

A3.12 Kelp and seaweed communities on sediment-affected or disturbed Atlantic infralittoral rock

Summary

This is an infralittoral rock habitat which is subject to disturbance through the mobility of the substratum, and abrasion/covering by nearby coarse sediments, or suspended particulate matter. The associated communities can be quite variable in character, depending on the particular conditions. Algae such as *Saccharina latissima*, *Saccorhiza polyschides* or *Halidrys siliquosa* may be prominent components of the associated community and, due to the disturbed nature of this habitat, fauna are generally sparse, being confined to encrusting bryozoans and/or sponges.

This habitat is vulnerable to change in the level of wave exposure, nutrient enrichment, pollution incidents (e.g. oil spills), dredging and the disposal of dredge spoil. Climate change could cause localised extinctions due to the inability of species to spread to suitable alternative habitats. It is also vulnerable to introduction of invasive non-indigenous species. Beneficial management measures include the regulation of coastal developments and discharges to the marine environment. The development of contingency plans to be followed in the event of a major pollution incident, and control on the potential introduction of non-native invasive species are other valuable measures.

Synthesis

Detailed information on the abundance and extent of this habitat is lacking, but it is known to have a widespread distribution. Data on the quantity and quality of this habitat, including any historical or recent, trends across the region are unknown.

This habitat has a large EOO and AOO, and therefore qualifies as Least Concern under criterion B. However the habitat is assessed as Data Deficient both at the EU 28 and EU 28+ levels given the lack of information on its area and any trends in quantity and quality.

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

None.

Habitat Type

Code and name

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Mixed kelps with scour-tolerant and opportunistic foliose red seaweeds on scoured/sand-covered infralittoral rock, Loch nan Ceall, Scotland (© K. Hiscock/JNCC).



Halidrys siliquosa and mixed kelps on tide-swept infralittoral rock with coarse sediment, Western Isles, Scotland (© JNCC).

Habitat description

Infralittoral rock habitat which is subject to disturbance through the mobility of the substratum (boulders or cobbles), abrasion/covering by nearby coarse sediments, or suspended particulate matter (sand). The associated communities can be quite variable in character, depending on the particular conditions. *Laminaria hyperborea* and red seaweed communities typical of stable open coast rocky habitats are replaced by those which include more ephemeral species or which are tolerant of sand and gravel abrasion. As such *Saccharina latissima*, *Saccorhiza polyschides* or *Halidrys siliquosa* may be prominent components of the associated community. The foliose green seaweed *Ulva* spp. is fast to colonise newly cleared areas of rock and is often present, along with the foliose brown seaweed *Dictyota dichotoma*.

Due to the disturbed nature of this habitat, fauna are generally sparse, being confined to encrusting bryozoans and/or sponges, such as *Halichondria panacea* and the gastropod *Gibbula cineraria*.

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:

Where *Saccorhiza polyschides* and other opportunistic kelps occur, scour-tolerant red seaweeds including *Corallina officinalis*, *Kallymenia reniformis*, *Plocamium cartilagineum*, *Chondrus crispus*, *Dilsea carnosa* and encrusting coralline algae are often present beneath the kelp. Foliose red seaweeds such as *Callophyllis laciniata*, *Cryptopleura ramosa* and *Palmaria palmata* also occur in this habitat. *P. palmata* and *Delesseria sanguinea* often occur as epiphytes on the stipes of *L. hyperborea*, when it is present.

Where there are seasonally disturbed unstable boulders and cobbles in very shallow water the brown seaweeds *Chorda filum* and *S. latissima* can dominate with *Desmarestia aculeata* and encrusting coralline algae also typical. Other red seaweeds, which can be found here, include *Chondria dasyphylla*, *Brongniartella byssoides*, *Polysiphonia elongata*, *Ceramium nodulosum*, *Cystoclonium purpureum*, *Heterosiphonia plumosa*, *Rhodomela confervoides* and *Plocamium cartilagineum*. The brown seaweeds *Punctaria* sp. and *Cladostephus spongiosus* are generally present.

Where there are dense stands of *Halidrys siliquosa* it can be mixed with the foliose brown seaweed; *Dictyota dichotoma* and kelp such as *Saccharina latissima* and *Laminaria hyperborea*. Below the canopy is an undergrowth of red seaweeds, that are tolerant of sand-scour such as *Phyllophora crispa*, *Phyllophora pseudoceranoides*, *Rhodomela confervoides*, *Corallina officinalis* and *Chondrus crispus*. Other red seaweeds such as *Plocamium cartilagineum*, *Calliblepharis ciliata*, *Cryptopleura ramosa*, *Delesseria sanguinea*, *Heterosiphonia plumosa*, *Dilsea carnosa*, *Hypoglossum hypoglossoides* and *Brongniartella byssoides* may be locally abundant, particularly in the summer months. There may be a rich epibiota on *H. siliquosa*, including the hydroid *Aglaophenia pluma*, ascidians such as *Botryllus schlosseri*. There is generally a sparse faunal component colonising the boulders and cobbles, comprising the tube-building polychaete *Pomatoceros triqueter*, the crab *Cancer pagurus*, the starfish *Asterias rubens*, the gastropod *Gibbula cineraria* and the sea anemone *Urticina felina*.

