**NAMMCO SCIENTIFIC COMMITTEE**

**25th MEETING**

**Polarlys Bergen-Tromsø, Norway**

**13-16 November 2018**

**DRAFT Agenda – Annotated (version 061118)**

Paper numbers in[ ].

Grey shading = text from previous reports. Green shading indicates work/notes for this meeting.

Purple shading indicate report on relevant non-NAMMCO initiatives

1. **CHAIRMAN’S WELCOME AND OPENING REMARKS** [SC/25/02]
   1. **Presentation of the new Scientific Secretary**
   2. **NAMMCO new staffing**
2. **ADOPTION OF AGENDA** [SC/25/01ab]
3. **APPOINTMENT OF RAPPORTEURS**
4. **REVIEW OF AVAILABLE DOCUMENTS AND REPORTS** [SC/25/03]
   1. **National Progress Reports** [SC/25/NPR-F, -G, -I, -N, -C, -J, -R]

The NPR from NAMMCO Parties have been received to the new deadline of March 1 (this year before the Council meeting). Observer countries NPR were received from Canada and Makivik.

|  |
| --- |
| Observer countries will be given the possibility of presenting the main points of their NPR. |

* + 1. **Update from observer country – Canada**

Update from Canada on the results of the multi-disciplinary research camp effort (Tremblay Sound), with satellite transmitters deployed on 20 narwhal and 2 ringed seals?

* + 1. **Update from Makivik (GD)**
    2. **Update from Nunavut (GD)**
    3. **Update from observer country – Japan**
    4. **Update from observer country – Russia**
  1. **Working Group Reports**

**By-catch WGs** [SC/25/13, SC/25/xx] // Convenor, Desportes

**Abundance Estimate WG** [SC/25/12] // Convenor, Hansen - Víkingsson

**Walrus WG** [SC/25/14] // Heide-Jørgensen - Whiting

* 1. **Other reports and documents**

**List of active Council requests [SC/25/04]**

FYI items

**North Atlantic killer whales: a status review** [SC/25/18]

SC24, 9.8.2 - The last review of killer whales in the North Atlantic was in 1987. The SC recommends that NAMMCO contract a scientist to prepare a working document for the next SC meeting which reviews all available information and current research activities on abundance, stock structure, and movements of killer whales in the North Atlantic. Vikingsson and Ugarte should coordinate with the contracted scientist, and the SC encouraged the participation of Canadian scientists to contribute information.

Eve Jourdain was contracted to do this review, presented as SC/25/18. She will present her review on Thursday afternoon.

**Review of Abundance and Trends tables** [SC/25/05ab]

These tables, available on the NAMMCO website, are the responsibility of the SC, which should review them at each meeting to be sure that they agree with the content.

See point 5.3

**NAMMCO guidelines for authors** [SC/25/19]

These are the latest ones with a different reference system, and including an Animal Welfare Protocols.

**Global Review of Monodontids – final version** [SC/25/FI/12]

For information. The result of the WS were presented last year, but the report was then in a draft form. This is the final report, including the corrections/erratum made in May 2018.

**Cetacean abundance and distribution in the NA workshop – final version [**SC/25/FI/18**]**

For information. The result of the WS was discussed last year, but the report was not finalised. This is the final report.

**Others**

1. **WORK PROCEDURES IN THE SC**
   1. **Presentation SC 25: Paul Wassmann “Whales are ecosystem engineers: fact or fake?”**
   2. **Swot analysis** [SC/25/15]

SC 24, 5.6 - As input to the current strategy and capacity building discussion evolving in NAMMCO, SC members were asked to provide a SWOT analysis of the SC (Strengths, Weaknesses, Opportunities and Threats). Members were asked to fill in the distributed template, which will then be collated by the Secretariat.

The Swot analysis presented in the document is a compilation of the input of scientists and Secretariat. It is thought as a tool for self-evaluation. The different terms do not need to be agreed by everyone, their sum represent the overall view.

* 1. **Updates from Council: NAMMCO/26** [SC/25/FI/04, SC/25/04]
     1. **General comments**

**CN 26, 8.1 – Comments ref. the report of the Joint Management Committees (MCJ):**

Council took note of the report from the MCJ. It particularly noted that SC had agreed to provide advice on

the prioritisation of the collection of S&L data and the best way of collecting them.

Council noted also the recommendations forwarded by the MCJ to member countries and was looking forward

to reliable estimate of by-catch and by-catch risk in the different member countries.

There were no new requests by Council for advice from the SC on joint issues.

**CN 26, 9.1 - Comment ref. the report of the Management Committee for Cetaceans (MCC):**

NASS - Council supported the Russian participation as well as a western extension, so a new trans-Atlantic NASS could be achieved. Collaboration with other European and American surveys, if possible, should also be

attempted. Council charged the SC to starting the planning of the next survey and prepare a tentative budget

to be submitted to the FAC and next Council meeting.

**CN 26, 9.2 - Comment ref. The quality of the SC advice**

With regards of the quality of the advice provided by the SC regarding future catch levels of humpback whales

in west Greenland (R-3.2.4-amended 2014), Norway reiterated that it was essential to all NAMMCO Parties

that the SC adhere to what NAMMCO had decided to base its management advice on, i.e., science and

sustainability. This should be the base for all management advices. Clearly, the advice provided by the SC for

humpback whale, encompassing the use of a “Needs Statements” did not.

Iceland strongly supported Norway on this issue and proposed the adoption of a new request to the SC,

requiring the SC to conduct a review of the management procedures used by the Committee for generating

management advice. Iceland would propose the Request for adoption under Point 12, after consultation with

the parties on the text.

CN 26, **8.1.2. Procedures for decision making on conservation and management measures**

8.1.2.1. Struck and Lost

The SC agreed to ask the WGs to indicate when more reliable struck and lost (S&L) were a priority for improving the assessment and would make the most significant difference in terms of quota allocation, so the collection of S&L data could be prioritised for these hunts. The WG should then give recommendations on how to better obtain S&L data for the targeted hunts.

CN 26, 8.1 – comments for 8.1

Council took note of the report from the MCJ. It particularly noted that SC had agreed to provide advice on the prioritisation of the collection of S&L data and the best way of collecting them.

* + 1. **New requests**

***R-1.6.6 (NEW, 2018):***  *The Council of NAMMCO request the Scientific Committee to conduct a review of the management procedures used by the Committee for generating management advice (RMP, AWMP, Bayesian assessment, Hitter Fitter, etc). The Committee should advise on which procedure is the most suitable for each species (or category of species) with the data that is currently available, while also meeting the management principles of NAMMCO. The Committee should further advise where additional data could allow for more suitable management procedure(s) to be implemented.*

* + 1. **Endorsed SC work plan** [SC/25/24]

CN 26, 4.2 - Council agreed to the following schedule for WG’s in 2018, 2019 and 2020:

|  |  |  |
| --- | --- | --- |
| **2018** | **2019** | **2020** |
| - Abundance Estimates WG  - By-Catch WG  - Walrus WG  - Joint IMR/NAMMCO harbour  porpoise symposium  Contracted work:  - Review of North Atlantic  killer whales  - Analysis of all remaining  TNASS and NASS data, for  species for which an  abundance estimate is  possible. | - Harbour porpoise WG  - NAMMCO/JCNB joint WG on  narwhal and beluga  - Workshop on impact of climate  change on management advice  - Joint ICES/NAFO/NAMMCO  WG on harp and hooded seals  - Satellite tagging workshop  (postponed from 2018) | ***Postponed from 2019***  - Coastal seal WG  - Pilot whale WG  ***Likely postponed to 2021***  - Bearded seal WG  - Ringed seal WG |

SC may wish to revise this plan according to progress achieved and to help answering Council new request, R-1.6.6 (See 5.3 above).

* + 1. **Super-tag project**

Haug presented the SC project proposal on the development of a tag for satellite tracking of cetacean

in the North Atlantic, with common minke whale as target species. The response of CN 26 was positive and SC 25 should considere how to go forward with this.

CN 26, 4.3 - All member countries expressed their support to the project. They saw it as an important technical development which will generate better information on minke whale movements but possibly also other species, therefore engendering better science and by the same token a better management of whale stocks. Therefore, and because it is a joint project involving all NAMMCO countries, it constitutes a good opportunity and flagship for

NAMMCO.

Council tasked FAC to consider the projects financial implications and propose avenues for funding. Desportes

indicated that the 2018 budget allowed the chair of the project to meet tag developers at the next meeting of

the European Cetacean Society.

* 1. **Population Estimates**
     1. **Review of NAMMCO abundance tables** [SC/25/05a,b]

The tables are the responsibility of the SC, who should check their accuracy and appropriatness.

* + - 1. Abundance Estimates
      2. Trends and status of stocks

SC shall decide on/agreed upon the definition of trends to use in these tables: from one survey to the next or on a longer time period, and if yes which one.

