H3.4 Wet inland cliff

Summary

This habitat occurs through the temperate and mediterranean regions, in often highly localised situations, where rock and earth surfaces are kept wet by water trickles, spray splashing and a sunless orientation. The characteristic flora is dominated by shade- and moisture-tolerant vascular plants, luxuriant ferns and bryophytes, and green and blue-green algae. It is threatened by any interruption to the consistently wet conditions, by outdoor sports, especially rock climbing, climate change, mining and quarrying.

Synthesis

Due to a lack of quantitative data and a high degree of uncertainty among the provided data, the Red List category could not be evaluated. Therefore, the overall assessment leads to category 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

No subtypes have been distinguished for further examination.

Habitat Type

Code and name

H3.4 Wet inland cliff

Wet inland cliffs at Cijevna River gorge, Montenegro (Photo: Đjordjije Milanović).

Pinguicula longifolia in the Añisclo canyon of the central Pyrenees on limestone wet cliffs, Huesca, Spain (Photo: José Luis Benito).

Habitat description

Plant species growing on wet cliffs are exposed to very specific ecological conditions. They occur on north-faced, very damp, dripping, overhanging or vertical calcareous rocks, in shady places. Species are mainly hygrophytic and shade-resistant. Communities are rich in ferns and mosses, on the more constantly watered places also green and blue-green algae occur. The habitat is strongly depending on the period of watering and appears on very small areas.

The habitat is found in temperate and in Mediterranean regions. In many sites, the areas of the habitat are very small and isolated. Wet cliffs of the Macaronesian islands are considered under habitat H3.3.

Indicators of good quality:

Main threats are various human activities that change the water regime. The following characteristics may be considered as indicators of good quality:

- species richness of the cliffs and presence of the characteristic species
- presence of habitat rare species at their typical frequency
- constant supply of water

Characteristic species*:*

Vascular plants: *Adiantum capillus-veneris, Alchemilla glabra, Asplenium scolopendrium, A. viride, Aurinia saxatilis, Blackstonia perfoliata, Borago pygmaea, Brachypodium sylvaticum, Carex brachystachys, C. distans, Cystopteris alpina, C. fragilis, Dianthus nitidus, Dittrichia viscosa, Eupatorium cannabinum, Ficus carica, Hypericum hircinum, H. nummularium, Moehringia muscosa, Mycelis muralis, Phegopteris connectilis, Phyllitis scolopendrium, Pinguicula grandiflora* subsp. *coenocantabrica*, *Pinguicula hirtiflora*, *Pinguicula longifolia*, *Pinguicula mundi*, *Pinguicula vallisneriifolia*, *Polypodium interjectum*, *Samolus valerandi*, *Saxifraga paniculata*, *Viola palustris*.

Bryophytes: *Conocephalum conicum, Eucladium verticillatum, Palustriella commutata* (=*Cratoneurum commutatum*)*.*

Classification

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

EUNIS:

H3.4 Wet inland cliffs

EuroVegChecklist:

Asplenio celtiberici-Saxifragion cuneatae Rivas-Mart. in Loidi et Fernández Prieto 1986

Violo biflorae-Cystopteridion alpinae Fernandez Casas 1970

Polypodion serrati Br.-Bl. in Br.-Bl. et al. 1952

Arenarion balearicae O. de Bolòs et Molinier 1969

Hymenophyllion tunbrigensis Tx. in Tx. et Oberd. 1958

Thelipterido pozoi-Woodwardion radicantis F. Prieto et C. Aguiar in F. Prieto et al. 2012

Adiantion Br.-Bl. ex Horvatic 1934

*Pinguiculion longifoli*ae Fernandez Casas 1970

Annex 1:

No relationship

Emerald:

No relationship

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?
No

Justification
The habitat type occurs in temperate and Mediterranean regions. Because of very specific ecological conditions the sites are often isolated from each other and the habitats are mostly restricted to small areas.

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	Unknown Km^2	Unknown	Decreasing
Bulgaria	Present	Unknown Km^2	Decreasing	Decreasing
Croatia	Present	0.5 Km^2	Stable	Stable
Finland	Finland mainland: Present	0.5 Km^2	Stable	Stable
France	France mainland: Present	Unknown Km^2	Decreasing	Decreasing
Germany	Present	Unknown Km^2	Unknown	Unknown
Greece	Greece (mainland and other islands): Present	Unknown Km^2	Unknown	Unknown
Ireland	Present	0.1 Km^2	Stable	Unknown
Italy	Italy mainland: Present	Unknown Km^2	Unknown	Unknown
Portugal	Portugal mainland: Present	3 Km^2	Stable	Unknown
Romania	Present	0.5 Km^2	Stable	Decreasing
Slovakia	Present	1 Km^2	Decreasing	Unknown
Slovenia	Present	0.5 Km^2	Stable	Unknown
Spain	Spain mainland: Present	74 Km^2	Stable	Decreasing

