], [Esperiopsis fucorum], [Myxilla incrustans] and [Halichondria panicea] proliferate forming the CTub.CuSp sub-biotope. There may also be a scattered bryozoan turf, formed by criisid bryozoans. However, where tidal streams are slightly reduced, but on more wave-exposed coasts, anthozoans such as [Alcyonium digitatum] become more prominent forming the CTub.Adig biotope. Other species recorded in this biotope include the anemones [Sagartia elegans], [Actinothoe sphyrodeta], [Corynactis virdis] and [Urticina felina]. There may be scattered clumps of hydroids such as [Sertularia argentea] and [Nemertes

Bryozoan turf and erect sponges on tide-swept circalittoral rock	This biotope is typically found on wave-exposed circalittoral bedrock or boulders subject to tidal streams ranging from moderately strong to strong. It often has a thin layer of silt covering the seabed, and is characterised by a bryozoan/hydroid turf with erect sponges. Typical bryozoans to be found include crisiids, [Alcyonidium diaphanum], [Flustra foliacea], [Pentapora foliacea], [Bugula plumosa] and [Bugula flabellata], while typical hydroids include [Nemertesia antennina], [Nemertesia ramosa] and [Halecium halecinum]. The soft coral [Alcyonium digitatum] is frequently recorded on the tops of boulders and rocky outcrops. Characteristic erect sponges include [Raspailia ramosa], [Stelligera stuposa] and [Stelligera rigida]; other sponges present include [Cliona celata], [Dysidea fragilis], [Pachymatisma johnstonia], [Polymastia boletiformis], [Hemimycale columella], [Esperiopsis fucorum], [Polymastia mamillaris] and [Tethya aurantium]. Other species present include [Caryophylia smithii], [Actinothoe sphyrodeta], [Corynactis viridis], [Urticina felina], [Balanus crenatus], [Asterias rubens], [Marthasterias glac
[Flustra foliacea] and colonial ascidians on tide-swept moderately wave-exposed circalittoral rock	This biotope typically occurs on the upper faces of moderately tide-swept, moderately wave-exposed circalittoral bedrock or boulders (although a variant is found on mixed substrata). It most frequently occurs between 10-20m water depth. The biotope is exposed to varying amounts of scour (due to nearby patches of sediment) and, as a consequence, is characteristically dominated by dense [Flustra folicaea], a range of colonial ascidians and a variety of other scour/silt-tolerant species. In addition to [F. foliacea], other bryozoans present in this biotope include [Alcyonidium diaphanum], [Bugula flabellata] and [Bugula plumosa]. Varying amounts of the soft coral [Alcyonium digitatum] may be recorded, depending on the amount of scouring which may vary locally. Where scour is a major factor, species such as the scour-tolerant [Urticina felina] are frequently observed. Hydroids present in this biotope include [Nemertesia antennina], [Halecium halecium], [Tubularia indivisa] and [Hydrallmania falcata]. Other species present include silt-tolerant sponges such as [Scypha ciliata], [Cliona celata], [Leucosolenia botryoide
[Flustra foliacea] and colonial ascidians on tide-swept exposed circalittoral mixed substrata	This variant is typically found on very exposed to moderately exposed, circalittoral mixed substrata subject to moderately strong tidal streams. It most frequently occurs between 10m and 20m water depth. This variant is characterised by a dense hydroid and [Flustra foliacea] turf, along with other scour-tolerant species, growing on the more stable boulders and cobbles which overlie coarse muddy sand and gravel. Although [Nemertesia antennina] is the dominant species within the hydroid turf, other species such as [Halecium halecinum], [Nemertesia ramosa] and [Hydrallmania falcata] may also be present. Other bryozoans found amongst the hydroid and [Flustra] turf include [Cellepora pumicosa], [Bugula flabellata], [Bugula turbinata], and a crisiid turf. Encrusting red algae, the polychaete [Pomatoceros triqueter] and barnacles such as [Balanus crenatus] may be found on the smaller cobbles and pebbles, which may become mobile during extreme storms. Echinoderms such as [Asterias rubens] and [Ophiothrix fragilis] may be present on the boulders, or the coarse sediment in between. On the larger, more stable b

Sparse sponges, [Nemertesia] spp., and [Alcyonidium diaphanum] on circalittoral mixed substrata	This biotope is found on moderately wave-exposed sand-scoured, circalittoral boulders, cobbles and pebbles that are subject to moderately strong tidal streams (referred to as lag-cobbles locally). It is characterised by sparse sponges and a diverse bryozoan and hydroid turf. The sparse sponge community is primarily composed of [Dysidea fragilis] and [Scypha ciliata]. The mixed faunal turf is composed of [Nemertesia antennina], [Nemertesia ramosa], [Halecium halecinum], [Sertularia argentea], [Alcyonium digitatum], [Bugula flabellata], [Bugula turbinata], [Bugula plumosa], [Flustra foliacea], [Cellepora pumicosa], [Alcyonidium diaphanum], [Cellaria fistulosa] and crisiid bryozoans. The anemones [Epizoanthus couchii], [Sagartia elegans] and [Cerianthus lloydii] may also be recorded. Echinoderms such as the starfish [Asterias rubens], [Crossaster papposus], [Henricia oculata] and the crinoid [Antedon bifida]. Other species present include the colonial ascidian [Clavelina lepadiformis], the barnacle [Balanus crenatus], the top shell [Gibbula cineraria], the polychaete [Pomatoceros triqueter], the ascidian [M
[Suberites] spp. with a mixed turf of crisiids and [Bugula] spp. on heavily silted moderately wave-exposed shallow circalittoral rock	This biotope is found on heavily silted, moderately wave-exposed circalittoral bedrock and boulders (often limestone) that are subject to moderately strong tidal streams. A very high silt loading in the water column means that this 'circalittoral' biotope occurs at unusually shallow depths (1 - 10 m BCD). It is characterised by a mixed faunal turf and `massive' examples of the sponges [Suberites ficus], [Suberites carnosus] and [Hymeniacidon perleve]. Other sponges recorded in this biotope are [Cliona celata], [Halichondria panicea], [Esperiopsis fucorum], [Raspailia ramosa], [Polymastia mamillaris], [Dysidea fragilis], [Scypha ciliata], [Stelligera rigida] and [Haliclona oculata]. Also characteristic of this biotope is a dense bryozoan turf with one or more crisiid species, [Flustra foliacea] and [Bugula plumosa]. The polychaete [Polydora] spp. and the rock-boring bivalve [Hiatella arctica] are able to bore into the relatively soft limestone. There is an ascidian component to the biotope, with [Morchellium argus] and [Clavelina lepadiformis] among
Brittlestars overlying coralline crusts, [Parasmittina trispinosa] and [Caryophyllia smithii] on wave-exposed circalittoral rock	This variant is typically found on the upper faces of wave-exposed circalittoral bedrock or boulders subject to moderately strong to weak tidal streams, on open coasts. However, the depth at which the variant occurs means that wave action is not so severe on the seabed as to displace the dense mat of brittlestars that covers the seabed. [Ophiothrix fragilis] is usually the most dominant species in shallow water, with [Ophiocomina nigra] usually found amongst them, but sometimes becoming the dominant species in deeper water. Although brittlestar biotopes are typically species-poor, the underlying fauna in this variant is relatively diverse and resembles that of CarSp.PenPcom. Species such as the anemone [Urticina felina], the cup coral [Caryophyllia smithii], and the anemone [Corynactis viridis] may occasionally be present. There may also be sparse clumps of various hydroids including [Halecium halecinum], [Nemertesia antennina], [Nemertesia ramosa], [Sertularella gayi] and [Abietinaria abietina]. Soft coral [Alcyonium digitatum] is occasionally present and there may be sparse specimens of the sponges

