H2.2 Boreal and arctic base-rich scree

Summary

The boreal and arctic base-rich scree and block fields comprise talus or freeze-thaw block fields of calcareous rocks in the southern boreal to arctic regions, mainly in the Scandinavian Mountain range, Iceland and Svalbard. Because of the large variation in climate, the habitat harbours a large diversity of species and plant communities, but this habitat includes only the sparse assemblages of vascular plants growing in sparse patches. These are dependent on the natural or seminatural disturbance regime, periodic rockfall and continuing instability of the substrate in the case of screes, and in some regions also a long tradition of grazing. This and tourist activity may cause additional erosion in the habitat to such an extent that it disturbs the formation of typical vegetation. Additional threats are from overgrowth of vegetation because of the lack of fires and higher atmospheric nitrogen-inputs.

Synthesis

Due to lack of quantitative data for most of the distribution range the habitat is assessed as Data Deficient (DD).

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Data Deficient	-	Data Deficient	-

Sub-habitat types that may require further examination

The habitat type partly corresponds to mountain calcareous bedrock outcrops and boulder fields and includes calcareous talus formations. Such sub-types can be distinguished.

Habitat Type

Code and name

H2.2 Boreal and arctic base-rich scree

Baserich screes under cliff Skansen, Petuniabukta Bay, Svalbard (Photo: Petr Šmarda).

Characteristic plant on calcareous screes, *Arenaria pseudofrigida*, Svalbard (Photo: Petr Šmarda).

Habitat description

This habitat type is connected to calcareous rock types, such as limestone, dolomite or calcareous siltstone. The habitat type extends from the southern boreal region to the arctic zone and harbours therefore large diversity of species and plant communities. Screes (or talus formations) are formed when

rock fragments fall off from cliff faces as a result of physical and chemical weathering and erosion. Screes often show a sorting of rock fragments. The largest blocks roll down the furthest, whereas the finest material accumulates in the uppermost part of the slope. Most occurrences of this habitat type probably represent scree slopes but also flat baserich gravel or blockfields may have been formed by frost action breaking calcareous rock outcrops *in situ*.

Baserich or calcareous screes are distributed mainly in the Scandinavian Mountain range, Iceland and Svalbard. In Iceland the division between baserich and basepoor scree habitats is not as clear as elsewhere in northern Europe, but the species composition on more-or-less neutral screes fits best in the here described habitat type. The sparsely vegetated flat, stony and sandy volcanic habitats of Central Island are included in type H5.1c.

Similar to siliceous screes, the vegetation of baserich screes varies in the boreal region from forests to scrubs and sparsely vegetated, unstable patches, if considered as a whole. However, the habitat type in question only refers to more or less open patches that do not have a tree or scrub layer. In screes, the most characteristic assemblages of vascular plants are found in the unstable patches, where also weak competitors or various pioneer communities can persist. On calcareous substrate, characteristic plants are *Arenaria humifusa, A. norvegica, A. pseudofrigida, Artemisia norvegica, Papaver* species of the *Papaver radicatum* group, *Papaver relictum, Papaver laestadianum* and *Braya linearis*.

The most important factor determining the species composition of screes is natural or seminatural disturbance regime, which maintains characteristic species assemblages. In screes, the disturbance regime is characterized by the continuum of periodic rockfall, unstability of the substrate, and in some regions also by the long tradition of grazing. In some cases, grazing or, e.g., hiking or mountaineering activities may cause additional erosion in the habitat to such an extent that it disturbs the formation of typical vegetation.

Indicators of good quality:

· natural or seminatural disturbance regime, with a continuum of periodic rockfall and unstability of the substrate or (in some cases) forest fires

· no or little succession towards scrub and forest

· continuation of traditional grazing (where relevant)

· no disturbance (for example by hiking, grazing, etc.)

· diversity of lichen, moss and vascular plant species

Characteristic species:

Majority of the listed species are relevant for the Scandinavian scree habitats, where they represent floral elements from southern boreal region to mid alpine levels. Species relevant also or especially for Svalbard are marked with (S).

