SCIENTIFIC COMMITTEE
WORKING GROUP ON ABUNDANCE ESTIMATES

January 21, 2025
Fram Centre, Tromsø, Norway

REPORT

Presented to the 31st Meeting of the Scientific Committee as NAMMCO/SC/31/22

Please cite this report as:

NAMMCO-North Atlantic Marine Mammal Commission (2025). Report of the Scientific Committee Working Group on Abundance Estimates, January 2025, Tromsø, Norway.

Available at https://nammco.no/abundance_estimates_reports/

DISCLAIMER:

The content of this report contains the view of the Working Group and does not necessarily represent the views of the NAMMCO Scientific Committee or Council.

NAMMCO

Postbox 6400, Sykehusveien 21-23, N-9294 Tromsø, Norway, +47 77687371, nammco-sec@nammco.no, www.nammco.no, www.facebook.com/nammco.no/

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Core members of the Working Group on Abundance Estimates (AEWG) held a hybrid meeting on 21 January 2025, to discuss the status of the survey data and ways forward, following the completion of NASS 2024. The meeting was chaired by Daniel Pike (Canada).

Status of analysis by country

Greenland has completed abundance estimates for target species using aerial surveys conducted in East and West Greenland. The Faroe Islands and Iceland have finished cleaning their survey data but have not yet validated or identified duplicate sightings. Norway is working on analysing minke whale data from a dedicated survey, which will be presented at the IWC in 2026. Duplicates for all species in the Norwegian dedicated survey were identified in the field; however, duplicates for the mackerel survey have not yet been addressed. A method for post-survey duplicate identification is urgently needed by the Faroe Islands, Iceland, and Norway.

Timeframe for analyses and AEWG schedule

For pilot whales, the deadline is early September 2025, so that the AEWG will have ample time to endorse or modify the analysis prior to the meeting of the Pilot Whale Working Group in November 2025. For Norwegian minke whales, a preliminary estimate is expected in May 2025. The final one will be presented to the IWC in April 2026, to inform a new quota in November 2026. For Icelandic fin and minke whales, the deadline to present abundance estimates to the IWC is in May 2026. For all target species, the aim is to have conducted the analyses in time for a meeting of the AEWG in late September/early October 2025.

The Faroe Islands, Iceland, and Norway will determine the best approach and personnel for identifying duplicates in their datasets (excluding Norwegian dedicated survey data) within three weeks of this meeting. These countries will also discuss pooling their data to generate a unified abundance estimate for each species across the three nations.

An in-person AEWG meeting will take place in late September or early October to review or reanalyse data before the Pilot Whale Working Group meeting in November. A second meeting is expected to follow in Spring 2026. The Greenlandic abundance estimates will be submitted for endorsement at the AEWG's fall meeting, after scrutinisation by the IWC Working Group for Abundance Estimates.

Alternative survey methods

As Norway is discontinuing dedicated cetacean surveys, and other countries may follow suit, the AEWG recognises the need for a discussion or workshop on alternative survey methods, such as drones, acoustics, and opportunistic surveys. This discussion may occur at an AEWG meeting or in collaboration with the IWC's Working Group on Abundance Estimates.

MAIN REPORT

Core members of the Working Group on Abundance Estimates (AEWG) held a hybrid meeting on 21 January 2025, to discuss the status of the survey data and ways forward, following the completion of NASS 2024. The meeting was chaired by Daniel Pike (Canada), who had also chaired the previous sessions of the AEWG in 2019.

1. WELCOME FROM THE CHAIR AND OPENING REMARKS

The Chair welcomed participants to the meeting, observing that the generation of robust abundance estimates is the essence of the scientific advice produced by NAMMCO.

2. ADOPTION OF AGENDA

The meeting Agenda, which was circulated a week prior to the meeting, was adopted with no modifications.

3. APPOINTMENT OF RAPPORTEURS

NAMMCO Deputy Secretary Maria Garagouni was appointed as primary rapporteur.

4. STATUS OF NASS 2024 DATA AND ANALYSIS PLAN

The Chair inquired whether any further progress had been made with regard to the tidying and validation of survey data, following the debriefing meeting held in October.

