A3.34 Submerged fucoids, green or red seaweeds on low salinity Atlantic infralittoral rock

Summary

This is a shallow sublittoral habitat on rocky shores which occurs under permanently reduced salinity conditions. These particular conditions lead, depending on salinity gradient, to a variety of seaweed-dominated communities, which include fucoids, green and red macroalgae species. Coastal works such as the construction of causeways and culverts that alter water flow and salinity in the sheltered areas where this habitat occurs can lead to habitat degradation and loss. Poor water quality can also have deleterious effects on the growth and survival of the associated species, however fucoids are more sensitive to those effects compared to especially green algae. Regulation of coastal construction and maintenance of good water quality will benefit this habitat. Inclusion within Marine Protected Areas and identification in spatial planning documents can also raise awareness about the biodiversity interest of this habitat and specify measures to prevent degradation and loss.

Synthesis

This habitat does not have a restricted geographical distribution however it may have a restricted Area of Occupancy. There is insufficient information to determine any overall trends in quantity or quality in the North East Atlantic

The current Red List assessment is that although AOO is less than 50, this habitat qualifies as Data Deficient because of incomplete 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

Biotopes dominated by fucoids and those dominated by filamentous algae should be assessed separately as these groups of species respond in different ways to pressures and threats.

Habitat Type

Code and name

A3.34 Submerged fucoids, green or red seaweeds on low salinity Atlantic infralittoral rock

Fucus ceranoides and *Ulva* spp. on low salinity infralittoral rock, Loch Leodsay, North Uist, Scotland, (© T.Hill/JNCC).

Mixed fucoids, *Chorda filum* and green seaweeds on reduced salinity infralittoral rock, Loch an Strumore, North Uist, Scotland (© S. Scott/JNCC).

Habitat description

Very shallow submerged rocky habitats in bays, inlets or estuaries subject to permanently reduced salinity conditions. These particular conditions lead to a variety of seaweed-dominated communities, which include fucoids, green and red macroalgae species. The fucoids, more typical of intertidal Atlantic habitats, penetrate into the subtidal under the reduced salinity conditions which are not tolerated by kelps. This habitat may also includes dense stands of *Ascophyllum nodosum* if salinities are high enough (>20psu).

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. Dominance of fucoids (cover or biomass ratios of fucoids to other macroalgae) or penetration of fucoids along the salinity gradient is used in some countries as a Water Framework Directive parameter for assessing ecological status.

Characteristic species:

The main species are the wracks *Fucus serratus* and *Fucus vesiculosus*, but there may also be dense stands of *Ascophyllum nodosum*, and presence of the brown seaweeds *Chorda filum*, and Ectocarpaceae. One sub-habitat is characterised by the wrack *Fucus ceranoides* and the green seaweed *Ulva* spp.

(A3.344). Perennial red seaweeds are normally present often under the fucoid canopy and include *Furcellaria lumbricalis, Mastocarpus stellatus, Polyides rotundus, Chondrus crispus, Ceramium* spp. and coralline crusts. A variety of green seaweeds is also present and include *Ulva* spp., while dense patches of *Cladophora rupestris* may occur on vertical rock faces. Associated with these seaweeds are a variety of ascidians including *Clavelina lepadiformis, Ascidiella aspersa, Ascidiella scabra* and *Ciona intestinalis* as well as the anemones *Anemonia viridis and Actinia equina* and the sponge *Halichondria panacea*. The faunal component is restricted to the mussel *Mytilus edulis,* the polychaete *Arenicola marina*, the starfish *Asterias rubens*, the hermit crab *Pagurus bernhardus* and the crab *Carcinus maenas*. Opossum shrimps Mysidae can be present as well. Part of this diversity is due to large differences between sites.

Classification

EUNIS (v1405):

Level 4. A sub-habitat of 'Atlantic infralittoral rock' (A3.3).

Annex 1:

1130 Estuaries

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?

