

25th Meeting of European Vegetation Survey

Roma (Italy), April 6-9 2016

Excursion Guide

National Nature Reserve "Tenuta di Castelporziano"

led by Francesco Spada



European
Vegetation
Survey



DIPARTIMENTO
DI BIOLOGIA AMBIENTALE

SAPIENZA
UNIVERSITÀ DI ROMA



Società Botanica Italiana

FIELD GUIDE EXCURSION TO THE PRESIDENTIAL ESTATE AND RESIDENCE IN CASTELPORZIANO

In occasion of the 25th annual meeting of the European Vegetation Survey (EVS), we planned a full-day visit to the Presidential Estate and Residence in Castelporziano. The field excursion will be guided by Francesco Spada and additional support will be provided by Emiliano Agrillo, Fabio Attorre, Laura Casella, Michele De Sanctis, Marco Massimi, Marta Gaia Sperandii, Anna Testi.

“Tenuta di Castelporziano” is the Estate and Residence of the President of The Italian Republic. It has *status* of National Nature Reserve and belongs to the European Network Natura 2000.

Formerly Royal Hunting Park, this 5800 hectares large area is located south of the city of Rome. It stretches from the S suburbs as far as to the Tyrrhenian shore-line at 41°39' North and represents the last, extant example of an earlier forest landscape of the Roman “Campagna” before the sprawl of urban areas during the second part of the XX century.

It offers a 12 km long transect through quite well preserved woodland sites, from the sand dunes of the seashore to inland. Coastal stands of evergreen broadleaved Mediterranean forest and maquis, deciduous planar mixed forests and stands of temperate hygrophilous forests in periodically flooded depressions, are scattered along a well-preserved zonal sequence. Large pasturelands and impressive plantations of Mediterranean pines (*Pinus pinea*), document a long history of the traditional human impact.

As last extant fragment of the former landscape of the Roman Campagna, it exhibits spectacular examples of the zonal, extrazonal and azonal forest communities at these latitudes in peninsular Italy. The last two centuries of management as hunting domain for the local aristocracy provided a relatively low degree of deforestation for cultivation and pastoralism, in comparison to adjacent districts. The area was more densely settled only during classic times especially close to the coast, where many villages and villas were scattered along a paved but now disrupted coastal road, “Via Severiana”. The permanent urban settlements were probably abandoned since the onset of the V century A.D. Thereafter, up to modern times, the area was mainly exploited by forest pastoralists. The extant large forest stands, despite a long history of exploitation by selective cutting (coppice), grazing and patchy clear cutting for temporary cultivation of cereals, which heavily affected the vertical and spatial structure of the woodland, still exhibit a high species richness, suggesting high resilience and persistence of an aboriginal species pool.

The territory is relatively flat and spans over a planar morphology shaped by marine sand deposits from Pliocene to Holocene. A more diverse morphology with tabular, rolling hills dissected by stream valleys,

characterizes the N Westernmost part of the area, at the edge of the deposits of the Pleistocene eruptions of the Albano Volcano.

The area exhibits an uninterrupted topographical sequence of less disturbed vegetation types along a 12 km protected transect, from the shoreline to the hinterland. Its botanical interest relies upon the extraordinary diversity of the local flora and vegetation, concentrated in a small area where relictuality and altitudinal disjunctions, originated by conditions of local high water table, due to the planar morphology, are displayed within a Mediterranean macroclimatic envelope.

The climate is Mediterranean with a nearly 3 months long dry season, between mid-June and mid-August. The average annual temperature is around 15,5 °C. Precipitations are concentrated in spring and autumn, with average annual P around 712 mm and a main peak in November (from records 1981-1991).

The physical environment of the sand dunes is locally well preserved. Here the classic topographical zonation of alo- and psammophytic plant communities of the Mediterranean seashore is displayed along the topographical gradient of the Holocene sand dunes as follows:

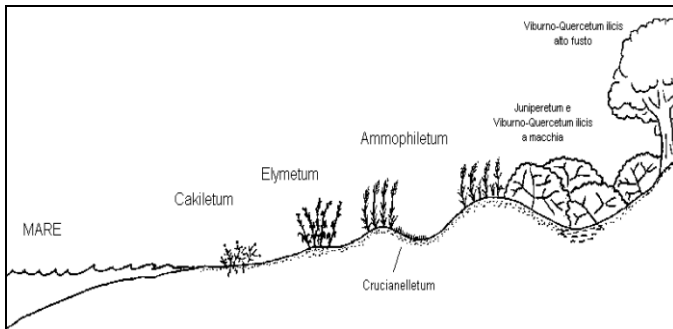


Fig. 1 Topographical sequence of the dune vegetation at Grotta di Piastra. (from Pignatti et al, 2001, redrawn)

Close to the sand dunes, the biome of the broadleaved evergreen Mediterranean forest is zonal, as it is all along the Tyrrhenian coast independently from the soil. It is represented by a sequence of woody communities of increasing height due to the disturbance of the marine aerosol. A first fringe of pigmy forest dominated by *Juniperus macrocarpa* develops both on inland dune slacks as well as at the top of the consolidated dunes. Slightly more inland, the stands are dominated by *J. phoenicea* which develops a more persistent canopy. The populations of this species are likely to represent a local late successional stage. In this highly dynamic belt, exposed to wind-blow and aerosol, which affect the growth of closer stands of woodland, a steady displacement of this mode of species aggregation occurs. The species pool is therefore very rich. Locally more or less transeunt scrub communities (garrigue) dominated by

Cistaceae and *Rosmarinus* develop at the transition between the consolidated dunes and the woodland.

Remnants of a more thermophilic thicket of Angiosperm treelets, analogue to the *Olea* and *Ceratonia* aggregations recorded along the coast south of this area, can be seen in the individuals of *Chamerops humilis* scattered in more open sites.

A dense thicket of low, bent and twisted individuals of *Q. ilex* develops upstream of the first consolidated dunes. Its physiognomy changes along with the distance from the sea shore, first achieving the vertical structure of a real broadleaved evergreen Mediterranean sclerophyllous forest behind the dunes.

Smaller polycormic trees (*Arbutus unedo*, *Phillyrea latifolia*, *Erica arborea*, *Rhamnus alaternus*, *Myrtus communis*, *Pistacia lentiscus*) are either successional or concentrated in openings where also swags of lianas (*Smilax aspera*, *Hedera helix* and *Clematis flammula*) often occur. *Daphne gnidium* apparently coexist in stands where individual of *Q. suber* enter the canopy. *Carex distachya*, *Cyclamen repandum*, *Rubia peregrina* are the most common species in the scanty and poor flora at the forest floor (cfr. *Viburno-Quercetum ilicis*).

