A5.22 Estuarine Atlantic sublittoral sand

Summary

This habitat consists of clean sands, that occur in the upper reaches of marine inlets, especially estuaries, where water movement is moderately strong, allowing the sedimentation of sand, but not the finer silt fraction. The habitat typically lacks a significant seaweed component and is characterised by brackish-water tolerant fauna, particularly amphipods, polychaetes and mysid shrimps.

Significant threats to this habitat include capital dredging, and coastal development or shoreline reinforcement which results in either direct habitat removal or changes in sediment and hydrological regimes. In addition, chemical contamination, and discharges of water of significantly higher or lower temperature will have a serious impact on the associated fauna, in particular crustaceans and amphipods. Conservation and management schemes to benefit estuarine habitats have been applied at a number of scales ranging from whole estuary systems to small areas within an estuary. They include the removal of dykes, and water quality improvement programmes to reduce the risk of toxic contamination or nutrient inputs leading to eutrophication. Furthermore, spatial management, including zoning of activities as part of Integrated Coastal Zone Management Schemes and Marine Protected Areas, that cover the entire estuary complex are beneficial.

Synthesis

There is a lack of quantitative data on extent and condition of this habitat therefore no assessment of trends in quantity and quality can be made at the present time. The small AOO suggests this habitat could be Endangered under criterion B however given the lack of information on its trends in quantity and quality and because the distribution data not comprehensive, 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

A5.22 Estuarine Atlantic sublittoral sand

No characteristic photographs of this habitat are currently available.

Habitat description

This habitat is characterised by clean sands that occur in the upper reaches of marine inlets, especially estuaries, where water movement is moderately strong, allowing the deposition of sand, but not the finer silt fraction. The habitat typically lacks a significant seaweed component and is characterised by brackish-water tolerant fauna, particularly amphipods, polychaetes and mysid shrimps.

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.

Many indicators of quality have been used for this habitat with particular parameters 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 of quality of this habitat are frequently linked to those for the whole estuarine environment and therefore include morphological and physical characteristics, carrying capacity and water quality parameters. For the mudflat itself benthic indices, contaminant levels and productivity are some of the frequently used measures of quality.

Indices developed to assess the ecological status of coastal waters, including estuaries, according to the Water Framework Directive, include physical indicators, water quality indicators and measures of benthic diversity, species richness and abundance. The latter group, which is particularly relevant to benthic habitats, includes a Benthic Quality Index, an Infaunal Trophic Index, a Marine Biotic index based on ecological groups, and the Benthic Opportunistic Polychaetes/Amphipods Index.

Characteristic species:

Nephtys cirrosa and *Macoma balthica* in variable salinity infralittoral mobile sand; *Neomysis integer* and *Gammarus spp*. in fluctuating low salinity infralittoral mobile sand. Also *Crangon crangon*, *Macoma calcarea, Mya truncata, Astarte* spp. *Spisula* spp. *Capitella capitata* and *Eurydice pulchra.*

Classification

EUNIS (v1405):

Level 4. A sub-habitat of ‘Atlantic shallow infralittoral sand’ (A5.2).

Annex 1:

1130 Estuaries

MAES:

Marine - Marine inlets and transitional waters

Marine - Coastal

MSFD:

Shallow sublittoral sand

EUSeaMap:

Shallow sands

IUCN:

9.4 Subtidal sandy

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

Unknown

Justification

Whilst estuaries are typical of the North East Atlantic region it is unclear whether the associated sandy sediment habitat can be considered typical.