[Neocrania anomala], [Dendrodoa grossularia] and [Sarcodictyon roseum] on variable salinity circalittoral rock	This variant typically occurs on lower circalittoral silty, bedrock or boulder cliffs and ridges in very wave-sheltered fjordic sealochs subjected to variable salinity regimes (such as Loch Etive). In these sheltered conditions, there are frequently dense populations of the ascidian [Dendrodoa grossularia], the brachiopod [Neocrania anomala] and to a lesser extent, the brachiopod [Terebratulina retusa], which are able to tolerate the variable salinity. Other solitary ascidians that may be present include [Ciona intestinalis], [Corella parallelogramma], [Ascidiella scabra], [Ascidia mentula], [Ascidia virginea] and [Polycarpa pomaria]. The anemone [Protanthea simplex] is occasionally seen, although to a lesser extent than in NeoPro, possibly due to the variable salinity. The hydroids [Bougainvillia ramosa] and [Lafoea dumosa], the cup-coral [Caryophilia smithii] and [Sarcodictyon roseum] are occasionally present. The tubes formed by the polychaete [Sabella pavonina] may be observed standing erect from the rock surface. The rest of the rock surface is usually covered by encrusting red algae and the polychaete [Pomatoceros
Large solitary ascidians and erect sponges on wave-sheltered circalittoral rock	A4.312 is characteristic of the wave-sheltered conditions found in the Kenmare River on the west coast of Ireland. This biotope is typically found on silty circalittoral bedrock and boulders in wave-sheltered channels subject to varying amounts of tidal flow. These fully marine inlets and channels have steep, often vertical sides with small terraces or ledges. This biotope, characterised by erect sponges and large solitary ascidians, appears to be biologically diverse. A diverse ascidian fauna is generally present, including [Ascidia mentula], [Aplidium punctum], [Corella parallelogramma], [Ascidia virginea], [Botryllus schlosseri], [Clavelina lepadiformis] and [Ciona intestinalis]. An equally diverse sponge fauna, with massive erect sponges particularly noticeable, compliments these species. Dominant species include [Esperiopsis fucorum], [Dysidea fragilis], [Tethya aurantium], [Polymastia boletiformis], [Raspailia ramosa], [Stelligera stuposa], [Polymastia mamilliaris] and [Pachymatisma johnstonia]. Other sponges present are [Suberites
[Alcyonium digitatum] and [Metridium senile] on moderately wave-exposed circalittoral steel wrecks	This biotope is found on moderately wave-exposed circalittoral steel wrecks that are subject to moderately strong to weak tidal streams. The vertical and upward facing sides of the wreck stand proud of the seabed, and may be colonised by dense aggregations of [Alcyonium digitatum], [Metridium senile] and [Actinothoe sphyrodeta]. [Caryophyllia smithii] and [Corynactis viridis] are also recorded with varying abundance. A mixed faunal turf may also be present on the vertical sides, with [Nemertesia antennina], [Flustra foliacea] and [Bugula plumosa]. Where tidal stream strength is elevated, for example if the wreck is situated in a straight or sound, the hydroid [Tubularia indivisa] may prevail. Crustaceans such as the crabs [Necora puber], [Maja squinado] and [Cancer pagurus], the lobster [Homarus gammarus] and barnacles are all recorded. The top shell [Calliostoma zizyphinum] is also recorded.

[Moerella] spp. with venerid bivalves in infralittoral gravelly sand	Infralittoral medium to coarse sand and gravelly sand which is subject to moderately strong water movement from tidal streams may be characterised by [Moerella] spp. with the polychaete [Glycera lapidum] (agg.) and venerid bivalves. Typical species include [Moerella pygmaea] or [M. donacina] with other robust bivalves such as [Dosinia lupinus], [Timoclea ovata], [Goodallia triangularis] and [Chamelea gallina]. Other infauna include nephtyd and spionid polychaetes and amphipod crustacea. Another important component of this biotope in some areas is the bivalve [Spisula solida] (see K?hne & Rachnor 1996) which may be common or abundant. In conjunction with FfabMag this biotope may form part of the 'Shallow [Venus] Community', the 'Boreal Off-shore Sand Association' and the '[Goniadella-Spisula] association' of previous workers (see Petersen 1918; Jones 1951; Thorson 1957; Salzwedel, Rachor & Gerdes 1985). Epifaunal communities may be reduced in this biotope when compared to FfabMag; both types may have surface sand waves which may be indicative of the presence of venerid bivalves (Warw
[Spisula subtruncata] and [Nephtys hombergii] in shallow muddy sand	In shallow non-cohesive muddy sands, in fully marine conditions, a community characterised by the bivalve [Spisula subtruncata] and the polychaete [Nephtys hombergii] may occur. The sediments in which this community is found may vary with regard silt content but they generally have less than 20% silt/clay and in some areas may contain a degree of shell debris. This biotope falls somewhere between SSA.FfabMag and SSA.AalbNuc with regard sediment type (i.e. somewhat muddier than SSA.FfabMag and less muddy than SSA.AalbNuc) and may have species in common with both. As a result, other important species in this community include [Abra alba], [Fabulina fabula] spp. and [Mysella bidentata] spp. In addition, [Diastylis rathkei/typical], [Philine aperta] (in muddier sediments), [Ampelisca] spp., [Ophiura albida], [Phaxas pellucidus] and occasionally [Bathyporeia] spp, may also be important, although this is not clear from the data available. In areas of slightly coarser, less muddy sediment [S. solida] or [S. elliptica] may appear occasionally in this biotope. Abundances of [Spisula subtruncata] in this b
[Hesionura elongata] and [Microphthalmus similis] with other interstitial polychaetes in infralittoral mobile coarse sand	On infralittoral sandbanks and sandwaves and other areas of mobile medium-coarse sand, populations of interstitial polychaetes may be found. These habitats consist of loosely packed grains of sand forming waves up to several metres high often with gravel, or occasionally silt, in the troughs of the waves. This biotope is commonly found both inshore along the east coast of the UK e.g. around the Race Bank, Docking Shoal and Inner Dowsing banks (IECS, 1995; IECS, 1999), and in the Southern Bight of the North Sea and off the Belgian coast (Degraer [et al]. 1999; Vanosmael [et al]. 1982). These habitats support interstitial communities living in the spaces between the grains of sand, in particular hesionurid polychaetes such as [Hesionura elongata] and [Microphthalmus similis], along with protodrilid polychaetes such as [Protodrilus] spp. and [Protodriloides] spp. Other important species may include Turbellaria spp. and larger deposit feeding polychaetes such as [Travisia forbesii]. An important feature of this biotope which is not reflected in much of the available data is the importance of the meiofauna