Old growth stands of this evergreen forest grow on the ruins of the settlements of Via Severiana, running along the ridge of a fossile, levelled dune. This suggests interesting inferences on the time span of a succession leading to a close-to-climax forest canopy. In periodically inundated hollows fringed by *Scirpus holoschoenus* and *Juncus inflexus*, stands of *Populus canescens* and *Fraxinus angustifolia* subsp. *oxycarpa* are clustered (cfr. *Carici remotae-Fraxinetum angustifoliae*).

A mixed deciduous-evergreen planar forest dominates the landscape on the inland tablelands. Its structure is due to the codominance of *Quercus frainetto* and *Q. cerris* in the late successional canopy, the former apparently favoured by the planar morphology in which layers of clay in the volcanic deposits provide moderate waterlogging. *Carpinus orientalis* usually builds a continuous lower layer of partially clonal origin. On drier patches, *Q. suber* and more seldom *Q. ilex* reach the canopy, along with an understorey of evergreen treelets (*Phillyrea*, *Arbutus*, *Erica arborea*; cfr. *Echinopo-Quercetum frainetto ericetosum*). This aggregation can be suggested as the earlier dominant forest cover in the Roman Campagna before the deforestation of historical times.

This forest community is extremely rare in Italy where it apparently only occurs along the middle-Tyrrhenian coast. It seldom occurs further inland, in this case only on planar sites, where the evergreen woody component becomes either scanty or is nearly absent. Peninsular Italy lacks larger areas where this topography is available. Its structure emerges when the Mediterranean biota meets the deciduous south European subcontinental

forest biome. Well-preserved stands are very rare at Castelporziano. Impressive, less disturbed stands occur in the SE of the Estate, while most of the area is covered by an overgrown parkland with relatively low, isolated trees with large crowns, emerging from a secondary growth of a thick canopy of evergreen treelets (*Phillyrea*, *Arbutus*, *Erica arborea*, *Myrtus*). This is the legacy of centuries of selective coppice for charcoal, which enhanced the luxuriant abundance of the evergreen obligatory root-sprouters.

The relatively large areas of more or less open, appealing stands of cork-oak (*Q. suber*) mostly are the result of a selective pastoral management on drier sites of this mixed forest. *Q. suber* is apparently successional in the aboriginal structure of the mixed forest, where it was probably clustered on slightly elevated sites on more leached sand deposits or on hardpans of ignimbrite.

Fragments of more hygrophilic forests with *Q. robur* are mostly confined in areas with higher density of larger and more permanently inundated sites. *Carpinus betulus*, *Ulmus minor* and *Q. frainetto* are less frequent codominant in the canopy in these cases (cfr. *Ornithogalo-Carpinetum betuli* p.p.; *Querculo-ulmetum* p.p.).

All these forest communities coexist as narrow belts scattered along the catena of the dissected plateau of ignimbrites in the hilly NW area of the Estate. While the mixed deciduous forest occupies the upper plateau on uncleared sites, a fringe of evergreen broadleaved forest is restricted on the edge of the slopes. A narrow belt of the former mixed deciduous forest reappears on the north facing slopes while at the bottom of the valleys, stands of *Carpinus betulus* and *Laurus nobilis* (cfr. *Lauro-Carpinetum betuli*) are settled.

The iconic pine forest (*Pinus pinea*) is locally the result of plantations established during the last 150 years. They hugely regenerate even if the recovery of the aboriginal forest trees, especially evergreen ones, rapidly develops when not artificially prevented. Otherwise, populations of *Inula viscosa*, *Piptatherum miliaceum* and *Stipa bromoides* are established on the forest floor. Nevertheless, *P. pinea* might have been indigenous somewhere along the middle-Tyrrhenian coast, before the spread of the broadleaved forests in middle Holocene.

The grasslands of the estate are the legacy of an earlier, more widespread pastoral landscape. They mostly consist of a dense canopy with shifting composition of *Dasyphyrum villosum*, *Hordeum bulbosum*, *Avena sterilis*, *Lagurus ovatus*, with *Poa trivialis*, *Holcus lanatus* on moister sites. Impressive carpets of *Asphodelus aestivus* cluster on more clay soils (cfr. *Vulpio-Dasyphyretum villosi* p.p.; *Laguro-Dasyphyretum*, *Brometalia-Rubenti tectorum*).

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VASCULAR SPECIES RECORDED IN THE RELEVÉS OF CASTELPORZIANO EXTRACTED FROM THE GEOREFERENCED VEGETATION DATABASE – SAPIENZA UNIVERSITY OF ROME

Nomenclature according to: Conti et al., 2005

ADOXACEAE

Viburnum tinus L. subsp. *Tinus*

ALISMATACEAE

Alisma lanceolatum With.
Baldellia ranunculoides (L.) Parl.
Damasonium alisma Mill. s.l.

AMARYLLIDACEAE

Allium ampeloprasum L.
Allium pallens L.
Allium roseum L.
Allium triquetrum L.
Narcissus tazetta L. subsp. *aureus* (Loisel.) Baker
Pancratium maritimum L.

ANACARDIACEAE

Pistacia lentiscus L.

APIACEAE

Anthriscus sylvestris (L.) Hoffm. subsp. *sylvestris*
Apium inundatum (L.) Rchb. f.
Apium nodiflorum (L.) Lag. subsp. *nodiflorum*
Berula erecta (Huds.) Coville
Conium maculatum L. subsp. *maculatum*
Daucus broteri Ten.
Daucus carota L. s.l.
Daucus carota L. subsp. *maritimus* (Lam.) Batt.
Echinophora spinosa L.
Eryngium campestre L.
Eryngium maritimum L.
Foeniculum vulgare Mill.
Kundmannia sicula (L.) DC.
Oenanthe fistulosa L.
Oenanthe pimpinelloides L.
Oenanthe silaifolia M. Bieb.
Pseudorhiza pumila (L.) Grande
Tordylium apulum L.
Torilis arvensis (Huds.) Link s.l.
Torilis nodosa (L.) Gaertn.

ARACEAE

Arisarum vulgare Targ. Tozz.
Arum italicum Mill. subsp. *italicum*
Lemna gibba L.
Lemna minor L.
 Araliaceae
Hedera helix L. s.l.

ARECACEAE

Chamaerops humilis L.

ARISTOLOCHIACEAE

Aristolochia rotunda L. s.l.

ASPARAGACEAE

Asparagus acutifolius L.
Asparagus aphyllus L.
Loncomelos pyrenaicus (L.) Hrouda ex J. Holub s.l.
Muscari comosum (L.) Mill.
Ornithogalum umbellatum L.
Prospero autumnale (L.) Speta subsp. *autumnale*
Ruscus aculeatus L.

