

H3.2f Temperate ultramafic inland cliffs

Summary

This habitat occurs in very local situations on warmer south-facing cliffs of ultramafic rocks from the lowlands to the alpine belt of the temperate zone. It has an open cover of a distinctive crevice-rooting flora, mostly annuals, grasses and certain ferns, specialised for the mineral content of the shallow soils, and supports some endemics. It is endangered by the kinds of threats common to many inland cliffs: natural erosion, slow succession, grazing and fires with quarrying for the bedrock.

Synthesis

Because of important data gaps and large uncertainties in reported data no Red List criteria could be evaluated, except those under B, due to the relatively wide distribution. Therefore this habitat type is labelled as Data Deficient (DD). It is worth improving the data because this habitat type possibly qualifies for the 'Near Threatened' category at the European scale.

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

Low altitude communities from 'older' mountain ranges may be assessed separately from high altitude communities (subalpine and alpine).

Habitat Type

Code and name

H3.2f Temperate ultramafic inland cliffs



A serpentine rocky slope with characteristic species *Ramonda nathaliae* (purple dots, upper-left) and *Scorzonera austriaca* (foreground) at Katlanovo-Pcinja, Macedonia (Photo: Vlado Matevski).



An alpine serpentine cliff with characteristic species *Carex fimbriata* at Bessans, Savoie, France (Photo: Alexis Mikolajczak).

Habitat description

This habitat occurs on southern, south-eastern and south-western slopes, from lowland to alpine belts, on bare ultramafic (e.g. serpentine) cliffs and rocks covered by shallow soil. The ultramafic rocks are ophiolitic, the content of calcium and silica is very low, but they contain high concentrations of aluminium, iron, magnesium, nickel, cobalt and chromium. The pH varies from basic to ultra-basic (5.5-8). The fluctuation of temperature, heat and drought is an important ecological factor.

The vegetation cover is low, consisting mainly of annuals, grasses and several fern species, which are adapted to the ultramafic conditions. The flora contains some rare and endemic species. The communities of this habitat are classified within the alliance *Asplenion serpentini* (order *Asplenetalia septentrionalis*) in Central Europe, and *Ramondion nathaliae* (*Potentilletalia speciosae*) in the south-central Balkan. The endemic and relict species *Ramonda nathaliae* is a typical chasmophyte which primarily grows on limestone rocks, but in the central part of Macedonia it can be found also on serpentine and siliceous rocks.

Communities on ophiolitic rocks are also found in the Western Alps (France, Italy and Switzerland) and in the Apennines. Ophiolitic cliffs are local phenomena and occur in restricted mountainous areas of those regions. *Carex fimbriata*, *Noccaea alpestris* subsp. *sylvium*, and *Cardamine plumieri* are three species occurring almost exclusively in sub- and alpine communities on ophiolitic substratum (cliffs, rock outcrops and open grasslands). *Carex fimbriata* is endemic to the Western Alps and the Apennines. Those communities have not been distinguished from other sub- and alpine alliances (cliffs: *Potentillion caulescentis*, *Violo-Cystopteridion* or *Androsacion vandellii*).

The main threats of the ultramafic rocks are mining, erosion processes, grazing, and fires.

Indicators of quality:

- species richness of the cliffs and presence of the characteristic species,
- presence of rare and endemic species.

Characteristic species:

Flora

Vascular plants: *Asplenium adulterinum*, *A. alternifolium*, *A. cuneifolium*, *A. trichomanes*, *A. septentrionale*, *Alysum murale*, *Asyneuma limonifolium*, *Campanula rotundifolia*, *Cardamine plumieri*, *Carex fimbriata*, *Cistus incanus*, *Dorycnium herbaceum*, *Festuca pallens*, *Halacsya sendtneri*, *Minuartia hybrida*, *M. viscosa*, *Noccaea alpestris* subsp. *sylvium*, *Notholaena marantae*, *Onosma echioides*, *Polypodium vulgare*, *Potentilla mollis*, *Silene flavescens*, *Thlaspi praecox*.

Mosses: *Brachythecium velutinum*, *Frullania dilatata*, *Homalothecium sericeum*, *Hypnum cupressiforme*, *Polytrichum piliferum*

Classification

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

EUNIS:

H3.2 Basic and ultra-basic inland cliffs

EuroVegChecklist:

Asplenion serpentini Br.-Bl. et Tx. ex Egger 1955

Ramondion nathaliae Horvat ex Simon 1958

Annex 1:

8210 Calcareous rocky slopes with chasmophytic vegetation

Emerald :

H3.2 Basic and ultra-basic inland cliff

MAES-2 :

Sparsely vegetated land

IUCN :

6 Rocky area

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

Yes

Regions

Alpine

Justification

Ultramafic outcrops are scattered across Europe according to the presence of ophiolitic rocks. They occur more within- and around the alpine biogeographical region.

