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DOCUMENT 14	**Report on the North Atlantic Survey of Selected Cetaceans NASS 2024**
Submitted by	Secretariat, NASS Scientific Planning Committee (SpC), Abundance estimate WG
Action requested	• Take note • Recommend that the analyses are completed in a timely manner, including the analyses of the non-target species.
Background/content	The 7th North Atlantic Sightings Survey was completed over the summer of 2024, with participation from all four member countries. It included both dedicated surveys and use of opportunistic platforms (fisheries surveys). This document contains an overview of the survey extent and outcomes, as well as questions that remain open.

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REPORT ON THE NORTH ATLANTIC SURVEY OF SELECTED CETACEANS – NASS 2024

1. CONTEXT

The North Atlantic Sightings Survey (NASS) was completed for the 7th 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 even non-target species are 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 (including dedicated and non-dedicated vessels) surveys. The planning was coordinated by the NASS Scientific Planning Committee (SpC), which held 11 online and in-person meetings from 2020 until just before the surveys started in 2024, and one debriefing meeting in October 2024, after the surveys were completed. Following this, the Working Group on Abundance Estimates (AEWG) is responsible for reviewing the abundance estimates produced, guiding the analyses if needed, and accepting the final estimates. The AEWG held an initial meeting in January 2024, to determine the structure and plans of the WG and priorities for each country.

2. SPC ACTIVITIES IN 2024

In January 2024, the SpC met to discuss the optimal shape and size of the strata (survey blocks), based on logistical and statistical constraints, to revise the allocation of funds accordingly, and to guide the development of survey protocols (including choice of hardware and software) for the Faroese vessels. A representative of the Department of Fisheries and Oceans Canada (DFO) attended this meeting online, presenting a data entry software ("Visual Surveyor") used by the DFO in aerial surveys. At the time, the DFO were planning an aerial survey of a large area off the Labrador coast, which would have acted as a western complement to the eastern North Atlantic surveys. That effort was tragically disrupted by a fatal plane crash, following which, all Canadian aerial surveys were temporarily suspended.

In early March 2024, draft strata and transect designs were assessed in an online meeting of the SpC and modifications were later agreed upon via correspondence. All calculations and mapping of the survey design were undertaken by Daniel Pike (external expert in the SpC).

In an online meeting in May 2024, the final survey design was agreed on and the survey protocols for each platform were presented and discussed. As the Icelandic and Faroese data are to be analysed together, the survey protocols for these two countries were co-developed, allowing for logistical differences (e.g., number of observers). The potential for drone deployments from the dedicated Faroese vessels was discussed (as it had been in previous meetings) and it was finally agreed that these would be *ad hoc* deployments that would serve as a test of capabilities, particularly with regard to estimating group size in large aggregations of pilot whales. Plans for the training of observers were also approved, as was the Secretariat's plan for outreach during the surveys. At this point, the dedicated Faroese vessel had not yet been chartered. The vessel acquired just before the survey was larger and cost more than the original budget would have allowed, which required a slight reduction

in the total survey effort and a last-minute redesign of the track lines to be followed—these were again agreed on via correspondence.

During the surveys, cruise leaders consulted with the SpC if serious adjustments had to be made to the survey protocols (e.g., when the dedicated Icelandic vessel encountered ice).

After the completion of the surveys, a debriefing meeting was held online in October 2024, wherein the team leads from each country presented the cruise reports of their respective platforms. The overall quality of the survey planning and execution was evaluated, and ways to optimise future efforts were suggested.

3. SURVEY COMPLETION

3.1. PLATFORMS

The following survey platforms were used by each country:

- **Faroe Islands**: a dedicated vessel survey of waters south and west of the Faroes and an "opportunistic" platform on board the IESSNS (International Summer Survey in the Nordic Seas) mackerel survey in Faroese waters;
- **Greenland**: dedicated aerial surveys of the East and West coastlines of Greenland, including selected fjords;
- **Iceland**: a dedicated vessel "filling the gaps" between the Icelandic, Faroese, and Greenlandic surveys, an opportunistic platform on board the IESSNS mackerel survey in Icelandic waters, and an opportunistic platform on board the ICES redfish survey southwest of Iceland;
- **Norway**: the dedicated NILS survey (last part of a six-year survey cycle) around Svalbard and an opportunistic platform on board the IESSNS mackerel survey in the Norwegian sea and from around Jan Mayen north toward Svalbard.

