H3.2b Temperate high-mountain base-rich inland cliff

Summary

This habitat comprises calcareous or base-rich rock faces and crevices in at high altitudes of European mountain ranges in the temperate region. The chasmophytes, dwarf- and cushion-formed chamaephytes and hemicryptophytes, and numerous fern species and mosses, are very well adapted to the extreme habitat conditions, like strong solar radiation, a low water content, high day/night and seasonal temperature fluctuations, strong winds, and the absence of snow cover protection. The soil is in general very poorly developed, but can accumulate in crevices. Variation in the vascular flora is high across the continent and due to geographical isolation and variety in site conditions numerous relict, endemic, rare and protected species can be found on these cliffs. Damage is caused mainly by leisure activities such as rock-climbing and mountaineering that often go with the cleaning and securing of cliffs and the proximity of ski-resorts and other infrastructure. Those activities also affect the behaviour of typical breeding birds. Limestone quarrying occurs locally in high mountains.

Synthesis

This habitat type qualifies for a Least Concern Red List status. Despite a lack of data, the decrease in quantity over the last 50 years is calculated with a sufficient number of countries to give a realistic picture. Assessment the decrease in quality is less reliable because values of extent and severity are based on a subset of only six countries' data.

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 sub-habitats have been distinguished for further analysis .

Habitat Type

Code and name

H3.2b Temperate high-mountain base-rich inland cliff

A high-mountain calcareous inland cliff with a limestrone pavement in the foreground, Pointe-Percée, Haute-Savoie, France (Photo: Alexis Mikolajczak).

High-mountain calcareous inland cliffs in the background, Korab, Macedonia (Photo: Vlado Matevski).

Habitat description

This habitat comprises calcareous or base-rich rock faces and crevices in at high altitudes of European mountain ranges in the temperate bioclimatic region. The chasmophytes, dwarf- and cushion-formed chamaephytes and hemicryptophytes, and numerous fern species and mosses, are very well adapted to the extreme habitat conditions, like strong solar radiation, a low water content, high day/night and seasonal temperature fluctuations, strong winds, and the absence of snow cover protection. The soil is in general very poorly developed, but in the crevices a small amount of fine soil may accumulate. Due to geographical isolation and variety in site conditions numerous relict, endemic, rare and protected species can be found on these cliffs.

Also the variation in species composition is high, resulting in a large number of alliances. In this habitat type we can find alliances from three orders. The *Potentilletalia caulescentis* comprises alliances of sunny rock faces and crevices. In the Central and Eastern Alps and in the Western Carpathians we find the alliance *Potentillion caulescentis,* in the Southern Alps the *Phyteumato-Saxifragion petraeae,* in the Maritime Alps the *Saxifragion lingulatae,* and in the Southern and Eastern Carpathians the *Gypsophilion petraeae.* On the Iberian Peninsula occur the alliances *Saxifragion mediae*, *Sedo albi-Seslerion hispanicae*, *Asplenio celtiberici-Saxifragion cuneatae, Jasionion foliosae* and *Saxifragion camposii,* in the Apennines the *Saxifragion australis* and on the Balkan Peninsula the alliances *Micromerion croaticae* and *Edraiantho graminifolii-Erysimion comati.* The order *Violo biflorae-Cystopteridetalia alpinae* comprises chasmophytic communities on shaded calcareous rock faces and crevices. Here the variation is much less, and only the alliance *Amphoricarpion neumayeri* is included, occurring in the central and south-eastern Dinarides. Other alliances of this order are found in lower altitudes (habitat H3.2c). In the alpine belt of the south-central Balkan mountain ranges we can find chasmophytic vegetation of the alliance *Ramondion nathaliae* from order *Potentilletalia speciosae.*

Many endemic and legally protected species occur in this habitat. The main threats are air pollution, exploitation of limestone, intensive tourism (climbing), grazing, collecting of flowers, erosion, and natural destruction of the rocks.

Indicators of good quality:
- natural erosion processes,
- species richness of the cliffs and presence of the characteristic species,
- presence of habitat rare species, relict species and endemics.