Geographic occurrence and trends

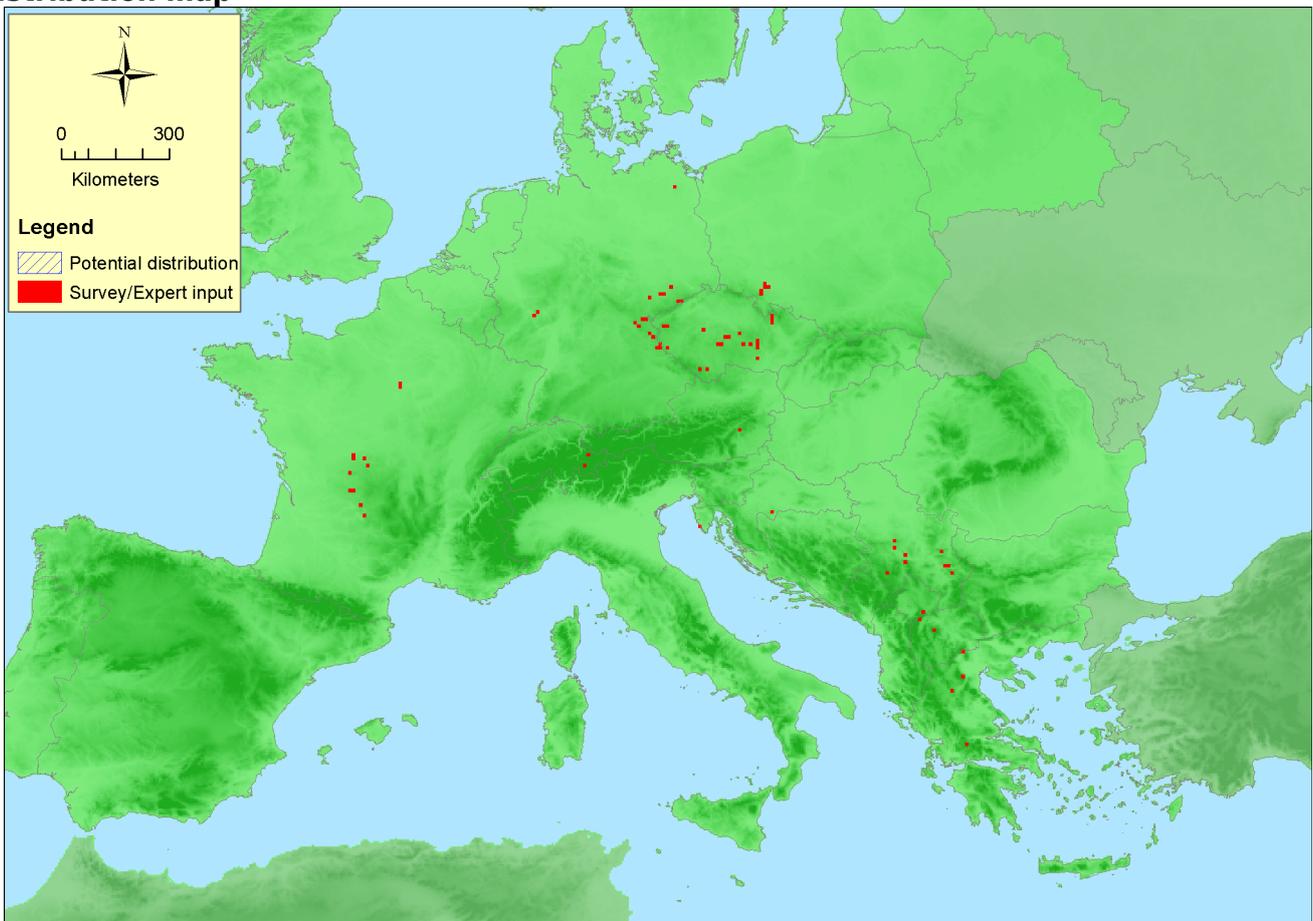
EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>Bulgaria</i>	Present	unknown Km ²	Stable	Stable
<i>Croatia</i>	Present	unknown Km ²	Unknown	Unknown
<i>Czech Republic</i>	Present	0.5 Km ²	Stable	Unknown
<i>France</i>	France mainland: Present	unknown Km ²	Unknown	Unknown
<i>Germany</i>	Present	2 Km ²	Decreasing	Decreasing
<i>Greece</i>	Greece (mainland and other islands): Present	4 Km ²	Stable	Stable
<i>Italy</i>	Italy mainland: Present	unknown Km ²	Decreasing	Decreasing
<i>Slovenia</i>	Present	0.05 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>Bosnia and Herzegovina</i>	Present	5 Km ²	Stable	Decreasing
<i>Former Yugoslavian Republic of Macedonia (FYROM)</i>	Present	5 Km ²	Unknown	Decreasing
<i>Switzerland</i>	Present	0.1 Km ²	Decreasing	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	>50000 Km ²	unknown	unknown Km ²	
EU 28+	>50000 Km ²	unknown	unknown Km ²	

