A1.32: Fucoids on variable salinity Atlantic littoral rock

Summary

This habitat is characterised by blankets of fucoid seaweeds, dominating sheltered to extremely sheltered rocky shores in areas of reduced salinity, such as sea lochs or estuaries. As these are often areas of urban and industrial development the main pressures are likely to be associated with deteriorating water quality, coastal defence works, impoundments and the dredging of navigational channels. Sea level rise and increased storminess associated with climate change are additional pressures potentially leading to the submergence or smothering of this habitat. The regulation of potentially damaging activities for the conservation and management of this habitat need to be integrated into the coastal zone management and conservation programmes of the sheltered inlets in which it occurs.

Synthesis

Detailed information on the abundance and extent of this habitat is lacking but survey information reveals that it has a widespread distribution. Local and/or seasonal factors often exert a substantial influence on intertidal habitats making it difficult to distinguish any long-term trend across the region. This is complicated further because differences between localities are often linked to differences in geographical latitude and, therefore, to differences in climatic traits like temperature and/or ice cover.

Where this habitat has been studied in detail some trends in quantity and quality have been reported over various time scales however, there is insufficient information to provide an overall estimate of historical, recent and possible future trends in quantity and 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 due to lack of information on 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

A1.325 *Ascophyllum nodosum* ecad *mackaii* beds on extremely sheltered mid-eulittoral mixed substrata. This is a rare habitat characterised by a loose living form of the egg wrack.

Habitat Type

Code and name

A1.32: Fucoids on variable salinity Atlantic littoral rock

Narrow zone of rocky habitat colonised by fucoid algae in the Severn Estuary, UK (© A.R.Davis).

Fucoids on estuarine rock, Oreston, Plymouth, UK (© K.Hiscock).

Habitat description

Blankets of fucoid seaweeds, dominating sheltered to extremely sheltered rocky shores with variable salinity, such as sea loch or estuaries. The extent of rocky habitat in estuaries can range from a narrow strip restricted to the top of the shore to littoral reef structures extending to the subtidal, particularly in rias. The topography of estuarine rocky shores also varies from flat and gently sloping to rugged reefs and large boulders with many microhabitats.

Rocky habitats in estuaries are typically located in low wave energy environments with reduced salinity, and experience accelerated tidal streams with increased turbidity and siltation. The communities present are adapted to these conditions and consequently their composition and character is different to that found on similar substrata on the open coast.

Estuarine rocky habitats often display a transition of community types down the length of an estuary, reflecting the different environmental conditions, i.e. those at the upper ends of estuaries being specific to ultra sheltered and low salinity to communities similar to open coast rock communities towards the mouth of estuaries. The wrack *Pelvetia canaliculata* occurs on the upper shore, with *Fucus spiralis* below. The middle shore is dominated by vast areas of *Ascophyllum nodosum*, *Fucus vesiculosus*, or a mixture of both. *Fucus serratus* covers lower shore bedrock and boulders. *Fucus ceranoides* can be found on extremely sheltered shores with variable or low salinity as it is more tolerant of reduced salinity than the other fucoids, so tends to replace *Fucus spiralis, Fucus vesiculosus* and *Ascophyllum nodosum* towards the upper reaches of estuaries and sea lochs. This biotope may, however, still contain other fucoids, although *Fucus ceranoides* always dominates.

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 variable salinity communities are species poor compared to those in full salinity or in tide-swept conditions as red seaweeds and sponges are usually absent. Underneath a canopy of fucoids such as *Pelvetia canaliculata, Fucus spiralis*, *Ascophyllum nodosum*, and *Fucus vesiculosus* are a few green seaweeds including *Ulva intestinalis* and *Cladophora* spp. The red seaweed *Polysiphonia lanosa* can be found as an epiphyte on *A.nodosum*. On the rock and among the boulders are the winkles *Littorina littorea* and *Littorina saxatilis*, the crab *Carcinus maenas*, the barnacles *Semibalanus balanoides* and *Elminius modestus* and the occasional mussel *Mytilus edulis.*

Classification

EUNIS (v1405).

Level 4. A sub-habitat of 'Atlantic littoral rock' (A1.3)

Annex 1:

1130 Estuaries

MAES:

Marine - Marine inlets and transitional waters

MSFD:

Littoral rock and biogenic reef

EUSeaMap:

Not mapped

IUCN:

9.10 Estuaries

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

No

Justification

This habitat occurs across the North East Atlantic 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. Consequently it is not regarded as a typical characteristic of the North East Atlantic region.

