

## E1.1e Submediterranean xeric open grassland of skeletal calcareous and ultramafic soils

### Summary

This habitat unique to the Italian peninsula comprises vegetation transitional between temperate dry grasslands and Mediterranean garrigue, developed on base-rich bedrocks through clearance of broadleaved and mixed woodland and maintained by traditional grazing in a distinctive cultural landscape. Best developed within the submediterranean bioclimatic zone, it is variously dominated by perennial grasses and herbs, particularly where there is a denser cover of vegetation on gentler slopes, or mat formers and sub-shrubs on steeper, rockier ground. Generally species-rich, and sometimes with contingents of annuals and, in disturbed places, geophytes, the habitat sometimes hosts endemic plants. Though sometimes subject to over-grazing, the more general threat is abandonment of traditional pastoralism, and in some places afforestation. Recent losses in extent have not been severe, except locally, though there is a more widespread decline in quality.

### Synthesis

The habitat is assigned to the category Vulnerable (VU) both in EU28 and EU28+, based on a strong reduction in abiotic and/or biotic quality (Criteria C/D1). In spite of a remarkable quantitative decrease, the assessment based on Criteria A and B did not meet the thresholds qualifying for higher threat levels. Indeed, although endemic to a country, due to a scattered distribution along the Italian Peninsula the EOO and the AOO resulted rather wide. A continuous future qualitative reduction can realistically be expected, mainly due to the ongoing abandonment and the related successional processes, with drastic changes in structure and floristic composition. Considering its endemism and the lack of complete data about past distribution and trends, a careful monitoring should be carried out in the future to prevent further loss of a landscape-shaping and species-rich habitat type.

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Vulnerable	C/D1	Vulnerable	C/D1

### Sub-habitat types that may require further examination

The peculiar vegetation types belonging to the alliance *Alysson bertolonii*, restricted to the Northern Apennines and typical of serpentine outcrops and ophiolitic substrata, might deserve further examination.

### Habitat Type

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#### Code and name

E1.1e Submediterranean xeric open grassland of skeletal calcareous and ultramafic soils



Open dry grasslands on skeletal calcareous soils with *Cytisus spinescens*. Aurunci Mountains, Latium, Central Italy (Photo: A. Gabellini).



Dry grassland on skeletal ophiolitic soils, in mosaic with shrubs. P. Galbane, pre-Apenninic range between Tuscany and Emilia-Romagna, Italy (Photo: V. Gonnelli).

## Habitat description

This endemic habitat includes open grasslands with participation of dwarf shrubs, occurring in the interior of the Italian Peninsula. Both in their structure and floristic composition they are transitional between the Temperate dry grasslands and Mediterranean garigues. Hemicryptophytes (including perennial grasses and herbs) predominate, but dwarf shrubs and other chamaephytes are also common. Hemicryptophytes usually prevail on gentle slopes, where vegetation tends to be denser, while chamaephytes are more common on steeper slopes. Therophytes and geophytes also occur in this vegetation, especially in disturbed places, but they are not dominant. A certain number of endemic *taxa* is typically represented in this habitat type.

These grasslands are developed from the supra-Mediterranean to the meso-Temperate bioclimatic belts, with their optimum in the latter and in its sub-Mediterranean variant. In most cases it is secondary vegetation developed in potential habitats for deciduous forests with *Quercus cerris*, *Q. pubescens s.l.*, *Ostrya carpinifolia*, or for mixed forests with *Quercus ilex*. Soils are shallow, developed usually in patches between rocky outcrops. They belong to the type of Lithic, Skeletic, Rendzic, Calcaric or Dolomitic Leptosols. Parent rocks are various calcareous sediments including limestones.

These dry grasslands are confined to the Italian Peninsula, where their range extends from the Northern to the Southern Apennines including some occurrences in Sicily. They are generally species-rich, and dependent for their long-term conservation on grazing by domestic livestock. Cessation of grazing may lead to encroachment of shrubs and trees and decline of this habitat type. In some areas the habitat was destroyed by plantation of trees, especially pines. A specific subtype of this vegetation belonging to the alliance *Alysson bertolonii*, with unique species composition and a rich chamaephytic component, occurs on neutral or basic soils of serpentine outcrops and ophiolitic substrata with neutral or alkaline pH, with a distribution restricted to Tuscany, Liguria and Piedmont (Northern Apennines).