Characteristic species:

Flora*: Achillea schurii, Agrostis schleicheri, Androsace cylindrica, A. helvetica, A. lactea, A. pubescens, Arabis serpyllifolia, A. stellulata, Artemisia eriantha, Asperula hirta, Asplenium celtibericum, A. viride, Athamantha cretensis, Avena setacea, Ballota frutescens, Bupleurum petraeum, Campanula cochleariifolia, C. tanfanii, Cystopteris fragilis, Draba aizoides, D. kotschyi, D. norvegica, D. sauteri, D. tomentosa, Festuca stenantha, Gypsophila petraea, Hieracium humile, Kernera saxatilis, Minuartia rupestris, Phyteuma charmelii, P. cordatum, Potentilla alchimilloides, P. caulescens, P. nebrodensis, P. nitida, P. nivalis, P. saxifraga, Primula allionii, P. latifolia, P. marginata, Ptilotrichum pyrenaicum, Ramonda myconi, Rhamnus pumila, Saxifraga aretioides, S. australis, S. callosae* ssp*. lingulata, S. longifolia, S. marginata* ssp*. rocheliana, S. media, S. moschata, S. mutata* spp*. demissa, Silene campanula, Silene pusilla, Thymus pulcherrimus, Trisetum bertolonii.*

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:
Potentilletalia caulescentis Br.-Bl. in Br.-Bl. et Jenny 1926
Asplenio celtiberici-Saxifragion cuneatae Rivas-Mart. in Loidi et Fernández Prieto 1986
Edraiantho graminifolii-Erysimion comati Mucina et al. 1990
Gypsophilion petraeae Borhidi et Pócs in Borhidi 1957
Jasionion foliosae O. de Bolòs 1957
Micromerion croaticae Horvat, Glavac et Ellenberg 1974
Phyteumato-Saxifragion petraeae Mucina in Mucina et al. 2012
Potentillion caulescentis Br.-Bl. In Br.-Bl. et Jenny 1926
Saxifragion australis Biondi et Ballelli ex S. Brullo 1984
Saxifragion camposii Cuatrecasas ex Quézel 1953
Saxifragion lingulatae (Rioux et Quézel 1949) Quézel 1950
Saxifragion mediae Br.-Bl. in Meier et Br.-Bl. 1934
Sedo albi-Seslerion hispanicae Br.-Bl. 1966
Violo biflorae-Cystopteridetalia alpinae Fernandez Casas 1970
Amphoricarpion neumayeri Lakušić 1968
Potentilletalia speciosae Quézel 1964
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 areas [e.g. inland cliffs, mountain peaks]

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

Regions
Alpine

Justification
Yes. This habitat type is a typical landscape feature of calcareous high mountains. It hosts a highly specialized biota adapted to harsh conditions (cf. habitat description above). A high level of endemism is found across most regions and mountain ranges.

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)
Austria	Present	275 Km^2	Stable	Stable
Bulgaria	Present	47 Km^2	Stable	Decreasing
Croatia	Present	unknown Km^2	Unknown	Unknown

