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MEETING OF THE COUNCIL

DOCUMENT 14	Update on the Planning of the North Atlantic Survey of Selected Cetaceans NASS-2024
Submitted by	Secretariat // NASS Scientific Planning Committee (SpC)
Action requested	Take note Provide comments on the progress of survey preparation
Background/content	<p>NAMMCO member Countries have scheduled a cetacean sightings survey (both target species and others) in the North Atlantic in summer 2024. The survey continues the NASS series, started in 1987, thus forming a 37-year time series of cetacean abundance.</p> <p>The SpC has held 10 planning meetings in 2020–2024. This document presents the progress in planning as of 6 March 2024, i.e., the decisions made regarding survey platforms, coverage, and methodology, as well as the allocation of funds across survey components. It also gives the tentative plan for the data analysis and their presentation and review by the NAMMCO WG on Abundance Estimates.</p>

UPDATE ON THE PLANNING OF THE NORTH ATLANTIC SURVEY OF SELECTED CETACEANS NASS-2024

1. BACKGROUND

Due to national and international requirements, management decisions on cetacean removals require scientific advice based on updated abundance estimates. Detecting trends is a requirement to understand anthropogenic impacts and, thus, is an essential step for designing management plans. It is agreed within NAMMCO that a better basis for the management of cetacean species in the NAMMCO area is obtained through effort coordination aiming at synoptic and contiguous surveys across the North Atlantic.

The upcoming North Atlantic Sighting Survey (NASS) in summer 2024 is the latest in a series of synoptic sighting surveys by NAMMCO Countries, which have taken place from 1987 to 2015. NASS 2024 will add to this series, thus forming a 37-year time series, providing a realistic opportunity for detecting changes in abundance and distribution of several cetacean species.

The NASS Scientific Planning Committee (SpC) has held a series of ten online and in-person meetings between September 2020 and March 2024 to coordinate survey plans and methodologies. Two external experts are included in the SpC, assisting with and advising on survey design and analysis.

These surveys are designed to obtain best abundance estimates for each country's target species. However, as every cetacean sighting is recorded, they also provide abundance for other species as well. For NASS 2024, the target species are: pilot whales for the Faroe Islands; minke, fin, and humpback whales for Greenland; minke and fin whales for Iceland; and minke whales for Norway.

The NASS survey is composed of two parts, the so-called *national surveys* covering essential areas for the countries' target species (West Greenland, Faroese and Icelandic area, part of the Norwegian mosaic survey cycle), and the so-called *associated survey efforts*. The associated survey efforts are essential for providing a larger and coherent survey coverage of the whole North Atlantic, enabling the detection of major shifts in the abundance and distribution of cetaceans, such as the abundance declines observed off West Greenland in 2015 or in the Icelandic coastal waters in 2007. The combination of *national surveys* and *associated survey efforts*, therefore, provides more reliable trends in abundance for the area.

The Norwegian Arktis 2030 call of the Norwegian Ministry of Foreign Affairs, through an application by the Ministry of Trade, Industry and Fisheries, granted 9,780,000 NOK to cover the cost of the associated survey efforts, as well as part of the data analysis of non-target species, while NAMMCO supports the cost of the coordination and preparation of the survey, as well as the review of the abundance estimates (589,000 NOK plus the support of the Secretariat).

The planning, preparation, and execution of the West Greenland survey and the Norwegian mosaic survey are ensured by Greenland and Norway, respectively, and will be similar to those of previous NASS surveys. The NASS Scientific Planning Committee coordinates the planning, preparation, and execution of the surveys in the Icelandic and Faroese areas, as well as the associated surveys.

The originally proposed national areas and NASS associated survey efforts are shown in Figure 1. Each platform's survey effort has since been determined to ensure maximum coverage of the target species' known ranges, maintain continuity with previous surveys, and allow for synoptic (concurrent) coverage of different areas.

Besides the four NAMMCO Countries, Canada and the UK are also planning to conduct sighting surveys in the summer of 2024, extending the survey coverage across the North Atlantic, similarly to the Trans-

NASS in 2007. Canada aims to conduct aerial surveys of the Labrador Sea and Gulf of St Lawrence from mid-July to mid-September. The Joint Nature Conservation Committee (UK) is planning a two-week survey of a stratum that was not covered by the SCANS IV survey in 2022 (equivalent to Block 8 in SCANS III). This will complement the Faroese coverage of the core pilot whale habitat that has been surveyed by all previous NASS.