ASPLENIACEAE

Asplenium onopteris L.
Asplenium trichomanes L. s.l.

ASTERACEAE

Anacyclus radiatus Loisel. subsp. *radiatus*
Andryala integrifolia L.
Anthemis arvensis L. s.l.
Anthemis arvensis L. subsp. *incrassata*
(Loisel.) Nyman
Anthemis cotula L.
Anthemis maritima L.
Arctium minus (Hill) Bernh.
Bellis perennis L.
Bidens tripartita L. s.l.
Carduus micropterus (Borbás) Teyber s.l.
Carduus nutans L. s.l.
Carduus pycnocephalus L. subsp.
pycnocephalus
Carlina corymbosa L.
Carthamus caeruleus L.
Centaurea jacea L. subsp. *gaudini* (Boiss.
& Reut.) Gremli
Centaurea sphaerocephala L.
Chamaemelum fuscatum (Brot.) Vasc.
Chondrilla juncea L.
Cirsium arvense (L.) Scop.
Cirsium creticum (Lam.) d'Urv. s.l.
Cladanthus mixtus (L.) Chevall.
Coleostephus myconis (L.) Cass. ex Rchb.
f.
Cota tinctoria (L.) J. Gay s.l.

Crepis bursifolia L.
Crepis neglecta L.
Crepis sancta (L.) Babc. subsp. *sancta*
Crepis sancta subsp. *sancta*
Crepis setosa Haller f.
Crepis vesicaria L. s.l.
Crepis vesicaria L. subsp. *vesicaria*
Dittrichia viscosa (L.) Greuter s.l.
Echinops ritro L. subsp. *siculus* (Strobl)
Greuter
Eupatorium cannabinum L. s.l.
Filago gallica L.
Filago vulgaris Lam.
Galactites elegans (All.) Soldano
Hedypnois cretica (L.) Dum.Cours.
Helichrysum italicum (Roth) G. Don s.l.
Helichrysum stoechas (L.) Moench
Hypochaeris achyrophorus L.
Hypochaeris glabra L.
Hypochaeris radicata L.
Inula conyzae (Griess.) Meikle
Lactuca serriola L.
Matricaria chamomilla L.
Onopordum illyricum L. s.l.
Pallenis spinosa (L.) Cass. subsp. *spinosa*
Picris hieracioides L. s.l.
Picris hieracioides L. subsp. *spinulosa*
(Bertol. ex Guss.) Arcang.
Pulicaria odora (L.) Rchb.
Reichardia picroides (L.) Roth
Rhagadiolus stellatus (L.) Gaertn.
Scolymus hispanicus L.
Senecio aquaticus Hill

Senecio leucanthemifolius Poir. subsp.
leucanthemifolius
Senecio vulgaris L.
Silybum marianum (L.) Gaertn.
Sonchus asper (L.) Hill s.l.
Sonchus bulbosus (L.) N. Kilian & Greuter
subsp. *bulbosus*
Sonchus maritimus L. subsp. *maritimus*
Sonchus oleraceus L.
Tanacetum parthenium (L.) Sch. Bip.
Tolpis umbellata Bertol.
Tolpis virgata (Desf.) Bertol. s.l.
Urospermum dalechampii (L.) F.W.
Schmidt
Urospermum picroides (L.) Scop. ex F.W.
Schmidt
Xeranthemum inapertum (L.) Mill.

BETULACEAE

Carpinus betulus L.
Carpinus orientalis Mill. subsp. *orientalis*
Corylus avellana L.

BORAGINACEAE

Anchusa undulata L. subsp. *hybrida*
(Ten.) Bég.
Borago officinalis L.
Buglossoides purpurocaerulea (L.) I.M.
Johnst.
Cynoglossum creticum Mill.
Echium italicum L. s.l.

Echium plantagineum L.
Heliotropium europaeum L.
Myosotis gussoni Jan
Myosotis ramosissima Rochel ex Schult.
subsp. *ramosissima*
Symphytum officinale L. s.l.

BRASSICACEAE

Alliaria petiolata (M. Bieb.) Cavara & Grande
Arabis sagittata (Bertol.) DC.
Barbarea vulgaris R. Br. s.l.
Bunias erucago L.
Cakile maritima Scop. subsp. *maritima*
Capsella rubella Reut.
Cardamine hirsuta L.
Cardamine parviflora L.
Diplotaxis tenuifolia (L.) DC.
Erophila verna (L.) DC. s.l.
Lepidium graminifolium L. subsp. *graminifolium*
Lobularia maritima (L.) Desv. subsp. *maritima*
Nasturtium officinale R. Br. subsp. *officinale*
Raphanus raphanistrum L. s.l.
Raphanus raphanistrum L. subsp. *landra* (DC.) Bonnier & Layens
Rapistrum rugosum (L.) Arcang.
Sisymbrium officinale (L.) Scop.

CAMPANULACEAE

Campanula rapunculus L.
Solenopsis laurentia (L.) C. Presl

CANNABACEAE

Celtis australis L. subsp. *australis*

CAPRIFOLIACEAE

Dipsacus fullonum L.
Knautia integrifolia (L.) Bertol. subsp. *integrifolia*
Lonicera caprifolium L.
Lonicera etrusca Santi
Lonicera implexa Aiton subsp. *implexa*
Sixalix atropurpurea (L.) Greuter & Burdet s.l.
Sixalix atropurpurea (L.) Greuter & Burdet subsp. *grandiflora* (Scop.) Soldano & F. Conti

CARYOPHYLLACEAE

Arenaria leptoclados (Rchb.) Guss.
Cerastium brachypetalum Desp. ex Pers. s.l.
Cerastium glomeratum Thuill.
Cerastium ligusticum Viv.
Cerastium semidecandrum L.
Dianthus armeria L. subsp. *armeria*
Dianthus sylvestris Wulfen s.l.
Moehringia pentandra Gay

Moehringia trinervia (L.) Clairv.
Moenchia erecta (L.) P. Gaertn., B. Mey. & Scherb. s.l.
Moenchia mantica (L.) Bartl. subsp. *mantica*
Petrorhagia dubia (Raf.) G. López & Romo
Petrorhagia prolifera (L.) P.W. Ball & Heywood
Petrorhagia saxifraga (L.) Link s.l.
Polycarpon tetraphyllum (L.) L. s.l.
Polycarpon tetraphyllum (L.) L. subsp. *diphyllum* (Cav.) O. Bolòs & Font Quer
Polycarpon tetraphyllum (L.) L. subsp. *tetraphyllum*
Sagina apetala Ard. subsp. *apetala*
Silene canescens Ten.
Silene colorata Poir.
Silene flos-cuculi (L.) Clairv.
Silene gallica L.
Silene italica (L.) Pers. s.l.
Silene laeta (Aiton) Godr.
Silene latifolia Poir. s.l.
Silene latifolia Poir. subsp. *alba* (Mill.) Greuter & Burdet
Silene nocturna L.
Silene vulgaris (Moench) Garcke s.l.
Spergularia rubra (L.) J. & C. Presl
Stellaria aquatica (L.) Scop.
Stellaria media (L.) Vill. s.l.
Stellaria neglecta Weihe
Stellaria pallida (Dumort.) Crép.

