

## H5.1c Subarctic volcanic field

### Summary

This habitat comprises sparsely vegetated volcanic features such as active volcanos, recently formed lava streams, and older lava fields and rocks, as well as volcanic slopes and plains in the subarctic and arctic regions of Europe, mostly on Iceland and parts of Jan Mayen. The rock surfaces and volcanic soils are only slowly colonised, are nutrient-poor and subject to continuing effects of wind erosion and desiccation. Vascular plants and few and cryptogams are generally sparse but accumulating soil and depressions benefiting from snow-lie may sustain more extensive vegetation. Generally very remote from human activity, the habitat suffers little direct anthropogenic influence, though climate warming may be threatening and, where volcanic activity continues, there can be more catastrophic effects.

### Synthesis

No data on trends in the habitat are available, but there are also no indications of negative trends or severe threats. For the future climate change may cause changes in quality of the habitat, but presently the habitat is assessed as Least Concern, with data gaps (Data Deficient) for relatively many criteria.

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

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

The habitat may be split in a upland subhabitat, with edaphic desert conditions, and a lowland type with different ecology.

### Habitat Type

#### Code and name

H5.1c Subarctic volcanic field



Volcano with sparsely vegetated lava on Iceland. The greyish colour is caused by lichens, especially *Stereocaulon* species (Photo: Wim Ozinga).



Sparsely vegetated volcanic soils on Iceland with the characteristic *Silene acaulis* (Photo: Wim Ozinga).

#### Habitat description

The habitat covers sparsely vegetated volcanic areas in subarctic and arctic regions of Europe. It includes active volcanos, recently formed lava streams, and older lava fields and rocks, as well as volcanic slopes

and plains with sparse vegetation. It is a relatively broad defined type, but in its distribution it is rather limited to a small part of Northern Europe. The habitat is found on large parts of the central highland of Iceland, almost everywhere where the volcanos and rocks are not covered by glaciers, and also in lowlands. Besides it covers small parts of the Norwegian arctic island Jan Mayen, in places where lava fields have been only sparsely colonized.

The central Icelandic highland has a naturally sparse vegetation cover, due to erosion by wind and rain. Here, on old lava soils, sparsely vegetated fields dominate with stony, gravelly, coarse-sandy, sometimes slightly loamy black soil, with spread pebbles and rocks. These gravel fields are called *melar* in Icelandic. They are well-drained, nutrient-poor and desiccate quickly due to wind and strong heat on sunny days. The dry conditions in these 'edaphic deserts' cause erosion of soil by wind, which prevents development of higher vegetation cover. Only few vascular plants are resistant to the harsh environment, mainly hemicryptophytic species. Examples are *Silene acaulis*, *Armeria maritima*, *Agrostis vinealis*, *Cerastium alpinum*, *Thymus arcticus*, *Festuca pruinosa* (= *F. rubra* s.l.), *Poa glauca* and *Cardaminopsis petraea*. Cryptogams are relatively rare and occur with low cover. Snow cover on wind-exposed fields is low, but in sheltered depressions transitions to snow beds occur, with higher vegetation cover and species of the alliance *Salicion herbacea*. Where soils are more stabilised lichens and mosses have higher cover and transitions towards heathlands occur. The typical plant community on these gravel fields is the association *Armerio-Silenetum acaulis*, which is classified in the alliance *Veronico-Poion glaucae*. This alliance is sometimes placed in the grassland class *Koelerio-Corynephoretea*, sometimes under the *Sedo-Scleranthetea*.

Relatively recent lava fields are colonized by lichens only, including species of *Stereocaulon* (*S. denudatum*), *Pletigera malacea*, *Cladonia* spp (*C. mitis*, *C. rangiformis*, *C. uncialis*, *C. coccifera*) and *Alectoria ochroleuca*. Further succession leads to *Racomitrium* dominated habitats, included under Moss and lichen tundra (F1.2).

Habitat H5.1c is also related to Fjell fields (H5.1a), which is also a sparsely vegetated habitat. This however is a (sub)alpine temperate and boreal mountain habitat, found in most cases on siliceous bedrock (acidic soil). In most Fjell fields lichens and mosses play an important role.

Indicators of good quality:

- Long-term stability of patches with extreme low vegetation cover
- No dominance of mosses
- Low cover of pioneer lichens

Characteristic species:

Flora, Vascular plants: *Agrostis vinealis*, *Arenaria norvegica*, *Armeria maritima*, *Cardaminopsis petraea*, *Cerastium alpinum*, *Luzula spicata*, *Lychnis alpina*, *Oxyria digyna*, *Poa glauca*, *Saxifraga oppositifolia*, *Silene acaulis*, *Thymus arcticus*.

