

A1.41: Communities of Atlantic littoral rockpools

Summary

This habitat has a large natural range in the North East Atlantic region being found on rocky shores in the Canaries and Azores in the west to the Skagerrak coast of Sweden in the east. There is considerable variety in the associated communities as they are influenced by factors such as position on the shore and size and depth of the rock pools. Weather as well as climate conditions can affect this habitat and it is also vulnerable to damage from chronic and acute pollution. Poor water quality, for example eutrophication, as well as acute pollution incidents such as oil spills are pressures on this habitat. The establishment of non-native species, has been known to change the species composition of this habitat.

Conservation and management measures which would benefit this habitat are mostly general rather than specific measures. They include pollution control and regulation, development control and contingency plans to be followed in the event of a major pollution incident and measures to reduce global warming and sea level rise.

Synthesis

The nature of this habitat means it can be ephemeral and subject to significant natural fluctuations as a result of patterns of erosion and deposition on the shore and climatic conditions. Survey information confirms that this habitat has a widespread distribution in the North East Atlantic. Examples have been studied in detail in some localities and although there have been some changes, overall it is considered to have been stable in extent. It does not have a narrow geographical range and the distribution of the habitat is such that the identified threats are unlikely to affect all localities at once. This habitat has therefore been assessed as Least Concern for both the EU 28 and EU 28+.

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

None.

Habitat Type

Code and name

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Shallow rockpool habitat fringed by *Cystoseira humilis*, Punta de Galdar, Gran Canaria, Spain (© R.Haroun).

Deep rockpool colonised by the wrack *Fucus serratus* and the green seaweed *Ulva intestinalis*. Port Eynon, Wales (© S.Gubbay).

Habitat description

Rockpools occur where the topography of the shore allows seawater to be retained within depressions in the bedrock producing pools on the retreat of the tide. As the associated communities are permanently submerged they are not directly affected by height on the shore and normal rocky shore zonation patterns do not apply. Factors such as pool depth, surface area, volume, orientation to sunlight, shading, internal topography, sediment content and type, together with wave exposure, shore height, and hence flushing rate, and the presence of absence of freshwater runoff, results in large spatial variation in community structure, even between adjacent pools at the same shore height.

Shallow rockpools in the mid to upper shore are characterised by encrusting coralline algae and *Corallina officinalis*. Deeper rockpools on the mid to lower shore can support fucoids and some sublittoral species such as kelp. Those rockpools influenced by the presence of sand are characterised by sand-tolerant seaweed such as *Furcellaria lumbricalis* and *Polyides rotundus*. Where more stable sand occurs in the base of the rockpool sea-grass beds can occur. Shallow rockpools on mixed cobbles, pebbles, gravel and sand may be characterised by hydroids. A very rough guideline to the terms shallow and deep rockpools: shallow rockpools do not support kelp, whereas deep rockpools do. Rockpools on the upper shore which are subject to rainwater influence and wide fluctuations in temperature are not included in this habitat type. This habitat also does not include shallow standing water on compacted sediment or mixed substrata.

Indicators of quality:

Both biotic and abiotic indicators have been used to describe marine habitat quality. These include: the presence of characteristic species as well as those which are sensitive to the pressures the habitat may face; water quality parameters; levels of exposure to particular pressure, and more integrated indices which describe habitat structure and function, such as trophic index, or successional stages of development in habitats that have a natural cycle of change over time.

There are no commonly agreed indicators of quality for this habitat, although particular parameters may have been set in certain situations e.g. protected features within Natura 2000 sites, where reference values have been determined and applied on a location-specific basis.

Characteristic species:

In shallow rockpools *Corallina officinalis* often forms a dense turf. Characteristic algae include *Dumontia contorta*, *Mastocarpus stellatus*, *Ceramium virgatum*, *Cladophora rupestris* and *Ulva* spp. The pools may hold large numbers of grazing molluscs, particularly *Littorina littorea*, *Patella vulgata* and *Gibbula cineraria*. Within the pools, pits and crevices are often occupied by the anemone *Actinia equina* and small *Mytilus*

edulis.

Deep rockpools often contain a community characterized by *Fucus serratus* and *Laminaria digitata*. Other large brown algae, including *Laminaria saccharina*, *Himanthalia elongata* and *Halidrys siliquosa*, may also occur. Characteristic encrusting filamentous and foliose algae, include *Palmaria palmata*, *Chondrus crispus*, *Ceramium* spp., *Membranoptera alata* and *Gastroclonium ovatum*. The sponge *Halichondria panicea* and anemones *Actinia equina* may be present on overhangs or algal free vertical surfaces. Grazing molluscs, mobile crustaceans (e.g. *Pagurus bernhardus* and *Carcinus maenas*), brittlestars (*Ophiothrix fragilis* and *Amphipholis squamata*), and encrusting bryozoans and ascidians are also present.