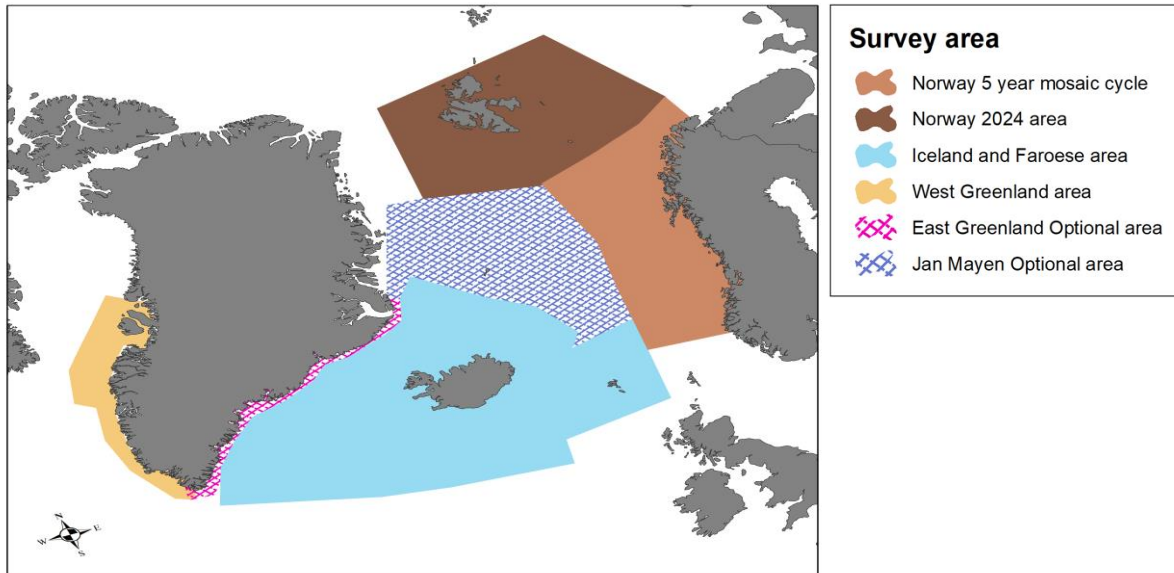


Figure 1. Extension of the proposed NASS 2024 and associated surveys. The size of the areas is estimated to be 726,044 km² for the Jan Mayen area, 1,911,354 km² for the Iceland and the Faroe Island area, 934,722 km² for the Norwegian mosaic cycle area, 936,437 km² for the Norway area (Svalbard), 225,285 km² for the West Greenland area, and 233,659 km² for the East Greenland area.

2. SURVEY DESIGN

2.1. SURVEY PLATFORMS

Greenland will conduct aerial surveys, while the Faroe Islands, Iceland, and Norway will conduct ship-based surveys, placing observers on board both dedicated vessels and opportunistic vessels conducting the ICES/IESSNS mackerel and redfish surveys.

While the Icelandic mackerel survey will pause sailing for 4–5 hours during the night and in bad weather, the redfish survey and Faroese and Norwegian mackerel survey will not. This increases the likelihood of large gaps in the observers' effort, due to the addition of night sailing without survey effort on top of poor visibility conditions. However, the size and density of the planned transects allows for sufficient on-effort sailing to obtain robust abundance estimates. Moreover, using these opportunistic platforms allows the dedicated platforms to increase coverage of the core pilot whale habitat and extend survey strata (blocks) that were poorly aligned in NASS 2015.

2.2 SURVEY STRATA

The survey strata covered by each platform are shown in Figure 2. The design ensures complete alignment between borders of adjacent strata and maximises coverage of the common area surveyed by all previous NASS, without significant loss of target species sightings (based on historical survey data, and with the possible exception of fin whales in more southern areas that will not be surveyed this year). The total area surveyed by NAMMCO Countries will cover 1,002,813 square nautical miles.

The Jan Mayen area (Figure 1) was originally intended to be surveyed by a dedicated vessel. However, given that the 2021 mosaic survey of the area was considered satisfactory by Norway, the SpC agreed

on a more cost-effective allocation of effort, namely, for the Jan Mayen area to be covered by the Norwegian mackerel survey strata. This serves a dual purpose: a) it covers an area of interest for minke whales, at a time when their distribution patterns appear to be shifting and b) it tests the use of the mackerel survey as an alternative monitoring platform for Norway, given that the mosaic survey cycles are being discontinued.

