Baltic Marine Environment Protection Commission

14th Meeting of HELCOM Expert Group on Marine Mammals   EG MAMA 14-2020

Online, 22-24 September 2020

Document title	Work plan for future work on HELCOM indicators on marine mammals and bycatch
Code	3-1
Category	CMNT
Agenda Item	3 – Seals in the Baltic Sea
Submission date	17.8.2020
Submitted by	Secretariat
Reference	HELCOM indicator workshops 1 and 2 (2019)

Background

The work plans for future work on HELCOM indicators have been prepared based on the two HELCOM indicator workshops held in 2019. The work plan on marine mammals is included in Annex 1 and for bycatch in Annex 2 of this document.

Action requested

The Meeting is invited to take note of the work plans for future work on HELCOM indicators on marine mammals (Annex 1) and bycatch (Annex 2) and plan current work on indicators accordingly.

Annex 1. Marine mammals – a Work Plan for future work on HELCOM indicators

What is the optimal assessment?

An optimal assessment fulfils primary Marine Strategy Framework Directive (MSFD) criteria on bycatch, distribution, abundance, and habitat for marine mammals. These separate components also contribute to a broader understanding and assessment of the Baltic Sea Action Plan (BSAP) gaols of a **favourable status of Baltic Sea biodiversity.** An overview of these aspects is considered in the Topic Summary.

A focus on not fully operational indicators is taken in the document below, for example: Nutritional status of seals, Reproductive status of seals and Porpoise distribution and abundance.

What will be achieved by HOLAS III (e.g. operational indicators by autumn 2021), and how?

In HOLAS III the distribution and abundance indicators for seals will be very similar to those applied in HOLAS II (largely suitable as they are). For distribution of seals, the scope is limited by only addressing haulout occupancy during the moult and not taking into account data on at-sea-distribution or breeding distribution.

Nutritional status of seals (a secondary MSFD criteria): the geographical range of grey seal data should be possible to expanded, and where possible the indicator may be expanded to other species (at least as supporting information). This indicator only covers one aspect of condition (e.g. MSFD D1C3), but may reflect numerous pressures.

Reproductive status of seals (a secondary MSFD criteria): as for nutritional status indicator.

Harbour porpoise abundance assessment will be based on key site as well as management unit level surveys. Data from the latter should be available for HOLAS III. Threshold values may be developed for HOLAS III, depending on funding being made available, though supporting information and an initial assessment should be possible. This indicator should be fully suitable for addressing the relevant primary MSFD criteria.

Porpoise distribution: as for harbour porpoise abundance indicator.

Porpoise condition indicators (a secondary MSFD criteria) may be available for reproductive rate (one aspect of condition (e.g. MSFD D1C3)), as a minimum as supporting information and an initial assessment. Indicators for other aspects of condition for porpoises are not likely to be operational for HOLAS III, but would be work with a longer-term perspective.

Operational indicators on marine mammal habitat will not be available for HOLAS III (as reflected in Workshop document and HELCOM Science and Research needs compilation). Initial information available from published works could be available to support the overall understanding in the thematic assessment.

Limiting the scope to pressure/risk-based assessments would exclude information on viability of management units, and for most pressures data would be limited/inadequate. Such information may support the overall thematic overview or where gaps exist but is not a suitable alternative to existing or proposed indicators for marine mammals.

What aspects of the identified work represent the highest priority?

Complementing the existing operational indicators where clear gaps occur is a major priority. This will contribute to an improved BSAP and MSFD assessment in the short- and longer-term.

A fully operational indicator to address harbour porpoise abundance is a high priority (e.g. relevant to MSFD D1C2).

Improvement (distribution of seals aspect) and development (other aspects) for distributional range and patterns (e.g. relevant to MSFD D1C4) and habitat quality (e.g. relevant to MSFD D1C5) for seals and harbour porpoise.

Is the proposed assessment policy relevant and ecologically relevant?

