

HELCOM Indicator

State of the soft-bottom macrofauna community

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State of the soft-bottom macrofauna community

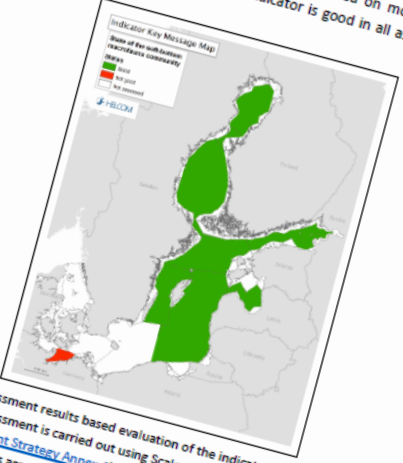
Key Message

The indicator and some of its associated threshold values are still being tested in some countries and may be further developed in HELCOM as a result of the outcome of the testing, or the results may show that the indicator is not suitable for use in a specific sub-basin. The results should thus be considered as intermediate.

The indicator evaluates the status of the soft-bottom macrofauna community above the permanent halocline in the open sea areas of the Baltic Sea. The current assessment result shows good status in most of the evaluated assessment units.

The indicator is not used in coastal areas which are assessed by national methods or in areas below the halocline which are assessed using the Oxygen debt indicator. The indicator takes into account the relative proportion of sensitive and tolerant species, as well as species richness and abundance.

The current evaluation spans the years 2011-2015, and is based on monitoring data reported by the Contracting Parties of HELCOM. The status of the indicator is good in all assessed sub-basins, except the Bay of Mecklenburg.



Key message figure 1: Status assessment results based evaluation of the indicator 'State of the soft-bottom macrofauna community'. The assessment is carried out using Scale 4 HELCOM assessment units (defined in the [HELCOM Monitoring and Assessment Strategy Annex 4](#)) so that the indicator is only applicable in the open sea assessment units. National indicators are used to assess the coastal assessment units.

www.helcom.fi > Baltic Sea trends > Indicators

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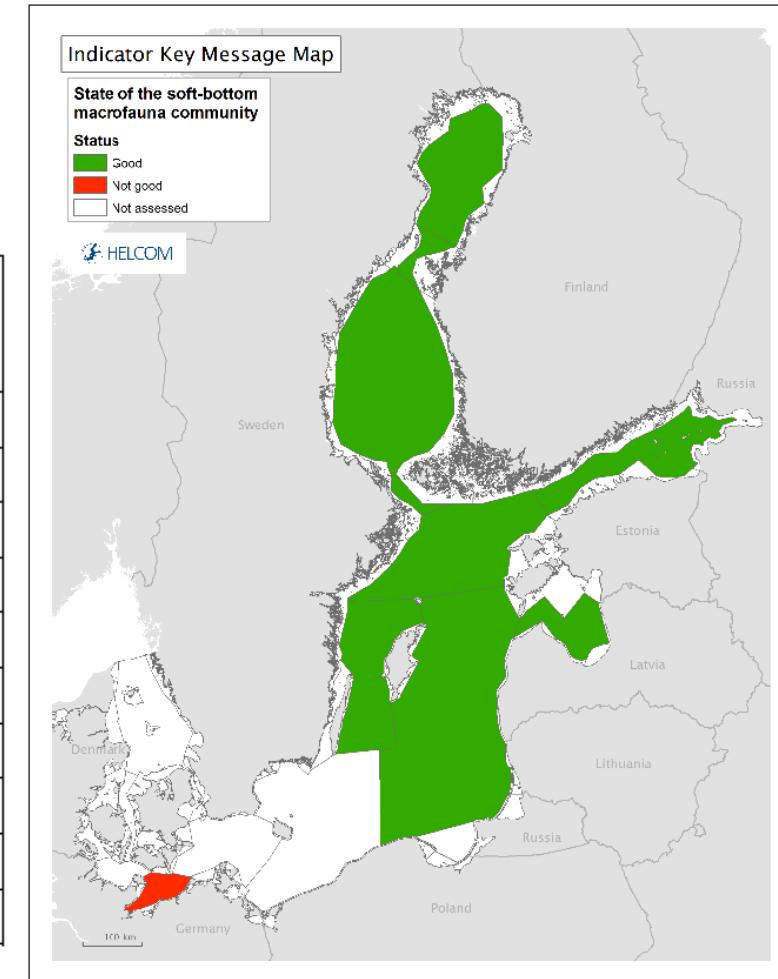
Background

- Used in the open sea areas of HELCOM assessment units, gives the average status of the sub-basin
- Based on BQI, which takes into account abundance weighted proportions of sensitive to tolerant taxa and the diversity of the community.
- A state indicator, responding to several pressures not only eutrophication (e.g. Josefsson et al. 2009).
- Two approaches for species sensitivity values used:
 - Literature information on sensitivity to disturbance and expert judgement (Leonardsson et al. 2009)
 - Values calculated based on species abundances at different diversities (Schiele et al. 2016). Salinity, depth and sampling method taken into account → in total 19 subsets of species sensitivity values.
- In sub-basins with a permanent halocline only areas <60 m depth assessed in HOLAS II. In areas >60 m 'Oxygen debt' indicator used.

Indicator assessment in HOLAS II

Good environmental status table 1. Threshold values used in the assessed open sea assessment units.³ In the northern units one threshold value per unit is given whereas in the southern units one threshold value per subset irrespective of assessment unit is given, thus one assessment unit may have more than one threshold value. Note that threshold values in assessment units where the Schiele *et al.* (2016) sensitivity value method is used will be 0.5 after normalisation to a common scale (see Assessment protocol for details).

Open sea assessment unit	Assessed depths	Threshold value									BQI species sensitivity value method
		Subset according to Schiele <i>et al.</i> 2016									
		2	3	4	8	9	11	12	13		
Bothnian Bay		1.5									Leonardsson <i>et al.</i> 2009
The Quark		1.5									Leonardsson <i>et al.</i> 2009
Bothnian Sea		4.0									Leonardsson <i>et al.</i> 2009
Åland Sea		4.0									Leonardsson <i>et al.</i> 2009
Northern Baltic Proper	<60 m	4.0									Leonardsson <i>et al.</i> 2009
Western Gotland Basin	<60 m	4.0									Leonardsson <i>et al.</i> 2009
Gulf of Finland	<60 m							0.93		1.07	Schiele <i>et al.</i> 2016
Gulf of Riga									1.59	1.07	Schiele <i>et al.</i> 2016
Eastern Gotland Basin	<60 m				1.81	2.11					Schiele <i>et al.</i> 2016
Bay of Mecklenburg		7.22	5.44	4.52							Schiele <i>et al.</i> 2016



- Not applied in Kattegat and The Sound (assessed by OSPAR)
- 3 assessment units without defined threshold values, interim threshold values in 3 assessment units

The indicator and MSFD

- Directly relevant for MSFD D5C8, also relevant for D6C5 and potentially also D4C1 and D6C3
- Current monitoring data can be used in assessment
- The indicator covers soft bottoms, not directly linked to broad habitat types
- The indicator gives the average status for a sub-basin. Percent area adversely affected can not be specified within the sub-basin

Challenges and development needs

- Problems in setting thresholds

- Sub-basins are large and benthic conditions are not homogenous across the sub-basins
- Natural vs anthropogenic pressures

→ Possibly a need to reconsider the assessment scale/assessment protocol

Other issues:

- Communication of results, the unassessed area >60 m depth need to be shown to avoid misunderstandings
- Inconsistency in data reporting (this issue has already been raised in a HELCOM-ICES meeting)