CELASTRACEAE

Euonymus europaeus L.

CHENOPODIACEAE

Salsola kali L.

CISTACEAE

Cistus creticus L. subsp. *eriocephalus*
(Viv.) Greuter & Burdet

Cistus salviifolius L.

Fumana thymifolia (L.) Spach ex Webb

Halimium halimifolium (L.) Willk. subsp.
halimifolium

Tuberaria guttata (L.) Fourr.

CONVOLVULACEAE

Calystegia sepium (L.) R. Br. subsp.
sepium

Calystegia soldanella (L.) Roem. & Schult.

Convolvulus arvensis L.

Convolvulus cantabrica L.

Cuscuta scandens Brot. subsp.
cesattiana (Bertol.) Greuter & Burdet

CORNACEAE

Cornus mas L.

Cornus sanguinea L. s.l.

CRASSULACEAE

Sedum cepaea L.

Sedum rupestre L. s.l.

Tillaea muscosa L.

CUPRESSACEAE

Juniperus communis L.

Juniperus oxycedrus L. s.l.

Juniperus oxycedrus L. subsp.
macrocarpa (Sibth. & Sm.) Neilr.

Juniperus phoenicea L. s.l.

CYPERACEAE

Carex acutiformis Ehrh.

Carex baldensis L.

Carex caryophylla Latourr.

Carex distachya Desf.

Carex distans L.

Carex divisa Huds.

Carex divulsa Stokes

Carex elata All. subsp. *elata*

Carex flacca Schreb. s.l.

Carex flacca Schreb. subsp. *flacca*

Carex flacca Schreb. subsp. *serrulata*
(Biv.) Greuter

Carex halleriana Asso

Carex hirta L.

Carex otrubae Podp.

Carex pallescens L.

Carex pendula Huds.

Carex riparia Curtis

Carex sylvatica Huds. subsp. *sylvatica*

Cyperus badius Desf.

Cyperus capitatus Vand.

Cyperus longus L.

Eleocharis palustris (L.) Roem. & Schult.
subsp. *palustris*

Isolepis cernua (Vahl) Roem. & Schult.

Schoenus nigricans L.

Scirpoides holoschoenus (L.) Soják

CYTINACEAE

Cytinus hypocistis (L.) L.

DENNSTAEDTIACEAE

Pteridium aquilinum (L.) Kuhn subsp.
aquilinum

DIOSCOREACEAE

Tamus communis L.

DRYOPTERIDACEAE

Polystichum setiferum (Forssk.) T. Moore
ex Woyn.

EQUISETACEAE

Equisetum ramosissimum Desf.

Equisetum telmateia Ehrh.

ERICACEAE

Arbutus unedo L.
Erica arborea L.
Erica multiflora L.
Erica scoparia L. subsp. *scoparia*

EUPHORBIACEAE

Chamaesyce pepelis (L.) Prokh.
Euphorbia amygdaloides L. s.l.
Euphorbia amygdaloides L. subsp. *amygdaloides*
Euphorbia exigua L. subsp. *exigua*
Euphorbia helioscopia L. subsp. *helioscopia*
Euphorbia peplus L.
Euphorbia terracina L.
Mercurialis perennis L.

FABACEAE

Astragalus boeticus L.
Astragalus hamosus L.
Astragalus pelecinus (L.) Barneby subsp. *pelecinus*
Cercis siliquastrum L. subsp. *siliquastrum*
Colutea arborescens L.
Coronilla scorpioides (L.) W.D.J. Koch
Cytisus scoparius (L.) Link subsp. *scoparius*
Cytisus villosus Pourr.
Dorycnium hirsutum (L.) Ser.
Dorycnium rectum (L.) Ser.

Emerus majus Mill. s.l.
Emerus majus Mill. subsp. *emeroides* (Boiss. & Spruner) Soldano & F. Conti
Galega officinalis L.
Hymenocarpos circinnatus (L.) Savi
Lathyrus aphaca L. subsp. *aphaca*
Lathyrus clymenum L.
Lathyrus latifolius L.
Lathyrus nissolia L.
Lathyrus pratensis L. s.l.
Lathyrus venetus (Mill.) Wohlf.
Lotus angustissimus L.
Lotus corniculatus L. s.l.
Lotus ornithopodioides L.
Lotus tenuis Waldst. & Kit. ex Willd.
Lupinus angustifolius L.
Lupinus graecus Boiss. & Spruner
Medicago arabica (L.) Huds.
Medicago falcata L. subsp. *falcata*
Medicago italica (Mill.) Grande
Medicago littoralis Loisel.
Medicago lupulina L.
Medicago marina L.
Medicago minima (L.) L.
Medicago murex Willd.
Medicago orbicularis (L.) Bartal.
Medicago polymorpha L.
Medicago rigidula (L.) All.
Medicago sativa L.
Medicago truncatula Gaertn.
Melilotus albus Medik.
Melilotus altissimus Thuill.
Melilotus indicus (L.) All.

Melilotus neapolitanus Ten.
Melilotus sulcatus Desf.
Ononis diffusa Ten.
Ononis reclinata L.
Ononis variegata L.
Ornithopus compressus L.
Ornithopus pinnatus (Mill.) Druce
Scorpiurus muricatus L.
Securigera securidaca (L.) Degen & Dörf.
Spartium junceum L.
Sulla coronaria (L.) Medik.
Tetragonolobus purpureus Moench
Trifolium angustifolium L. subsp. *angustifolium*
Trifolium arvense L. s.l.
Trifolium campestre Schreb.
Trifolium cherleri L.
Trifolium echinatum M. Bieb.
Trifolium fragiferum L. subsp. *fragiferum*
Trifolium glomeratum L.
Trifolium incarnatum L. s.l.
Trifolium incarnatum L. subsp. *incarnatum*
Trifolium incarnatum L. subsp. *molinerii* (Hornem.) Ces.
Trifolium lappaceum L.
Trifolium ligusticum Loisel.
Trifolium micranthum Viv.
Trifolium nigrescens Viv. s.l.
Trifolium pallidum Waldst. & Kit.
Trifolium pratense L. s.l.
Trifolium repens L. s.l.
Trifolium resupinatum L.