Distribution and abundance indicators are highly ecologically relevant and also provide information relevant to gaining an overview of foodweb and ecosystem health. These parameters are also crucial for management such as marine spatial planning. Life history data, such as reproductive data, though only addressing secondary criteria, are necessary for setting threshold values and favourable reference values for viable population abundance. Abundance data are also necessary for setting thresholds for bycatch.

Other proposed priority areas are also significant from both a policy and ecological perspective.

What are the resource needs (and period) to 1) carry out the work by HOLAS III (autumn 2021), and 2) for longer-term development issues (post-HOLAS III)?

For harbour porpoise abundance and distribution to be included in HOLAS III, 30,000 euros covering 3 months of total worktime has been proposed for Favourable Reference Values (FRV) and Good Environmental Status (GES) threshold value modelling. Resources at national institutions to provide the data and the accessibility of the data are not directly considered here.

Resources for the compilation of harbour porpoise data are also needed. 80,000 euros covering 4 months of total worktime is necessary for trend analyses and optimal design of monitoring programmes for abundance and distribution (see 'research needs' proposed by EG MAMA 13). This aspect would further advance the work on the harbour porpoise indicators.

For nutritional status data for grey seals from the entire Baltic to be included in HOLAS III, a proposal of 50,000 euros has been prepared.

Cost for expanding nutritional status and reproductive status to harbour and ringed seals for HOLAS III need to be assessed by compiling current data and estimating costs for filling identified gaps.

Beyond HOLAS III, the 'research needs' proposed by EG MAMA 13, those not related to the abovementioned tasks, directly address the outstanding issues for the (further) develop the indicators. In all cases, several years of work are needed to develop new indicators or develop current indicators to enhance their suitability. Data gaps and needs must be further investigated before more exact financial and workload magnitudes can be estimated.

An approach and plan to develop an assessment of marine mammal habitat needs to be considered as a priority in the short-term (i.e. planning and preparation) as this is an important topic (and a primary MSFD criteria) that will require significant development before it can be operationalised in the future.

What integration of the indicators (i.e. those defined in question 2) is foreseen in HOLAS III?

This aspect would benefit from further discussion during the HOLAS III process. The experts present have previously not been heavily involved in the integrated assessment process.

What across-theme issues exist (e.g. links between biodiversity and eutrophication) and how will these be considered in future assessments?

This aspect is covered in a separate document related to across-theme linkages.

Annex 2. By-catch – a Work Plan for future work on HELCOM indicators

Red text reflects additions made based on comments from the relevant Expert Groups after the Second HELCOM Indicator Workshop. These are mainly technical calrifications or reflect areas where further discussion is needed on details within the workplan.

This workplan refelcts aspects of by-catch related to fish, mammals and birds to be comparable with the Topic Summary and to refeflect the overall longer-term aims related to by-catch. The existing indicator 'Number of drownned mammals and waterbirds in fishing gear' is however the main focus of the work, at least in the shorter-term perspective.

What limits the assessment of by catch so far:

- So far no monitoring is in place in the Baltic Sea area.
  - o pilot projects are ongoing, e.g. CCTV in Denmark; on board observation in Sweden
  - o representative, gear specific, on-board sampling is needed, either CCTV or on-board observers.
- By catch of unwanted species in coastal fisheries is not monitored or reported.
- Landing obligation (fish) is restricted to quota species, species outside the landing obligation should be monitored by on board observers, or via remote electronic monitoring (REM).
- Report systems based on voluntary action might not be the solution: Problem might occur that fisher(wo)men reporting by-catch risks to be banned from their fishing grounds (or restricted regarding the use of certain fishing gears (e.g. EC regulation 812/2004). If self-reporting is considered in the small vessel sector, this must be accompanied by a method to verify such data (e.g., REM).
- Robust estimates on fishing effort is missing as well, thus not possible to calculate/model total by-catch numbers from by-catch rates (CG FISHDATA might be able to provide possible solutions as addressed in the DRAFT Roadmap on fisheries data in order to assess incidental bycatches and fisheries impact on benthic biotopes in the Baltic Sea).
- Definition of species which might be negatively impacted by by-catch (sensitive species in the sense the EU commission decision is defining it) is difficult before robust monitoring is in place, since species getting by-caught are likely at risk of not achieving Good Environmental Status.
- To assess possible impact on the species/populations, other sources of anthropogenic mortality (such as oiling and hunting in birds, and underwater explosions and collisions in mammals) must also be taken into account.
- Definition of threshold is dependent on overall population state and models based on life history (i.e. growth rate, age distribution).

