F6.1b Western acidopholous garrigue

Summary

Western acidic garrigue comprises pioneer scrub vegetation dominated by xerophytic dwarf shrubs and herbs established between fallow periods or after abandonment in the traditional agricultural landscapes of the western Mediterranean. It occurs on thin, often eroded, acid humic soils derived from siliceous bedrocks or on dune sands and the associated vegetation is very diverse according to the regional climate and terrain. As the habitat is seral, its persistence depends on the maintenance of disturbance by fire, grazing and periodic fallow and it is threatened by lack of fire, agricultural improvement and permanent abandonment.

Synthesis

The habitat is assessed as Least Concern (LC) based on available territorial data. The habitat has not a small range and has not suffered any historical reduction in quality or quantity. A stable condition and no important threats are expected in the future. This is in consistency with the habitat's pioneer nature, common in former agricultural land after abandonment.

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Least Concern	-	Least Concern	-

Sub-habitat types that may require further examination

Although various sub-habitats (either based on biogeographical or ecological criteria, such as substratum, bioclimate, etc.) might be recognized along the distribution range of the habitat, its pioneer character and its high resilience rate does not require the implementation of conservation measures or any more detailed Red List assessment. Nevertheless, for typological purposes, or for the characterization of the studied territories, subtypes should be identified.

Habitat Type

Code and name

F6.1b Western acidopholous garrigue

Early stage of *Cistus ladanifer*-dominated scrub, as substitution stage of holm-oak forest in Alentejo, Portugal (Photo: S. Mesquita)

Acidic garrigue of the alliance *Teucrion mari* in Corsica (Photo: K. O'Deye-Guizie).

Habitat description

Xerophytic shrub communities of Mediterranean nano-phanerophytes with rolled or densely hairy leaves, rich in aromatic compoundsdominated by *Cistaceae*, *Labiatae* and sometimes by spiny brooms (*Genista* spp.) that are always seral stages of forests or high-scrubs (mostly *Quercetea ilicis*); distributed from the thermo- to the lower supra- mediterranean vegetation belts with semi-arid to subhumid bioclimatic conditions, always in acidic, silicate-derived soils, excluding ultramafic substrata with alkaline reaction. These communities occur on shallow, frequently eroded soils with very acidic raw organic matter (mor type humus) throughout the Western Mediterranean subregion. Their range has been expanded due to human disturbances, namely the destruction of woodlands, and subsequent burning, grazing and agriculture. After abandonment of agricultural fields, after burning or after management of forest landscapes in Mediterranean bioclimates these communities act primarily as pioneer woody vegetation, being composed mostly of R-strategists, partly summer-deciduous seeder shrubs, which are also radiation-prone (heliophilous). As long as the disturbance regimes are kept (fire, tilling) shrub encroachment might occur and successional processes halt at the garrigue stage for a long time; hence the garrigues may have a quasi-permanent character. Garrigues are characterized by high *taxa* diversity and also a great bio-coenotical and biogeographical differentiation, harboring many endemics. There are two main groups of communities following the nature of the substratum: those on hard silicate (*Lavanduletalia stoechadis*) rocks and those on loose-sand dunes and palaeodunes (*Stauracantho-Halimietalia commutati*). Several subtypes (alliances) may be recognized according to biogeography in the span of western Mediterranean region of Europe:

1. *Cistion ladaniferi*: garrigues of *Cistus* spp. and *Lavandula stoechas* at the thermo- to the supra-mediterranenan oceanic bioclimatic belts distributed to the north-central-Levantine Iberia, south coast of France, up to Italy to the coast of Liguria.

2. *Cistion laurifolii*: garrigues dominated by *Cistus laurifolius* and *Lavandula pedunculata* s.l. at the meso- to supra-mediterranean semi-continental bioclimatic belts distributed to west-central Iberian..

3. *Ulici argentei-Cistion ladaniferi*: garrigues dominated by *Cistus ladanifer* and *C. monspeliensis* and co-dominated by *Lavandula sampaioana* (various subsp.), *L. luisieri, Genista hirsuta, Ulex borgiae, U.eriocladus, U. argenteus* distributed to central south-western Iberian (luso-estremadurensian and betic provinces).

