

E4.3b Temperate acidophilous alpine grassland

Summary

These grasslands and dwarf chamaephyte communities comprise the climax vegetation on skeletal and shallow soils over predominantly siliceous bedrocks in the alpine belt throughout the temperate mountains of Europe, typical of the highest summits and ridges, often very exposed to strong winds and largely blown clear of snow in the winter. There are especially large occurrences in Austria, France, Italy and Switzerland and for both EU28 and EU28+ countries an average modest decrease in quantity and quality have been reported over recent historic time, with more drastic losses in Switzerland. Major pressures are related to changes of abiotic conditions due to climate change, abandonment of traditional land-use practices in the subalpine zone and corresponding succession processes as well as outdoor sports and leisure activities such as mountaineering/rock climbing and construction of skiing complexes. Two of the key factors concerning the maintenance of this habitat type are both resumption of traditional pastoral systems in the subalpine zone and the establishment of protected areas. Once destroyed or severely damaged the recovery of the habitat type by natural processes will take a very long time.

Synthesis

As far as EU28+ countries are concerned, data for some countries of the Balkan peninsula are missing. Nevertheless, the overall analysis of territorial data leads according to criteria A1, B1, B2 and C/D1 to the category Least Concern both for EU28 and EU28+. The geographic distribution is not restricted (EOO ≥ 50000 km², AOO ≥ 50).

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

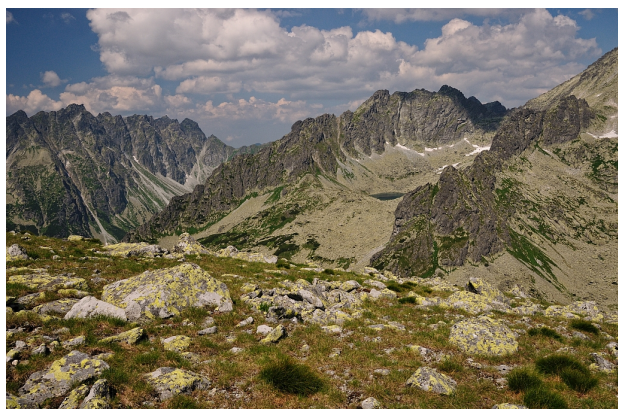
Sub-habitat types that may require further examination

In general, subalpine communities are in need of further examination, as they show regional variation and are heavily affected by abandonment of land-use practices which differ from place to place.

Habitat Type

Code and name

E4.3b Temperate acidophilous alpine grassland



Alpine acidophilous grassland dominated by *Oreochloa disticha*, *Festuca supina* and *Juncus trifidus* are typical for granitic bedrock in the Western Carpathians, Lúčne sedlo Saddle, High Tatras, Slovakia (Photo: Jozef Šibík).



Alpine acidophilous grassland dominated by *Juncus trifidus*, common in the Rodna Mountains, northern part of the Romanian Carpathians (Photo: Jozef Šibík).

Habitat description

These grasslands and dwarf chamaephyte communities comprise the climax vegetation on predominantly siliceous bedrocks in the alpine belt throughout the temperate mountains of Europe. Typical of the highest summits and ridges, often very exposed to strong winds and largely blown clear of snow in the winter, they are characteristic of skeletal rankers and mostly shallow free-draining cambisols that can sometimes also be found on de-calcified soils over basic bedrocks. *Nardus stricta*-dominated grasslands included here may be influenced by grazing and where stock or wild herbivores reduce the cover of scrub or heath at lower altitudes, the habitat may extend down into the sub-alpine belt.

The vegetation is mostly species-poor, reflecting the harsh environmental conditions, and comprises xero- to mesophilous, heliophilous and calcifuge grasses, sedges and rushes with a significant contingent of foliose and fruticose lichens. However, very commonly the vegetation is found as part of large-scale mosaics with heaths, snow-bed communities and tall herb vegetation, with which there can be some overlap in species composition (for which reason the vegetation has traditionally been grouped in a broadly defined phytosociological class Juncetea trifidi, = Caricetea curvulae). Regional subtypes sometime show species vicariance such as *Festuca eskia* being confined to the Pyrenean Peninsula, *Festuca varia* and *Carex curvula* missing from the Western Carpathians, *Sesleria comosa* typical for Balkan mountains.

Indicators of good quality:

- Presence of lichens such as *Alectoria ochroleuca*, *Cetraria islandica*, *Cladonia* spp. div.
- Stability of populations of rare species
- No signs of erosion due to grazing, indicated by open soil or patches of unpalatable herbs
- No visible disturbance by trampling, skiing, or burning
- Absence of nutrient-demanding weeds
- Continuance of grazing for *Nardus stricta*-dominated grasslands.

