

NAMMCO ANNUAL MEETING 33

MEETING OF THE COUNCIL

24–26 March 2026

Hotel Hans Egede, Nuuk, Greenland

DOCUMENT 14	Update on the analyses and abundance results of NASS 2024
Agenda item(s)	5
Submitted by	Secretariat
Action requested	<ul style="list-style-type: none"> • Take note
Background/content	<p>The 7th iteration of the North Atlantic Sightings Series (NASS) was completed in 2024. Cetacean surveys were conducted between June and September, with participation from all four NAMMCO Parties, using several different survey platforms. Subsequently, each Party focused on validating and processing the data for their respective target species, and producing abundance estimates to be reviewed by the Working Group on Abundance Estimates (AEWG).</p> <p>Abundance estimates generated from the Greenlandic aerial surveys were endorsed in 2025. There were some delays in preparing the Faroese and Icelandic data for analysis, which meant that not all estimates could be endorsed by the AEWG as scheduled.</p> <p>This document presents the status of the analyses, as well as the timeline for finalising the analyses for target and non-target species, with the AEWG aiming to endorse all estimates within 2026.</p>

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1 PROJECT BACKGROUND

The North Atlantic Sightings Survey (NASS) was completed for the seventh time in the summer of 2024, extending the series to a 37-year timespan. NASS is a large-scale, collaborative effort, during which participating countries visually survey broad areas as close together in time as possible (synoptic surveys), with the aim of quantifying the abundance of cetaceans in the North Atlantic. Each country designs a survey protocol with its own target species in mind, but non-target species are also recorded. Repeated surveys of the same region allow the detection not only of changes and long-term trends in abundance, but also of any shifts in cetacean distribution that may have occurred over time—both of which are fundamental for the management of human activities in the marine environment.

All four NAMMCO member countries participated in NASS 2024, with a combination of aerial and ship-based surveys (Figure 1). The planning was coordinated by the NASS Scientific Planning Committee (SpC). Following this, the Working Group on Abundance Estimates (AEWG) has been responsible for reviewing the abundance estimates produced, guiding the analyses if needed, and accepting the final estimates. For this survey cycle, the AEWG is chaired by Daniel Pike (Essox Associates, Canada).