4. Calicotomo villosae-Genistion tyrrhenae: Italo-Thyrrenean garrigues on volcanic substrata at the thermos-mediterranean belt, dominated by *Genista tyrrhena, G. cilentina, Erica multiflora, Cistus spp.., Calicotome villosa, Ampelodesmos mauritanica*.

5. Teucrion mari: garrigues dominated by *Teucrium marum, Stachys glutinosa, Cistus creticus, Phagnalon rupestre subsp. annoticum, Helychrysum italicum subsp. microphyllum, Genista corsica, G. sardoa, G. ephedroides, G. sulcitana, Santolina insularis, Euphorbia cupanii* at the meso- to thermos-mediterranean belts of Sardinia and Corsica.

6. *Coremation albi*: endemic-rich garrigues communities dominated by *Stauracanthus genistoides* (= *S. lusitanicus*), *S. spectabilis, Halimium halimifolium, H. calycinum, Ulex australis* subsp. *australis* and U. *australis* subsp*. welwitschianus, U. argenteus* subsp. *subsericeus, Thymus camphoratus, Thymus capitellatus, Thymus albicans* subsp*. donyanae* on consolidated dunes and palaeodunes distributed from the Portuguese coasts to the coasts of Andalusia. This subtype is characterized by the following genera with endemic species: *Armeria, Dianthus, Thymus, Avenula* and *Sideritis* (see flora).

Note on the circumscription of the habitat

Due to vagueness and broadness of the historical ‘garrigue’ concept, the circumscription of the habitat F6.1b should become more precise. Thus, we circumscribe the habitat F6.1b to contain typical nano-

phaneropytic (dwarf scrub) garrigues, seral of forests, on acidic silicate-derived soils, excluding chamaephytic mountain vegetation and sea-cliff vegetation. Taking Mucina *et al.* [EuroVegChecklist] (ined.) as syntaxonomic reference, the habitat includes the major part of the *Cisto-Lavanduletea stoechadis* vegetation class; hence, the following units or *syntaxa* with physiognomic and ecological affinities to *Cisto-Lavanduletea* are excluded: chamaephytic cushion scrub vegetation of Corsica Sardinia and Sicily occurring at the upper supra- to mountain- and oro- mediterranean belts assigned to *Carici-Genistetea lobelii* and *Rumici-Astragaletea siculi* - only on Mount Etna) is excluded (F7.4b); *Armerio sardoae- Genistion salzmanii* is excluded (considered *Carici-Genistetea lobelii*); tall-broom (*Genistetea*) communities seral of forests are excluded (F3.1c *Cytisetea scopario-striati*); xerophytic cushion chamaephytic scrub under the influence of salty wind is excluded (F7.1-2 or B3.1-3b: *Helichrysetalia italici*, *Crithmo-Staticetea* or *Rosmarinetea*); *Staehlino-Ulicion baetici* is excluded due to ultramafic siliceous alkaline substrata (F6.1a *Rosmarinetea officinalis*); *Teucrion mari* and *Calicotomo villosae-Genistion tyrrhenae* are considered separate alliances and are included in F6.1b; any type of vegetation of F5.1/2 (*Pistacio-Rhamnetalia alaterni*, *Quercetea ilicis*), namely *Quercion fruticosae* is excluded. All *Cisto-Micromerietea* vegetation from the Eastern Mediterranean subregion is excluded, due to strict biogeographic circumscription of the habitat to the Western Mediterranean ; thus, only territories west of Italy, including the Thyrrenian coast, Sicily, Corsica, Sardinia, Malta and the Baleares are included (the Adriatic coasts of Italy and territories eastwards are not included). All heathland habitats (F4.2) are excluded. *Erica multiflora* communities on limestone, even if decarbonated are excluded (*Cisto eriocephali-Ericion multiflorae*, *Cisto-Micromerietea* or *Rosmarino-Ericion multiflorae*, *Rosmarinetea*). Those communities including *E. multiflora* on substrata other than limestone are included. Semi- nitrogen or salt prone shrub vegetation is also excluded (F6.8a - *Pegano-Salsoletea* class).