No

Justification

This habitat occurs across the regional sea where there are suitable reduced salinity and hard substrate conditions, however reduced salinity conditions are much more typical for the Baltic Sea and Black Sea, where this habitat also occurs. Therefore it is not regarded as a typical characteristic of the North East Atlantic region.

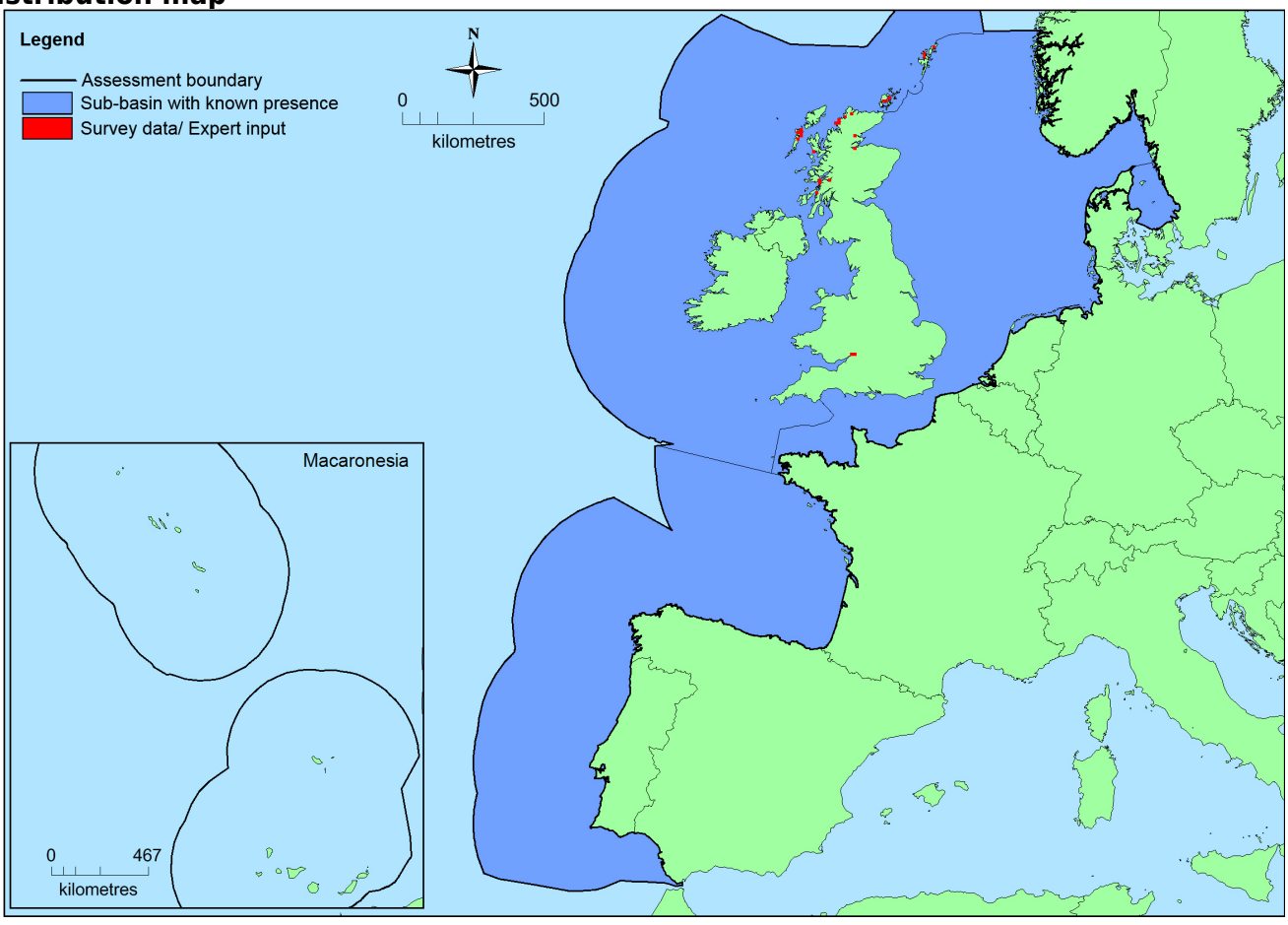
Geographic occurrence and trends

Region	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
North-East Atlantic	Bay of Biscay and the Iberian Coast: Present Celtic Seas: Present Greater North Sea: 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
EU 28	193,333 Km^2	>30	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 threshold for threatened status for EOO.
EU 28+	>193,333 Km^2	>30	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 threshold for threatened status for EOO.

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 Norway, inner fjords with freshwater outflow, estuaries therefore less than 100% is hosted by the EU 28 in the North East Atlantic. 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 overall trends in quantity of this habitat in the North East Atlantic.

- 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 does not have a small natural range as EOO exceeds 50,000 km^2.
- Does the habitat have a small natural range by reason of its intrinsically restricted area?
  Unknown
  Justification
  This habitat does not have a small natural range as EOO exceeds 50,000 km^2 but the conditions required for its development are limited therefore it may only occupy a limited area.

Trends in quality

There is insufficient information to determine any overall trends in quality of this habitat in the North East Atlantic.

- Average current trend in quality
  EU 28: Unknown
  EU 28+: Unknown

Pressures and threats

Coastal works such as the construction of causeways and culverts that alter water flow and salinity in the sheltered areas where this habitat occurs can lead to habitat degradation and loss by making conditions unsuitable for characteristic species such as the wrack *Fucus ceranoides* and *F.vesiculosus.* Reduced water quality, for example nutrient enrichment can also have deleterious effects on the growth and survival of the associated species as ephemeral algae overgrow fucoids and perennial red seaweeds, which are in consequence replaced by opportunistic filamentous annual algal species.

