

E4.4b Alpine and subalpine calcareous grassland of the Balkan and Apennines

Summary

This grass-dominated habitat of high mountains in the Balkans and Apennines includes both primary vegetation above the tree-line but also secondary grasslands maintained by grazing at lower altitudes. The main threats are changes of abiotic conditions due to global warming, biocenotic evolution due to abandonment of pastoral systems in the subalpine zone as well as outdoor sports and leisure activities. Overall, there has been a slight decrease in extent but changes in quality vary from slight to severe. For conservation, the establishment of additional protected areas and the resumption of traditional pastoral systems, especially in the subalpine zone, is required. Once destroyed or severely damaged the recovery of the habitat type by natural processes will take a very long time.

Synthesis

Although territorial data were not provided for all EU28+ countries, the available data seem to give a reliable overview of the overall situation. The calculated decreases in quantity and quality are well below the thresholds to qualify this habitat type as Near Threatened, though a relative severity of degradation of 45.4% was calculated for EU28+ countries. Hence, based on the application of the Red List Criteria, it qualifies for a Least Concern (LC) status both for EU28 as well as EU28+.

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

Subalpine subtypes are in need of further examination.

Habitat Type

Code and name

E4.4b Alpine and subalpine calcareous grassland of the Balkan and Apennines



Calcareous grasslands at Monte Greco (Abruzzi), Italy (Photo: John Janssen).



Calcareous mountain grassland of the association *Stipo eriocauli-Caricetum humilis* on Mt Biokovo, Croatia (Photo: Jozo Franjic).

Habitat description

These habitats built by many alpine plant species have been a source for fodder during summer period. Grasslands can be divided into two main groups: grasslands over calcareous and acid bedrock. They are further divided into two groups according to altitude: one is of primary origin that appears above the timberline, where site conditions are too severe for woody species to grow. The other is secondary and developed in the subalpine vegetation belt, where the forest surfaces were deforested and transformed into pastures and the timberline was lowered for somewhere 300-500 meters. But it is very difficult to draw the line between the primary and secondary grasslands and they often overlap. The subalpine grasslands extend at altitude between 1650 and 2250 m and the alpine ones are above them.

Geographically subalpine and alpine grasslands are divided into two orders, *Seslerietalia tenuifoliae*, comprising alpine and subalpine grasslands of the northern Balkan and Apennines, and *Onobrychido-Seslerietalia*, comprising those of central and southern Balkans. In the alpine vegetation belt we can find the vegetation alliances *Seslerio juncifoliae-Caricion firmae* on the northern Dinarides, *Seslerion apenninae* on the Apennines, *Oxytropion dinaricae* on southern Dinarides and *Anthyllido-Seslerion klastersky* in the central part of the Balkans. In the subalpine belt we can find *Seslerion apennine* in the Apennines, *Seslerion juncifoliae* on wind exposed slopes and *Festucion pungentis* in sheltered sites in Dinarides and *Festuco-Knaution longifoliae* in Serbia, *Festucion xanthinae* in the southern Dinarides, *Campanulion albanicae* in Montenegro and Kosovo and *Seslerion nitidae* in the central part of the Balkans. But the division between alpine and subalpine is not fixed as alpine communities can appear in the subalpine and even in montane vegetation belt in exposed sites and vice versa in sheltered sites. At the same time, the subalpine communities are well differentiated by the presence of species from dry grasslands that appear in those communities.

Indicators of good quality:

Grasslands in the alpine zone are of primary origin and do not undergo the natural process of afforestation. The only threat is the abandonment of grazing that may change the species composition. It is also expected that global warming will raise the timberline and, therefore, the vegetation zones will shift upwards, however mountains are generally not high enough to allow such an altitudinal shift on the long term.

In the subalpine zone, the situation is much more complicated. With the abandonment of grazing the afforestation process begins. This process is due to severe site condition slower than in lowland, but we can expect that we will lose a great part of subalpine grasslands in the near future.

The following characteristics may be considered as indicators of good quality:

- species richness of the grasslands and presence of diagnostic species,
- presence of regular grazing (overgrazing can appear near to the stable),
- absence of afforestation, absence of high tall herb, shrub and tree species.

