A4.23 Communities on Atlantic soft circalittoral rock

Summary

This habitat occurs on moderately wave-exposed circalittoral soft rock, such as soft chalk, clay or peat exposures, in areas subject to moderately strong tidal streams, as well as on carbonate-cemented structures known as 'bubbling reefs'. It is vulnerable to physical disturbance and damage from seabed activities such as dredging, cable laying and the use of heavy demersal towed fishing gears. The habitat is also sensitive to increases in wave exposure, which can increase the rate of erosion, especially where the habitat occurs in shallow waters. Predicted increased storminess asociated with climate change is therefore an additional pressure. Conservation measures both within and outside protected areas, such as limiting or prohibiting activities which damage or remove seabed communities, like bottom towed fishing gears or dredging, will benefit this habitat.

Synthesis

Detailed information on the abundance and extent of this habitat is lacking but survey information reveals that it has a widespread distribution (e.g. sublittoral chalk habitat present on the south east and south coasts of the UK and the Channel coast of France and the island of Helgoland in the southern North Sea, and 'bubbling reefs' in the Kattegat). 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 because of the lack of information on any trends in quantity and quality and the fact that its overall distribution is unknown.

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

Carbonate-cemented structures known as 'bubbling reefs'.

Habitat Type

Code and name

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Clay cliff with carrot sponge *Amphilecus fucorum* and soft hydroid turf. Holes created by the piddock *Pholas dactylus* are also visible. The Hounds, Sussex UK (© C. Wood/Marine Conservation Society).

Chalk cliff with holes created by piddock *Pholas dactylus*. Worthing Lumps, Sussex, UK (© C. Wood/Marine Conservation Society).

Habitat description

This habitat occurs on moderately wave-exposed, circalittoral soft rock such as soft chalk, clay or peat exposures, in areas subject to moderately strong tidal streams. As it is found in highly turbid water conditions it can be present in shallow water and sometimes even around the low water mark.
The associated biotopes may therefore sometimes be present in the infralittoral and even the littoral zone. Soft chalk and firm clay are often too soft for sessile filter-feeding animals to attach and thrive in large numbers, so there is generally an extremely impoverished epifauna, particularly on upward-facing surfaces. The vertical rock faces may be somewhat richer. The rock is sufficiently soft to be bored by bivalves such as *Pholas dactylus,* and by polychaete worms *Polydora* sp. which may form a complete cover in highly turbid conditions. Carbonate cemented structures formed by methane seeps ('bubbling reefs') are also examples of this habitat. These have been reported from the northern Kattegat and the Skagerrak where they are present as slabs or pillars up to 4m high and are colonised by anthozoans *Metridium senile, Alcyonium digitatum* and *Tealia felina* as well as species which bore into the surfaces such as the
sponge *Cliona celata,* the polychaete *Dodocaceria concharum* and the bivalve *Hiatella* sp. The three dimensional structures also provides shelter for mobile species such as crabs and lobster, cod and pollack.

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 beendetermined and applied on a location-specific basis.

Characteristic species:

This habitat is dominated by the piddock *Pholas dactylus*. Other typical species include the polychaete *Polydora* and *Bispira volutacornis*, the sponges *Cliona celata* and *Suberites ficus,* the bryozoan *Flustra foliacea, Alcyonium digitatum*, hydroids such as *Sertularia cupressina*, and *Hydrallmania falcata*, the starfish *Asterias rubens*, the mussel *Mytilus edulis* and the crab *Necora puber* and *Cancer pagurus*. Foliose red algae may also be present on the harder more stable areas of rock.

Classification

EUNIS (v1405):

Level 4. A sub-habitat of 'Atlantic circalittoral rock' (A4.2).

Annex 1:

1170 Reefs

1180 Submarine structures made by leaking gas

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
Current knowledge of the distribution of soft circalittoral rock habitats across the North East Atlantic region suggests that is unusual rather than a typical habitat in the region.