List of pressures and threats

Urbanisation, residential and commercial development

Other urbanisation, industrial and similar activities

Pollution

Pollution to surface waters (limnic, terrestrial, marine & brackish)
Nutrient enrichment (N, P, organic matter)

Natural System modifications

Human induced changes in hydraulic conditions

Conservation and management

Regulation of coastal construction and maintenance of good water quality will benefit this habitat. Inclusion within Marine Protected Areas and identification in spatial planning documents can also raise awareness about the biodiversity interest of this habitat and specify measures to prevent degradation and loss. There may be some scope for habitat restoration by opening up or removing any barriers to water movement that have altered the salinity regime.

List of conservation and management needs

Measures related to wetland, freshwater and coastal habitats

Restoring/Improving water quality

Measures related to marine habitats

Restoring marine habitats

Measures related to spatial planning

Other spatial measures
Establish protected areas/sites

Conservation status

Annex 1:

1130: MATL U2

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

The capacity for this habitat to recover after being severly damaged is 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. It is therefore assessed as Data Deficient under Criteria 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	Unknown	>30	Unknown	Unknown	Unknown	No
EU 28+	>50,000 Km^2	Unknown	Unknown	Unknown	>30	Unknown	Unknown	Unknown	No

This habitat does not have a restricted geographical distribution. Data available suggests that the Area of Occupancy is less than 50 but this is believed to be incomplete. There is also a lack of information on whether this habitat is likely to be subject to decline in the future or capable of becoming Critically Endangered or Collapsed within a very short time period. This habitat has therefore been assessed as Least Concern under criterion 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	DD	DD	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	DD	DD	DD	DD	DD	DD	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
S. Gubbay.

Contributors
North East Atlantic Working Group: S. Gubbay, G. Saunders, H. Tyler-Walters, N. Dankers, F.Otero-Ferrer, J. Forde, K. Fürhaupter, R. Haroun Tabraue, N. Sanders.

Reviewers
K. Fürhaupter.

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