What is the optimal assessment?

An initial overview is provided in the Topic Summary and other relevant information is also available in the draft HELCOM roadmap on fisheries data. Further information will also come available when the outcomes of the joint OSPAR-HELCOM by-catch workshop are complete. The optimal assessment would be based on robust on-board monitoring and data, provided by following up the landing obligation (for fish). The assessment would be calculated based on population models that include mortality of different age classes, for which by-catch is a part of, and robust fishing effort data.

Sensitive species might be chosen based on appropriate monitoring. For example, species which are by-caught in high numbers are in the risk zone, or species that are endangered (e.g. HELCOM red list).

Thresholds should be based on the overall status of the population and need to be defined during the process, e.g. zero if species is assessed as endangered.

What will be achieved by HOLAS III (e.g. operational indicators by autumn 2021), and how?

Underlying data to make a fully operational assessment, and the related monitoring, are not likely to be available in time for HOALS III. Suggestions for thresholds are available, e.g. the joint OSPAR-HELCOM by-catch workshop suggested to use 1% of annual natural adult mortality for seabird species and ASCOBANS has set a precautionary level of 1% of the best available population estimate in harbour porpoise to define an unacceptable level of fisheries interaction. However, every threshold value might be seen as controversial both from a conservation and marine users' point of view as the populations' statuses are very different. More threshold values, based on the best available science, may be needed.

- Pilot evaluations for those species for which data is available, based on recommendation from the joint OSPAR-HELCOM bycatch workshop should be viable.
- Complementing these pilot assessments or test cases with risk maps would also offer an improved assessment at HOLAS III.
  - These risk maps, combination of data layers: fishing per gear type/ hot spots of respective population, as done in WP1 HELCOM ACTION project for harbour porpoises or by Sonntag et al. 2012 for birds) would help identify where measures could be most effective.
  - If by-catch data (by catch rates for certain species in certain gear types) are missing, information based on expert knowledge and taking the precautionary principle into account, or by-catch rates from regions with similar densities and fishing effort, might be used to calculate the possible effect of by-catch.
- Further development, both in the short- and longer-term perspective should be carried out in close cooperation with EG MAMA, JWG BIRD OSPAR, and ICES WGBYC, as appropriate.

Species specific solutions based on the outcome of the joint OSPAR-HELCOM by-catch workshop:

Cetaceans:

For cetaceans in the Baltic Sea, estimated bycatch numbers can be evaluated using a deterministic density dependent population dynamic production model. This has been done for the Belt Sea population, but is not yet possible to do for the Baltic Proper population due to limited data. The Belt Sea model must be updated with abundance data from the upcoming Mini SCANS survey and more recent bycatch estimates.

PBR (Potential Biological Removal) is one possible way for threshold value setting. Analyses can also be done for the Belt Sea harbour porpoise population to estimate maximum number of anthropogenic removal which the population could sustain. This in turn can be compared to the estimated number of total bycatches. The Baltic Proper population is depleted and thus no by-catch can be tolerated. PBR calculation has been done (e.g. Hammond et al., 2008; final report of SCANS II) using various assumptions for management procedures, but also these analyses need to be updated with more recent data.

