B3.1a Atlantic and Baltic rocky sea cliff and shore

Summary

This habitat occurs as linear, narrow and often broken stretches of vegetated crevices, ledges and cliff-tops along the coasts of the Baltic Sea, the North Sea and the Atlantic Ocean south to mid Portugal. Exposed bedrock dominates the habitat and its very variable composition and structure determines the character of available surfaces, the height and slope of the cliffs influencing the input of salt spray which, on exposed coasts, can be very high close to the sea. This combination of local climatic and topographic conditions determins the often strong zonation of crevice vegetation, grasslands and heaths found on the cliffs, with regional climate also affecting the flora. Nesting seabirds also add a distinctive nutrient-demanding element to the flora on their guano. Especially towards the cliff tops, grazing has also been of great importance in the character of the vegetation and the widespread decline of pastoral farming has influenced succession in more sheltered situations with transitions to coastal scrub and woodland. The habitat is also locally threatened by natural erosion that can lead to degeneration and fragmentation and widely by tourism, with trampling and eutrophication affecting the vegetation. No specific conservation measures are recommended, except on frequently visited and eroded areas where restoration can aim to limit damage.

Synthesis

All provided data lead to the conclusion that the habitat qualifies as Least Concern (LC) for both trends in quantity and trends in quality. For both indicators there is a slight negative trend, but their scores are relatively far from the thresholds for Vulnerable.

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

Due to geographical and ecological variations, sub-habitat types may be identified for the different regions (Atlantic versus Baltic), with an additional separate subtype for the Arctic region.

Habitat Type

Code and name

B3.1a Atlantic and Baltic rocky sea cliff and shore

Flysh cliffs of the Corniche Basque between Saint-Jean-de-Luz and Hendaye, Basque Country (Photo: Frédéric Bioret).

Martime grassland of the Cap Sizun granitic cliffs, Brittany (Photo: Frédéric Bioret).

Habitat description

This is a linear, narrow habitat of rocky cliffs and shores along the coasts of the Arctic Sea, the Baltic Sea, the North Sea and the Atlantic Ocean (southwards until Oporto, Portugal). In most cases it is related to eroding coasts, where the bedrock is exposed due to the eroding energy of the sea, but in some cases (like in the upheaval area of the Bothnian Gulf) rocky shores are found on sedimentary coasts. The habitat is restricted to hard cliffs, made of granite (crystalline rocks), sandstone, limestone, marble or schists. Soft, quickly eroding cliffs (for example with a loamy soil) are under habitat B3.4a. Pebble beaches are not included here, but considered part of shingles (habitat B2.1-3a). Littoral caves (HD Annex 1-type 8330) are considered under marine types. Anthropogenic rocky shores (dikes, stone walls) may contain several of the same species as sea cliffs, but are not considered part of this natural habitat. The habitat is dominated by exposed bedrock, while vegetation cover is low. The slopes are in many cases steep. Erosion at sea level causes the fall of higher parts of the cliffs, which conserves the steepness of cliffs, but in hard bedrock erosion rates are insignificant. Near the shoreline sometimes a notch is seen, where waves have eroded the bedrock surface. Elevation ranges from a few to several hundreds of meters. Amongst the highest sea cliffs in Europe are Slieve League in County Donegal, Ireland, reaching about 600 meters above the sea, and the cliffs on the West-coast of Iceland (more than 400 meters). The majority of the bedrock sea shores along the Baltic Sea are low with smoothed and rounded slopes, which are products of glacial abrasion. Cliffs are primary habitats on which no or little succession takes place, due to constant disturbance and ecological constraints by waves, wind and salt spray, combined with a lack of available water in the substrate. There is some influence of grazing, especially on cliff tops. But in many cases this habitat is inaccessible and rather undisturbed, the latter being a rarity on the European continent. Exceptions exist however, like in the Baltic Sea area, where summer houses are built also on sea cliffs. Rocky sea cliffs show gradients in species composition along the climatic gradient from south to north; besides three altitudinal zones are distinguished, from the supralittoral belt to the cliff top. The lowest, supralittoral zone is under the influence of waves, wind and sea spray and has a similar species composition as rocky shores, mainly consisting of lichens and algae. Also the middle cliff zone is very exposed, both wind and salt spray, and almost absent of soil development. Here a mixture of halophytic and chasmophytic vascular plant species is found. A species more-or-less restricted to this zone is the fern *Asplenium marinum*. The upper cliff and cliff top have a deeper soil, a higher vegetation cover and a vegetation which forms transitions towards grassland, heathland, shrub and forest habitats. In contrast to other regions in the world, hardly any shrub or tree species is found on the Atlantic cliffs, as few salt resistant species exist on the continent. The rocky shores of the Baltic Sea make an exception due to the low salinity of the sea. Also the gradient from south to north shows a shift in species composition in Europe. Common species over most of the latitudinal gradient are *Armeria maritima, Crithmum maritimum, Plantago coronopus, Plantago maritima, Silene vulgaris* subsp *maritima*, and on the cliff top *Agrostis stolonifera* and *Festuca rubra*. Typical northern