Flora

Vascular plants: *Arabis alpina, Arenaria humifusa, A. norvegica, A. pseudofrigida* (S), *Artemisia norvegica, Braya linearis, B. purpurascens* (S), *Campanula rotundifolia, Cardaminopsis petraea, Carex capillaris, C. bigelowii, C. glacialis, C. misandra* (S), C. rupestris, Cerastium alpinum, Draba fladnizensis, D. nivalis, D. norvegica, Dryas octopetala, *Elymus macrourus* (*Roegneria borealis* subsp. *islandica*), *Equisetum scirpoides*, *E. variegatum, Gymnocarpium robertianum, Kobresia simpliuscula* (S), *Luzula arcuata* (S), *Minuartia rubella. M. stricta, Oxytropis lapponica, Papaver laestadianum, P. radicatum* coll., *P. relictum, Pinguicula alpina, Poa alpina, P. glauca, Potentilla nivea* (S), *Salix reticulata, Saxifraga aizoides, S. nivalis, S. oppositifolia, Silene acaulis, Thalictrum alpinum, Tofieldia pusilla, Woodsia alpina.*

Lichens: *Caloplaca* ssp., *Polyblastia* ssp., *Protoblastenia rupestris, Thelidium* ssp., *Verrucaria* ssp.

Fauna

Insects: Spiders

Classification

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

EUNIS:

H2.2 Cold base-rich screes

Euroveg Checklist:

Arenarion norvegicae Nordhagen 1935
Annex 1:

8120 Calcareous and calcshist screes of the montane to alpine levels (only partly)

Emerald:

H2.2 Cold limestone screes

MAES-2:

Sparsely or unvegetated land

IUCN:

6 Rocky areas

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

Yes

Regions
Boreal
Arctic

Justification
Boreal and arctic zone only.

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	0.3 Km^2	Stable	Stable
Sweden	Present	Unknown Km^2	Unknown	Unknown
UK	Northern Island: Present	Unknown Km^2	Unknown	Unknown

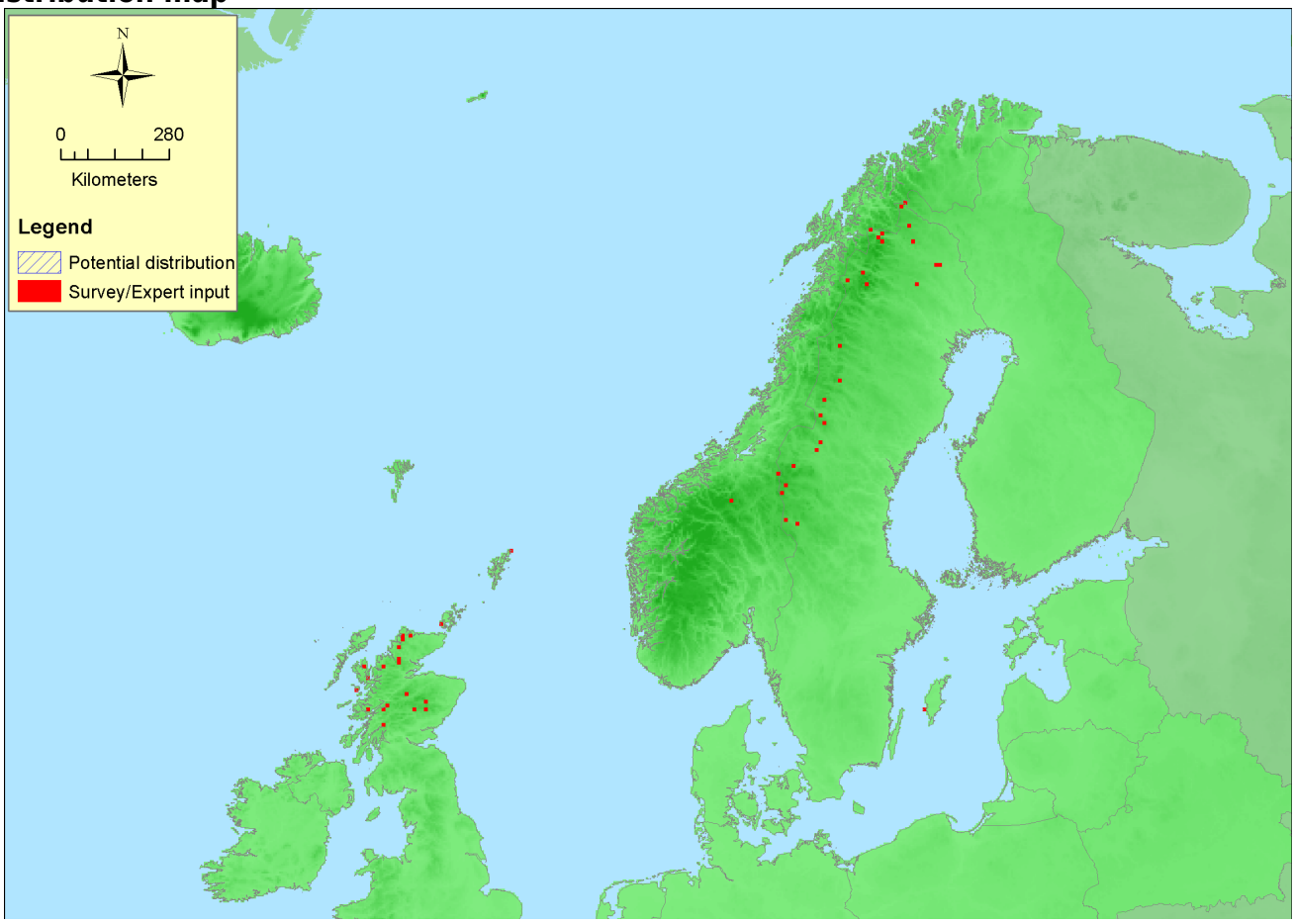
EU 28 +	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
Norway	Norway Mainland: Present	Unknown Km^2	Unknown	Unknown