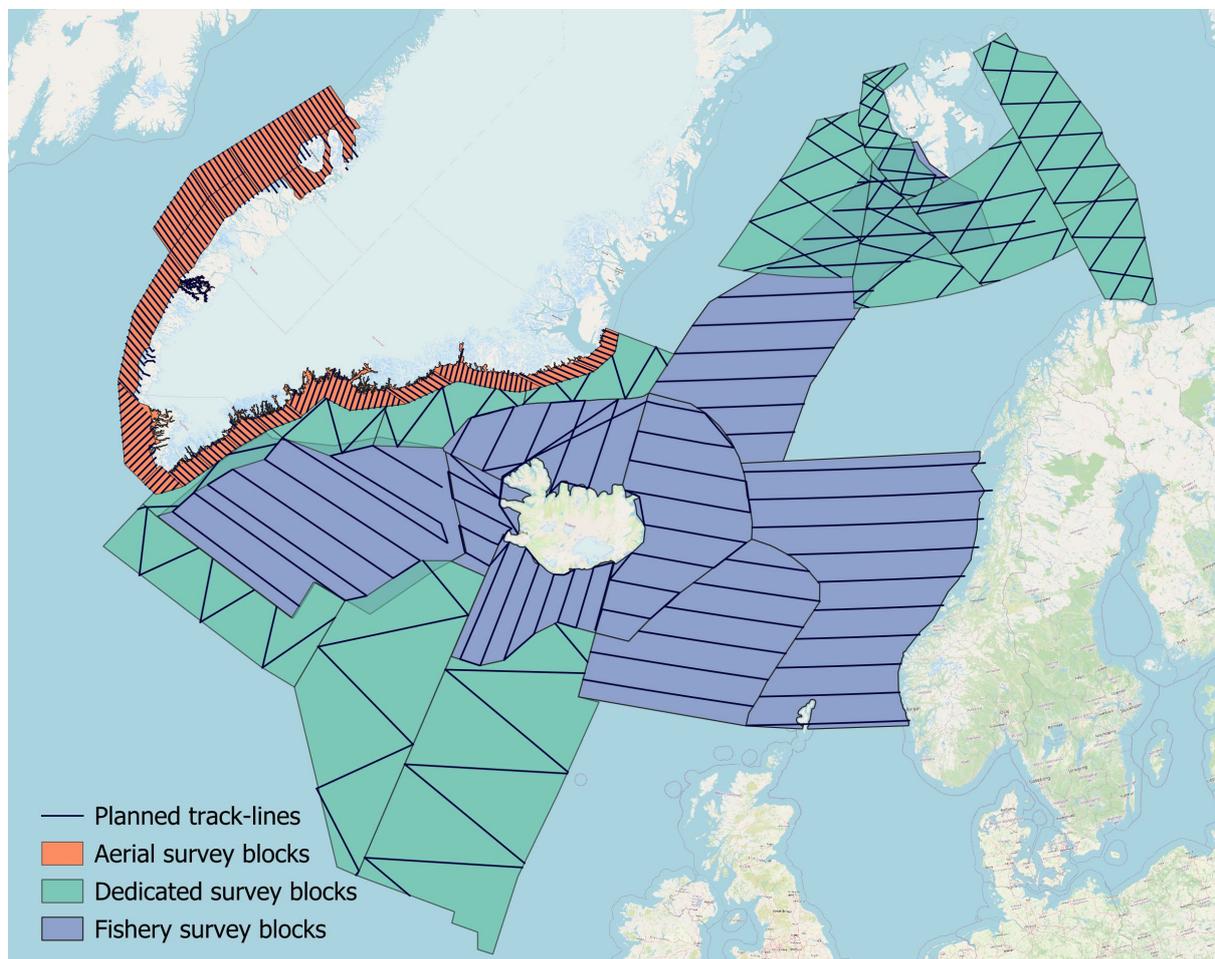


Figure 1. Planned survey blocks and track-lines for observation of target and non-target cetaceans in NASS 2024.

1.1 SURVEY DESIGN AND REALISED EFFORT

As presented to Council 32, the ship-based surveys were carried out using both dedicated and non-dedicated vessels conducting fisheries surveys. The dedicated surveys were designed and implemented with cetacean observation in mind, that is, track-lines were drawn to follow requirements of statistical robustness, and (with some exceptions due to illness and weather) observers followed double-platform (independent observation) protocols. The latter method is used

to account for perception bias, i.e., the likelihood of an observer not seeing an animal even though it is at the surface, which would result in underestimating abundance for that species. However, the two platforms may also record the same group of animals, which, if not accounted for through duplicate identification, results in overestimating abundance for that species. The non-dedicated surveys were conducted by placing cetacean observers on board fishery survey (for redfish and mackerel) vessels. These surveys followed predetermined track-lines not optimised for cetacean surveys, and (with the exception of the Icelandic mackerel survey) did not stop sailing during adverse visibility conditions. Logistical constraints also limited the number of cetacean observers on board some vessels, which in certain cases resulted in not being able to follow independent observation mode. These factors, as well as bad weather and ice conditions, led to somewhat patchy coverage of the total survey area, and complications in the data processing and analysis.

1.2 ABUNDANCE ESTIMATION PLANS

The project status presented to Council 32 indicated that Greenland had already prepared abundance estimates for all species where that was possible (i.e., large enough number of sightings), while the Faroe Islands, Iceland, and Norway were still in the data validation phase—although for the dedicated component of the Norwegian surveys, analyses were already underway. For the Faroe Islands and Iceland, specifically, the bulk of the remaining work was stated to be duplicate identification. The AEWG was scheduled to meet in early Autumn of 2025, to review abundance estimates: all species for Greenland; pilot whales for the Faroe Islands, Iceland, and Norway, in preparation for the pilot whale assessment later that year; and fin and minke whales for the Faroe Island and Iceland, in preparation for their assessment in January 2026. Two workshops to investigate methods for optimising data collection and analysis for robust abundance estimation were also discussed and approved for planning.

2 PROJECT PROGRESS: MARCH 2025–MARCH 2026

2.1 ABUNDANCE ESTIMATES FOR GREENLANDIC AERIAL SURVEYS

The AEWG met on 23–26 September at the Greenland Representation in Copenhagen, Denmark. Greenlandic estimates for minke, fin, and humpback whales were endorsed, as were surface estimates (corrected only for perception bias) of white-beaked dolphins and harbour porpoises (see Table 1). Abundance estimates can be influenced by availability bias, which results from cetaceans not always being present at the surface as the vessel passes them; the time potentially spent underwater and the time spent in view of the survey platform must be taken into account and corrected for. Data on diving patterns derived from tagging studies are often used for the former. However, the available data for white-beaked dolphins were not considered sufficiently representative in this case, and so the correction for availability bias was not endorsed. Similarly, for harbour porpoises, the difficulty in precisely recording time-in-view resulted in the availability correction not being endorsed. The AEWG recommended that Greenland explore the harbour porpoise dataset to gauge other possibilities of obtaining representative availability corrections. Regarding pilot whales, the AEWG requested some further investigation of analytical methods, which were reviewed at a later meeting online; after due consideration, the original estimates for pilot whales were endorsed.