Characteristic species:

Vascular plants: *Agrostis nevadensis*, *Agrostis rupestris*, *Anthoxanthum odoratum* s. *alpinum*, *Anthyllis vulneraria* s. *pulchella*, *Avenula versicolor*, *Bellardiochloa violacea*, *Campanula alpina*, *Campanula herminii*, *Campanula scheuchzeri*, *Carex bigelowii*, *Carex curvula*, *Carex sempervirens*, *Cruciata glabra*, *Cynosurus cristatus*, *Danthonia decumbens*, *Deschampsia flexuosa*, *Euphrasia minima*, *Festuca airoides*, *Festuca eskia*, *Festuca iberica*, *Gentiana alpina*, *Gentiana alpina*, *Geum montanum*, *Globularia meridionalis*, *Helianthemum oelandicum* s. *incanum*, *Hieracium alpinum*, *Hieracium lactucella*, *Holcus lanatus*, *Homogyne alpina*, *Iris latifolia*, *Juncus squarrosus*, *Juncus trifidus*, *Koeleria lobata*, *Leontodon microcephalus*, *Leontodon pyrenaicus*, *Leucanthemopsis alpina*, *Ligusticum corsicum*, *Ligusticum mutellina*, *Lotus corniculatus* s. *carpetanus*, *Luzula nutans*, *Luzula spicata*, *Minuartia recurva*, *Minuartia verna* s. *collina*, *Nardus stricta*, *Oreochloa disticha*, *Phyteuma hemisphaericum*, *Plantago holosteum*, *Potentilla aurea*, *Potentilla erecta*, *Primula minima*, *Pulsatilla alba/alpina/scherfelii*, *Ranunculus pyrenaicus*, *Sagina pilifera*, *Senecio abrotanifolius*, *S. incanus*, *Thymus nervosus*, *Trifolium alpinum*, *Trifolium repens*, *Trinia glauca* s. *carniolica*.

Lichens and bryophytes: *Alectoria ochroleuca*, *Cetraria islandica*, *Cetraria cucullata*, *C. nivalis*, *Cladonia uncialis*, *Cladonia arbuscula*, *C. pyxidata*, *C. rangiferina*, *Thamnolia vermicularis*, *Racomitrium lanuginosum*, *Polytrichum alpinum*, *P. strictum*.

Classification

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

following typologies.

EUNIS:

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EuroVegChecklist:

Agrostion schraderanae Grabherr 1993

Anemonastro sibirici-Festucion ovinae Chytrý et al. 1993 (Russia)

Anemonion speciosae Minaeva ex Onipchenko 2002 (Caucasus)

Carici macrostyli-Nardion (Rivas-Mart. et al. 1984) de Foucault 1994

Carici-Juncion trifidi Nordhagen 1943

Caricion curvulae Br.-Bl. 1925

Festucion eskiae Br.-Bl. 1948

Festucion macratherae Avena et Bruno 1975 corr. Petriccione et Persia 1995

Festucion supinae Br.-Bl. 1948

Festucion variae Br.-Bl. ex Guinochet 1938

Festucion woronowii Tsepkova 1987 (Caucasus)

Juncion trifidi Krajina 1934

Nardion strictae Br.-Bl. 1926

Poion violaceae Horvat et al. 1937

Potentillo montenegrinae-Festucion paniculatae Redžić ex Carni et Mucina 2013

Potentillo rigoanae-Festucion paniculatae Di Pietro all. nova

Potentillo ternatae-Nardion Simon 1958

Seslerion comosae Horvat et al. 1937

Annex 1:

6140 Siliceous Pyrenean *Festuca eskia* grasslands

6150 Siliceous alpine and boreal grasslands

62D0 Oro-Moesian acidophilous grasslands

6230 Species-rich *Nardus* grasslands on silicious substrates in mountain areas (and submontane areas in Continental Europe) (partly)

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?

Yes

Regions

Alpine

Justification

The habitat type is widespread throughout all temperate mountain regions of Europe, representing climax communities on predominantly siliceous bedrocks.

