

## A1.15: Fucoids on tide-swept Atlantic littoral rock

### Summary

This habitat is present in locations sheltered from wave action but which are tide swept, such as narrow channels in sea lochs. The high levels of water movement encourages a rich associated fauna including several filter-feeding groups. The habitat is vulnerable to changes in wave exposure and tidal flow. These may be the result of activities such as coastal defence works, land claim, and dredging. There is also direct pressure associated with harvesting algae from these sheltered rocky areas, primarily *Ascophyllum nodosum* but also *Fucus vesiculosus*.

The regulation of the harvesting of algae especially the methods used, location, intensity and frequency is an essential measure to safeguard the marine biotopes associated with this habitat. Direct impacts of seaweed harvesting on the habitat and associated community can include the removal and damage of sedentary or encrusting invertebrates as well as the target seaweed species. Removal of seaweed cover can alter local hydrodynamic conditions and change wave exposure regimes which, in turn, can modify sedimentation rates. Controls on activities that change the hydrological regime, such as coast protection works and infilling are also relevant. These measures have been introduced where this habitat occurs both within and outside marine protected areas.

### Synthesis

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.

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 the lack of information on its extent and 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	-

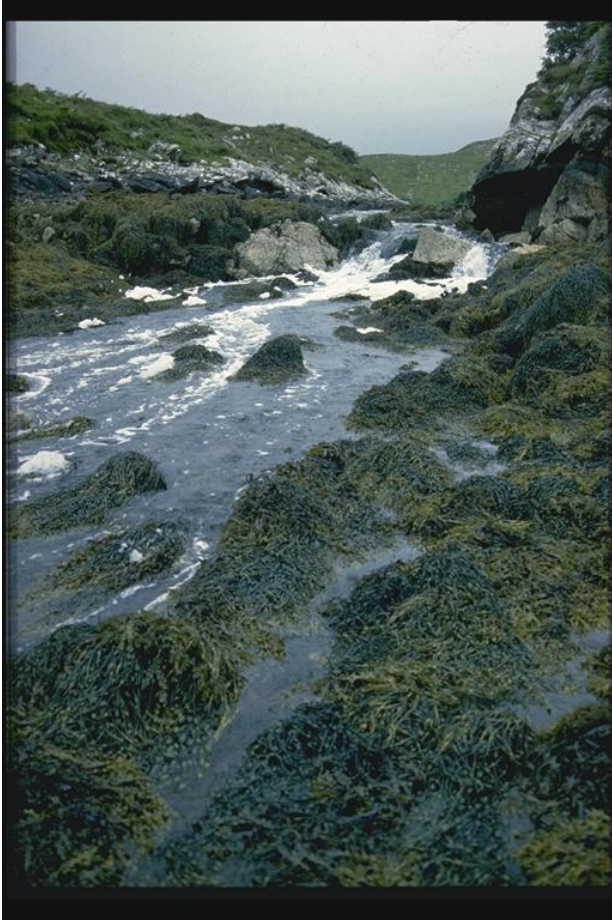
### Sub-habitat types that may require further examination

None.

### Habitat Type

#### Code and name

A1.15: Fucoids on tide-swept Atlantic littoral rock



Fucoids on tide-swept Atlantic littoral rock taken at Loch nam Bodach, Loch nam Bodach, Lewis, Scotland (© R.Holt/JNCC).



*Cystoseira humilis* fringing a tide pool on littoral rock. Punta de Gladar, Gran Canaria, Spain (© R.Haroun)

## Habitat description

This habitat is characterised by fucoid seaweeds in tide-swept conditions on sheltered to extremely sheltered mid-eulittoral to lower eulittoral rocky shores, such as narrow channels in sea lochs and estuaries. It occurs below the band of *Fucus spiralis* and *F. vesiculosus* on the shore but above the kelp dominated zone in the sublittoral fringe. The middle shore can be dominated by the wrack *Ascophyllum nodosum*, while *Fucus serratus* is dominating the lower shore. The high levels of water movement encourages a rich associated fauna including several filter-feeding groups. In the Macaronesian Islands, *Cystoseira* spp. are the dominant fucoid.

### 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. Indicators which have been developed for the assessment of ecological quality of coastal water bodies for the Water Framework Directive (WFD) that are relevant to this habitat include a consideration of macroalgae species richness, proportions of different taxa of algae present, and the abundance and coverage of the rocky surfaces by typical species.

### Characteristic species:

*Fucus serratus*, *Fucus vesiculosus*, *Enteromorpha intestinalis*, *Ulva lactuca*, *Ascophyllum nodosum*, *Cystoseira humilis*. Associated fauna include the sponges *Grantia compressa*, *Halichondria panicea* and *Hymeniacion perleve* which frequently occur on steep and overhanging faces of boulders and bedrock. It also includes the sea squirts *Dendrodoa grossularia* and *Asciella scabra*, which occur on steep surfaces and beneath boulders. Hydroids such as the pink *Clava multicornis* can form colonies on *A. nodosum* while *Dynamena pumila* is more often found on *Fucus vesiculosus* or *F. serratus*.