Cumaceans and [Chaetozone setosa] in infralittoral gravelly sand	In shallow medium-fine sands with gravel, on moderately exposed open coasts, communities dominated by cumacean crustaceans such as [Iphinoe trispinosa] and [Diastylis bradyi] along with the cirratulid polychaete [Chaetozone setosa] (agg.) may occur. [Chaetozone setosa] is a species complex so it is likely that some variability in nomenclature will be found in the literature. Other important taxa may include the polychaetes [Anaitides] spp., [Lanice conchilega], [Eteone longa] and [Scoloplos armiger]. This community may be subject to periodical sedimentary disturbance, such that a sub-climactic community may develop with opportunistic taxa such as [C. setosa] and [S. armiger] often dominating the community (Allen 2000). Situation: This biotope may be found in areas with moderate currents and wave action often facing into the prevailing wind and along the Holderness coast of the North Sea. It is possible that this biotope has developed due to chronic sedimentary disturbance in areas where the biotopes AalbNuc or FfabMag would normally develop as these biotopes are often found in more sheltered are
Sparse fauna on highly mobile sublittoral shingle (cobbles and pebbles)	Sublittoral clean shingle and pebble habitats with a lack of conspicuous fauna. Unstable, rounded pebbles and stones (as opposed to sub-angular cobbles, which are often found lying on or embedded in other sediment) that are strongly affected by tidal steams and/or wave action can support few animals and are consequently faunally impoverished. The species composition of this biotope may be highly variable seasonally and is likely to comprise of low numbers of robust polychaetes or bivalves with occasional epibiota including echinoderms and crustacea such as [Liocarcinus] spp. and [Pagurus] spp. In more settled periods there may be colonisation by anemones such as [Urticina felina] and small populations of hydroids and Bryozoa. Situation: This biotope is found in marine inlets with very strong tidal currents as well as in very wave exposed open coast environments. Temporal variation: The faunal composition of this biotope is likely to be highly variable as a result of seasonal changes in wave and tidal energy.
[Melinna palmata] with [Magelona] spp. and [Thyasira] spp. in infralittoral sandy mud	In infralittoral cohesive sandy mud, in sheltered marine inlets, and occasionally variable salinity environments, dense populations of the polychaete [Melinna palmata] may occur, often with high numbers of [Magelona] spp. and the bivalve [Thyasira flexuosa]. Other important taxa may include [Chaetozone gibber, Nephtys hombergii, Galathowenia oculata], [Euclymene oerstedii], [Ampelisca tenuicornis], [Ampharete lindstroemi], [Abra alba], and [Phoronis] sp. In addition the polychaete [Aphelochaeta] spp. and the gastropod [Turritella communis] may be common or abundant in some areas. At the sediment surface visible taxa may include occasional [Virgularia mirabilis], and mobile epifauna such as [Pagurus bernhardus]. This biotope is characteristic in many southern UK marine inlets and in some areas e.g. Plymouth Sound during high levels of recruitment when [M. palmata] often occurs in abundances between 500 to 1000 per m2 moderate numbers of the species often 'overspill' into adjacent biotopes (Allen [et al]. 2001). Situation: In many areas this biotope is found on or near the boundary between euryhaline a

[Amphiura filiformis], [Mysella bidentata] and [Abra nitida] in circalittoral sandy mud	Cohesive sandy mud off wave exposed coasts with weak tidal streams can be characterised by super-abundant [Amphiura filiformis] with [Mysella bidentata] and [Abra nitida]. This community occurs in muddy sands in moderately deep water (Hiscock 1984; Picton [et al]. 1994) and may be related to the 'off-shore muddy sand association' described by other workers (Jones 1951; Thorson 1957; Mackie 1990) and is part of the infralittoral etage described by Glemarec. This community is also characterised by the sipunculid [Thysanocardia procera] and the polychaetes [Nephtys incisa], [Phoronis] sp. and [Pholoe] sp., with cirratulids also common in some areas. Other taxa such as [Nephtys hombergii], [Echinocardium cordatum], [Nucula nitidosa], [Callianassa subterranea] and [Eudorella truncatula] may also occur in offshore examples of this biotope (e.g. Künitzer [et al]. 1992).
[Glycera lapidum] in impoverished infralittoral mobile gravel and sand	In infralittoral mixed slightly gravelly sands on exposed open coasts impoverished communities characterised by the polychaete [Glycera lapidum] (agg.) may be found. [Glycera lapidum] is a species complex and as such some variability in identification may be found in the literature. It is also quite widespread and may occur in a variety of coarser sediments and is often present in other SCS biotopes. However, it is rarely considered a characteristic species and where this is the case it is normally due to the exclusion of other species. Consequently it is considered that habitats containing this biotope may be subject to continual or periodic sediment disturbance from wave action, which prevents the establishment of a more stable community. Other taxa include spionid polychaetes such as [Spio martinensis] and [Spiophanes bombyx, Nephtys] spp. and in some areas the bivalve [Spisula elliptica]. It is possible that SCS.Glap it is not a true biotope, rather an impoverished, transitional community, which in more settled conditions develops into other more stable communities. Situation: In many cases e.
[Amphiura filiformis] and [Nuculoma tenuis] in circalittoral and offshore muddy sand	In cohesive and non-cohesive sandy mud, off moderately exposed coasts in deep water dense populations of [Amphiura filiformis] with the bivalve [Nuculoma tenuis] may occur. This biotope together with AfilMysAnit, ThyNten and OfusAfil may be part of the [Amphiura filiformis] dominated infralittoral etage described by Glemarec (1973) and part of the 'off-shore muddy sand association' described by other workers (Jones 1951; Mackie 1990). Other species characteristic of this biotope may include the echinoderms [Ophiura albida] and [Echinocardium flavescens] and the bivalve [Mysella bidentata]. [Phaxas pellucidus], [Owenia fusiformis] and [Virgularia mirabilis] may also be present. At the sediment surface the hydroid [Sertularia argentea] may be present although only at very low abundances. Variations of this biotope exist in the northern North Sea (see below) and it is possible that more than one entity exists for this biotope.

