A3.31: Atlantic silted kelp on marine low energy infralittoral rock

Summary

This is an infralittoral rocky habitat found in wave and tide-sheltered conditions, supporting silty communities with *Laminaria hyperborea* and/or *Saccharina latissima*. The associated seaweeds are typically silt-tolerant and include a high proportion of delicate filamentous types. This habitat is susceptible to pollution incidents, substratum loss and changes in wave exposure either induced by coastal developments or, over the longer term, to predicted increased storminess and sea level rise associated with climate change.

Marine Protected Areas and integrated coastal zone management, which may include zoning of activities and limits on land claim and other activities that alter the tidal regime, are examples of beneficial measures. Others include the regulation of the construction of hard coastal defence structures, water quality improvement programmes to reduce the risk of toxic contamination, and measures to mitigate against climate change.

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 because of the lack of information on 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

A3.31: Atlantic silted kelp on marine low energy infralittoral rock

Laminaria hyperborea heavily encrusted with byozoans. Grazing sea urchins

Echinus esculentus and the brown seaweed *Halidrys siliquosa* also visible. Loch Gairloch, Scotland (© S.Gubbay).

Habitat description

This habitat can be found in wave and tide-sheltered conditions with *Laminaria hyperborea* and/or *Saccharina latissima* on infralittoral bedrock and boulders. It is typically subject to weak tidal streams and rather silty conditions. The associated seaweeds are silt-tolerant and include a high proportion of delicate filamentous types. Beneath the kelp canopy, the faunal component is generally less diverse than in kelp forests that develop in more exposed locations. Some areas, particularly in the lower infralittoral zone, are subject to intense grazing by urchins and chitons and subsequently may have poorly developed seaweed communities. In very sheltered conditions *S.latissima* may grow as a 'cape form' where there are often few associated seaweeds due to siltation, grazing or shading from the dense kelp canopy.

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:

Laminaria hyperborea, *Saccharina latissima.* Beneath the kelp is an associated under-storey flora of foliose red seaweeds including *Plocamium cartilagineum, Cryptopleura ramosa* and *Callophyllis laciniata* as well as the brown seaweeds *Dictyota dichotoma, Cutleria multifidi* and *Desmarestia aculeata*. The stipes of *L. hyperborea* may be densely covered with red seaweeds such as *Phycodrys rubens* and *Delesseria sanguinea* as well as the solitary ascidian *Clavelina lepadiformis* and the featherstar *Antedon bifida*. The fronds are often epiphytised by the hydroid *Obelia geniculata* and the bryozoan *Membranipora membranacea*. In addition to the kelp, the brown seaweed *Chorda filum* and *Ectocarpaceae* are often present.

A depauperate assemblage of animals is present predominantly consisting of the encrusting polychaetes *Pomatoceros triqueter*, the crabs *Carcinus maenas* and *Pagurus bernhardus* and the ubiquitous gastropod *Gibbula cineraria*. The echinoderms *Antedon bifida*, starfish *A. rubens,* brittlestar *O. fragilis* and urchin *Echinus esculentus* occur in low abundance. Ascidians are commonly found but the large solitary ascidian *Ascidia mentula* are most prolific in very sheltered conditions of *S.latissima* forests.

Classification

EUNIS (v1405):

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

Annex 1:

1160 Large shallow inlets and bays

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

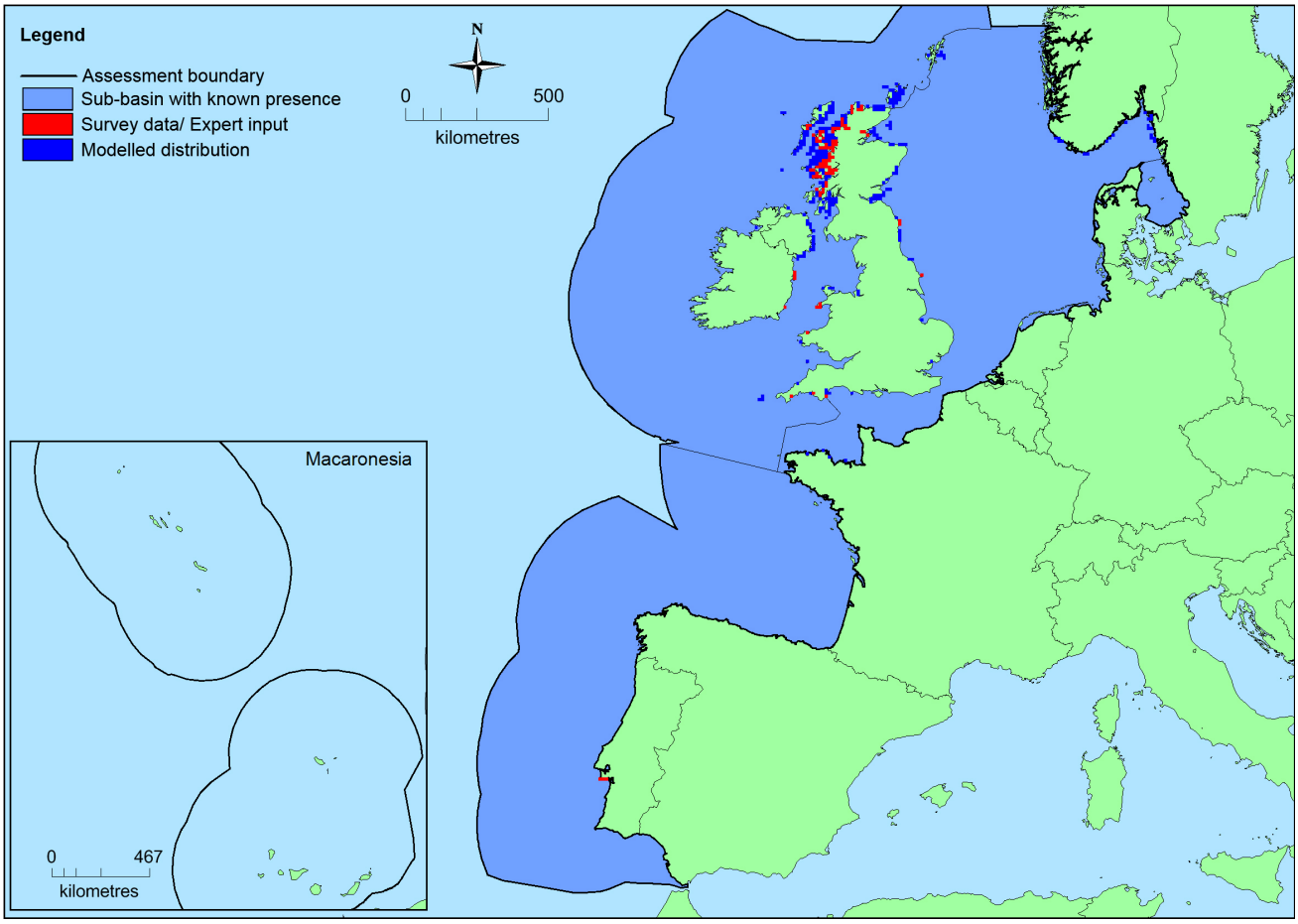
Geographic occurrence and trends

Region	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
North-East Atlantic	Celtic Seas: Present Kattegat: Present Greater North Sea: Present Bay of Biscay and the Iberian Coast: 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	1,210,154 Km^2	584	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+	>1,210,154 Km^2	>584	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 are 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 as EOO exceeds 50,000km^2.
- 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 as EOO exceeds 50,000km^2.

Trends in quality

The trends in quality of this habitat are unknown.

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

Pressures and threats

This habitat is susceptible to pollution incidents, substratum loss and changes in wave exposure either induced by coastal developments or, over the longer term, to predicted increased storminess and sea level rise associated with climate change. *L. hyperborea* is unable to survive in areas of high wave energy because of its large frond area attached to a stiff stipe which is liable to snap. Wave action depresses the upper depth limit of populations to several meters below low water. Similarly, an increase in wave action is likely to dislodge *S. latissima* plants and interfere with feeding activity in solitary tunicates.

List of pressures and threats

Pollution

Marine water pollution
- Toxic chemical discharge from material dumped at sea
- Non-synthetic compound contamination
- Synthetic compound contamination

Natural System modifications

Human induced changes in hydraulic conditions
- Modification of hydrographic functioning, general
- Modification of water flow (tidal & marine currents)
- Wave exposure changes
- Dykes, embankments, artificial beaches, general
- Sea defense or coast protection works, tidal barrages
- Dykes and flooding defense in inland water systems

Climate change

Changes in abiotic conditions
- Flooding and rising precipitations
- Water flow changes (limnic, tidal and oceanic)
- Wave exposure changes
- Sea-level changes

Conservation and management

Management of marine activities will be important to control factors leading to the decline in quantity and quality of this habitat. Integrated coastal zone management, which includes spatial planning measures and limits land claim and other activities that alter the tidal regime, are examples of beneficial measures. Others include the regulation of the construction of hard coastal defence structures, water quality improvement programmes to reduce the risk of toxic contamination, and measures to mitigate against climate change.

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

Conservation status

Annex 1:

1160: MATL U2, MMAC FV

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 %
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	unknown	No
EU 28+	>50,000 Km^2	Unknown	Unknown	No	>50	Unknown	Unknown	unknown	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

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