Annual algal communities on Baltic infralittoral rock and mixed substrata (predominantly hard)

Summary

This habitat occurs in all the Baltic Sea sub-basins but is especially common in areas with reduced salinity and/or high wave exposure. It is a benthic habitat in the photic zone where the substrates are a mixture of hard and soft sediment. Site records and distribution maps are available for some of the characteristic species but there are no quantitative data on extent and area of the habitat. Pressures, threats, and conservation and management measures have not been identified specifically for this habitat type.

Synthesis

There are no quantitative data on extent and area of the habitat but site records and distribution maps are available for some of the associated characteristic species. Expert opinion is that the extent is believed to have changed by less than 10% over the past 50 years and that there have been moderate changes in quality in some parts of the Baltic (<10%). No significant changes in extent or quality are envisaged for 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 the three relevant Baltic sub-biotopes (AA.A1S, AA.M1S1 and AA.M1S2) to be of Least Concern (based on criterion A1). With no additional information on changes in extent or quality of this habitat, the current expert opinion is an assessment of Least Concern for 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

Annual algal communities on Baltic infralittoral rock and mixed substrata (predominantly hard)

Description

Algal dominated rock surfaces (© J.Nyström, FINMARINET).

Habitat description

This is a Baltic Sea benthic habitat in the photic zone where between 10-90% of the substrate is rock, boulders or stones or mixed substrates according to the HELCOM HUB classification. Annual algae cover at least 10% of the seabed, while all other epibenthic biotic structures cover less than 10%. Annual algae can live as epiphytes (e.g. *Pilayella/Ectocarpus* on *Fucus* spp.or *Aglaothamnion* spp. on perennial red algae like *Furcellaria* or on *Mytilus*) where they may be considered quality descriptors, thus this habitat can be recognized only when annual algae grow directly on the hard substrate and not when they grow on perennial biotic structures. This habitat covers the full salinity range of the Baltic Sea and is more common in exposed areas, mainly within the surf zone, in which wave energy prevents the establishment of perennial vegtation. Mapping should take place during the months when the vegetation is fully developed.

Indicators of quality:

The ratio of annual to perennial epibenthic components is used in several countries to describe habitat quality. As such the area of the habitat itself or the biomass of the corresponding species is used as an indicator for quality.In this particular case the lowest area or biomass is a sign of high quality as only in very high exposure levels should annual algae dominate. In all other circumstances perennials (*Fucus*) should dominate except where there is a low salinity (below 3 psu) as perennial algae growth does not generally occur under such conditions.

Characteristic species:

C*ladophora glomerata, Ceramium tenuicorne, , Chorda filum, Halosiphon tomentosus, Pilayella littoralis, Ulva* spp*. Dictypsiphon* spp.

Classification

EUNIS:

The closest correspondence in EUNIS (2004) level 3 for rocks is A3.4 Baltic exposed infralittoral rock, A3.5 Baltic moderately exposed infralittoral rock and A3.6 Baltic sheltered infralittoral rock and for mixed substrate EUNIS (2004) level 4 A5.52 Kelp and seaweed communities on sublittoral sediment with A5.528 Filamentous green seaweeds on low salinity infralittoral mixed sediment or rock as best corresponding level 5 biotope.

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:

1130 Estuaries

1160 Large shallow inlets and bays

1170 Reefs

1650 Boreal Baltic narrow inlets

MAES:

Marine - Marine inlets and transitional waters

Marine - Coastal

MSFD:

Shallow sublittoral rock and biogenic reef

EUSeaMap:

Shallow photic rock or biogenic reef

IUCN:

9.2 Subtidal rock and rocky reefs

9.3 Subtidal Loose Rock/Pebble/Gravel

9.7 Macroalgal/Kelp

9.10 Estuaries

Other relationships:

Level 5 of the HELCOM HUB classification (2013):

AA.A1S Baltic photic rock characterised by annual algae

AA.M1S Baltic photic mixed substrate characterised by annual algae

This habitat has two associated biotopes on HUB level 6:

AA.M1S1 Baltic photic mixed substrate dominated by filamentous annual algae

AA.M1S2 Baltic photic mixed substrate dominated by Chorda filum and/or Halosiphon tomentosus.

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

No

Justification

Hard substrates dominated by annual algae are found in all regional seas. The characteristic species may vary between regions, and the annual algae of the Baltic Sea represent a more or less only a reduced marine flora.