Trifolium scabrum L. subsp. *scabrum*
Trifolium stellatum L.
Trifolium strictum L.
Trifolium subterraneum L. s.l.
Trifolium suffocatum L.
Trifolium vesiculosum Savi
Vicia bithynica (L.) L.
Vicia hirsuta (L.) Gray
Vicia hybrida L.
Vicia lutea L.
Vicia parviflora Cav.
Vicia pseudocracca Bertol.
Vicia sativa L. s.l.
Vicia sativa L. subsp. *nigra* (L.) Ehrh.
Vicia villosa Roth subsp. *varia* (Host) Corb.

FAGACEAE

Quercus cerris L.
Quercus frainetto Ten.
Quercus ilex L. subsp. *ilex*
Quercus petraea (Matt.) Liebl. subsp. *petraea*
Quercus pubescens Willd. subsp. *pubescens*
Quercus robur L. s.l.
Quercus suber L.

GENTIANACEAE

Blackstonia perfoliata (L.) Huds. s.l.
Cicendia filiformis (L.) Delarbre

Centaurium erythraea Rafn s.l.
Centaurium maritimum (L.) Fritsch

GERANIACEAE

Erodium ciconium (L.) L'Hér.
Erodium cicutarium (L.) L'Hér.
Erodium laciniatum (Cav.) Willd. subsp. *laciniatum*
Erodium malacoides (L.) L'Hér. subsp. *malacoides*
Geranium columbinum L.
Geranium dissectum L.
Geranium lucidum L.
Geranium molle L.
Geranium purpureum Vill.
Geranium robertianum L.
Geranium rotundifolium L.

HALORAGACEAE

Myriophyllum alterniflorum DC.

HYPERICACEAE

Hypericum australe Ten.
Hypericum perforatum L.
Hypericum perforatum L.

IRIDACEAE

Iris foetidissima L.
Iris pseudacorus L.

Romulea rollii Parl.

ISOETACEAE

Isoetes histrix Bory

JUNCACEAE

Juncus acutus L. subsp. *acutus*
Juncus articulatus L.
Juncus bufonius L.
Juncus capitatus Weigel
Juncus conglomeratus L.
Juncus effusus L. subsp. *effusus*
Juncus heterophyllus Desf.
Juncus hybridus Brot.
Juncus inflexus L.
Juncus pygmaeus Rich. ex Thuill.
Juncus tenageja Ehrh.
Luzula campestris (L.) DC.
Luzula forsteri (Sm.) DC.
Luzula multiflora (Ehrh.) Lej.

LAMIACEAE

Ajuga reptans L.
Calamintha ascendens Jord.
Calamintha nepeta (L.) Savi s.l.
Calamintha nepeta (L.) Savi subsp. *sylvatica* (Bromf.) R. Morales
Clinopodium vulgare L. s.l.
Lamium bifidum Cirillo s.l.
Lamium maculatum L.
Lamium purpureum L.

Lycopus europaeus L. s.l.
Melissa officinalis L. subsp. *altissima* (Sm.)
Arcang.
Melissa officinalis L. subsp. *officinalis*
Mentha aquatica L. subsp. *aquatica*
Mentha pulegium L. subsp. *pulegium*
Mentha suaveolens Ehrh. s.l.
Prasium majus L.
Prunella laciniata (L.) L.
Prunella vulgaris L. subsp. *vulgaris*
Rosmarinus officinalis L.
Salvia verbenaca L.
Salvia virgata Jacq.
Sideritis romana L. subsp. *romana*
Stachys ocymastrum (L.) Briq.
Stachys officinalis (L.) Trevis.
Stachys sylvatica L.
Teucrium capitatum L. subsp. *capitatum*
Teucrium chamaedrys L. s.l.
Teucrium flavum L. s.l.
Teucrium polium L. subsp. *polium*
Teucrium scordium L. s.l.

LAURACEAE

Laurus nobilis L.

LINACEAE

Linum bienne Mill.
Linum maritimum L. s.l.
Linum strictum L. s.l.

Linum strictum L. subsp. *spicatum* (Pers.)
Nyman
Linum strictum L. subsp. *strictum*
Linum trigynum L.
Radiola linoides Roth

LYTHRACEAE

Lythrum hyssopifolia L.
Lythrum salicaria L.
Peplis portula L.

MALVACEAE

Althaea hirsuta L.
Malope malacoides L.
Malva sylvestris L. subsp. *sylvestris*

MONTIACEAE

Montia fontana L. s.l.
MORACEAE

Ficus carica L.

MYRTACEAE

Myrtus communis L. s.l.
OLEACEAE

Fraxinus angustifolia Vahl subsp.
oxycarpa (Willd.) Franco & Rocha Afonso
Fraxinus ornus L. subsp. *ornus*

Ligustrum vulgare L.
Phillyrea angustifolia L.
Phillyrea latifolia L.

ONAGRACEAE

Epilobium hirsutum L.

ORCHIDACEAE

Cephalanthera longifolia (L.) Fritsch
Limodorum abortivum (L.) Sw.
Orchis papilionacea L.
Serapias parviflora Parl.
OROBANCHACEAE

Bartsia trixago L.
Odontites luteus (L.) Clairv.
Odontites vulgaris Moench s.l.
Orobanche hederarum Duby
Orobanche minor Sm.
Parentucellia latifolia (L.) Caruel
Parentucellia viscosa (L.) Caruel

PAPAVERACEAE

Chelidonium majus L.
Fumaria capreolata L. subsp. *capreolata*
Papaver rhoeas L. subsp. *rhoeas*

PINACEAE

Pinus halepensis Mill.

Pinus pinaster Aiton s.l.
Pinus pinea L.

PLANTAGINACEAE

Callitriche obtusangula Le Gall
Callitriche stagnalis Scop.
Callitriche truncata Guss. s.l.
Linaria pelisseriana (L.) Mill.
Linaria triphylla (L.) Mill.
Linaria vulgaris Mill. subsp. *vulgaris*
Plantago afra L. s.l.
Plantago bellardii All.
Plantago coronopus L. subsp. *coronopus*
Plantago lagopus L.
Plantago lanceolata L.
Plantago macrorrhiza Poir.
Plantago major L. s.l.
Veronica arvensis L.
Veronica beccabunga L.
Veronica cymbalaria Bodard s.l.
Veronica hederifolia L. s.l.
Veronica persica Poir.
Veronica polita Fr.
Veronica scutellata L.
Veronica serpyllifolia L. s.l.

POACEAE

Achnatherum bromoides (L.) P. Beauv.
Agrostis canina L. s.l.
Agrostis stolonifera L.
Aira caryophyllea L. s.l.