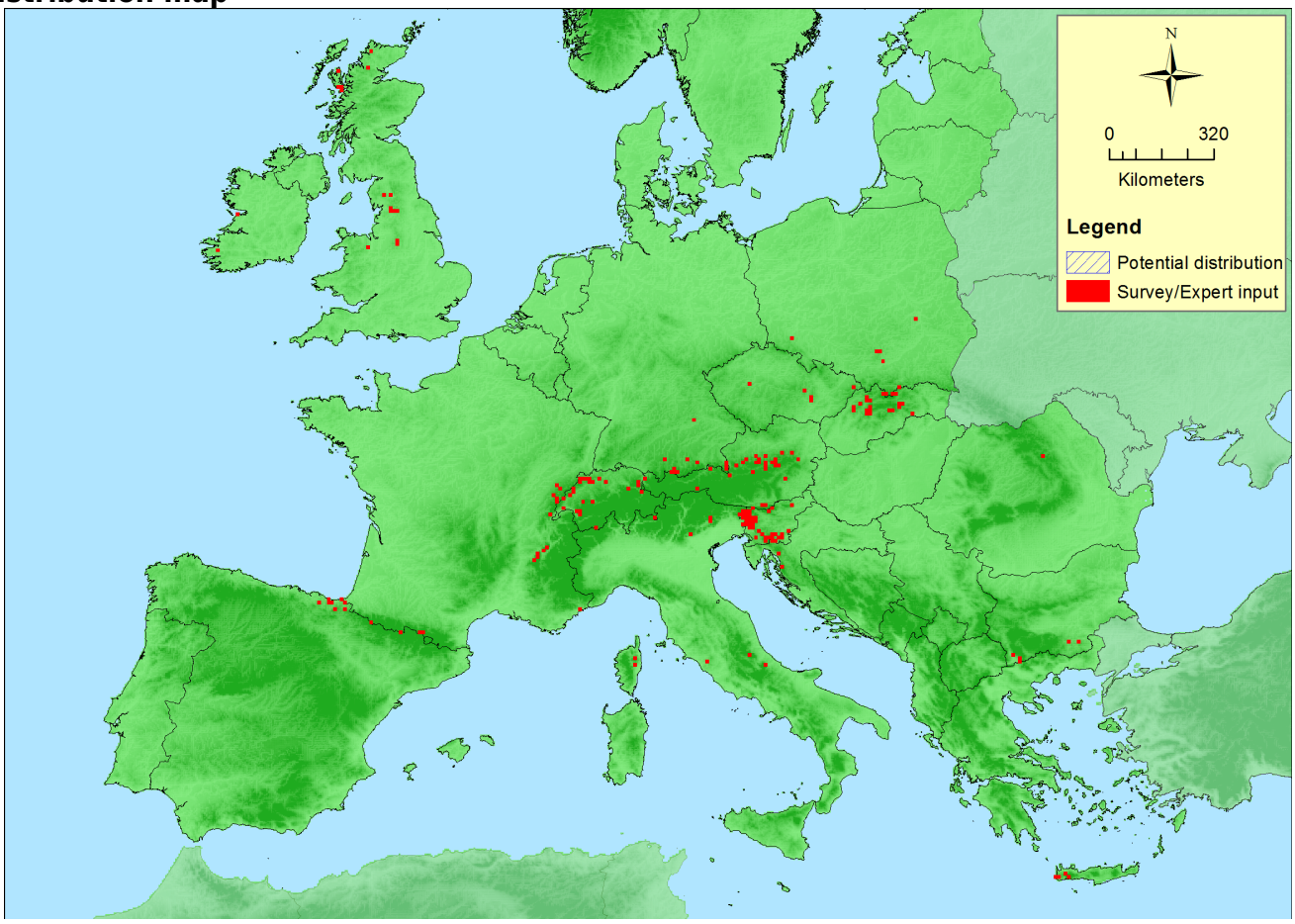
EU 28 +	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
Albania	Uncertain	Km^2	-	-
Bosnia and Herzegovina	Present	15 Km^2	Stable	Decreasing
Kosovo	Uncertain	Km^2	-	-
Montenegro	Uncertain	Km^2	-	-
Norway	Norway Mainland: Uncertain	Km^2	-	-
Serbia	Uncertain	Km^2	-	-

Extent of Occurrence, Area of Occupancy and habitat area

	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
EU 28	3967550 Km^2	176	80 Km^2	

	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
EU 28+	3967550 Km^2	197	95 Km^2	

Distribution map



The map is rather incomplete, amongst others in Romania, Belgium, Luxembourg, Greece, Finland, Bosnia-Herzegovina, Spain and Macaronesia. Data sources: EVA, NAT.

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

Approximately 80%. This is a rough estimate. Outside the EU28 the habitat occurs in Norway and on the Balkan peninsula. Outside the EU28+ it is found in Russia, Ukraine and Turkey.

Trends in quantity

According to the provided data, the calculated trend in quantity over the last decades is stable. However, due to the high uncertainty in the reported data and due to missing data of several countries the calculation of trends at a European scale is rather uncertain. Some countries (Bulgaria, France, Slovakia) reported a slight decline in area, but those data couldn't be included in the calculation because no values were provided. The decrease in area seems to be more critical in lowlands.