Depending on data availability, for data rich cetacean species such as the harbour porpoise PBR is only one of the two options for threshold setting discussed in the joint OSPAR/HELCOM bycatch workshop (Figure 1). Removal Limit Algorithm (RLA) has recently been modeled for the North Sea harbour porpoise population (Hammond et al. 2018: Development of a Removals Limit Algorithm (RLA) to set limits to anthropogenic mortality of small cetaceans to meet specified conservation objectives, with an example implementation for bycatch of harbour porpoise in the North Sea). A similar modelling exercise could also be performed for the population of the Western Baltic, Belt Sea and Kattegat. Both suggested threshold setting methods might be brought forward by conducting a workshop gathering experts on population abundance, fishing effort from all HELCOM Contracting Parties and bycatch rates and an external expert, doing the modelling. This workshop could be organised in co-operation with ICES WGBYC and needs preparation.

Expected outcomes of such modelling exercises are:

- population trends for the years with input data (can also be extrapolated to future years based on assumed future bycatch numbers),

- maximum population growth rates,
- and an evaluation of current bycatch numbers against the maximum number of anthropogenic removal which the population could sustain.

This could also be complemented with data from necropsies on stranded porpoises, but the number of necropsied animals are currently sparse in many countries. Increased national efforts could change this. The diagnosed post mortem bycatch percentage could be valuable for comparing this minimum number with the percentage modelled from observed/camera and effort data. The most valuable contribution of necropsy data is probably the input of life history parameters needed for population modelling. This may also call for increased efforts in performing necropsies.

Alternatives for validating the models should also be discusses further within the EG MAMA.
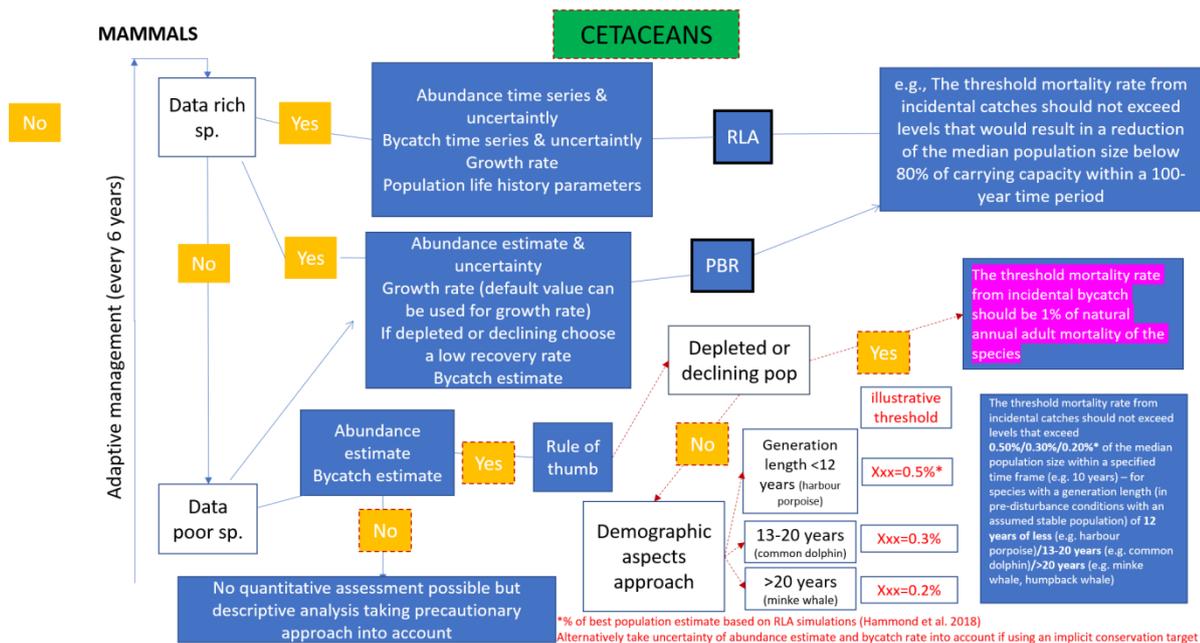

Figure 1 A proposed common approach for incidental by-catch assessment and associated data needs, including proposals on threshold-setting methods - cetaceans (joint OSPAR-HELCOM bycatch workshop 2019)