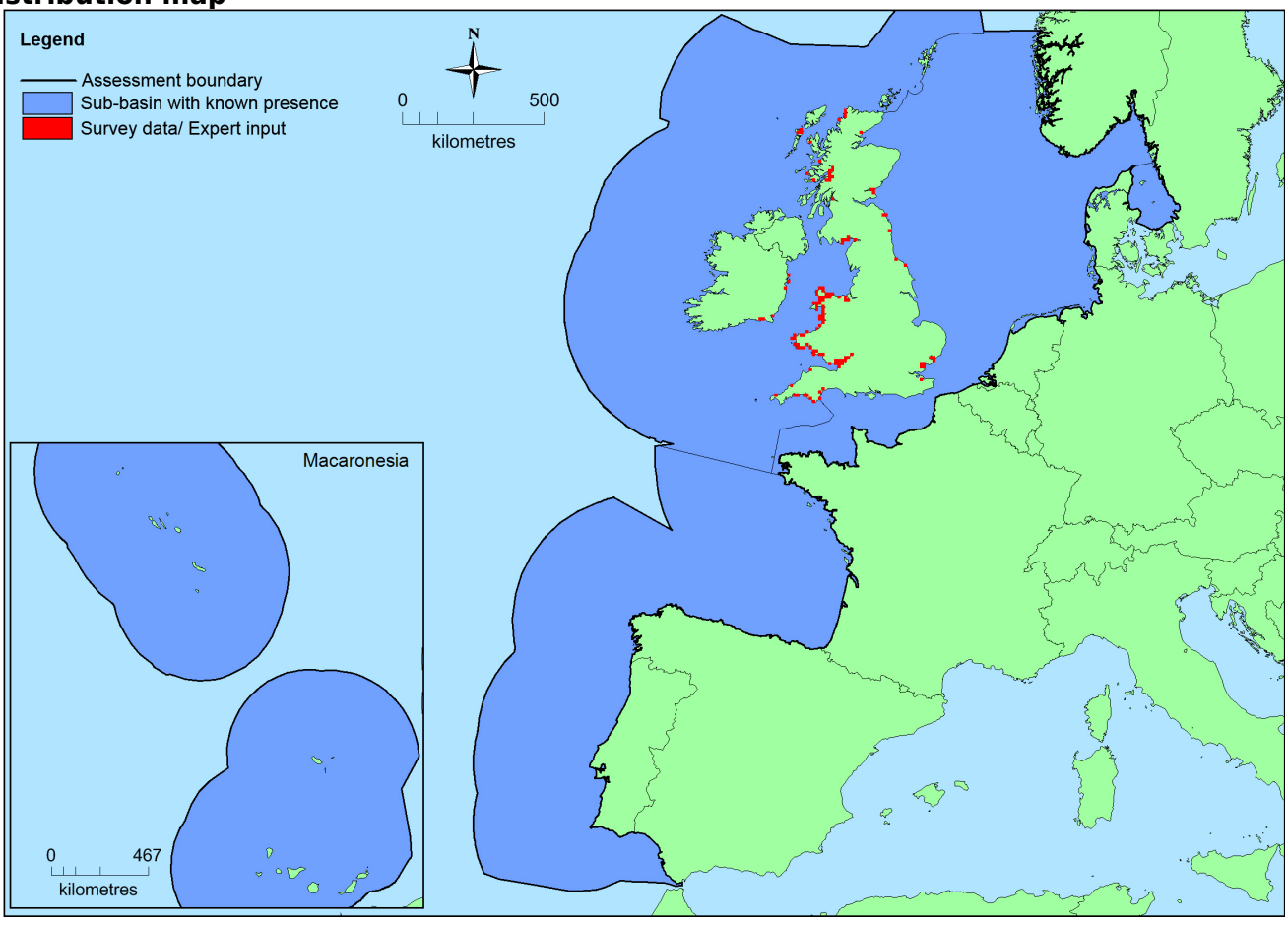
Geographic occurrence and trends

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	348,779 Km^2	251	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.
EU 28+	348,779 Km^2	251	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?