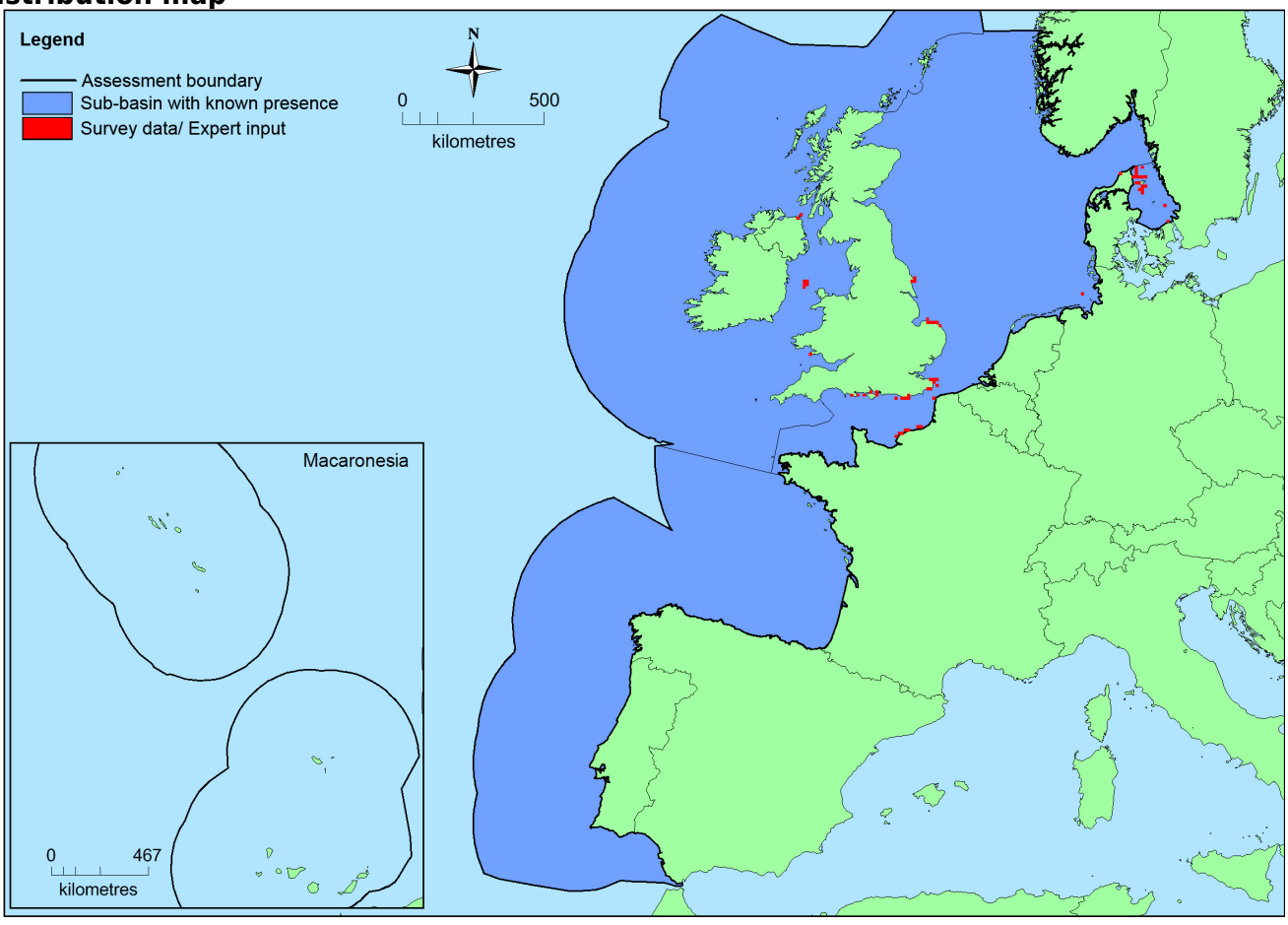
Geographic occurrence and trends

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 Macaronesia: Uncertain	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	597,111 Km^2	63	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+	597,111 Km^2	63	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 but likely to be more than 90% based on the distribution of coastal chalk in northern Europe.