Underneath the canopy formed by the brown seaweeds is a diverse community of the red seaweeds *Gelidium pusillum*, *Chondrus crispus*, *Lomentaria articulata*, *Membranoptera alata* and coralline crusts, but the green seaweeds *Enteromorpha intestinalis*, *Ulva lactuca* and *Cladophora rupestris* can be present. The filamentous red seaweed *Polysiphonia lanosa* can usually be found growing on *A. nodosum*. On the rock beneath are the limpet *Patella vulgata* and the barnacle *Semibalanus balanoides*, while the crab *Carcinus maenas* and a variety of winkles including *Littorina littorea*, *Littorina mariae* and *Littorina obtusata* can be found on or among the boulders. The whelk *Nucella lapillus* can be found in cracks and crevices.

### **Classification**

EUNIS (v1405)

Level 4. A sub-habitat of 'Atlantic littoral rock' (A1.1).

Annex 1:

1160 Large shallow inlets and bays

1170 Reefs

MAES:

Marine - Marine inlets and transitional waters

Marine - Coastal

MSFD:

Littoral rock and biogenic reef

EUSeaMap:

Not mapped

IUCN:

12.1 Rocky shoreline

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

Yes

Regions

Atlantic

### Justification

This habitat is often extensive in the northern part of the North East Atlantic biogeographical region.

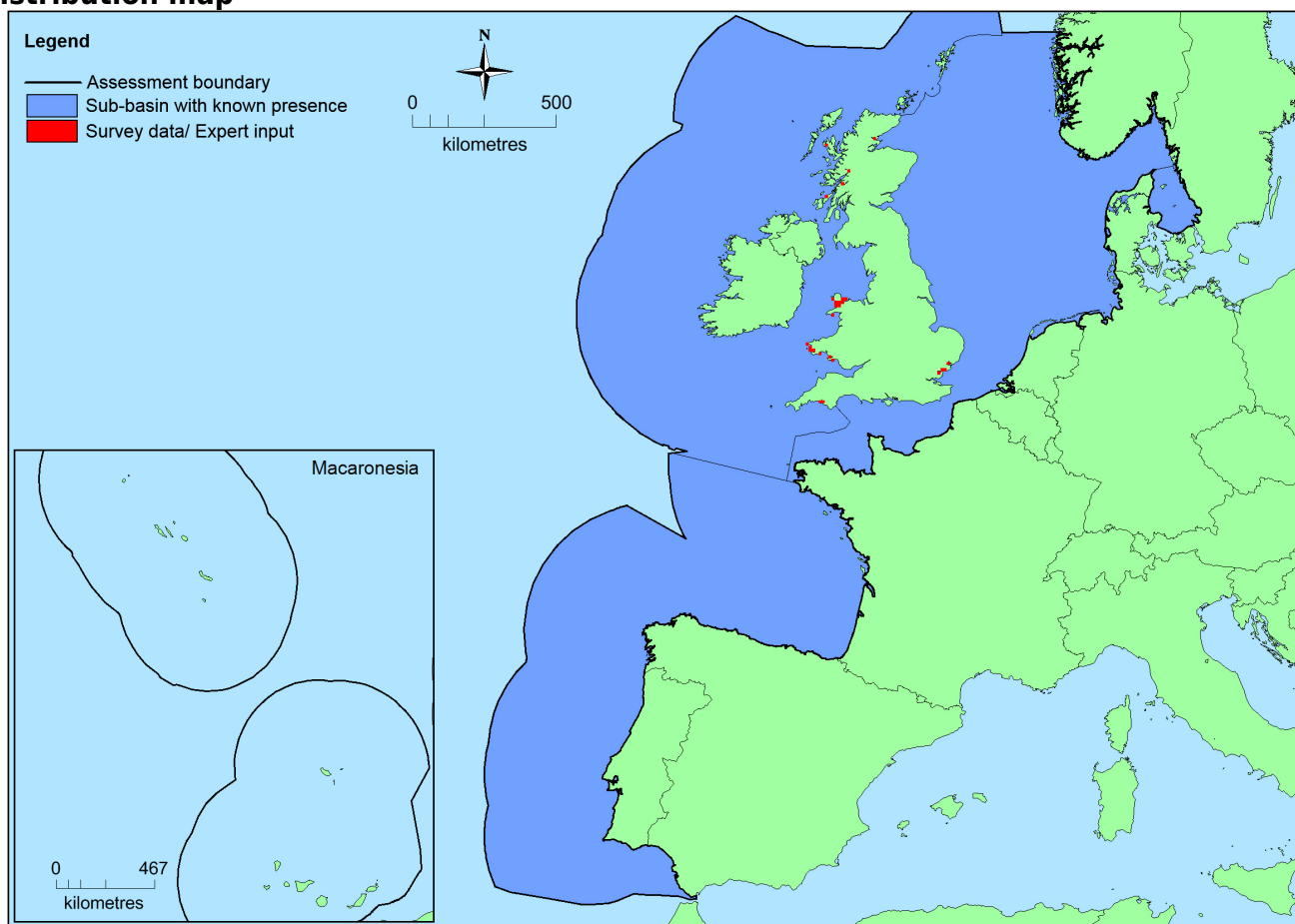
### Geographic occurrence and trends

Region	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>North-East Atlantic</i>	Bay of Biscay and the Iberian Coast: Present Celtic Seas: Present Greater North Sea: Present Kattegat: Present	Unknown Km <sup>2</sup>	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>	>247,890 Km <sup>2</sup>	>36	unknown Km <sup>2</sup>	Based on a limited data set. AOO is known to be an underestimate.
<i>EU 28+</i>	>247,890 Km <sup>2</sup>	>36	unknown Km <sup>2</sup>	Based on a limited data set. AOO is known to be an underestimate.

