# Sparse or no macrofauna communities on Baltic infralittoral sand

## Summary

This habitat occurs in all sub-basins in the Baltic. There is some information on extent in particular locations (e.g. a minimum of 3,296km$^2$ in six survey areas off the coast of Estonia), but no overall quantitative information on changes in quality or quantity. The main factor affecting the quantity is the photic/aphotic boundary which is affected by water quality (turbidity), which in turn is affected by eutrophication (increases in N, P and organic matter). No conservation measures have been identified specifically for this habitat.

## Synthesis

The presence of this habitat type in the Baltic Sea is well known and it occurs in all the sub-basins. 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 as Least Concern (A1). No additional information is available, therefore 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

None.

## Habitat Type

### Code and name

Sparse or no macrofauna communities on Baltic infralittoral sand



Infralittoral sand habitat in northern Bothnian Bay (© OCEANA/C.Suarez).



Infralittoral sand habitat in the Bothnian Bay (Krunnit)(© Parks and Wildlife Finland 2008/

E.Keskinen).

## Habitat description

This Baltic Sea benthic habitat occurs in the photic zone with at least 90% coverage of sand according to the HELCOM HUB classification. The substrate may be mobile and any macro or microvegetation, if present, is sparse. Macrofauna, eipfauna and infauna in this habitat are also sparse and it supports a low species diversity.

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;

Low species diversity but may include burrowing infauna such as  *Marenzelleria viridis, Pygospio elegans, Macoma baltica* or actively swimming nectobenthic forms such as *Bathyporeia pilosa* and *Crangon crangon.*

## 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.J4U: Baltic photic sand characterized by no macrocommunity.

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

No

Justification
Photic sand with sparse or no macrofauna exist in other places around the world.

## 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<br>Belt Sea: Present<br>Gulf of Bothnia: Present<br>Gulf of Finland: Present<br>Gulf of Riga: Present<br>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. |
| *EU 28+* | >50,000 $Km^2$ | Unknown | Unknown $Km^2$ | This habitat is present in all the Baltic sub-basins |

