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Action requested	For Information
Background/content	

FAROE ISLANDS
PROGRESS REPORT ON MARINE MAMMALS 2023

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I. INTRODUCTION

This report summarises research on cetaceans and pinnipeds conducted in the Faroe Islands in 2023, by the Faroe Marine Research Institute and the Faroese Environment Agency.

II. RESEARCH BY SPECIES 2023

II.a Species/Stocks studied

- Grey seal (*Halichoerus grypus*) – tagging
- Pilot whale (*Globicephala melas*) – tagging, landed animals
- White-sided dolphin (*Lagenorhynchus acutus*) – tagging, stored samples
- Bottlenose whale (*Hyperoodon ampullatus*) – observation
- Common dolphin (*Delphinus delphis*) – observation

II.b Field work

In 2023, biological samples for age and reproductive analysis were collected from 452 **pilot whales**, by the Faroe Marine Research Institute, in 7 drives. In addition, 86 stomach content samples and 452 necropsies were stored for diet, genetic and ecological studies.

In 2023, the Faroese Environment Agency took samples of **pilot whales** in connection with grinds in Kollafjørður on 8 May, Miðvágur 6 June and Sandagerði 9 July. In all, 42 individual samples of muscle and blubber, and approximately same number of liver and kidney tissue, were taken.

Two **grey seals**, a juvenile female and a juvenile male, were tagged with GPS/GSM transmitters in June and July, respectively, by the Faroe Marine Research Institute.

Pilot whales were tagged with satellite-linked transmitters in two operations. In June, one whale from a pod of 25 animals was beached and fitted with a satellite transmitter in Sandavágur, while in July, five individuals from a pod numbering 40 whales were tagged at the same location.

White-sided dolphins were tagged with satellite-linked transmitters during three different tagging events. In June, six individuals were tagged in Fuglafjørður, while in August, two animals were tagged in Leynar and two in Norðragøta. All three pods beached for tagging counted around 15 dolphins; the Leynar pod being part of a bigger group though.

Three northern **bottlenose whales** entered Skálafjørður, the largest fjord in the Faroes, in early July. They resided in the inner part of the fjord for fourteen days, thereafter moving to another fjord, Kaldbaksfjørður. Here they stayed for another two months, also in the innermost part of the fjord. Their behaviour shifted between short distance movements back and forth, passive floating and leaping, all the time on the same side of the fjord. All animals were of similar size,

about 7 meters, likely maturing animals. There was no sign of any feeding activities during these nearly three months, but no obvious drop in body condition either.

A short-beaked **common dolphin** was present in Kaldbaksfjøður from summer 2022 until autumn 2023, or for more than a year. The relatively small sub-adult dolphin was likely predating on sprat and herring, common resources in the fjord, during the visit.

II.c Laboratory work

The biological material collected from **pilot whales** in 2023, and materials from previous years, is under processing for analysing the age, reproduction and diet, partly as part of the TOPLINK project.

Available samples from **white-sided dolphins** were analysed in 2023, and the age and life-history data presented at the NAMMCO Dolphin Working Group assessment meeting in November 2023.

The laboratory procedure for age estimation of marine mammals is now fully implemented at the Faroe Marine Research Institute.

Pilot whale stomach content and stable isotopes analysis of teeth are in progress, for ecological studies as part of the TOPLINK project.

The Environment Agency are regularly collecting **pilot whale** samples for a tissue bank, where the aim is to take samples from three schools a year, with generally 25 individuals from each. In addition to a pollution monitoring program, as outlined in Table 1, research activities are done as projects and when funding allows. Such projects could be to investigate the presence of chemicals of emerging environmental concern and elucidate potential negative impact of pollutants on pilot whales.

c. Table 1. Pollutants in the pilot whale monitoring program of the Environment Agency.

Matrix (tissue)	blubber & muscle	kidney	liver	blubber / liver*,**	blubber*
Frequency of sampling	yearly, pref. from 3 schools, focus incr. on juv. males for timetrend				
number of samples analysed per year	25	15	15	5	5
Tissue analysed for:	Blubber:Legacy persistent organic pollutants$ Muscle:metals£	Cadmium, dry mass	Mercury, selenium, cadmium, dry mass	Perfluoroalkyl substances, polybrominated diethyl ethers	hexabromo cyclo-dodecane, Dechlorane plus

*Time trends
** PFAS is analysed in liver
$ PCB, HCH, HCB, DDT, DDE, and from ca. ½ of the samples even o,p-isomer DDT and metabolites, CHL, Mirex, Toxaphene.
£ Mercury, selenium, dry mass and stable N and C isotopes

II.d Other studies

Faroe Marine Research Institute has since 2018 made boat-based censuses of **grey seals** along the shoreline during summer, for monitoring abundance and trend. In order to have a full abundance estimate, a correction factor for the unknown proportion of seals outside the coastal zone, and missed during counts, is needed. Satellite tracking data from fifteen grey seals is available that may provide this information.