Geographic occurrence and trends

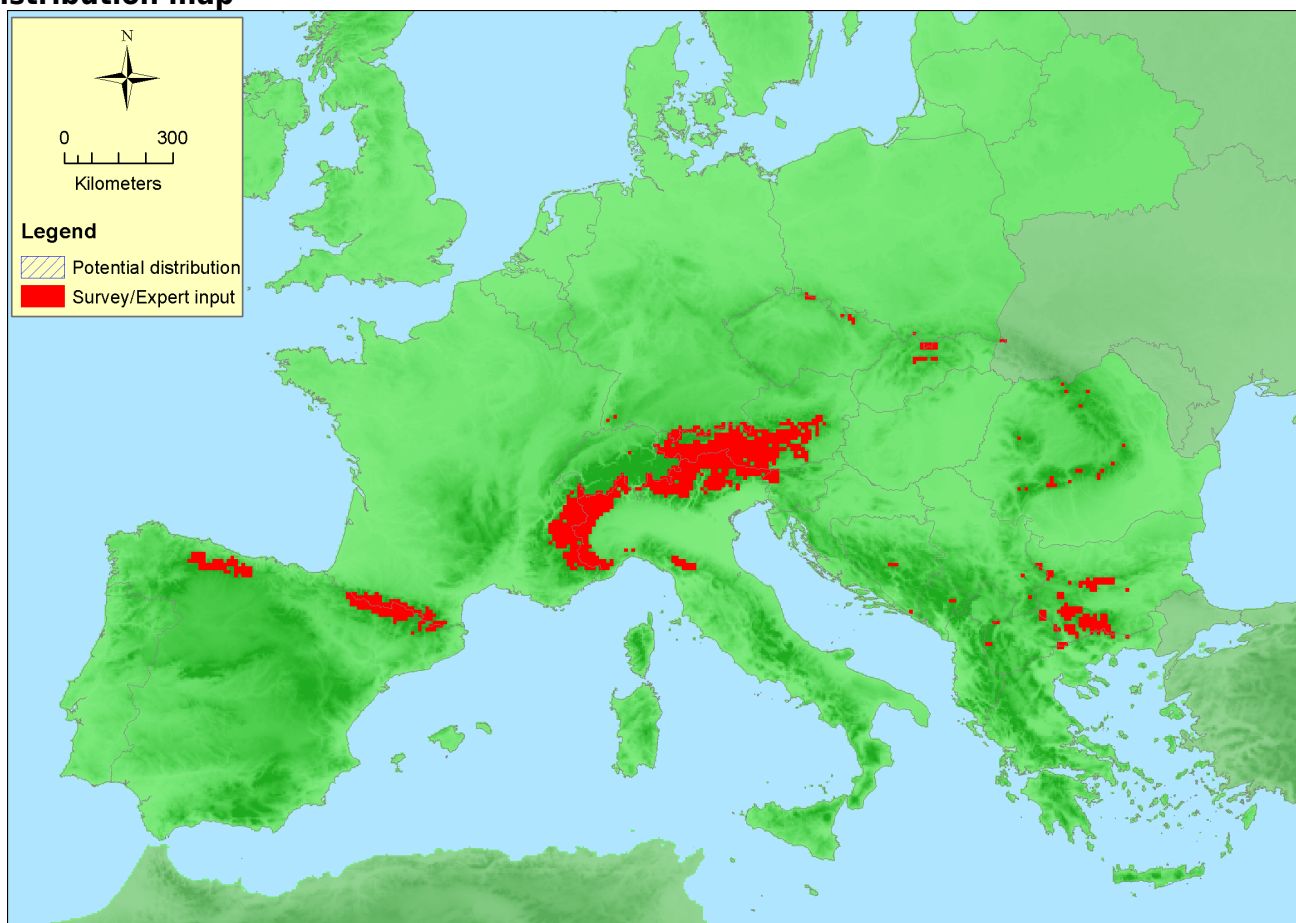
EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>Austria</i>	Present	3840 Km ²	Decreasing	Decreasing
<i>Belgium</i>	Uncertain	Km ²	-	-
<i>Bulgaria</i>	Present	656 Km ²	Decreasing	Decreasing
<i>Czech Republic</i>	Present	7.6 Km ²	Decreasing	Decreasing
<i>France</i>	Corsica: Present France mainland: Present	2700 Km ²	Decreasing	Decreasing
<i>Germany</i>	Present	50 Km ²	Decreasing	Decreasing
<i>Greece</i>	Greece (mainland and other islands): Present	4.2 Km ²	Unknown	Decreasing
<i>Ireland</i>	Present	5 Km ²	Unknown	Unknown
<i>Italy</i>	Italy mainland: Present	2415 Km ²	Decreasing	Decreasing
<i>Poland</i>	Present	28 Km ²	Decreasing	Stable
<i>Romania</i>	Present	136 Km ²	Decreasing	Decreasing
<i>Slovakia</i>	Present	40 Km ²	Decreasing	Decreasing
<i>Slovenia</i>	Present	113 Km ²	Stable	Stable
<i>Spain</i>	Spain mainland: Present	725 Km ²	Stable	Unknown
<i>UK</i>	United Kingdom: Present	380 Km ²	Decreasing	Decreasing

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	5 Km ²	Decreasing	Decreasing
<i>Former Yugoslavian Republic of Macedonia (FYROM)</i>	Present	550 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	-	-
<i>Switzerland</i>	Present	1700 Km ²	Unknown	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	1720050 Km ²	1167	11100 Km ²	
EU 28+	1720050 Km ²	1180	13355 Km ²	no data from Albania, Montenegro and Serbia

Distribution map



The map is rather complete, with some data gaps on the Balkan, in the Carpathians and in Switzerland. Data sources: EVA, ART17.

