A5.43 Marine Atlantic infralittoral mixed sediments

Summary

This habitat consists of shallow mixed (heterogeneous) sediments in fully marine or near fully marine conditions, supporting various animal-dominated communities, with relatively low proportions of seaweeds. It may also include well-mixed muddy gravelly sands or very poorly sorted mosaics of shell, cobbles and pebbles embedded in mud, sand or gravel. It occurs in all the regional sea sub-basins in shallower depths (typically less than 40m) where sufficient light penetrates for the growth of algae. Due to the range of the sediment types that support this habitat, the communities may vary considerably, including those characterised by bivalves, polychaetes and file shells.

Abrasion from bottom towed gears, maintenance and capital dredging operations and change in the hydrological regimes are pressures that threaten the structure and functioning of this habitat. In addition, coastal construction and protection, hydrocarbon contamination incidents, such as oil spills, may lead to substratum loss and bio-accumulation of synthetic compounds. Moreover, the introduction of non-native species and the extraction of some species are also significant threats for some species components of this habitat.

Beneficial management measures for this habitat include the regulation of fishing activities which damage or disturb seabed communities, management and control of coastal developments and the construction of hard coastal defence structures. In addition control of chemical discharges may be important for future prospects, together with prevention measures on the introduction of non-indigenous invasive species. Some of these measures have been introduced through management schemes in Marine Protected Areas.

Synthesis

Survey information confirms that this habitat has a widespread distribution in the North East Atlantic. There are documented changes in the quality of this habitat and some of the associated biotopes are known to have suffered substantial declines in quality and quantity. Nevertheless there is insufficient information to determine the overall trend for the North East Atlantic.

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 lack of information on its 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

Sub-types which may require further analysis are 5.434 *Limaria hians* beds in tide-swept sublittoral muddy mixed sediment 5.435 *Ostrea edulis* beds on shallow sublittoral muddy mixed sediment.

Habitat Type

Code and name

A5.43 Marine Atlantic infralittoral mixed sediments

No characteristic photographs of this habitat currently available.

Habitat description

This habitat comprises mixed (heterogeneous) sediments in fully marine or near fully marine conditions, supporting various animal-dominated communities, with relatively low proportions of seaweeds even though it is an infralittoral habitat. The sediment may include well-mixed muddy gravelly sands or very poorly sorted mosaics of shell, cobbles and pebbles embedded in mud, sand or gravel. Due to the range of the sediment types that support this habitat, the communities may vary considerably, including those characterised by bivalves, polychaetes and file shells. The very varied sediment composition also means that the species diversity and biomass can be high. This has resulted in many species being described as characteristic of this habitat type, but most, in general contribute only a small proportion of the overall similarity. Where the sediment is unstable, most of the fauna are mobile such as hermit crabs, netted dogwhelks and gobies. However, there may also be the dahlia anemones partially buried in the sediments as well as cobbles or pebble with encrustations of keelworrns.

Indicators of Quality:

Both biotic and abiotic indicators have been used to describe marine habitat quality. These include; the presence of particular species, water quality parameters, levels of exposure to particular pressure as well as 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:

Common and abundant species reported from this habitat include: *Anaitides mucosa, Syllidia armata, Aphelochaeta marioni, Mediomastus fragilis, Notomastus latericeus, Melinna palmate, Tubificoides benedii, Gammarella fucicola, Gammarella fucicola, Corophium sextonae, Janira maculosa, Apseudes latreillii ,Calyptraea chinensis, Tellimya ferruginosa* and *Venerupis senegalensis.*

Classification

EUNIS (v1405):

Level 4. A sub-habitat of 'Atlantic circalittoral mixed sediment' (A5.4).

Annex 1:

1160 Large shallow inlets and bays

MAES:

Marine - Marine inlets and transitional waters

Marine - Coastal

MSFD:

Shallow sublittoral mixed sediment

EUSeaMap:

Shallow coarse or mixed sediments

IUCN:

9.4 Subtidal sandy

9.5 Subtidal sandy-mud

9.6 Subtidal muddy

Does the habitat type present an outstanding example of typical characteristics of one or more biogeographic regions?
No

<u>Justification</u>
This habitat type does occur in other regional seas although the associated characteristic species may vary.