The faunal component of this biotope is typically sparse - the starfish *Asterias rubens* and the crabs *Pagurus bernhardus* and *Necora puber* are amongst the most conspicuous animals. The bryozoan crust *Electra pilosa* colonise many of the algae along with the ascidian *Botryllus schlosseri*. Occasionally, the polychaete *Lanice conchilega* may occur in the sand between pebbles, and the anemone *Urticina felina* may be found amongst pockets of gravel along with the gastropod *Gibbula cineraria*. At some sites the rock beneath the algae can be occupied by the tube-building polychaete *Pomatoceros triqueter*.

Classification

EUNIS (v1405):

Level 4 of the EUNIS classification. A sub-habitat of 'Atlantic infralittoral rock' (A3.1).

Annex 1:

1160 Large shallow inlets and bays

MAES:

Marine - Marine inlets and transitional waters

Marine - Coastal

MSFD:

Shallow sublittoral rock and biogenic reef

EUSEaMap:

Shallow photic rock or biogenic reef

IUCN:

9.2 subtidal rock and rocky reefs

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

Unknown

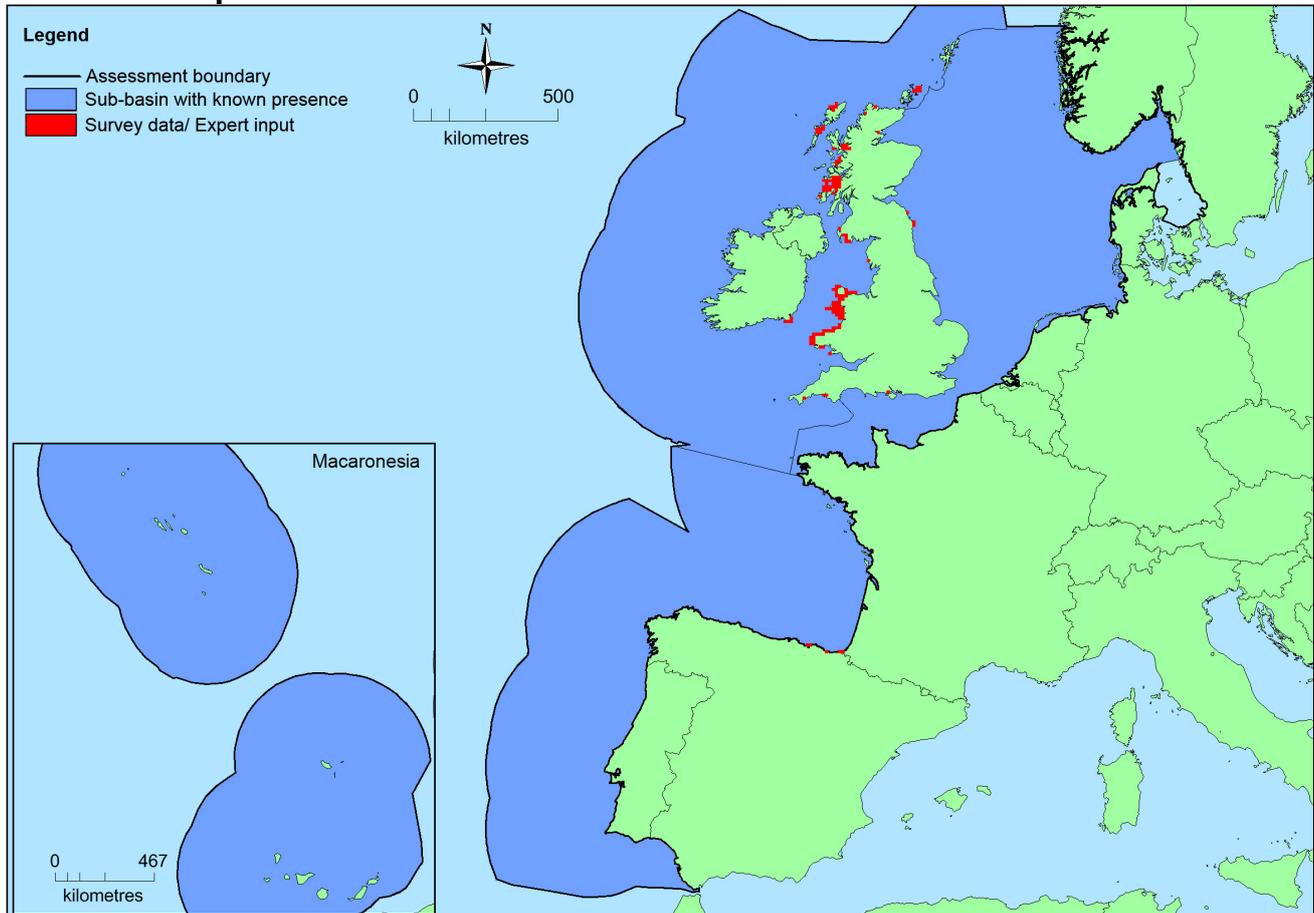
Geographic occurrence and trends

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: Uncertain	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>	495,868 Km ²	168	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>	>495,868 Km ²	>168	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 trends in quantity of this habitat is unknown.