In addition to the funding provided by each Party for their own survey vessels, Norway contributed a substantial voluntary fund (NOK 9.595 million), for which the SpC is very appreciative. This additional funding was crucial in extending the total survey area, as it was used to finance the Faroese mackerel survey, the aerial survey of East Greenland, the dedicated Icelandic vessel, and the Norwegian mackerel survey.

3.2. COVERAGE

The planned survey design and achieved coverage are shown in Figure 1, while the duration of the surveys and observer effort are shown in Table 1. Overall, despite frequent interference from the weather and sudden illnesses, the surveys achieved satisfactory coverage compared to the original design.

The opportunistic vessels (redfish and mackerel surveys) did not provide many (or any) accommodations for marine mammal survey needs, with the exception of the Icelandic mackerel survey. This resulted in "gaps" in the observer effort, e.g., where the vessel performed trawl stations during the day or continued sailing during the night. Furthermore, some modifications to the observer setup had to be made, e.g., switching from double- to single-platform configuration on the second leg of the Norwegian mackerel survey and part of the Faroese mackerel survey. Additionally, the Norwegian mackerel survey did not cover the northernmost transects, as is common practice when fish are not detected, leading to further missed effort.

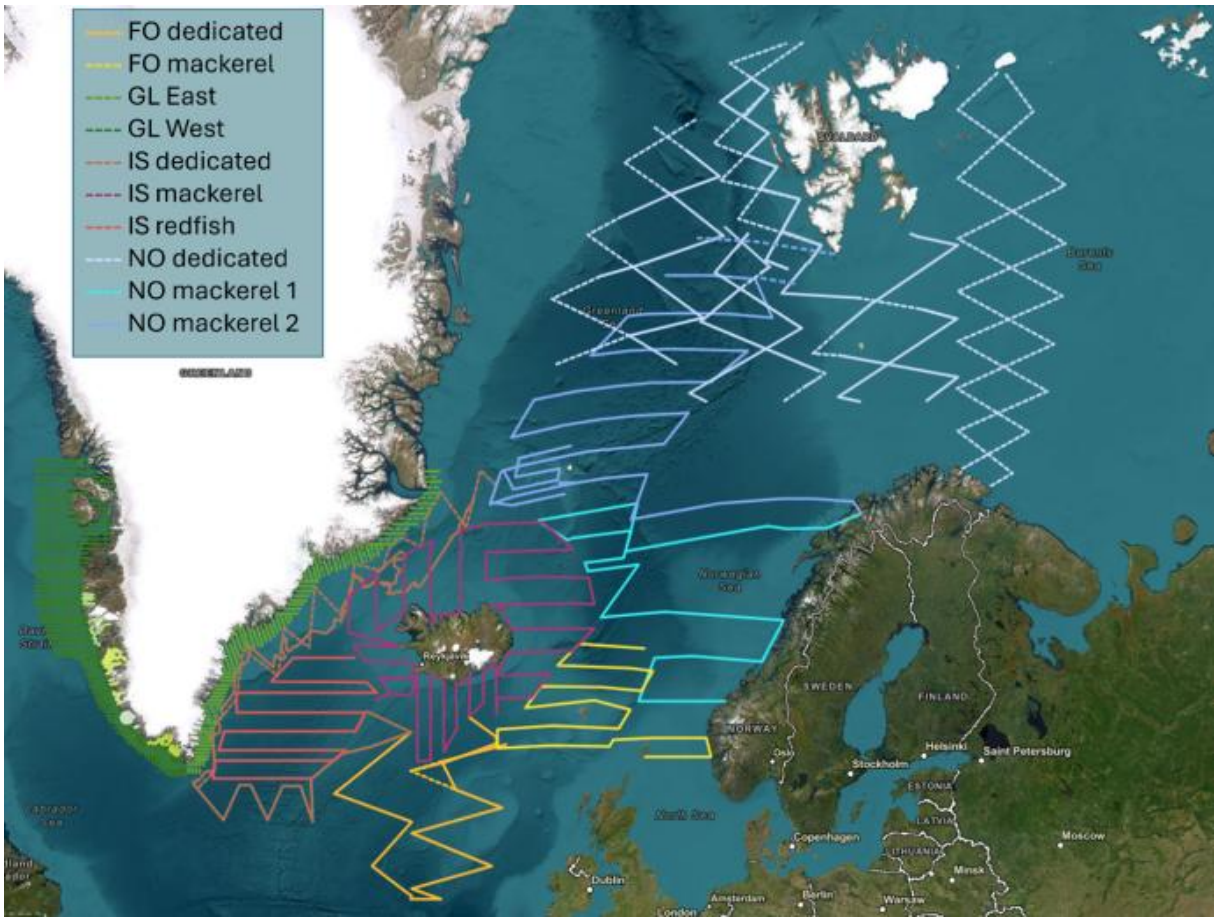

Figure 1. Planned (dashed lines) and achieved (solid lines) transects of the various NASS 2024 survey platforms. It should be noted that the dedicated Norwegian survey vessel was on effort during some parts of the eastern Barents Sea stratum, but the coverage was very intermittent due to poor weather conditions and is not fully reflected in this figure.

The Faroe Islands chartered a dedicated vessel to survey the sourthernmost blocks (south of Iceland). Opting for a larger vessel to maximise stability in offshore waters resulted in higher running costs and therefore less time at sea than planned (this may have been further compounded by not securing said vessel until a few days before the survey start). As such, time and weather constraints led to the re-designing of some track-lines.

The dedicated Icelandic vessel had to implement an ice-edge protocol for much of the westernmost strata it surveyed. This was due to extensive land-fast ice cover along the Greenlandic coast, which reportedly did not break off until late in July. As there would not have been cetaceans present in East Greenland waters at the time of the Icelandic survey, this could mean that animals counted later in the year in the East Greenland aerial surveys may already have been counted by the dedicated vessel when they were displaced by the ice.