SC 24, 5.2 - The table should continue specifying when and which organisation/institution had endorsed the abundance estimates. Also, the SC should discuss which trends of abundance should be indicated in the table, the trend between two surveys or a trend on a longer period.

* + 1. **Guidelines for reporting abundance estimates and other results in WG and SC reports**

The question is how to report abundance estimates but also any numbers and in fact conclusions/results from documents submitted to the WG and SC. What if they are not endorsed by the WG/SC? The IWC does not mention in its reports numbers which have not been endorsed by the SC, to avoid them being used/quoted. Reports then only refer to the document submitted. NAMMCO has so far reported everything. Should this be changed?

* 1. **Catches**

***R-1.6.4 (Ongoing):*** *The SC has recommended that catch statistics include correction for struck and lost animals for different seasons, areas, and catch operations. Council requested the SC and the Committee on Hunting*

*Methods to provide advice on the best methods for collecting the desired struck and loss data. Council noted*

*that this request, although brought up regarding walruses, pertains to all species.*

* + 1. **Struck and Lost**

SC 24, 5.3.1 – However given the importance of identifying S&L rates for some hunts more than others, it was agreed that one way forward was to direct WGs to indicate when more reliable S&L were a priority for improving the assessment and would make the most significant difference in terms of quota allocation, so the collection of S&L data could be prioritised for these hunts. The WG could then give recommendations on how to better obtain S&L data for the targeted hunts.

CN 26, 8.1.2.1. The SC agreed to ask the WGs to indicate when more reliable struck and lost (S&L) were a priority for improving the assessment and would make the most significant difference in terms of quota allocation, so the collection of S&L data could be prioritised for these hunts. The WG should then give recommendations on how to better obtain S&L data for the targeted hunts.

The WWG 2018 was forwarded such request, AND other WGs are coming up, and SC is expected to provide such an advice.

* + 1. **Catch database**

SC 24, 5.3.1 – Presently the catch statistics received by the Secretariat are available on the website under the different species. The SC noted that it might be beneficial to compile these data sets under one easily accessible heading. The Secretariat agreed to undertake this.

Update from Secretariat expected.

* 1. **Furthering cooperation in SC**
     1. **Presentation by SC members**
     2. **Super tag project**

SC 24, 5.4.2 - The SC agreed that a small group of SC members (led by Heide-Jørgensen) should either meet in person or via correspondence to discuss the steps to move forward with the proposal. The SC discussed that it might be useful to engage other interested parties in the development of a new “*common minke satellite-tag*”, so the cost of the development could be shared. The SC also discussed preparation of a possible review paper on tagging systems presently in use.

Expecting update from the project Chair here, MPHJ, who had a meeting with US designers.

At the time of the SC 25 meeting, FAC had hold a new meeting and therefore not considered a way forward yet. FAC will meet again at the end of the month. Suggestions and update from SC would be welcome for supporting FAC progress on the funding issue.

Japan is expected in cooperating to the project, also financially. This interest was also mentioned at SC24.

SC24/4.1 - Finally, Yasunaga emphasised that Japanese scientists are interested in cooperating with NAMMCO scientists regarding different aspects of this program, in particular satellite tagging.

Japan will give a presentation on their own tagging experiment.

* + 1. **Genetics collaboration on harbour porpoise**

SC 24, 9.11.2 - As stock structure is an important question in the North Atlantic [for harbour porpoises], the SC encouraged a combined analysis genetics, and encouraged NAMMCO countries to provide samples.

Any update/news on this project?

* + 1. **AOB**

Comparative paper on the life history of harbour porpoise

* 1. **Development of Management Advice**
     1. **Review of development of management advice in NAMMCO** [SC/25/20, SC/25/21]

SC 24, 5.5 - The SC agreed that for the purpose of transparency such an overview [document “Summary of assessment and working procedure in the SC” (SC/24/16)] is important. The aim is not to standardise the rules for how decisions are made, but to have a systematic overview giving the rationale behind specific decisions, and as a result also an historic recording of how decisions are taken for the future.

The SC noted that this was a working document and agreed to give their input to the Secretariat.

So far, the Secretariat has not received any input from the SC. This issue needs to be worked upon, maybe in combination with response to R-1.6.6 (see below).

* + 1. **Review and status of active requests**

***R-1.6.4 (Ongoing):*** *Council requested the SC and the Committee on Hunting Methods to provide advice on the best methods for collection of the desired statistics on losses, as the SC has recommended that catch statistics include correction for struck but lost animals for different seasons, areas, and catch operations.*

***R-1.6.5 (Standing):*** *Struck and loss rates should be subtracted from future advice on sustainable removals in Greenland, with the advice being given as total allowable landings.*

***R-1.6.6 (NEW, 2018):***  *The Council of NAMMCO request the Scientific Committee to conduct a review of the management procedures used by the Committee for generating management advice (RMP, AWMP, Bayesian assessment, Hitter Fitter, etc). The Committee should advise on which procedure is the most suitable for each species (or category of species) with the data that is currently available, while also meeting the management principles of NAMMCO. The Committee should further advise where additional data could allow for more suitable management procedure(s) to be implemented.*

* 1. **NAMMCO Scientific Publications**
     1. **Guidelines for authors** [SC/25/19]

These are the latest ones with a different reference system, supported by reference softwares. From now on authors are expected to prepare the reference list using one of these softwares, as the formatting is then systematic and checking the cohesion of references between the text and the reference list becomes automatic.

The guidelines also now include a request for a statement in regard to Animal Welfare Protocols, as required by the SC at SC24.

**SC 24, 11**

The SC agreed to discuss opening the journal for individual papers accepted outside of themed volumes at its next meeting (SC/25).

**SC 24, 11.3**

Many journals have requirements that authors have followed any institutional and/or national animal welfare protocols. The Scientific Committee agreed that the *NAMMCO Scientific Publications* should also ask the authors to state that the national animal welfare protocols have been followed.

Comments and endorsement are expected from SC

* + 1. **Publication process**

The Secretariat will update on the publication process, including the tests (e.g. plagiarism test) and information required.

* 1. **Classification and criteria for assessing conservation status in NAMMCO (e.g. website)** [SC/25/17]

Maybe some general discussion here to decide on procedure, then tables taken under each species.

There are definitely issues on the choice of classification. Also how do we deel with very old assessments? We need some guidelines here.

Take examples

* Killer whale: no assessment, data deficient, but we know catches likely problematic
* Substantial catches: how to define that?
* Humpback whale: green but assessment dated from 2003 or 2009. How long is an assessment valid. Same problem with pilot whales before the partial assessment.

Iceland had initially some ideas on this issue.

* 1. **Confidentiality of documents to SC and WGs meeting**

Is expected a discussion on the necessity of having SC and WGs document as confidential, if they can be required by and delivered to outsiders later one (usual practice) and fall under the national public access legislations.

1. **COOPERATION WITH OTHER ORGANISATIONS** 
   1. **IWC** [SC/25/07-08]

Update from Gisli for SC and Charlotte for Commission

* 1. **ASCOBANS** [SC/25/06]

Update from Geneviève

* 1. **ICES** [SC/25/09]
     1. **Update**

Update from Tore

* + 1. **RoPs for the ICES/NAFO/NAMMCO joint WGHarp** [SC/25/26]

Discussion on draft RoP to be circulated to ICES and NAFO, then discussed at WG

* 1. **JCNB** [SC/25/11]

Update from Rikke

* 1. **Arctic Council and subsidiary bodies** [SC/25/10]

Update from GD and Fernando, specifically on cooperation with CAFF and CBMP meeting, latest CBMP meeting and Arctic Biodiversity Congress 2018.

How can the CAFF/CBMP work be used in NAMMCO, how can NAMMCO have an input to this monitoring work?

GD update on other initiatives (AMAP last report).

* 1. **Other**

OSPAR – defining state of present cooperation between Parties and OSPAR, especially regarding assessment. GD update on developing cooperation.

In the framework of its [Joint Assessment and Monitoring Pogramme (JAMP)](https://www.ospar.org/documents?d=32988), OSPAR assesses the environmental impact of a range of human activities as part of its decadal assessment of the state of the marine environment of the North-East Atlantic. Can NAMMCO uses this work to help answering R-1.5.4 (see 7.3.2). Vice-versa can NAMMCO SC have an input to OSPAR work.

1. **ENVIRONMENTAL / ECOSYSTEM ISSUES**
   1. **Marine mammals-fisheries interactions** (R-1.1.5)
      1. **Consumption of resources by marine mammals**

Some more detailed and updated information on Mette Mauritzen led work

* + 1. **By-catch** [SC/25/13, SC/25/xx, SC/25/FI05, SC/25/FI09]
       1. **Update**

Needs update from Faroes, Greenland, Iceland and Norway on the implementation of the recommendations made by BYCWG 2017, with in particular work that needed to be done before by-catch estimates could be endorsed by the WG and used in assessments (particularly HP and Coastal Seals, scheduled to have WG meetings in 2019 and 2020, respectively).