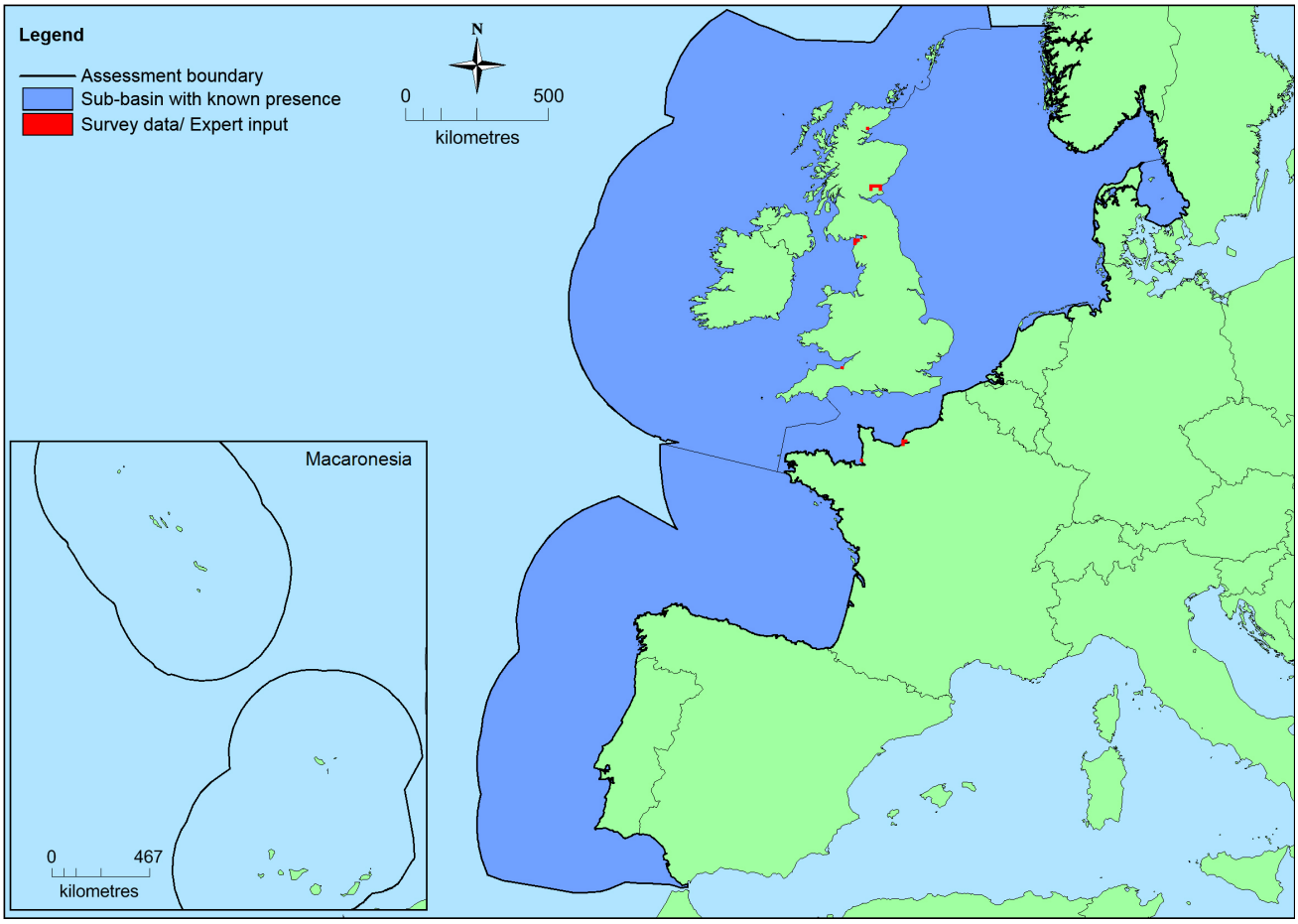
Geographic occurrence and trends

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 Kattegat: Present Greater North Sea: 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	>128,095 Km^2	>19	Unknown Km^2	EOO and AOO figures are known to be an underestimate.
EU 28+	>128,095 Km^2	>19	Unknown Km^2	EOO and AOO figures are 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?

Unknown.

Trends in quantity

The extent of this habitat has been mapped in detail in some parts of its range (e.g Danish estuaries and rias in north western Spain) however there is insufficient information to determine any historical or recent 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
  This habitat does not have a small natural range as EOO>50,000km^2.
- 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 as EOO>50,000km^2 although intrinsically restricted to estuarine situations.

Trends in quality

There is insufficient information to determine any historical or recent 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 is vulnerable to capital dredging operations that may result in direct habitat removal or in changes to sediment and hydrological regimes. Coastal development works that cause an increase in water flow rate, may lead to changes in granulometry and subsequent shifts in infaunal community structure.

Localised water temperature changes, caused by discharges from industrial processes can disrupt the breeding cycles of some infaunal species which are sometimes unable to adapt to these temperature changes. In addition, this habitat may be subjected to a range of toxic compounds from anthropogenic discharges, run-off and maintainance activities. Contaminants may include heavy metals, polycyclic aromatic hydrocarbons (PAHs)and hydrocarbon (oil) spills. The crustacean component of the habitat community, in particularly is susceptible to these toxic agents. Moreover, the toxicity of these substances may be enhanced by changes in the water temperature and salinity.

List of pressures and threats

Urbanisation, residential and commercial development

Urbanised areas, human habitation
Discharges

Pollution

Pollution to surface waters (limnic, terrestrial, marine & brackish)
Marine water pollution

Natural System modifications

Human induced changes in hydraulic conditions
- Removal of sediments (mud...)
- Dredging/ Removal of limnic sediments
- Estuarine and coastal dredging
- Modification of hydrographic functioning, general

Conservation and management

Conservation and management schemes to benefit estuarine habitats have been applied at a number of scales ranging from whole estuary systems to small areas within an estuary. They include the removal of dykes, and water quality improvement programmes to reduce the risk of toxic contamination or nutrient inputs leading to eutrophication.

Spatial management including zoning of activities as part of Integrated Coastal Zone Management Schemes and Marine Protected Areas that cover the entire estuary complex, as well as management of water quality throughout the surrounding catchment.

List of conservation and management needs

Measures related to wetland, freshwater and coastal habitats

Restoring/Improving water quality

Measures related to spatial planning

Establish protected areas/sites

Measures related to urban areas, industry, energy and transport

Urban and industrial waste management

Conservation status

Annex 1:

1130: MATL U2

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

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 are insufficient data for an assessment of criterion A. This habitat is therefore considered to be Data Deficient under criterion 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	unknown	>19	Unknown	Unknown	unknown	unknown
EU 28+	>50,000 Km^2	Unknown	Unknown	unknown	>19	Unknown	Unknown	unknown	unknown

The available information on the occurrence of this habitat is known to be substantially incomplete. The existing data obtained from EMODnet would suggest that this habitat could potentially be considered as Vulnerable under Criterion B (AOO<50) if there were grounds for believing that this habitat was undergoing a decline in extent or quality. There are, however, no data on the present status of this habitat and trends, and the accuracy of the mapping data cannot be verified at this time. This habitat has therefore been assessed as Data Deficient under criteria B 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 %

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 %

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 tot 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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