Indicators of good quality:

As acidic garrigues are considered seral vegetation stages of woodlands, their maintenance in the landscape mosaic depends on the persistence of disturbance: cutting, fire, grazing and agricultural abandonment. Due to the pioneer character of this vegetation type, primary colonization stages after bare ground are species-poor basal communities lacking most specialized plants and poccessing less conservation value. Meta-stability of the garrigues stage for some time is necessary to reach coenotic saturation, i.e. defined by the presence of its full characteristic set of bio-indicators. Thus, as most garrigues follow plowing in managed forest-agricultural context, some patches are to be kept without disturbance for greater time. As much as more characteristic-indicator species are present, the greater the value of the communities.

In general, short periods between plowing should be avoided (< 15 years). In a greater time span, garrigues may be replaced by taller woody vegetation due to progressive ecological succession. The later should be taken on account when managing a landscape mosaic.

Characteristic species:

Due to the high number of species that the habitat contains as a whole, only the dominant taxa and taxa belonging to characteristic bioindicator sets at the alliance level are listed.

Vascular plants:

Calluna vulgaris subsp*. elegantissima, Cistus salviifolius, Cytinus hypocistis* subsp*. macranthus, Halimium viscosum, Orchis mascula* subsp*. olbiensis, Orchis champagneuxii, Orchis picta, Cistus crispus, Cistus ladanifer, Cistus monspeliensis, Cistus salvifolius, Cistus populifolius, Cytinus hypocistis* subsp*. hypocistis, Narcisssus concolor, Narcissus triandrus* subsp*. palidulus, Helichrysum serotinum, Thymus mastichina, Centaurea hanryi, Dianthus multiaffinis, Hypericum australe, Lavandula stoechas, Calicotome spinosa, Cytisus catalaunicus, Genista pillosa, Thymus vulgaris, Arctostaphylos uva-ursi* var*. crassifolia, Aster aragonensis, Cistus laurifolius, Lavandula pedunculata, Lotus corniculatus* subsp*. carpetanus, Thymus*

leptophyllus, Erophaca baetica (=Astragalus lusitanicus), Centaurea sagredoi, Centaurea tartesiana, Genista hirsute subsp*. hirsute, Lavandula stoechas* subsp*. luisieri, Lavandula sampaioana* subsp*. sampaiona, Lithodora prostrate* subsp*. lusitanica, Sideritis lacaitae, Sideritis marianica, Sideritis paulii, Thymelaea lythroides, Ulex argenteus, Ulex borgiae, Ulex eriocladus. Genista polyanthus, Thymus camphoratus* subsp*. congestus, Ulex airensis, Genista tyrrhena, Genista cilentina,Genista aspalathoides, Genista demarcoi, G. desoliana, Genista gasparrini, Teucrium marum, Stachys glutinosa, Helichrysum italicum* subsp*. microphyllum, Phagnalon rupestre* subsp*. annoticum, Genista Corsica, Genista sardoa, Genista ephedroides, Genista sulcitana, Santolina insularis, Euphorbia cupanii, Armeria macrophyll, Armeria pinifolia, Armeria rouyana, Armeria velutina, Cistus libanotis, Dianthus broteri* subsp*. hinoxianus, Fritillaria lusitanica* subsp*. stenophylla, Halimium calycinum, Halimium halimifolium* subsp*. halimifolium, Halimium halimifolium* subsp*. multiflorum, Halimium verticillatum, Iberis linifolia* subsp*.welwitschii, Lavandula sampaioana* subsp*. lusitanica, Stauracanthus genistoides, Stauracanthus spectabilis* subsp*. spectabilis, Stauracanthus genistoides* subsp*. vicentinus, Thymus albicans* subsp*. albicans, Thymus albicans* subsp*. donyanae, Thymus camphorates* subsp*. camphoratus, Thymus capitellatus, Ulex australis* subsp*. australis, Ulex australis* subsp*. welwitschianus, Ulex aregenteus* subsp*. subsericeus, Helichrisum picardii* var*. virescens, Avenula hackelli, Klasea algarviensis, Sideritis perezlarae.*

Classification

This habitat may be equivalent to, or broader than, or narrower than the habitats or ecosystems in the following typologies.

