F7.4a Western Mediterranean mountain hedgehog-heath

Summary

This habitat with vegetation dominated by prostrate ligneous plants of hedgehog habit occurs in high mountainous areas in the central and southern Iberian Peninsula. It is adapted to the cold and drought typical of such situations and the flora is rich in narrow endemics, especially ion base-rich substrates, due to speciation, enhanced by isolation between mountain summits. It is mostly a natural habitat of crests and steep slopes but grazing and burning have extended its occurrence downslope as secondary vegetation. Traditionally used in extensive husbandry with local transhumance of sheep and goat herds moving along the different altitudinal levels, grazing pressure was moderate. This habitat type is relatively self-protected as it occurs in high mountains where human pressure is usually low but ski resorts and other leisure activities continue to threaten and their development should be restricted. In other areas, conifer plantations endanger the habitat. Climatic warming might also affect this cold-adapted habitat.

Synthesis

This habitat is assessed as Least Concern as it occurs in high mountains and it is relatively self-protected, and the fact that it has not declined fast enough to qualify for a threatened Category. However, the development of infrastructures for ski resorts and the use of tracks by hikers and mountain-bikes, together with as the construction of the road network, have substantially increased the threats to this habitat. Additionally, in some areas there has been also important artificial plantations of pines (mostly *Pinus sylvestris*), which makes the situation less optimistic for the next future, in combination with the expected effects of climate change. Therefore this habitat type should be monitored carefully, and conservation measures should be put in place to further protect it.

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

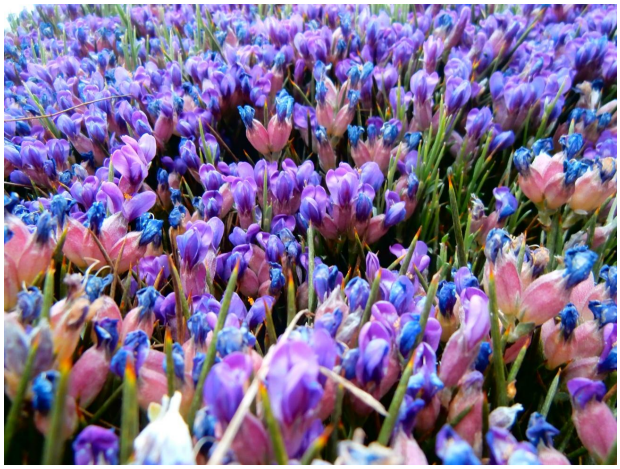
Sub-habitat types that may require further examination

No sub-habitats have been distinguished for further analysis.

Habitat Type

Code and name

F7.4a Western Mediterranean mountain hedgehog-heath



Erinacea pungens, Sarabia, Spain (Photo: Javier Loidi).

Berberido seroi-Juniperetum sabinae in Javalambre mountain summit at 2,000 m elevation, Spain (Photo: Javier Loidi).

Habitat description

This habitat consists of scrub or shrubby vegetation dominated by prostrate ligneous plants of pulviniform habit, i.e. simulating a hedgehog. They live in high mountainous areas, mostly in upper supra- and oro-mediterranean levels, usually between 1,600 and 2,300 m Aslin mountains of the central and southern Iberian Peninsula. This habitat type is presentin the siliceous mountains (*Cytision oromediterranei*, *Genisto versicoloris-Juniperion hemisphaericae*) and in the calcareous ones (*Pruno prostratae-Juniperion sabinae*, *Xeroacantho-Erinaceion anthyllidis*); while in the dolomitic substrata of the Baetic ranges, the endemic-rich alliance *Andryalion aghardii* is represented. Junipers and hedgehog legumes, often spiny, are the dominant and representative elements of this habitat, which is adapted to conditions of cold and drought typical of the Mediterranean mountains. The flora is rich in narrow endemics due to speciation, which is enhanced by isolation between mountain summits. Endemics are much more numerous on limestone or dolomite than in siliceous substrata. This habitat type constitutes, in most of the stands, the potential natural vegetation of the oro-mediterranean belt but there are also secondary, anthropo-zoogenic downslope extensions of the high-altitude formations which can be considered seral scrubs; at these lower altitudes, the primary stands of this habitat are in the crests and steep slopes. Due to human influence (grazing, burning), those extensions have historically increased and currently occupy somewhat larger areas than they would under strictly natural conditions. This habitat type has been traditionally used by an extensive husbandry with local transhumance of sheep and goat herds moving along the different altitudinal levels, and thus leading to a moderate grazing pressure.