### **Classification**

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

EUNIS:

H5.1 Fjell fields and other freeze-thaw features with very sparse or no vegetation

EuroVegChecklist (alliances):

*Veronico-Poion glaucae* Nordhagen 1943

Annex I:

8320 Fields of lava and natural excavations

Emerald:

H6 Recent volcanic features

MAES-2:

Sparsely or unvegetated land

IUCN ecosystems:

8.3 Cold desert

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

Yes

Regions

Arctic

Justification

The habitat is restricted to volcanic areas in arctic and subarctic regions. In the EU28+ it is restricted to Iceland and the island of Jan Mayen.

**Geographic occurrence and trends**

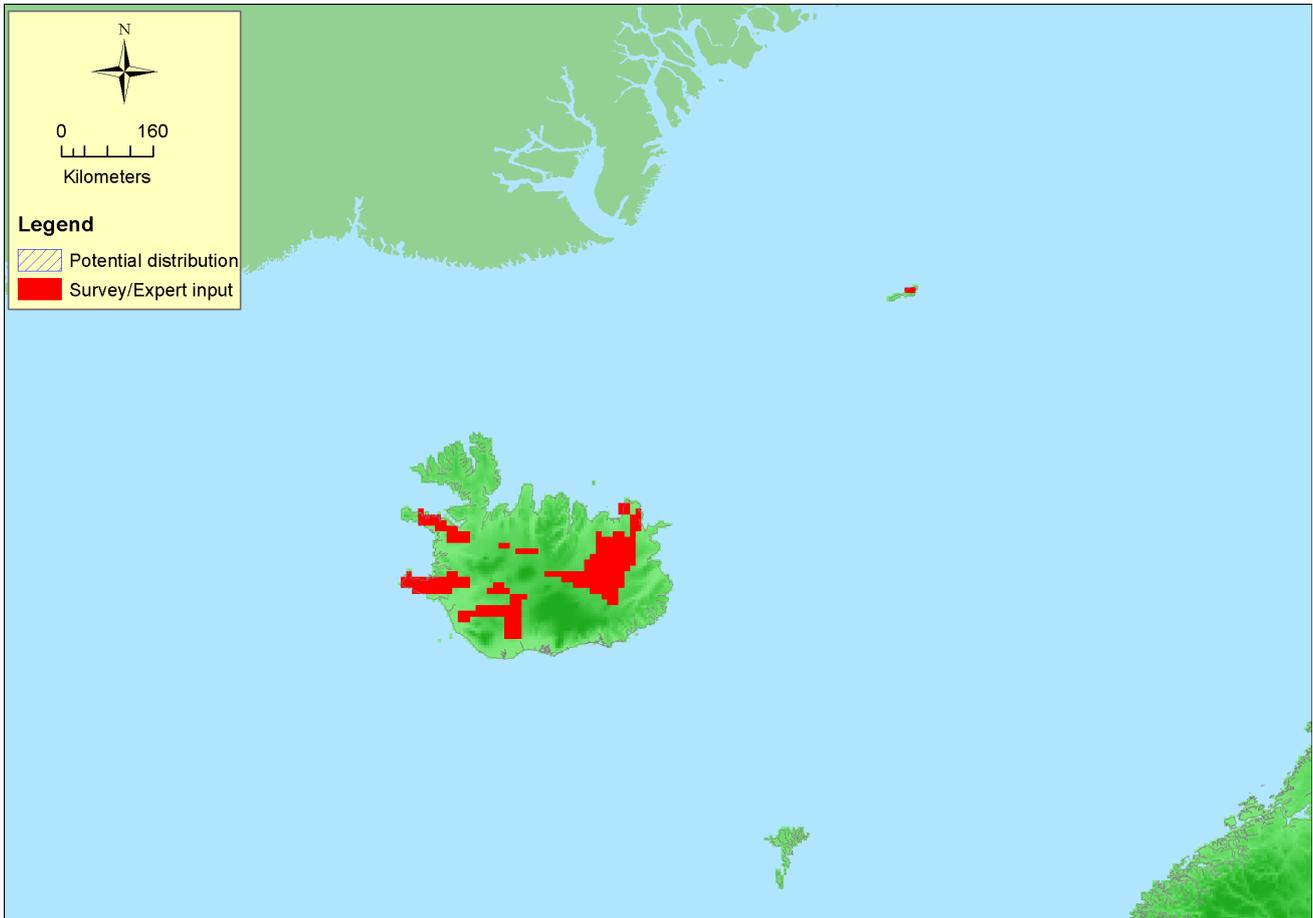
EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
-------	-------------------------------	-------------------------	--	---------------------------------------