SC 24, 7.1.3

**Faroe Islands:**

The Scientific Committee **endorsed** the concerns and the recommendations put forward by the WG. It

recommended that a data-based assessment of by-catch risk be implemented in a timely manner, starting with

analysing the already existing information and the monitoring of the fisheries of most concerns. The main

issues and recommendations are listed below while the complete list is given in the WG report.

*With regards to by-catch reporting:*

The WG recommended adding the selection of local marine mammal species to e-logbook design, so species

identification can be easily reported.

• Implement a reporting system for vessels below 15 GMT, as also recommended by the previous BYCWG.

*With regards to by-catch observation:*

• Review and present to the WG the data already collected by fishery observers on the monkfish fishery during an experimental monitoring of the fishery prior to 2015.

• Improve reporting of by-catch on pelagic pair trawl fisheries by monitoring vessels in the fleet with an electronic monitoring video system (EM) or onboard observers, careful attention being given to where the observer or cameras are placed and to the stage of the haul because of the volume of catch and the multi-vessel nature of the fishery.

• Implement observer coverage in other fleets with potential for by-catch, such as the high vertical opening trawl fleet.

• Include documentation of marine mammal by-catch in the protocol of fisheries observers, as well as other standard characteristics of the fleet (effort, location, month, etc.) to measure by-catch rates.

**Greenland:**

The SC **endorsed** the recommendations put forward by the WG. The main issues and recommendations are listed below while the complete list, and background reasons are developed in the WG report.

• The marine mammal by-catch reports made in fishery logbooks previous to 2016 have become available and an overview of this information should be analysed and made available for review.

• Summarise and make available the data collected by fisheries inspectors regarding marine mammal bycatch

events, in addition to information on the total fisheries effort, the number of trips observed, and the specific focus of the observation/inspection.

• For marine mammal species without regulatory measures (e.g. non-quota small cetaceans such as harbour porpoise, dolphins, pilot and killer whales) and some seals, a reporting system similar to that mandated by the species-specific executive orders (i.e., for large whales, beluga, narwhal and some seals) would be helpful.

• Include in the online reporting system for the hunters some kind of automatic validation, e.g. a popup window requesting information on the by-catch and the fishery in which it occurs.

• Greenland perform as soon as feasible the validation of by-catch reporting data from the licensed hunters’ online system against those from the buyers to understand levels of by-catch on a routine basis.

**Iceland:**

The SC **endorsed** the concerns of the WG and the **recommendations** put forward. The main issues and recommendations are listed below while the complete list is given in the WG report.

*Lumpfish Fishery*

Iceland explore different stratification schemes for the ratio estimate, and pool data over the 3-year time frame to report an average annual estimate of by-catch.

• The uncertainty around the estimates be re-evaluated, such as with a bootstrap approach. These revisions should be completed and endorsed by the group prior to the Harbour Porpoise WG meeting in 2018, and the Coastal Seals WG meeting in 2019.

• Fishing trips sampled for estimating by-catch rates be selected as randomly as possible, to ensure observer coverage is representative of various fishing behaviours.

• Observers collect jaws or photos of by-caught seals to improve species identification, and collect skin samples to inform genetic research.

*Cod Fishery*

• The uncertainty around the estimates be re-evaluated, such as with a bootstrap approach.

*Other*

• Iceland conduct monitoring of the monkfish and Greenland halibut gillnet fishery, as by-catch has been observed in this type of gear in other areas.

**Norway:**

The SC **endorsed** the concerns of the WG and the recommendations put forward. The main issues and recommendations are listed below while the complete list is given in Appendix 1 of the WG report.

• The ratio-based approach is more robust to different issues identified (such as zero-data, clustered by-catch events, correlated data) and the WG recommended it should be preferred over for the model-based and mark recapture approaches.

• The total landed weight for all species should be used as a measure of effort, and not only the landed weight of the target species, cod and monkfish, as using only a portion of the catch as a measure of fishing effort may lead to an underestimate of by-catch.

• Other measures of fishery efforts than landings should be explored, as landings do not represent the actual fishing net effort.

• If the same vessels are used in the CRF year after year, they will be correlation in the data samples which will lead to errors in the by-catch estimate and the WG recommended to modify the design of the selection process.

• Some other fisheries are not considered, with particularly the gillnet lumpfish fishery which has a high by-catch rate although it is a small seasonal fishery, and the recreational fishery that also uses gillnets.

• In the mark-recapture approach using tagged animals, the assumption between regarding tag loss and annual mortality rate, emigration and immigration being similar between the two sets of animals (harvested and by-caught) are unlikely to be upheld, also consideration should be given to the implications of different age structures between harvested and by-caught samples. Therefore, the WG recommended to disregard using this method for the estimation of by-catch rates.

… The SC noted that the BYCWG discussed the lack of fishing effort data. IMR is currently working with the

Directorate on improving data collection and exploring the additional existing data that may be available.

**General Business:**

The SC noted that the WG recognizes that while it has recommended that marine mammal by-catch reporting is made mandatory in commercial logbook systems for vessels of all sizes, this information is not reliable without validation, which is difficult. While logbook reporting can be useful for qualitative indicators, the most reliable means to obtain information on by-catch is via dedicated monitoring by fisheries observers or electronic monitoring.

The SC also noted that the WG discussed interactions between aquaculture and seals and encouraged the work of the Norwegian Fisheries Directorate to obtain improved data on the numbers of seals shot at fish farms. It further supported the suggestion of the WG that Norway should look at the numbers of fish mortalities at the fish farms that have been attributed to seals.

* + - 1. **NAMMCO By-Catch WGs 2018**

Report form the BYCWGs 2018 April and October by GD, with catch details provided under the relevant species (harbour porpoise, harbour seal, grey seals).

Needs update from Faroes, Greenland, Iceland, Norway on the implementations of recommendations from WG 2018a.

* + - 1. **Others**

Secretariat: report from recent meeting – FAO, 2018. Report of the Expert Workshop on Means and Methods for Reducing Marine Mammal Mortality in Fishing and Aquaculture Operations.

* + 1. **Review and status of active requests**

***R-1.1.5 (standing):*** *The Council encourages scientific work that leads to a better understanding of interactions between marine mammals and commercially exploited marine resources and requested**the Scientific Committee to periodically review and update available knowledge in this field.*

* 1. **Multispecies approaches to management/Ecosystem Modelling** (R-1.1.8, 1.2.1, 1.2.2, 1.4.7)
     1. **MAREFRAME [**SC/25/27**]**

CN 26, 8.1.1.3

The MCJ endorsed the recommendation of the SC that a small group review the results of MareFrame and present a review to the next SC meeting. This review may provide answers to R-1.2.1 and R-1.4.7. It was further discussed that the heading over these requests “Economic aspects of marine mammal-fisheries interactions” may not be within the competence of the SC.

The MCJ suggested that the SC comment on whether considering the “economic aspects” should remain in their purview.

Bjarki and Mette should provide a review here to be commented by SC.

* + 1. **Other updates**
    2. **Review and status of active requests**

***R-1.1.8 (ongoing):*** *In addressing the standing requests on ecosystem modelling and marine mammal fisheries interaction, the SC is requested to extend the focus to include all areas under NAMMCO jurisdiction. In the light of the distributional shifts seen under T-NASS 2007, the SC should investigate dynamic changes in spatial distribution due to ecosystem changes and functional responses.*

Iceland will present the work done by Nadya including Icelandic, Faroese and Norwegian survey data.

More needing to be done, warranting more funding?

***R-1.2.1 (ongoing):*** *consider whether multispecies models for management purposes can be established for the North Atlantic ecosystems and whether such models could include the marine mammal compartment. If such models and the required data are not available, then identify the knowledge lacking for such an enterprise to be beneficial to proper scientific management and suggest scientific projects which would be required for obtaining this knowledge.*

***R-1.2.2 (standing):*** *In relation to the importance of the further development of multispecies approaches to the management of marine resources, the Scientific Committee was requested to monitor stock levels and trends in stocks of all marine mammals in the North Atlantic.*

***R-1.4.7 (ongoing):*** *The Scientific Committee is requested to review the results of the MAREFRAME ecosystem management project when these become available. In particular, the results should be reviewed with respect to the ongoing and standing requests on marine mammal interactions (R-1.1.0) and multispecies approaches to management (R-1.2.0).*

See 7.2.1

* + 1. **Future work**
  1. **Other Environmental issues** (R-1.5.1, 1.5.3, R-1.5.4)
     1. **Updates [**Sc/25/FI10, xx**]**

Secretariat: report on recent paper – Murphy et al, 2018. Organochlorine Contaminants and Reproductive Implication in Cetaceans: A Case Study of the Common Dolphin.

