

B3.1c Macaronesian rocky sea cliff and shore

Summary

The rocky cliffs of the Macaronesian islands comprise a narrow strip of basalt lava influenced by salt-spray whose zonation of crevice and ledge vegetation vary on the different island groups of the Canaries, Madiera and the Azores, with endemics providing a highly distinctive aspect to the flora. The habitat also provides important sites for nesting seabirds whose guano offers a nutrient-rich surface for colonisation. It is vulnerable to urbanisation, tourism and the invasion of alien plants and conservation needs control of access and development.

Synthesis

This habitat is assessed as Least Concern as, within Macaronesia, it is widespread and declining trends are small. The low degree of degradation is a result of its intrinsic steepness and, therefore, inaccessibility.

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

B3.1c Macaronesian rocky sea cliff and shore



Astydamia latifolia on volcanic sea cliff. Island of La Palma, Spain (Photo: John)



Euphorbia azoricae-Festucion petraeae in Azores, Portugal (Photo: Jorge Capelo).

Habitat description

This habitat comprises the rocky sea cliffs of the Macaronesian islands, which are formed by a narrow strip of lava bedrock (basalt) that is influenced by salt spray from the sea. Some of the Macaronesian coastal cliffs are among the highest sea cliffs in Europe and the world, like the Cliffs of the Giants along the western coast of Tenerife, with vertical walls reaching 500 meters above sea level, and the cliffs of Gabo Girao in Madeira, reaching a height of 540 m above sea level. The habitat refers to the area that is still under influence of the sea (waves, salt spray and strong wind), but above the mean high tide (supralittoral). The sea cliffs of the Macaronesian islands differ from those of the temperate Atlantic coast and the Mediterranean coast due to the dominance of a set of Macaronesian endemic species. The cliffs of the different island groups also show a diversity in species composition, which is expressed in three alliances of the class *Crithmo-Limonietea*: *Frankenio-Astydamion* of the Canary island, *Helichryson obconico-devium* of the Madeiran archipelago and *Euphorbio azoricae-Festucion petraeae* on the Azores. In the Canary islands, the most characteristic species of sea cliffs are *Astydamia latifolia* and several endemic species of *Limonium*. Species that are also found at Atlantic and/or Mediterranean sea cliffs are *Crithmum maritimum*, *Plantago coronopus*, *Frankenia laevis*, *Frankenia pulverulenta*, and *Asplenium marinum*. Additional characteristic species which are restricted to the Canary islands are *Plantago aschersonii*, *Lotus glaucus*, *Argyranthemum frutescens*, *Frankenia ericifolia*, *Atractylis preauxiana*, *Reichardia crystallina* and *Reichardia ligulata*. The characteristic *Limonium* species are often restricted to only one or two islands, like *Limonium imbricatum* (La Palma, Tenerife), *Limonium fruticans* (Tenerife), *Limonium macrophyllum* (Tenerife, Gran Canaria) and *Limonium brassicifolium* (El Hierro, La Gomera). *Limonium pectinatum* (including *L. humboldtii*) is a more widespread species of coastal cliffs, found on most of the Canary Islands and also on Selvagens. *Limonium papillatum* is found on coastal cliffs of Lanzarote and Fuertaventura, but also on the smaller islands Alegranza, La Graciosa, Lobos and Selvagens. On Madeira the endemic shrubs *Helichrysum obconium* and *Helichrysum devium* form different plant communities of coastal cliffs. Other characteristic species are *Lotus glaucus*, the endemic *Limonium pyramidatum*, *Crithmum maritimum*, *Lotus loweanus*, *Frankenia laevis* and *Plantago coronopus*. In the Azores, the most characteristic species are the endemics *Azorina vidali*, *Daucus carota* subsp. *azorica*, *Euphorbia azorica*, *Festuca petraea*, *Myosotis maritima*, *Solidago sempervirens* subsp. *azorica* and *Spergularia azorica*. *Juncus acutus* grows on littoral lava bed depressions that are temporarily submerged in sea water, but also on rocky shores. Like in other coastal regions in the Macaronesian archipelagos, an altitudinal gradient with different zones may be distinguished within the cliff habitat, from the supralittoral belt to the cliff top, with algae and lichens on the lowest parts and transitions towards succulent vegetation and thicket on the higher cliffs. Additionally, in the Macaronesian archipelagos coastal cliffs and small islands form important nesting sites to pelagic and coastal seabirds, especially where these are inaccessible to predators and undisturbed by human or animals (e.g. no grazing). Important birds of the Macaronesian coastal cliffs are several species of Petrels and Shearwaters.