### 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**

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 has a widespread distribution with examples present on the Atlantic coast of Spain, the west coast of Ireland, the Outer Hebrides off the west coast of Scotland and the Shetland Islands in the northern North Sea.

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

No

*Justification*

This habitat has a widespread distribution with examples present on the Atlantic coast of Spain, the west coast of Ireland, the Outer Hebrides off the west coast of Scotland and the Shetland Islands in the northern North Sea.

### **Trends in quality**

Seaweed harvesting can affect the quality of this habitat. Studies have shown significant and persistent effects on shore ecology from harvesting seaweeds leading to a change in the balance of species composition, but also instances of no discernible effects in the long term. Regular harvesting can also change the size distribution of the population and changes the growth form of algae associated with this habitat. Overall there is insufficient information to quantify any historical, recent and possible future trends in quantity of this habitat.

- Average current trend in quality

EU 28: Unknown

EU 28+: Unknown

### **Pressures and threats**

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Because this habitat is present in sheltered or extremely sheltered locations, such as narrow channels in sea lochs, it is vulnerable to changes in wave exposure and tidal flow. These may be the result of activities such as coastal defence works, land claim, and dredging. There is also direct pressure associated with harvesting algae from these sheltered rocky areas, primarily *Ascophyllum nodosum* but also *Fucus vesiculosus*. Harvesting has been a long-standing activity in some parts of the region e.g. the west coast of Ireland, the Outer Hebrides and Brittany. The impact on the habitat depends on whether the algae are cut

or uprooted with the latter technique requiring a longer recovery time. Studies have shown significant and persistent effects on shore ecology leading to a change in the balance of species composition, but also instances of no discernible effects in the long term. Regular harvesting can also change the size distribution of the population and changes the growth form of plants.

On a local scale tramping may change the mosaic of species present, for example by decreasing fucoid cover, increasing bare space and increasing cover of the green algae *Enteromorpha*. and oil pollution can reduce fucoid cover and the number of associated species.

## **List of pressures and threats**

### **Urbanisation, residential and commercial development**

Urbanised areas, human habitation

### **Biological resource use other than agriculture & forestry**

Fishing and harvesting aquatic resources

### **Natural System modifications**

Human induced changes in hydraulic conditions

Modification of hydrographic functioning, general

## **Conservation and management**

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The regulation of the harvesting of algae especially the methods used, location, intensity and frequency is an essential measure to safeguard the marine biotopes associated with this habitat. Controls on activities that change the hydrological regime, such as coast protection works and infilling are also relevant. These measures have been introduced where this habitat occurs both within and outside marine protected areas.

## **List of conservation and management needs**

### **Measures related to marine habitats**

Other marine-related measures

### **Measures related to spatial planning**

Establish protected areas/sites

### **Measures related to special resource use**

Regulating/Managing exploitation of natural resources on sea

## **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?**

There is a significant difference in the longevity and recoverability of brown algae that make up the communities associated with this habitat. *Ascophyllum nodosum* is a slow growing species, with poor recruitment rates that limit recoverability. It has a long life span with individual fronds surviving for 10-15 years.  
Assemblages



originating from a common holdfast are thought capable of living for decades or even longer. If not cut back to the rock *A.nodosum* can regenerate quickly from the basal portions, the rate depending on how much remains. Annual growth rates of 8-15 cm have been recorded. It is slow to recruit if completely removed from an area with reported recovery times of more than 8 years in Britain and 3 -8 years in Norway. A study on the long term effects of removing the canopy of *Ascophyllum nodosum* on a sheltered rocky shore in the Isle of Man, reported major effects even after twelve years. This included changes in the understory community which showed no signs of reverting to its pre-disturbance state.

*Fucus* spp have life spans of the order of 3-4 years and species such as *F. vesiculosus* and *F. serratus* recruit readily to cleared areas, especially in the absence of grazers.

### Effort required

10 years	20 years
Naturally	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 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 insufficient information to determine any overall trends in quantity for the North East Atlantic region. 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 <sup>2</sup>	Unknown	Unknown	No	>36	Unknown	Unknown	No	No
EU 28+	>50,000 Km <sup>2</sup>	Unknown	Unknown	No	>36	Unknown	Unknown	No	No

Records for the occurrence of this habitat indicate that it does not have a narrow geographical distribution (EOO >50,000km<sup>2</sup>). AOO records are recognised as incomplete and there are no data on trends. 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) & 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

J.Forde.

### Date of assessment

18/08/2015

### Date of review

27/11/15



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