Aqqalu: report on recent paper – Desforges et al, 2018. Predicting global killer whale population collapse from PCB pollution.

* + 1. **Review and status of active requests**

***R-1.5.1 (pending):*** *To describe the possible pathways of radioactive material from blowouts and leakage in existing nuclear power plants, leakage from dumped material and possible accidents in planned recycling plants in the northern part of Scotland into the food web of the North Atlantic and hence into the top predators like marine mammals. This request was sent to ICES by NAC.*

Remember anything about this & should the request be kept open?

***R-1.5.3 (ongoing):*** *The Council* ***requests the SC to monitor the development of the Mary River Project and assess qualitatively or if possible quantitatively the likely impact and consequences on marine mammals in the area.***

SC 24, 7.3.1

The JWG [2017] expressed concern regarding development of mining activities and associated ship traffic on the Eclipse Sound narwhal stock. No similar example of such a high level of shipping and development has occurred in a high density narwhal habitat so there is little precedent to inform an assessment of the impacts.

The SC noted that other species [than narwhal and beluga] (bowhead whales, ringed seals, walrus, etc.) are also potentially impacted by the Mary River project, not only narwhals and belugas. The SC reiterated its previous recommendation that all information on the Mary River project be presented to the JWG. It was suggested that someone from the Fisheries Protection Division in Canada should attend the next NAMMCO-JCNB JWG in 2019.

**An update from Canada is expected here**

***R-1.5.4 (2017, ongoing):*** *Committed to furthering its ecosystem approach to the management of marine mammals, and recognising the range of anthropogenic pressures facing North Atlantic marine mammals associated with the climate and environmental changes taking place, the Council requests the SC to advise on the best process to investigate the effects of non-hunting related anthropogenic stressors on marine mammal populations, including the cumulative impacts of global warming, by-catch, pollution and disturbance.*

JCNB workshop, update from Rikke on preparation.

Update from Tore on IMR/PINRO symposium.

* + 1. **Future work**

1. **SEALS AND WALRUS STOCKS - STATUS AND ADVICE TO THE COUNCIL** 
   1. **Harp Seal** 
      1. **Update [SC/25/13]**

Tore Haug: report on recent survey – Biuw et al, 2018. Report from surveys to assess harp and hooded seal pup production in the Greenland Sea pack-ice in 2018.

* + 1. **ICES/NAFO/NAMMCO WGHARP 2019**

Next meeting 2-6 September 2019, in Tromsø: Chair Mike Hammill

Update from Tore Haug, Mike Hammil (North West Atlantic) and Vladimir Zabavnikov (White Sea), as well as Mike as WGHARP chair on preparation.

Needs to decide on invited participants and convenor

There are some preliminary TORs for the meeting in the WGHARP report from 2016. More precise TORs will be developed when Norway send a request for advice later this month. The meeting will focus on both harps and hoods.

* + 1. **Review and status of active requests** (R-2.1.4, 2.1.10)

***R-2.1.4 (standing):*** *update the stock status of North Atlantic harp and hooded seals as new information becomes available.*

***R-2.1.10 (standing):*** *provide advice on Total Allowable Catches for the management of harp seals and the establishment of a quota system for the common stocks between Norway and the Russian Federation*

* + 1. **Future Work**
  1. **Hooded seal [**SC/25/FI15**]**.
     1. **Update**

Tore Haug: report on recent survey – Biuw et al, 2018. Report from surveys to assess harp and hooded seal pup production in the Greenland Sea pack-ice in 2018.

* + 1. **ICES/NAFO/NAMMCO WGHarp 2019**

As above, next meeting 2-6 September 2019, in Tromsø.

Update by Tore Haug on the 2018 survey [SC/25/FI15] and preparation for WG meeting, incl. invited participants.

* + 1. **Review and status of active requests** (R-2.1.4, 2.1.9)

***R-2.1.4 (standing):*** *update the stock status of North Atlantic harp and hooded seals as new information becomes available.*

***R-2.1.9 (ongoing):*** *investigate possible reasons for the apparent decline of Greenland Sea stock of hooded seals; and assess the status of the stock.*

MCSW 2017, 3.2

WGHARP had met in September 2016. The SC had endorsed the WG estimate of the 2017 abundance of Greenland Sea hooded seals is 80,460 (59,020 – 101,900). All model runs indicate a population currently well below the Limit Reference Level of 30%. Following the precautionary approach framework developed by WGHARP, no catches should be taken from this population, with the exception of catches for scientific purposes.

Norway plans to carry out a survey in the Greenland Sea in 2018, and it was anticipated that most of the information needed to answer R-2.1.4 and R-2.1.9 will come from this survey. By 2018 enough time should have gone for the pups to have reached sexual maturity and possibly show an increase in the population as a result of the protection in 2007.

Greenland noted that the 2007 advice of no catch still allowed for some small subsistence hunt in East Greenland villages and should be reflected in text referring to this advice from the SC.

* + 1. **Future work**
  1. **Ringed seal**
     1. **Update**

**SC 23, 7.3.2 – especially referring to the** Ilulissat Icefjord (Kangia) in Greenland:

The SC noted that it is important that morphs/ecotypes/subspecies that are so different (and probably highly specialized to certain environmental conditions) are protected from overharvest, because a replacement by the more common ringed seals will be a great loss of diversity. A separate management plan should therefore be developed for the ringed seal in the Ilulissat Icefjord, as soon as a survey has been conducted.

The SC **recommends** that genetics sampling work continues and looks forward to seeing these results. The SC also **recommends** that a survey be conducted to obtain an abundance estimate for this population. The SC noted that with the increasing number of hunters, and with little known about this population, the hunt could have a large impact on the population quickly and Greenland should consider protection of this small population until more information is known. SC **recommends** wider research to look at whether these types of seals are more widely geographically spread.

**SC 24, 8.3.2**

At SC/23, the SC had r**ecommended** more satellite telemetry and collection of samples for genetics to inform

on possible stock structure in Greenland, and across the Arctic. The SC therefore welcomes this new tracking

information and looks forward to the genetics results.

Genetics samples have been collected from ringed seals in Svalbard, and it may be possible to combine these with the analysis of samples from Greenland.

**SC 24, 8.3.3**

The previous review of ringed seals occurred in 1996, and although there are still many gaps in knowledge

about this species, there has been quite a bit of research since that meeting. At SC/23, the SC discussed a

possible Ringed Seal WG meeting, and recommended that possible issues to be discussed by such a WG could

be:

1) Stock structure

2) Abundance

3) Effect of polar bears

The SC decided that more results from the ongoing studies are still needed before a Ringed Seal WG meeting

should be convened, and the suggested timing is 2020/2021. It could also be a useful venture to expand the

WG to other researchers outside of the NAMMCO countries, in particular Canada.

It was also suggested that this meeting could occur in combination with a Bearded Seal WG, as many of the same researchers would be involved in both meetings.

Needs update from Greenland/Norway on the Ringed seal ecotypes project, which has made a lot of progress and will be completed/submitted before the end of 2018.

Update from Svalbard on the study of space use in relation to glacier fronts.

Update from Canada on 2026 and 2017 surveys

* + 1. **Ringed Seal WG (2020/2021) [**SC/25/FIxx**]**

Chair (Aqqalu) and preparation: cooperation, invitation.

Peter Boveng (Marine Mammal Laboratory, NOAA Alaska Fisheries Science Center) met by GD at ABC said that they were a priori interested in participating in a pan-arctic review of ringed and bearded seals, as their own review dated from 2010.

* + 1. **Review and status of active requests** (R-2.3.1, 2.3.2)

***R-2.3.1 (standing):*** *To advise on stock identity of ringed seals for management purposes and to assess abundance in each stock area, long-term effects on stocks by present removals in each stock area, effects of recent environmental changes (i.e. disturbance, pollution) and changes in the food supply, and interactions with other marine living resources.*

***R-2.3.2 (standing):*** *To advise on what scientific studies need to be completed to evaluate the effects of changed levels of removals of ringed seals in West and East Greenland.*

* + 1. **Future work**
  1. **Grey seal** 
     1. **Update [SC/25/13]**

Parties should update on the implementation of the recommendation CSWG2016/SC 23, to see whether the preparation for the next CSWG are on track.

Also update on by-catch rates in the different countries.

