

A3.15 Frondose algal communities (other than kelp) on exposed Atlantic infralittoral rock

Summary

This rocky habitat type is found in the infralittoral zone, in locations exposed or extremely exposed to wave action, or strong tidal streams. It is characterised by a dense turf of foliose red seaweeds, many of which have annual fronds that tend to die back in the autumn and regenerate again in the spring. This produces a seasonal change with seaweed cover most dense between April and September, then substantially reduced over winter months. As well as a varied red seaweed component, the habitat may also contain occasional kelp plants and patches of the brown foliose seaweed *Dictyota dichotoma*. Dense fields of *Cystoseira* cf. *abies-marina*, are an associated biotope but currently only recorded on the Macaronesian archipelagos.

This habitat is particularly sensitive to substratum removal as this will result in the loss of all the attached species including the characterising red algal species. More likely are changes in water quality and turbidity, for example from dredge spoil disposal or activities which disturb the seabed in adjacent areas of soft sediment. Increased turbidity can increase sedimentation and reduce photosynthesis. Beneficial management and conservation measures for this habitat include water quality improvement programmes, the regulation of fishing methods which damage, or disturb seabed communities, of dredging, of coastal development and the construction of hard coastal defence structures that can alter the hydrological regime or sediment loads in the water column.

Synthesis

Survey information confirms that this habitat has a widespread distribution in the North East Atlantic. It has been studied in detail in some localities however there is insufficient information to determine whether there have been any historical, recent and possible future trends in quantity or quality.

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 because of 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	-

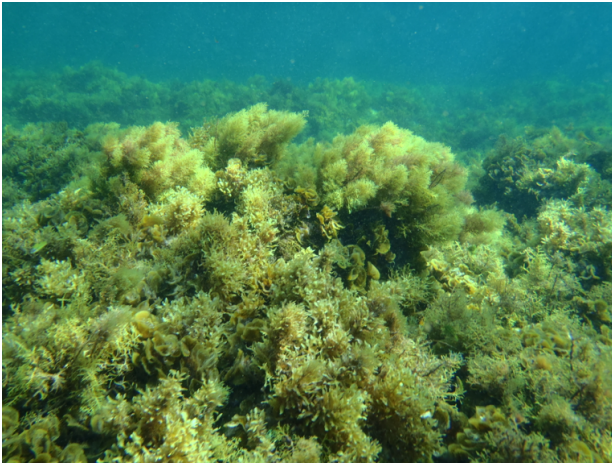
Sub-habitat types that may require further examination

None.

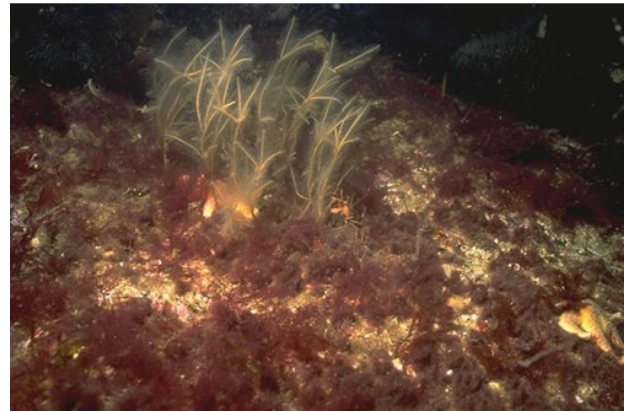
Habitat Type

Code and name

A3.15 Frondose algal communities (other than kelp) on exposed Atlantic infralittoral rock



Belt of *Cystoseira abies-marina* forming a dense cover of exposed infralittoral rock. Alegranza, Lanzarote, Spain (© R.Haroun).



Foliose red seaweeds and a clump of the hydroid *Nemertesia ramosa* on exposed lower infralittoral rock, Ardnamurchan Point, Scotland (© P.Brazier/JNCC).

Habitat description

This rocky habitat type is found in the infralittoral zone, in locations exposed or extremely exposed to wave action, or strong tidal streams. Associated biotopes are characterised by foliose red seaweeds, turfs of articulated *Corallinaceae* and *Cystosiera* spp. at or below the lower limit of the kelp. Most of the red seaweeds which make up the dense turf of foliose red seaweeds are common to the kelp zone above, while the faunal component of the habitat is made up of species that are found either in the kelp zone or the animal-dominated upper circalittoral. Many of the red seaweeds, which occur in this habitat have annual fronds, which tend to die back in the autumn and regenerate again in the spring. This produces a seasonal change in the density of the seaweed cover, which is greatest between April and September, then substantially reduced over winter months. As well as a varied red seaweed component, this habitat may also contain occasional kelp plants and patches of the brown foliose seaweed *Dictyota dichotoma*.

