A5.6_PT01 *Neopycnodonte cochlear* beds on exposed and tide-swept circalittoral rocks and cobbles

Summary

This habitat occurs in the circalittoral zone on both hard and mixed substrates. It has been recorded in exposed and tide-swept sites at depths of 60 - 150m in the Faial-Pico channel and the Formigas Bank in the Azores, as well as in deeper waters on the upper slope of the Bay of Biscay between 200-500m. Its full distribution in the North East Atlantic is not known. The sessile macrofauna is dominated by the oyster *Neopycnodonte cochlear* and the clam *Chama circinata,* and the two species growing together may build up to form a calcareous bioherm. *N. cochlear* is able to create thick mantles, serving as hard substrate for other species including foraminifera, bryozoan, ascidians, coral and sponges.

Conservation measures which prevent damage to the seabed where this habitat occurs will be beneficial. These include regulation or prohibition of demersal fisheries both within and outside Marine Protected Areas. Polluted water discharges and dredge disposal may have lethal or sub-lethal effects therefore water quality management is also important.

Synthesis

This habitat has a widespread distribution (EOO >50,000 km^2) and although not reported to occur in many locations (AOO <50) it is unlikely that the available data cover its full distribution. Because of the lack of information on area and any trends in quantity and quality expert opinion is this habitat should be considered 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

A5.6_PT01 *Neopycnodonte cochlear* beds on exposed and tide-swept circalittoral rocks and cobbles

Rocky seabed colonised by the oyster *Neopycnodonte cochlear* which is providing a hard substrate for attachment by bryozoans, ascidians, corals and sponges and feeding ground for the lobster *Palinurus elephas*. Gorringe Bank, Portugal (© OCEANA).

Habitat description

This habitat occurs in the circalittoral zone on both hard and mixed substrates. It has been recorded in exposed and tide-swept sites at depths of 60 - 150m in the Faial-Pico channel and the Formigas Bank in the Azores and in deeper waters on the upper slope of the Bay of Biscay between 200-500m. Sessile macrofauna is dominated by the oyster *Neopycnodonte cochlear* and the clam *Chama circinata*. Some variance has been observed in the abundance of the two species although in shallower zones it may be exclusively *Neopycnodonte* . On hard substrates the two species growing together may build up to form a calcareous bioherm. The habitat has also been observed on mixed carbonate-volcanoclastic sediment plains where the two species form cobble to small-boulder sized clumps. *N. cochlear* is able to create thick mantles, serving as hard substrate for other species including foraminifera, bryozoan, ascidians, coral and sponges.

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.

The overall quality and continued occurrence of this habitat is dependent on the presence of the predominate structural species, the oyster *Neopycnodonte cochlear* and the clam *Chama circinata* species which create the biogenic structural complexity on which the associated species depend. The density and the maintenance of viable populations of these species are therefore likely to be a key indicator of habitat quality, together with the visual evidence of presence or absence of physical damage.

Characteristic species:

Species reported to be present on clumps formed by *N. cochlear* and *C.circinata* include the serpulids *Spirobranchus polytrema*, *Hydroides azoricus* and a variety of bryozoans (*Crisia* sp.*, Omalosecosa* sp., *Hippothoa* sp. and *Reteporella* sp.). In its deepest reaches (150m) the assemblage shows a higher abundance of associated sponges and hydrozoans. Other species of serpulids (*Filograna gracilis and Hyalopomatus* cf. *marenzelleri*) and bryozoans (*Puellina* sp. and *Celleporina* sp.) have been recorded in the assemblage. Other associated fauna includes various clams, holothurians and echinoids (*Centrostephanus longispinus*).

Classification

EUNIS (v1405):

Recommended new Level 4. A sub-habitat of ‘Infralittoral biogenic reef’ (A5.6).

