
Document title	Future work on HELCOM indicators - Marine mammals
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Background

The following document contains a brief topic summary that addresses the overall aim of indicator work and assessments on the given topic. It outlines the current status and gives an indication of the work needed to adjust/develop the identified indicators. Potential avenues of cooperation are also described. Where possible the information has been compiled based on responses received from the HELCOM indicator questionnaire process and revised based on comments received at the 1st HELCOM Indicator Workshop. This is particularly the case for the section on the aims of the work, which was a focus of attention at that 1st indicator workshop.

The information has been updated by the HELCOM Mammal Health Team (a team within the HELCOM Expert Group on Marine Mammals, EG MAMA). Changes in the document are shown as underlined text.

Action requested

The Workshop is invited:

- to take note of the information and use it as needed to support the discussion
- provide comments or corrections as needed

Marine mammals

Future work on HELCOM indicators – towards the 3rd Holistic Assessment of the Baltic Sea 2023.

Indicators under discussion

1. *Population trends and abundance of seals.
2. *Nutritional status of seals.
3. *Reproductive status of seals.
4. *Distribution of Baltic seals
5. *Candidate: Harbour porpoise distribution and abundance (proposed division).
6. *core: Number of drowned mammals and waterbirds in fishing gear (addressed separately)
7. proposal: mammal health indicator (e.g. based on parasite infestations).

*Completed indicator questionnaires received.

Main indicators listed in black text are those discussed below, with other related indicators or proposals listed in grey. These indicators appears in the additional document that considers the HELCOM indicator-policy match and scoring (Document 17 - HELCOM indicator-policy matching and draft scoring, and annex).

Aim

The short-term aims should consider a complete and robust assessment of marine mammal abundance and distribution, as well as health indicators at the population level. The HELCOM assessment should be coordinated as much as possible with assessment carried out in OSPAR, to ensure comparable approaches are used, however this also requires that seal monitoring guidelines are streamlined for OSPAR and HELCOM. These assessments for seals and the harbour porpoise should be fully operational and include the widest spatial coverage possible by the next assessment date.

The long-term aim is an assessment of all Baltic Sea marine mammal species (seal species and the harbour porpoise) at relevant ecological scales which is compatible with assessments under the Baltic Sea Action Plan (BSAP), the EU Marine Strategy Framework Directive (MSFD) and the Habitats directive (HD). Relevant developments that may support crosscutting between relevant policy initiatives (e.g. HD and MSFD) should also be considered. The assessments need to cover aspects such as distribution, abundance and health related status evaluations for all mammal species in the region and should integrate these parameters on the species level (i.e. per seal species and for the harbour porpoise). Suitable monitoring should ensure that sufficient spatial and temporal information is available, including at the periphery of distribution. Robust quantitative thresholds are needed to facilitate appropriate management of marine mammals. Future developments in the longer-term perspective should also consider demographic on the species level, and habitat aspects of all marine mammal species in the region.

General introduction and current status

Four marine mammal indicators are operational and were evaluated in 2018, with indicator reports and incorporation into the State of the Baltic Sea report. Of these, the two health-related indicators (Reproductive status and Nutritional status) require greater development work to incorporate data into their methodologies, in particular to increase their spatial coverage and confidence. An integrated assessment of seals was also carried out in the [2018 State of the Baltic Sea report](#). The indicator

addressing the harbour porpoise requires more extensive development work and proposals by the leads are to divide it into two indicators that independently address abundance and distribution factors.

Relevant species (regional lists of species for the assessment)

In the 2018 indicator assessment the three Baltic seal species were assessed for [distribution](#) and [population trends and abundance](#) parameters. The [nutritional](#) and [reproductive](#) status indicators are partially operational and focus on the grey seal only, due to immediate data availability. The harbour porpoise was only presented descriptively in the [State of the Baltic Sea report](#) as no indicator evaluation was carried out. A recent reference list of MSFD species and habitats compiled by the Joint Research Council (JRC) covers these species for the Baltic Sea region, accompanied by the JRC Technical Report documenting the approach used (Document 13 - Supporting information - JRC's reference lists of MSFD species and habitats, and annexes). These species are also linked to the 2012 HELCOM Check List (Document 14 - Draft HELCOM species list matching, and annex) and matched against (EU) 2016/1251 Table 1D. *Please note that both of these documents can be considered as 'drafts' at this stage, and updates or corrections by experts from the Contracting Parties will be warmly welcomed.*

Development/adjustment work

This group of indicators has high relevance and broad links across other policy areas/objectives, for example pollution or food webs, since marine mammals are top predators in the Baltic Sea. The species also have defined ecological/management distributions/groupings which do not always easily correlate with existing HELCOM assessment units. This is an issue that needs to be considered and better clarified in the indicator work. Furthermore, carrying capacity has implications for all seal indicators (including some threshold values) and needs to be clearly defined and described in the reports. Improved data transparency, clarity and description within the indicator reports (and for reporting) is also important for future assessments.