Aira cupaniana Guss.
Aira elegantissima Schur
Alopecurus myosuroides Huds.
Ammophila arenaria (L.) Link subsp. *australis* (Mabille) Lainz
Anthoxanthum odoratum L. s.l.
Avena barbata Pott ex Link
Avena sterilis L. s.l.
Beckmannia eruciformis (L.) Host
Bothriochloa ischaemum (L.) Keng
Brachypodium rupestre (Host) Roem. & Schult.
Brachypodium sylvaticum (Huds.) P. Beauv. s.l.
Briza maxima L.
Briza minor L.
Bromus diandrus Roth s.l.
Bromus diandrus Roth subsp. *maximus* (Desf.) Soó
Bromus erectus Huds. s.l.
Bromus hordeaceus L. s.l.
Bromus madritensis L.
Bromus rubens L.
Bromus sterilis L.
Calamagrostis epigejos (L.) Roth
Catapodium rigidum (L.) C.E. Hubb. ex Dony s.l.
Corynephorus articulatus (Desf.) P. Beauv.
Corynephorus divaricatus (Pourr.) Breistr.
Cutandia maritima (L.) Barbey
Cynodon dactylon (L.) Pers.
Cynosurus cristatus L.

Cynosurus echinatus L.
Dactylis glomerata L. s.l.
Dactylis glomerata L. subsp. *glomerata*
Dactylis glomerata L. subsp. *hispanica* (Roth) Nyman
Danthonia decumbens (L.) DC. subsp. *decumbens*
Dasyphyrum villosum (L.) P. Candargy, non Borbás
Deschampsia cespitosa (L.) P. Beauv. s.l.
Echinochloa crus-galli (L.) P. Beauv.
Eleusine indica (L.) Gaertn. s.l.
Elymus athericus (Link) Kerguelen
Elymus farctus (Viv.) Runemark ex Melderis subsp. *farctus*
Elymus repens (L.) Gould. subsp. *repens*
Erianthus ravennae (L.) P. Beauv.
Festuca arundinacea Schreb. s.l.
Festuca heterophylla Lam.
Gastridium ventricosum (Gouan) Schinz & Thell.
Gaudinia fragilis (L.) P. Beauv.
Glyceria notata Chevall.
Hainardia cylindrica (Willd.) Greuter
Holcus lanatus L.
Hordeum bulbosum L.
Hordeum murinum L. subsp. *leporinum* (Link) Arcang.
Imperata cylindrica (L.) P. Beauv.
Lagurus ova tus L. s.l.
Lolium multiflorum Lam. s.l.
Lolium multiflorum Lam. subsp. *gaudini* (Parl.) Schinz & Thell.

Lolium multiflorum Lam. subsp.
multiflorum
Lolium perenne L.
Melica uniflora Retz.
Phalaris brachystachys Link
Phleum arenarium L. subsp. *caesium* H.
Scholz
Phleum pratense L.
Phleum subulatum (Savi) Asch. &
Graebn.
Phragmites australis (Cav.) Trin. ex Steud.
s.l.
Piptatherum miliaceum (L.) Coss. s.l.
Poa annua L.
Poa bulbosa L.
Poa pratensis L.
Poa sylvicola Guss.
Poa trivialis L.
Psilurus incurvus (Gouan) Schinz & Thell.
Rostraria cristata (L.) Tzevelev s.l.
Rostraria litorea (All.) Holub
Sporobolus virginicus Kunth
Trachynia distachya (L.) Link
Trisetaria panicea (Lam.) Maire
Triticum aestivum L.
Triticum ovatum (L.) Raspail
Vulpia alopecuros (Schousb.) Dumort.
Vulpia ciliata Dumort.
Vulpia fasciculata (Forssk.) Fritsch
Vulpia ligustica (All.) Link
Vulpia myuros (L.) C.C. Gmel.

POLYGALACEAE

Polygala monspeliaca L.

POLYGONACEAE

Persicaria hydropiper (L.) Delarbre
Polygonum arenastrum Boreau subsp.
arenastrum
Polygonum aviculare L. s.l.
Rumex acetosa L. subsp. *acetosa*
Rumex acetosella L. s.l.
Rumex bucephalophorus L. s.l.
Rumex conglomeratus Murray
Rumex crispus L.
Rumex obtusifolius L. s.l.
Rumex pulcher L. s.l.
Rumex sanguineus L.

POLYPODIACEAE

Polypodium cambricum L.

PORTULACACEAE

Portulaca oleracea L. s.l.

POTAMOGETONACEAE

Potamogeton crispus L.
Potamogeton natans L.
Zannichellia palustris L. s.l.

PRIMULACEAE

Anagallis arvensis L. s.l.
Anagallis arvensis L. subsp. *arvensis*
Anagallis arvensis L. subsp. *parviflora*
(Hoffmanns. & Link) Arcang.
Cyclamen hederifolium Aiton s.l.
Cyclamen repandum Sm. subsp.
repandum
Samolus valerandi L.

PTERIDACEAE

Anogramma leptophylla (L.) Link

RANUNCULACEAE

Anemone apennina L. subsp. *apennina*
Clematis flammula L.
Clematis vitalba L.
Delphinium halteratum Sm. subsp.
halteratum
Nigella damascena L.
Ranunculus aquatilis L.
Ranunculus bulbosus L.
Ranunculus ficaria L. s.l.
Ranunculus lanuginosus L.
Ranunculus muricatus L.
Ranunculus ophioglossifolius Vill.
Ranunculus repens L.
Ranunculus sardous Crantz s.l.
Ranunculus sceleratus L.
Ranunculus trichophyllus Chaix s.l.
Ranunculus velutinus Ten.

RESEDACEAE

Reseda lutea L. subsp. *lutea*

RHAMNACEAE

Paliurus spina-christi Mill.
Rhamnus alaternus L. subsp. *alaternus*
Rhamnus cathartica L.

ROSACEAE

Agrimonia eupatoria L. s.l.
Aphanes arvensis L.
Aphanes inexpectata Lippert
Crataegus laevigata (Poir.) DC.
Crataegus monogyna Jacq.
Geum urbanum L.
Malus sylvestris (L.) Mill.
Mespilus germanica L.
Potentilla hirta L.
Potentilla reptans L.
Prunus spinosa L. subsp. *spinosa*
Pyrus spinosa Forssk.
Rosa gallica L.
Rosa sempervirens L.
Rubus caesius L.
Rubus hirtus Waldst. & Kit.
Rubus ulmifolius Schott
Sanguisorba minor Scop. s.l.
Sanguisorba minor Scop. subsp.
balearica (Bourq. Ex Nyman) Muñoz
Garm. & C. Navarro

Sorbus domestica L.