2.2 ABUNDANCE ESTIMATES FOR OTHER PARTIES

For the remaining Parties, the AEWG recommended re-drawing the survey blocks post hoc to exclude some of the poorly surveyed areas (Figure 2). The analysis of pilot whale data had not yet been finalised at the September meeting and, thus, the abundance estimate could not be endorsed. Norway did not record pilot whale sightings during 2024, so the pertinent analysis was only of Faroese and Icelandic data. However, delays in duplicate identification and approaching external analysts to generate the abundance estimates resulted in an incomplete working paper presented to the AEWG. Following this meeting, the analysis was outsourced to scientists in the UK. The AEWG held an online meeting on 18

November and endorsed the fully corrected estimates for pilot whales—these were subsequently used by the WG on Pilot Whales.

The generation of abundance estimates for fin and minke whales for the Faroe Islands and Iceland was done in-house (Marine and Freshwater Research Institute, Iceland), but there were several delays that prevented the AEWG from endorsing them during 2025. An incomplete analysis was presented at an online meeting of the AEWG on 17 December, at which time further guidance was provided on the appropriate methods. A corrected analysis was to be endorsed before the meeting of the Large Whale Assessment WG in mid-January, but this was not completed on time.

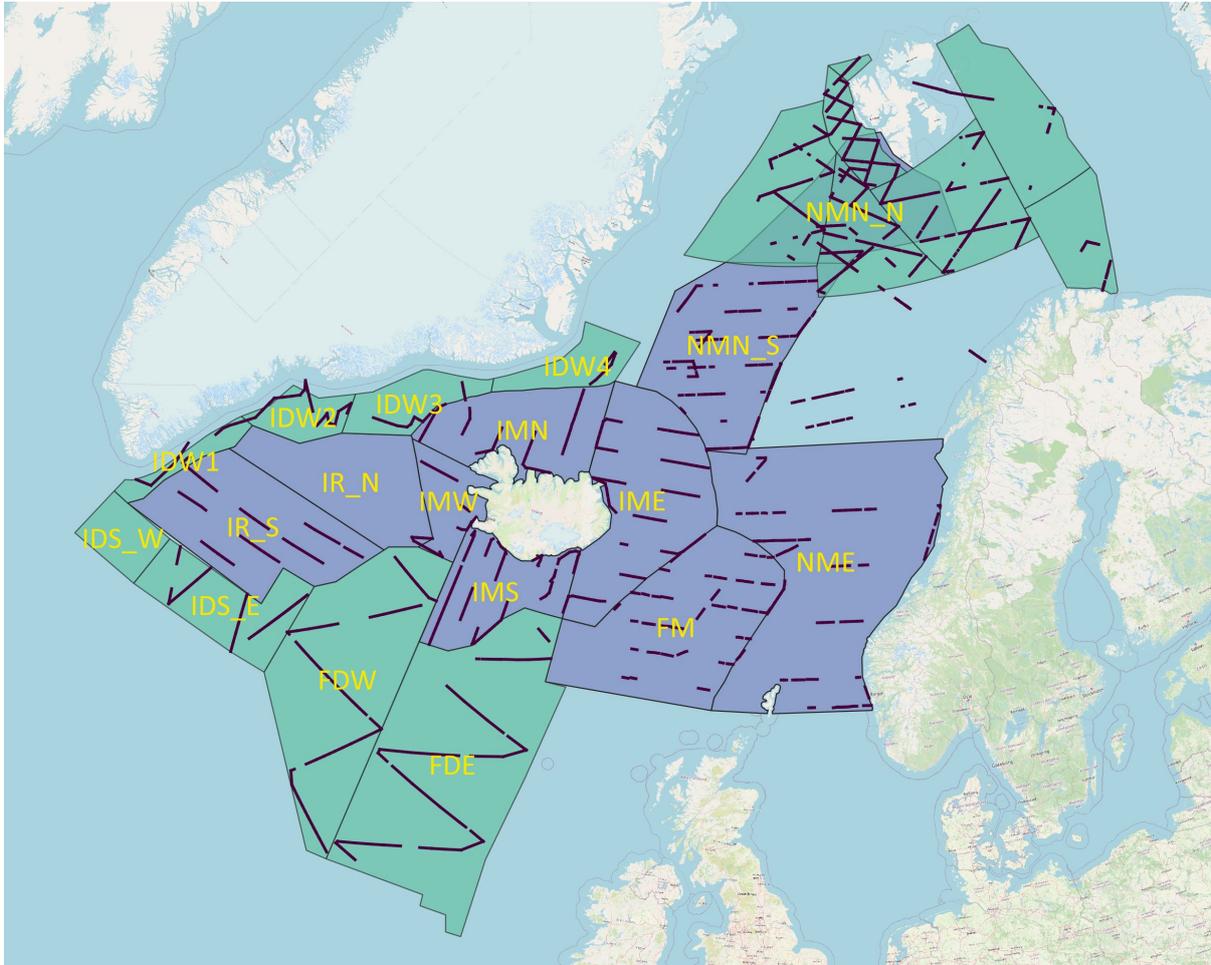


Figure 2. Ship-based survey blocks re-drawn by the AEWG to account for under-surveyed areas. Blocks IDS_W, IDW4, IR_N, and NMN_N were excluded from the estimation of abundance. Lines indicate the survey effort achieved by Faroese, Icelandic, and Norwegian vessels. Some survey effort was also conducted while in transit to and from survey blocks; this may be used to supplement the data available for abundance estimation.

Norway has not previously presented minke whale estimates for endorsement by the AEWG, as the entire review process has been conducted through the IWC. However, it is planned that the AEWG will review the minke whale estimates from the mackerel survey component of NASS 2024. It will also review all non-target species estimates, including from the dedicated minke whale survey. Thus far, no analyses have been presented to AEWG meetings, as the data are in various stages of processing and analysing. Spatial modelling is being investigated as an alternative to design-based estimation, considering the issues with coverage described above.

2.3 NASS-ASSOCIATED WORKSHOPS

Of the two workshops agreed upon to improve abundance estimation methods for cetaceans, one was held in Tromsø on 13–15 November. This was titled “Spatial and space-time models for whale surveys