Annex 1:

1170 Reefs

MAES:

Marine – Coastal

MSFD:

Shelf sublittoral sediment (coarse, sand, mud, mixed)

Shelf sublittoral rock and biogenic reef

EUSeaMap:

Shelf coarse or mixed sediments

Shelf rock or biogenic reef

IUCN:

9.2. Subtidal rock and rocky reefs

9.3. Subtidal loose rock/pebble/gravel

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

Justification

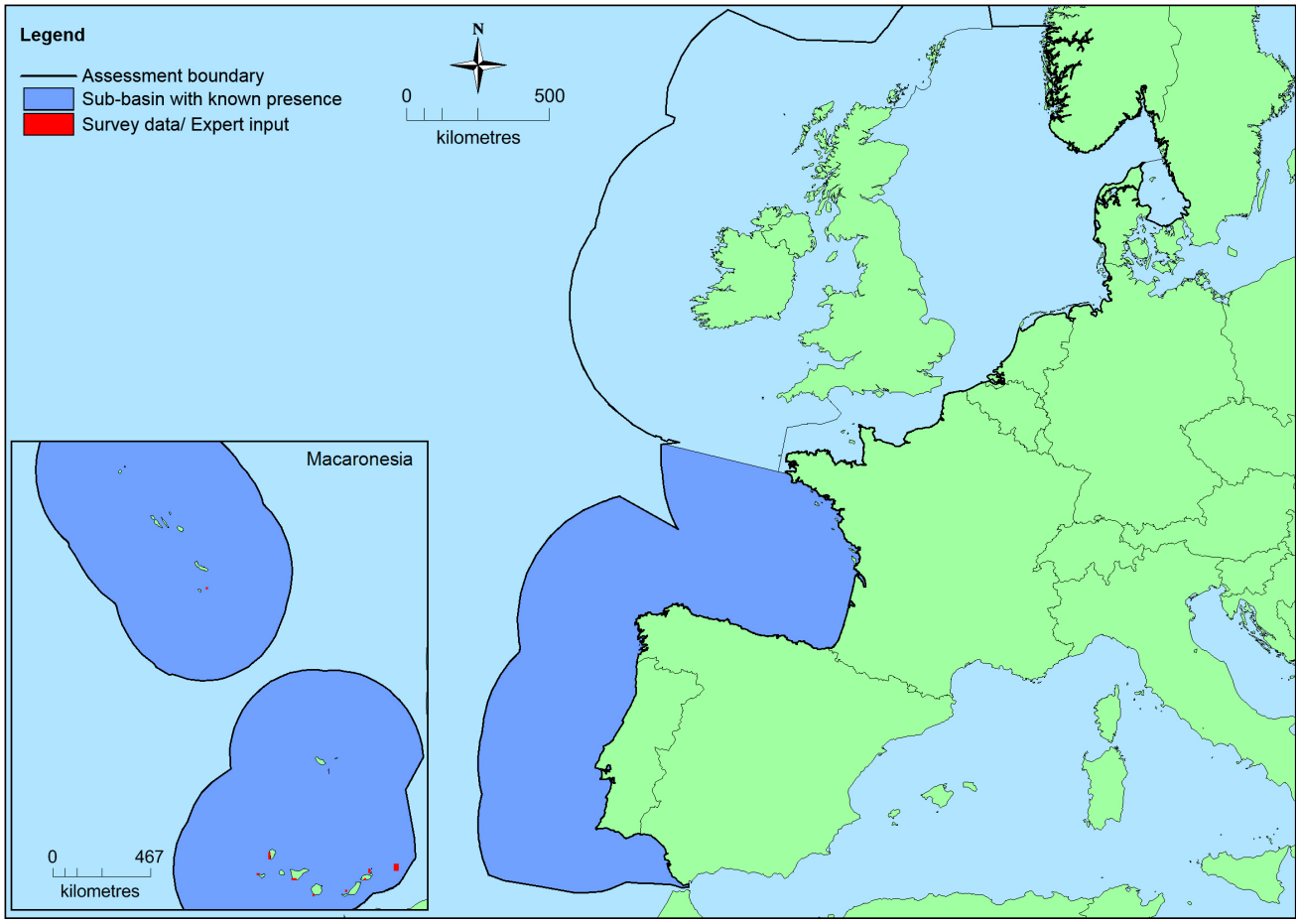
Geographic occurrence and trends

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	Macaronesia: 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	430,484 Km^2	> 18	Unknown Km^2	These values are likely underestimated.
EU 28+	430,484 Km^2	> 18	Unknown Km^2	These values are likely underestimated.