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 Macaronesia: 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
EU 28	5,014,877 Km^2	1,015	>15,885 Km^2	The area estimate for this habitat has been derived from a synthesis of EUNIS seabed habitat geospatial information for the European Seas but is recognised as being an underestimate.
EU 28+	>5,014,877 Km^2	>1,015	>15,885 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
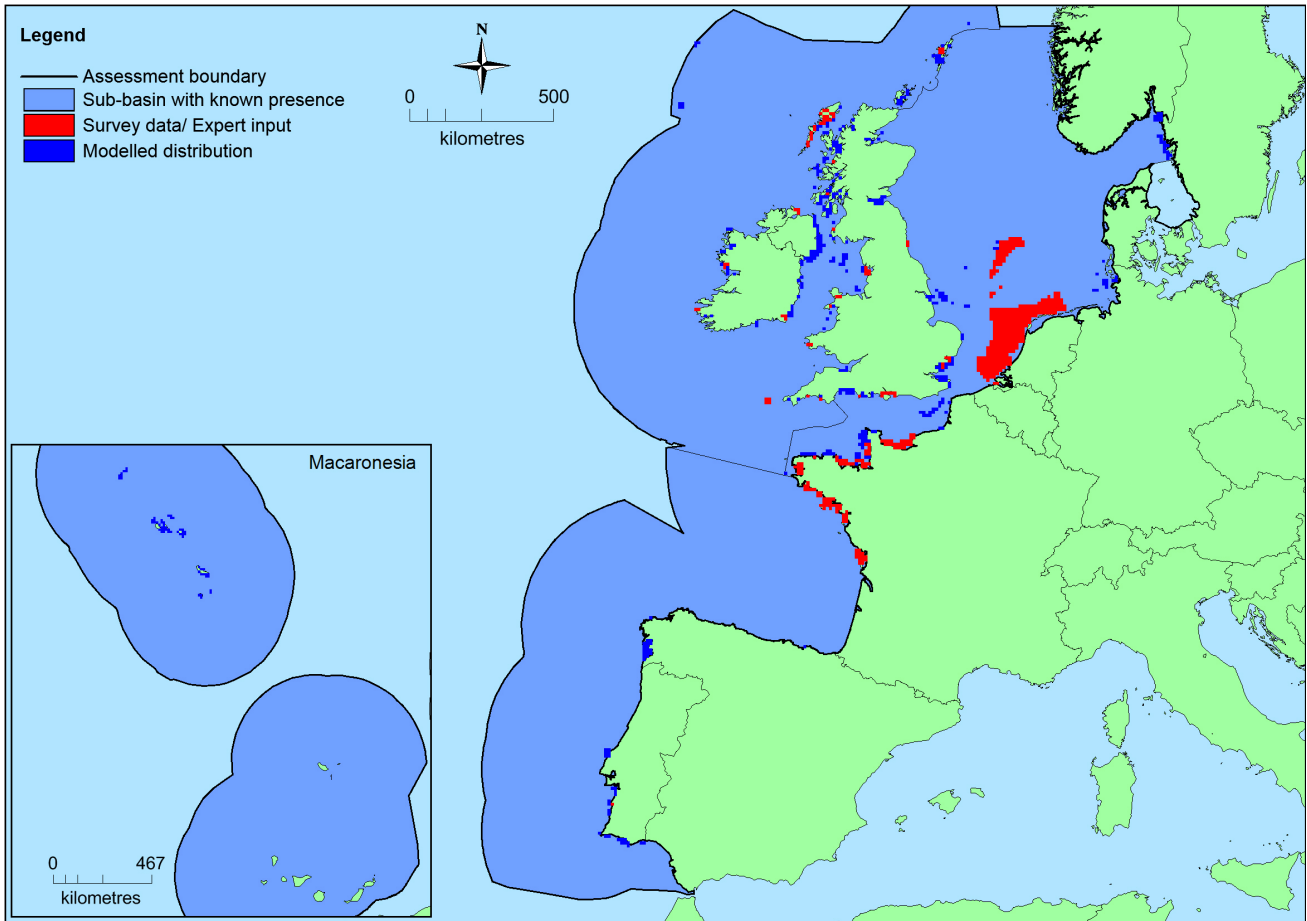
There are insufficient data to provide a comprehensive and accurate map of the distribution of this habitat. This map has been generated using EMODnet data from modelled/surveyed records for the North East Atlantic (and supplemented with expert opinion where applicable) (EMODnet 2010). EOO and AOO have 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, 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