**Updates on Recommendations from CSWG 2016, endorsed by SC 23 – Norway:**

• Development of the model to see if it can be modified to account for the observed changes in pup production

• More frequent surveys, particularly in the areas of decline

• Tagging of grey seal pups

• Age-structure of the hunt assumed to be the same as for the by-catch, and this assumption needs to be tested

• Complete the genetics study within this year

• Increase the number of vessels in the reference fleet in the areas of high by-catch (especially Nordland)

• Reporting of all removals. Currently there is little to no reporting of removals around fish farms and from both commercial gill net fisheries and recreational fisheries

***Recommendations for the Norwegian Harbour and Grey Seal Management Plans***

• The target population levels for both species should be evaluated as the levels are not based on any biological assessment

• To recommend that the quota is set to 0 when the population is at 70% of the target level instead of 50%

• Management plans should include all sources of mortality, not just the hunt • A mechanism for consulting IMR on for example seal distribution when fish farms are being built should be required when management plans are revised

Update on the analysis/results of the last Norwegian survey cycle which was completed in 2017.

Update on shooting situation around seal farms in No.

SC 24, 8.4.3 - In Norway there are ongoing discussions on whether to forbid the shooting of seals around fish farms, and if they are allowed to be removed, to subtract the numbers shot from the from quotas. The SC noted that the total numbers of removals are crucial to model the population.

**Updates on Recommendations from CSWG 2016, endorsed by SC 23 – Iceland:**

*Primary*

• A Management Plan should be developed including: the frequency of surveys, legislation of seal hunting and re-evaluation of the target population level objective with the new level being based on biological criteria

• A complete survey should be conducted to obtain a full, reliable abundance estimate

• Reporting of all removals (e.g., by-catches, hunted seals, any other removals)

*Next steps*

• Pup production surveys at least 3 times to make sure that the peak pupping period is covered

o Iceland should also consider tagging pups for staging

o Iceland should also investigate whether the peaks in pupping differ in different areas around the country

• Genetics samples should be collected and analysed to explore stock structure

The need for a reporting system for direct catches was underlined to be able to model the status of the population.

From CN 25: Iceland noted that the recent surveys on seal species in Iceland indicate a severe drop in abundance and it welcomes the recommendations put forward by the SC. Iceland further noted that re-evaluation of the seal management is under consideration in Iceland and that harbour seal surveys will be conducted every other year.

Update on the result of the 2017 survey, the advisory management plan (incl. re-evaluation of current target population level objective (based on biological criteria), outlining of the frequency of censuses, development of a reporting system for seal hunting and increased effort in by-catch data collection.

Update of the results on tagging effort during pupping.

**Updates on Recommendations from CSWG 2016, endorsed by SC 23 – Faroe Islands:**

An estimated 150-250 grey seals are shot at fish farms annually, based on reports from 40% of the fish farms. Without information on abundance, it is impossible to determine whether this level of removals is sustainable.

• Develop a monitoring plan that includes regular assessments.

• Based on exiting data analyse population viability (population size necessary to sustain the levels of removals)

• Analyse existing UK telemetry data for possible migration between the UK and the Faroes. • New research to be undertaken

*First Priorities*

• Obtain minimum population estimates via haulout counts.

• Obtain reliable and complete reporting of all removals (e.g., all companies operating fish farms need to report.

*Secondary Priorities*

• Telemetry tagging studies to develop correction factors for the haulout counts and also obtain information on movements and distribution

• Samples should be collected from animals shot at farms (e.g., jaws to obtain information on age, sex, genetics etc.).

• A study using cameras to observe animals going in and out of caves

• Photo-ID study for a mark-recapture based population size

**From CN 25:**

The Faroe Islands informed that the plan is to start in 2017 with obtaining minimum population estimates followed up by reliable reporting of all removals and tagging animals, something that would lead to develop a monitoring plan.

Update on the planned 2018 survey (May and subsequent counts in June and July), planned concurrent satellite tagging and development of the monitoring plan

**SC 24, 8.4.3**

It has been 15 years since the SC first expressed concern regarding grey seals in the Faroe Islands. The SC welcomes these new plans for research and **strongly recommends** that this work be given a high priority.

Update from Greenland and Canada

* + 1. **Coastal Seals WG (2019)**

Next meeting tentatively scheduled for 2019, now postponed to 2020.

Place, invited participants, specific ToRs?

Update on preparation from Chair Kjell Nilssen

* + 1. **Review and status of active requests** (R-2.4.2)

***R-2.4.2 (ongoing):*** *To provide a new assessment of grey seal stocks throughout the North Atlantic. -- It is noted that there has been a decline in the numbers of grey seals around Iceland, possibly due to harvesting at rates that are not sustainable. The SC had previously provided advice in response to a request to review and assess abundance and stock levels of grey seals in the North Atlantic, with an emphasis on their role in the marine ecosystem in general, and their significance as a source of nematodal infestations in fish in particular (NAMMCO 1995). Given the apparent stock decline in Iceland, an apparent increase in Southwest Norway and in the United Kingdom, and the fact that this species interacts with fisheries in three NAMMCO member countries, it is recommended that the SC provide a new assessment of grey seal stocks throughout the North Atlantic.*

* + 1. **Future work**
  1. **Harbour seal**
     1. **Update [**SC/25/13]

Parties should update on the implementation of the recommendation CSWG2016/SC 23, to see whether the preparation for the next CSWG are on track.

Update on by-catch rates in Iceland and Norway.

Update on catches of harbour seals in GL - although the species is protected.

**Updates on Recommendations from CSWG 2016, endorsed by SC 23 – Norway:**

• Increase the number of vessels in the reference fleet in the areas of high by-catch (especially Nordland that has a long coastline).

• Increase survey effort. Important areas could be identified to be surveyed in between other full-coast surveys.

• Management by county should be re-examined, as these management units do not always follow the population structure of harbour seals, especially Nordland county.

• Reporting of all removals. Currently there is little to no reporting of removals around fish farms, or of by-catches in commercial gill net fisheries and recreational fisheries.

• Collect data from by-catches (age, sex, etc.). It would be ideal to collect jaws from bycaught seals which will provide information on age, sex and species. It would be particularly helpful to have samples from the reference fleet.

Update on the level of predation by killer whales and whether it is large enough to warrant inclusion in the population modelling (as natural mortality).

Update on genetic study comparing No, GL and IS.

Update on MUs

Update on tagging at Svalbard outside breeding area

**Updates on Recommendations from CSWG 2016, endorsed by SC 23 – Iceland:**

• An assessment survey of the entire population should be conducted as soon as possible

o Surveys should then be conducted every 2 years while the population is lower than the target level

• All removals should be reported (e.g., hunting, by-catch, etc.)

• A Management Plan should be developed including outlining the frequency of surveys and legislation of seal hunting

• The target population level objective should be re-evaluated and be based on biological criteria.

• Reproductive rates should be collected

• The effects of disturbance from tourism should continue to be investigated

o Develop mitigation measures

• The method of catching pups in nets should be investigated. In NAMMCO, killing methods should be immediate. This issue should be referred to the NAMMCO Hunting Committee.

**SC 23, 7.5.2**

The SC endorsed the recommendations of the WG and stressed the need for obtaining catch statistics [for costal seals in Iceland).

Update on the 2018 survey and the development of the advisory management plan, incl. re-evaluation of current

target population level objective, outlining of the frequency of censuses, development of a reporting system

for seal hunting and increased effort in by-catch data collection.

Update on ministry response to MFRI advice “that direct hunt should be prevented and that actions must be taken to reduce by-catch of seals in commercial fisheries. MFRI also advices that a hunting management system

should be initiated, and that reporting of all seal hunt should be mandatory.” (https://www.hafogvatn.is

/static/extras/images/Landselur277.pdf).

* + 1. **Coastal Seals WG (2019)**

**SC 23, 7.5.3**

The SC recommended that a future CSWG should identify a level of sustainable removals in all areas, particularly in Iceland where the decline has been observed.

Update on preparation from Chair Kjell Nilssen

* + 1. **Review and status of active requests** (R-2.5.2)

***R-2.5.2:*** *To conduct a formal assessment of the status of harbour seals around Iceland and Norway as soon as feasible*

* + 1. **Future work**
  1. **Bearded seal**
     1. **Update [**SC/25/13**]**

Update from Rikke, who is responsible for the GL aerial surveys of cetaceans and walruses, with bearded seals as byproduct.

Update from Christian on the CAFF monitoring programme

* + 1. **Bearded Seal WG (2020/2021) [**SC/25/FIxx**]**

**SC 23, 7.6.2**

The SC **recommended** a future working group on bearded seals with the following information. This WG should involve the CAFF group.

Chair: Christian Lydersen Possible Participants: Aqqalu Rosing-Asvid, Mads Peter Heide-Jørgensen, Kit Kovacs, and participants from Russia, Canada, and possibly Alaska.

The Terms of Reference for the bearded seal WG will be to:

1. assess the global distribution and possible population delineations
2. evaluate available information on biology including reproduction and feeding habits
3. assess the exploitation and other anthropogenic effects incl. climate changes on bearded seals
4. suggest populations and areas in the North Atlantic where sufficient data are available for assessing the effects of exploitation and reductions in habitats.