Rockpools with sediment floors support distinct communities of scour-tolerant algae. Deep pools with sediment are typically dominated by furoids and kelps (*Fucus serratus*, *Laminaria digitata*, *Saccharina latissima* and *Saccorhiza polyschides*). Shallow pools on mixed cobbles, pebbles, gravel and sand may be colonized by hydroids (*Obelia longissima* and *Kirchenpaueria pinnata*), ephemeral green algae (*Ulva* sp.) and the winkle *Littorina littorea*. *Mytilus edulis*, barnacles (*Semibalanus balanoides* and *Elminius modestus*) and the keel worm *Pomatoceros triqueter*.

Classification

EUNIS (v1405):

Level 4 of the EUNIS classification. A sub-habitat of 'Atlantic littoral rock' (A1.4)

Annex 1:

1160 Large shallow inlets and bays

1170 Reefs

MAES:

Marine - Marine inlets and transitional waters

Marine - Coastal

MSFD relationships:

Littoral rock and biogenic reef

EUSEaMap:

Not mapped

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

Justification

This habitat is very typical of rocky shores in the North East Atlantic region because of the tidal range. This can be more than 13 m (Saint Malo, France) or as little as 30 cm (Danish Kattegat), and enables rockpools to form as the tide recedes.

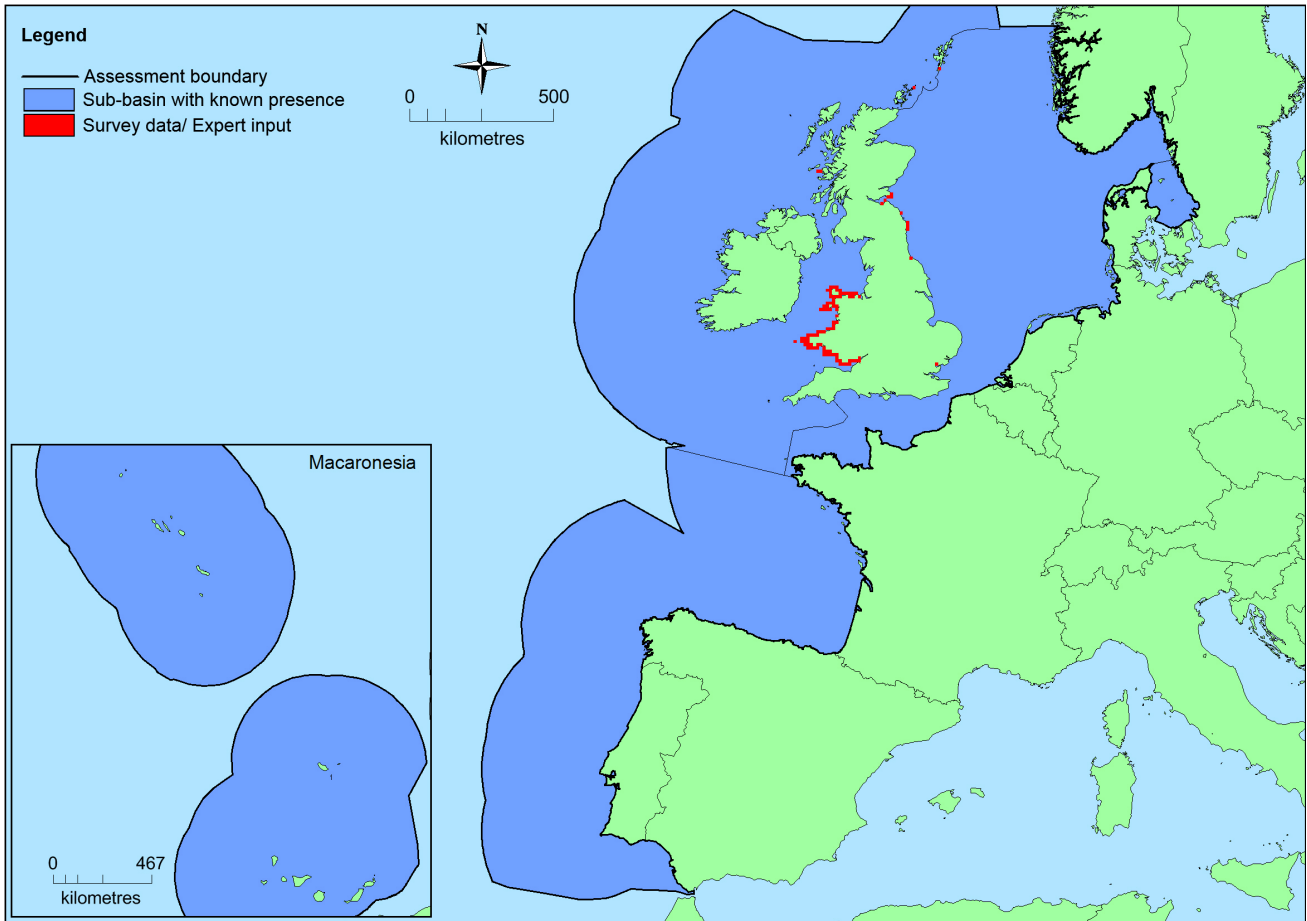
Geographic occurrence and trends

Region	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>North-East Atlantic</i>	Bay of Biscay and the Iberian Coast: Present Celtic Seas: Present Greater North Sea: Present Macaronesia: Present Kattegat: Present	unknown Km ²	Unknown	Unknown