Trends in quantity

There is a lack of historical information on the extent of this habitat but sublittoral surveys, such as those mapping the extent of sublittoral chalk reefs around the British Isles since the 1980s, are providing some baseline data. The most significant areas, in terms of extent, appear to be the sublittoral areas of chalk which extend offshore from Flamborough Head, on the east coast of England, for up to 6 km into water depths of over 30 m. The 20 mile long Cromer Shoals off the coast of East Anglia may the longest chalk reef feature in Europe.

There is also a lack of data on the occurrence and extent of other soft rock habitat such as those associated with peat and clay beds although some descriptions from a limited number of locations. For example there were known to be significant areas of hard layers of peat on the Noord-Holland coast and on the Dogger Bank. For example there were known to be significant areas of hard layers of peat on the Noord-Holland coast and on the Dogger Bank. Locations of 'bubbling reefs' in the Kattegat and Skagerrak have long been known to fishermen due to fragments of the pillars becoming entangled in the nets.

The full extent of this habitat and any trends in quantity cannot be determined at the present time.

- 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. Examples are the subtidal chalk reefs around the British Isles (e.g. Yorkshire, Norfolk and Northern Ireland) off the Channel coastline of France and England and around the island of Helgoland in the southern North Sea.
- 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. Examples are the subtidal chalk reefs around the British Isles (e.g. Yorkshire, Norfolk and Sussex coasts) off the Channel coastline of France, the island of Helgoland in the southern North Sea and Djursland, in the Øresund.

Trends in quality

Some locations where this habitat is present have been described in detail with species inventories that could be used to inform quality assessments in the future. Overall there is insufficient information to identify any recent or historical trends in quality of this habitat.

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

Pressures and threats

Coastal defence works can cause both direct and indirect physical damage to this habitat, particularly to areas of sublittoral peat and clay, through habitat loss and also alteration of sediment regimes.

Maintenance and capital dredging operations are also a pressures as they may result in direct habitat removal or indirect damage through changes in sediment and hydrological regimes. Abrasion from bottom towed gears is also known to impact this habitat with trawling, bottom trawling or other fishing methods the major threat to bubbling reefs. Recreational activities such as SCUBA diving and other recreational
activities may also potentially harm the reef structures. Careless movements of the divers or divers touching the underwater structures could cause them to break.

Both peat and clay habitats are vulnerable to physical disturbance and smothering arising from dredge, mussel lay and mussel collection operations associated with commercial mussel fisheries.They are also sensitive to increases in wave exposure, which can increase the rate of erosion of this habitat in shallow waters. There may therefore be future pressures associated with predicted increased storminess associated with climate change.

List of pressures and threats

Transportation and service corridors

Shipping lanes, ports, marine constructions

Biological resource use other than agriculture & forestry

Fishing and harvesting aquatic resources
- Professional active fishing
- Benthic or demersal trawling

Natural System modifications

Human induced changes in hydraulic conditions
- Removal of sediments (mud...)
- Modification of hydrographic functioning, general
- Dykes, embankments, artificial beaches, general
- Sea defense or coast protection works, tidal barrages

Climate change

Changes in abiotic conditions

Conservation and management

Examples of this habitat occur within Marine Protected Areas where there may be management measures to avoid damage. Useful measures would include limitations on activities which cause direct damage to the soft sediment, such as dredging or the use of towed demersal fishing gears.

List of conservation and management needs

Measures related to spatial planning

Establish protected areas/sites

Measures related to hunting, taking and fishing and species management

Regulation/Management of fishery in marine and brackish systems

Conservation status

Annex 1:

1160: MATL U2, MMAC FV

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

Where the substrate is damaged this habitat is irreplaceable. Where the associated communities have been affected, timescales and ability to recover are 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 current or historical information about the area covered by this habitat to draw any conclusions about trends in quantity also there is known to have been damage to some of the associated biotopes in some locations ('bubbling reefs'). This habitat has therefore been assessed as Data Deficient under criteria 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 for both the EU 28 and EU 28+.

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)

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