



Document title	State of the soft-bottom macrofauna community
Code	3J-24
Category	DEC
Agenda Item	3J-Progress of relevant HELCOM expert groups and projects
Submission date	13.9.2021
Submitted by	Secretariat

Background

The document below provides a template filled by indicator leads to provide an overview of progress to STATE & CONSERVATION 15-2021. Key aspects such as methodologies, spatial extent changes, assessment scales and threshold values are presented, identifying ongoing work and other relevant issues towards HOLAS III. This process builds on the prior review of indicator development carried out under STATE & CONSERVATION 14-2021 (summarised in [document 4J-16 Rev.1](#), and detailed within numerous documents under agenda item 4J). The focus of these development works is the completion of indicator development and adjustment work for HOLAS III by the end of 2021, as previously agreed under HOD 57-2019 ([document 4-20](#), [Outcomes paragraph 4.51](#)).

The aspect of threshold values in particular is a key issue as threshold value approval will be carried out at HOD 61-2021, with these same templates being submitted to HOD at the same stage as submission to State and Conservation 15-2021 (to allow for the longer national processes required that culminate in approval at HOD).

The document below addresses a single indicator and as well as the generic 'action requests' relating to endorsement of the proposed application in HOLAS III (and the threshold values proposals, where relevant), specific additional requests or statements are also indicated within the separate sections of the document to help guide where further input/discussion/guidance may be needed.

This template aims to report the indicator development for HOLAS III, allowing for technical guidance and endorsement by STATE & CONSERVATION 15-2021 and also simultaneously to facilitate the threshold value approval process by HOD 61-2021.

Action requested

The Meeting is invited to:

- provide further technical guidance to the indicator leads and experts, including specific requests defined within the document;
- consider and endorse the proposed developments of the indicator for use in the HOLAS III assessment.

State of the soft-bottom macrofauna community

Indicator name
State of the soft-bottom macrofauna community
Scale of assessment for HOLAS III and rational
As used in HOLAS II, i.e. SAU level 4 with the indicator applied only in open sea areas. In assessment units with a permanent halocline, the indicator is only applied in areas <60 m depth. This will be made clearer in HOLAS III by overlaying the >60 m area with a grey shade on the result map.
Spatial coverage of the indicator for HOLAS III
The spatial coverage is the same as in HOLAS II. Since HOLAS II work to define threshold values for assessment units not included in HOLAS II has been undertaken, but no new threshold values could be proposed. Short descriptions of the issues encountered are found in Annex 1.
Methodology to be applied for HOLAS III and rational
As used in HOLAS II
Threshold value setting logic and rational
As used in HOLAS II
Threshold value(s)
As used in HOLAS II
Other significant issues that need to be addressed or presented to State and Conservation
<p>The indicator is relevant for soft-bottoms, i.e. substrates that can be quantitatively sampled using grabs, but the indicator do not assess specific MSFD broad habitat types. The indicator report for HOLAS III will include a table with information on how many samples from each broad habitat type the indicator calculations are based on. This can give an indication on how well the result covers the different broad habitat types.</p> <p>For the indicator calculation, sample data is needed. Currently some of the data available in the COMBINE database is reported as averages of several replicate samples, leading to an overestimation of the species richness and thus cannot be used in the indicator calculation. For better coverage and representativity of the indicator, the data currently reported as average values need to be re-reported as sample data, or an additional data call is needed to include all available data in the indicator calculations.</p>
Latest indicator report or (for new indicators) initially completed indicator template
https://helcom.fi/wp-content/uploads/2019/08/State-of-the-soft-bottom-macrofauna-community-HELCOM-core-indicator-2018.pdf

Development work regarding the State of the soft-bottom macrofauna community indicator for use in HOLAS III

For HOLAS III indicator threshold values should be put forward for approval to the State & Conservation 15, with a submission deadline 7.9.2021. At EN-BENTHIC 5 in March 2021 a sub-group was formed (members from FI, SE, DE, DK and PL) to proceed the work on the State of the soft-bottom macrofauna community indicator.

The sub-group met four times to discuss progress on the work developing the indicator. At the first sub-group meeting it was noted that the development work has two phases: 1) short-term development towards HOLAS III and 2) long-term development beyond HOLAS III.

1) Short-term development

Due to time constraints, no major changes to the indicator can be made for HOLAS III and the proposal is to use the same indicator concept as in HOLAS II. Assessment units included in HOLAS II would be assessed using the same threshold values as used in HOLAS II. The assessment can be expanded also to other assessment units if threshold values can be set.

The sub-group have considered the following assessment units, for which no assessment was done in HOLAS II: Gdansk Bay, Bornholm Basin, Arkona Basin, Belt Seas, The Sound and Kattegat.