Indicators of good quality:

In optimal conditions, this type shows a structure of dense scrub or shrubland of high to medium cover with prominent cushion shaped (hedgehog) ligneous plants in mosaic with a grassland of hard grasses in the open spaces. The following characteristics may be considered as indicators of good quality:

- Abundance of endemics, including threatened species.
- High to medium cover of vascular plant vegetation, particularly prostrate shrubs and chamaephytes.
- Absence of signals of disturbance by trampling, skiing or burning.
- Absence of ruderal, nutrient-demanding species.

Characteristic species:

Vascular plants: *Anthyllis vulneraria* subsp*. microcephala, Arenaria alfacarensis, Armeria lanceobracteata, Artemisia villosa, Astragalus nevadensis* subsp*. andresmolinae, Astragalus nevadensis* subsp*. muticus, Astragalus nevadensis* subsp*. nevadensis, Astragalus sempervirens* subsp*. giennensis, Bupleurum spinosum, Centaurea boissieri* subsp*. funkii, Cytisus balansae* subsp*. nevadensis, Cytisus oromediterraneus, Echinospartum barnadesii* var*. hirsutum, Echinospertum ibericum* subsp*. pulviniformis,*

Erinacea anthyllis, Genista longipes subsp*. gadorensis, Genista longipes* subsp*. longipes, Genista longipes* subsp*. viciosoi, Genista sanabrensis, Genista versicolor, Hippocrepis castroviejoi, Hippocrepis nevadensis, Juniperus alpina, Juniperus hemispaherica, Juniperus sabina, Prunus prostrata, Satureja intricata, Scabiosa andryalifolia, Sideritis carbonellis, Sideritis giennensis, Sideritis glacialis* subsp*. virens, Teucrium lerrouxii, Teucrium oxylepis, Thymus gadorensis, Vella castrilensis, Vella spinosa, Veronica tenuifolia* subsp*. fontqueri.* Dolomitic species*: Andryala aghardii, Anthyllis rupestris, Anthyllis tejedensis, Arenaria caesia, Arenaria racemosa, Arenaria tomentosa, Armeria trevenqueana, Armeria villosa* subsp*. longiaristata, Centaurea ginesii-lopezii, Chamaespartium undulatum, Convolvulus boissieri, Erodium boissieri, Erysimum cazorlense, Festuca plicata, Festuca segimonensis, Fumana procumbens* subsp*. baetica, Globularia spinosa, Hedysarum costatalentis, Helianthemum frigidulum, Helianthemum neopiliferum, Helianthemum pannosum, Jasione crispa* subsp*. segurensis, Leucanthemopsis spathulifolia, Lithodora nitida, Ononis cephalotes, Rothmaleria granatensis, Santolina elegans, Scabiosa pulsatilloides, Scorzonera albicans, Silene boryi* subsp*. tejedensis, Thymus granatensis.*

Classification

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

EUNIS:

F7.4a Western Mediterranean mountain hedgehog heaths

EuroVegChecklist (alliances):

Cytision oromediterranei Tüxen in Tüxen & Oberdorfer 1958 corr. Rivas-Martínez 1987

Genisto versicoloris-Juniperion hemisphaericae Rivas-Martínez & J.A.Molina in Rivas-Martínez et al. 1999

Pruno prostratae-Juniperion sabinae Rivas-Martínez & J.A.Molina in Rivas-Martínez et al. 1999

Xeroacantho-Erinaceion anthyllidis (Quézel 1953) O.Bolós 1967

Andryalion aghardii Rivas-Martínez in Rivas Goday & Mayor 1966 (dolomitic substrata in Baetic ranges)

Annex 1:

4090 Endemic oro-Mediterranean heaths with gorse

5120 Mountain *Cytisus purgans* formations

Emerald:

F7 Spiny Mediterranean heaths (phrygana, hedgehog-heaths and related coastal cliff vegetation)

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
The subalpine (oromediterranean) belt of the mountains in the Mediterranean regions is covered with

heaths of this type, as a responde to the climatic conditions of the high mountain combined with drought stress.