cliff species are *Cochlearia scotica, Ligusticum scoticum, Puccinellia maritima* (on relatively wet sites), *Saxifraga oppositifolia, Sedum* (=*Rhodiola*) *roseum* and *Silene acaulis*. The lower cliff zone and rocky shores in boreal areas (like in the Baltic) contain few vascular plants, but are mainly occupied by filamentous algae and lichens (*Caloplaca* sp., *Ramalina* sp.). The arctic cliffs of Svalbard and Jan Mayen island contain *Oxyria digyna* and *Chrysosplenium tetrandum* as typical species, while (further) arctic elements are formed by *Alopecurus alpinus, Taraxacum arcticum, Cerastium arcticum* and several lichens. Cliff species with a relatively southern distribution are *Catapodium marinum, Sagina maritima, Daucus carota* subsp. *gummifer, Euphorbia portlandica, Inula crithmoides, Spergularia rupicola, Plantago crassifolia, Plantago maritima, Frankenia laevis, Dactylis glomerata* subsp. *oceanica* and several species of *Limonium*. Examples of *Limonium* species with a restricted range are *Limonium binervosum* agg., *Limonium dodartii, Limonium dufourei, Limonium girardianum, Limonium normannicum, Limonium ovalifolium* and *Limonium virgatum*. Along the coasts of the Channel, the rare *Rumex rupestris* (a species of the Annex II of the Habitats Directive) may be found in places where freshwater gathers on the lower part of cliffs, together with *Apium graveolens, Samolus valerandi* and *Agrostis stolonifera*. *Halimione portulacoide*s and *Salicornia ramosissima* can grow in the most wind and salt spray exposed cliffs, like those of the Massif Armoricain. Some cliffs have a high diversity of saxicole lichens. Some rare species are characteristic for some biogeographic zones, like *Teloschistes flavicans*. The coastal cliffs of Europe are important breeding sites for large colonies of sea birds, amongst which puffins, northern gannets, guillemots and razorbills. Different birds nest in different parts of the cliffs, but in general steep cliffs are preferred (safe against predators) in areas where plenty of sea food is available. Bird colonies may harbour several nitrophilous plant species, due to the guano and trampling, like *Tripleurospermum maritimum, Stellaria media, Cochlearia danica, Cochlearia officinalis, Atriplex* ssp., *Beta vulgaris* subsp. *maritima, Sonchus oleraceus* and *Poa annua*. In some cliffs of Brittany, the rare *Asplenium obovatum* subsp. *obovatum* is found.

Indicators of good quality:

The following characteristics are considered as indicators of good quality:

- no disturbance by man
- presence of sea bird colonies
- presence of characteristic zonation belts
- high diversity in lichens

Characteristic species:

Flora

Agrostis stolonifera, Allium schoenoprasum, Anthyllis vulneraria, Armeria maritima, Asplenium marinum, Aster tripolium, Atriplex prostrata, Beta vulgaris subsp *maritima, Catapodium marinum, Cochlearia danica, Cochlearia officinalis, Cochlearia scotica, Crithmum maritimum, Dactylis glomerata* subsp*. hispanica, Dactylis glomerata* subsp*. oceanica, Daucus carota* subsp*. gummifer, Euphorbia portlandica, Festuca rubra, Frankenia laevis, Inula crithmoides, Lavatera arborea , Ligusticum scoticum, Limonium binervosum* agg., *Limonium dodartii*, *Limonium normannicum*, *Limonium ovalifolium, Lotus corniculatus, Plantago maritima, Puccinellia maritima, Sagina marítima, Saxifraga oppositifolia, Sedum acre, Sedum (=Rhodiola) roseum, Silene acaulis, Silene vulgaris* subsp*. maritima, Spergularia rupicola.*

Bryophytes: *Schistidium maritimum*

Lichens (Baltic Sea): *Aspicilia leprocescens, Caloplaca* spp., *Lasallia pustulata, Lecanora actophila, Lichina confinis, Umbilicaria spodochroa, Verrucaria maura*

Fauna

Birds: Atlantic puffin (*Fratercula arctica*), northern gannet (*Sula bassana*), black guillemot (*Cepphus grylle*), Thick-billed murre or Brünnich's guillemot (*Uria lomvia*), Common murre (*Uria aalge*; *only on boreal and arctic islands*), razorbill (*Alca torda*), little auk (*Plautus alle*; *arctic*), glaucous gull (*Larus hyperboreus*), European herring gull (*Larus argentatus*), Common gull (*Larus canus*), Lesser black-backed gull (*Larus fuscus*), Great black-backed gull gull (*Larus marinus*), Kittiwake (*Rissa tridactyla*), Northern fulmar (*Fulmarus glacialis*)