Gdansk Basin

Most of the open sea assessment unit is deeper than the halocline depth and hypoxic/anoxic, and all open sea monitoring stations are also deeper than the halocline depth. Coastal areas are assessed nationally by Poland, but open sea area will not be assessed using the macrozoobenthos indicator.

The conclusion from the sub-group is that no threshold value can be proposed at this stage and thus the assessment unit will not be assessed with this indicator in HOLAS III. The use of the Oxygen debt indicator as a proxy for assessing condition of benthic habitats is recommended.

Bornholm Basin

In Bornholm Basin a threshold value exist in the northern part (Swedish area). The Swedish threshold value are based on undisturbed/least disturbed areas, but as the environmental conditions are different in the southern part of the assessment unit, the same threshold value cannot directly be applied in the northern and southern parts. To assess Bornholm Basin a solution could be to define a threshold value for the southern Bornholm Basin based on the same approach (undisturbed/least disturbed areas) as used in the northern part, and normalize the indicator value based on the threshold value. The threshold value suggested in HOLAS II was based on a statistical approach without validation against disturbance and thus this threshold value cannot be used for normalization.

Polish National Marine Fisheries Research Institute has calculated station specific threshold values for BQI based on a reference period (1979-1983), however using different species sensitivity values as those used in the indicator. Thus, these threshold values cannot be readily used for testing and as all data is not easily available any recalculations cannot be done within this short timeframe.

In Germany data from the Oderbank are available (12 or 45 samples per year 2009-2019) which could possibly be used as a reference area for undisturbed/least disturbed condition (both for eutrophication and bottom trawling pressures). German data will need to be validated against Polish historical data for least disturbed areas in order to reflect possible spatial differences in the threshold values in the Bornholm Basin. However, this will be not possible within the HOLAS III process since the differences in sensitivity values between HOLAS II and PL datasets have so far not been tested.

The conclusion from the sub-group is that no threshold value can be proposed at this stage and thus the assessment unit will not be assessed with this indicator in HOLAS III.

Arkona Basin

In the Arkona Basin the situation is similar to that in the Bornholm Basin, i.e. a threshold value exist in the northern part, but not for the rest of the Basin.

Attempts to identify pressure-impact responses based on new datasets from the German area of Arkona Basin were done, but no significant relation between fishing pressure or oxygen concentration and BQI were detected. The area has been trawled for a long time and all data is thus likely representing disturbed conditions. This means that the statistical method proposed in HOLAS II do not work and it is challenging to find undisturbed conditions to validate a threshold value.

The conclusion from the sub-group is that no threshold value can be proposed at this stage and thus the assessment unit will not be assessed with this indicator in HOLAS III.

Great Belt

Currently, in the Danish national assessment the open sea area has only been assessed using pressures, i.e. no response variables. In WFD, there are vegetation indicators (eelgrass and macrophytes) in coastal areas. In open sea areas there are few data points. Indicator robustness need to be tested in relation to the main pressures (fishing and eutrophication) before threshold values can be proposed.

The conclusion from the sub-group is that no threshold values can be proposed at this stage and thus the assessment unit will not be assessed with this indicator in HOLAS III.

Kattegat

The sampling approaches are different in Sweden (Smith-MacIntyre grab) and Denmark (HAPS corer). There has been a comparative study on how to combine the Swedish and Danish data based on WFD approaches, (unpublished report by Blomqvist & Hansen, circulated within the sub-group). In practice, the proposal is to use the WFD intercalibrated national threshold values and do an assessment using EQR values. Although a method for how threshold values could be set was identified, no threshold values are proposed as it is unlikely they would be accepted by all countries anyway.

The conclusion from the sub-group is that no threshold values can be proposed at this stage and thus the assessment unit will not be assessed with this indicator in HOLAS III.

The Sound/Öresund

Currently the open sea assessment unit is only covering Danish waters. Sweden has recently changed the coastal baseline and now also has an open sea area in their territorial waters. The process to change the HELCOM assessment units to also include the Swedish part has been initiated.

Sweden has 12 monitoring stations in Öresund of which 7 represent the open sea area. Denmark has 1 monitoring station in Öresund. The Swedish and Danish stations are sampled with different methods (Sweden Smith-McIntyre grab, Denmark Haps-corer). Threshold values could be defined based on the same method as identified in Kattegat, i.e. to use the national WFD threshold values, which are intercalibrated, and use EQR values for the assessment. Similar to Kattegat, no threshold values are, however, proposed.

The conclusion from the sub-group is that no threshold values can be proposed at this stage and thus the assessment unit will not be assessed with this indicator in HOLAS III.

2) Long-term development

Long-term development of the indicator beyond HOLAS III was not prioritized at this point, although some ideas were already presented.