Infaunal communities in Baltic infralittoral sand not dominated by bivalves

Summary

This habitat occurs in shallow areas in all the Baltic sub-basins although some of the associated biotopes have a more limited distribution. It is a benthic habitat in the photic zone where at least 90% of the substrate is sand. There is a lack of macrovegetation or epibenthic macrofauna but crustaceans, polychaetes and insect larvae may dominate the infauna. The habitat is present in areas of high energy associated with wave action or currents. No pressures and threats specific to this habitat, nor any specific conservation or management measures have been identified at the present time.

Synthesis

There is a lack of quantitative data on current status and changes in extent and quality for the entire Baltic over the last 50 years although there are modelled data predicting distribution in some regions (e.g. Poland). One of the biotopes (where the infauna is dominated by the sand digger shrimp, *Bathyporeia pilosa)* is estimated to have declined by 10% over that time. The other biotopes have either been stable or increased.

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 the four associated biotopes as Least Concern (A1). With no additional data on changes in extent or quality of this habitat the current expert opinion is 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

AA.J3N3 Baltic photic sand dominated by sand digger shrimp (*Bathyporeia pilosa*).

Habitat Type

Code and name

Infaunal communities in Baltic infralittoral sand not dominated by bivalves

Description	No characteristic photographs of this habitat currently available.

Habitat description

This is a Baltic Sea benthic habitat in the photic zone where at least 90% of the substrate is sand according to the HELCOM HUB classification. There is a lack of macrovegetation or epibenthic macrofauna but crustaceans, polychaetes and insect larvae may dominate the infauna. The habitat is present in areas of high energy associated with wave action or currents.

Where polychaetes dominate the infauna two associated biotopes with different dominant species of polychaetes (at least 50% of the biomass of the infaunal polychaetes) can be identified. 'Baltic photic sand dominated by lugworms (*Arenicola marina*)' (AA.J3M2) usually at a depth of 1 – 5 meters, in high exposure and in salinities over 10 psu. It is distributed in only in the western Baltic Sea, in the Sound and the Belt Sea. 'Baltic photic sand dominated by multiple infaunal polychaete species: *Pygiospio elegans, Marenzelleria* spp. and *Hediste diversicolor*' (AA.J3M4) distributed in the whole Baltic Sea. Where crustaceans dominate the infauna one associated biotope has been identified: 'Baltic photic sand dominated by sand digger shrimp (*Bathyporeia pilosa*)' (AA.J3N3). Depth of this biotope is typically from 1 to 10 meters, and it is encountered in areas of moderate to high wave exposure with salinity over 4 psu. Another biotope 'Baltic photic sand dominated by midge larvae (Chironomidae)' (AA.J3P1) is identified by a large representation of Midge larvae (Chironomidae).

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 been determined and applied on a location-specific basis. Diversity, abundance and biomass of fauna are potential indicators of quality.

Characteristic species:

Arenicola marina with *Mya arenaria* and *Cerastoderma* sp.; where mixed polychaetes dominate, P*ygospio elegans, Marenzelleria* spp., *Hediste diversicolor, Ophelia* spp. and *Travisia forbesii*; where crustaceans dominate *Monoporeia affinis*; and where insect larvae dominate Chironomid larvae.

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 classification (2013):

AA.J3M Baltic photic sand characterised by infaunal polychaetes This habitat has two biotopes on HUB level 6; 'Baltic photic sand dominated by lugworms (*Arenicola marina*)' (AA.J3M2) and 'Baltic photic sand dominated by multiple infaunal polychaete species: *Pygiospio elegans, Marenzelleria* spp. and *Hediste diversicolor*' (AA.J3M4)

AA.J3N Baltic photic sand characterised by infaunal crustacea. This habitat has one biotope on HUB level 6; 'Baltic photic sand dominated by sand digger shrimp (*Bathyporeia pilosa*)' (AA.J3N3).

AA.J3P Baltic photic sand characterised by infaunal insect larvae This habitat has one biotope on HUB level 6; 'Baltic photic sand dominated by midge larvae (Chironomidae)' (AA.J3P1).

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

No

Justification

Not overall but the biotope dominated by midge larvae (Chironomidae) is typical of the Bothnain Bay and important in large lagoons in the southern parts of the Baltic.