4.1. FAROE ISLANDS

Bjarni Mikkelsen reported that all Faroese survey data had been quality-controlled and any corrections that needed to be made had been implemented. Data validation had not proceeded, as guidance was necessary on a method to identify duplicate sightings (sightings of the same animal(s) by both observation platforms) post-survey. He also noted that the Faroe Islands lack the in-house expertise to conduct the abundance analysis in-house and that this will have to be outsourced. Mikkelsen noted that researchers from the USA (Ana Cañadas, Duke University) have reached out to ask NAMMCO countries for NASS 2024 data, with which they can update spatial models previously developed. He noted the potential for outsourcing the abundance estimation to them in exchange for the data. Pike noted that Cañadas had received validated data for previous modelling exercises, and that it is unlikely she will be able to complete data validation and analysis in a suitable timeframe for NAMMCO assessments.

Geneviève Desportes inquired whether the Faroese and Icelandic large whale data will be analysed together, as in previous NASS. Gudjón Már Sigurdsson confirmed that this is indeed the case. The group agreed that the same method for duplicate identification should be used by both parties. Philip Hammond stressed that this is an absolutely critical step that needs to be prioritised, as it requires considerable skill and time to achieve. To the suggestion that Norway advise on an algorithmic approach to post-survey duplicate identification, Deanna Leonard noted that their R script is now obsolete, and they require an updated method. The group agreed that finding a way forward on duplicate identification is an immediate priority and that the three countries (Faroe Islands, Iceland, Norway) are to develop a solution within the next three weeks.

4.2. ICELAND

Sigurdsson reported that all the vessel effort data have been entered, that data cleaning is approximately 50% complete, and that the main tidying required is to match species names across

platforms. He noted the same issue with duplicate identification as in the Faroe Islands. Hammond suggested that a user interface (visual confirmation of duplicates), rather than an entirely algorithmic approach, may be beneficial.

The large whale assessment, to be conducted by Sigurdsson and Bjarki Elvarsson, will be presented to the IWC in April 2026. This will require a robust abundance estimate of baleen whales, but Sigurdsson and Elvarsson are not confident they can generate that themselves.

4.3. GREENLAND

Mads Peter Heide-Jørgensen confirmed that the analysis of target species for Greenland had been completed, and had supplied a Working Document (AEWG/04) outlining the methods and results. The biggest issue in data tidying had been validating the exact transect lines in cases where they were curtailed due to weather or ice cover. Identification of duplicates was done in the field. The abundance estimation is discussed under item 7.

4.4. NORWAY

Leonard reported that the dedicated Norwegian survey was the final component of the six-year mosaic survey cycle, completed one year early. She noted that, due to complications with Russia, the Eastern Barents Sea was not (and will not in future) surveyed. As all indications from other surveys point to a distributional shift of minke whales towards the Barents Sea, alternative estimation processes will need to be explored. The minke whale analysis is under way in-house (at the Institute of Marine Research) and will be presented to the IWC in 2026.

With regard to the non-target species, Leonard is tasked with generating model-based estimates for all past surveys, including this last survey cycle, in order to have a basis for comparison for any future survey methods. There was considerable discussion on whether a design-based estimate can be generated from the mackerel survey, as it was not designed with sighting survey techniques in mind. The aim is to complete this analysis by Fall 2025. Leonard confirmed that duplicate sightings on board the mackerel survey had not been matched in the field and, as a result, Norway would be happy to pool their ideas/methods with the Faroe Islands and Iceland in that regard.

Leonard also underlined the need for alternative cetacean survey methods following the discontinuation of the mosaic survey cycles. Norway is currently testing a variety of technologies, including drones, genetic mark-recapture and next-of-kin analysis, acoustic surveys, and telemetry studies. A number of methods will be tested in July 2025, with preliminary results possibly prepared by Fall 2025. Other group members expressed concerns about disrupted funding for marine mammal surveys in their respective countries. The group agreed that a bigger discussion, perhaps in the form of a workshop, should be held on this topic; moreover, that the IWC should be approached, so the two WGs on Abundance Estimates can discuss this jointly. This discussion could take place as part of the AEWG meeting in Fall 2025, to discuss preliminary results from Norway, or in 2026 when more complete results are available.

