

A3.32 Kelp in variable salinity low energy Atlantic infralittoral rock

Summary

This habitat is found in areas of variable or reduced salinity and in very wave-sheltered bedrock, boulders and cobbles subject to only weak tidal streams in the sublittoral fringe and infralittoral zone typical for some estuaries and fjords. It is vulnerable to smothering, substratum loss, and increased wave action, the former affecting the sessile filter feeding associated fauna and the latter two likely to dislodge the characterising *S. latissima* plants. In addition, low or variable salinity habitats are threatened by activities that change the water flow and salinity regime (e.g. coastal development, land claim, water abstraction) and are susceptible to sea level rise and pollution.

Beneficial management and conservation measures for this habitat include protection within marine protected areas, integrated coastal management, water quality improvement programmes, the regulation of fishing methods which damage, or disturb seabed communities, regulation and control of dredging, coastal development and the construction of hard coastal defence structures.

Synthesis

There is a lack of information on the extent of this habitat and any trends in quantity or quality over the last 50 years. Future trends have not been predicted. For the purposes of Red List assessment it is therefore considered to be Data Deficient for both the EU 28 and EU 28+.

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

A3.32 Kelp in variable salinity low energy Atlantic infralittoral rock



Saccharina latissima and *Psammechinus miliaris* on variable salinity grazed infralittoral rock. Loch Duich, Scotland (© S.Hiscock/JNCC).

Habitat description

This is a structurally complex habitat that develops in areas of very wave-sheltered infralittoral bedrock, boulders and cobbles subject to only weak tidal streams in the sublittoral fringe and infralittoral zone, with variable/reduced salinity typical for estuaries. The variable salinity and increased turbidity have a significant effect on the biota, limiting species richness of seaweeds and the occurrence to shallower parts of the infralittoral zone. The kelp canopy is characterised by *Saccharina latissima* only with accompanying foliose red seaweeds and coralline crusts. *Laminaria hyperborea* is generally missing due to the low salinity and weak tidal currents. The associated biotopes may support dense stands of silted filamentous green seaweeds and red seaweeds, depauperate coralline-encrusted rock with few foliose seaweeds but many grazing urchins and, in very shallow, heavily-silted situations, dense stands of *Codium* spp., together with silt-tolerant red seaweeds, the green seaweed *Ulva* spp. and often only a sparse covering of the kelp *Saccharina latissima*.

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. The depth limit of kelp and/or red seaweeds is used in some countries as a Water Framework Directive parameter for assessing ecological

status.

Characteristic species:

This habitat type is characterised by the kelp *Saccharina latissima* and coralline crusts such as *Lithothamnion glaciale*. Red algal communities are composed primarily of *Phycodryas rubens*. Grazers such as the urchins *Psammechinus miliaris* and *Echinus esculentus*, and the gastropods *Gibbula cineraria* and *Buccinum undatum* may be present. The tube-dwelling polychaete *Pomatoceros triqueter*, the ascidians *Ciona intestinalis*, *Corella parallelogramma* and *Ascidiella scabra*, the barnacle *Balanus crenatus*, the starfish *Asterias rubens* and the brittlestar *Ophiothrix fragilis* may also be present. The crabs *Carcinus maenas* and *Pagurus bernhardus*, and the bivalve *Modiolus modiolus* may also be observed.

Classification

EUNIS (v1405):

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

Annex 1:

1130 Estuaries

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

9.7 Macroalgal/kelp

9.10 Estuaries

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

No

Justification

The specific composition of *S. latissima* and seaweeds are not limited to the North East Atlantic. They also occur in the Baltic Sea and estuarine areas of the Mediterranean Sea.

