

E1.1i Perennial rocky calcareous grassland of subatlantic-submediterranean Europe

Summary

These open grasslands, dominated by perennials and especially rich in mat-formers, are typical of shallow, nutrient-poor, base-rich soils over sloping, rubbly limestone terrain through the lowland to sub-montane levels in subatlantic and submediterranean Europe. Extensive grazing has been crucial in maintaining the habitat free of shrub and tree encroachment and substantial losses in extent and quality have occurred where traditional agriculture has declined. Reinstatement of pastoral management is essential for restoring stands that are not already too damaged.

Synthesis

The habitat is assessed as Vulnerable since it has suffered a maximum estimate of reduction in quantity of just more than 30% in the last decades. The mean estimate calculated from territorial data is 29.8%. Although only the maximum estimate meets the criterion of reduction in quantity, it has to be taken into account that the habitat has also suffered an intermediate decline in quality (55%) affecting more than 30% of its area in the past 50 years. Considering that the main threat for its conservation is the abandonment of extensive grazing, it is expected that the decline will continue in the future.

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Vulnerable	A1	Vulnerable	A1

Sub-habitat types that may require further examination

The territorial experts from France have reported that there are some subtypes within this habitat that deserve special attention for conservation: alluvial dry calcareous grasslands like *Teucrio montani-Fumaneum procumbentis* (Pabot 1940) Royer 1987 along the Rhône and Ain rivers (close to E1.9a type) and also all grasslands in the Atlantic region.

Habitat Type

Code and name

E1.1i Perennial rocky calcareous grassland of subatlantic-submediterranean Europe



Xerothermic calcareous grassland with *Stipa pennata* on south exposed calcareous soil, Drôme, France. (Photo: John Janssen).



Vegetation of the Xero-Bromion on a steep, south-exposed slope of the Meuse valley in Lorraine, France (Photo: John Janssen).

Habitat description

This habitat type occurs on shallow calcareous substrates with hardly any soil and humus, mostly on slopes. The underlying bedrock can be of different geological origin, including Carboniferous limestone and Cretaceous chalk. The open vegetation is characterized by perennials, among which a large percentage of chamaephytes. This is in contrast with habitat type 1.1d (Pioneer grassland on shallow soils on calcareous and ultramafic rocky outcrops), where annuals play a prominent role. Syntaxonically, the vegetation type forms a separate order (*Artemisio albae-Brometalia erecti*) within the class *Festuco-Brometea*. The communities have a rather small distribution, ranging from the United Kingdom in the northwest and Italy (Liguria) in the southeast. In the National Vegetation Classification of the UK, it is represented by the sub-community with *Helianthemum canum* and *Asperula cynanchica* of the 'Sesleria albicans-Galium sternerii grassland' (CG9). The centre of the distribution is in France and Germany. In France, these grasslands are (for the greater part) described as 'pelouses primaires' in contrast to the other limestone grasslands of the *Festuco-Brometea* that are considered to be 'pelouses secondaires' or 'semi-naturelles'. The habitat type, occurring from the lowlands to the submontane zone, is regarded as a western vicariant of E1.1g (Perennial grassland on rocky outcrops at low altitudes in Central and Southeastern Europe). The bedrock is often broken, resulting in a lot of loose material, resembling screes at higher altitudes in the mountains. The nutrient status (nitrogen, phosphorous) is extremely low, the pH high. Although the production of the vegetation is very low, grazing is important to guarantee that the sites are not grown over by shrubs and trees. As such, the habitat generally is part of a traditional management regime.

Indicators of quality:

- Open and low vegetation structure, with a high percentage of bare rock
- Absence of nutrient-demanding and ruderal species
- Chamaephytes account for a large proportion in the vegetation
- Exposed to sunshine to support light-demanding species
- Extensive grazing regime preventing the encroachment of shrubs and tree at the sites and the near vicinity

Characteristic species:

Flora: Vascular plants: *Allium sphaerocephalon*, *Anthyllis vulneraria*, *Asperula cynanchica*, *Aster linosyris*, *Bromus erectus*, *Carex halleriana*, *Carex humilis*, *Coronilla minima*, *Euphorbia cyparissias*, *Fumana procumbens*, *Galium sternerii*, *Globularia punctata*, *Helianthemum apenninum*, *Helianthemum canum*, *Helianthemum oelandicum*, *Hippocrepis comosa*, *Koeleria vallesiana*, *Linum tenuifolium*, *Melica ciliata*, *Ononis pusilla*, *Orobanche teucarii*, *Potentilla tabernaemontani*, *Ranunculus gramineus*, *Seseli montanum*, *Stachys recta*, *Teucrium botrys*, *Teucrium chamaedrys*, *Teucrium montanum*, *Thymus praecox*, *Trinia glauca*.