[Owenia fusiformis] and [Amphiura filiformis] in deep circalittoral sand or muddy sand	Areas of slightly muddy sand (generally <20% mud) in offshore waters may be characterised by high numbers of the tube building polychaete [Owenia fusiformis] often with the brittlestar [Amphiura filiformis]. Whilst [O. fusiformis] is also found in other circalittoral or offshore biotopes it usually occurs in lower abundances than in SSA.OfusAfil. Other species found in this community are the polychaetes [Goniada maculata], [Pholoe inornata], [Diplocirrus glaucus], [Chaetozone setosa] and [Spiophanes kroyeri] with occasional bivalves such as [Timoclea ovata] and [Thyasira equalis]. The sea cucumber [Labidoplax buski] and the cumacean [Eudorella truncatula] are also commonly often found in this biotope.
Semi-permanent tube-building amphipods and polychaetes in sublittoral sand	Sublittoral marine sand in moderately exposed or sheltered inlets and voes in shallow water may support large populations of semi-permanent tube-building amphipods and polychaetes. Typically dominated by [Corophium crassicorne] with other tube building amphipods such as [Ampelisca] spp. also common. Other taxa include typical shallow sand fauna such as [Spiophanes bombyx], [Urothoe elegans], [Bathyporeia] spp. along with various polychaetes including [Exogone hebes] and [Lanice conchilega]. [Polydora ciliata] may also be abundant in some areas. At the sediment surface, Arenicola marina worm casts may be visible and occasional seaweeds such as [Laminaria saccharina] may be present. As many of the sites featuring this biotope are situated near to fish farms it is possible that it may have developed as the result of moderate nutrient enrichment. The distribution of this biotope is poorly known and like the muddier SMU.AmpPlon, to which it is related, appears to have a patchy distribution. Temporal variation: It is possible that this biotope is a temporal or spatial variant of other more stable biotop
[Ampelisca] spp., [Photis longicaudata] and other tube-building amphipods and polychaetes in infralittoral sandy mud	Sublittoral stable cohesive sandy muds occurring over a wide depth range may support large populations of semi-permanent tube-building amphipods and polychaetes. In particular large numbers of the amphipods [Ampelisca] spp. and [Photis longicaudata] may be present along with polychaetes such as [Lagis koreni]. Other important taxa may include bivalves such as [Nucula nitidosa], [Chamelea gallina], [Abra alba] and [Mysella bidentata] and the echinoderms [Echinocardium cordatum] and [Amphiura brachiata]. In some areas polychaetes such as [Spiophanes bombyx] and [Polydora ciliata] may also be conspicuously numerous. This community is poorly known, appearing to occur in restricted patches. In some areas it is possible that AmpPlon may develop as a result of moderate organic enrichment. A similar community in mud has also been reported in the Baltic which is characterised by large populations of amphipods such as [Ampelisca] spp., [Corophium] spp. and [Haploops tubicola] (see Petersen 1918; Thorson 1957) and it is not known if SMU.AmpPlon is a UK variant of this biotope. Temporal varia

[Sabellaria alveolata] on variable salinity sublittoral mixed sediment	Tide-swept sandy mixed sediments with cobbles and pebbles, in variable salinity or fully marine conditions, may be characterised by surface accumulations of the reef building polychaete [Sabellaria alveolata]. The presence of [Sabellaria] sp. has a strong influence on the associated infauna as the tubes bind the surface sediments together and provide increased stability. Such reefs may form large structures up to a metre in height although they are considerably less extensive than the intertidal reefs formed by this species (Salv). Other associated species may include the polychaete [Melinna cristata], itself often as dense aggregations, mobile surface feeding polychaetes including [Typosyllis armillary] and [Eulalia tripunctata]. Other polychaetes may include [Mediomastus fragilis] and [Pygospio elegans] whilst amphipods such as [Harpinia pectinata] and tubificid oligochaetes may also be found.
[Flustra foliacea] and [Hydrallmania falcata] on tide-swept circalittoral mixed sediment	This biotope represents part of a transition between sand-scoured circalittoral rock where the epifauna is conspicuous enough to be considered as a biotope and a sediment biotope where an infaunal sample is required to characterise it and is possibly best considered an epibiotic overlay. [Flustra foliacea] and the hydroid [Hydrallmania falcata] characterise this biotope; lesser amounts of other hydroids such as [Sertularia argentea], [Nemertesia antennina] and occasionally [Nemertesia ramose], occur where suitably stable hard substrata is found. The anemone [Urticina feline] and the soft coral [Alcyonium digitatum] may also characterise this biotope. Barnacles [Balanus crenatus] and tube worms [Pomatoceros triqueter] may be present and the robust bryozoans [Alcyonidium diaphanum] and [Vesicularia spinosa] appear amongst the hydroids at a few sites. [Sabella pavonina] and [Lanice conchilega] may be occasionally found in the coarse sediment around the stones. In shallower (i.e. upper circalittoral) examples of this biotope scour-tolerant robust red algae such as [Polysiphonia nigrescens]
[Laminaria saccharina] and red seaweeds on infralittoral sediments	On infralittoral mixed muddy substrata communities characterised by the kelp [Laminaria saccharina] and mixed filamentous and foliose red algae can be found. This biotope contains a number of sub-biotopes distinguished by the degree of either wave or tidal exposure. In moderately strong tidal streams in exposed areas [Laminaria] is sparse and dense stands of red seaweeds are found attached to the boulders and cobbles that make up a large proportion of the sediment (LsacR.CbPb). As the degree of wave and/or tidal exposure decreases there is a change in community structure, with the density of [Laminaria] and the diversity of red algal species increasing (LsacR.Gv). As the environment becomes more stable a number of brown algal species are able to inhabit this environment and a rich infauna develops (LsacR.Sa). In the most sheltered examples of this biotope a diverse muddy sediment infauna can be found and the ['Trailliella'] phase of [Bonnemaisonia hamifera] may develop (LsacR.Mu).