Finally, the group agreed that the ideal way forward for all species is for Norway to pool their data with the Faroe Islands and Iceland for analysis.

5. POINTS OF CONCERN FOR ANALYSIS

The Chair opened the floor for queries and concerns regarding the analysis of any dataset, given issues with the number of observers, extensive ice cover, and equal coverage probability.

Hammond flagged the high number of records of “Unidentified large baleen whales” in the Icelandic data. Sigurdsson responded that a species could be assigned to many of those sightings based on subsequent observations closer to the vessel. There was general agreement to use the best species identification available for each sighting.

Pike raised a question concerning the extensive ice cover that obstructed the dedicated Icelandic vessel in a considerable portion of its western survey strata. A parsimonious interpretation could be that any cetaceans would have been prevented from entering the ice-covered area and therefore would all have been counted in the remaining, ice-free, area which was surveyed. This also potentially solves the issue of the Eastern Greenlandic survey, conducted later in the year, double-counting whales that would have moved into the area following the ice breakup. That is, the Icelandic and Greenlandic abundance estimates should not be summed, but taken separately as representing the abundance of a given species. Pike noted that, historically, surveys have shown high concentrations of whales up against the ice border, "waiting" to enter the area as soon as the ice recedes. Sigurdsson confirmed that a first inspection of the Icelandic data indicated such a pattern.

Mikkelsen inquired whether the asymmetrical observer configuration in the first part of the Faroese mackerel survey (two observers on the first platform and one on the second) would affect the use of that data portion. Pike opined that, as they were still running in double platform mode, at the very least the identification of duplicate sightings should be possible. Leonard suggested including the number of observers as a model covariate in the detection functions.

Desportes expressed great interest in finding a way to compare the efficacy of all the different platform types and observer configurations (e.g., mackerel survey with four vs eight observers, mackerel survey compared to redfish survey, etc.). Pike noted that there ought to be a shift away from thinking of the non-dedicated vessels as purely platforms of opportunity. Rather, in future they should be devised as joint surveys between cetacean observers and other survey teams (e.g., mackerel). That way, issues with surveys running during nighttime hours, random transect design, etc., could be minimised. The group concurred that joint survey design would require the relevant plans and requirements for cetacean surveys to be in place well in advance of any joint planning meetings (e.g., before ICES plans the IESSNS protocols).

6. AEWG STRUCTURE AND TIMELINE

6.1. SELECTION OF PARTICIPANTS AND INVITED EXPERTS

The group discussed potential researchers who could be invited to join the AEWG meetings going forward. Names and research groups were listed, with an emphasis on including experts on model-based estimation, considering that this is likely to become a more frequently used approach. The Secretariat will take charge of inviting participants in the coming months.

6.2. GENERATION OF ABUNDANCE ESTIMATES - TIMEFRAME

The deadlines for the generation of abundance estimates for each country are as follows:

For pilot whales, the deadline is early September 2025, so that the AEWG will have ample time to endorse or modify the analysis prior to the meeting of the Pilot Whale Working Group in November 2025. For Norwegian minke whales, a preliminary estimate is expected in May 2025. The final one will be presented to the IWC in April 2026, to inform a new quota in November 2026. For Icelandic fin and minke whales, the deadline to present abundance estimates to the IWC is in May 2026. For all target species, the aim is to have conducted the analyses in time for a meeting of the AEWG in late September/early October 2025.

6.3. PUBLICATION

The Chair noted that most large-scale cetacean surveys present their results as one unified publication, rather than species-specific articles. Mikkelsen supported the idea for a joint publication of all NASS 2024 results. Heide-Jørgensen highlighted that continued Greenlandic funding is contingent on presenting achievements from previous surveys, therefore the aerial survey results would need to be published no later than 2026. The group agreed to keep this in mind and revisit the topic as progress is made on the analyses for the three remaining countries.