EUNIS

F6.1 Western garrigues

EuroVegChecklist

Cistion laurifolii

Ulici argentei-Cistion ladaniferi

Cistion ladaniferi

Calicotomo villosae-Genistion tyrrheneae

Teucrion mari

Coremation albi

Annex 1:

- (in dunes similar plant communities are included under 2260)

Emerald:

-

MAES-2:

Heathland and shrub

IUCN:

3.8 Mediterranean-type Shrubby Vegetation

Does the habitat type present an outstanding example of typical characteristics of one or more biogeographic regions?

Yes

Regions
Mediterranean

Justification
This type of vegetation is exclusive of the Western Mediterranean Subregion of the Mediterranean Region under Mediterranean macrobioclimate.

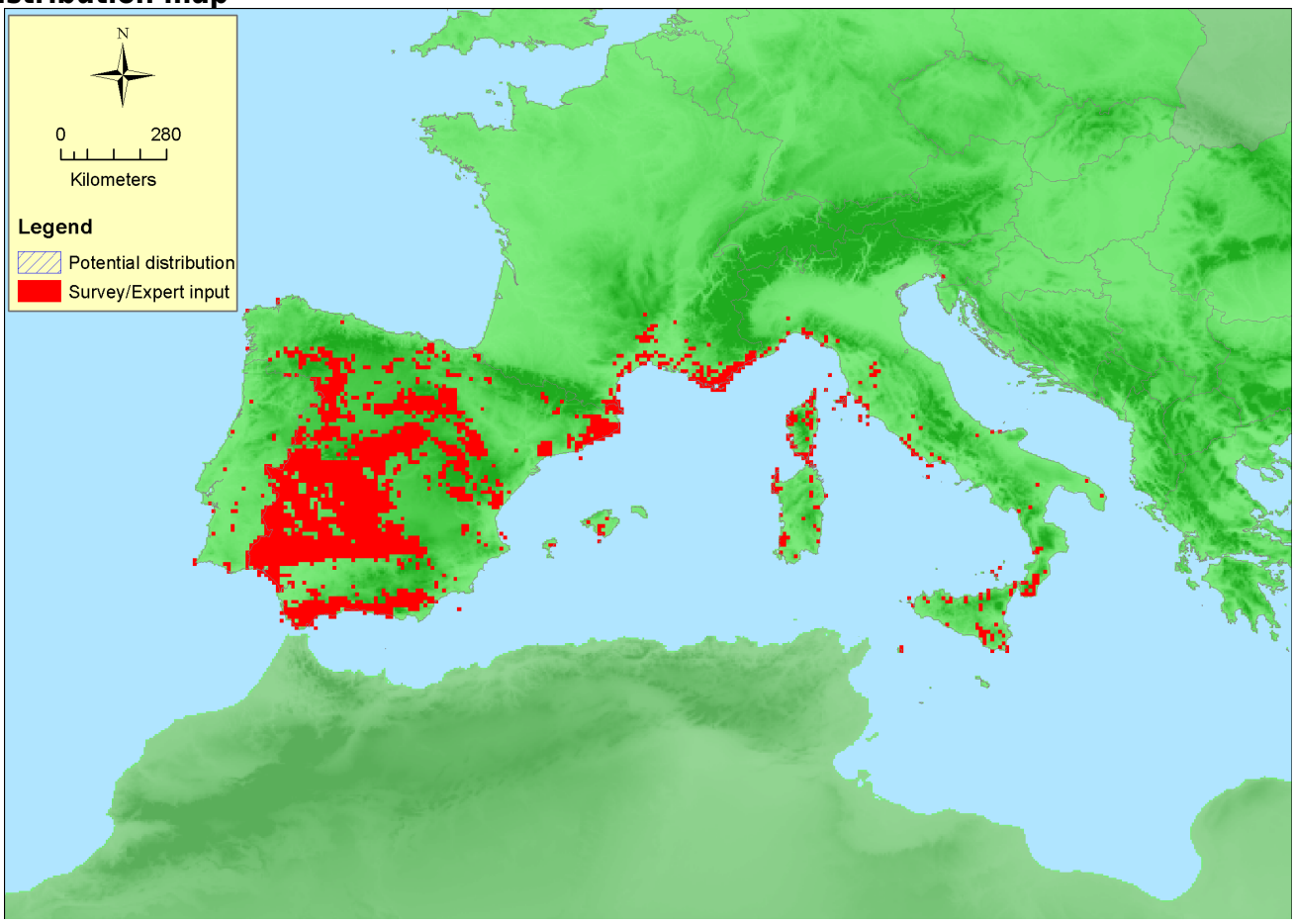
Geographic occurrence and trends

EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
France	Corsica: Present France mainland: Present	unknown Km^2	Unknown	Unknown
Italy	Italy mainland: Present Sardinia: Present Sicily: Present	473 Km^2	Stable	Decreasing
Portugal	Portugal mainland: Present	797 Km^2	Increasing	Unknown
Spain	Spain mainland: Present	8075 Km^2	Decreasing	Decreasing

Extent of Occurrence, Area of Occupancy and habitat area

	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
EU 28	2032900 Km^2	2319	9345 Km^2	
EU 28+	2032900 Km^2	2319	9345 Km^2	

Distribution map



The map is rather complete except for the distribution in Portugal. Data source: NAT, EVA.

How much of the current distribution of the habitat type lies within the EU 28?

The habitat is distributed in both European and North African areas of the Western Mediterranean subregion. In Europe, the habitat stretches from Portugal to the Thyreenean coast of Italy. Along the North African coast, its range is from the Tingitanian peninsula (Tanger, Morroco) in the west, includes the subcoastal areas of Algeria and Tunisia and reaches, in the east, the Cyrenaica peninsula in Lybia (Al Akhdar). We estimate that approximately 50% of the habitat is within the EU28 and the remaining 50% is in North Africa.

Trends in quantity