Red seaweeds and kelps on tide-swept mobile infralittoral cobbles and pebbles	Shallow mixed substrata of cobbles and pebbles swept by moderately strong tidal streams in exposed areas, and characterised by dense stands of red seaweeds. Tide-swept infralittoral cobbles and pebbles which may be highly mobile, create an environment that is difficult for many algae to survive in. Foliose and filamentous seaweeds with an encrusting phase in their life history, or those that are able to withstand rolling of the substratum and scouring, can form dense turfs of seaweed in the more settled summer months. Characteristic red seaweeds include [Halarachnion ligulatum] which is able to survive attached to the pebbles and cobbles. Ephemeral algae grow rapidly in periods of relative stability. Other characteristic red seaweeds include [Plocamium cartilagineum], [Hypoglossum hypoglossoides], [Bonnemaisonia asparagoides] and [Brongniartella byssoides]. Coralline encrusting algae cover many of the cobbles and pebbles; some areas of cobbles may be quite barren, dominated only by encrusting coralline algae and brittlestars. Of the brown seaweeds scattered [Laminaria] spp. and [Desmarestia] spp. may l
[Laminaria saccharina] and robust red algae on infralittoral gravel and pebble	Shallow kelp community found on gravel and gravelly sand in slightly less exposed areas than SMP.LsacR.CbPb but in moderately strong tidal currents, and characterised by occasional [Laminaria saccharina] with an undergrowth of robust red seaweeds. Characteristic red seaweeds, as with LsacR.CbPb, include [Plocamium cartilagineum], [Halarachnion ligulatum] and [Brongniartella byssoides]; however the greater stability of this biotope allows a slightly more diverse range of red seaweeds to become established including [Polyides rotundus], [Rhodophyllis divaricata], [Delesseria sanguinea] and [Nitophyllum punctatum]. Coralline encrusting algae may be found covering the larger pebbles. [Laminaria hyperborea] may also be present within this biotope, although at low densities. Other brown algal species present include [Desmarestia] spp., [Dictyota dichotoma] and [Chorda filum], all at low abundance. The ubiquitous green seaweed [Ulva] sp. may be found attached to larger pebbles.
[Laminaria saccharina] and filamentous red algae on infralittoral sand	Shallow kelp community found on sand and slightly gravelly sand, in moderately exposed and sheltered conditions, with weak tidal currents. The community is characterised by occasional [Laminaria saccharina] with an undergrowth of red algae. Characteristic red seaweeds, as with LsacR.Gv, include [Plocamium cartilagineum], [Polyides rotundus], [Polysiphonia elongate] and [Lomentaria clavellosa]. Coralline encrusting algae is much less important in this biotope as a result of a lack of suitable substrate. Brown algal species present, as with other LsacR biotopes, include [Desmarestia] spp., [Dictyota dichotoma] and [Chorda filum], all at low abundance. The ubiquitous green seaweed [Ulva] sp. may also be present. The sandy substrate is home to a variety of typical sand dwelling infauna including polychaetes ([Scoloplos armiger], [Exogone hebes], and [Aricidea minuta]), amphipods ([Ampelisca brevicornis]), and bivalves ([Lucinoma borealis] and [Abra alba]). [Arenicola] worm casts and [Lanice] worm tubes may be visible at the sediment surface.

[Mediomastus fragilis], [Lumbrineris] spp. and venerid bivalves in circalittoral coarse sand or gravel	Circalittoral gravels, coarse to medium sands, and shell gravels, sometimes with a small amount of silt and generally in relatively deep water (generally over 15-20m), may be characterised by polychaetes such as [Mediomastus fragilis], [Lumbrineris] spp., [Glycera lapidum] with the pea urchin [Echinocyamus pusillus]. Other taxa may include Nemertea spp., [Protodorvillea kefersteini, Owenia fusiformis, Spiophanes bombyx] and [Amphipholis squamata] along with amphipods such as [Ampelisca spinipes]. This biotope may also be characterised by the presence of conspicuous venerid bivalves, particularly [Timoclea ovata]. Other robust bivalve species such as [Moerella] spp., [Glycymeris glycymeris] and [Astarte sulcata] may also be found in this biotope. [Spatangus purpureus] may be present especially where the interstices of the gravel are filled by finer particles, in which case, [Gari tellinella] may also be prevalent (Glemarec 1973). Venerid bivalves are often under-sampled in benthic grab surveys and as such may not be conspicuous in many infaunal datasets. Such communities in gravelly sed
Polychaete-rich deep [Venus] community in offshore mixed sediments	In offshore circalittoral slightly muddy mixed sediments, a diverse community particularly rich in polychaetes with a significant venerid bivalve component may be found. Typical species include the polychaetes [Glycera lapidum], [Aonides paucibranchiata], [Laonice bahusiensis], [Mediomastus fragilis], [Lumbrineris gracilis], [Pseudomystides limbata], [Protomystides bidentata] and syllid species and bivalves such as [Timoclea ovata], [Glycymeris glycymeris], [Spisula elliptica] and [Goodallia triangularis]. This biotope has been recorded on surveys of the Lambay and Codling Deeps and other areas of the Irish Sea and collectively with MedLumVen comprise the 'Deep [Venus] Community' and the 'Boreal Off-Shore Gravel Association' as defined by other workers (Ford 1923; Jones 1950). Some examples of this biotope may have abundant juvenile [Modiolus modiolus]
[Protodorvillea kefersteini] and other polychaetes in impoverished circalittoral mixed gravelly sand	In coarse gravelly or shelly sand sometimes with a slight mud content, along open coasts in depths of 10 to 30m, and in shallower offshore areas, an impoverished community characterised by [Protodorvillea kefersteini] may be found. This biotope has a number of other species associated with it including Nemertea spp., [Caulleriella] [zetlandica], [Minuspio cirrifera], [Glycera lapidum], [Ampelisca spinipes] and numerous other polychaete species all occurring at low abundances. The polychaete [Sabellaria spinulosa] is also found in low numbers in this biotope Situation: This biotope has been reported in the North Sea along the Norfolk/Lincolnshire coast located in and around marine aggregate dredging areas (IECS, 1999). Temporal variation: This biotope may be quite variable both spatially and temporally in terms community structure and also sediment type which is often borderline between the SCS complex and the SMX complex.