Mosses: *Abietinella abietina*, *Encalypta streptocarpa*, *Homalothecium lutescens*, *Rhytidium rugosum*, *Tortella tortuosa*, *Trichostomum brachydontium*.

Classification

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

EUNIS:

E1.2 Perennial calcareous grassland and basic steppes

EuroVegChecklist:

Xero-Bromion erecti Zoller 1954

Festuco-Bromion Barbero et Loisel 1971

Annex I:

6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)

Emerald:

E1.2 Perennial calcareous grassland and basic steppes

MAES-2:

Grassland

IUCN:

4.4 Temperate grassland

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

No

Justification

This habitat occurs mostly in Alpine and Continental regions, also in the Atlantic region, but most of the characteristic species also live in mountains of the Mediterranean region.

Geographic occurrence and trends

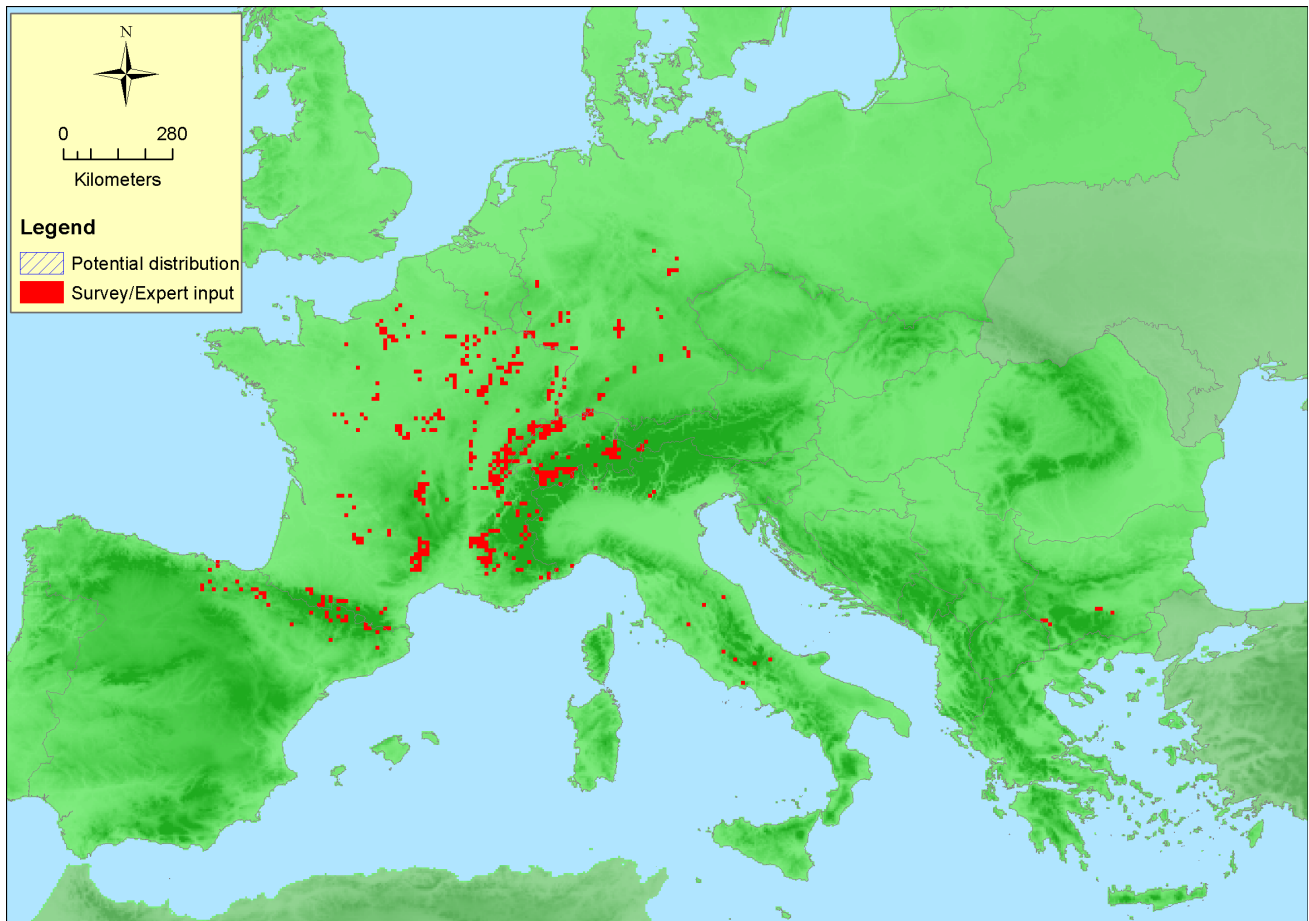
EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>Belgium</i>	Present	<1 Km ²	Decreasing	Decreasing
<i>France</i>	France mainland: Present	400-800 Km ²	Decreasing	Decreasing
<i>Germany</i>	Present	<20 Km ²	Decreasing	Decreasing
<i>Ireland</i>	Present	0.1-1.0 Km ²	Stable	Unknown
<i>Italy</i>	Italy mainland: Present	827 Km ²	Decreasing	Decreasing
<i>Luxembourg</i>	Uncertain	unknown Km ²	Unknown	Unknown
<i>UK</i>	United Kingdom: Uncertain	Km ²	-	-