Classification

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

EUNIS :

B3.1 Supralittoral rock (lichen or splash zone)

B3.2 Unvegetated rock cliffs, ledges, shores and islets

B3.3 Rock cliffs, ledges and shores, with angiosperms

Annex I :

1230 Vegetated sea cliffs of the Atlantic and Baltic coasts

EuroVegChecklist (alliances) :

Asplenion marini Segal 1969

Crithmion maritimi Tx. et Oberd. 1958

Crithmo-Armerion maritimae Géhu 1968

Crithmo-Daucion halophili Rivas-Mart. et al. 1990

Saginion maritimae Westhoff et al. 1962

Silenion maritimae Malloch 1971

Annex I :

1230 Vegetated sea cliffs of the Atlantic and Baltic coasts

Emerald:

B3.24 Unvegetated Baltic rocky shores and cliffs

B3.3 Rock cliffs, ledges and shores, with angiosperms

MAES-2 :

Coastal

IUCN :

12.1. Rocky Shoreline

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

Yes

Regions
Atlantic
Boreal

Justification
This habitat occurs along all the rocky coasts along the Atlantic and Baltic sea shores of the EU28

Geographic occurrence and trends

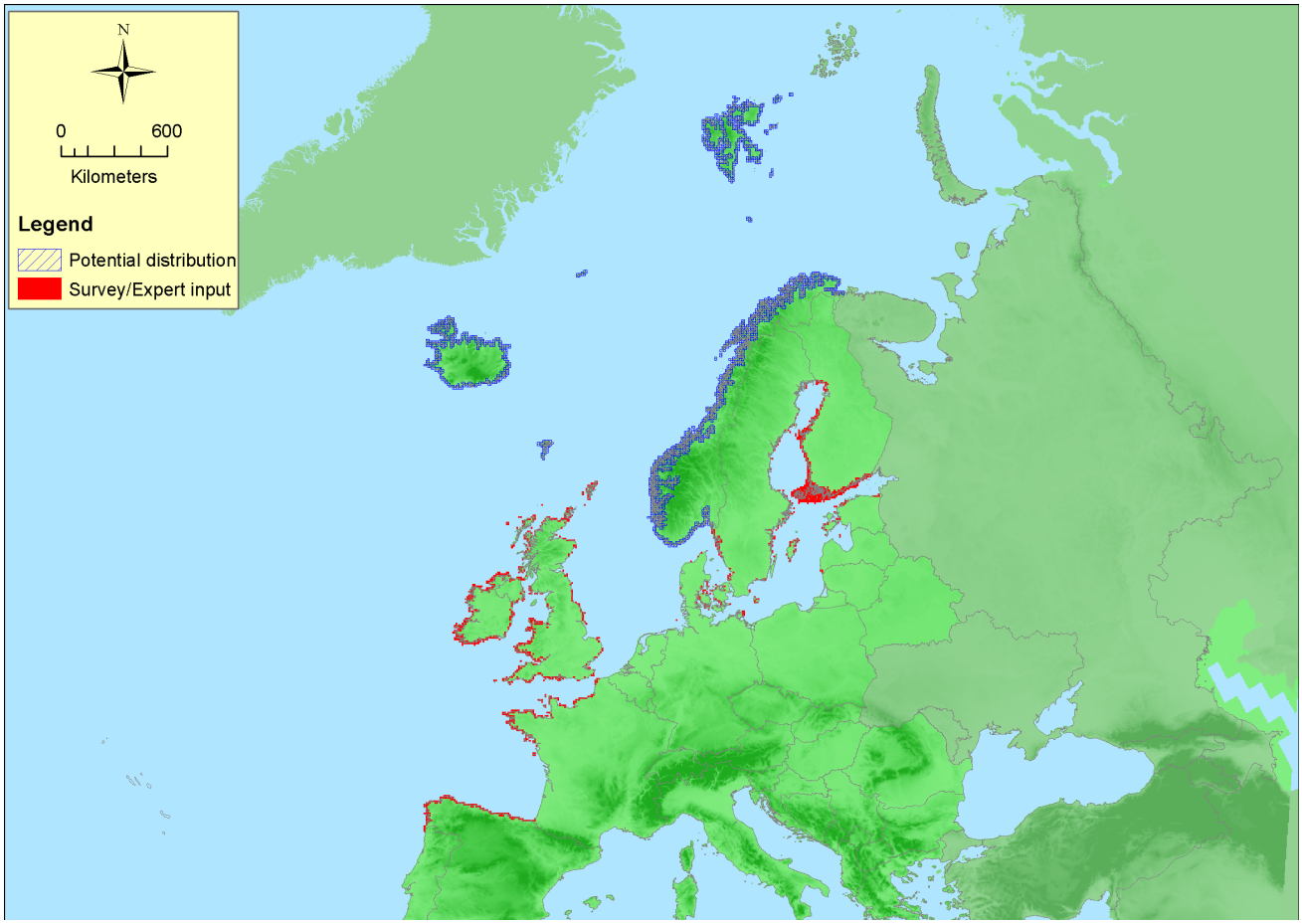
EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
Denmark	Present	6.7 Km^2	Stable	Unknown
Estonia	Present	0.9 Km^2	Stable	Unknown
Finland	Finland mainland: Present	200 Km^2	Stable	Stable
France	France mainland: Present	185 Km^2	Decreasing	Stable
Germany	Present	2 Km^2	Stable	Decreasing
Ireland	Present	90 Km^2	Stable	Unknown
Portugal	Portugal mainland: Present	0.2 Km^2	Decreasing	-
Spain	Spain mainland: Present	15 Km^2	Unknown	Decreasing
UK	Northern Island: Present	221 Km^2	Decreasing	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)
Faroe Islands	Present	Km^2	Unknown	Unknown
Guernsey	Present	Km^2	Stable	Stable
Isle of Man	Present	Km^2	Unknown	Unknown
Jersey	Present	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	3363300 Km^2	1512	497 Km^2	area based on territorial data
EU 28+	7246950 Km^2	4041	>500 Km^2	AOO and EOO incl. potential distribution