with complex and non-systematic designs” and stemmed from several issues encountered during NASS 2024 and the dedicated minke whale survey in the Barents Sea: i) poor weather conditions and geopolitical reasons resulted in incomplete surveying of several pre-determined blocks and transect lines in key regions, ii) some vessels used independent observation (IO) protocols with two platforms, others used a single platform, iii) some vessels followed transects designed for cetacean surveys, while others were on fishery survey track lines. The workshop aim was to explore different approaches to model-based abundance (and distribution) estimation. Different modelling methods and case studies were discussed, including hands-on testing on NASS datasets. The results of the hands-on work appeared quite promising for the most part, while several topics were raised that require further discussions, e.g., around the caveats and applicability of different methods for various data types. The SC has recommended that spatial modelling be used for the non-target species data from NASS, especially in the context of detecting trends in abundance and changes in distribution.

The second of the two workshops will investigate alternatives to classic cetacean survey methods. The classic method used in the entire NASS series (and many other standard cetacean surveys) is distance sampling, where recording the distance and angle of sightings from the vessel (ship or plane) is critical for the calculation of abundance. Due to a number of factors, distance sampling is not always possible or effective. Crewed aerial surveys in some regions may be too dangerous and are thus being discontinued, for instance, as a monitoring method for coastal seals in Iceland. Survey costs may also be prohibitive, particularly for frequent monitoring; Norway, for example, has discontinued their dedicated minke whale surveys. Moreover, for cryptic species such as deep-diving whales, or for small stocks such as narwhal in East Greenland, distance sampling may not detect a sufficient number of animals to produce an abundance estimate. The aim of this workshop, therefore, will be to “*assess the status of current development and practicality of novel methods for obtaining robust abundance estimates of cetaceans in the North Atlantic.*” The SC has appointed members to form a Steering Committee and make arrangements to hold this workshop in 2026.

Table 1. Endorsement status of abundance estimates for target species of each Party. NB: the Faroe Islands and Iceland produce joint estimates for their target species. Estimates are accompanied by 95% confidence intervals in brackets. Estimate type refers to whether it has been corrected for perception and availability bias (Fully corrected: both biases taken into account; At surface: only perception bias taken into account; Not corrected: neither bias taken into account).

