Sparse or no macrofaunal communities in Baltic upper circalittoral sand

Summary

This habitat occurs in all the Baltic sub basins, typically present below depths of 30 m and in high energy exposure areas. Macrofauna, epifauna and infauna are sparse or absent but there may be a large biomass of meiofauna. Eutrophication, uplift and changes in sedimentation regimes could affect the quality and extent of this habitat in the future. No specific conservation or management measures have been identified although turbidity monitoring would be beneficial particularly to detect any changes in quality.

Synthesis

The quantity and quality of this habitat is considered to have been stable over the last 50 years and no change is expected in the near future. The overall assessment for this EUNIS level 4 habitat has been based on the HELCOM (2013) assessments for the associated HELCOM HUB biotopes. Draft assessments were derived using a weighted approach whereby the HELCOM assessment outcomes were assigned a score. This was averaged across the relevant biotopes. The outcomes were reviewed by Baltic experts to reach a final conclusion. HELCOM (2013) assessed this habitat (AB.J4U1) as Least Concern (A1). There is no additional data or information to update the assessment outcome past the HELCOM 2013 assessment. The current expert opinion is therefore an assessment of Least Concern 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
Least Concern	-	Least Concern	-

Sub-habitat types that may require further examination

None.

Habitat Type

Code and name

Sparse or no macrofaunal communities in Baltic upper circalittoral sand

No characteristic photographs currently available for this habitat.

Habitat description

This Baltic Sea benthic habitat occurs in the aphotic zone where there is least 90% coverage of sand according to the HELCOM HUB classification. Macrofauna, epifauna and infauna are sparse or absent. It is typically present below depths of 30m and occurs in high energy exposure areas. One associated biotope has been identified: 'Baltic aphotic sand dominated by meiofauna' (AB.J4U1). This occurs in all wave exposure classes and is identified by a large representation of meiofauna (for example Oligochaeta, Ostracoda, Nematoda, Copepoda), which constitutes at least 50% of the biomass. In the Gulf of Bothnia nectobenthic Mysidae can be associated with the biotope, and Mysidae can also appear in benthic grab-samples.

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 overtime. 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:

Oligochaeta, Ostracoda, Nematoda, Copepoda. In the Gulf of Bothnia nectobenthic Mysidae can be associated with the habitat, and Mysidae can also appear in benthic grab-samples.

Classification

EUNIS:

The closest correspondence in EUNIS (2004) level 4 is A5.21 Sublittoral sand in low or reduced salinity.

Annex 1:

The relationship between HUB biotopes and Annex 1 habitats has not yet been mapped by HELCOM, however this habitat may occur in the following Annex 1 habitats:

1110 Sandbanks slightly covered all the time

1130 Estuaries

1160 Large shallow inlets and bays

1650 Boreal Baltic narrow inlets

MAES:

Marine - Marine inlets and transitional waters

Marine – Coastal

MSFD:

Shallow sublittoral sand

EUSeaMap:

Shallow sands

IUCN:

9.4 Subtidal Sandy

Other relationships:

Level 5 of the HELCOM HUB (2013) classification:

AB.J4U: Baltic aphotic sand characterized by no macrocommunity This habitat has one sub-habitat on HUB level 6; 'Baltic aphotic sand dominated by meiofauna' (AB.J4U1).

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

<u>Justification</u>

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)
Baltic Sea	Baltic Proper: Present Belt Sea: Present Gulf of Bothnia: Present Gulf of Finland: Present Gulf of Riga: Present The Sound: Present	Unknown Km^2	Stable	Stable

Extent of Occurrence, Area of Occupancy and habitat area

	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
EU 28	>50,000 Km^2	>50	Unknown Km^2	Based on known presence in all the Baltic sub-basins and expert opinion.
EU 28+	>50,000 Km^2	>50	Unknown Km^2	Based on known presence in all the Baltic sub-basins and expert opinion.