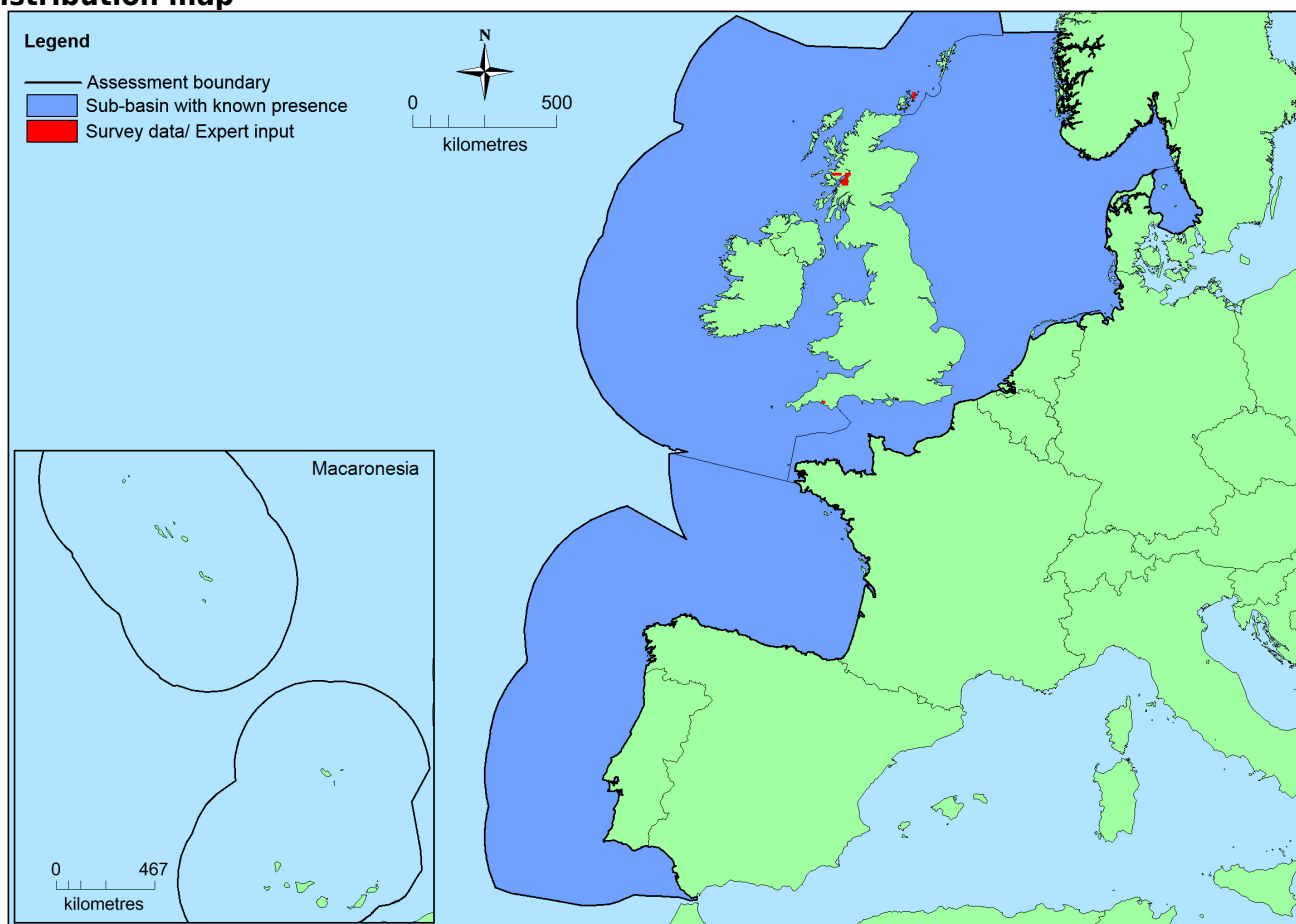
Geographic occurrence and trends

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 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
<i>EU 28</i>	unknown Km ²	unknown	Unknown Km ²	This habitat is widespread in estuaries and inlets however there is insufficient quantitative data to make an accurate estimate of EOO and AOO.
<i>EU 28+</i>	unknown Km ²	unknown	Unknown Km ²	This habitat is widespread in estuaries and inlets however there is insufficient quantitative data to make an accurate estimate of EOO and AOO.

Distribution map



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). There are

insufficient data to provide a comprehensive and accurate map of the distribution of this habitat or for calculation of EOO and AOO.

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). 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 current 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 occurs in estuaries and sheltered inlets so has a widespread distribution in the North East Atlantic although there is insufficient information to derive an accurate EOO at the present time.

- Does the habitat have a small natural range by reason of its intrinsically restricted area?

No

Justification

This habitat occurs in estuaries and sheltered inlets so has a widespread distribution in the North East Atlantic although there is insufficient information to derive an accurate EOO at the present time.

Trends in quality

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

- Average current trend in quality

EU 28: Unknown

EU 28+: Unknown

Pressures and threats

Most of the characteristic species in this habitat are permanently or firmly attached to the substratum so are susceptible to substratum loss. Some species, especially *S. latissima*, are likely to protrude above smothering material, but the associated flora and fauna are commonly foliose red algae and active suspension feeders, which are unlikely survive smothering from increased levels of siltation. Additionally, increased wave action is likely to dislodge *S. latissima* plants. Urbanisation is thought to have the most disrupting effects on kelps and other canopy-forming algae, particularly by affecting water clarity and quality as well as other habitat-related changes.

In addition, low or variable salinity habitats are threatened by activities that change the water flow and the salinity regime (e.g. coastal development, land claim, water abstraction) and are susceptible to sea level rise and pollution.

List of pressures and threats

Urbanisation, residential and commercial development

Disposal of household / Recreational facility waste

Disposal of industrial waste
Water discharges (with/without contaminants)

Pollution

Marine water pollution
Non-synthetic compound contamination
Synthetic compound contamination

Natural System modifications

Human induced changes in hydraulic conditions
Landfill, land reclamation and drying out, general
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

Flooding and rising precipitations
Water flow changes (limnic, tidal and oceanic)
Wave exposure changes

Conservation and management

The main approach to the conservation and management of this habitat should be through regulation of fishing methods which damage or disturb seabed communities. In addition, controls on activities that change the hydrological regime, such coastal development and hard coastal defence structures are also important. Furthermore, water quality improvement programmes to reduce the risk of contamination should also be considered. Lastly, measures to reduce climate change effects will benefit this habitat. This habitat is afforded protection within some Marine Protected Areas.

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:

1130: MATL U2

1160: MATL U2, MMAC FV

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

The dominating kelp species *S. latissima* is capable of rapid settling and fast growing. Therefore the dominating element can recover rapidly but establishment of a community containing the range of

characteristic species associated with an undisturbed and mature community may take several years.

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 %

There is insufficient information to determine any trends in quantity of this habitat. This habitat is therefore 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	unknown Km ²	Unknown	Unknown	unknown	unknown	Unknown	Unknown	unknown	unknown
EU 28+	unknown Km ²	Unknown	Unknown	unknown	unknown	Unknown	Unknown	unknown	unknown

This habitat most probably has a large range however significant shortcomings in available mapping data mean that reliable figures for EOO and AOO cannot be derived at the present time. There is also a lack of information on trends. This habitat has therefore been assessed as Data Deficient under criterion B.

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	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	DD	DD	DD	DD	DD	DD	DD	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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27/07/2015

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08/01/2016

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