The dedicated Norwegian vessel repeatedly encountered poor weather conditions, particularly in the easternmost survey block in the Barents Sea. This resulted in very minimal and intermittent on-effort coverage in that stratum (and as such it is not accurately represented in Figure 1).

Table 1. Survey dates and achieved coverage for each of the platforms used in NASS 2024. "On-effort" refers to those parts of the survey that will be used in the calculation of abundance estimates.

Survey/platform	Survey start	Survey end	"On-effort" coverage
Faroe Islands dedicated	27 June	16 July	1,947 nm (80% of planned)
Faroe Islands mackerel	27 June	14 July	84 hours
Greenland (East) aerial	8 August	22 August	63.63 hours (75% of planned transects)
Greenland (West) aerial	31 August	18 September	96.63 hours (56% of planned transects; 79% if excluding fjords)
Iceland dedicated	1 July	19 July	TBC
Iceland redfish	4 June	26 June	TBC
Iceland mackerel	1 July	2 August	TBC
Norway dedicated (NILS)	19 June	14 August	2916 nm (T-mode: Double platform, minke whale tracking) 354 nm (W-mode: Double platform, no minke whale tracking)
Norway mackerel (Leg 1)	2 July	16 July	655 nm (double platform)
Norway mackerel (Leg 2)	18 July	1 August	953 nm (single platform)

3.3. DATA COLLECTED

The data processing and analysis is currently at different stages for each of the survey platforms. Some early outputs are outlined below.

Faroe Islands

In terms of cetacean sightings, 17 species were identified on the dedicated survey, with the most commonly observed being the common dolphin and pilot whale. Passive acoustic monitoring was active throughout the survey after the first day, allowing for the detection of vocalising or echolocating cetaceans even in poor weather conditions and during the night. Drone flights were not attempted at any point.

On the mackerel survey, 10 different species were identified in a total of 124 sightings—although some of those, including several pilot whale observations, were during "off effort" hours. Overall, the sighting rates in Faroese waters appeared lower than in other years, for all species except minke whales.

Greenland

Across both East and West Greenland, the aerial surveys had a total of 291 sightings, with 11 species identified. Notably, despite excellent sighting conditions for the most part, no harbour porpoises were observed in East Greenland. Most white-beaked dolphin sightings were in West Greenland, and there were fewer than in previous surveys.

Iceland

On the dedicated survey, 11 cetacean species were identified, while on the mackerel and redfish surveys, 13 species were observed—notably, high numbers of northern bottlenose whales.

Norway

The most notable sighting from the dedicated vessel was a bowhead whale, a species not often seen in previous iterations of the mosaic survey.