RUBIACEAE

Asperula laevigata L.
Crucianella maritima L.
Cruciata laevipes Opiz
Galium aparine L.
Galium debile Desv.
Galium divaricatum Lam.
Galium mollugo L. subsp. *erectum* Syme
Galium murale (L.) All.
Galium palustre L. subsp. *elongatum* (C.
Presl) Lange
Galium verum L. s.l.
Rubia peregrina L. s.l.
Sherardia arvensis L.
SALICACEAE

Populus alba L.
Populus canescens (Aiton) Sm.
Salix alba L.

SANTALACEAE

Osyris alba L.

SAPINDACEAE

Acer campestre L.
Acer monspessulanum L. subsp.
monspessulanum

SCROPHULARIACEAE

Scrophularia auriculata L. subsp.
auriculata
Verbascum blattaria L.
Verbascum densiflorum Bertol.
Verbascum samniticum Ten.
Verbascum sinuatum L.
Verbascum thapsus L. s.l.

SMILACACEAE

Smilax aspera L.

SOLANACEAE

Solanum nigrum L.

THYMELAEACEAE

Daphne gnidium L.
Daphne sericea Vahl

TYPHACEAE

Sparganium erectum L. s.l.
Typha angustifolia L.
Typha latifolia L.

ULMACEAE

Ulmus minor Mill. s.l.

URTICACEAE

Parietaria judaica L.
Urtica dioica L. subsp. dioica
Urtica membranacea Poir. ex Savigny
Urtica urens L.

VERBENACEAE

Verbena officinalis L.

VIOLACEAE

Viola alba Besser subsp. dehnhardtii
(Ten.) W. Becker
Viola reichenbachiana Jord. ex Boreau
Viola suavis M. Bieb. subsp. Suavis

VITACEAE

Vitis vinifera L. s.l.

Vitis vinifera L. subsp. sylvestris (C.C.
Gmel.) Hegi

XANTHORRHOEACEAE

Asphodelus macrocarpus Parl. subsp.
Macrocarpus
Asphodelus ramosus L. subsp. ramosus

SYNTAXONOMY

CAKILETEA MARITIMAE Tx. et Preising ex Br.-Bl. et Tx. 1952

Euphorbietalia pepilis Tx. 1950

Euphorbion pepilis Tx. 1950

Cakiletum maritimae Pign. 1953

AMMOPHILETEA Br.-Bl. et Tx. ex Westhoff, Dijk et Passchier 1946

Ammophiletalia australis Br.-Bl. (1931) 1933 em. J.-M. et J.Géhu 1988

Ammophilion australis Br.-Bl. (1931) 1932 em. J.M. et J.Géhu 1988

Sporobolo-Elymetum farcti [(Br.-Bl. 1933) Géhu, Riv. Mart., Tx. 1972])
Géhu 1984

Ammophiletum arundinaceae Br.-Bl. (1921) 1933

Helichryso stoechadis-Crucianelletalia maritimae (Sissingh 1974) Géhu, Riv.
Mart., Tx. in Géhu 1975

Crucianellion maritimae Rivas Goday et Riv. Mart. 1963

Crucianellietum maritimae Br.-Bl. (1921) 1933

Popolamenti a Ononis variegata

LEMNETEA de Bolos et Masclans 1955

Lemnetalia minoris Tx. 1955

Lemnion minoris Tx. 1955

Lemnetum minoris Soò 1947

Lemnetum gibbae (W. Koch 1954) Miyaw. et J. Tx. 1960 em. Scoppola 1982

POTAMETEA Klika in Klika et Novak 1941

Callitricho-Potametalia Schipper, Lanjouw et Schaminée in Schaminée et al. 1995

Ranunculion peltati Schaminée, Lanjouw et Schipper 1990

Aggruppamento a *Callitriche* sp.pl. e *Ranunculus aquatilis*

Nupharo-Potametalia Schaminée, Lanjouw et Schipper 1990

Parvopotamion (Vollmar 1947) Den Hartog et Segal 1967

Aggruppamento a *Potamogeton crispus*

Comunità a *Myriophyllum alterniflorum* e *Potamogeton natans*

Zannichellietum palustris (Baumann 1911) G.Lang 1967

ISOËTO-NANOJUNCETEA Br.-Bl. et Tx. ex Westhoff, Dijk et Passchier 1946

Nanocyperetalia Klika 1935

Isoetion Br.-Bl. 1931

Radiolo-Isoetetum histicris Chevassut et Quézel 1956

Nanocyperion flavescens Koch 1926

Comunità a *Ranunculus ophioglossifolius* e *Callitriche truncata*

PHRAGMITO-MAGNOCARICETEA Klika in Klika et Novak 1941

Nasturtio-Glyceretalia Pign. 1953 em. Kopecky in Kopecky et Hejny 1965

Sparganio-Glycerion fluitantis Br.-Bl. et Sissingh in Boer 1942 nom.inv.
Oberd. 1957