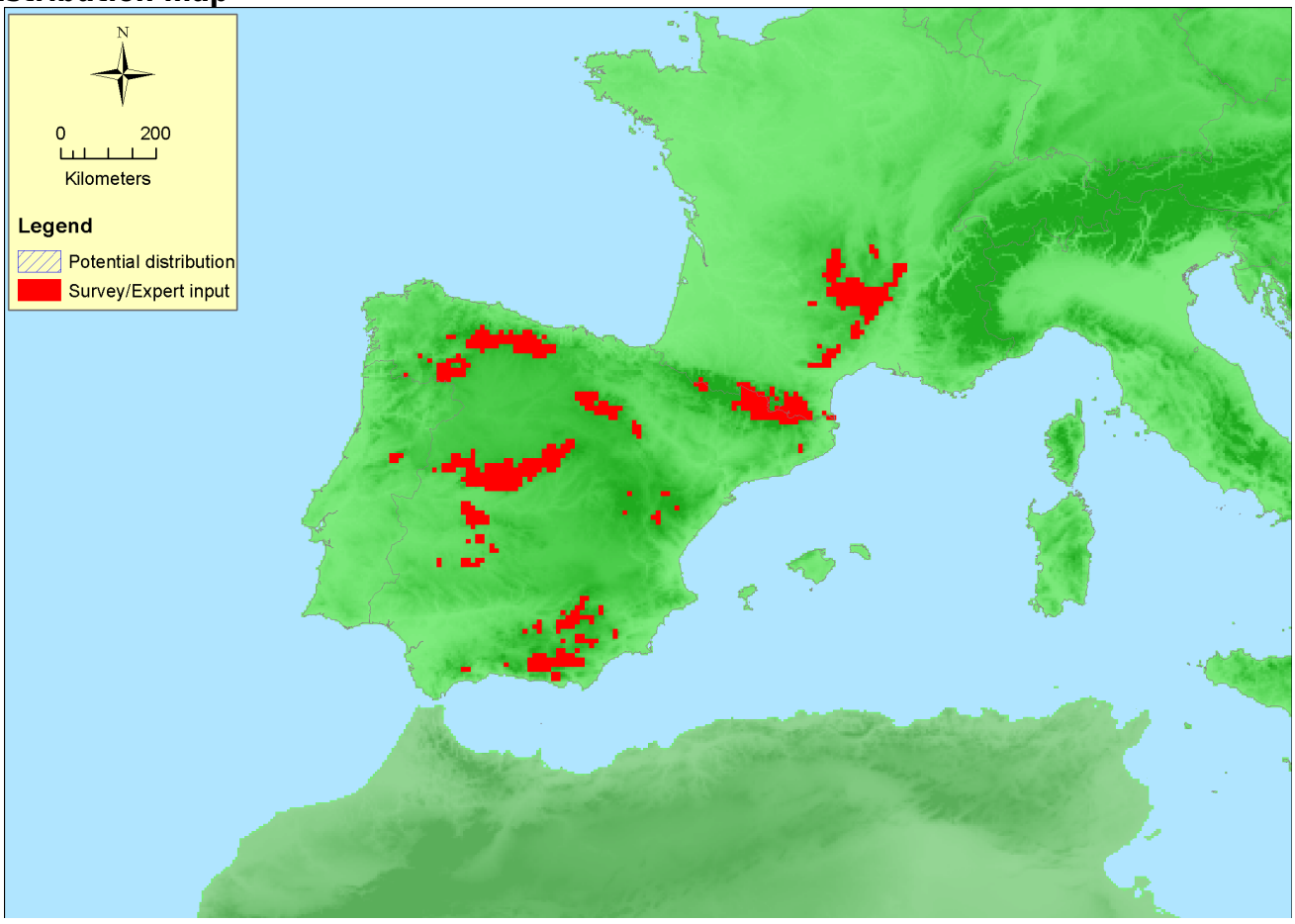
Geographic occurrence and trends

EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
Portugal	Portugal mainland: Present	77 Km^2	Increasing	Stable
Spain	Balearic Islands: Uncertain Spain mainland: Present	579 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	595250 Km^2	629	656 Km^2	Mostly in mountains of the Iberian Peninsula
EU 28+	595250 Km^2	629	656 Km^2	Mostly in mountains of the Iberian Peninsula

Distribution map



The map possibly over-estimates the distribution a bit. Data sources: NAT, Art17

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

Taking into account that the north African mountains Rif and Atlas contain an important share of this habitat type, it is estimated that around 40% of the current total distribution of this habitat lies within the EU.