Distribution map



The map is very incomplete and underestimates the distribution due to data gaps. All alpine locations in France, Italy and Switzerland are missing. Data sources: EVA, GBIF.

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

About 90 %. Excepting *Asplenium adnigrum* many characteristic plants of this habitat type are endemic or limited to sub-parts of Europe.

Trends in quantity

No trend at the European scale can be estimated for this habitat type because of three problems: a lot of missing data, possible overlaps between H3.2e-f-g definitions, and some uncertain data (when provided). Based on existing reliable data, however, the recent decrease should be slightly decreasing in Western Europe and more stable elsewhere. Germany has reported quite a significant historical decrease, between 30 and 50 %. There is also a big difference of context between low-land and high-mountain occurrences.

- Average current trend in quantity (extent)

EU 28: Unknown

EU 28+: Unknown

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

No

Justification

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

Yes

Justification

Yes. Ophiolitic cliffs and rock outcrops always occur on restricted areas (small spots) within a larger landscape.

Trends in quality

No trend at the European scale can be estimated for this habitat type because of three problems: a lot of missing data, possible overlaps between H3.2e-f-g definitions, and some uncertain data (when provided). Based on existing reliable data, however, a recent decrease in quality has occurred in many countries with extent affected up to 30 % and level of severity up to 50% in Western Europe (Italy, Switzerland and Germany). There is also a big difference of context between low-land and high-mountain occurrences.

- Average current trend in quality

EU 28: Unknown

EU 28+: Unknown

Pressures and threats

Among the main threats is quarrying, which is scattered across the habitat range. Another threat is biological succession and the change of species linked to natural (and artificial) afforestation that causes rocks cliffs and outcrops to become more shaded, which favours shade-tolerant species (many bryophytes) at the expense of full-light species.

List of pressures and threats

Mining, extraction of materials and energy production

Mining and quarrying

Natural biotic and abiotic processes (without catastrophes)

Biocenotic evolution, succession

Interspecific floral relations

Conservation and management

This habitat type benefits mainly from the conservation of some emblematic - and often protected - species, like *Asplenium cuneifolium* (protected in France) or *Asplenium adulterinum* (Annex II Natura 2000). This kind of conservation usually takes place in 'older' and lower mountain ranges within which the habitat occurs on small and well-known spots (Central Massif in France, Bohemian Massif in Czech Republic). There, conservation usually consists of protecting the species and habitat from degradations and in restoring proper habitat conditions (e.g. cutting surrounding trees). In the Alps, conservation depends on the presence of protected areas. The knowledge of this habitat and associated plant species in the Alps should also be improved. A legal protection should be attributed to *Carex fimbriata* and *Ramonda nathaliae*.

List of conservation and management needs

Measures related to spatial planning

Establish protected areas/sites

Legal protection of habitats and species

Manage landscape features

Conservation status

Annex I:

8210: ALP FV, ATL XX, BLS U1, BOR U1, CON U1, MED XX, PAN FV

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

The highly scattered distribution of the habitat makes any natural recovery very slow, even impossible without human intervention (species reintroduction).

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

The recent trend in quantity cannot be estimated because of missing or inconsistent data, and overlaps in distribution data of similar types (H3.2e and H3.2g).

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

The AOO and EOO are larger than the thresholds for criterion B1 and B2, and also the number of locations is high. The calculated AOO in the EU28 is only slightly higher than 50, but it is likely that the distribution map is far from complete, and in reality the AOO value is higher than 100.

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

The average trend in quality for Europe cannot be estimated because of missing or inconsistent data, and overlap in data of similar types (H3.2e and H3.2g).

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	LC	LC	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	DD	DD	DD	DD	LC	LC	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD

Overall Category & Criteria			
EU 28		EU 28+	
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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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