Portugal reports a great increase (+83%) in the 50-years' time span, due to the marginal agricultural land that remained fallow (EU CAP) in an extensive way to the country. By contrast, both Spain and Italy report slight decrease in the extent of the habitat, although the habitat in Spain is covering more extensive areas (estimated by territorial experts and not area calculated by data and information on the last 50 years period). Territorial data from France are unavailable. As a result, the average trend is -0,7% decrease, which means practically stable condition for the whole EU28 (and EU28+) distribution range of the habitat.

- Average current trend in quantity (extent)
  EU 28: Stable
  EU 28+: Stable
- Does the habitat type have a small natural range following regression?
  No
  Justification
  The habitat does not have a small range, since the EOO is >50.000 Km^2 and AOO is >> 50 grid cells (of 10x10 km^2).
- Does the habitat have a small natural range by reason of its intrinsically restricted area?
  No
  Justification
  The distribution range of the habitat is extensive throughout the whole Western Mediterranean subregion.

Trends in quality

Using available territorial data, the % extent of degradation (with slight severity in all countries) is negligible (1,6 %). Thus, we consider the European global trend in quality as stable.

- Average current trend in quality
  EU 28: Stable
  EU 28+: Stable

Pressures and threats

The habitat develops mostly after agricultural abandonment or after very long fallow intervals. Agricultural intensification, changes in the agriculture system (such as change in crops, intensification by fertilization or reduction of fallow period, introduction of grazing in large areas, afforestation with exotic alien species), are liable to induce reductions in quantity and quality of acidic garrigues. The removal of undergrowth in parklands (dehesa/montado systems) might also be locally important in order to safeguard the succession of old garrigues. Many acidic garrigues are fire-prone, i.e. composed of pyrophytes. Measures preventing wildfires might also reduce the extent of the acidic garrigues. Natural succession towards forest or pre-forest stages might reduce the area of acidic garrigues. The start of widespread use of machines to agriculture in the decades of 50's and 60's might have caused reduction in the extent of the acidic garrigues. However, in our days, none of these effects is significant to be considered a threat for the habitat.