Trends in quantity

The area of this habitat seems to have remained very stable during past years and it is expected that it will have slight variations in the near future.

- 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 has a reduced area not following regression but due to its intrinsical restricted distribution.
- Does the habitat have a small natural range by reason of its intrinsically restricted area?
  Yes
  Justification
  The range of the habitat is small due to its ecological requirements as it occupies the oro- belt of the Mediterranean mountains, which is a relatively restricted area.

Trends in quality

The quality of this habitat seems to have remained very stable during past years and it is expected that it will have slight variations in the near future. However, this is a climate-dependent type and climate warming can affect it.

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

Pressures and threats

The main threats to this habitat are related to the influence of human visitors, which extensively affect the habitat area through the creation of tracks for hikers, mountain-bikes, quads, etc. Sky resorts are another important threat which is severely damaging these restricted areas. Some areas have been damaged by pine plantations, usually of *Pinus sylvestris*. Additionally, climate change poses another potential threat, as is the case with most of the cold adapted habitats and species.

List of pressures and threats

Transportation and service corridors

Paths, tracks, cycling tracks
Car parcs and parking areas

Human intrusions and disturbances

Skiing, off-piste
Skiing complex

Climate change

Temperature changes (e.g. rise of temperature & extremes)

Conservation and management

Control of skiing activities and the development of associated resorts (i.e. stop erecting new buildings, parking lots, roads, sky tracks, etc). Stopping the process of planting pines and other conifers is required, together with a restriction on the building of roads and tracks for 4x4 vehicles and a restriction of access

for mountain-bikes, motorcycles and quads.

List of conservation and management needs

Measures related to spatial planning

Establish protected areas/sites

Conservation status

Annex 1:

4090: ALP FV, ATL FV, MED FV

5120: ALP FV, ATL FV, MED FV

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

Due to the effects of climate change, the recovery capacity of this habitat type after a severe damage is slow, needing several decades to recover.

Effort required

20 years	50+ years	200+ years
Through intervention	Naturally	Naturally

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-7.6 %	-5 %	Unknown %	Unknown %
EU 28+	-7.6 %	-5 %	Unknown %	Unknown %

There has been a decline in this habitat type of 7.6% for the past 50 years, as a result of the building of roads, parking lots and hotels for ski resorts, which has happened locally but whose impact has been severe in a few areas. A future decline of 5 % is projected considering that the development of ski resorts and other infrastractures is progressing quickly. As the percentages of reduction are below the thresholds for threatened Categories, the habitat type is therefore assessed as Least Concern.

Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	>50000 Km^2	Yes	Unknown	Unknown	>50	Unknown	Unknown	Unknown	Unknown
EU 28+	>50000 Km^2	Yes	Unknown	Unknown	>50	Unknown	Unknown	Unknown	Unknown

The EOO and AOO exceeds the thresholds for a threatened Category, but there is a continuing decline in spatial extent. It is unknown whether the habitat type exists only at very few locations. Thus, the habitat type is assessed as Least Concern under Criterion B.

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	4.4 %	25 %	Unknown %	Unknown %	Unknown %	Unknown %
EU 28+	4.4 %	25 %	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%

The habitat type has experienced a decline in quality with a relative severity of 25%, affecting 4.4% of the extent, being thus assessed as Least Concern under Criterion C/D. This reduction in quality is the result of leisure and sport activities such as hiking, horse riding, mountain bike, motorcycles, quads, etc. Climate change has also favored the introgression of some species from lower levels of altitude.

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, and it is thus assessed as Data Deficient under Criterion E.

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	LC	DD	DD	LC	LC	LC	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	LC	LC	DD	DD	LC	LC	LC	LC	DD	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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