Indicators of good quality:

- No human or animal disturbance (e.g. no grazing)
- Presence of sea bird colonies
- Presence of characteristic zonation belts
- Absence of alien plant species (like *Mesembryanthemum* sp., *Carpobrotus* sp.)

Characteristic species:

Flora: *Argyranthemum frutescens*, *Asplenium marinum*, *Astydamia latifolia*, *Atractylis preauxiana*, *Azorina vidali*, *Crithmum maritimum*, *Daucus carota* subsp. *azoricus*, *Euphorbia azorica*, *Festuca petraea*,

Frankenia ericifolia, *Frankenia laevis*, *Frankenia pulverulenta*, *Helichrysum devium*, *Helichrysum obconium*, *Limonium brassicifolium*, *Limonium fruticans*, *Limonium imbricatum*, *Limonium macrophyllum*, *Limonium papillatum*, *Limonium pectinatum* (incl. *L. humboldtii*), *Limonium pyramidatum*, *Lotus glaucus*, *Lotus glaucus*, *Lotus loweanus*, *Myosotis maritima*, *Plantago aschersonii*, *Plantago coronopus*, *Reichardia crystallina*, *Reichardia ligulata*, *Solidago sempervirens* subsp. *azorica*, *Spergularia azorica*

Fauna: Macaronesian Shearwater (*Puffinus baroli*), Manx Shearwater (*Puffinus puffinus*), Plain Swift (*Apus unicolor*), Band-rumped Storm Petrel or Madeiran Storm Petrel (*Oceanodroma castro*), Bulwer's Petrel (*Bulweria bulwerii*), Cory's Shearwater (*Calonectris diomedea*), Little Shearwater (*Puffinus assimilis*), White-faced Storm Petrel (*Pelagodroma marina*) and Fea's Petrel (*Pterodroma feae*), which is only present on Buggio, Desertas Islands.

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

EuroVegChecklist:

Frankenio-Astydamion latifoliae Santos 1976

Euphorbio azoricae-Festucion petraeae Lüpnitz 1976

Helichrysiobconico-devium Rivas-Mart. et al. 2002

Annex I:

1250 Vegetated sea cliffs with endemic flora of the Macaronesian coast

Emerald:

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

Macaronesian

Justification

The habitat type is composed of many endemic species of the Macaronesian archipelagos.