EU 28 +	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>Switzerland</i>	Present	10-20 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
<i>EU 28</i>	1627450 Km ²	436	1,448 Km ²	no data from Luxembourg and UK
<i>EU 28+</i>	1627450 Km ²	503	1,463 Km ²	

Distribution map



The map is likely to be incomplete (UK, Belgium) and incorrect for central Italy and Bulgaria. Data: Art17, EVA, NAT.

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

95% of the current distribution of the habitat type lies within the EU28. The habitat only exists in Europe, and its distribution centre is in France and Germany, extending northwest to the British Isles and southeast to the Apennines. The EU28 hosts nearly all of the occurrences, except for those present in Switzerland.

Trends in quantity

The surface area of this habitat has been decreasing since the middle of the 20th century, from 2,062 km² to 1,448 km² in the EU 28 region. Over the last 50 years a relative loss of area of approximately 30% has been reported in EU 28 and EU 28+ countries. This decline changes across countries, from 20% to 40%, and it was even more intense in previous decades: for example, in Germany a decrease of 70-90% since 1850 has been reported. This regression was mainly due to scrub encroachment, afforestation, extraction (stone quarrying), lack of management or urbanization. Regarding future trends, some countries estimate the area will remain more or less stable, probably because most of the habitat is found in protected areas. Nevertheless, the countries where it is more abundant, Italy and France, estimate it will decrease, at least slightly, in the future.

- Average current trend in quantity (extent)
 EU 28: Decreasing
 EU 28+: Decreasing
- Does the habitat type have a small natural range following regression?
 No
Justification

Although we do not have the exact figures, the EOO is larger than 50,000 km².

- Does the habitat have a small natural range by reason of its intrinsically restricted area?

No

Justification

The habitat type is neither restricted to small spots, nor does it have a small total area, maybe with the exception of its occurrence in the British Isles and other areas of the Atlantic region.

Trends in quality

More than a third of the area of the habitat in Europe has been subjected to moderate and even severe degradation over the last 50 years. The trends over larger historical periods are not known, and there is no agreement about what the future trend will be. Recent degradation is related mainly to succession (biocenotic evolution) due to the abandonment of extensive grazing. Trampling by tourists and nitrogen deposition have also been reported as factors contributing to loss of habitat quality. An intermediate decline (55% severity) affecting 33% of the extent of the habitat over the past 50 years has been calculated for both the EU 28 and EU 28+ regions.

- Average current trend in quality

EU 28: Decreasing

EU 28+: Decreasing

Pressures and threats

Grasslands included in this habitat are mainly threatened by the abandonment of traditional extensive grazing, which causes shrub encroachment during the succession process. Characteristic light-demanding species, many of which are small chamaephytes, disappear in this process. Removal of grasslands for arable land and afforestation can also decrease the area they occupy, but as they are often linked to shallow calcareous substrates not so suitable for these uses, with the exception of vineyards. Another important threat is nitrogen deposition, which increases the nitrogen content of the soil and thus facilitates the growth of nutrient-demanding and ruderal species and consequently the loss of quality of the grassland. Finally, as these grasslands often occupy nice landscape views, over-attendance of people can also contribute to their loss of quality. These threats are similar along all EU 28 and EU 28+ countries.