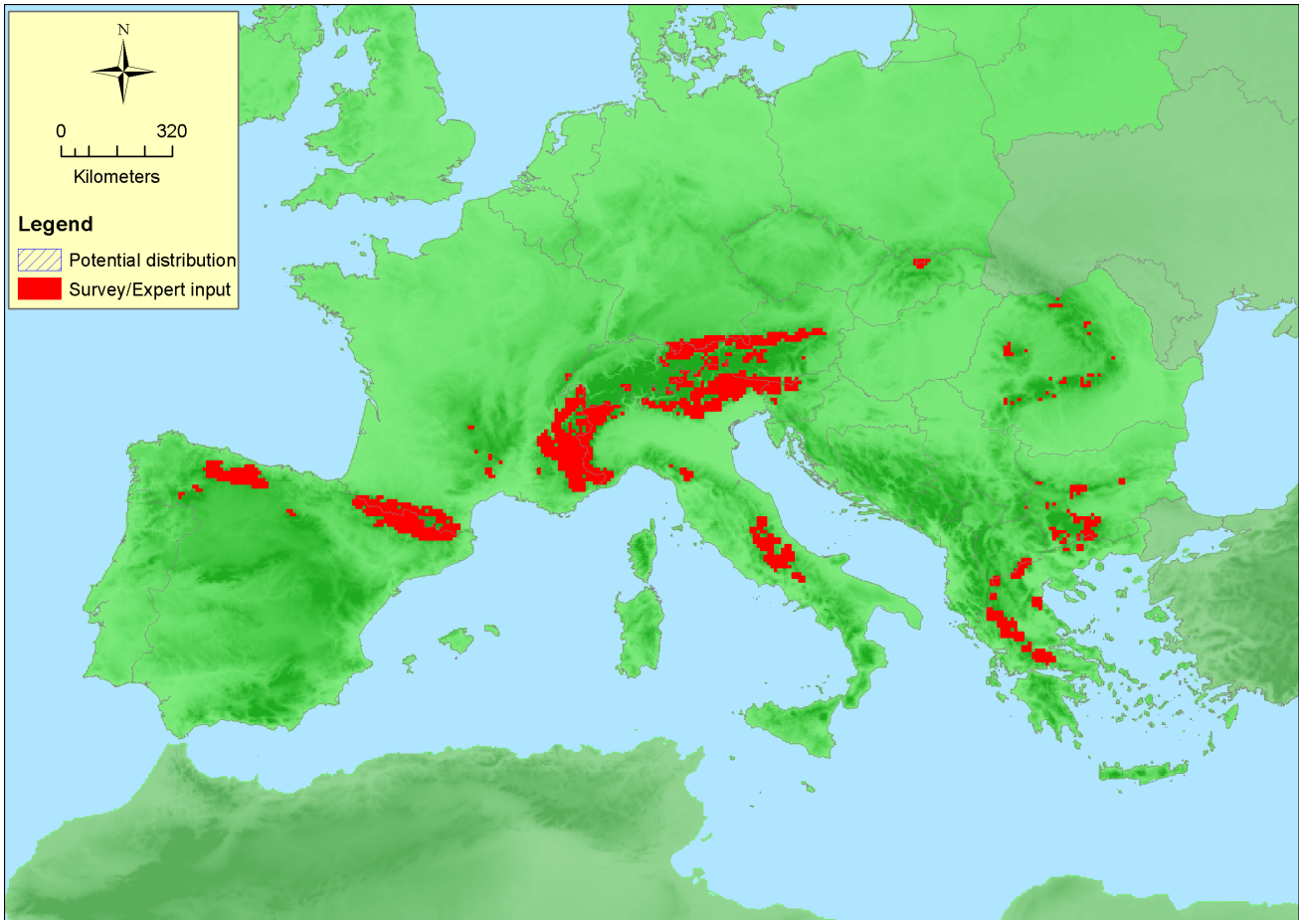
EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
France	Corsica: Present France mainland: Present	600 Km^2	Stable	Stable
Greece	Greece (mainland and other islands): Present	50 Km^2	Unknown	Unknown
Italy	Italy mainland: Present Sardinia: Present Sicily: Present	1597 Km^2	Unknown	Unknown
Romania	Present	3 Km^2	Decreasing	Decreasing
Slovakia	Present	20 Km^2	Stable	Unknown
Slovenia	Present	140 Km^2	Stable	Stable
Spain	Spain mainland: Present	388 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)
Bosnia and Herzegovina	Present	65 Km^2	Stable	Stable
Former Yugoslavian Republic of Macedonia (FYROM)	Present	unknown Km^2	Unknown	Unknown
Switzerland	Present	600 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	1829850 Km^2	1469	3117 Km^2	Greece and Bosnia-Herzegovinia are not included in the current area due to the late arrival of data.
EU 28+	1829850 Km^2	1471	3717 Km^2	

Distribution map



The map is incomplete for Switzerland and the Balkan. Data sources: Art17.