6.4. MEETING OF THE AEWG

The AEWG will meet in late September or early October 2025. A second meeting will likely be required in March or April 2026, to review analyses not presented (or not appropriately completed) at the first meeting.

7. REVIEW OF GREENLANDIC ANALYSIS

Heide-Jørgensen presented the results of the Greenlandic aerial surveys (NAMMCO/SC/31/16). He flagged a low number of minke whale sightings, which necessitated merging the East and West Greenland sightings and the assumption of a common detection function for both areas.

The group debated the most appropriate method of incorporating time in view values into availability correction factors. While maximum values should not be used as a proxy for potential time in view (as animals at the maximum forward distance will frequently be missed by observers), mean values almost certainly result in an underestimation of abundance.

The group was impressed by how quickly the Greenlandic survey data were analysed. The consensus was that the results appear robust, but should be reviewed and endorsed by the full AEWG (i.e., by additional experts).

8. MEETING CLOSE

The Chair thanked the meeting participants for their contribution and wished those in Tromsø a productive continuation of the SC/31 meeting. The group thanked Pike for his able chairing of the meeting from afar, as well as Hammond for sharing his time and expertise.

APPENDIX 1: AGENDA

ABUNDANCE ESTIMATES WORKING GROUP

21 January 2025, 14:00–18:00 CET, Tromsø (hybrid)

1. **Welcome and Opening Remarks from the Chair**
2. **Adoption of agenda**
3. **Appointment of rapporteurs**
4. **Status of NASS 2024 data and analysis plan** *(number of unique sightings/species, data sharing/grouping, who is analysing what, have the data been validated and how)*
    - **4.1. Faroe Islands**
    - **4.2. Greenland**
    - **4.3. Iceland**
    - **4.4. Norway**
5. **Points of concern for analysis** *(ice cover, reduced effort, changing number of observers, difference between dedicated and non-dedicated platforms, can Norway use mackerel survey as alternative platform)*
6. **AEWG structure and timeline**
    - **6.1. Selection of participants and Invited Experts**
    - **6.2. Generation of abundance estimates** *(when are preliminary results expected)*
    - **6.3. Publication**
    - **6.4. Meetings of the AEWG**
7. **Review of Greenlandic analysis**
8. **Meeting close**

APPENDIX 2: LIST OF PARTICIPANTS

Bjarni Mikkelsen (FO)
Faroe Marine Research Institute
bjarnim@hav.fo

Daniel Pike (Invited Expert, Chair)
Esox Associates, Ontario, Canada
kinguq@gmail.com

Deanna Leonard (NO)
Institute of Marine Research
deanna.leonard@hi.no

Geneviève Desportes (NAMMCO Secretariat)
Secretary General
genevieve@nammco.org

Guðjón Sigurdsson (IS)
Marine and Freshwater Research Institute
gudjon.mar.sigurdsson@hafogvatn.is

Mads Peter Heide-Jørgensen (GL)
Greenland Institute of Natural Resources
mhj@ghsdk.dk

Maria Garagouni (NAMMCO Secretariat)
Deputy Secretary
maria@nammco.org

Noor Elias (NAMMCO Secretariat)
Intern
intern@nammco.org

Philip Hammond (Invited Expert)
University of St Andrews, UK
psh2@st-andrews.ac.uk

APPENDIX 3: LIST OF DOCUMENTS

Working Documents

Doc. No.	Title	Agenda item
SC/31/AEWG/01	Draft Agenda	2
SC/31/AEWG/02	Draft List of Participants	1
SC/31/AEWG/03	Draft List of Documents	Several
SC/31/AEWG/04	Analysis of whale survey in West and East Greenland 2024	7

For Information Documents

Doc. No.	Title	Agenda item
SC/31/AEWG/FI01	Report Scientific Working Group on Abundance Estimates 2019	6
SC/31/AEWG/FI02	NASS 2024 Financial Overview	4
SC/31/AEWG/FI03	Scientific Planning Committee Debriefing Minutes	Several
SC/31/AEWG/FI04	NASS 2024 Report to Scientific Committee with Cruise Reports	Several