Characteristic species:

Vascular plants: *Achillea holosericea*, *Acinos alpinus*, *Aethionema saxatile*, *Anthyllis aurea* subsp. *multifoliata*, *Asperula aristata*, *Asplenium fissum*, *Aster alpinus*, *Astragalus mayeri*, *Asyneuma limonifolia*, *Biscutella laevigata*, *Carex laevis*, *Centaurea triumfetti*, *Dianthus integer*, *Dianthus sylvestris* subsp. *longicaulis*, *Draba aizoides*, *Draba lasiocarpa*, *Edrianthus horvatii*, *Fritillaria tenella*, *Galium oreophyllum*, *Geranium subcaulescens* var. *rupestris*, *Helianthemum canum*, *Helianthemum nummularium* subsp. *grandiflorum*, *Hieracium pannosum*, *Iberis sempervirens*, *Juniperus nana*, *Leontodon crispus*, *Linum alpinum*, *Linum capitatum*, *Minuartia collina* / *verna*, *Oxytropis campestris* (= *O. dinarica*), *Oxytropis neglecta*, *Oxytropis purpurea*, *Pedicularis comosa*, *Pedicularis verticillata*, *Peucedanum schottii*, *Phyteuma orbicularae*, *Plantago argentea*, *Polygala alpestris*, *Polygala comosa*, *Potentilla crantzii*, *Pulsatilla alpina*,

Ranunculus breyninus, *Satureja pycnidica*, *Senecio procera*, *Sesleria juncifolia*, *Sesleria nitida*, *Sideritis roeseri*, *Teucrium montanum*, *Thalictrum minus*, *Thymus ciliatipubescens*, *Thymus praecox* subsp. *polytrichus*, *Trinia dalechampii*.

Classification

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

EUNIS:

E4.4 Calciophilous alpine and subalpine grasslands

EuroVegChecklist:

Seslerietalia tenuifoliae Horvat 1930

Seslerion tenuifoliae Horvat 1930

Seslerio juncifoliae-*Caricion firmae* Trinajstić 2005

Festucion pungentis Horvat 1930

Festuco-Knaution longifoliae Jovanović-Dunjić 1955

Seslerion apenninae Bruno et Furnari 1966

Onobrychido-Seslerietalia Horvat 1960 (southern Balkan):

Oxytropidion dinaricae Lakušić 1966

Anthyllido-Seslerion klasterskyi Simon 1958

Seslerio-Festucion xanthinae Horvat in Horvat et al. 1974

Festucion xanthinae Lakušić et al. 1969

Seslerion nitidae Horvat 1936

Campanulion albanicae Lakušić 1966

Annex 1:

6170 Alpine and subalpine calcareous grasslands

Emerald:

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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 type is not an outstanding example of typical characteristics of any biogeographic region (neither Alpine nor Mediterranean).