Seal population trends and abundance: Although this indicator is considered operational and applied throughout the HELCOM area, the availability and frequency of data differs between seal species and regions. Evaluations are derived from the number seals hauling out during the peak moulting period and management and conservation actions would benefit from higher data quality. Variation in the observed fraction of the population from annually collected data takes several years to detect moderate changes in the population trend, thus maintaining/improving data quality is important. A better understanding on demography, timing distribution, duration of moult, individual haulout rhythm and duration, as well as effects of weather and disturbance are needed to improve management actions. These aspects are not covered by monitoring programmes but valuable information could be collated via research projects.

Seal distribution: Although this indicator is considered operational and applied throughout the HELCOM area, the availability and frequency of data differs between seal species and regions. In some areas, there are survey data covering moulting season as well as breeding season along with rich telemetry data providing data on offshore distribution. In other areas, the only available data are those derived from the annual moult surveys (a short period and limited to haul-out-sites – data less suited to distribution). Currently, the indicator is mainly based on information from the haulouts during the moulting time. Such factors mean that the sensitivity of monitoring to detect expansions or contractions of distribution are uncertain. Ideally, all species should be monitored throughout their range during breeding as well as moulting. For the breeding distribution and at-sea components of the indicator, a level of required data in terms of spatial and temporal coverage should be defined and

the resulting data gaps should be addressed. Getting this level of data would be costly, but at least an effort could be done to better define the background data for each assessment unit and let the lacking data be reflected in the confidence of the assessments.

Southern areas of ringed seal distribution are not surveyed annually due to poor ice-conditions, but open-water survey methods are under development. A clear statement of the type and amount of data available for each assessment (including a statement regarding data that are not available) would benefit the text. Data format and reporting needs to be reassessed to meet indicator needs, including data calls, to ensure sufficient data of appropriate type (e.g. spatial, temporal, and other specific requirements) and quality are available.

Nutritional status: The indicator “Nutritional status” is currently based on blubber thickness is measured in 1-3 years-old grey seals from August to December to avoid seasonal variation and variation due to lactation. Threshold values have been developed for hunted and bycaught grey seals from Finland and Sweden, with current assessments based on data from these two countries (dominantly Swedish data). The indicator is currently evaluated. The approach which should be more correctly named “Blubber thickness” is known to cover strong geographical, seasonal, age and sex related variations. This was also documented by data collected in the Southern Baltic area. The next step is to incorporate all available blubber thickness measurements from the different seal species and harbour porpoises (if possible) in combination with location, date, group (by-caught, stranded, hunted) sex, age, health assessment, etc.

In ringed seal, the amount of data is increasing but the confidence of the evaluation is still considered low. In harbour seal, data has not been compiled. Input from Denmark (e.g. data/monitoring availability) will be a major factor in the assessment. Threshold values may need to be reviewed to cover incorporation of new data categories (i.e. stranded animals) and to address other species once included in a full assessment. Many of the above considerations are also relevant for ringed and harbour seals also. Large data sets are also available for harbour porpoises from different HELCOM countries. Gathering all data available from all countries, verifying the quality of data and identifying gaps, as well as calculating this need resources and securing veterinarian and statistical expertise for data collection and analyses.

Reproductive status: Reproductive status is currently measured as pregnancy rate in grey seals only. Work has recently been done to include postpartum changes as a sign of a recent pregnancy so that data from all HELCOM areas can be used. In Sweden, pregnancy rate is estimated mostly from samples from hunted seals and by-caught seals. Finland mainly collects data from hunted seals. Through this work, it is now possible to incorporate more data from Southern Baltic countries (and thus include stranded and by-caught animals). A few methodological/statistical aspects may need further development, such as a harmonized necropsy protocol and form for data delivery, and assessment of threshold values at carrying capacity.