It is difficult to establish the quantity of this habitat as it often has a patchy distribution, grading into other soft sediment habitats, or interspersed amongst rocky areas. Even where the extent of this habitat or its associated biotopes has been mapped in detail (e.g. within marine protected areas) there is a lack of information on trends. There have been some changes to the sediment characteristics in particular locations and losses reported. In the Netherlands sector of the North Sea, for example the stones in the Texelse Stenen have been dredged up or disappeared under the sand. Some of the associated biotopes (*Limaria hians* beds, and *Ostrea edulis* beds) have suffered substantial historical declines in quantity and remain under threat today.

- 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

The habitat has a large natural range and within sites the area can be extensive.

- Does the habitat have a small natural range by reason of its intrinsically restricted area?
  No
  Justification
  The habitat has a large natural range and does not occur in a very limited area within this range.

Trends in quality

There is insufficient information to determine historical and current trends in quality of this habitat although localised degradation will have occured in areas where activities such as demersal fishing and offshore construction have disturbed or removed the seabed sediments. Some of the associated biotopes (*Limaria hians* beds, and *Ostrea edulis* beds) have suffered substantial historical declines in quality and remain under threat today.

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

Pressures and threats

This habitat is vulnerable to abrasion from bottom towed fishing gears and the associated loss of extracted target and non-target species. In addition, maintenance and capital dredging operations may result in direct habitat removal, or may have indirect impacts, through changes in sediment and hydrological regimes. A change in hydrological regime may increase the water flow rate and wave exposure, which, could subsequently modify sedimentcharacter leading to changes in community structure.

Similarly, nearby coastal construction or coastal reinforcement work could result in downstream substrate modification or loss, or may result in the introduction and bioaccumulation of synthetic compounds.

Moreover, the introduction of non-native species is also constitutes a threat for some species components of this habitat.

List of pressures and threats

Biological resource use other than agriculture & forestry

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

Pollution

Marine water pollution
  Toxic chemical discharge from material dumped at sea
  Synthetic compound contamination
  Radionucleide contamination

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 biotic conditions

Migration of species (natural newcomers)

Conservation and management

Beneficial management measures for this habitat include the regulation of fishing activities which damage or disturb seabed communities, the regulation and control of coastal developments and of the construction of hard coastal defence structures. In some instances such measures are part of the mangement of Marine Protected Areas. In addition, the regulation of chemical discharges from outfalls, measures to reduce and mitigate against climate change and sea level rise, and and strategies to prevent the introduction of invasive species may also benefit this habitat.

List of conservation and management needs

Measures related to wetland, freshwater and coastal habitats

Restoring/Improving water quality
Restoring/Improving the hydrological regime

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?

Timescale between incidents of damaging activity, the type of damaging activity and the predominant species, influences recovery. Studies have shown that recovery times following dredging were significantly shorter for short-lived species (<1 – 3 years), free-living and tube-dwelling species and for scavenging or opportunistic species, than for medium-lived species (3 – 10 years), burrow-dwelling species and suspension feeders. Free living species are also likely to recolonise areas more quicky that those that grow attached to the substratum and have an erect or stalked body form such as seapens. Differences in the
recoverability of different species groups following fishing may result in changes in
community composition and ecosystem functioning over the long term.

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 %

It is difficult to establish the quantity of this habitat as it often has a patchy distribution, grading into other soft sediment habitats, or interspersed amongst rocky areas. Although there may have been some changes to the sediment characteristics in particular locations overall trends are unknown. This habitat has therefore been assessed as Data Deficient under criteria A1 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) 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%

There is insufficient information to determine historical and current trends in quality of this habitat although localised degradation will have occured in areas where activities such as demersal fishing and offshore construction have disturbed or removed the seabed sediments. This habitat has been assessed as Data Deficient under criteria C/D1.

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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Date of assessment
25/08/2015

Date of review
04/04/2016

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