Distribution map



There is insufficient data to provide a comprehensive 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?

The full distribution of this habitat is not known. A similar habitat occurs in other regional seas (The Mediterranean) and also in deeper water where a different species of oyster dominates.

Trends in quantity

This habitat is insufficiently studied to quantify its extent and any recent or historical trends in quantity. 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
  Known locations of this habitat indicate that it does not have a small natural range, even though the figures given are likely to be an underestimate. There is insufficient information to determine any trends over the last 50 years.
- Does the habitat have a small natural range by reason of its intrinsically restricted area?
  No
  Justification

Known locations of this habitat indicate that it does not have a small natural range, even though the figures given are likely to be an underestimate.

Trends in quality

This habitat is insufficiently studied to quantify its extent and any recent or historical trends in quality. Future trends have not been estimated.

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

Pressures and threats

This habitat may be affected by demersal fishing gears such as trawls that physically impact the bottom and break the oyster shells growing on bedrock or displaces/removes the oyster clumps. Polluted water discharges and dredge disposals may also have lethal or sub-lethal effects.

List of pressures and threats

Biological resource use other than agriculture & forestry

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

Pollution

Marine water pollution

Natural System modifications

Siltation rate changes, dumping, depositing of dredged deposits

Conservation and management

Conservation measures which prevent damage to the seabed where this habitat occurs will be beneficial. These include regulation of demersal fisheries, establishment of Marine Protected Areas (with regulation or prohibition of demersal fisheries) and measures to maintain water quality.

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

Measures related to hunting, taking and fishing and species management

Regulation/Management of fishery in marine and brackish systems

Conservation status

Annex 1:

1170: MATL U2, MMED XX

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

There is insufficient information to determine the recovery capacity of this habitat although shallow water oyster species are generally fast growing and relatively short lived (less than 20 years).

Effort required

10 years
Unknown

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 on the extent of this habitat to determine historical or current trends in quantity. 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	>50,000 Km^2	Unknown	Unknown	unknown	>18	Unknown	Unknown	unknown	unknown
EU 28+	>50,000 Km^2	Unknown	Unknown	unknown	>18	Unknown	Unknown	unknown	unknown

The precise extent is unknown however as EOO >50,000 km^2 this exceeds the thresholds for a threatened category on the basis of restricted geographic distribution. The AOO is less than 50 but is known to be an underestimate. Trends are unknown. This habitat has therefore been assessed as Least Concern under criterion B1, and Data Deficient under criteria B2 & B3.

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 that estimates 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	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	DD	DD	DD	DD	LC	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)

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References

OCEANA. 2014. The seamounts of the Gorringe Bank. Available at: http://oceana.org/sites/default/files/reports/oceana_the_seamounts_of_the_gorringe_bank_2014.pdf. (Accessed: 13/10/2014).

Van Rooij, D., De Mol, L., Le Guilloux, E , Wisshak, M., Huvenne, V.A.I., Moeremans, R. & Henriet, J.-P. 2010. Environmental setting of deep-water oysters in the Bay of Biscay. Deep Sea Research. Part I. Oceanographic Research Papers 57(12):1561-1672.

Tempera, F., Atchoi, E., Amorim, P., Gomes-Pereira, J., and Gonçalves, J. 2013. *Atlantic Area Marine Habitats. Adding new Macaronesian habitat types from the Azores to the EUNIS Habitat Classification*. Horta: MeshAtlantic, IMAR/DOP-UAç, p.126.

Wisshak, M., Neumann, C., Jakobsen, J., Freiwald, A. 2009. The “living-fossil community” of the cyrtocrinid *Cyanthidium foresti* and the deep-sea oyster *Neopycnodonte zibrowii* (Azores Archipelago). *Paleogeography, Paleoclimatology, Palaeoecology*, 271: 77-83.

Wisshak, M., Form, A., Jakobsen, J. & Freiwald, A. 2010. Temperate carbonate cycling and water mass properties from intertidal to bathyal depth (Azores). *Biogeosciences* 7: 2379-2396.