[Glycera lapidum], [Thyasira] spp. and [Amythasides macroglossus] in offshore gravelly sand	Offshore (deep) circalittoral habitats with coarse sands and gravel, stone or shell and occasionally a little silt (<5%) may be characterised by the polychaetes [Glycera lapidum] and [Amythasides macroglossus] with the bivalve [Thyasira] spp. (particularly [Thyasira succisa]). Other taxa include polychaetes such as [Exogone verugera], [Notomastus latericeus], [Spiophanes kroyeri],[Aphelochaeta marioni] ([Tharyx marioni]) and [Lumbrineris gracilis] and occasional numbers of the bivalve [Timoclea ovata]. This biotope bears some resemblance to the shallow SCS.Glap and also to the circalittoral and offshore venerid biotopes (SCS.MedLumVen and SMX.PoVen) but differs by the range of polychaete and bivalve fauna present. This biotope is notable for the presence of the rarely recorded ampharetid polychaete [Amythasides macroglossus] and also for the small ear file clam [Limatula subauriculata] which is common in some examples of this biotope.
[Hesionura elongata] and [Protodorvillea kefersteini] in offshore coarse sand	Offshore (deep) circalittoral habitats with coarse sand may support populations of the interstitial polychaete [Hesionura elongata] with [Protodorvillea kefersteini]. Other notable species include the phyllodocid polychaete [Protomystides limbata] and the bivalve [Moerella pygmaea]. This biotope was reported in the offshore northern North Sea by Eleftheriou and Basford (1989). Relatively little data exists for this biotope.
[Laminaria saccharina] with red and brown seaweeds on lower infralittoral muddy mixed sediment	Slightly deeper kelp community in the lower infralittoral, found on sandy gravelly mud, in sheltered and very sheltered conditions, with very weak tidal currents. The community is characterised by occasional [Laminaria saccharina] with an undergrowth of red and brown algae. Characteristic red seaweeds, as with other LsacR biotopes include [Plocamium cartilagineum] and [Phycodrys rubens]. However, the sheltered conditions of this biotope allow the '[Trailliella]' phase of [Bonnemaisonia hamifera] to develop (although not to the extent of forming distinct mats as in SMP.Tra), and the related species [Bonnemaisonia asparagoides]. Brown algal species present, as with other LsacR biotopes, include [Desmarestia] spp at low abundance. The ubiquitous green seaweed [Ulva] sp. may also be present. The muddy substrate is home to a variety of typical mud dwelling fauna including the burrowing anemone [Cerianthus lloydii]. The gravelly component of this biotope provides a substrate for encrusting species such as the polychaete [Pomatoceros triqueter] and coralline encrusting algae.

[Laminaria saccharina] and [Chorda filum] on sheltered upper infralittoral muddy sediment	Shallow kelp community found on sandy mud and gravelly sandy mud, in sheltered or extremely sheltered conditions, with very weak tidal currents. The community is characterised by a reasonable covering of [Laminaria saccharina] and [Chorda filum]. Beneath the kelp canopy, [Ulva lactuca] is often frequent and some filamentous and foliose red algae may be present, along with filamentous brown ectocarpoid algae although in much lower abundance than in the LsacR biotopes. At the sediment surface ubiquitous fauna such as [Asterias rubens], crabs such as [Pagurus bernhardus], [Carcinus maenas], and the gastropod [Gibbula cineraria] may be visable and in some areas [Sabella pavonina] may be present. Given the nature of the sediment it is likely that a wide range of infaunal bivalves and polychaetes are present including [Arenicola marina], [Mediomastus fragilis] and [Anaitides mucosa]. In more tideswept areas with coarser and generally less muddy sediments SMP.LsacCho may be replaced by one of the sub biotopes of SMP.LsacR.
[Laminaria saccharina], [Gracilaria gracilis] and brown seaweeds on full salinity infralittoral sediment	Shallow kelp community found on muddy sand, in moderately exposed or sheltered, fully marine conditions, with weak tidal currents. The community is characterised by a reasonable covering of [Laminaria saccharina]. Frequent [Chorda filum] may also form part of the canopy although not at the abundance in LsacCho. Beneath the canopy the community is characterised by the red algae [Gracilaria gracilis], and various brown algal species particularly [Dictyota dichotoma]. Other members of the understory may include a variety of other filamentous and foliose red algae in particular [Ceramium nodulosum] and the green alga [Ulva]. The muddy sand substrate supports a variety of faunal species including polychaetes ([Lanice conchilega]) and gastropods ([Hinia reticulata]).
[Laminaria saccharina] and [Gracilaria gracilis] with sponges and ascidians on variable salinity infralittoral sediment	Shallow kelp community found on stony sediment, in extremely sheltered, variable salinity conditions, with moderately strong tidal currents. The community is characterised by a more sparse covering of [Laminaria saccharina], particularly when compared to the fully marine version of this sub biotope (SMP.LsacGraFS). Beneath the canopy the community is characterised by the red algae [Gracilaria gracilis], and a variety of faunal species in particular sponges ([Suberites ficus] and [Halichondria panacea]) and ascidians ([Ascidiella aspersa] and [Dendrodoa grossularia]). The stony substrate provides a surface for attachment for these and many other filter and suspension feeding species, particularly barnacles ([Balanus crenatus]), hydroids ([Urticina feline] and [Hydractinia echinata]) and anemones. Other members of the understory may include a variety of filamentous and foliose red algae in particular [Pterothamnion plumula], and the green alga [Ulva].

[Laminaria saccharina] with [Psammechinus miliaris] and/or [Modiolus modiolus] on variable salinity infralittoral sediment	Shallow kelp community found on stoney mixed sediment, in full or variable salinity, in sheltered or moderately exposed conditions, with weak or very weak tidal currents. The community is characterised by a dense covering of [Laminaria saccharina]. Beneath the kelp canopy, frequent [Psammechinus miliaris] may be found grazing the algal turf and scattered [Modiolus modiolus] are characteristic of this biotope. Encrusting the suface of stones and pebbles are [Pomatoceros triqueter] and in the sediment between the stones, the burrowing anemone [Cerianthus lloydii] may also be present. Small patches of [Lithothamnion glaciale] may be found in this biotope, although these patches do not form distict beds as in SBR.Lgla. In addition, a more ubiquitous fauna such as [Asterias rubens] and [Pagurus bernhardus] are also present. This biotope is generally found in sealochs.
Infralittoral rock and other hard substrata	Infralittoral rock includes habitats of bedrock, boulders and cobbles which occur in the shallow subtidal zone and typically support seaweed communities. The upper limit is marked by the top of the kelp zone whilst the lower limit is marked by the lower limit of kelp growth or the lower limit of dense seaweed growth. Infralittoral rock typically has an upper zone of dense kelp (forest) and a lower zone of sparse kelp (park), both with an understorey of erect seaweeds. In exposed conditions the kelp is [Laminaria hyperborea] whilst in more sheltered habitats it is usually [Laminaria saccharina]; other kelp species may dominate under certain conditions. On the extreme lower shore and in the very shallow subtidal (sublittoral fringe) there is usually a narrow band of dabberlocks [Alaria esculenta] (exposed coasts) or the kelps [Laminaria digitata] (moderately exposed) or [L. saccharina] (very sheltered). Areas of mixed ground, lacking stable rock, may lack kelps but support seaweed communities. In estuaries and other turbid-water areas the shallow subtidal may be
Circalittoral rock and other hard substrata	Circalittoral rock is characterised by animal dominated communities (a departure from the algae dominated communities in the infralittoral zone). The circalittoral zone can itself be split into two sub-zones; upper circalittoral (foliose red algae present but not dominant) and lower circalittoral (foliose red algae absent). The depth at which the circalittoral zone begins is directly dependent on the intensity of light reaching the seabed; in highly turbid conditions, the circalittoral zone may begin just below water level at mean low water springs (MLWS). The biotopes identified in the field can be broadly assigned to one of three energy level categories: high, moderate and low energy circalittoral rock (used to define the habitat complex level). The character of the fauna varies enormously and is affected mainly by wave action, tidal stream strength, salinity, turbidity, the degree of scouring and rock topography. It is typical for the community not to be dominated by single species, as is common in shore and infralittoral habitats, but rather comprise a mosaic of
Inland saline water [Phragmites] beds	[Phragmites australis] beds of the Palaearctic region beds permanently, usually or frequently inundated by the sea or by saline coastal lagoons, by athalassal saline lakes, by saline estuaries or saline rivers.