- 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 with examples as widely separated as the coast of northern Spain and the Shetland Islands, Scotland.

- 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 with examples as widely separated as the coast of northern Spain and the Shetland Islands, Scotland.

Trends in quality

The trends in quality of this habitat is unknown.

- Average current trend in quality

EU 28: Unknown

EU 28+: Unknown

Pressures and threats

This habitat is vulnerable to change in the level of wave exposure (higher or lower) which can be a consequence of nearby coastal construction and coastal protection works. It can also be affected by nutrient enrichment, for example associated with run-off from the land. Pollution, for example, oil spills can also be a significant threat to this habitat, while dredging and the disposal of dredge spoil may result in the displacement and loss of characteristic species. Climate change could cause localised extinctions due to the inability of species to spread to suitable alternative habitats. This habitat is also vulnerable to introduction of invasive non-indigenous species.

List of pressures and threats

Pollution

Marine water pollution

Oil spills in the sea

Toxic chemical discharge from material dumped at sea

Input of litter (solid waste matter)

Invasive, other problematic species and genes

Invasive non-native species

Natural System modifications

Human induced changes in hydraulic conditions

Modification of hydrographic functioning, general

Siltation rate changes, dumping, depositing of dredged deposits

Dykes, embankments, artificial beaches, general

Climate change

Changes in abiotic conditions

Temperature changes (e.g. rise of temperature & extremes)

Droughts and less precipitations

Flooding and rising precipitations

pH-changes

Water flow changes (limnic, tidal and oceanic)

Wave exposure changes

Sea-level changes

Changes in biotic conditions

Habitat shifting and alteration

Desynchronisation of processes

Decline or extinction of species

Migration of species (natural newcomers)

Conservation and management

Beneficial management measures for this habitat include the regulation of coastal developments that might affect adjacent areas of this habitat by altering sediment movement patterns and wave exposure. Also pollution control and regulation of discharges to the marine environment, the development of contingency plans to be followed in the event of a major pollution incident, and control on the potential introduction of non-native invasive species.

List of conservation and management needs

Measures related to wetland, freshwater and coastal habitats

Restoring/Improving water quality

Measures related to spatial planning

Other spatial measures

Establish protected areas/sites

Conservation status

Annex 1:

1160: MATL U2, MMAC FV

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

Unknown

Effort required

Red List Assessment

Criterion A: Reduction in quantity

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

There is insufficient information to determine any overall trends in quantity of this habitat in the North East Atlantic. This habitat has therefore been assessed as Data Deficient 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	Unknown	Unknown	No	>50	Unknown	Unknown	No	No
EU 28+	>50,000 Km ²	Unknown	Unknown	No	>50	Unknown	Unknown	No	No

This habitat has a large natural range in the North East Atlantic region. The precise extent is unknown however as EOO >50,000 km² and AOO >50, this exceeds the thresholds for a threatened category on the basis of restricted geographic distribution. Trends are unknown but 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 under criteria B1(c) B2 (c) and B3 and Data Deficient for all other criteria.

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 to estimate 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

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Reviewers

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References

Connor, D. W., Allen, J. H., Golding, N, Howell, K. L., Lieberknecht, L. M., Northen K. O. and Reker, J. B. 2004. *The Marine Habitat Classification for Britain and Ireland*. Peterborough: Version 04.05 JNCC ISBN 1 861 07561 8. Available at: <http://jncc.defra.gov.uk/MarineHabitatClassification>. (Accessed: 08/11/2015).

European Environment Agency. 2014. EUNIS habitat type hierarchical view. Available at: <http://eunis.eea.europa.eu/habitats-code-browser.jsp>. (Accessed: 22/08/2014).

MarLIN (Marine Life Information Network) .2015. MarLIN - The Marine Life Information Network. Available at: <http://www.marlin.ac.uk/speciesfullreview.php>. (Accessed: 18/11/2015).

Tempera, F., E. Atchoi, P. Amorim, J. Gomes-Pereira and J. Gonçalves. 2013. *Atlantic Area Marine Habitats. Adding new Macaronesian habitat types from the Azores to the EUNIS Habitat Classification*. Horta: MeshAtlantic, IMAR/DOP-UAç, p.126.