The reproductive status indicator also needs to be developed for all HELCOM marine mammal species. A challenge is the lesser amount of data collected for the other species (other than grey seal) and it will have to be evaluated if the data is sufficient.

Harbour porpoise health, distribution and abundance: The indicator is not operational but proposals for development have been discussed and a sub-group within SEAL EG (EG MAMA) is now preparing for future/ongoing work. Proposals were made at SEAL EG 12-2018 to divide the existing indicator in two, to provide a clearer understanding of the species and facilitate good regional assessments: ‘Harbour porpoise abundance’ and Harbour porpoise density. HELCOM assessment units scale 1 and

2 would likely be utilised, to encompass appropriate populations. As mentioned above health indicators for harbour porpoises also need to be developed.

Data, monitoring and assessment protocols will need to be evaluated and defined (i.e. a guideline). Potential for enhanced regional cooperation for example through the timing of assessment campaigns (e.g. placement of monitoring devices) need to be explored and inclusion of incidental sightings into monitoring protocols should be explored. Regular large-scale surveys are needed for the abundance indicator. Areas with historic populations should be discussed so that appropriate processes are available when populations recover or disperse. To assess shifts in density and distribution, key sites of significant importance need to be identified (based on criteria that are yet to be defined) and incorporated into a new indicator that evaluates local changes in density for the harbour porpoise populations. An agreement on trend estimation needs to be found and the power of detecting these trends needs to be assessed. A set of rules and decision-making tools needs to be developed that help evaluate the importance of locally constraint changes on the population level. Threshold values need to be developed (and approved) based on modelling of life-history data per population.

Note: many of the above issues or potential obstacles also have resource implications.

Potential obstacles

Seal population trends and abundance, and distribution: Decreased spatial and/or temporal monitoring and changes to monitoring programmes (e.g. selective areas per year) risks the assessment quality and confidence. For example, current monitoring aims to cover all possible areas of haulouts in the Baltic for grey seals and harbour seals, and possible new haulouts are also searched for, some areas deemed to be of relatively minor importance for estimating both abundance and distribution of grey seals have not been surveyed every year. Other such examples include the fact that since 2018 Finland is not surveying grey seals annually, which will create an extensive gap in the data. The gap is most visible in the abundance assessments, but also has an impact on assessment of distribution since regionally variable trends and tipping points are less accurately evaluated.

Nutritional, reproductive status and health indicators: Many of the above issues defined in development/adjustment work are also potential obstacles. Gathering all available data, identifying gaps, development of parameter for all HELCOM marine mammal species and analysing will provide a greater understanding on many practical issues..

Harbour porpoise: Threshold values for viable populations need to be modelled based on life-history data, which are sparse for the Belt Sea and extremely sparse for the Baltic Proper population.

Frequency

Seals: Update of assessment every 3-5 years considered suitable and should be synchronised with other indicators, especially other mammal indicators. Long term trend data also important as it is estimated that ten successive years of data are required to reliably assess abundance trends. Update of nutritional and reproductive status may be valid at 2-3 year intervals, in addition to being synchronised with other indicators and policy requirements. Annual data reporting and review should happen irrespective of update frequency.

Harbour porpoise: Every 6 years for population abundance, to align with reporting deadlines and other indicators. However a shift in the interval of large scale surveys such as SAMBAH and SCANS would be required to apply this (currently planned approximately once every ten years). Survey frequencies for smaller areas as are required for the proposed trends in density indicator due to higher resolution data needs (e.g. from continuous monitoring to every 3 years, depending e.g. on local density).

Potential for cooperation

Potential cooperation with OSPAR was identified as a possibility for seal indicators. OSPAR is currently also evaluating options for seal health indicator work. Cooperation on aspects such as pup production of PCBs (contaminants) in seals may be possible cooperation avenues. ASCOBANS / Jastarnia Group and the OSPAR expert group on marine mammals were considered appropriate links for work on the harbour porpoise, in addition to potential synergies with ICES WGMME and WBYC.

Other issues

The workshop is invited to document other aspects they consider to be relevant to the development of this specific indicator category.

A number of issues raised previously (though not an exclusive list) that may be relevant for discussion include: integration rules, linkages between biodiversity and eutrophication (e.g. status and threshold values), appropriate coordination with MSFD CIS processes, and appropriate coordination with OSPAR.