Unknown

Trends in quantity

Local and/or seasonal factors often exert a substantial influence on intertidal habitats making it difficult to distinguish any long-term trend across the region. This is complicated further because differences between localities are often linked to differences in geographical latitude and, therefore, to differences in climatic traits like temperature and/or ice cover. This habitat has been reported and studied in detail in some localities however there is insufficient information to provide an overall estimate of historical, recent and possible 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 does not have a small natural range.
- Does the habitat have a small natural range by reason of its intrinsically restricted area?
  No
  Justification
  This habitat does not have a small natural range.

Trends in quality

Local and/or seasonal factors often exert a substantial influence on intertidal habitats making it difficult to distinguish any long-term trend across the region. This is complicated further because differences between localities are often linked to differences in geographical latitude and, therefore, to differences in climatic traits like temperature and/or ice cover. This habitat has been reported and studied in detail in some localities however there is insufficient information to provide an overall estimate of historical, recent and possible future trends in quality.

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

Pressures and threats

This habitat occurs in estuaries and sea lochs which are naturally sheltered but also subject to reduced salinity. They can be major areas of urban and industrial development with resulting pressures on intertidal habitat associated with deteriorating water quality (through industrial contaminants and run off from agricultural land resulting in enhanced nutrient input and silt loading), coastal defence works, impoundments and the dredging of navigational channels.

Sea level rise and increased storminess associated with climate change is an additional pressure. In the UK, for example it is considered likely to exacerbate the existing infilling of south and west facing estuaries, where eroded sediment is deposited within the estuary, gradually covering rocky outcrops.

List of pressures and threats

Pollution

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

Natural System modifications

Human induced changes in hydraulic conditions
- Removal of sediments (mud...)
- Estuarine and coastal dredging
- Siltation rate changes, dumping, depositing of dredged deposits
- Sea defense or coast protection works, tidal barrages

Climate change

Changes in abiotic conditions
- Wave exposure changes
- Sea-level changes

Conservation and management

Conservation and management of this habitat need to be integrated into the management of the sheltered inlets in which it occurs. This includes the planning and regulation of activities like coastal works, the discharge of hazardous substances, the establishment of nitrate sensitive zones, specifications relating to the dredging of navigational channels and dredge spoil disposal.

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

Measures related to urban areas, industry, energy and transport

Urban and industrial waste management

Conservation status

Annex 1:

1130: MATL U2

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

This habitat will not have any capacity to recover if the rocky substrate on which it depends is removed, permanently submerged or smothered with soft sediment. If not, and the pressures which caused the damage are removed, recovery times will depend on availability and suitable conditions for the settlement of the characteristic species of algae.

Effort required

10 years
Naturally

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 %

The range of this habitat is well known and its extent has been mapped in detail in some locations (e.g. some Marine Protected Areas). There are studies showing short and long term trends in some locations but no assessment of overall trend in quantity for the North East Atlantic. It is therefore considered to be Data Deficient under criterion A for both the EU 28 and EU 28+.

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 >50,000km^2 and AOO >50, this exceeds the thresholds for a threatened category on the basis of restricted geographic distribution. Trends are unknown. 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
S. Gubbay.

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

Reviewers
S.Beal.

Date of assessment
30/10/2015

Date of review
15/12/15

References

Budd, G.C. 2007. Fucus *ceranoides* on reduced salinity eulittoral rock. *Marine Life Information Network: Biology and Sensitivity Key Information Sub-programme*. [online] Plymouth: Marine Biological Association of the United Kingdom. Available at: http://www.marlin.ac.uk/habitats/detail/271/fucus_ceranoides_on_reduced_salinity_eulittoral_rock. (Accessed: 11/08/2014).

Connor, D.W., Allen, J.H., Golding, N. *et al.* 2004. The Marine Habitat Classification for Britain and Ireland Version 04.05 JNCC. [online] Peterborough: ISBN 1 861 07561 8. Availiable at: http://jncc.defra.gov.uk/pdf/04_05_introduction.pdf. (Accessed: 30/08/2014).

European Environment Agency. 2014. EUNIS habitat type hierarchical view. Available at:

http://eunis.eea.europa.eu/habitats-code-browser.jsp. (Accessed August 2014).

UK Biodiversity Action Plan. 2008. Priority Habitat Descriptions. Esutarine Rocky Habitats. Availiable at: http://jncc.defra.gov.uk/PDF/UKBAP_PriorityHabitatDesc-Rev2011.pdf. (Accessed: 11/08/2014).