Seals:

PBR and RLA for grey seals might be possible (see Figure 2, based on the outcome of the joint OSPAR-HELCOM bycatch workshop), depending on personal resources available. The resource requirements to apply the proposed approach (where data is available in the short-term) should be clarified by EG MAMA. For the Baltic Sea, observer/REM coverage must be directed into set nets (as is the case in cetaceans) but also include fyke nets (gear code: FYK), pound nets with codends and various kinds of fish traps (FPO) including the push-up trap commonly used in the northern Baltic Sea.
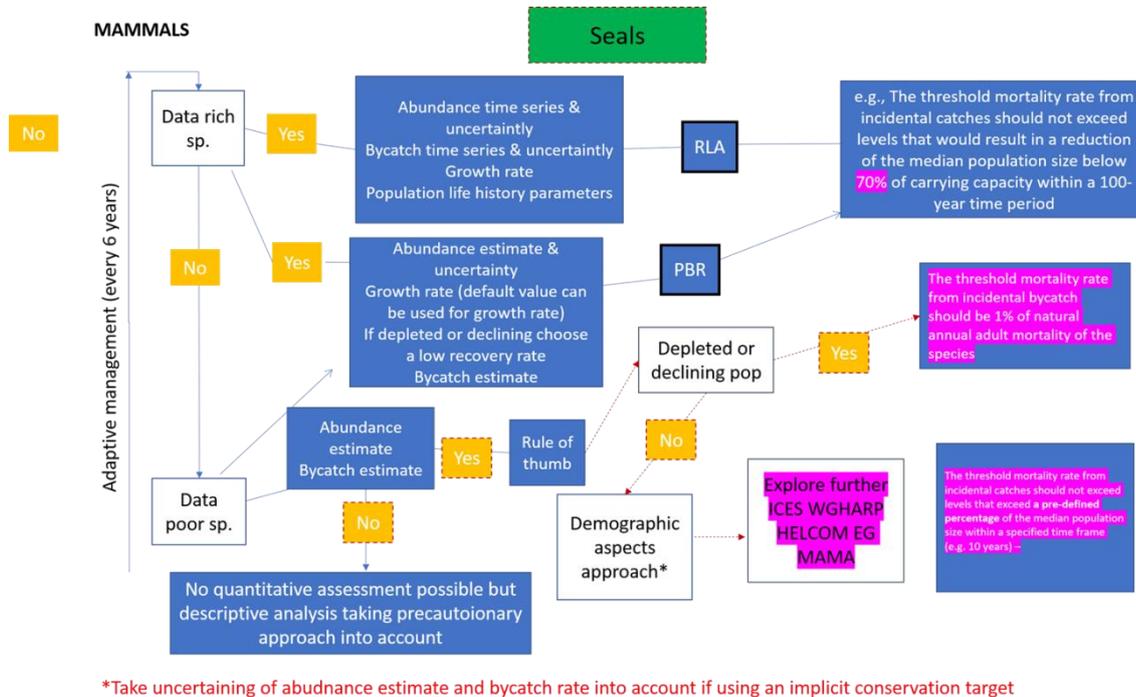
Figure 2 A proposed common approach for incidental by-catch assessment and associated data needs, including proposals on threshold-setting methods - seals (joint OSPAR-HELCOM bycatch workshop 2019)

Birds:

Pilot assessments using the 1% of natural annual adult mortality which has been suggested as a threshold by the joint OSPAR-HELCOM by-catch workshop are possible for a number of bird species for which mortality data is available.

PBR is not suggested as a threshold setting method by the workshop. But in addition to the 1% rule, PVA and RLA might be tested (see Figure 3, based on the outcome of the joint OSPAR-HELCOM bycatch workshop) of which RLA has never been tested for birds before. PVA has been performed in the frame of the offshore windfarm development and thus a method is available. It requires a large amount of data and thus can only be done for a few species or which such data (e. g. mortality-at-age data) is available. This could not be done for all species, some pilot species should be chosen from the threatened species on the HELCOM red list, because most species with anticipated bycatch problems are not covered by the present HELCOM assessment of waterbird abundance. However, the joint OSPAR-HELCOM bycatch workshop recommends to assume for data-poor species that the threshold (1% of annual adult mortality) is exceeded, if there is anecdotal information of bycatch and the species is endangered.