Gravelly beach and shingle pioneer communities	Gravelly beaches can host pioneer communities of the class [Ammophiletea] consisting mainly of geophytes and hemicryptophytes, e.g. the association [Agropyro juncei-Sporoboletum pungentis] and the alliance [Medicagini marinae-Triplachnion nitensis]. They may sporadically be inundated by sea water during storms.
Water-fringing large sedge communities	Beds of large sedges [Carex rostrata], [Carex acuta], [Carex riparia], [Carex elata] in the littoral zone of freshwaters. Note that large sedge formations developed on moist soils, not inundated during most of the year, are included in D5.21.
Brackish and alkaline [Cirsium brachycephalum] beds	Beds of [Bolboschoenus maritimus ssp. compactus] and [Cirsium brachycephalum] on saline soils which are species-poor and structurally simple. [Puccinellia limosa], [Tripolium pannonicum] and [Potentilla anserina] are also typical.
Eastern Carpathian calcareous thermophilous screes	Screes of the Eastern Carpathians, typified by the presence of numerous Mediterranean thermophilous species and those belonging to the Dacio-Balkanic floristic element. Characteristic species: [Achnatherum calamagrostis], [Parietaria officinalis], [Lamium garganicum ssp. laevigatum], [Galium album ssp. album], [Vincetoxicum hirundinaria].
Old town walls	Ancient town walls and similar structures which are not derelict. Frequently with pteridophytes. Other possible species include: [Parietaria judaica], [Mercurialis annua], [Hyoscyamus albus], [Verbascum undulatum], [Capparis spinosa ssp. spinosa], [Micromeria juliana], [Diplotaxis tenuifolia], [Sedum album], [Lactuca serriola], [Asphodelus fistulosus], [Bromus madritensis], [Erysimum cheiri], [Antirrhinum majus], [Sonchus oleraceus].
Coastal brown dunes covered with natural or almost natural thermophilous pines	Coastal dunes colonised by Mediterranean and Atlantic thermophilous pines, corresponding to substitution facies or in some stations climax formations of evergreen oak of artificial origin ([Quercetalia ilicis] or [Ceratonio-Rhamnetalia]). Typical species are [Pinus pinea], [Pinus pinaster], [Pinus halepensis], [Juniperus macrocarpa], [Juniperus turbinata ssp. turbinata], [Scaligeria napiformis], [Rhamnus alaternus], [Arbutus unedo], [Erica arborea], [Pistacia lentiscus]. This is the coastal equivalent of unit G3.7.
Plankton communities of oligotrophic waters	Free-floating microscopic plant (phytoplankton) and animal (zooplankton) organisms of standing oligotrophic waters.
Plankton communities of mesotrophic standing waters	Free-floating microscopic plant (phytoplankton) and animal (zooplankton) organisms of slightly muddy, poorly pellucid standing mesotrophic waters.
Plankton communities of eutrophic standing waters	Free-floating microscopic plant (phytoplankton) and animal (zooplankton) organisms of very muddy, non-pellucid waters of standing eutrophic waters. Phytoplankton is represented mainly by algae of the groups [Bacillariophyta] and [Chlorophyta], rarely also by [Euglenophyta], [Pyrrophyta], zooplankton by [Chrysophyta]; [Cladocera], [Copepoda] and [Rotatoria].
Floating vegetation of saline and brackish waters	Rooted or non-rooted floating vegetation of saline waters dominated by aquatic vascular plants (macrophytes) whose leaves float on the water surface. The most important of these are represented by the species of genus [Lemna], [Wolffia], [Callitriche] and [Ranunculus] sect. [Batrachium].

Submerged macrophytes of saline and brackish waters	Habitats of saline pools and waters where the bottom is densely vegetated. Typical species are [Najas marina], [Najas minor], [Potamogeton pectinatus], [Ranunculus trichophyllus], [Utricularia neglecta], [Zannichellia pedicellata] among others.
Interior European saltmarsh [Carex divisa] and [Carex distans] beds	Inland saltmarsh formations of central Europe, dominated by [Carex divisa] or [Carex distans], typically c. 40-60 cm high, occurring particularly in the Pannonian lowlands.
Dry sub-continental acid steppic grasslands	Closed, floristically quite rich steppe-like perennial grasslands occupying acid soils of Central, East and Southeast Europe, dominated by grasses [Agrostis capillaris], [Festuca valesiaca], [Anthoxanthum odoratum], [Danthonia calycina] and [Chrysopogon gryllus] or species of clover ([Trifolium alpestre.], [T. montanum], [T. pannonicum], [T. pratense], [T. repens], [T. velenovskyi], [T. campestre]).
Central Balkan salt steppes and saltmarshes	The flora and vegetation of Central Balkan salt steppes and marshes are intermediate in character, influenced both by Pannonian and Mediterranean salt habitats. The vegetation represents a complex mosaic of diverse herb communities. The most frequently dominant species are [Puccinellia convoluta] or [Puccinellia distans], growing in depressions of saltmarshes, where ephemeral vegetation of annuals [Plantago coronopus], [Myosurus minimus], [Camphorosma monspeliaca] etc. is also typical. On higher parts of the saltmarsh micro-relief [Trifolium subterraneum], [Trifolium nigrescens], [Ranunculus marginatus], [Ranunculus pedatus], [Scilla autumnalis], [Allium guttatum] are typical.
Serpentine silver fir forests [G3.1K Serpentine [Abies alba] forests Serpentine [Abies alba] forests	[Abies alba]- and [Picea abies]-dominated forests on serpentines, usually at altitude 1400-1600 m in the Balkan peninsula. [Erica carnea] is also relatively abundant. Other typical species are [Vaccinium myrtillus], [Festuca heterophylla], [Daphne blagayana], [Thymus montanus], [Saxifraga rotundifolia], [Valeriana montana], [Doronicum austriacum], [Campanula rotundifolia], [Luzula sylvatica], [Luzula nemorosa], [Senecio nemorensis], [Melampyrum album], [Sorbus aucuparia], [Hypericum perforatum], [Luzula maxima], [Oxalis acetosella], [Symphytum tuberosum], [Euphorbia amygdaloides], [Pyrola secunda].
Southeast European mountain siliceous screes	Siliceous screes of mountains of southeast Europe, with vegetation dominated by [Saxifraga bryoides], [Saxifraga adscendens], [Saxifraga oppositifolia], [Oxyria digyna], [Androsace hedraeantha] and [Poa cenisia]. [Cryptogramma crispa] and mosses occur. Other important species are [Vaccinium] spp., [Polygonum alpinum], [Pleuropteropyrum undulatum], [Lerchenfeldia flexuosa], [Senecio rupestris].
Southeast European thermo-siliceous screes	Warm dry screes of the Balkan Peninsula, with vegetation dominated by [Achnatherum calamagrostis] and [Melica ciliata].
Illyrio-Helleno-Balkanic wet carbonate cliffs	Wet cliffs, often with luxuriant vegetation. Typical plants are fern [Adiantum capillus-veneris] and mosses [Eucladium verticillatum], [Cratoneuron commutatum]. On open wet rock algae are also frequent.