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

80%. Further important occurrences are in Switzerland and on the Balkan peninsula.

Trends in quantity

Average Trend EU28: -9.9% over the last decades

Average Trend EU28+: -8.6% over the last decades

The surface of the habitat type was probably at its maximum around 1850 and since then has been steadily decreasing. Over the last 50 years, a relative loss of area of approximately 10% has been reported in EU28 and EU28+ countries. Whereas the habitat type remained more or less stable in Spain or Slovenia, a more serious decline was reported by Germany, Italy and the Czech Republic, mainly due to abandonment of traditional land-use practices in the subalpine zone and corresponding succession processes. At a local scale, the loss of habitats was also related to the construction of skiing complexes. According to the provided data, an ongoing decline at a pan-European level is expected to occur in the

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 EOO is larger than 50.000 km². The habitat is widespread across temperate high-mountain regions in Europe.

- 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 has a small total area. In fact, large areas in the alpine and subalpine zone of the Alpine biogeographical region are occupied by this habitat type.

Trends in quality

Most of the EU28 countries reported either a slight or a moderate decrease in quality over the last 50 years. Degradation was mainly related to climate change and biocenotic evolution due to abandonment of grazing practices in the subalpine zone. Furthermore, in some areas local overgrazing was also associated with degradation of the habitat. The calculated extent of degradation in EU28 is 18.1% with 31.5% severity of degradation. Concerning EU28+, Switzerland has reported a severe decrease in quality over the last 50 years. The extent of degradation in EU28+ is 19.1% with 34.7% severity of degradation.

- Average current trend in quality

EU 28: Stable

EU 28+: Stable

Pressures and threats

Grasslands in the alpine zone are primary grasslands. As they are temperature dependent, the main threats are related to changes of abiotic conditions due to climate change. 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 and the major threat comes from abandonment of traditional land-use practices, especially abandonment of pastoral systems, and corresponding succession processes. Other threats, both in the alpine and subalpine zone, are associated with outdoor sports and leisure activities, for example mountaineering and rock climbing. Local loss of habitats occurred due to construction of skiing resorts.

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

Sport and leisure structures

Natural biotic and abiotic processes (without catastrophes)

Biocenotic evolution, succession

Climate change

Changes in abiotic conditions

Conservation and management

The maintenance of these grasslands by resumption of traditional pastoral systems in the subalpine zone is one of the key factors for conserving this habitat type. Furthermore, provident management strategies are necessary to delimit local overgrazing. To avoid an ongoing loss of habitats due to construction of skiing complexes further protected areas have to be established in ecologically sensitive areas.

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:

6140: ALP U1, ATL FV

6150: ALP FV, ATL U2, CON U1

62D0: ALP U1, CON U1

6230: ALP U2, ATL U2, CON U2, MED XX

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

Alpine siliceous grasslands represent climax communities, that prefer the highest summits and ridges. Once destroyed or severely damaged (e. g. due to construction of skiing complexes), the recovery of the habitat type by natural succession processes will take a very long time. Semi-natural habitats of the subalpine zone with modified species composition due to abandonment of traditional land-use practices need human intervention for restoration. This can be achieved by re-introducing 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	-9.9 %	unknown %	unknown %	unknown %
EU 28+	-8.6 %	unknown %	unknown %	unknown %

The values for A1 were calculated from the territorial data sheets. The calculated trend in the last 50 years is a reduction of about 9.9% (EU28) and 8.6% (EU28+), respectively (resulting in category Least Concern). No data (%) available or insufficient data for 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

Both values (AOO and EOO) are relatively large and do not meet criterion B. Sub-criteria were not evaluated because the values for EOO and AOO are well above the thresholds.

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	18.1 %	31.5 %	unknown %	unknown %	unknown %	unknown %
EU 28+	19.1 %	34.7 %	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 from the territorial data sheets. The calculated figures result in a Least Concern category. No reliable data (%) available for C/D2, C/D3, C1, C2, C3, D1, D2 and D3.

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	DD	DD	DD	DD
EU28+	LC	DD	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)

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