Indicators of good quality:

- Long-term habitat openness
- No encroachment of shrubs and trees
- Extensive grazing
- High species richness
- Occurrence of rare and endemic species

- Absence of tall, nutrient-demanding, ruderal and alien species

#### Characteristic species

Vascular plants: *Alyssoides utriculata*, *Alyssum bertolonii*, *Alyssum diffusum*, *Anthyllis vulneraria* subsp. *praepropera*, *Armeria denticulata*, *Artemisia alba*, *Asperula aristata* subsp. *scabra*, *Asperula purpurea*, *Asphodeline lutea*, *Bromus erectus*, *Centaurea ambigua*, *Centaurea apolepa* subsp. *ligustica*, *Centaurea rupestris*, *Centaurea triumfetti*, *Cephalaria leucantha*, *Convolvulus cantabrica*, *Coronilla valentina*, *Crepis lacera*, *Cytisus spinescens*, *Dianthus ciliatus*, *Dianthus garganicus*, *Eryngium amethystinum*, *Erysimum pseudorhaeticum*, *Euphorbia myrsinites*, *Euphorbia spinosa*, *Festuca inops*, *Festuca robustifolia*, *Genista desoleana*, *Genista januensis*, *Globularia bisnagarica*, *Globularia meridionalis*, *Helianthemum oelandicum*, *Hippocrepis glauca*, *Hyssopus officinalis* subsp. *aristatus*, *Inula montana*, *Iris pseudopumila*, *Jurinea mollis*, *Koeleria splendens*, *Linum tommasinii*, *Matthiola fruticulosa*, *Melica transsylvanica*, *Minuartia laricifolia* subsp. *ofiolitica*, *Osyris alba*, *Phleum ambiguum*, *Phlomis fruticosa*, *Pimpinella saxifraga*, *Plantago holosteum*, *Rhamnus saxatilis* subsp. *infectoria*, *Ruta graveolens*, *Salvia officinalis*, *Satureja montana*, *Scorzonera villosa* subsp. *columnae*, *Silene otites*, *Stipa austroitalica* subsp. *austroitalica*, *Stipa dasyvaginata* subsp. *apenninica*, *Stipa etrusca*, *Teucrium polium*, *Thymus longicaulis*, *Thymus striatus* var. *ophiolithicus*, *Thymus vulgaris*, *Trinia glauca*.

#### Classification

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

EUNIS:

E1.1 Pioneer and open perennial grasslands of inland sands and rocky terrain

EuroVegChecklist alliances:

*Cytiso spinescentis-Bromion erecti* Bonin 1978

*Alyssion bertolonii* E. Pignatti et Pignatti 1977

*Seslerio nitidae-Caricion macrolepidis* Ubaldi 1997.

Annex 1:

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:

Terrestrial - Grassland

IUCN:

4.4. Temperate grassland

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

Yes

## Regions

Continental

Mediterranean

## Justification

These endemic dry grassland are exclusive of Peninsular Italy. They can be found both in the Continental and the Mediterranean Biogeographic regions, however their optimum occurs in the climatic transitional zone between Temperate and Mediterranean. They concur in shaping a cultural landscape linked to the traditional land use of these areas, formerly characterized by extensive grazing systems, now increasingly at risk of disappearance due to different economic priorities and changing customs of the local populations.

## 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)
Italy	Italy mainland: Present Sardinia: Uncertain Sicily: Present	643 Km <sup>2</sup>	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	142250 Km <sup>2</sup>	795	643 Km <sup>2</sup>	
EU 28+	142250 Km <sup>2</sup>	795	643 Km <sup>2</sup>	

## Distribution map



The map is incomplete, but potential distribution is provided. Data sources: Art17, EVA.

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

The distribution area of this habitat type lies 100% inside the EU 28 territory.

### Trends in quantity

Complete quantitative past data are not available for the whole habitat range, however a realistic approximation, based on the available data, is reported (643 km<sup>2</sup>). During the past 50 years a clear decreasing trend of the distribution area has been observed by the territorial experts, mostly due to abandonment of the traditional grazing activities and consequent start of the successional processes. The overall decline in quantity is about 20% on average, although there are local studies that in some cases show a stronger decrease. Due to ongoing abandonment, a future decline in quantity can be expected.

- 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*

The natural range of this habitat exceeds 50,000 km<sup>2</sup> (although EOO is not available yet, on the ground of the known distribution it exceeds the indicated threshold).

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

No

*Justification*

The natural range of this habitat exceeds 50,000 km<sup>2</sup> (although EOO is not available yet, on the ground of the known distribution it exceeds the indicated threshold).