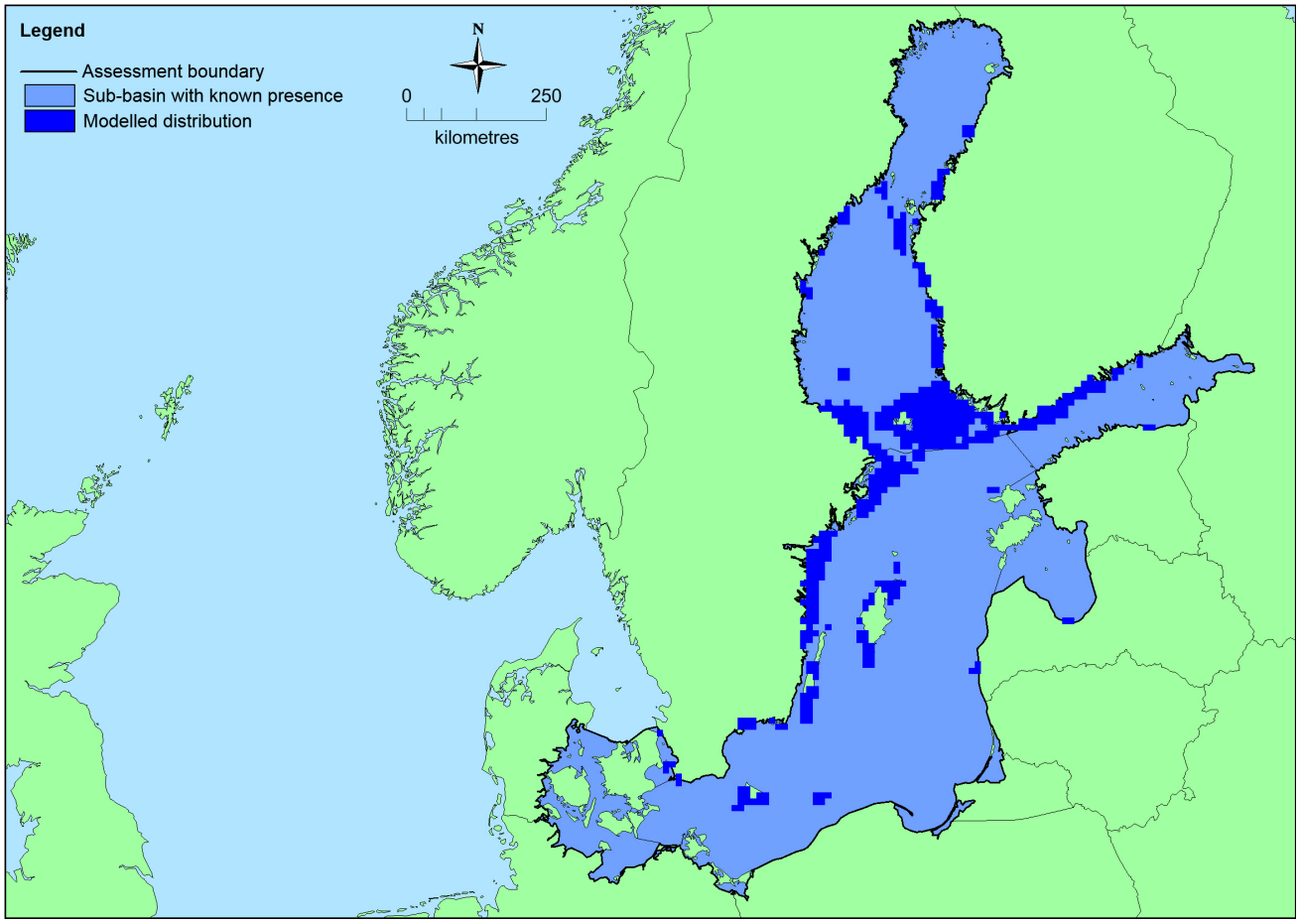
Geographic occurrence and trends

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	624,427 Km^2	499	Unknown Km^2	This habitat is present in all the Baltic sub-basins. occurs nearly everywhere, when light and substrate is adequate.
EU 28+	>50,000 Km^2	>50	Unknown Km^2	This habitat is present in all the Baltic sub-basins. occurs nearly everywhere, when light and substrate is adequate.

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 EU28 is therefore less than 100% but there is insufficient information to establish the proportion.

Trends in quantity

This habitat is very common throughout the Baltic Sea and particularly common in areas with reduced salinity and/or high wave exposure. Recent (past 50 years): The extent has changed less than 10% over the past 50 years at certain locations. The habitat has also gained in area in other locations where perennials like *Fucus* spp. have lost area (e.g. along the German coastline). There are not data available on historical trends and no significant future changes have been predicted.

- 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 is present in all the Baltic Sea sub-basins therefore 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 is present in all the Baltic Sea sub-basins therefore does not have a small natural range.

Trends in quality

Moderate reductions in quality have been documented locally (<10%). No further declines in quality are estimated.

- 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.

List of pressures and threats

-

Conservation and management

No conservation and management measures specific to this habitat have been identified.

List of conservation and management needs

-

Conservation status

Annex 1:

1130: MBAL U2

1160: MBAL U2

1170: MBAL U1

1650: MBAL U2

HELCOM (2013) assessments:

1130 CR, C1

1160: VU C1

1170: VU C1

1650: VU C1

HELCOM (2013) has assessed the three associated biotopes (AA.A1S, AA.M1S1 and AA.M1S2) as LC (A1).

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

As the dominant species of this habitat are annual species, often known as opportunists with short life cycles, recovery can be very fast (1-2 years) even after strong declines.

Effort required

10 years
Naturally

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	<25 %	Unknown %	Unknown %	Unknown %
EU 28+	<25 %	Unknown %	Unknown %	Unknown %

There are no quantitative data on trends in the area covered by this habitat type in the Baltic. Expert opinion is that there has been less than a 25% decline over the last 50 years. This habitat has therefore been assessed as Least Concern under Criteria A.

Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	>50,000 Km^2	No	No	Unknown	>50	No	No	unknown	No
EU 28+	>50,000 Km^2	No	No	Unknown	>50	No	No	unknown	No

This habitat has a large natural range in the Baltic Sea extending from the Danish coast in the west to the Bothnian Bay in the north-east but its the precise extent over the last 50 years is unknown. EOO >50,000 km^2 and AOO >50, and it is not limited to a few locations. As the quality and quanity of the habitat is considered to have been stable over the last 50 years there is no continuing decline. This habitat has therefore been assessed as Least Concern 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 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 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	LC	LC	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	LC	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
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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Contributors
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Reviewers
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References

HELCOM, 2013. *Red List of Baltic Sea underwater biotopes, habitats and biotope complexes.* Avellan, L. (Ed). Helsinki, Finland.