In NASS 2015, the East Greenland and westernmost Icelandic strata did not fully align, creating issues in the calculation of total abundance estimates for the area. Given the logistical difficulties of surveying further offshore by plane, as well as of optimising core areas for multiple target species, the East Greenland strata will remain the same as in 2015, and the dedicated Icelandic vessel will survey the gaps to the west and north of the mackerel and redfish survey.

Norwegian waters around Svalbard will be covered in part by the ship-based mosaic surveys, while West Greenland will be covered by national aerial survey effort.

Transects will follow an equal spaced zig-zag pattern, as is most commonly used by sighting surveys, taking into account logistical constraints and reducing transit time between transects as much as possible.

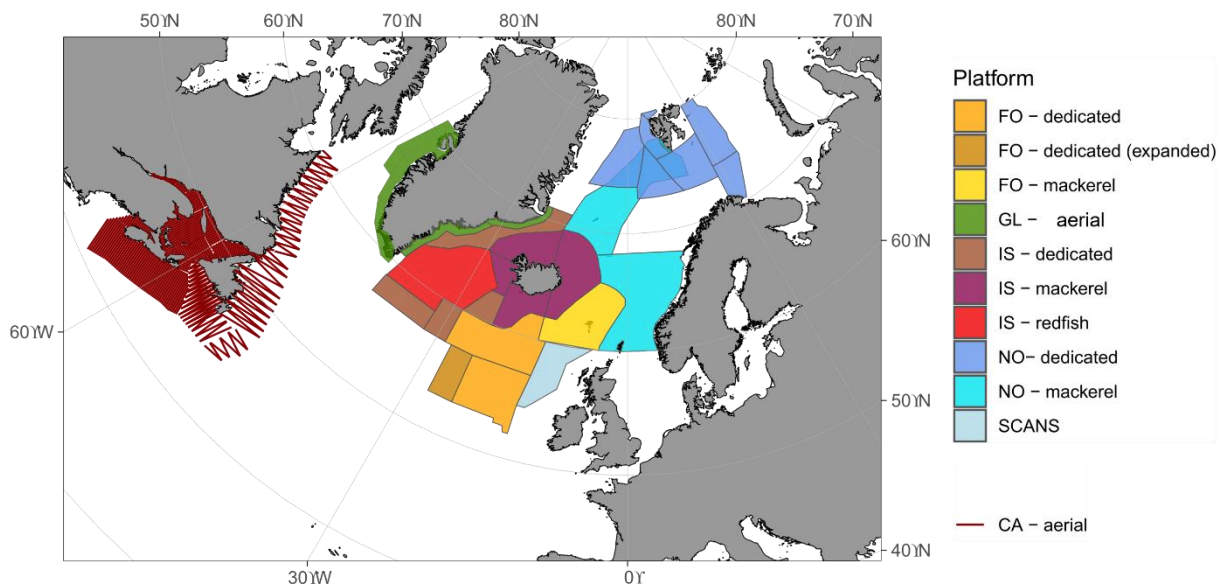
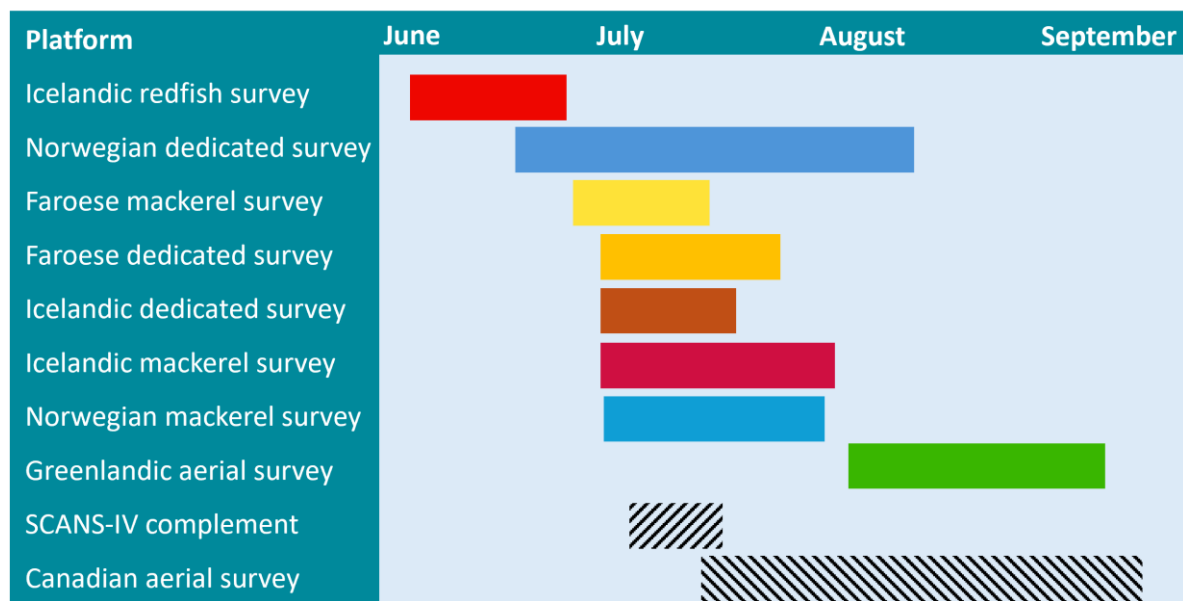