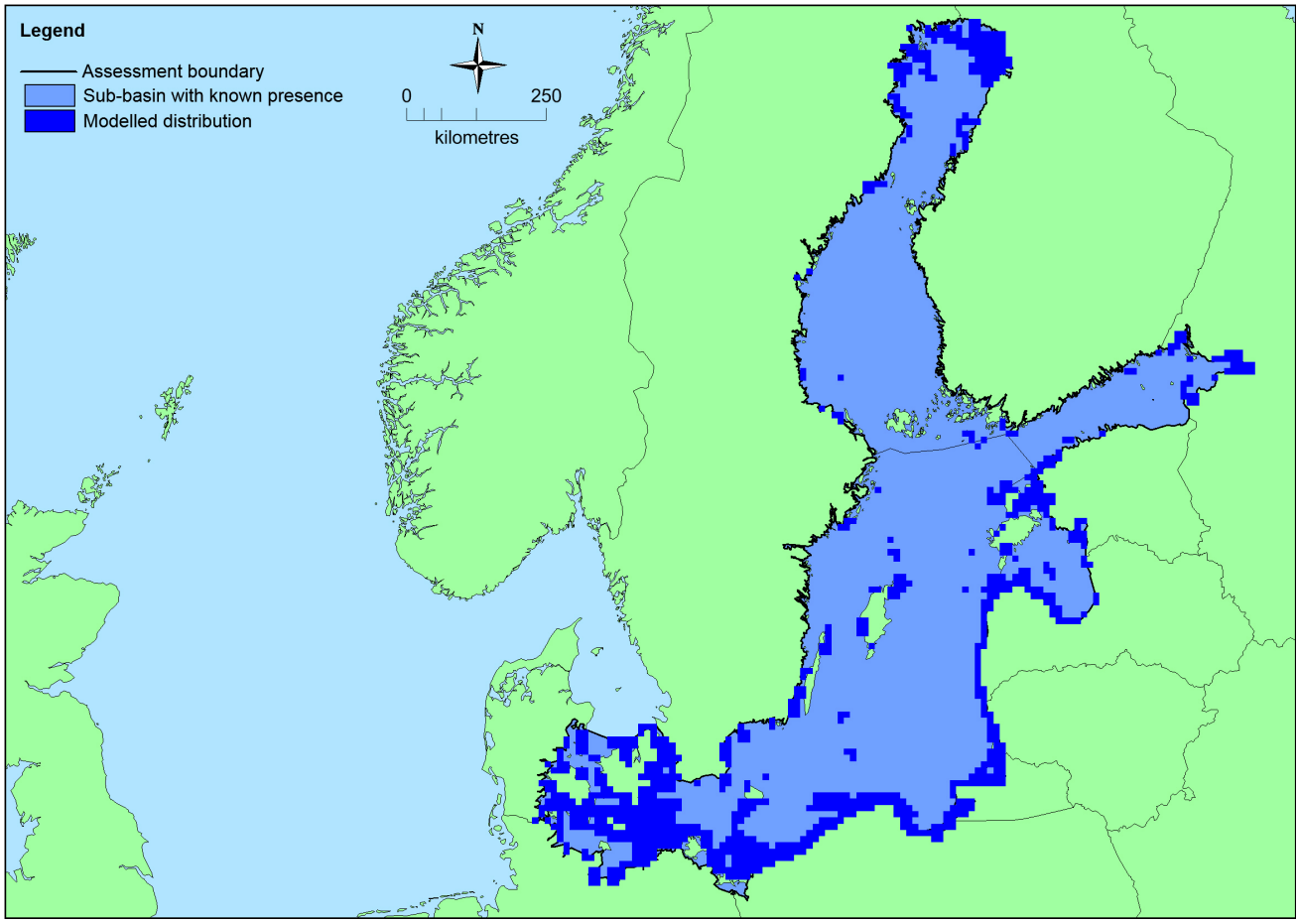
Geographic occurrence and trends

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	Unknown	Unknown Km^2	This habitat is present in all the Baltic sub-basins however there is insufficient information for accurate calculation of EOO and AOO.
EU 28+	>50,000 Km^2	Unknown	Unknown Km^2	This habitat is present in all the Baltic sub-basins however there is insufficient information for accurate calculation of EOO and AOO.

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. EOO and AOO cannot be calculated at the present time, although the habitat is known to occur in all the Baltic Sea sub-basins.

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. Similar habitats may occur in other European Regional Seas.

Trends in quantity

There have been different trends in the different associated biotopes. AA.J3N3 (dominated by the sand digger shrimp (*Bathyporeia pilosa*) is estimated to have declined by around 10% in the past 50 years, areas dominated by midge larvae (AA.J3N3) are considered to have been stable, and areas where the infauna are dominated by polychaetes (AA.J3 M2 and AA.J3M4) are considered to be increasing. Expert opinion is that the overall condition of the habitat is most likely to be stable. There are no detailed historic data and no estimates available on future trends in quantity.

- Average current trend in quantity (extent)
  EU 28: Stable
  EU 28+: Stable
- Does the habitat type have a small natural range following regression?
  No
  Justification
  This habitat occurs in all the Baltic Sea sub-basins so does not have a small natural range.
- Does the habitat have a small natural range by reason of its intrinsically restricted area?

No

Justification

This habitat occurs in all the Baltic Sea sub-basins so does not have a small natural range.

Trends in quality

Overall habitat quality is considered to be generally good although there have been declines in quality in areas where the infauna is dominated by the sand digger shrimp (an estimated reduction of 10% over the past 50 years). Overall quality is considered to have been stable over the past 50 years.

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

Pressures and threats

No pressures and threats specific to this habitat type have been identified at the present time.

List of pressures and threats

-

Conservation and management

No conservation and management measures have been identified specifically for this habitat type at the present time.

List of conservation and management needs

No measures

No measures needed for the conservation of the habitat/species

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) have assessed all four associated biotopes AA.J3M2, AA.J3M4, AA.J3N3 and AA.J3P1 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 %

One of the associated biotopes (where the infauna is dominated by the sand digger shrimp, *Bathyporeia pilosa*) is estimated to have declined by 10% in the last 50 years. The other associated biotopes have either been stable or increased. Expert opinion is that overall this habitat has been stable over the last 50 years. This habitat is therefore assessed as Least Concern 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	unknown	Unknown	Unknown	unknown	unknown
EU 28+	>50,000 Km^2	Unknown	Unknown	unknown	unknown	Unknown	Unknown	unknown	unknown

This habitat is present in all Baltic Sea basins therefore EOO exceeds 50,000km^2 however with no quantitative data on habitat extent or area, accurate calculation of EOO or AOO is not possible at the present time. This habitat has therefore been 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%

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%

Experts considered 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	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)

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Reviewers
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References

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