Dense fields of *Cystoseira* cf. *abies-marina*, are an associated biotope but currently only recorded on the Macaronesian archipelagos such as Formigas Bank, Azores and Chinijo Islets, north of Lanzarote, Canary Islands. Encrusting coralline algae frequently cover the substrate under the *Cystoseira* plants whilst *Ulva rigida* is an occasional epiphyte on the fronds. Around the various nooks and crevices of the irregular bedrock, the more abundant species are encrusting rhodophytes (calcareous and non-calcareous) as well as cartilaginous rhodophytes. Other species present are *Sphaerococcus coronopifolius*, *Hypoglossum hypoglossoides*, *Dictyopteris membranacea* and *Cladophora* sp.

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:

Foliose species commonly present include *Dilsea carnosa*, *Hypoglossum hypoglossoides*, *Schottera nicaeensis*, *Cryptopleura ramosa* and *Delesseria sanguinea*. The red seaweed species composition varies considerably; at some sites a single species may dominate (particularly *Plocamium cartilagineum*). Small filamentous red seaweeds can be found here as well. These include *Heterosiphonia plumosa* and

Brongniartella byssoides. Coralline crusts cover the bedrock beneath the seaweeds. The fauna generally comprises low-encrusting forms such as the tubeworms *Pomatoceros* spp., anthozoans including *Alcyonium digitatum*, *Urticina felina* and *Caryophyllia smithii*) and occasional sponge crusts such as *Cliona celata*, *Esperiopsis fucorum*, *Scypha ciliata* and *Dysidea fragilis*. More mobile fauna include the gastropod *Calliostoma zizyphinum*, the echinoderms *Echinus esculentus* as well as the starfishes *Asterias rubens*, and *Marthasterias glacialis* and the crab *Cancer pagurus*. Bryozoan crusts such as *Electra pilosa* can be found fronds on the foliose red seaweeds while scattered hydroids such as *Nemertesia antennina* form colonies on shells, cobbles and available rock. At some sites erect bryozoans *Crisia* spp. and *Bugula* spp. are present. Ascidians such as *Clavelina lepadiformis* and *Clavelina lepadiformis* may also be common. The *Cystoseira* beds are used by a multitude of species that feed, take shelter and nest amongst the fronds. *Thalassoma pavo* and *Centrolabrus trutta* are two extremely abundant fish species and the latter species has major breeding grounds in this assemblage. Cryptic fish such as *Conger conger*, *Muraenidae* spp., *Epinephelus marginatus* and *Phycis phycis* are typically found in the crevices.

Classification

EUNIS (v1405):

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

Annex 1:

1170 Reefs

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

Justification

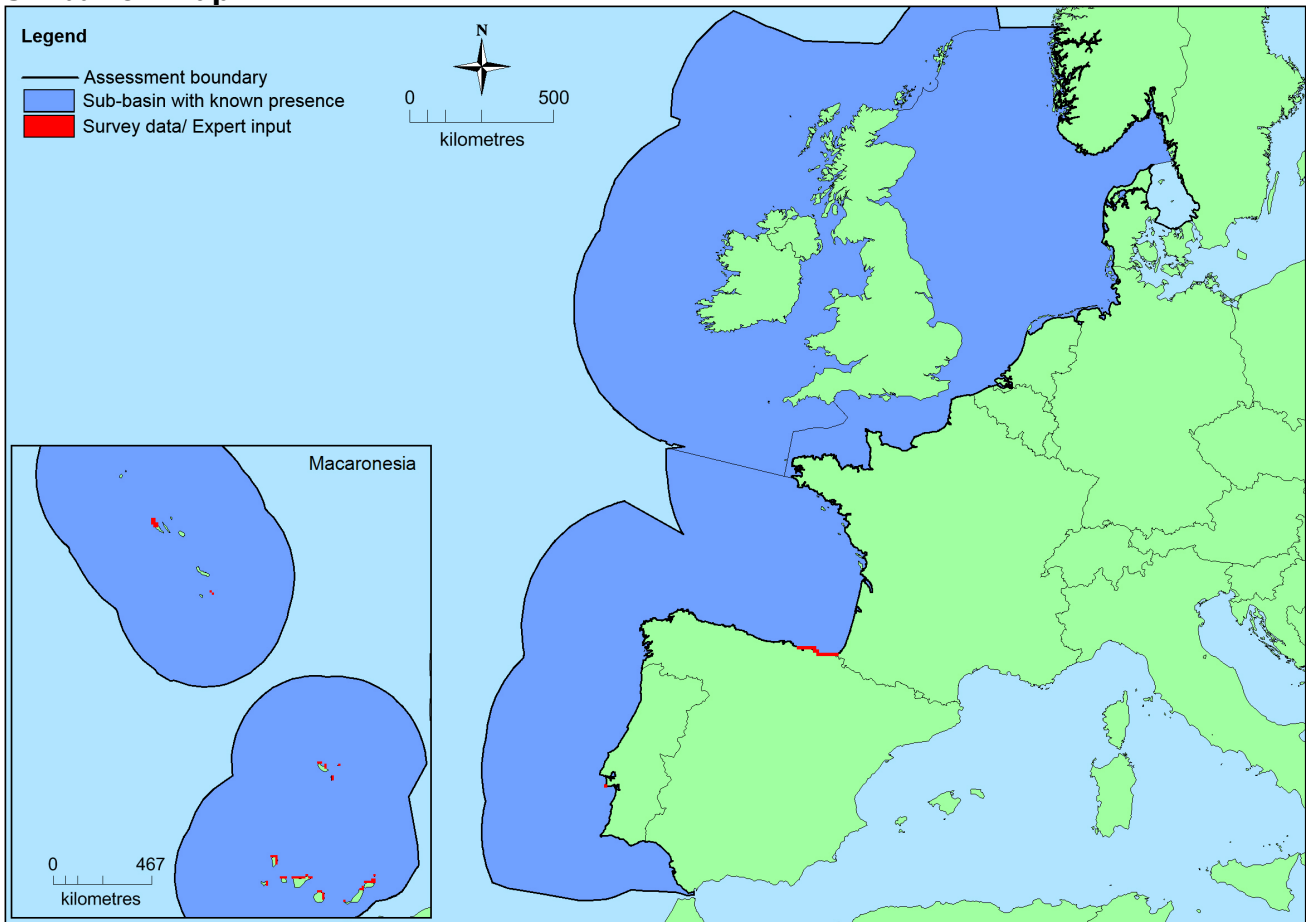
Geographic occurrence and trends

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>	2,094,000 Km ²	83	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>	>2,094,000 Km ²	>83	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

There is insufficient information to determine any historical or recent trends in quantity of this habitat. Future trends have not been estimated.

- 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 Azores and the Shetland Islands.

- 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 Azores and the Shetland Islands.

Trends in quality

Overall unknown although in the case of the Macaronesian archipelagos, the *C.abies-marina* habitat has declined in quality in recent years. In some cases, a severe decline in coverage and structure have been reported, and even total loss of the species (Madeira and Canary Islands). This seems to be related to herbivore pressure (sea urchin grazing) and thermal stress (temperature increase), but these ecological processes are not yet fully understood, nor are any potential long-term effects on ecosystem services.

- Average current trend in quality

EU 28: Unknown

EU 28+: Unknown

Pressures and threats

This habitat is particularly sensitive to substratum removal as this will result in the loss of all the attached species including the characterising red algal species. More likely are changes in water quality and turbidity, for example from dredge spoil disposal or activities which disturb the seabed in adjacent areas of soft sediment. Increased turbidity can increase sedimentation and reduce photosynthesis.

Red algal species and the urchin *Echinus esculentus* are sensitive to synthetic chemical contamination and some red algal species such as *Delesseria sanguinea* are particularly intolerant to anoxic conditions. Furthermore, sessile faunal species would probably be lost if there are changes in water column oxygenation and mobile species are likely to migrate to avoid adverse conditions, causing a subsequent decline in species richness.

List of pressures and threats

Pollution

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

Nutrient enrichment (N, P, organic matter)

Marine water pollution

Oil spills in the sea

Toxic chemical discharge from material dumped at sea

Non-synthetic compound contamination

Synthetic compound contamination

Natural System modifications

Human induced changes in hydraulic conditions

Conservation and management

The main approach to the conservation and management of this habitat would be through regulation of activities that can alter the hydrological regime or sediment loads in the water column e.g.coastal and offshore construction. Water quality improvement programmes to reduce the risk of toxic contamination or of nutrient inputs leading to eutrophication would also be beneficial measures.

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

Establish protected areas/sites

Measures related to special resource use

Regulating/Managing exploitation of natural resources on sea

Conservation status

Annex 1:

1170: 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 %

Criterion A	A1	A2a	A2b	A3
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 >50,000km² 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 one. 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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Contributors

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Reviewers

R.Haroun.

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Date of review

29/03/2016

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