## Distribution map
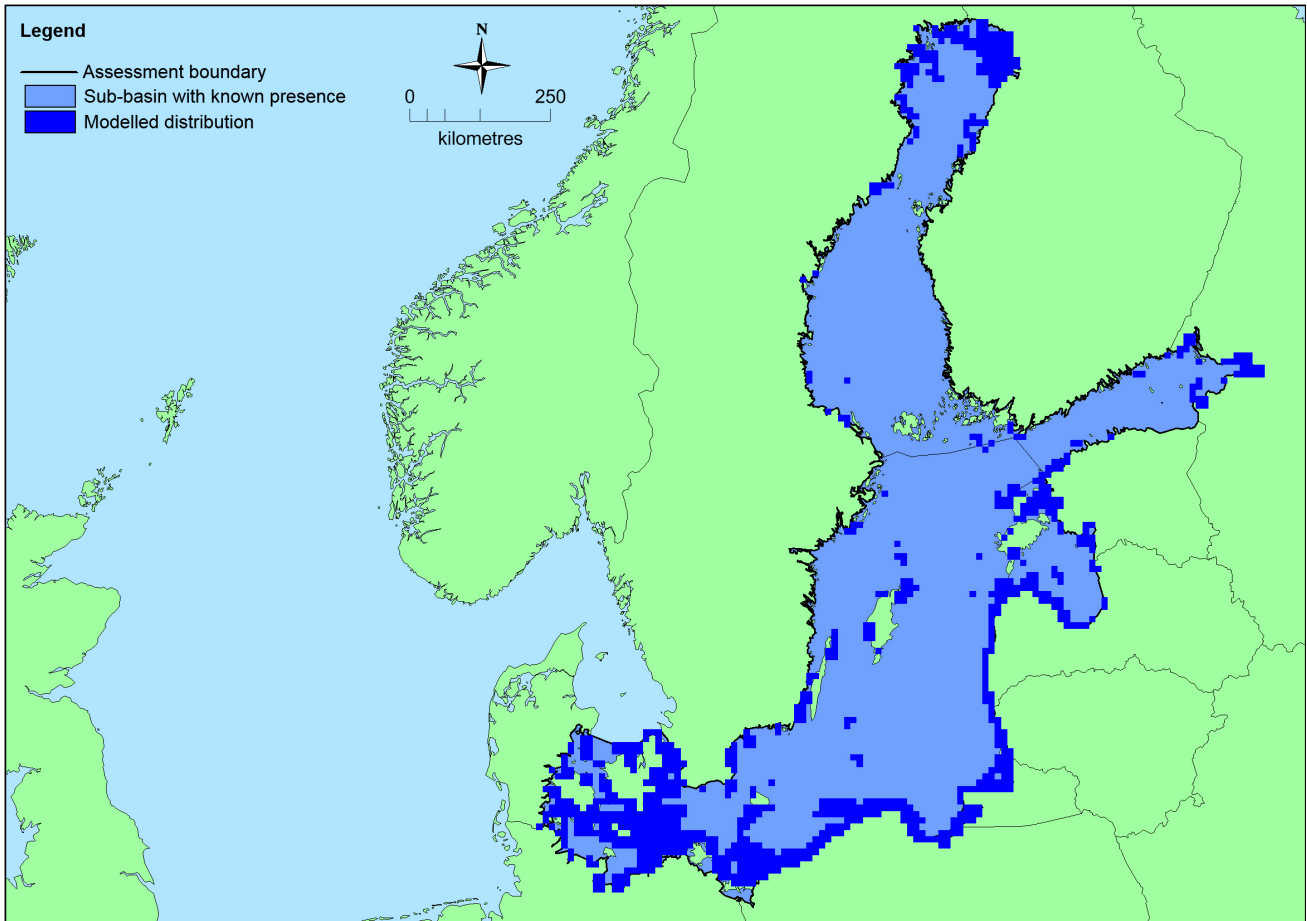
There are insufficient data to provide a comprehensive and accurate map of the distribution of this habitat. This map has therefore been generated using the modelled data available on EMODnet for EUNIS level 3 habitats in the Baltic Sea (EMODnet, 2010). This means it indicates potential areas in which 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 where low salinity limits the amount of colonizing macrospecies. The quantity is believed to have been stable over the last 50 years although slight regional changes have occurred. There are no quantitative data on historic changes and no estimates of future change 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

The current condition of this habitat is generally good.

In the Bothnian Bay natural continual change into other biotopes (defined by vegetation cover) occur due to the combination of land uplift and siltation/sedimentation. Land uplift and turbidity change/fluctuation also affects the distribution between this habitat and the corresponding circalittoral habitat.

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

## Pressures and threats

Eutrophication (increased N, P and organic matter) leading to increased water turbidity will affect the boundary between this habitat and its circalittoral counterpart by changing the bottom conditions from photic to aphotic. Correspondingly the photic habitat will increase if turbidity improves. In the northern parts of the Baltic this effect could be quite dramatic due to the general shallowness of the seafloor.

### 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
Siltation rate changes, 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 and management measures have been identified specifically for this habitat.

### 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 this habitat 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 believed to have been stable over the last 50 years. This habitat has therefore been 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 |

A lack of a comprehensive of quantitative data on the area covered by this habitat in the Baltic means that precise figures for EOO and AOO could not be calculated however as it is present in all Baltic Sea sub basins the EOO is likely to exceed 50,000km$^2$. This habitat has therefore been assessed as Data Deficient under criterion 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 % |
| *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 to estimate the probability of collapse of this habitat.

## 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
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## Reviewers
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## Date of review
19/01/2016

## References

HELCOM 2013. Red List of Baltic Sea underwater biotopes, habitats and biotope complexes. Baltic Sea Environmental Proceedings No. 138.

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