Glycerietum plicatae Kulcz. 1920 em. Oberd. 1954

Sparganietum erecti Roll 1938

Phragmitetalia Koch 1926

Phragmition australis Koch 1926

- Phragmitetum australis** (Allorge 1921) Pign. 1953
Typhetum latifoliae (Soo 1927) Lang 1973
Magnocaricetalia Pign. 1954
Magnocaricion elatae Koch 1926 em. Neuhäusl 1957
Caricetum ripariae Knapp et Stoffers 1962
Caricetum elatae Koch 1926
- BIDENTETEA TRIPARTITI** Tx., Lohm. et Preising ex von Rochow 1951
Bidentetalia tripartitate Br.-Bl. et Tx. ex Klika et Hadac 1944
Bidention tripartitae Nordhagen 1940 em. Tx. in Poli et J. Tx. 1960
Bidenti-Polygonetum hydropiperis (W. Koch 1926) Lohm. 1950
- MOLINIO-ARRHENATHERETEA** Tx. 1937
Holoschoenetalia Br.-Bl. (1931) 1947
Molinio-Holoschoenion Br.-Bl. 1947
Comunità a Juncus inflexus e Scirpus holoschoenus
Popolamenti a Calamagrostis epigejos
Associazione a Juncus depauperatus
Eriantho ravennae-Schoenetum nigricantis (Pign. 1953) Géhu 1984
Agrostietalia stoloniferae (Oberd. 1967) Tx. 1975
Paspalo-Agrostidion semiverticillatae Br.-Bl. 1952
Paspalo-Agrostidetum Br.-Bl. 1936
Agropyro-Rumicion crispi Nordh. 1940 em. Tx. 1950
Ranunculetum repentis Knapp 1946
Popolamenti a Holcus lanatus
Aggruppamento a Carex otrubae
- THERO-BRACHYPODIETEA** Br.-Bl. 1931 em. Fanelli et Lucchese 1998
Brometalia rubenti-tectorum Riv. Mart. et Izco 1977
Echio-Galactition de Bolos et Molinier 1969
Vulpio-Dasypyretum villosi Fanelli 1998
Laguro-Dasypyretum villosi Fanelli 1998
Comunità a Vulpia ligustica
Aggruppamento ad Asphodelus aestivus
Aggruppamento ad Aegilops geniculata
- HELIANTHEMETEA GUTTATI** Br.-Bl. 1940
Helianthemetalia guttati Br.-Bl. 1940 em. Riv. Mart. 1978
Helianthemion guttati Br.-Bl. 1940
Moenchio-Tuberarietum guttatae Lucchese et Pignatti 1987
Trifolio resupinati-Caricetum chaetophyllae Riv. Mart. et Costa
 in Riv. Mart., Costa, Castroviejo et Valdes 1980
Sileno coloratae-Vulpietum membranaceae (Pign. 1953) Géhu et
 Scoppola 1984
- STELLARIETEA MEDIAE** Tx., Lohm. et Preising ex von Rochow 1951
Sisymbretalia J.Tx. ex Görs 1966
Hordeion leporini Br.-Bl. 1947
Hordeetum leporini Br.-Bl. 1952
Chenopodietalia muralis Br.-Bl. 1931
Chenopodion muralis Br.-Bl. 1931
Conyzetum albido-canadensis Biondi et Baldoni 1993
Centaureetalia cyani Tx., Lohm. et Preising in Tx. 1950

Roemerion hybridae Riv. Mart., Fern.-Gonz. et Loidi 1998
Popolamenti ad *Anthemis arvensis*

PARIETARIEEA JUDAICAE (Riv.Mart.1955) Oberd. 1977

Parietarietalia judaicae Riv. Mart. 1969 corr. Oberd. 1977
Centrantho-Parietarium judaicae Riv. Mart. (1960) 1969
Parietarium judaicae (Arènes 1928) Oberd. 1977
Parietario-Cymbalarietum muralis Pign. 1953
Umbilicetum rupestris-neglecti Riv. Mart. et al. 1980

ADIANTEEA Br.-Bl. 1947

Adiantetalia capilli-veneris Br.-Bl. ex Horvatic 1939
Adiantion capilli-veneris Br.-Bl. ex Horvatic 1939
Conocephalo conici-Adiantetum Caneva et al. 1995

POLYGONO ARENASTRI-POETEA ANNUAE Riv. Mart. 1975 corr. Riv. Mart. et al. 1991

Polygono arenastri-Poetalia annuae Tx. in Géhu et al.1972 corr. Riv. Mart. et al. 1991
Polygonion avicularis Br.-Bl. 1931 ex Aich. 1933
Lolio-Polygonetum arenastri Br.-Bl. 1930 em. Lohm. 1975
Lolio-Plantagnetum majoris Begger 1930
Polycarpion tetraphylli Riv. Mart. 1975
Bryo-Saginetum apetalae Blasi et Pign. 1984 ex Bianco, Fanelli et Tescarollo 2001
Eleusinatum indicae Pign. 1953
Conyzo albidae-Trisetarietum paniceae Pirone et Ferretti (1999)

ARTEMISIEEA VULGARIS Lohm., Preising et Tx. ex von Rochow 1951

Onopordetalia acanthii Br.-Bl. et Tx. ex Klika et Hadac 1944
Dauco-Mellilotion Görs 1966
Dauco-Picridetum hieracioidis Görs 1966

GALIO-URTICEEA Passarge ex Kopecky 1969

Lamio albi-Chenopodietalia boni-henrici Kopecky 1969
Arction lappae (Tx. 1937) 1947
Galio aparines-Conietum maculati Riv. Mart. ex G. Lopez 1978
Convolvuletalia sepium Tx. 1950 em. Mucina 1993
Convolvulion sepium (Tx. 1947) Th. Müll. 1969
Comunità ad *Urtica dioica*
Popolamenti a *Pteridium aquilinum*

CISTO-LAVANDULETEEA Br.-Bl. in Br.-Bl., Molinier et Wagner 1940

Lavanduletalia stoechadis Br.-Bl. 1940 em. Riv.Mart. 1968
Cistion ladaniferi Br.-Bl. 1940
Garighe a *Cistus salvifolius*

ROSMARINETEA OFFICINALIS Riv-Mart. et al. 1991

Rosmarinetalia officinalis Br.-Bl. ex Molinier 1934
Rosmarinion officinalis Br.-Bl. ex Molinier 1934
Helichryso stoechadis-Cistetum eriocephali Biondi 1999
Erico-Rosmarinetum Horvatic 1958

QUERCETEA ILICIS Br.-Bl. ex de Bolos y Vayreda 1950

Pistacio lentisci-Rhamnetalia Riv. Mart. 1975
Oleo-Ceratonion Br.-Bl. ex Guinochet et Drouineau 1944 em. Riv. Mart. 1975
Asparago acutifolii-Juniperetum macrocarpae (R. Molinier 1955) de Bolos 1962
Quercetalia ilicis Br.-Bl. ex Molinier 1934 em. Riv. Mart. 1975
Quercion ilicis Br.-Bl. ex Molinier 1934 em. Riv. Mart. 1975
Viburno-Quercetum ilicis (Br.-Bl. 36) Riv. Mart. 1975
 - *suberetosum* Br.-Bl. 1936
 - *ericetosum* Molinier 1937

QUERCO-FAGETEA Br.-Bl. et Vlieger in Vlieger 1937

Prunetalia spinosae Tx. 1952
Pruno-Rubion ulmifolii de Bolos 1954
Pruno-Crataegetum Hueck 1931
Quercetalia pubescentis Br.-Bl. 1931
Quercion frainetto Horvat 1954
Echinopo siculi-Quercetum frainetto Blasi et Paura 1993
Fagetalia sylvaticae Pawloski in Pawloski, Sokolowski et Wallich 1928
Carpinion betuli Issler 1931
Lauro-Carpinetum betuli Lucchese et Pignatti, 1990
Ornithogalo pyrenaici-Carpinetum Marineck et al. 1982
Querco-Ulmetum Issler 1924
Alnion incanae Pawlowski in Pawlowski et al. 1928
Carici remotae-Fraxinetum Koch ex Faber 1936
Populetales albae Br.-Bl. 1931
Populion albae Br.-Bl. 1931
Populetales albae Tchou Yen-Cheng 1949

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