Extent of Occurrence, Area of Occupancy and habitat area

	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
EU 28	1145050 Km^2	47	unknown Km^2	

	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
EU 28+	1145050 Km^2	49	unknown Km^2	

Distribution map



The map is very incomplete, especially for Svalbard, Iceland and Norway. Data sources: Art17, EVA.

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

The habitat is restricted to the arctic-boreal zone in FI, IS, NO (incl. SV), SE

Trends in quantity

No data for assesment.

- Average current trend in quantity (extent)
  EU 28: Unknown
  EU 28+: Unknown
- Does the habitat type have a small natural range following regression?
  Unknown
  Justification
- Does the habitat have a small natural range by reason of its intrinsically restricted area?
  Yes
  Justification

Trends in quality

No data for assesment.

- Average current trend in quality

EU 28: Unknown
EU 28+: Unknown

Pressures and threats

Based on Finish data only: Currently known/assumed occurrences are in the northern fell area and in the Kuusamo district. It is assumed that no significant quantitative or qualitative changes have occurred in the past 50 years. The habitat type partly corresponds to 8.9.3 Mountain calcareous bedrock outcrops and boulder fields and includes 8.10.2 Calcareous talus formations. The mentioned habitat types are both categorized NT in the assessment of threatened habitat types in Finland (fell habitats assessed Norokorpi et al. 2008). The potential threat is overgrowth of vegetation in relation to the lack of fires, the higher atmospheric nitrogen-inputs, the species composition changes due succession. Forest plantations on open ground, construction of dispersed habitations are of lesser concern. The habitat type partly corresponds to 8.9.3 Mountain calcareous bedrock outcrops and boulder fields and includes 8.10.2 Calcareous talus formations. The mentioned habitat types are both categorized NT in the assessment of threatened habitat types in Finland (fell habitats assessed Norokorpi et al. 2008).

List of pressures and threats

Sylviculture, forestry

Forest planting on open ground
Forest and Plantation management & use

Urbanisation, residential and commercial development

Dispersed habitation

Pollution

Nitrogen-input

Natural System modifications

Lack of fires

Natural biotic and abiotic processes (without catastrophes)

Species composition change (succession)

Conservation and management

To preserve natural or semi natural disturbance regime, with a continuum of periodic rockfall and instability of the substrate the protection of some areas as nature reserve is recommended. Also management to stop the succession towards scrub and forest. Negative factors can be intensive grazing, hiking and trampling.

List of conservation and management needs

No measures

Measures needed, but not implemented

Conservation status

8210: BOR FV

When severely damaged, does the habitat retain the capacity to recover its typical

character and functionality?

At least for generalist rock plants, the natural recovery of this habitat is possible and fast when it is not isolated from habitats of the same type. The return of specialized nesting birds after strong disturbances is less easy for example. The same applies to specialists plants of rock micro-habitats.

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 %

Trend data on the area have only been reported from Finland (stable), and as important data from Sweden, UK and Norway are lacking, the conclusion for criterion A is Data Deficient.

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

The calculated AOO is below the thresholds fro criterion B (resp. 47 and 49 for EU28 and EU28+), but the map is rather incomplete and therefore it is expected that the value in reality is larger than 50. It may be below the Near Threatened threshold of 100 grid cells however. As no trend on quality or quantity is known, and nothing is known about likely future threats, criterion B has been evaluated as Data Deficient.

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	unknown %	unknown %	unknown %	unknown %	unknown %	unknown %
EU 28+	unknown %	unknown %	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%

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%

Trend data on the quality have only been reported from Finland (stable over the last 50 years). Because of large data gaps (Sweden, Scotland, Norway) the conclusion for criterion A is Data Deficient.

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	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	DD	DD	DD	DD	DD	DD	DD	DD	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
Data Deficient	-	Data Deficient	-

Confidence in the assessment
Low (mainly based on uncertain or indirect information, inferred and suspected data values, and/or limited expert knowledge)

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