Peter Boveng (Marine Mammal Laboratory, NOAA Alaska Fisheries Science Center) met by GD at ABC said that they were a priori interested in participating in a pan-arctic review of ringed and bearded seals, as their own review dated from 2010.

* + 1. **Review and status of active requests (**none**)**
    2. **Future work**
  1. **Walrus** 
     1. **Walrus Working Group October 2018 [**SC/25/14**]**

The convenor, Mads Peter Heide-Jørgensen will report on the WG

* + 1. **Updates [**SC/25/FI07**]**

Update on the Russian tag deployed GPS loggers in the Pechora Sea, as well as the Svalbard 2014 and 2015 GPS tagging.

Update on the result of the Canadian 2017 Hudson Bay-Davis Strait

Secretariat: update on recent paper – Higdon and Stewart, 2018. State of circumpolar walrus (*O. r*) populations.

* + 1. **Review and status of active requests** (R-2.6.3, R-2.6.7, R-1.6.4, R-1.6.5)

***R-2.6.3 (ongoing):*** *Provide advice on the effects of human disturbance, including fishing and shipping activities, in particular scallop fishing, on the distribution, behaviour and conservation status of walrus in West Greenland.*

***R-2.6.7 (2017, pending):*** *To provide assessments of, and advice on sustainable removals from, all stocks of walrus in Greenland covering the period from 2019 to 2023, with the advice for Qaanaaq starting in 2021.*

***R-1.6.4******(ongoing):*** *The SC has recommended that catch statistics include correction for struck but lost animals for different seasons, areas, and catch operations. Council requested the SC and the Committee on Hunting Methods to provide advice on the best methods for collection of the desired statistics on losses.*

***R-1.6.5 (2017, standing):*** *Struck and loss rates should be subtracted from future advice on sustainable removals in Greenland, with the advice being given as total allowable landings.*

* + 1. **Future Work**

1. **CETACEANS STOCKS - STATUS AND ADVICE TO THE COUNCIL**

SC 24, 10

Abundance estimates and analyses emanating from the 2015/16 NASS surveys have not all been completed and there are still some remaining from the 2007 TNASS survey. The SC recommend using the funds remaining on the NASS budget for completing all the 2007 and 2015/16 analyses as well as conducting a joint analysis of the abundance of common minke whales in Central North Atlantic (NCA). These should be presented to the next Abundance Estimate WG and generate publications to be included in the next NASS volume.

**9.0. AEWG 2018**

Guldborg-Hansen, convenor will report on the general stuff, specific abundance estimates will be given under each species.

**SC 24, 10.1**

Besides reviewing as planned the Norwegian common minke last cycle estimate and the pilot whale 2015

estimate and trends, the WG would therefore also review the

* Icelandic/Faroes shipboard dolphin estimates 2007 and 2015
* Norwegian last two survey cycles all non-common minke species, including large baleen
* whale, sperm whale, killer whales and dolphins.
* An overall (FR, GL, IS NO) Central North Atlantic common minke whale estimate
* Icelandic/Faroes shipboard sperm whales 2007 and 2015

Status of analysis, AEWG 2018 report, table 1-

* 1. **Fin whale** 
     1. **AEWG 2018 [SC/25/12]**

Update from Víkingsson

Include table with status of AE

* + 1. **Update**

Update from Iceland on 2018 catches and on the age, sex, condition study from 2006-15 & 2018 sampling.

Update on genetic studies from Svalbard and GL

* + 1. **Review and status of active requests** (1.7.12)

***R-1.7.11 (ongoing):*** *Develop estimates of abundance and trends as soon as possible*

***R-1.7.12 (ongoing):*** *Greenland requests the SC to give information on sustainable yield based on new abundance estimates expected from TNASS2015 for all large baleen whales in West Greenland waters*

* + 1. **Future work**
  1. **Humpback whale**
     1. **AEWG 2018**

Update from Víkingsson

Include table with status of AE

* + 1. **Update**

**SC 24, 9.2.3**

The SC discussed issues relating to sharing of photos to the various organisations that house photo-ID

catalogues. Although sharing of photos can be problematic when appropriate acknowledgements are not given

by the organisations, the SC encourages researchers to work on collaborative efforts, especially between the

NAMMCO countries, but also with organisations outside of NAMMCO. The photo-ID databases are more

valuable for looking at broad-scale movements when they cover large areas of the North Atlantic.

Update on input to photo-ID databases

Anything new on the consumption of capelin by humpback and fin whales off Iceland

* + 1. **Review and status of active requests** (R-3.2.4, 1.7.12)

***R-1.7.12 (ongoing):*** *Greenland requests the SC to give information on sustainable yield based on new abundance estimates expected from TNASS2015 for all large baleen whales in West Greenland waters*

***R-3.2.4-amended (ongoing):*** *conduct a formal assessment following the completion of the T-NASS…In addition the Scientific Committee is requested to investigate the relationship between the humpback whales summering in West Greenland and other areas and incorporate this knowledge into their estimate of sustainable yields of West Greenland humpback whales.* ***Amendment (NAMMCO/25):*** *adds the following text: “The SC is further asked to provide advice on future catch levels of humpback whales in West Greenland at different probability levels for a non-declining population evaluated over a 5 year period, similar to the procedure for the advice generated for beluga, narwhal and walrus. The advice should include the latest abundance estimate.”*

**CN 26, 9.2 - Comment ref. The quality of the SC advice**

With regards of the quality of the advice provided by the SC regarding future catch levels of humpback whales

in west Greenland (R-3.2.4-amended 2014), Norway reiterated that it was essential to all NAMMCO Parties

that the SC adhere to what NAMMCO had decided to base its management advice on, i.e., science and

sustainability. This should be the base for all management advices. Clearly, the advice provided by the SC for

humpback whale, encompassing the use of a “Needs Statements” did not.

**SC needs to provide a new advice regarding R-3.2.4 – NOT BASED ON A NEED STATEMENT**

**May be can just be taken from advice from last SC, as there has been a comparison of different modelling exercises.**

**SC 24, 9.2.2**

The SC reiterates its recommendation that the SLAs that are developed in the IWC be used for advice for large whales in Greenland. These SLAs are developed as case specific applications that match the whale stocks and their hunts in Greenland, providing a reasonable balance between exploitation and conservation. The use of these SLAs in NAMMCO will benefit from the work that is carried out in the IWC SC, allowing for an easy application with a minimum of extra work in NAMMCO.

**…**

SLA advice within NAMMCO

The SLA for humpback whales in West Greenland that was developed in the SC of IWC has been simulated tested and found to provide a safe and precautionary advice. The basis for these tests include that the annual strike limits do not exceed 20 whales from 2013 to 2018, 25 whales from 2019 to 2024, and a linear increase from 30 to 50 whales over the remaining 88 years of the 100-year simulation period. There is no guarantee that strike limits that are greater than this are sustainable.

Given the agreed abundance estimates for 2007 and 2015, the SLA calculates that strikes up to 25 whales per year are sustainable during the period from 2019 to 2024 (this advice is independent of the actual strikes in 2017 and 2018, as long as these are no larger than 20).

**Discussion**

The SC advises that annual strikes of no more than 25 humpback whales off West Greenland are sustainable from 2019 to 2024.

Comparison with RMP

These strikes can be compared with the allowable takes that are calculated by the CLA of IWC’s RMP. The CLA has not been tested for West Greenland humpback whales. However, being developed as a general procedure for a closed population, adequate conservation performance is guaranteed if the CLA is applied to West Greenland humpback whales.

Given annual strikes of ten humpback whales for 2017 and 2018, and the 2007 and 2015 abundance estimates, the CLA calculates total allowable annual takes (from 2019 to 2024) of respectively 13, 14 and 20 whales for tuning levels 0.72, 0.66 and 0.60.

These results are not directly comparable with those of the SLA. The humpback SLA assumes some background by-catch, while by-catch is included in the total allowable removals of the CLA. The actual strike limits of the latter should thus be reduced by a few whales (the by-catch/entanglement numbers for humpback whales in West Greenland were one in 2014, nine in 2015 and three in 2016).

Bayesian assessment

The strikes of the SLA may also be compared with a sustainable catch estimate from a Bayesian assessment. The trials used for the SLA for West Greenland humpback whales are based on a model of density regulated growth for a closed population that is assumed to summer in the waters off West Greenland. A density regulated assessment model for a closed population was developed by Witting (2011), and the model was updated in SC/24/AS/03 with the new abundance estimates for 2007 and 2015 included.