Figure 2. Planned NASS 2024 effort, including national and associated surveys, as well as planned Canadian (CA) and UK (SCANS) surveys. FO: Faroe Islands; GL: Greenland; IS: Iceland; NO: Norway.

The scheduled effort of each survey platform is given in Table 1. In an ideal scenario, all survey blocks would be covered at the same time (synoptic survey), to reduce the likelihood of animals moving between different areas and thus being counted twice. While this is logistically impossible for a survey of this scale, the bulk of the effort overlaps quite well across adjacent areas, with the exception of the redfish and Greenlandic aerial surveys. Inclement weather and persistent ice cover in July in East Greenland preclude the possibility of conducting the aerial survey earlier than August. However, the timing of the Greenlandic surveys aligns well with the planned Canadian surveys. The SCANS IV extension will ideally be timed to coincide the Faroese surveys to the north and west of that stratum.

Table 1. Scheduled sailing time for each NASS 2024 survey platform. Note: the timing of the SCANS-IV complement and Canadian surveys has not yet been decided.



3. PROTOCOLS FOR ICELANDIC, FAROESE, AND ASSOCIATED SURVEYS

All surveys, aerial and ship-based, will operate under double-platform configuration, which allows for the correction of cetacean perception bias that occurs when animals are available to be seen but are missed by the observers. All but the Norwegian surveys will use Independent Observer mode, while the Norwegian vessels will employ Tracker mode, in which observers on one platform scan a wider area than the observers on the other platform. Due to capacity limitations, the Faroese and Norwegian mackerel vessels will only have four observers on board, whereas the Icelandic mackerel and redfish survey vessels will have eight.

For datasets that will be analysed together, the survey protocols (observer setup and equipment, data entry methods) will be the same across platforms. For example, the dedicated Faroese and Icelandic survey effort will be analysed together. Similarly, the Norwegian mackerel survey will be tested against the dedicated survey effort around Svalbard, and will therefore use the same protocols.

Observers will remain on effort in sea states below Beaufort 6, which is suitable for detection of the larger target species. However, for smaller/cryptic species, only observations made in Beaufort ≤ 4 will be used to generate abundance estimates.

The hardware and software for recording sighting data, as well as plans observer training and sighting protocols are not finalised yet; however, they will be ready for review by the SpC in May, prior to the start of the survey. The shipboard survey protocols for the dedicated Norwegian mosaic survey targeting minke whales will be the same as in previous years. The Greenlandic aerial survey protocols will remain largely unchanged from previous years. One notable difference will be the collection of time-in-view data for all species, as opposed to just the target species. The Faroe Islands intend to include drone deployments as a supplementary method of estimating pilot whale group size; the protocol for this should also be developed in time to be reviewed in May.

4. BUDGET

For meeting planning and participation during 2023, a total of NOK 116,500 was contributed (100,000 from NAMMCO and 16,500) from Norway. The realised expenses in 2023 were NOK 80,675.97. The

remaining funds will be transferred to 2024 and used to continue paying external contracted work and participation in planning meetings.

The voluntary contribution of NOK 9,100,000 allocated by Norway to achieve thorough and contiguous coverage of the eastern North Atlantic (via the associated survey efforts) included NOK 5 mil intended for dedicated coverage of the Jan Mayen area, and 1.5 mil NOK to use NASS vessels as deployment platforms for the MINTAG project. Based on updated considerations since the initial project funding application in 2022, the SpC has decided on the optimal distribution of funds to achieve the NASS 2024 goals. Specifically, these funds will maximise coverage of the high-density whale area between Greenland and Iceland, ensure complete coverage of the proposed East Greenland strata, increase coverage of the Faroese survey area, and equip two legs of the Norwegian mackerel survey (thereby also covering the Jan Mayen area).