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

95 %. Plant species occurring in this habitat type show a high rate of endemism to mountain ranges with few widely distributed species. Only a small part small part of the Eastern Carpathians in Ukraine and most of the Dinaric Alps (Bosnia, …) are outside EUR28.

Trends in quantity

This habitat type shows a nearly stable trend in quantity over the last 50 years. The average trend is -1.1% and – 0.5% respectively for EUR28+ and EUR28. Some countries have reported a more significant decrease like Germany (-5%) or Switzerland (-2.5%). This trend reflects the destruction of cliffs by the quarrying of limestone cliffs and also the complete degradation of limestone cliffs which become devoid of plant and animal biota after cleaning and securing for rock-climbing and mountaineering. Italy didn't report any trend in quantity.

- 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
  No. EOO is well above the 50,000 Km² threshold and no important decline has occurred during the last 50 years.
- Does the habitat have a small natural range by reason of its intrinsically restricted area?
  No
  Justification

This habitat type occupies large areas across high-mountain regions of Europe.

Trends in quality

This habitat type shows a nearly stable trend in quality over the last 50 years. The trend is 2.8% extent/30% severity and 3.4% extent/30% severity for EUR28 and EUR28+. France, Switzerland and Germany have reported a more significant extent of around 5% affected by a decrease in quality. Quality is reduced mainly by rock-climbing and mountaineering which cause disturbances both to plants and animals by cleaning and securing cliffs. Climbers and hikers on trails close to cliffs may also disturb animals during critical periods of time (breeding and chicks seasons). Vicinity to ski resorts may also reduce quality for the same reason (hindering animal behaviour). The values above were calculated on a small subset of countries.

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

Pressures and threats

Threats affecting this habitat type are rather weak and scattered across its distribution. The main threat are recreational activities, such as rock-climbing and mountaineering. Rock-climbing routes are often cleaned and secured (removal of plants and unstable rock parts). Rock-climbing it-self, especially in well frequented areas disturb the animal biota (e.g. birds). This threat affects more Western European countries (France, Switzerland and Austria) where rock-climbing and mountaineering communities are active and influential. Limestone quarrying rarely occurs in high mountain areas. The construction and development of ski resorts may also cause this habitat to decrease in quantity (works on small cliffs) and in quality (disturbance to animal biota). Climate change and air pollution (acidification) are also likely to affect habitat quality.

List of pressures and threats

Mining, extraction of materials and energy production

Mining and quarrying

Human intrusions and disturbances

Outdoor sports and leisure activities, recreational activities
Mountaineering, rock climbing, speleology
Sport and leisure structures

Pollution

Air pollution, air-borne pollutants

Conservation and management

This habitat stays without any human intervention. It is best protected from human disturbance inside protected areas like in Bulgaria, where it lies almost fully inside national parks. France is another instance. Outer calcareous French Alps are very well covered by either big Natural Reserves, Natura 2000 sites or Natural Regional Parks. Site managers seek cooperation and prevention with other stakeholders such as climbers and gliders to better control these activities and make people aware of the disturbances they may cause to plants and animals.

List of conservation and management needs

Measures related to spatial planning

Manage landscape features

Measures related to hunting, taking and fishing and species management

Specific single species or species group management measures

Conservation status

Annex 1:

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?

At least for plants, natural recovery of this habitat is rather fast when it is not isolated from habitats of the same type. Return of specialized nesting birds after strong disturbances is less easy.

Effort required

50+ years	200+ years
Naturally	Naturally

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	0.5 %	unknown %	unknown %	unknown %
EU 28+	1.1 %	unknown %	unknown %	unknown %

The values given above were calculated with the territorial data only.

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

Sub-criteria of B1 and B2 are 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	30 %	2.8 %	unknown %	unknown %	unknown %	unknown %
EU 28+	30 %	3.4 %	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 were calculated with the territorial data of a small subset of countries which provided data of redaction in quality.

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