Baltic Marine Environment Protection Commission

Working Group on the State of the Environment and Nature Conservation

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STATE & CONSERVATION 15-2021

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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 as indicated in the corresponding document, including list of species to be included in evaluation as submitted to this Meeting.

Abundance of coastal fish key functional groups

Indicator name
Abundance of coastal fish key functional groups
Scale of assessment for HOLAS III and rational
Scale 3 (same as in HOLAS II)
Spatial coverage of the indicator for HOLAS III
The spatial coverage of the assessment is expected to increase to some extent, through addition of coastal areas in Poland, and of some additional coastal areas in Lithuania, Finland and Sweden. It is possible that the spatial coverage will also be increased in Latvia (however, to be confirmed). The indicator lead has requested confirmation from experts from all Contracting Parties on the foreseen spatial extent of the assessment (i.e. which coastal areas will be included in HOLAS III). Responses are so far still missing from Latvia. The indicator is not applicable to the current monitoring program in Denmark. Further, the last HELCOM FISH PRO III meeting (FISH PRO III-3, 23-25th March 2021) agreed that the indicator will only include cyprinids and/or mesopredators (depending on the coastal area). In HOLAS II, piscivores were also included in the indicator. However, when reviewing the assessment results, it became apparent that including piscivores does not bring any added value to the assessment, as in those areas where perch is the key species it is also the key piscivore, hence the assessment of piscivores becomes redundant to that of key species. Further, in areas where perch is not the key species, the current monitoring program does not allow for a robust assessment of piscivores. Also based on FISH PRO III-3, data on cyprinids from the Finnish commercial catch data will not be included in HOLAS III as the data source does not provide reliable and robust information on the abundance of the species group. As such, the spatial coverage of the indicator along the Finnish coasts will be lower and only include those new monitoring areas based on fisheries independent coastal fish monitoring programs. Due to lack of applicable monitoring, there will be no assessment of the indicator in Germany, Russia, nor Denmark. Further, due to the extensive stretches of coastline in many assessment areas, and as a result of locally appearing coastal fish communities, there will also be certain spatial gaps and/or low representation of monitoring in some of the assessment units (Scale 3). Details on the foreseen gaps will be outlined in the indicator report after confirmation has been received from coastal fish experts from all Contracting Parties, as outlined above.
Methodology to be applied for HOLAS III and rational
The overall methodology to be applied for this indicator will follow that of HOLAS II, see the CORE indicator report from 2018 for further details. One exception is that for the “baseline-approach” used for time-series, the assessment will now make use of the recently developed ASCETS-methodology (Östman et al. 2020). The ASCETS-methodology has been discussed and reviewed in FISH PRO during recent years. It builds on the logic applied in the 2018 indicator assessment but enables a more reproducible and robust assessment. In brief, the ASCETS-methodology offers a more refined approach to infer threshold values through analysing structural changes in time-series, and it also gives estimates on the confidence of an apparent change in the indicator state. Thus, by applying ASCETS, it will be possible to derive more robust threshold values for addressing a change in status and a more developed assessment of the confidence of the derived status. The ASCETS-methodology also allows a more advanced, structured and transparent way to aggregate assessment results from the monitoring area level to the assessment unit level, as is needed for coastal fish. See the CORE indicator report from 2018 for further details on this.
Threshold value setting logic and rational
The methodology to be applied for this indicator will to large extent follow the same approach as used in HOLAS II, see the CORE indicator report from 2018 for further details.

As coastal fish communities are local in their appearance and respond to local environmental conditions, the threshold values will be locally derived (one threshold value for each monitoring area and indicator/species) using time-series data from a specific monitoring area. However, for the "baseline-approach" used for time-series, analyses will be carried out using the recently developed ASCETS-methodology, as developed by Östman et al. (2020) and described above.
To establish local threshold values the ASCETS-methodology uses a bootstrapped distribution (from observed monitoring data) of potential indicator values during a reference period. Based on the indicator values during the reference period, the specific threshold value is set based on the 5th and 95th percentile values of the bootstrapped distribution. Hence, the specific threshold values will be based on the data that is entered to a given assessment, as these define the percentiles. Thus, no table of threshold values can be generated until the assessment itself is carried out. In the following section, the structure for defining the threshold values and the status assessment is described.
For shorter time-series, a trend-based approach as described in the CORE indicator report from 2018 will be applied.
As in HOLAS II, the reference period used to evaluate the current status of the indicator in a monitoring area will be defined (using additional data and/or expert judgement) as representing either a good or poor environmental state, see the CORE indicator report from 2018 for further details.