The species should be chosen based on published information or on the availability of by-catch data from other regions, and based on association with specific gear type.

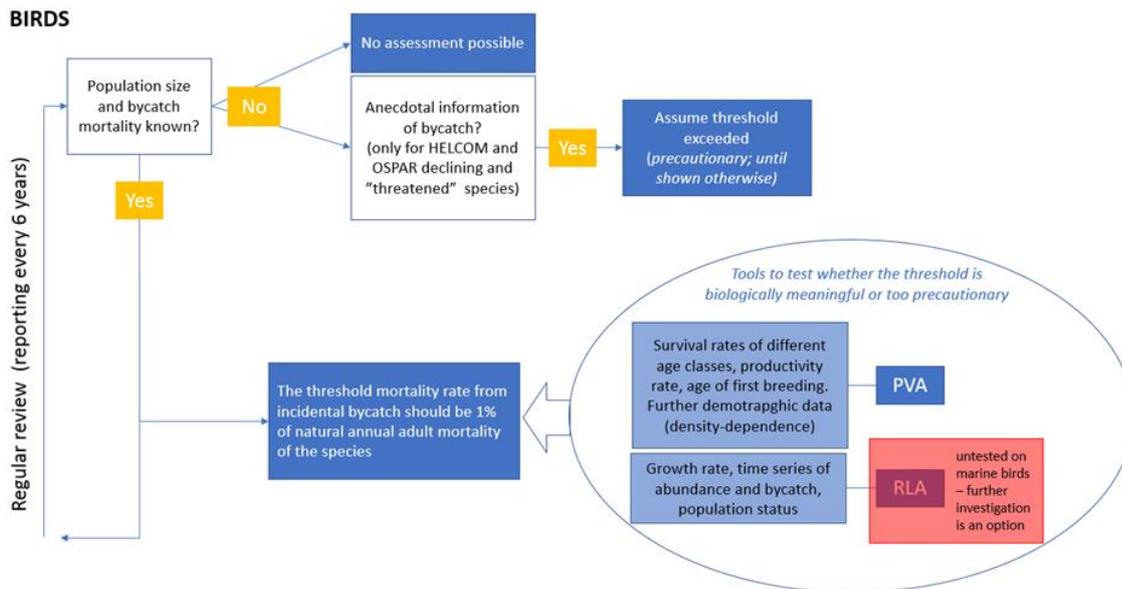Competence for this work is available in the JWGBIRD.

Figure 3 A proposed common approach for incidental by-catch assessment and associated data needs, including proposals on threshold-setting methods - birds (joint OSPAR-HELCOM bycatch workshop hop 2019)

Fish:

This aspect is considered in a the workplan but is not currently considered directly in indicator development at this stage.

It is impossible to estimate model-based by-catch rates for fish species at the moment. But by-catch could be assessed by expert judgement for salmon, trout and grayling. These assessment would be qualitative. By catch of cod should be assessed by reported by catch within the Data Collection Framework (DCF) for fisheries. Also, landing obligation may provide some information on bycatch of fish, as well as monitoring of catches for control purposes, such as last haul control.

Other species have not been discussed so far and this topic could be raised with additional fish experts in the build up to HOLAS III to see what information can support the overall assessment. Information on Natura 2000 species such as lampreys, twaite shad, as well as sturgeon (due to re-introduction program) may also be relevant to consider.

A number of relevant components are covered in the DRAFT Roadmap on fisheries data in order to assess incidental bycatches and fisheries impact on benthic biotopes in the Baltic Sea (note this version may not be the latest, September 2019).