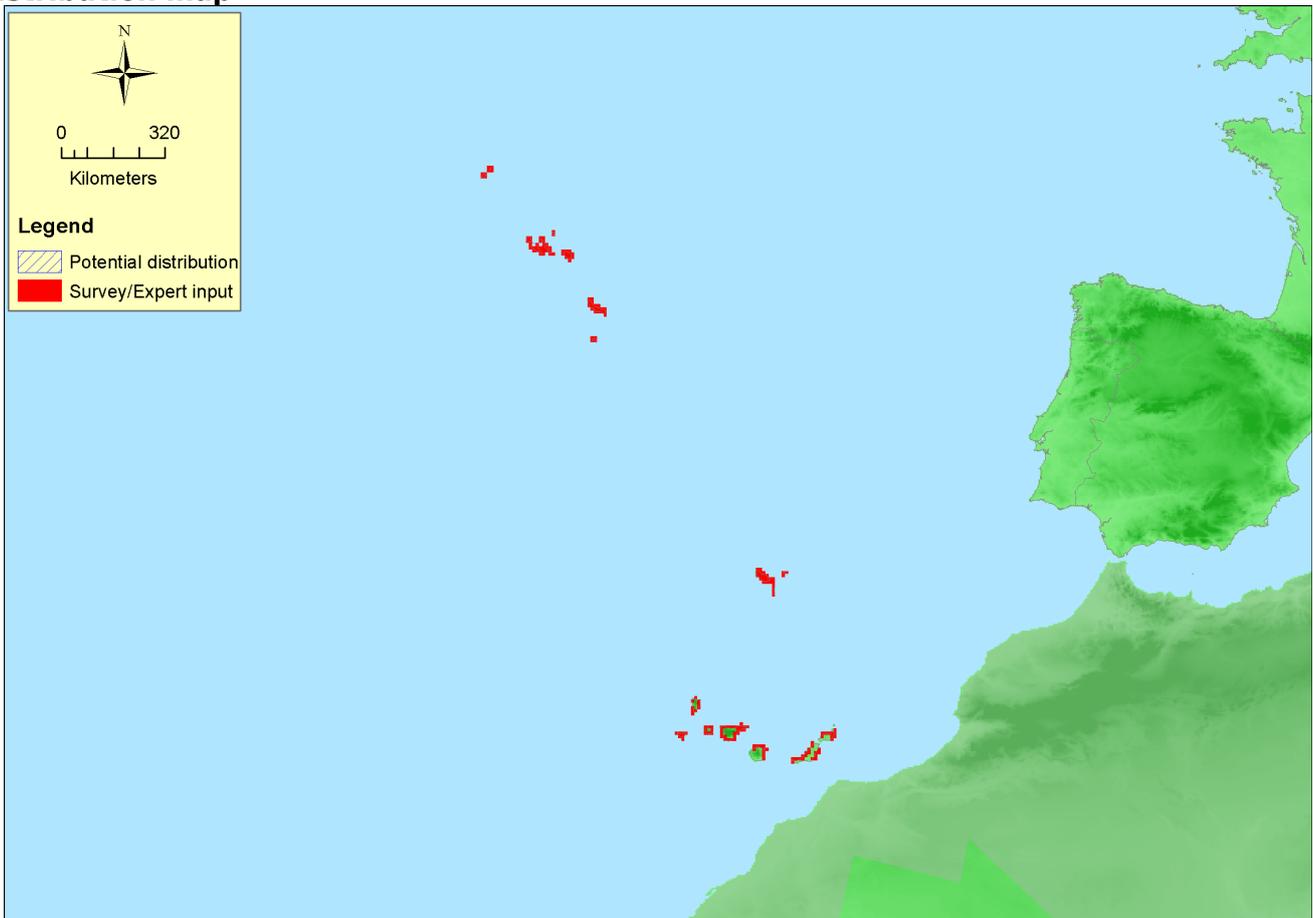
Geographic occurrence and trends

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>Portugal</i>	Madeira: Present Portugal Azores: Present Savage Islands: Present	6 Km ²	Decreasing	Decreasing
<i>Spain</i>	Canary Islands: Present	2.27 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	693950 Km ²	183	8.3 Km ²	
EU 28+	693950 Km ²	183	8.3 Km ²	

Distribution map



Map complete. Data: Art17.

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

Probably 100% as it is not documented from the Cabo Verde archipelago.

Trends in quantity

The habitat type has experienced a slight decrease of a 5% in extent over the last 50 years due to human disturbances, such as the small paths used by fishers and other people to approach sites such as hidden beaches, as well as rock climbers. In addition, the building of infrastructure such as human settlements, lighthouses or military installations (particularly coastal artillery) has posed an impact to this habitat type.

- Average current trend in quantity (extent)

EU 28: Decreasing

EU 28+: Decreasing

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

No

Justification

The habitat has an EOO larger than 50,000 km².

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

No

Justification

The habitat is widespread in the Atlantic archipelagos of Azores, Madeira, Savagens and Canary Islands.

Trends in quality

This habitat type has experienced a decline in quality of about 27% particularly due pollution (waste disposal) and introduction of invasive alien species.