Geographic occurrence and trends

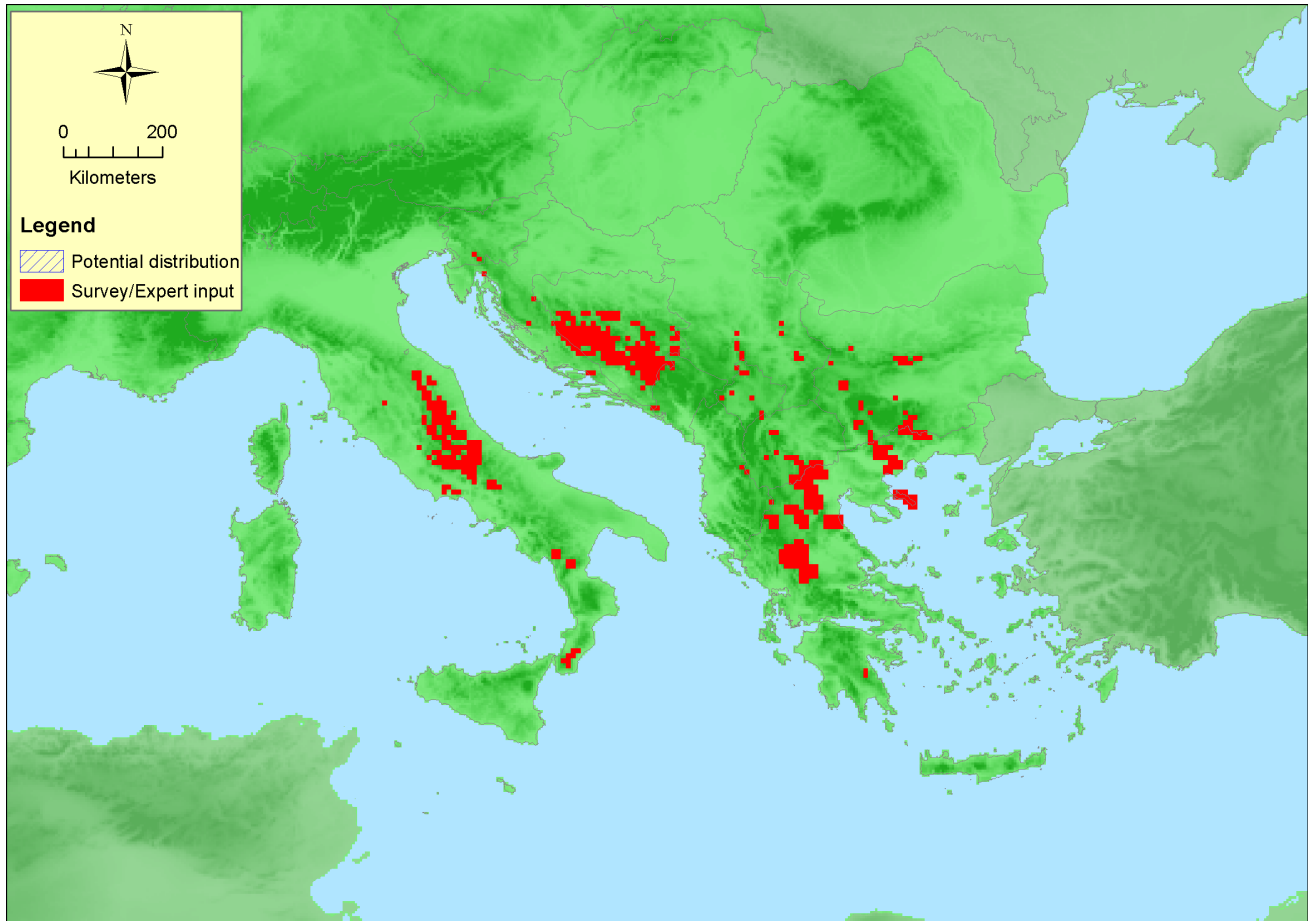
EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>Bulgaria</i>	Present	50 Km ²	Decreasing	Decreasing
<i>Croatia</i>	Present	73 Km ²	Stable	Decreasing
<i>Greece</i>	Greece (mainland and other islands): Present	557 Km ²	Unknown	Decreasing
<i>Italy</i>	Italy mainland: Present	478 Km ²	Decreasing	Decreasing
<i>Romania</i>	Present	32 Km ²	Decreasing	Decreasing
<i>Slovenia</i>	Present	1 Km ²	Stable	Stable

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>Albania</i>	Uncertain	Km ²	-	-
<i>Bosnia and Herzegovina</i>	Present	1300 Km ²	Decreasing	Decreasing
<i>Former Yugoslavian Republic of Macedonia (FYROM)</i>	Present	690 Km ²	Decreasing	Decreasing
<i>Kosovo</i>	Present	Unknown Km ²	Decreasing	Decreasing
<i>Montenegro</i>	Uncertain	Km ²	-	-
<i>Serbia</i>	Uncertain	Km ²	-	-

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>	688550 Km ²	337	1191 Km ²	
<i>EU 28+</i>	690650 Km ²	538	3181 Km ²	no data from Albania, Kosovo, Montenegro and Serbia

Distribution map



Map is rather complete for EU28, but has data gaps on the Balkan. Data sources: EVA, ART17.

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

Approximately 30%. Major occurrences outside EU28 are on the Balkan peninsula.