Anchihaline caves	Caves which are usually coastal, with different salinities in their water-body profile, from freshwater at the water surface to saline water (usually sea water) on the bottom, with biocenoses typical for each of them. They are influenced by outside climatic conditions and to differing extents by the sea. They occur on karstic substrates and are inhabited by specific communities of anchihaline stygobionts, e.g. copepods [Acanthocyclops gordani], [Diacyclops antrincola], thermosbaenaceans (crustaceans) [Monodella argentarii] and amphipods [Hadzia fragilis], [Niphargus hebereri], [Niphargus pectencoronatae], [Niphargus salonitanus], [Pseudoniphargus adriaticus], [Rhipidogammarus karamani], [Salentinella angelieri].
Unmanaged xeric grassland	Xeric grassland that is not currently mown or used for pasture.
Trampled xeric grasslands with annuals	Low annuals on dry and warm trampled localities, for example the community of [Matricario matricarioidis-Polygonion arenastri] recorded in Hungary and Serbia with [Coronopus squamatus], [Cynodon dactylon], [Eragrostis minor], [Herniaria glabra], [Herniaria hirsuta], [Juncus tenuis], [Lepidium ruderale], [Lolium perenne], [Matricaria discoidea], [Plantago lanceolata], [Plantago major], [Poa annua] agg. and [Polygonum arenastrum].
Trampled mesophilous grasslands with annuals	Low annuals on mesophilous trampled localities, for example the community [Saginion procumbentis] with [Sagina procumbens], [Sagina apetala], [Spergularia rubra], [Juncus bufonius], [Poa supina], [Veronica serpyllifolia]; in sub-mountain and mountain locations the vegetation may consist of [Alchemillo-Poion supinae].
Western Pontic salt humid meadows	Mediterranean humid grasslands dominated by [Juncus littoralis] and [J. maritimus] along the coast of the Black Sea, in particular in the Danube Delta.
Balkanic quaking bogs	Dense, low formations, typified by an abundant turf layer of [Sphagnum contortum], [Sphagnum flexuosum], [Sphagnum subsecundum], [Sphagnum acutifolium], [Sphagnum squarrosum] and the presence of [Drosera rotundifolia], [Pinguicula balcanica] or [Equisetum fluviatile]. Other important elements of this habitat are mosses [Aulacomnium palustre], [Scorpidium vernicosum], [Philonotis fontana] and vascular plants [Carex echinata], [Carex curta], [Parnassia palustris], [Potentilla erecta], [Eriophorum angustifolium].
Balkan mountain hay meadows	Mesophile tall grasslands in the mountain and sub-alpine areas of Balkan peninsula in the beech forest zone. They are dominated by [Trisetum flavescens], [Cynosurus cristatus], [Festuca pratensis], and geographically differentiated by Balkan endemic species [Armeria rumelica], [Knautia dinarica], [Rhinanthus rumelicus].
Illyrian alpine and subalpine acid open grasslands	Open habitats dominated by patches of [Minuartia recurva] and [Scleranthus neglectus], with perimeter from several cm to 80 cm. The total herb cover is often not higher than 20%. They are species-poor, and in addition to the dominants the typical species are [Armeria rumelica], [Poa violacea], [Cardamine pancicii], [Luzula campestris], [Juncus trifidus], [Anthemis carpatica], [Jasione orbiculata], [Rumex acetosella], [Plantago carinata], [Campanula scheuchzeri] and numerous mosses and lichens.

Balkan alpine and sub-alpine serpentine grasslands	Habitats with sparse vegetation on stony serpentine soils in high mountains of the Balkan Peninsula. The dominant species are sedges [Carex humilis] and [Carex laevis], and grasses [Sesleria latifolia], [Sesleria rigida], [Stipa pulcherrima]. The occurrence of endemic and sub-endemic species is typical.
Dinaric sub-alpine tall grasslands	High, closed Dinaric grasslands which are quite species-rich (alliance [Pancicion]). Grasses [Festuca fallax], [Agrostis capillaris], [Anthoxanthum odoratum], [Nardus stricta] are dominant, together with tall species which give a specific visual aspect: [Pancicia serbica], [Astrantia elatior], [Leucanthemum vulgare] (s.l.), [Rhinanthus rumelicus].
Riparian stands of invasive shrubs	Riparian stands of invasive shrubs, for example [Amorpha fruticosa], recorded from Romania and Croatia, and [Reynoutria japonica] (= [Fallopia japonica]) (Japanese Knotweed), which invades watercourses and roadsides in UK.
Oligotrophic pools in inland sand dunes	Habitats of permanent oligotrophic waters in sand dunes, other than coastal dune-slack pools (B1.81).
Alpic tall-grass communities on siliceous substrates	Dominant species are [Calamagrostis villosa], [Deschampsia cespitosa], [Trisetum fuscum].
Alpic tall-grass communities on carbonate substrates	Dominant species are [Calamagrostis varia], [Festuca carpatica].
Alpic tall-grass communities on drier and warmer slopes	Dominant species are [Calamagrostis arundinacea], [Laserpitium latifolium].
Infralittoral coarse sediment in low or reduced salinity	Includes bare Baltic gravel and shell bottoms in the infralittoral photic zone and the aphotic zone