- Average current trend in quality

EU 28: Decreasing

EU 28+: Decreasing

Pressures and threats

This type is affected by the common threats of coastal habitats as a result of the pressures of human settlements and the tourism industry. In some of the islands, infrastructure development, particularly through urbanization, reaches the sea cliffs, at least partially. Traditionally, urbanisation was punctual and related to the construction of lighthouses and military resorts (coastal artillery), but now the construction of residential buildings has been enhanced by touristic development and it seems that there will be further developments in the future. The use of paths by fishers, rock climbers and other visitors, as well as other human disturbances have occurred historically and will probably increase in the next future. However, the extent of these disturbances is local and of low impact. A more concerning threat is the increasing appearance of invasive alien species, mostly in the neighbourhoods of human settlements.

List of pressures and threats

Transportation and service corridors

Paths, tracks, cycling tracks

Urbanisation, residential and commercial development

Dispersed habitation

Human intrusions and disturbances

Mountaineering & rock climbing

Circuit, track

Pollution

Garbage and solid waste

Invasive, other problematic species and genes

Invasive non-native species

Conservation and management

Suppression of residential building activity in the border of the cliffs, climbing and use of paths for fishing

and trekking would be sufficient for effective conservation of this habitat type.

List of conservation and management needs

Measures related to spatial planning

Establish protected areas/sites

Conservation status

Annex I:

1250: MAC FV

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

If the disturbance is trampling, the recovery of this habitat is quick and can be done naturally, but in the cases of buildings it would take much longer and intervention would probably be needed.

Effort required

10 years	20 years	50+ years	200+ years
Through intervention	Through intervention	Naturally	Naturally

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-5 %	-10 %	-8 %	-6 %
EU 28+	-5 %	-10 %	-8 %	-6 %

These coastal cliffs are very inaccessible and have suffered little reduction, having experienced a decline of 5% in the last 50 years, estimated by averaging the decline of the habitat in Spain (-1% over 2,27 km²) and the one in Portugal (-7% over 6 Km²). A historical decline of 6% has also been calculated, assuming that the 2% decline that occurred in Spain is also true in Portugal. It is expected that this trend will continue in the future, and an estimate of 5 to 10% decline is expected in the next 50 years according to the territorial experts in Portugal. This trend is expected to be the same for Spain as well. Additionally, a decline of 8% has been calculated for the 50 year time span between 1976 and 2026. The habitat type is therefore assessed as Least Concern under Criterion A.

Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	>50000 Km ²	Yes	No	Unknown	>50	Yes	No	Unknown	Unknown
EU 28+	>50000 Km ²	Yes	No	Unknown	>50	Yes	No	Unknown	Unknown

The EOO and AOO values largely exceed the thresholds for a threatened category, as this habitat is widespread along a wide area in the Macaronesian archipelagos. However, it is experiencing a very slight continuing decline in spatial extent, abiotic and biotic quality of the habitat. It is thus 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	27 %	30% %	Unknown %	Unknown %	Unknown %	Unknown %
EU 28+	27 %	30% %	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 habitat type has seen 27% of his extent affected with a 30% relative severity (moderate reduction). It is thus assessed as Least Concern under Criterion C/D.

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

Assessors

J. Loidi

Contributors

Type description: J. Janssen

Territorial data: M. Del Arco, J. Capelo, D. Espírito-Santo, J. Loidi, O Rodríguez

Working Group Coastal: A. Acosta, F. Bioret, H. Gardfjell, J. Janssen, J. Loidi, R. Tzonev

Reviewers

M. García Criado

Date of assessment

30/09/2015

Date of review

19/02/2016

References

Capelo, J.H., Costa, J.C., Jardim, R., Sequeira, M. and Rivas-Martínez, S. 2003. The vegetation of Madeira VIII: Advances on the phytosociological survey of non-nitrophyllous vegetation of the Madeira archipelago. *Silva Lusitana* 11(2): 256-263.

Prieto, J.A.F., Aguiar, C. and Dias, E. 2012. Description of some new syntaxa from the Azores archipelago. *International Journal of Geobotanical Research* 2: 111-116.

Santos Guerra, A. 1983. *Vegetacion y flora de La Palma*. Ed. Interinsular Canaria, Santa Cruz de Tenerife.