E4.3a Boreal and arctic acidophilous alpine grassland

Summary

These boreal and arctic acidophilous alpine grasslands, dominated by low graminoids and herbs, are characteristic of shallow base-poor soils with thick late snow-lie, occurring through the high mountains of Fennoscandia, Iceland and Scotland. Largely unthreatened, the habitat quantity and quality have remained stable over the last 50 years, though global warming and air-borne pollutants might be expected to have some futute effect. Avoiding disturbance and destruction of sites will be best achieved by establishing protected areas and/or wilderness areas.

Synthesis

Despite missing data from Sweden and Iceland and incomplete data from Norway the available data seem to give a reliable overview on the real situation. Both habitat quantity and quality remained stable over the last 50 years. Hence, the overall analysis of territorial data leads according to stable trends in quantity and quality to the category Least Concern (LC) both for EU28 and 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

No subtypes required for further examination.

Habitat Type

Code and name

E4.3a Boreal and arctic acidophilous alpine grassland

Boreal acidophilous grassland at Saanajarvi, Finland (Photo: Saara Tynys).

Dry grassland with *Juncus trifidus*, *Carex bigelowi* and *Festuca ovina* in the high mountains of Dovre, Oppland, Norway (Photo: Yngve Rekdal NIBIO).

Habitat description

Boreal and arctic acidophilous alpine grasslands represent grass-, sedge-, rush- or herb-dominated vegetation types in boreal and arcto-alpine mountains of Fennoscandia, Iceland and Scotland. The habitat includes a quite wide range of different vegetation communities from low-graminoid mountain heaths to mountain meadows. Common to these varieties is a low field layer, usually < 30 cm. These grasslands

occur predominantly on siliceous bedrock and they are in most sites characterized by thick and late-lying snow cover.

There is no single characteristic species describing all of these grassland habitats, and the species composition varies according to the vegetation community. In high mountains grasses (*Nardus stricta, Festuca ovina*), sedges *(Carex bigelowii*) and/or rushes (*Juncus trifidus*) dominate the so-called graminoid mountain heaths (order *Juncetalia trifidi*). Other species present are a mixture of typical species for mountain heaths, snowbeds and mountain meadows. Mountain meadows (secondary grasslands) belonging to this habitat type are low-herb communities consisting mainly of *Bistorta vivipara, Cerastium alpinum, Thalictrum alpinum, Saussurea alpina, Ranunculus acris, Silene acaulis, Astragalus alpinus, A. frigidus, Ericeron uniflorus* and *Potentilla crantzii* (*alliance Potentillo-Polygonion vivipari*), forming a boreal equivalent to E2.3 Mountain hay meadows. The distinction between this habitat type and E4.4a Calcareous arctic-alpine grasslands does not relate only to the chemistry of bedrock, but is also reflected in the average height of vegetation, which in this habitat is usually relatively low.

Climate change can increase the growth of bushes and shrubs, which may reduce the area of grasslands.

Indicators of good quality:

The following characteristics are indicators of good quality:

· Openness (no trees or shrubs)

· Dominance of low sedges, rushes, grasses or hebs

· Thick snow cover

Characteristic species:

Species marked with (*) are calciphilic in Fennoscandia, but in the arctic are indifferent fro soil type.

Vascular plants: *Astragalus alpinus*, Astragalus frigidus*, Bistorta vivipara, Carex bigelowii, Cassiope tetragona, Cerastium alpinum*,Deschampsia flexuosa, Ericeron uniflorus*, Festuca ovina, Hieracium alpinum, Juncus trifidus, Luzula multiflora* ssp. *frigida, Nardus stricta, Poa alpina*, Potentilla crantzii*, Ranunculus acris ssp. pumila, Salix polaris*, Saussurea alpina*, Silene acaulis*, Soligado virgaurea, Thalictrum alpinum*, Trisetum spicatum, Veronica alpina*, Viola biflora*