The aim is to maximise the budget's value, taking into account *inter alia* the good coverage and results of the Norwegian mosaic survey in the Jan Mayen area in 2021, and the fact that the Norwegian mosaic survey will be phased out after 2024. Norway is keen to test alternative survey platforms, and the mackerel survey is an ideally timed opportunity for such a test. As there will be some overlap of the dedicated and opportunistic strata around Svalbard, this will allow for more rigorous testing of the mackerel survey outputs.

The revised budget also takes into account the slow progress of the MINTAG project. The MINTAG Steering Group decided to continue experimental tagging in 2024 (and not full tag deployment) and therefore deploy fewer tags in summer 2024, with a focus on coastal deployments. In light of this, and Iceland's decision to cover the cost of coastal tagging efforts locally, part of this budget will be used for coastal tagging in the Lofoten area ahead of the survey (data on whale movement and availability to observers will thus be available during the survey, allowing for appropriate correction of availability bias, which occurs when animals are in the area but not observable at the surface) and other parts can be reallocated to other tasks contributing to the success and maximised output of NASS 2024. However, some tagging from NASS survey platforms will be done from the Norwegian dedicated vessel, and tagging guns and tags will be available on all dedicated survey vessels.

The proposed budget is shown in Table 2. The new total allocation of funds for East Greenland is NOK 2.3 million, while for the Faroe Islands it is NOK 700,000.

Table 2. Original and optimal distribution of Norway's voluntary contribution to NASS 2024.

Original allocation	Original budget	Reallocation	Reallocated budget
East Greenland	1,700,000	East Greenland	1,700,000
Jan Mayen area	5,000,000	East Greenland	600,000
		Norwegian mackerel survey (2 legs including Jan Mayen)	2,200,000
		Icelandic dedicated vessel	2,100,000
		Faroese mackerel survey	100,000
Increased Faroese effort/coverage	500,000	Increased Faroese coverage (mackerel survey)	500,000
Ship-based MINTAG deployment	1,500,000	Faroese mackerel survey	100,000
		Lofoten MINTAG deployment	1,200,000
Abundance estimate of non-target species (FO, IS, NO)	400,000	Abundance estimate of non-target species (FO, IS, NO)	600,000

The projected meeting and survey expenses (excluding staff salaries) for 2024 are shown in Table 3, along with the contributions from different sources that will cover these costs.

Table 3. Projected expenses related to NASS 2024 activities in 2024 and contributions from NAMMCO and member Countries.

Expenses	NOK	Contributions	NOK
Coordination, meetings & contracted work	150,000	NAMMCO	150,000
Greenland aerial survey	6,800,000	Greenland Institute of Natural Resources	4,500,000
		Voluntary contribution - Norway	2,300,000
Iceland dedicated survey	11,100,000	Marine Research Institute - Iceland	9,000,000
		Voluntary contribution - Norway	2,100,000
Faroe Islands dedicated survey	2,250,000	Marine Research Institute - Faroe Islands	2,250,000
Faroe Islands mackerel survey	700,000	Voluntary contribution - Norway	700,000
Norway dedicated survey	9,000,000	Institute of Marine Research - Norway	9,000,000
Jan Mayen mackerel survey (2 legs)	2,200,000	Voluntary contribution - Norway	2,200,000
MINTAG deployments	1,200,000	Voluntary contribution - Norway	1,200,000
Abundance estimate of non-target species (FO, IS, NO)	600,000	Voluntary contribution - Norway	600,000

5. 2024–2025 TIMELINE OF ACTIVITIES

The SpC met on 23 January and 6 March 2024 to finalise the survey effort design, including stratification and transects. Another meeting will be held in May 2024, prior to the start of all surveys, in order to review the platform setup and protocols for observer training and data recording. The schedule for all NASS activities planned for 2024 and 2025 is shown in Table 4.

Following the completion of all surveys, a debriefing meeting will be held in October 2024, to review the survey process as a whole. Data validation will begin as early as September 2024, as most of the surveys will have been completed before then, and analysis will begin shortly thereafter, both for target and non-target species. The technical Working Group on Abundance Estimates (AEWG) will review the initial analyses in January 2025, providing guidance and corrections as needed to obtain robust estimates for each species. Another meeting of the AEWG will be held in the Fall of 2025. Approved results will be used by stock assessment working groups, including the Pilot Whale Working Group, which is scheduled to meet in 2025. These results will be presented to the NAMMCO Management Committees and Council in late 2025.