Distribution map
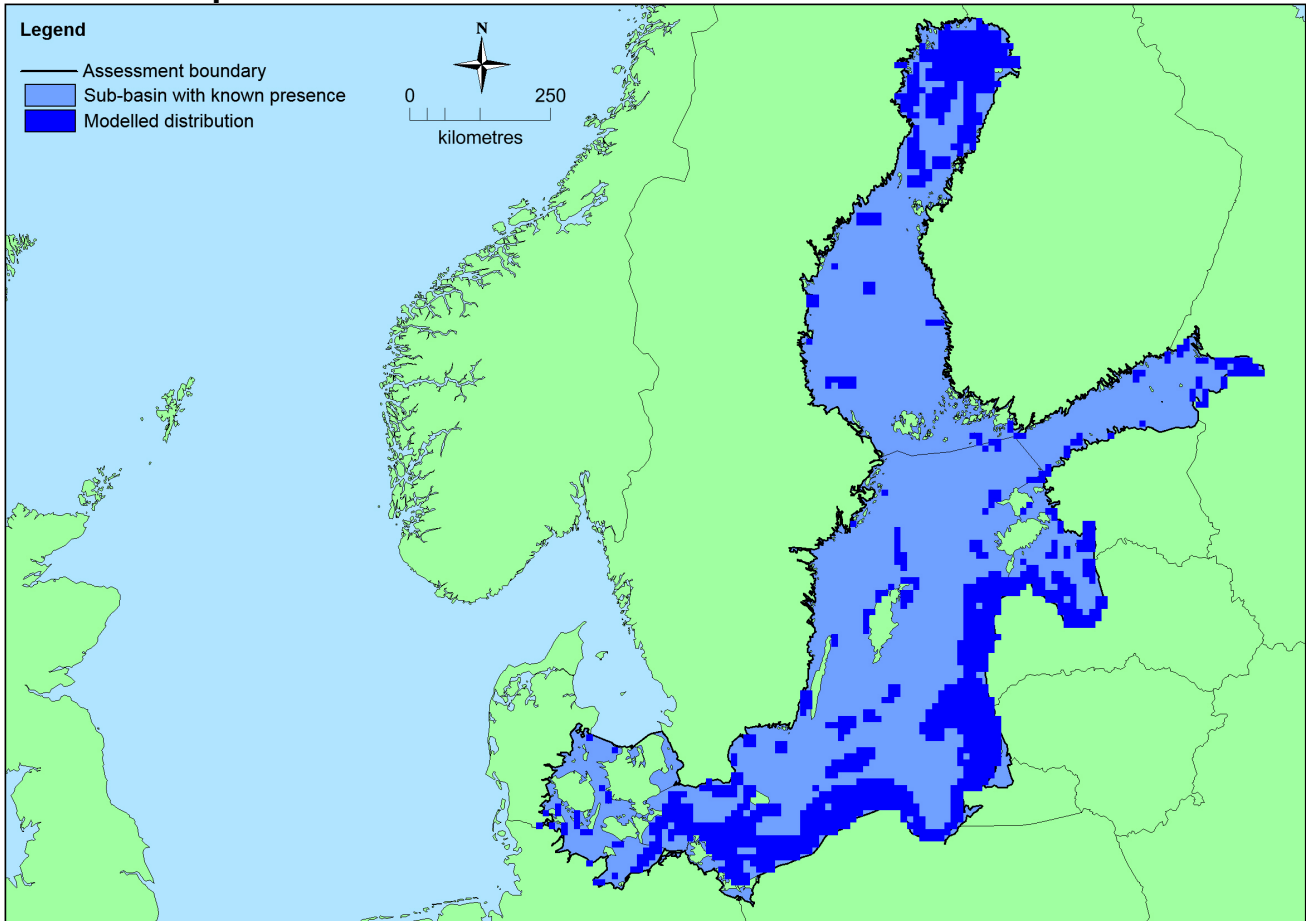
There are insufficient data to provide a comprehensive and accurate map of the distribution of this habitat. This map has therefore been generated using the modelled data available on EMODnet for EUNIS level 3 habitats in the Baltic Sea (EMODnet, 2010). This means it indicates potential areas in which this habitat may occur, not the actual distribution of this EUNIS level 4 habitat.