Mosses and liverworts: *Polytrichastrum alpinum, Polyrichum juniperinum*

Lichens: *Cetraria spp., Flavocetraria spp.*

Classification

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

EUNIS:

E4.3 Acid alpine and subalpine grassland

EuroVegChecklist:

Carici-Juncion trifidi Nordhagen 1943

Nardo-Caricion rigidae Nordhagen 1943 (Iceland)

Potentillo-Polygonion vivipari Nordhagen ex Dierßen 1992 (alpine parts)

Annex 1:

6150 Siliceous alpine and boreal grasslands

Emerald:

E4.3 Acid alpine and subalpine grassland

MAES-2:

Grasslands

IUCN:

4.2 Subarctic grassland

4.4 Temperate grassland

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

Regions
Alpine
Boreal

Justification
Boreal and arctic acidophilous alpine grasslands represent important vegetation types in boreal and arcto-alpine mountains of Fennoscandia.

Geographic occurrence and trends

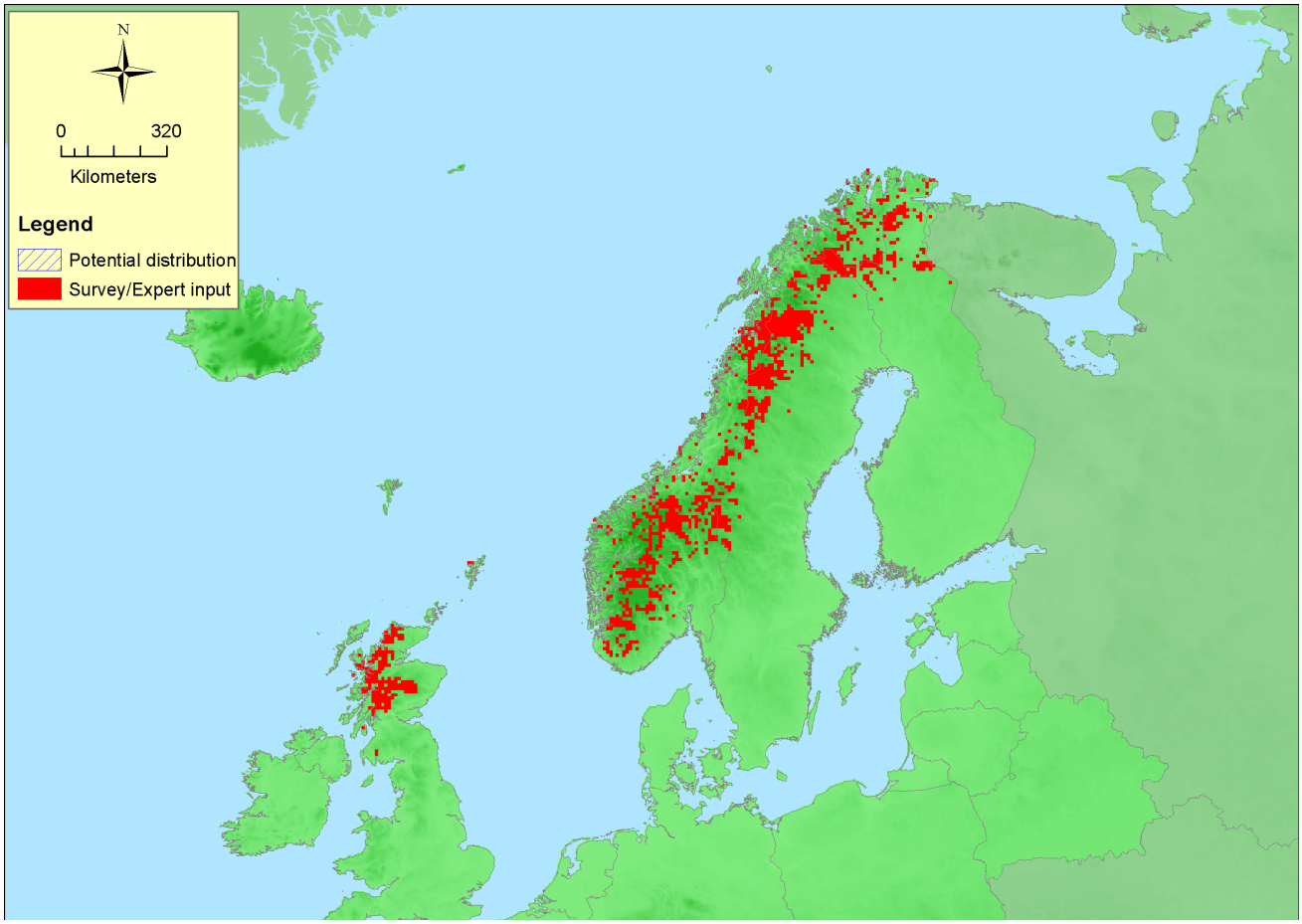
EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
Finland	Finland mainland: Present	195 Km^2	Stable	Stable
Sweden	Uncertain	Km^2	-	-