Part of Norway's voluntary contribution to the NASS 2024 project was allocated to the deployment of MINTAG tags during the survey. A minke whale and fin whale were successfully tagged from the dedicated vessel.

4. OUTREACH EFFORTS

The Secretariat set up a webpage (https://nass.nammco.org/2024/) prior to the survey start, where the public could follow the surveys "live". The planned track-lines were shown as dashed lines, and these were "filled in" as the various vessels progressed on their way (see Figure 1). Before commencing, the cruise leaders were asked to send frequent updates and descriptions of their daily highlights (Figure 2).

Feedback from members of the public was encouraging, as the updates heightened awareness and interest in the surveys, as well as of life on board a survey vessel or plane. Although the number of visits to the website were not counted directly, social media reach was consistently high when updates were shared (e.g., on Facebook and Instagram). The page will also be used as a complementary tool for the GUARDNA project.

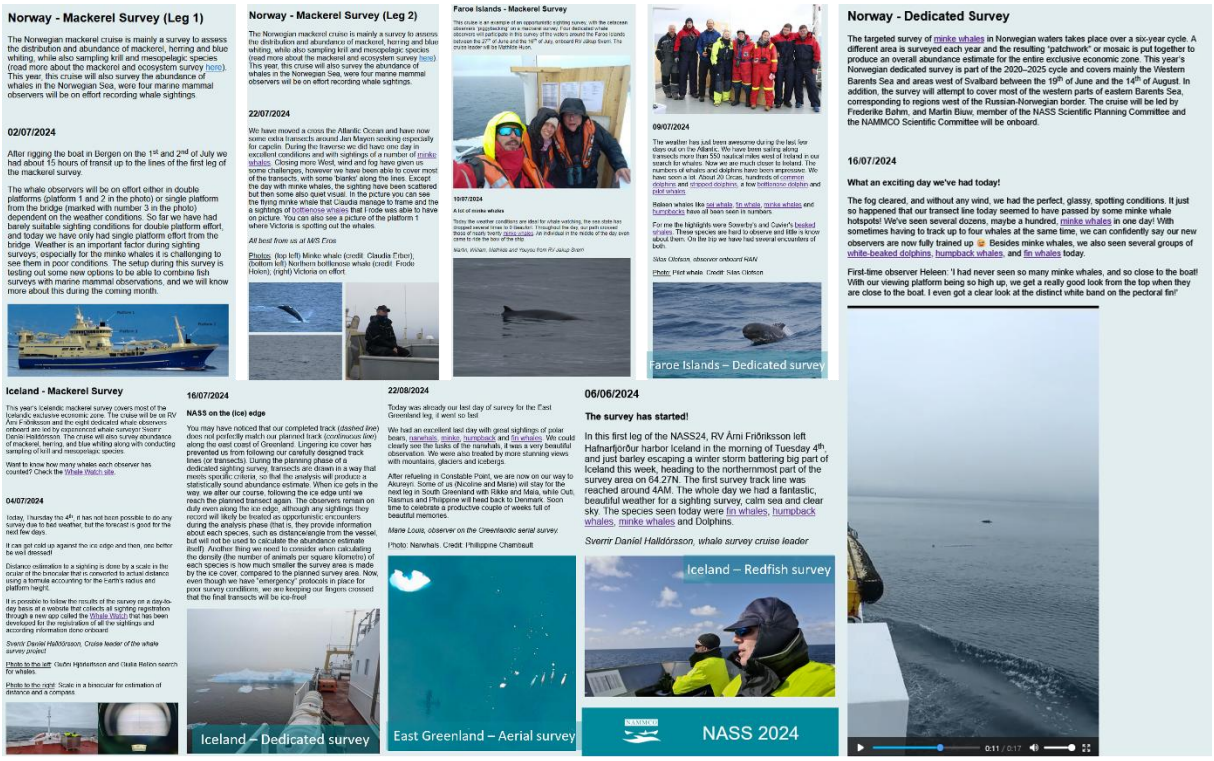

Figure 2. Examples of updates (text, photos, video) sent from NASS vessels documenting their progress.