How much of the current distribution of the habitat type lies within the EU 28?

This habitat occurs in the EU 28+ (Russia). The percentage hosted by EU 28 is therefore less than 100% but there is insufficient information to establish the proportion.

Trends in quantity

This habitat is fairly common in the Baltic Sea with a clear emphasis on the northern parts of the Bothnian Bay. There are no historical data on trends but the extent is believed to have been stable overall in the recent past although slight regional changes have occurred. No estimates of future trends have been made.

- Average current trend in quantity (extent)

EU 28: Stable
EU 28+: Stable

- <u>Does the habitat type have a small natural range following regression?</u>
  No
  Justification
  This habitat occurs in all the Baltic Sea sub-basins so does not have a small natural range.
- <u>Does the habitat have a small natural range by reason of its intrinsically restricted area?</u>
  No
  Justification
  This habitat occurs in all the Baltic Sea sub-basins so does not have a small natural range.

Trends in quality

No significant recent changes in condition have been reported although natural continual transition into other habitats can be expected as a result of land uplift and siltation/sedimentation.

- <u>Average current trend in quality</u>
  EU 28: Stable
  EU 28+: Stable

Pressures and threats

Changes in water turbidity can affect the balance between photic/aphotic distribution of this habitat. This may result from coastal development, eutrophication (N, P and organic input), dredging and deposition of sediment.

List of pressures and threats

Pollution

Pollution to surface waters (limnic, terrestrial, marine & brackish)
Nutrient enrichment (N, P, organic matter)

Natural System modifications

Human induced changes in hydraulic conditions
Removal of sediments (mud...)
Dredging/ Removal of limnic sediments
Estuarine and coastal dredging
Extraction of sea-floor and subsoil minerals (e.g. sand, gravel, rock, oil, gas)
Change of sea-floor substrate
Modification of hydrographic functioning, general
Alteration of sea-floor/ Water body morphology
Siltation rate changes, dumping, depositing of dredged deposits
Dumping, depositing of dredged deposits
Other siltation rate changes

Climate change

Changes in abiotic conditions
Sea-level changes
Changes in biotic conditions
Habitat shifting and alteration

Conservation and management

No conservation or management measures have been identified specifically for this habitat, however

turbidity monitoring would be beneficial to detect any changes in the quality.

List of conservation and management needs

No measures

Measures needed, but not implemented

Conservation status

Annex 1:

1110: MBAL U1

1130: MBAL U2

1160: MBAL U2

1650: MBAL U2

HELCOM (2013) assessments:

1110 VU C1

1130 CR C1

1160 VU C1

1650 VU C1

HELCOM (2013) assessed this habitat (AB.J4U1) as LC (A1).

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	0 %	unknown %	unknown %	unknown %
EU 28+	0 %	unknown %	unknown %	unknown %

The quantity of this habitat is considered to have been stable over the last 50 years. It has therefore been assessed as Least Concern 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	unknown	>50	Unknown	Unknown	unknown	unknown
EU 28+	>50,000 Km^2	Unknown	Unknown	unknown	>50	Unknown	Unknown	unknown	unknown

A lack of a comprehensive quantitative data on the area covered by this habitat in the Baltic Sea means

that precise figures for EOO and AOO could not be calculated. As it is present in all Baltic sea sub-basins and is common throughout the Baltic the EOO is likely to exceed 50,000km^2 and AOO exceed 50. Future trends have not been predicted. This habitat is therefore assessed as Data Deficient under criterion B.

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 make an overall assessment of 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	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	LC	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
Least Concern	-	Least Concern	-

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

HELCOM RED LIST Biotope Expert Team 2013 and Baltic Sea Working Group for the European Red List of Habitats 2014 and 2015.

Reviewers

G. Saunders.

Date of assessment

09/07/2015

Date of review

07/01/2016

References

HELCOM, 2013. Red List of Baltic Sea underwater biotopes, habitats and biotope complexes. Baltic Sea Environment Proceedings: 138. Helsinki Commission.