### Trends in quality

Complete qualitative past data are not available for the whole habitat range, however during the past 50 years a clear decline, from slight to severe in the different territories, has been observed by the territorial experts, mostly due to abandonment of the traditional grazing activities and consequent start of the successional processes, with important changes in the floristic composition, loss of rare species and settlement of taxa typical of shrubby and fringe communities. The average overall decline in quality is around 55% severity affecting about 60% of the current extent of the habitat, although locally a more severe degradation can be observed. Due to ongoing abandonment, a future qualitative decline can be expected.

- Average current trend in quality

EU 28: Decreasing

EU 28+: Decreasing

## Pressures and threats

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The major threat for this habitat is represented by the abandonment of pastoral systems and the consequent lack of extensive grazing, a type of sustainable use that is needed for the conservation of these semi-natural grasslands. The abandonment sets the successional processes up and allows the settlement of shrubs and herbs from the forest fringes. Less frequently, even overgrazing can be a problem, when the cattle load is excessive and the animals are kept long on the same areas, causing damage to soil, vegetation structure and its floristic composition. Due to an ongoing abandonment, further decline can be expected in future.

In several areas also the former activities of forest planting on open ground, aimed at protecting soil from erosion, have largely damaged this habitat type, from both a quantitative and qualitative point of view,

however these practices are nowadays not so frequently applied in the land management.

## **List of pressures and threats**

### **Agriculture**

- Modification of cultivation practices
  - Agricultural intensification
- Grazing
  - Abandonment of pastoral systems, lack of grazing

### **Sylviculture, forestry**

- Forest planting on open ground

### **Invasive, other problematic species and genes**

- Invasive non-native species

### **Natural biotic and abiotic processes (without catastrophes)**

- Biocenotic evolution, succession

### **Climate change**

- Changes in abiotic conditions

## **Conservation and management**

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The maintenance and promotion of traditional pastoral systems, also by way of financial support, is an essential tool for the conservation of this habitat type. The widespread abandonment that took place in the Apennines starting from the 60s, strongly affecting this habitat distribution and floristic composition, was obviously due to a lack of profit and to a deep change in the economy of Italy. Nowadays, a new evaluation of the importance of the traditional pastoral systems as nature conservation instruments and as opportunities for high-quality local productions can offer a spur for a repopulation of the marginal lands in the mountains, however it is currently acting only on a very limited scale.

## **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 1 types:

6210: MED U2, CON U2

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

This habitat is typically represented by semi-natural plant communities, depending on traditional land-use practices for their maintenance. Once destroyed or severely damaged, e.g. due to the recolonization by the shrub-dominated vegetation, their recovery would need a drastic removal of the shrub and tree

species and the re-introduction of traditional pastoral systems with extensive grazing. However, these are extremely delicate processes which might give good results only on the medium-long term.

### Effort required

20 years	50+ years
Through intervention	Through intervention

## Red List Assessment

### Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-20 %	Unknown %	Unknown %	Unknown %
EU 28+	-20 %	Unknown %	Unknown %	Unknown %

Based on the territorial data, the reduction in quantity affected 20% of the total area on average, although in several territories of Italy the rate of decrease is higher. Figures don't correspond to any category of threat, so the habitat can be assessed as Least concern based on Criterion A1. Insufficient data are available for long historical and future trends. In general, an even worse future quantitative reduction can be expected, mainly due to the ongoing abandonment and the related successional processes.

### Criterion B: Restricted geographic distribution

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

The ongoing tendency to abandon the traditional grazing activities represents a threatening process likely to cause continuing declines in quantity and/or quality for this habitat type, within the next 20 years. EOO and AOO are not available yet for this habitat type. However, on the ground of the known distribution it can be predicted that the values of EOO and AOO will exceed the thresholds qualifying for higher threat levels, and the assessment will result in the category Least Concern (Criteria B1 and B2).

### 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	60 %	55 %	Unknown %	Unknown %	Unknown %	Unknown %
EU 28+	60 %	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 data in the territorial sheets were mostly based on the expert opinion and provided information only for the calculation of a reduction in abiotic and/or biotic quality in the last 50 years (Criterion C/D1). The qualitative On this ground, this habitat type results as Vulnerable (VU). Insufficient data are available for long historical and future trends, however a continuous future qualitative reduction can realistically be expected, mainly due to the ongoing abandonment and the related successional processes, with drastic changes in structure and floristic composition.

### Criterion E: Quantitative analysis to evaluate risk of habitat collapse

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

No data are available for the application of 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	DD	DD	DD	LC	LC	LC	VU	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	LC	DD	DD	DD	LC	LC	LC	VU	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	C/D1	Vulnerable	C/D1

### Confidence in the assessment

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

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### Date of assessment

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