List of pressures and threats

Agriculture

Agricultural intensification
Crop change
Intensive mixed animal grazing

Sylviculture, forestry

Artificial planting on open ground (non-native trees)
Removal of forest undergrowth
Grazing in forests/ woodland

Natural System modifications

Lack of fires
Reduction or loss of specific habitat features

Natural biotic and abiotic processes (without catastrophes)

Species composition change (succession)

Conservation and management

Although in most part of the habitat area no special management measures are required, other than regular plowing (when included in very extensive agro-silvo-pastoral systems), the reduction of the period between plowing due to intensification or preventing fires, might not allow succession to go beyond the species poor pioneer stages. Thus, in some areas where conservation of garrigues is desirable (also as habitat for wildlife), an extension in period between plowing might be advisable to allow succession towards a species saturated condition. As to the specific case of palaeodune scrub (cf. 2260 Annex 1) it is advisable that tilling is kept at a minimum and only when, by sucession, the pre-forest stages tend to become dominant at local scale.

List of conservation and management needs

No measures

No measures needed for the conservation of the habitat/species

Measures related to agriculture and open habitats

Other agriculture-related measures

Conservation status

No corresponding Annex I type

When severely damaged, does the habitat retain the capacity to recover its typical character and functionality?

In general, no interventions are needed to promote the habitat’s distribution and support its recovery.It is composed of pioneer species colonizing soils after cessation of agricultural activities. The establishment of species saturated condition is reached in about 10 years.

Effort required

10 years
Naturally

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-0.7 %	stable %	stable %	increasing %
EU 28+	-0.7 %	stable %	stable %	increasing %

For all A-type criteria, as well as for future prospects of the habitat, a stable condition is expected. A historical (A3) increase of unknown importance is also postulated by assessors.

Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	>50000 Km^2	No	-		>50	No	-		
EU 28+	>50000 Km^2	No	-		>50	No	-		

Both EOO and AOO are much greater than the thresholds 50.000 Km^2 and 50 grid cells (of 10 x 10 km^2).

Criterion C and D: Reduction in abiotic and/or biotic quality

Criteria C/D	C/D1		C/D2		C/D3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	1.6 %	14% %	unknown %	unknown %	unknown %	unknown %
EU 28+	1.6 %	14% %	unknown %	unknown %	unknown %	unknown %

Criterion C	C1		C2		C3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	unknown %	unknown %	unknown %	unknown %	unknown %	unknown %
EU 28+	unknown %	unknown %	unknown %	unknown %	unknown %	unknown %

Criterion D	D1		D2		D3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	unknown %	unknown%	unknown %	unknown%	unknown %	unknown%
EU 28+	unknown %	unknown%	unknown %	unknown%	unknown %	unknown%

There is a negligible average european trend in quality reduction.

Criterion E: Quantitative analysis to evaluate risk of habitat collapse

Criterion E	Probability of collapse
EU 28	unknown
EU 28+	unknown

There is no quantitative analysis available that estimates the probability of collapse of this habitat type.

Overall assessment "Balance sheet" for EU 28 and EU 28+

	A1	A2a	A2b	A3	B1	B2	B3	C/D1	C/D2	C/D3	C1	C2	C3	D1	D2	D3	E
EU28	LC	DD	DD	DD	LC	LC	LC	LC	DD	DD	DD	DD	DD	LC	DD	LC	-
EU28+	LC	DD	DD	DD	LC	LC	LC	LC	DD	DD	DD	DD	DD	DD	DD	DD	-

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Least Concern	-	Least Concern	-

Confidence in the assessment
Medium (evenly split between quantitative data/literature and uncertain data sources and assured expert knowledge)

Assessors
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