This method is similar in structure to the assessment-based advice that is traditionally applied for narwhal, beluga and walrus within NAMMCO, and it estimates that a 70% chance of an increase over the block period from 2019 to 2024 is obtained for a total annual removal of 14 whales. If catches up to 90% of the MSYR are allowed for cases where the population is above the MSYL, the method estimates instead that annual strikes to around 47 whales would ensure a 70% chance of fulfilling the management objective. The latter approach, however, is unable to estimate an upper bound of the carrying capacity, and this implies some uncertainty associated with the last removal estimate.

Future Research

The SC recommends that information be collected on possible movements of individuals between summering areas in the North Atlantic (e.g. satellite tagging, biopsies, photo-ID etc.).

* + 1. **Future work**
  1. **Common minke whale**
     1. **AEWG 2018 [SC/25/12]**
     2. **Update**

Update on Satellite tagging in West Greenland. University of Potsdam genetic analysis on GL and IS samples. Iceland has also sent samples to University of Potdsam for the same analysis.

* + 1. **Review and status of active requests** (R-1.7.11, 1.7.12)

***R-1.7.11 (ongoing):*** *develop estimates of abundance and trends as soon as possible*

***R-1.7.12 (ongoing):*** *Greenland requests the SC to give information on sustainable yield based on new abundance estimates expected from TNASS2015 for all large baleen whales in West Greenland waters*

* + 1. **Future work**

**SC 24, 9.3.2**

For the next LWAWG meeting the SC may want to consider the following:

1. No management variant has been formally simulation tested that includes catches in the CM area. At the 2017 LWAWG meeting it was noted that Norwegian whalers had expressed interest in taking up to 50 common minke whales in the area in the coming years.

2. The CLA with a tuning level of 0.6 should be formally simulation tested. As noted above, this is not expected to produce substantially different results, but could be conducted in tandem with testing a management variant for the CM area.

3. Catch advice for the CIC area on could be based on the best performing management variant from the IWC simulation trials. This would mean that the combined total catch advice for the Central North Atlantic would be taken in the CIC area. This was not possible for the LWAWG meeting in 2017 as abundance estimates from the CM area were not available and there were still some uncertainty on the final result from the IWC simulation trials.

* 1. **Beluga**
     1. **Global Review of Monodontids** **[**SC/25/28**]**

The report of the WS was completed and circulated in February 2018. There was a mistake in the report regarding the ways PBR were calculated. An erratum was inserted in agreement between Rod Hobbs, Randy Reeves and GD. The erratum is explained under the report point 1.5 Sustainability of removals. Otherwise the report is unchanged.

The Peer reviewed publication: submitted to Marine Fisheries Review in July.

The agreement was that the GROM and associated papers would appear together in single issue devoted to this topic.  To date four of the eight papers have been submitted:

* Global Review of the Conservation Status of Monodontid Stocks, by Hobbs et al.  Submitted July 23
* Reconstructing Catch Statistics for Narwhals in Greenland 1862 to 2017. Garde, E., R. G. Hansen and M.P. Heide-Jørgensen. Submitted mid-June
* Structure and Assessment of the Beluga Whale (Delphinapterus leucas) Populations in the Russian Far East. Shpak, O. V., I. G. Mershersky, D. M. Glazov, D. I. Litovka, and D. M. Kuvnetsova. Submitted mid-July.
* A Review of the Current State of Knowledge on the Beluga Whale (Delphinapterus leucas) in the Russian Arctic Seas.  by Glazov DM, Meschersky IG, Kuznetsova DM, Krаsnova VV, Gavrilo MV, Udovik, DA, Solovyev BA and Shpak OV. Submitted August 17.

Four papers remain to be submitted:

* Hunt allocation modelling for migrating marine mammals by Watt, C. et al. To be submitted in a few days.
* Meta-population modelling of narwhals in East Canada and West Greenland by Witting, L. et al.  To be submitted Early September
* Distribution, Abundance, Harvest, and Status of Western Alaska Beluga Whale Stocks.  Lowry et al. To be submitted Early September
* Genetic review paper by  Mikkel Skovrind, Eline Lorenzen. Status unknown

The Hunt allocation paper, Meta-population modeling and Western Alaska papers are being actively circulated.  I have not heard about the Genetic paper since early June.  I imagine that if we can get the remaining papers in during September then the issue will be published in spring 2019.

* + 1. **Update**
    2. **NAMMCO-JCNB JWG & Workshop March 2019**

CN 26, 8.1.1.1

The MCJ endorsed the recommendation of the SC that all information on the Mary River project be presented

to the JWG, and for someone from the Fisheries Protection Division in Canada to attend the next NAMMCO-JCNB JWG in 2019. [Canada informed the MCJ that they will work with the NAMMCO Secretariat to

determine which potential impacts and related indicators are of specific interest for updates concerning the

Mary River project.]

ToRs and invited participants, date and place, both JWG and WS

WS chair and convenors

* + 1. **Review and status of active requests** (R-3.4.9, 3.4.11, R-3.4.14)

***R-3.4.9 (ongoing):*** *To provide advice on the effects of human disturbance, including noise and shipping activities, on the distribution, behaviour and conservation status of belugas, particularly in West Greenland; narwhal added at NAMMCO 23*

***R-3.4.11 (standing):*** *To update the assessment of both narwhal and beluga*

***R-3.4.14 (ongoing):*** *To examine the data existing on beluga in East Greenland (sightings, strandings, by-catch and catch) and examine how this material can be used in an assessment process and advice on how this data can be improved.*

**SC 24, 9.4.2**

**Discussion**

Reiteration of Past Advice

The SC reiterates the previous advice from 2005 and 2012 about seasonal closures. The following seasonal closures are recommended:

• Northern (Uummannaq, Upernavik and Qaanaaq): June through August

• Central (Disko Bay): June through October

• Southern (South of Kangaatsiaq): May through October.

• For the area south of 65°N, it is recommended that no harvesting of beluga be allowed at any time. The function of these closures is to protect the few belugas that may remain from historical summer aggregations in Greenland, and to allow for the possibility of reestablishment of the aggregations. The SC noted that the quotas given by the Government of Greenland included catches in these areas.

These were not endorsed by MCC. Concern of SC?

* + 1. **Future work**
  1. **Narwhal** 
     1. **Global Review of Monodontids [SC/25/28]**
     2. **Update**

**SC 24, 9.5.4**

**Canada**

A meeting is planned for spring 2018 to discuss stock identity issues around the Eclipse Sound and Admiralty Inlet stocks. Satellite tracking has indicated more movement between these areas than was previously believed.

* + 1. **NAMMCO-JCNB JWG & Workshop March 2019**
    2. **Review and status of active requests** (R-3.4.9, 3.4.11)

***R-3.4.9 (ongoing):*** *provide advice on the effects of human disturbance, including noise and shipping activities, on the distribution, behaviour and conservation status of belugas, particularly in West Greenland; narwhal added at NAMMCO 23*

***R-3.4.11 (standing):*** *update the assessment of both narwhal and beluga*

* + 1. **Future work**
  1. **Sei whale**
     1. **AEWG 2018 [SC/25/12]**

???? Any abundance to expect

* + 1. **Update**

Secretariat: report on recent thesis – Prieto da Silva, 2014. Sei whale (B.b.) ecology and management in the North Atlantic.

Pastene/Víkingsson: report on recent paper – Huijser et al. 2018. Population structure of North Atlantic and North Pacific sei whales (Balaenoptera borealis) inferred from mitochondrial control region DNA sequences and microsatellite genotypes.

* + 1. **Review and status of active requests (R-3.5.3 amended, 1.7.12)**

***R-1.7.12 (ongoing):*** *Greenland requests the SC to give information on sustainable yield based on new abundance estimates expected from TNASS2015 for all large baleen whales in West Greenland waters*

***R-3.5.3 amended (ongoing):*** *assess the status of sei whales in West Greenland waters and the Central North Atlantic and provide minimum estimates of sustainable yield*

* + 1. **Future work**
  1. **Bottlenose whale** 
     1. **AEWG 2018 [**SC/25/12**]**
     2. **Update [**SC/25/FI/17**]**

Mikkelsen: report on recent thesis – Rogan et al, 2018. Distribution, abundance and habitat use of deep diving cetaceans in the North-East Atlantic.

**SC 24, 9.7.1**

There was a presentation by Patrick Miller (SMRU) at the recent SMM conference on satellite tagging of bottlenose whales in the Jan Mayen area, and there is also work being conducted by Peter Kvadsheim (Norwegian Defense Research Establishment) and Lise D. Sivle (IMR). These studies will be discussed by the SC when the papers have been published.

* + 1. **Review and status of active requests (none)**
    2. **Future work**

**SC 24, 9.6.3.**

**Future work**

The data from 2007 and 2015 surveys will be explored to assess whether a minimum abundance estimate can be calculated. More information will be discussed at the AEWG meeting in spring 2018.

* 1. **Killer whale**

Eve Jourdain will embark on Thursday afternoon (ca. 15:00) and this point should be kept open until then.