Overall:

All these models are dependent on fishing effort data. Some of this data might be harvested from ICES WG BYC, but a specific request to the group should be issued from HELCOM as soon as possible to clarify what is available.

Alternatively, a group could be identified to take on and initiate the task in early 2020 to gather all available fishing effort data for the HELCOM area, based on the road map. It could be explored as to if this could be an incorporated into the work and tasks of CG FISHDATA.

Furthermore, every assessment of by catch would benefit from input via a review, per population (species) or species group, that would take place via experts within the relevant Expert Groups (EG MAMA and JWG Bird).

What aspects of the identified work represent the highest priority?

- Maintaining momentum in the development work, in particular approaches to solve data deficiency issues is of highest importance (by-catch rates and fishing effort). Commitment and resources to close the data gaps are likely. Future availability of effort data will also depend on the current revision of the EU Control Regulation. These aspects will be critical in attaining a good quality assessment in the future.
- Gathering all available data, and reviewing this, to define what test cases and what level of assessment can be achieved by HOLAS III.
- Application of test cases based on data and proposed threshold value setting approaches.
- Collection and review of all supporting information on all possible species.
- Discussion with fish/fisheries experts to ascertain what is relevant and what can be achieved in providing an overview of fish by-catch.

Is the proposed assessment policy relevant and ecologically relevant?

Yes, both ecologically relevant and from policy point of view. The assessment of by-catch addresses direct impact of human activities on species and their populations, thereby directly addressing objectives and goals of the BSAP. Furthermore, MSFD Criterion D1C1 (By catch of sensitive species) is a primary criterion.

What are the resource needs (and period) to 1) carry out the work by HOLAS III (autumn 2021), and 2) for longer-term development issues (post-HOLAS III)?

Resource needs for the long-term development could be discussed when robust monitoring is in place, though maintaining the current momentum also appears to be valuable, especially in the frame of the current revision of the EU Control Regulation (with respect to effort monitoring) and in the preparation of national DC-MAP workplans for the period 2020-2021 (with respect to by-catch monitoring). The implementation of monitoring and relevant approaches to address data needs may also be a resource factor. These aspects need to be considered to make a fully operational indicator in the longer-term.

- Updating the indicator based on selected test cases and risk maps appears viable for HOLAS III. The work of the indicator leads is a resource factor, and support/input from relevant Expert Groups will be needed.
- Workshop for development of an assessment overview for cetaceans by-catch. Estimated time would be 75-100 working days (5 experts 15-20 days each) per population.
- Test assessments and application of proposed methodology for assessing seals (specific resource requirements not clear at this stage).
- Testing and applying the proposed approaches for the assessment of birds, on selected species. Resource needs are difficult to estimate, because it should be based on availability of data for by catch rate, demographic data needs for a PVA, and number of species assessed. But any by-catch modelling is expected to demand intense work for at least 3-6 months.
- Collation of supporting information to provide a suitable and scientifically sound thematic assessment in HOLAS III.

What integration of the indicators (i.e. those defined in question 2) is foreseen in HOLAS III?

This is an aspect that should be discussed further in the relevant Expert groups, inclusive of indicator leads, and will in part be dependent on what type of assessment can be achieved by HOLAS III. The argumentation as to what integration approach is feasible and for which ecosystem components must be based on the robustness of the assessment. If estimated bycatch numbers are based on stable assessment (based on solid fishing effort and bycatch rates, population growth rates etc.) and D1C1 is not at GES then the overall assessment of a species should also be red (i.e. not achieved). It must be agreed how the bycatch assessment contributes to the species abundance assessment as suggested in the Draft guidance for assessments under Article 8 of the MSFD prepared for WG GES (Document GES_17-2017-02 of 10 March 2017).

The overall need for integration specifically related to by-catch (e.g. MSFD D1C1) needs further discussion, including if specifically it is needed with regard to by-catch.

What across-theme issues exist (e.g. links between biodiversity and eutrophication) and how will these be considered in future assessments?

Not discussed in detail, see other documents related to interlinkages.