Some challenges became quickly apparent after the page was set up. For example, despite frequent and detailed reminders to the cruise leaders, not all survey tracks, dates, and plans were made available to the Secretariat in a timely manner. Communication throughout most surveys was not frequent, and updates were secured via indirect channels (e.g., social media posts from the observers on board, who had not been informed about the outreach plan). During the debriefing meeting, the team leads noted that the task should have been delegated to other members of the team with more time on their hands during the cruises. This proved particularly helpful in keeping the observers engaged and motivated during the Greenlandic aerial surveys.

5. ABUNDANCE ESTIMATION – PLANS, TIMEFRAME, AND ISSUES

On 21 January 2025, the AEWG held an introductory meeting, with one member from each Member country, the two external experts from the SpC, and two members of the Secretariat. At this time, each country was at a different stage of the data processing and analysis.

Greenland had calculated abundance estimates for the target species and presented these results. While the group commended the rapidity of getting results, they agreed to wait until more members with appropriate expertise join the WG before formally approving the estimates.

The Faroe Islands had finished verifying the raw effort data, while Iceland had completed the bulk of verification. Neither country's protocol required observers to conduct identification of duplicate sightings while in the field, therefore the development of a protocol to identify duplicates post-hoc is needed. Norway conducted duplicate identification from the dedicated vessel, but not on board the mackerel survey vessels. Analyses for the dedicated Norwegian survey are underway.

It was agreed that the three countries should work together to find a common solution for the post-hoc identification of duplicates, ideally an algorithm that would automate part or all of the process.

Following the identification of duplicates, abundance estimates will be calculated for all remaining target species, pooling the data from the Faroe Islands, Iceland, and Norway. Data will also be pooled across the region for the non-target species. As each country with baleen whale target species has an obligation to present their abundance estimates to the IWC (see Table 2), the AEWG will review the estimates with that deadline in mind. For the Faroe Islands, the estimation of pilot whale abundance is critical for their robust assessment in late 2025; therefore, the AEWG will assess that estimate in October 2025 at the latest.

Table 2. Requirements and timeframe for analyses (including duplicate identification) for each country. Abundance estimation for non-target species is not under strict deadline. (*: discussion is ongoing as to outsourcing the identification of duplicates in each dataset.)

Country	Species	Duplicate ID	Abundance estimation needed by	Revision AEWG
Faroe Islands	Target *pilot whale*	*	September 2025	October 2025
	Non-target	*	-	Spring 2026
Greenland	Target *minke, fin, humpback, pilot whales, white-beaked, white-sided dolphins, harbour porpoise*	Done *in situ*	Preliminary analysis done and presented at SC 31	[IWC May 2025] October 2025
	Non-target	Done *in situ*	Preliminary analysis done	September 2025
Iceland	Target *Fin, minke whales*	*	September 2025	[IWC May 2026]
	Non-target	*	-	Spring 2026
Norway non-dedicated	Target *minke whale*	*	May 2025	[IWC May 2026]
	Non-target	*	-	Spring 2026
	Target *minke whale*	Done *in situ*	May 2025	[IWC May 2026]

Norway dedicated	Non-target	Done *in situ*	-	Spring 2026

During the AEWG meeting, a number of issues related to data collection and analysis were brought up. For one thing, Norway is discontinuing the dedicated mosaic surveys for minke whale after this successfully completed cycle. The mackerel surveys were meant to be tested as an alternative survey platform, however, the limited space for observers on board resulted in the use of a different configuration to the one used on the dedicated vessel. Furthermore, the curtailing of transects and the continued sailing during poor weather conditions created gaps in the observers' effort. The same is true for the opportunistic vessel used by the Faroe Islands. This raises two major questions: whether and how to combine the data obtained across different platforms (dedicated and non-dedicated), and what alternative survey methods can be used to collect the data in the first place, if dedicated surveys are no longer funded. The AEWG suggested the exploration of these topics in a workshop setting.

The Scientific Committee (SC) agreed that this would be applicable to several NAMMCO species, and two workshop topics were recommended. The first would focus more on alternative survey methods for cetacean abundance estimation (such as the use of drones, acoustic monitoring, and genetic techniques), which could complement or replace conventional surveys, as well as be used to assess small stocks. The second, recommended after the SC meeting itself, would be on spatial modelling approaches for dealing with uneven coverage in dedicated and opportunistic cetacean surveys.

The AEWG will hold a meeting in late September or early October 2025, and another in Spring 2026, to evaluate the abundance estimates generated for each species. Pike is Chair of the WG, as in the meetings following NASS 2015, and other external experts will be invited.