Trends in quantity

Average Trend EU28: -5.8% over the last ~50 years

Average Trend EU28+: -10.4% over the last ~50 years

Over the last 50 years an average decrease in area of about 6% and 10%, respectively, has been reported both for EU28 and EU28+ countries. Whereas the habitat type remained stable in Croatia and Slovenia, a decrease in area between 5% and 10% was reported by other countries. The loss of area was mainly related to biocenotic evolution (invasion of shrubs and trees) due to abandonment of traditional land-use practices (grazing) in the subalpine zone. According to the provided national data, an ongoing decline looks set to continue in the future.

- Average current trend in quantity (extent)

EU 28: Stable

EU 28+: Decreasing

- Does the habitat type have a small natural range following regression?

No

Justification

The EOO is larger than 50000 km². The habitat is widespread in the subalpine and alpine zone of the Appennine Mountains and the Balkan peninsula.

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

No

Justification

Though the habitat type only occurs in the Balkan and Apennines, it neither has a very limited area and range nor is restricted to small spots.

Trends in quality

Several EU28 and EU28+ countries have reported a slight or moderate decrease in quality over the last 50 years, which was mainly related to climate change and successional processes due to abandonment of land-use practices. Furthermore, degradation was also related to leisure activities and tourism. The extent of degradation is 21.1% in EU28 with 22.7% severity of degradation and 15.1% in EU28+ with 45.4% severity of degradation.

- Average current trend in quality

EU 28: Decreasing

EU 28+: Decreasing

Pressures and threats

Grasslands of the alpine zone are primary habitats, that do not undergo the process of biocenotic evolution after the abandonment of grazing. The major threat is caused by changes of abiotic conditions due to global warming. It is expected, that global warming will raise the timberline and therefore, the vegetation zone will shift upwards. In the subalpine zone, the situation is much more complicated. With the abandonment of pastoral systems, the process of succession begins and degradation is caused by the invasion of tall herbs, shrubs and trees. Furthermore, the habitat is negatively affected by outdoor sports and leisure activities both in the subalpine and alpine zone.

List of pressures and threats

Agriculture

Grazing

Abandonment of pastoral systems, lack of grazing

Human intrusions and disturbances

Outdoor sports and leisure activities, recreational activities

Natural biotic and abiotic processes (without catastrophes)

Biocenotic evolution, succession

Climate change

Changes in abiotic conditions

Conservation and management

Establishment of protected sites, legal protection of habitats and species and management of landscape features by resuming traditional pastoral systems are the key factors for maintaining these grasslands. To avoid ongoing degradation it is necessary to regulate the exploitation of natural resources, e. g. by touristic activities.

List of conservation and management needs

Measures related to agriculture and open habitats

Other agriculture-related measures

Maintaining grasslands and other open habitats

Measures related to spatial planning

Establish protected areas/sites
Legal protection of habitats and species
Manage landscape features

Measures related to special resource use

Regulating/Management exploitation of natural resources on land

Conservation status

Annex 1 types:

6170: ALP U1, CON U1, MED U1

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

Once destroyed or severely damaged, the recovery of primary habitats by natural regeneration processes will take a very long time. Semi-natural habitats with modified species composition affected by successional processes are in need of human intervention for their restoration. This can be achieved by re-introduction of traditional pastoral systems.

Effort required

50+ years	200+ years
Through intervention	Naturally

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-5.8 %	unknown %	unknown %	unknown %
EU 28+	-10.4 %	unknown %	unknown %	unknown %

The values for A1 were calculated using the territorial data sheets. The calculated trend in the last 50 years is a reduction of about 5.8% (EU28) and 10.4% (EU28+), respectively (resulting in category Least Concern). No data available or insufficient data for applying the Criteria A2a, A2b and A3.

Criterion B: Restricted geographic distribution

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

No data have been provided for EOO and AOO until now; however, on the ground of the known habitat occurrence, EOO and AOO exceed the thresholds for 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	21.1 %	22.7 %	Unknown %	Unknown %	Unknown %	Unknown %

Criteria C/D	C/D1		C/D2		C/D3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28+	15.1 %	45.4 %	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 values for C/D1 were calculated using the territorial data sheets. The calculated figures result in a Least Concern (LC) category. No reliable data available for applying the other Criteria based on qualitative 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	DD	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	LC	DD	DD	DD	LC	LC	DD	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)

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