Distribution map



Map is complete for EU28, but potential for Norway and Iceland. Data sources: Art17.

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

>70% (estimation)

Trends in quantity

At the EU28 scale, the habitat is more or less stable, but it could be locally decreasing in areas submitted to recurrent erosion.

- 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
  EOO is larger than 50,000km^2. AOO is larger than 50 km^2.
- Does the habitat have a small natural range by reason of its intrinsically restricted area?
  No
  Justification
  The habitat is widespread and occurring in long stretches in 9 countries of EU28 from Denmark and Ireland to Spain, and also along the north-western shores of the Baltic sea.

Trends in quality

A small, local decline in quality has been reported.

- Average current trend in quality
  EU 28: Decreasing

EU 28+: Decreasing

Pressures and threats

Different threats have been reported in touristic areas, urbanisation can lead to the fragmentation of the habitat; frequentation (trampling) and invasive species can cause destructuration and eutrophication of the habitat.

List of pressures and threats

Urbanisation, residential and commercial development

Discontinuous urbanisation

Human intrusions and disturbances

Outdoor sports and leisure activities, recreational activities
Trampling, overuse

Pollution

Nutrient enrichment (N, P, organic matter)
Oil spills in the sea

Invasive, other problematic species and genes

Invasive non-native species

Conservation and management

Special attention should be paid to sectors with endemic chasmo-halophytic species and associations and to the steepiest cliffs where frequentation should be canalised in order to prevent trampling and erosion.

List of conservation and management needs

No measures

No measures needed for the conservation of the habitat/species

Measures related to wetland, freshwater and coastal habitats

Restoring coastal areas

Conservation status

Annex I:

1230: ATL U1, BOR FV, CON FV

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

Natural restoration of degraded zones can be efficient after controling frequentation

Effort required

10 years	20 years
Through intervention	Naturally

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-9 %	unknown %	unknown %	unknown %
EU 28+	-9 %	unknown %	unknown %	unknown %

A negative trend of 9% was calculated based on data provided by 8 countries. The overall conclusion for Criterion A1 is Least Concern (LC).

Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	> 50000 Km^2	Yes	Unknown	unknown	> 50	Yes	Unknown	unknown	unknown
EU 28+	> 50000 Km^2	Yes	Unknown	unknown	> 50	Yes	Unknown	unknown	unknown

The habitat is widespread over the 8 countries of EU28 (EOO > 50000 km2 and AOO > than 50 km2), and does not reach any of the thresholds for 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	4 %	58% %	unknown %	unknown %	unknown %	unknown %
EU 28+	4 %	58% %	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%

Most of the countries reported slight to moderate trend with 0-30% area affected. Based on these incomplete data, it is estimated that trend in quality over the last 50 years is substantial (58%), but affecting only a small part (4%) of the area. This reduction leads to Least Concern (LC) status for criterion C/D1.

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	LC	LC	LC	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	LC	DD	DD	DD	LC	LC	LC	LC	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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Date of assessment
25/04/2016

Date of review
23/05/2016

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