- 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 > 50000 km².
- Does the habitat have a small natural range by reason of its intrinsically restricted area?

Yes

Justification

The habitat is in almost all sites occurring on relative small spots.

Trends in quality

According to the provided data, the calculated trend in quality over the last decades is decreasing. The extent of degradation for EU28 countries is 1% with 10% severity of degradation and 2.5% with 57% severity for EU28+ countries. The calculations are only based on data from four or five countries. Due to the high uncertainty in the reported data and due to missing data of several countries the calculation of trends at a European scale is rather uncertain. Many countries indicated a decrease in quality, but the data couldn't be included in the calculations due to the absence of mandatory values. Hence, the calculated trends in quality are supposed to underestimate the real situation at a European scale.

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

Pressures and threats

The pressures and threats affecting the particular countries are rather diverse. A major threat is related to outdoor sports: especially mountaineering and rock climbing cause disturbances on the native flora and fauna and the cleaning of routes leads to changes in the structure and functioning of the habitats by removal of vegetation and loose rocks. The securing of cliffs along transportation corridors or in urbanised areas has more or less the same effect on the habitats. Further important threats are mining and quarrying, landslides (both simply leading to the destruction of sites) and human induced changes in hydraulic conditions. Changes of abiotic conditions due to climate change has also been reported as a major threat, that probably will gain influence in the future.

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

Natural System modifications

Human induced changes in hydraulic conditions

Geological events, natural catastrophes

Collapse of terrain, landslide

Climate change

Changes in abiotic conditions

Conservation and management

As the habitat type is highly natural the main conservation strategy is the prevention of disturbance and destruction of sites. The protection of habitats and corresponding species is realised best in protected areas. The habitat is strongly depending on water regimes and the period of watering. Hence, degraded sites may require management measures concerning the hydrological regime. To avoid further loss and

deterioration of sites, these habitats have to be incorporated more strongly in spatial development planning.

List of conservation and management needs

Measures related to wetland, freshwater and coastal habitats

Restoring/Improving the hydrological regime
Managing water abstraction

Measures related to spatial planning

Establish protected areas/sites
Legal protection of habitats and species

Measures related to special resouce use

Regulating/Management exploitation of natural resources on land

Conservation status

Annex 1 types:

No corresponding Annex 1-type.

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

Once completely destroyed, the habitat has almost no capacity to recover, as it's origin is dependent on geomorphological processes. In the case of damage without destruction of sites, at least for plants, the natural recovery of this habitat is rather fast when it is not isolated from similar habitats. The recolonization of sites by characteristic animals after strong disturbances may take longer.

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 %	unknown %	unknown %	unknown %
EU 28+	0 %	unknown %	unknown %	unknown %

The values for A1 were calculated by using the territorial data sheets. The calculated trend in the last 50 years is stable (resulting in category Least Concern), but due to missing data of several countries the calculated trend is considered as unreliable. 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	Unknown	Unknown	unknown	> 50	Unknown	Unknown	unknown	unknown
EU 28+	> 50000 Km^2	Unknown	Unknown	unknown	> 50	Unknown	Unknown	unknown	unknown

AOO and EOO and numbver of locations are much higher than the thresholds for criteria under 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	1 %	10 %	unknown %	unknown %	unknown %	unknown %
EU 28+	2.5 %	56.8 %	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%

No reliable data (%) available for C/D2, C/D3, C1, C2, C3, D1, D2 and D3. The figures for C/D1 were calculated by using the territorial data sheets and lead to the Least Concern category, but due to missing data of several countries the calculated trend is considered as unreliable.

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+	
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)

Assessors

D. Paternoster

Contributors
Habitat definition: A. Čarni, N. Juvan.

Territorial data: E. Agrillo, F. Attorre, S. Bagella, C. Bita-Nicolae, J.Capelo, A. Čarni, L. Casella, L. M. Delescaille, P. Dimopoulos, D. Espírito-Santo, P. Finck, D. Gigante, C. Gussev, N. Juvan, T. Kontula, J. Loidi, D. Milanović, P. Perrin, G. Pezzi, U. Raths, U. Riecken, A. Ssymank, D. Viciani, Z. Škvorc.

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

Reviewers
J. Loidi

Date of assessment
21/10/2015

Date of review
31/03/2016

References

Deil, U. 1996. Zur Kenntnis der Adiantetea-Gesellschaften des Mittelmeerraumes und angrenzender Gebiete – mit allgemeinen Überlegungen zur ökologischen Skalierung ihrer Standorte und zur Sättigung von Pflanzengesellschaften. *Phytocoenologia* 26(4): 481-536.

Mucina, L. 1993. *Asplenietea trichomanis.* In: Mucina, L., Grabherr, G., (eds.), Die Pflanzengesellschaften Österreichs. Teil II. Natürliche waldfreie Vegetation. Gustav Fischer Verlag, Jena: pp. 241-275.

Oberdorfer, E., 1977. *Süddeutsche Pflanzgesellschaften.Teil I.* Gustav Fischer Verlag, Jena.