Threshold value(s)

Baseline approach (time-series with data covering > 15 years):

- **If the status during the reference period is perceived as GOOD**, then the **median indicator value during the assessment period** (2016-2020) **MUST NOT BE BELOW THE 5TH PERCENTILE** OR **ABOVE THE 95TH PERCENTILE** of the median distribution of the indicator values during the reference period to reflect **good status (GS)**. If the **median indicator value during the assessment period** (2016-2020) **are either below the 5th percentile** or **above the 95th percentile** of the median distribution of the indicator values during the reference period, **the status is perceived as not good (nGS).**
- **If the status during the reference period is perceived as NOT GOOD DUE TO TOO HIGH ABUNDANCES of cyprinids/mesopredators**, then the **median indicator value during the assessment period** (2016-2020) **MUST BE BELOW THE 5TH PERCENTILE** of the median distribution of the indicator values during the reference period to reflect **good status (GS)**. If the **median indicator value during the assessment period** (2016-2020) **are equal to or above the 5th percentile** of the median distribution of the indicator values during the reference period, **the status is perceived as not good (nGS).**
- **If the status during the reference period is perceived as NOT GOOD DUE TO TOO LOW ABUNDANCES of cyprinids/mesopredators**, then the **median indicator value during the assessment period** (2016-2020) **MUST BE ABOVE THE 95TH PERCENTILE** of the median distribution of the indicator values during the reference period to reflect **good status (GS)**. If the **median indicator value during the assessment period** (2016-2020) **are equal to or below the 95th percentile** of the median distribution of the indicator values during the reference period, **the status is perceived as not good (nGS).**

Trend-based approach (time-series with data covering < 15 years), as applied in HOLAS II:

- **If the status in the area is perceived as GOOD**, then there **MUST NOT BE ANY DIRECTIONAL TREND OF THE INDICATOR VALUES OVER TIME AT P<0.1** to reflect **good status (GS)**. If the trend of the indicator values over time is **either negative or positive at p<0.1**, **the status is perceived as not good (nGS).**
- **If the status in the area is perceived as NOT GOOD DUE TO TOO HIGH ABUNDANCES of cyprinids/mesopredators**, then the trend of the indicator values over time **MUST BE**

NEGATIVE AT P<0.1 to reflect **good status (GS)**. If there is no trend of the indicator values over time is **at p<0.1**, **the status is perceived as not good (nGS).**

- **If the status in the area is perceived as NOT GOOD DUE TO TOO LOW ABUNDANCES of cyprinids/mesopredators**, then the trend of the indicator values over time **MUST BE POSITIVE AT P<0.1** to reflect **good status (GS)**. If there is no trend of the indicator values over time is **at p<0.1**, **the status is perceived as not good (nGS).**

For more information, see the CORE indicator report from 2018.

Other significant issues that need to be addressed or presented to State and Conservation

As outlined above, confirmation from experts in some of the Contracting Parties on the areas and species to include in the indicator evaluation for HOLAS III is still needed. This will hopefully be done during autumn 2021.

S&C 2021-14 asked indicator-leads to provide detailed information on what the barriers are preventing reporting of 2021 data and what the implications of excluding this data would be for the indicator. The barriers for including 2021 data for coastal fish in HOLAS III are two-fold. First, the timing of the data-submission deadline for HOLAS III in late May 2022 is not possible to meet for all Contracting Parties. In FISH PRO III, the data-reporting deadline has since long been the 30th of June the following year, and very few Contracting Parties are able to meet this deadline as data is usually reported in early fall. Second, the deadline for indicator evaluations is set to 31st of August 2022 and the time-period between the final data submission and this deadline coincides with the field season of the majority of the experts involved in the work. There is hence no possibility for evaluation of the indicator results by the experts during the period of June-August 2022. The implications on the assessment results from not including also 2021 data are difficult to perceive given that coastal fish indicator data exhibit pronounced interannual variation, a feature that has substantial impact on the occurrence of trends in short time-series. For the longer time-series (> 15 years of data), for which the "base-line approach" will be applied, however, excluding 2021 will likely not have any major impact on the assessment results as the indicator assessment value is based on the median indicator value during the assessment period of six (and in this case five) years. The potential inclusion of 2021 data in some areas but not all, is expected to lower the comparability of the assessments in the different areas.

Latest indicator report or (for new indicators) initially completed indicator template

https://helcom.fi/wp-content/uploads/2019/08/Abundance-of-coastal-fish-key-functional-groups-HELCOM-core-indicator-2018.pdf