EU 28 +	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
Iceland	Present	unknown Km^2	-	-
Norway	Norway Mainland: Present	1299 Km^2	Stable	Stable

Extent of Occurrence, Area of Occupancy and habitat area

	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
EU 28	915800 Km^2	733	195 Km^2	no data from Sweden
EU 28+	1152950 Km^2	1325	1494 Km^2	no data from Sweden, Iceland

Distribution map



The map is rather complete, although there maybe some occurrences on Iceland or the Far Oer islands. Data sources: EVA, ART17, GBIF.

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

Less than 40%. Outside the EU28 this habitat occurs in Norway and Iceland. Outside the EU28+ the habitat is found in Russia.

Trends in quantity

Both for EU28 and EU28+ no significant decline has been recorded over the last 50 years. No informations regarding long historical or future trends have been provided in the territorial data sheets.

- 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 50000 km². The habitat is widespread in the mountainous areas of the Boreal and Arctic biogeographic region.
- Does the habitat have a small natural range by reason of its intrinsically restricted area?
  No
  Justification
  The underlying factors are not restricted to a limited area or range.

Trends in quality

According to the reported data the quality of the habitat type remained stable over the last 50 years. No

informations regarding future trends have been provided in the territorial data sheets.

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

Pressures and threats

Though no threats or pressures have been reported by national experts, the habitat type might be at least affected by global warming and air-borne pollutants. Climate change is expected to increase the growth of bushes and shrubs, which may reduce the area of grasslands.

List of pressures and threats

Pollution

Air pollution, air-borne pollutants

Climate change

Changes in abiotic conditions
Changes in biotic conditions

No threats or pressures

No threats or pressures

Conservation and management

This habitat type contains mainly natural grasslands. Therefore, no special measures are required except avoiding disturbances and destruction of sites. This is achieved best by establishing protected areas and/or wilderness areas. For meadows of this habitat type extensive mowing or grazing is required.

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
Establishing wilderness areas/allowing succession

Conservation status

Annex 1:

6150: ALP FV, BOR FV

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

Boreal and arctic acidophilous alpine grasslands represent mainly climax communities. 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 in the cold climate where they occur.

Effort required

200+ years
Naturally

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	0 %	unknown %	unknown %	unknown %
EU 28+	0 %	unknown %	unknown %	unknown %

The values for A1 were calculated from the territorial data sheets. The area remained stable over the last 50 years both for EU28 and EU28 (resulting in category Least Concern). No data (%) available or unsufficient 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	No	No	No	> 50	No	No	No	No
EU 28+	> 50000 Km^2	No	No	No	> 50	No	No	No	No

The EOO, AOO and number of locations are all much largr than 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	0 %	0 %	unknown %	unknown %	unknown %	unknown %
EU 28+	0 %	0 %	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 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

Criterion E	Probability of collapse
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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References

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