Party	Species	Estimate (95% CI)	Estimate type	Endorsed
Faroe Islands	Pilot whale	262,387 (134,027–513,681)	Fully corrected	Yes
Iceland	Minke whale	15,660 (9,134–26,848)	Not corrected	No
	Fin whale	15,867 (11,399–22,088)	Not corrected	No
Greenland	Minke whale	West: 2,415 (1,266–4,606) East: 6,370 (3,490–11,626)	Fully corrected	Yes
	Fin whale	West: 1,376 (512–3,699) East: 5,155 (2,540–10,462)	Fully corrected	Yes
	Humpback whale	West: 1,041 (438–2,470) East: 3,898 (2,096–7,247)	Fully corrected	Yes
	Pilot whale	West: 7,595 (3,084–18,707) East: 2,025 (585–7,012)	Fully corrected	Yes
	White-beaked dolphin	West: 1,697 East: 285	At surface	Yes
	Harbour porpoise	West: 8,270 East: no sightings	At surface	Yes
Norway	Minke whale	Analysis ongoing	NA	NA

3 FINANCIAL UPDATE

NASS Project / 2024 Voluntary Contribution from Norway - Apportionment and Actual Expenses - Project Status (as of 1 March 2026)

2024 Voluntary Contribution from Norway	9,595,000		
Planned and Actual Expenses Covered by 2024 NMFA/NASS 2024 Funds	Planned	Expended	Remnant
Survey - Faroe Islands (Non dedicated)	700,000	700,000	0
Survey - Greenland (East Greenland)	2,300,000	2,300,000	0
Survey - Iceland (Non dedicated and dedicated on Jan Mayen area)	2,100,000	2,100,000	0
Survey - Norway (Non dedicated)	2,200,000	1,268,682	931,318
MINTAG Tagging associated to NASS Surveys	1,200,000	718,513	481,487
Abundance Estimate of Non-Target Species*	600,000	0	600,000
Overheads	495,000	495,000	0
Total Expenses Covered by NMFA/NASS 2024 Funds	9,595,000	7,582,195	2,012,805
Funds remaining from the 2024 funding returned to NMFA (July 2025)	1,000,000		
*Abundance Estimate of Non-Target Species was delayed and has started. Therefore, the use of this funding was postponed for years 2025 and 2026.			
	Years 2025 and 2026		
	Planned	Expended in 2025	Remnant
Funds remaining after the amount returned to NMFA	1,012,805		
Abundance Estimate of Non-Target Species, and review by the AEWG	600,000	161,603	438,397
Two <i>ad hoc</i> Working Groups for fulfilling analysis and exploitation of the data generated by the 2024 surveys	412,805	153,789	259,016

4 TIMELINE FOR REMAINING ACTIVITIES

The planned timeline for the completion of all NASS 2024–related activities is shown in Table 2. Corrected estimates for fin and minke whales for the Faroe Islands and Iceland will be finalised in Spring 2026 and reviewed at an online meeting of the AEWG. Abundance estimates for non-target species will be reviewed in late 2026 at an in-person meeting of the AEWG. The analyses for all non-target species will be outsourced, using the allocated budget from Norway’s voluntary contribution to the NASS 2024 project. Any final points of relevance to NASS 2024 will also be discussed at that meeting. Survey results will be published in special topic issues of NAMMCO Scientific Publications during 2026 and 2027. Due to the nature of the Greenlandic surveys and considering that the estimates have already been endorsed by both the AEWG and the SC, these results can already be prepared for publication—the exact timing of the publication depends on the length of the review process, but realistically falls within late 2026. The results of the remaining survey components are likely to take longer to prepare and review, and therefore their publication is unlikely—although not impossible—before 2027.

Table 2. Planned timing of activities related to NASS 2024 and future surveys.

Activity	Spring 2026	Summer 2026	Autumn 2026	2027
Fin and minke whale analysis (Iceland)	x			
Fin and minke whale review (AEWG)	x			
Non-target species analysis (outsourced)	x	x	x	
Non-target species review (AEWG)			x	
Workshop on survey method alternatives			x	
Preparation for publications		x	x	x
Publication of Greenlandic results			x	
Publication of other results				x
Guidelines for future surveys		x	x	x
Trends analyses				x

The AEWG is tasked by the SC with producing guidelines for standardised data input, cleanup protocols, and formats between countries, including data validation protocols and software if needed. The goal is to formulate a consistent and cohesive approach to data collection and completion well in advance of future surveys, in order to prevent issues and delays arising from poor compatibility, data organisation, and analytical requirements. The AEWG can work on this intersessionally and even after the NASS 2024 project itself has been completed.

Analysis of trends in abundance will be conducted for as many species as possible, taking into consideration all previous NASS data and potentially using spatial modelling approaches. This will require coordination between the relevant scientists from each Party, and would benefit from the organisation of a centrally archived dataset.