List of pressures and threats

Agriculture

Modification of cultivation practices

Agricultural intensification

Grassland removal for arable land

Grazing

Abandonment of pastoral systems, lack of grazing

Pollution

Air pollution, air-borne pollutants

Nitrogen-input

Natural biotic and abiotic processes (without catastrophes)

Biocenotic evolution, succession

Species composition change (succession)

Conservation and management

The maintenance of traditional silvopastoral systems is very important for the conservation of this habitat.

Extensive grazing is a basic feature, and management should be focused on this key factor. The rare occurrences of the habitat in the Atlantic region (British Isles and Atlantic region in Germany and France) should receive special protection and avoid activities such as tree plantation, extraction and urbanization. In general, trampling by people should be controlled, and grassland removal for crop plantation should be avoided as long as possible.

List of conservation and management needs

Measures related to agriculture and open habitats

Maintaining grasslands and other open habitats

Measures related to spatial planning

Establish protected areas/sites

Legal protection of habitats and species

Manage landscape features

Conservation status

Annex I:

6210: ALP U1, ATL U2, CON U2, MED U2

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

Grasslands of this habitat grow in shallow soils. Once destroyed or severely damaged, their recovery will take a long time. If the habitat degradation is due to abandonment and consequent shrub encroachment, it can only be recovered by re-introducing traditional extensive grazing.

The time needed for recovery is strongly dependent on the type of damage. As the most common is shrub encroachment, the estimation of time is given for that case.

Effort required

20 years
Through intervention

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-27.9/-31.2 % %	Unknown %	Unknown %	Unknown %
EU 28+	-27.8/-31.3 % %	Unknown %	Unknown %	Unknown %

The values for the reduction in quantity over the last 50 years were calculated from the territorial data sheets. All the countries which reported data of the habitat were used for the calculation, except Belgium, where the habitat only occurs in less than 1 km². The habitat has decreased over the last decades from 20% in Italy to 40% in France. In Ireland there is no decrease, but the occurrence of the habitat in this country is very restricted. In total, it was reduced on average from 2,062 km² to 1,448 km² in EU28 countries, resulting in a reduction rate of 29.8% in both EU28 and EU28+ regions. However, if we consider the entire range of the present reported area, the estimate values of reduction range from -27.8% (EU28+) and -27.9 (EU28) to -31.3 (EU28+) and -31.2 (EU28). That is, the upper estimate is above the 30%

threshold. The habitat is therefore assessed as Vulnerable under Criterion A. There is no information on longer historical trends. In the future a small further decline is expected in most of its area, but quantitative data are not available.

Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	> 50,000 Km ²	Yes	Unknown	Unknown	> 50	Yes	Unknown	Unknown	Unknown
EU 28+	> 50,000 Km ²	Yes	Unknown	Unknown	> 50	Yes	Unknown	Unknown	Unknown

Although we do not have quantitative data, both values (AOO and EOO) are large, and do not approach the thresholds for classifying the habitat in a threatened category. Nevertheless, it has to be taken into account that there is a continuing decline in spatial extent (i) and abiotic and/or biotic quality (ii, iii). This habitat is therefore 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	33 %	55 %	Unknown %	Unknown %	Unknown %	Unknown %
EU 28+	33 %	55 %	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 overall extent and severity of degradation are the weighted average calculated from reported data from Germany, France and Italy for EU 28 (99.9% of known area in EU28), plus Switzerland for EU 28+ (99.9% of known area in EU 28+). There has been an intermediate decline (55% severity) affecting 33% of the extent of the habitat in the past 50 years both in the EU 28 and EU 28+ regions. There is not enough information on long historical or future trends in quality to calculate precise values and these trends are unknown. The changes in quality are both abiotic and biotic and this habitat is therefore assessed as Near Threatened under Criterion C/D1.

Criterion E: Quantitative analysis to evaluate risk of habitat collapse

Criterion E	Probability of collapse
EU 28	Unknown

Criterion E	Probability of collapse
EU 28+	Unknown

There is no quantitative analysis available that estimates the probability of collapse of this habitat type and it is therefore 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	VU	DD	DD	DD	LC	LC	LC	NT	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	VU	DD	DD	DD	LC	LC	LC	NT	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
Vulnerable	A1	Vulnerable	A1

Confidence in the assessment

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

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