* + 1. **Status Review by Jourdain et al [**SC/25/18**]**

SC24 - The last review of killer whales in the North Atlantic was in 1987. The SC recommends that NAMMCO contract a scientist to prepare a working document for the next SC meeting which reviews all available information and current research activities on abundance, stock structure, and movements of killer whales in the North Atlantic. Víkingsson and Ugarte should coordinate with the contracted scientist, and the SC encouraged the participation of Canadian scientists to contribute information.

* + 1. **AEWG 2018 [**SC/25/12**]**
    2. **Update**

From NAMMCO/25: Greenland updated the MCC that the process of validating the catch data has begun. Greenland noted that killer whales are not a target species and asked for clarification on the recommendations by the SC. The SC stressed the importance in obtaining reliable catch statistics.

**SC 24, 9.8.2**

**Discussion**

The SC reiterated its previous concerns regarding the hunt in east Greenland which is unregulated, and from a species with no abundance estimate from this area and unknown stock identity. There is little information available to be able to provide advice on a sustainable removal level.

…

However, it seems clear that catches of killer whales in east Greenland have increased since 2010. Prior to 2010, there were only sporadic catches. Additionally, it appears that groups are taken together, not just single animals, and a large struck and lost rate is likely. In recent years, there has been a shift in east Greenland from hunting mainly narwhals and common minke whales to hunting more killer whales, pilot whales, and white-beaked dolphins. GINR has applied for funding to conduct an interview study of hunters in Tasiilaq that is primarily focussed on the hunter’s recent experiences with distribution of narwhals, but these results will be relevant to understanding the killer whale hunt as well.

Note: COSEWIC 2008 “threatened” status for Eastern Canada killer whales, with hunting in Greenland being named as a threat to this stock. Also to be discussed threat from pollutants and risk for stock extension.

Aqqalu: report on recent paper – Bourque et al, 2018. Feeding habits of a new Arctic predator: insight from full-depth blubber fatty acid signatures of Greenland, Faroe Islands, Denmark, and managed-care killer whales Orcinus orca.

Aqqalu: report on recent paper – Desforges et al, 2018. Predicting global killer whale population collapse from PCB pollution.

* + 1. **Review and status of active requests (R-3.7.2)**

***R-3.7.2 (ongoing):*** *review the knowledge on the abundance, stock structure, migration and feeding ecology of killer whales in the North Atlantic, and to provide advice on research needs to improve this knowledge. Priority should be given to killer whales in the West Greenland – Eastern Canada area.*

* + 1. **Future work**
  1. **Pilot whale**
     1. **AEWG 2018 [**SC/25/12**]**
     2. **Trends [**SC/25/22**]**
     3. **Update**

GD to update on the IUCN new assessment of pilot whales

* + 1. **Pilot Whale WG (2020)**

**SC 24, 9.9.3.1.**

The SC recommended that a Pilot Whale working group meeting be held in 2019. The TORs for this meeting would be:

• full assessment of pilot whales in the North Atlantic

• provide advice on the sustainability of catches...with particular emphasis on the Faroese area and East and West Greenland.

Are we on track with the preparation? Advice on data needed and preparation should be provided.

* + 1. **Review and status of active requests (R-1.7.11, 3.8.6)**

***R-1.7.11 (ongoing):*** *To develop estimates of abundance and trends as soon as possible*

***R-3.8.6 (ongoing):*** *To complete a full assessment of pilot whales in the North Atlantic and provide advice on the sustainability of catches...with particular emphasis on the Faroese area and East and West Greenland. [Part answered: In the short term...provide a general indication of the level of abundance of pilot whales required to sustain an annual catch equivalent to the annual average of the Faroese catch in the years since 1997]*

* + 1. **Future work**
  1. **Dolphins**
     1. **AEWG 2018 [SC/25/12]**
     2. **Update [SC/25/13]**

**SC 24, 9.10.2**

**FR**: After 2006 only a few catches of white-sided dolphins have been taken, but in 2017 catches have been higher again.

**GL:** Increasing catches of white-beaked dolphins have been reported since 2009 in southeast Greenland, probably due to a reduction of summer sea ice making the animals more accessible to hunters.

* + 1. **Review and status of active requests (R-3.9.6)**

***R-3.9.6 (ongoing):*** *assessments of dolphin species*

* + 1. **Future work**
  1. **Harbour porpoise**
     1. **AEWG 2018 [SC/25/12]**
     2. **Update [SC/25/13]**

Update Norway and Greeenland

* + 1. **HP Workshop December 2018**
    2. **HPWG 2019**

• Status of past recommendations – are we on track for the next meeting? The ones completed are not listed here:

• Norway- update on reference fleet and bycatch estimates o Re-analysis completed – but not accepted by BYCWG – re-re-analysis needs to be done

• Norway- update on survey for HP in 2016 – abundance est. ready for AEWG?

• Norway- update on pinger experiments on monkfish gillnets

• Greenland- update on catch history validation

* + 1. **Review and status of active requests (R-3.10.1)**

***R-3.10.1 (ongoing):*** *To perform a comprehensive assessment of the species throughout its range, which might include distribution and abundance, stock identity, biological parameters, ecological interaction, pollutants, removals and sustainability of removals.*

* + 1. **Future work**
  1. **Sperm whale**
     1. **AEWG 2018 [SC/25/12]**
     2. **Update**
     3. **Review and status of active requests (none)**
     4. **Future work**
  2. **Bowhead whale** 
     1. **Update**
     2. **Review and status of active requests (none)**
     3. **Future work**
  3. **Blue Whales**
     1. **AEWG 2018 [SC/25/12]**
     2. **Update**
     3. **Review and status of active requests (R-1.7.11)**

***R-1.7.12 (ongoing):*** *Greenland requests the SC to give information on sustainable yield based on new abundance estimates expected from TNASS2015 for all large baleen whales in West Greenland waters*

* + 1. **Future work**

1. **SURVEYS** 
   1. **Update “Cetacean abundance and distribution in the North Atlantic” workshop [**SC/25/FI/18**]**
   2. **NAMMCO/IWC cooperation reg. AE WGs**
   3. **Abundance Estimates WG 2018 [**SC/25/12 & 29**]**
      1. **Status of analyses**

Rikke present

* + 1. **Joint analyses**

Gisli: Nadya project – SC must give an advice to Council

* 1. **Review and status of active requests and recommendations (R-1.7.11)**

***R-1.7.11 (ongoing):*** *To develop estimates of abundance and trends as soon as possible*

* 1. **Plans for next NASS**

Cn 26, 9.1.1.

The MCC had recommended that the SC start with the planning of the next NASS and develop a tentative

budget as the first priority. The MCC awaited a budget proposal for the next NASS before it could endorse the

recommendation for the timing of the next NASS.

The MCC had endorsed

* The previous recommendation (SC/23) that surveys should be repeated more frequently in areas where declines have been observed
* The recommendation that attempt to get trans-Atlantic coverage for the next NASS. The MCC further noted that they would like to include Russia in this effort

Council supported the Russian participation as well as a western extension, so a new trans-Atlantic NASS could be achieved. Collaboration with other European and American surveys, if possible, should also be attempted. Council charged the SC to starting the planning of the next survey and prepare a tentative budget to be submitted to the FAC and next Council meeting.

**SC 24, 10.2**

The IWC RMP now required repetition of abundance surveys at 8 years interval. The next NASS survey should therefore be in 2022-2023. One recommendation emanating from the SCANS survey series for European surveys is an inter-survey interval down from 10 to 6 years. Canada and USA also conduct surveys regularly with variable intervals.

The SC strongly recommends that attempt be made to conduct again a trans-Atlantic coordinated survey and charge the Secretariat to explore what are the present plans and how much flexibility they encompass.

Several recommendations from the AEWG 2018 report, see table 2

* + 1. **Focus**
    2. **Timing and time-line**
    3. **Tentative budget**

1. **NAMMCO SCIENTIFIC PUBLICATIONS**
   1. **Age estimation of MM with a focus on Monodontids [**SC/25/FI/13**]**
   2. **NASS II [**SC/25/23**]**
2. **FUTURE WORK PLANS**
   1. **Scientific Committee 2019 Meeting**
      1. **Timing and place**

Faroes’ turn

* + 1. **Presentations**
  1. **Working groups/Symposia/Other meetings [**SC/25/24**]**
     1. **2019**
     2. **2020**
     3. **Long-term planning**

1. **EXPENSES 2018 and BUDGET 2019-20 [**SC/25/25**]**
   1. **SC Expenses 2018**
   2. **SC Budget 2019-20**
2. **ANY OTHER BUSINESS**

**14.1 Election of Officers**

1. **MEETING CLOSURE** 
   1. **Acceptance of report**
   2. **Closing remarks**