Extent of Occurrence, Area of Occupancy and habitat area

	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
<i>EU 28</i>	316,131 Km ²	231	unknown Km ²	EOO and AOO have been calculated on the available data. Although this data set is known to be incomplete the figures exceed the thresholds for threatened status.
<i>EU 28+</i>	316,131 Km ²	231	unknown Km ²	EOO and AOO have been calculated on the available data. Although this data set is known to be incomplete the figures exceed the thresholds for threatened status.

Distribution map



There are insufficient data to provide a comprehensive and accurate map of the distribution of this habitat. This map has been generated using EMODnet data from modelled/surveyed records for the North East Atlantic (and supplemented with expert opinion where applicable) (EMODnet 2010). EOO and AOO have been calculated on the available data presented in this map however these should be treated with caution as expert opinion is that this is not the full distribution of the habitat.

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

This habitat occurs in the EU 28+ (e.g. Norway, Isle of Man, Channel Islands). The percentage hosted by the EU 28 is likely to be between 85-90% but there is insufficient information to establish the exact figure.

Trends in quantity

The nature of this habitat means it can be ephemeral and subject to significant natural fluctuations as a result of patterns of erosion and deposition on the shore and climatic conditions. There is insufficient data on which to make an overall assessment of historical, recent or future trends in quantity.

- 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

This habitat has a large natural range in the North East Atlantic region extending from the Canaries and Azores in the west to the Skagerrak coast of Sweden in the east.

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

No

Justification

This habitat has a large natural range in the North East Atlantic region extending from the Canaries and Azores in the west to the Skagerrak coast of Sweden in the east.

Trends in quality

This nature of this habitat means it can be ephemeral and subject to significant natural fluctuations as a result of patterns of erosion and deposition on the shore, and climatic conditions. There is insufficient data on which to make an overall assessment of historical, recent or future trends in quality.

- Average current trend in quality

EU 28: Unknown

EU 28+: Unknown

Pressures and threats

Poor water quality, for example eutrophication, as well as acute pollution incidents such as oil spills are pressures on this habitat. The establishment of non-native species, has been known to change the species composition of this habitat (e.g. on Helgoland where *Sargassum muticum* has invaded rock pools and formed a blanketing layer in the summer). Collecting may be an additional localised pressure in some locations.

List of pressures and threats

Pollution

Pollution to surface waters (limnic, terrestrial, marine & brackish)

Nutrient enrichment (N, P, organic matter)

Input of contaminants (synthetic substances, non-synthetic substances, radionuclides) - diffuse sources, point sources, acute events

Marine water pollution

Oil spills in the sea

Invasive, other problematic species and genes

Invasive non-native species

Conservation and management

Conservation and management measures which would benefit this habitat are mostly general rather than specific measures. They include pollution control and regulation, development control and contingency plans to be followed in the event of a major pollution incident and measures to reduce global warming and sea level rise.

List of conservation and management needs

Measures related to wetland, freshwater and coastal habitats

Restoring/Improving water quality

Measures related to marine habitats

Other marine-related measures

Measures related to spatial planning

Other spatial measures

Conservation status

Annex 1:

1160 MATL U2

1170 MATL U2

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

Generally, the effects of chronic impacts on this habitat are reversible provided the disturbance is stopped. Recovery from acute impacts is also possible but may take much longer depending on the type and scale of the impact as well as physical factors such as position on the shore, size and depth of the rock pool habitat.

Effort required

10 years
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 general distribution of this habitat is well known even though there is a lack of information on its exact extent. There is a lack of data on trends although this habitat has been studied in detail in some localities. Overall the extent is considered unlikely to have changed significantly as there is a natural pattern of the creation and loss of rock pools through erosive processes. This habitat is therefore considered stable and 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	>50,000 Km ²	No	No	No	>50	No	No	No	No
EU 28+	>50,000 Km ²	No	No	No	>50	No	No	No	No

This habitat has a large natural range in the North East Atlantic region extending from the Canaries and Azores in the west to the Skagerrak coast of Sweden in the east. EOO >50,000 km² and AOO >50 which exceeds the thresholds for a threatened category on the basis of restricted geographic distribution. Overall the habitat is considered to have been stable over the last 40 years although localised changes have taken place. The distribution is such that the identified threats are unlikely to affect all localities at once. This habitat has therefore been assessed as Least Concern under criteria B1, B2 & B3.

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%

Experts consider there to be insufficient data on which to assess criteria 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	DD	DD	DD	LC	LC	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	LC	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
Least Concern	-	Least Concern	-

Confidence in the assessment

Low (mainly based on uncertain or indirect information, inferred and suspected data values, and/or limited expert knowledge)

Assessors

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