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>Iceland</i>	Present	unknown Km <sup>2</sup>	Stable	Stable
<i>Norway</i>	Jan Mayen: Present	unknown Km <sup>2</sup>	Stable	Stable

**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>	- Km <sup>2</sup>	-	- Km <sup>2</sup>	
<i>EU 28+</i>	192250 Km <sup>2</sup>	213	unknown Km <sup>2</sup>	

**Distribution map**



The map provides a good overview of the range but is not very precise in its detail, due to lack of good data. Data sources: LIT.

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

0%. Within the geographical scope of the Red list project the habitat is restricted to the EU28+ (Iceland, Jan Mayen Island).

### Trends in quantity

There is no quantitative data on the habitat at all, but there is no indication of negative trends or severe threats either. Therefore it is estimated that trends in area are more or less stable.

- Average current trend in quantity (extent)

EU 28: -

EU 28+: Stable

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

No

*Justification*

The habitat has a relatively large range, even if it is restricted to Iceland and Jan Mayen.

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

No

*Justification*

On Iceland the habitat covers extreme large areas, including most of the upland area outside the glaciers.

### Trends in quality

There is no data at all about trends in quality. There is no indication of negative trends, but maybe some

changes can be expected in future due to global warming.

- Average current trend in quality

EU 28: -

EU 28+: Unknown

## Pressures and threats

---

This is natural vegetation occurring in remote areas which are under limited human influence. It is generally rather stable, but may be threatened by global warming. Of course, severe disturbances may be caused by natural volcanic activity.

### List of pressures and threats

#### Climate change

Changes in abiotic conditions

#### No threats or pressures

No threats or pressures

## Conservation and management

---

This is natural vegetation occurring in remote areas for which no management is needed.

### List of conservation and management needs

#### No measures

No measures needed for the conservation of the habitat/species

### Conservation status

Annex I:

8320: no data from Iceland

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

Yes, but only natural. As ecological processes occur very slow in the arctic, recovery will take a long time.

### Effort required

50+ years	200+ years
Naturally	Naturally

## Red List Assessment

---

### Criterion A: Reduction in quantity

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

There is no quantitative information on trends in area, but there are also no indications of severe threats or negative trends. Therefore the trend is indicated to be stable over the last 50 years, leading to a Least

Concern assessment.

### Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	-- Km <sup>2</sup>	-	-		--	-	-		
EU 28+	>50000 Km <sup>2</sup>	No	No	No	>50	No	No	No	No

There is no indication of negative trends or severe threats, while the AOO, EOO and number of locations are relatively high. Therefore the habitat is assessed as Least Concern under 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	- %	- %	- %	- %	- %	- %
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	- %	- %	- %	- %	- %	- %
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	- %	- %	- %	- %	- %	- %
EU 28+	unknown %	unknown %	unknown %	unknown %	unknown %	unknown %

There is no quantitative information on trends in area, but there are also no indications of severe threats or negative trends.

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

Criterion E	Probability of collapse
EU 28	--
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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EU28+	LC	DD	DD	DD	LC	LC	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD

Overall Category & Criteria	
EU 28	EU 28+

Overall Category & Criteria			
Red List Category	Red List Criteria	Red List Category	Red List Criteria
-	-	Least Concern	-

### Confidence in the assessment

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

### Assessors

J. Janssen

### Contributors

Habitat definition: J. Janssen

Territorial data: --

Working Group Sparsely Vegetated Habitats: G. Giusso Del Galdo, F. Essl, A. Mikolajczak, D. Paternoster, M. Valachovič, M. Valderrabano

### Reviewers

J. Schaminée

### Date of assessment

15/03/2016

### Date of review

17/08/2016

## References

---

Dierssen, K. 1996. *Vegetation Nordeuropas*. Verlag Eugen Ulmer, Stuttgart.

Hadač, E. (1972). Fell-field and heath communities of Reykjanes peninsula, SW Iceland. *Folia Geobot. Phytotax.* 7: 349-380.

Gunnlaugsdóttir, E. (1985). Composition and dynamical status of heathland communities in Iceland in relation to recovery measures. *Acta Phytogeographica Suecica* 75, Uppsala, 84 pp.