TOPLINK is project cooperation between Faroe Marine Research Institute and Greenland Institute of Natural Resources, for studying the ecological role of killer whales, pilot whales and dolphins along the Greenland-Shetland Ridge. Successful fieldwork was performed in east Greenland for the first time and in the Faroe Islands in 2023.

Faroe Marine Research Institute continues the effort of tracking **pilot whale** in the North Atlantic. Further tagging activities will harmonize with the MINITAG (a NAMMCO initiative) and TOPLINK projects, which helps securing the continuation of cetacean tagging studies in the Faroe Islands.

II.e Research results

The 10 **white-sided dolphins** tagged in total in 2023 provided contact for between 2 and 176 days. The individuals from all three pods left the Faroe Shelf shortly after tagging, heading towards slope areas and deeper waters. They generally went in two directions; either northward to the slope north and northeast of the Faroe Plateau or west towards the Faroe – Iceland Ridge, where the thereafter stayed for the whole tracking duration. However, one dolphin migrated all the way to the east coast of Greenland, where it was mainly attracted to the shelf slope. Similar long distance migration was observed also from tracking in 2022. Interestingly, all of the tracked dolphins separated only a few days after tagging. This behaviour has been seen in all six tagging events so far, where a total of 23 dolphins have been tagged. This dispersal behaviour is not believed to be induced by the tagging operation itself. Rather it confirms the fluid mating and group structure of the white-sided dolphin shown also by genetic analysis.

The transmitters of the six tagged **pilot whales** from 2023 provided contacts for up to 85 days. All tagged animals moved directly east to the Faroe-Shetland channel, and stayed there for the tracking period, which lasted for up to three months. Animals were overall most strongly associated with the eastern slope and the northern part of the channel.

The male and female juvenile **grey seals** were tracked for 88 and 179 days, respectively. The 135cm male showed a resident behaviour, moving mainly within the tagging location in Vestmannasund, a narrow sound with strong tidal currents, but with some repeated trips also to a bay 5 nautical miles west of Vestmannasund. The 149cm female was more dynamic, frequently visiting the westernmost island Mykines, and with also several trips of up to 20 nautical miles offshore. Interestingly, the female made one trip towards the Icelandic Shelf, and was 170 nautical miles offshore, before returning home. This represent the longest distance a grey seal tagged in the Faroes has moved offshore.

Gose *et al.* used Atlantic **white-sided dolphin** samples collected from stranding and free-ranging individuals across the North Atlantic, including Faroes, to investigate population structure, genetic diversity and individual relatedness. Mitochondrial DNA sequences and nuclear DNA single-nucleotide polymorphisms showed a complete lack of population differentiation across the species' range, implying an unusual pattern of strong connectivity. And the lack of differences in genetic diversity among geographic regions and weak within-group relatedness further supported the existence of species-wide panmixia in white-sided dolphin. This study induced important new knowledge for conservation and management of the Atlantic white-sided dolphin.

The preliminary abundance estimate of **grey seals**, based on counts along the shoreline in summer, summarized up to 661 animals. This number represents an absolute minimum, since it is not corrected for the unknown proportion of animals that were offshore and away from the coastal zone during the surveys.

Results from the contaminant analyses of **pilot whales** were reported by the Faroese Environment Agency in the report: *Reinert et al., (2023). AMAP Faroe Islands 2017-2020: Heavy Metals and POPs Core Programme*. Along with the data for heavy metals and legacy POPs, the report includes data from time trend analyses of PBDEs and PFAS in pilot whale. The monitoring of pollutants in pilot whales is focusing on juvenile males, so as to minimize variability that stems from sex/age related biological processes. The monitoring results indicate a steadily decreasing concentration of POPs in general (i.e. PCB and legacy pesticides) including the brominated flame retardants PBDE. Also perfluorinated alkyl substances, like PFOS, seem to have decreased much the latest years, although the concentrations show large variations and conclusions should therefore be done with caution.

Result from analyses of heavy metals in **pilot whale** foetuses and their mothers from 2018 and 2019 were presented at SETAC Europe 33rd Annual Meeting in Dublin, Ireland 30 April to 4 May 2023. The results show that mercury is transported from the mother to the fetus, and the transfer is correlated to the gestation time, whereas cadmium was not transferred to the fetus during gestation. PCB result in fetuses and mothers are also received, whereas analyses of PFAS are ongoing and will be ready in 2024.

III. ONGOING (CURRENT) RESEARCH

Faroe Islands has requested NAMMCO for management advice on sustainable harvest levels of long-finned **pilot whales**. A NAMMCO assessment working group meeting is planned in 2025, after a new abundance estimate from the NASS-2024 survey, and updated life history data, has become available.

The Faroe Marine Research Institute will in 2025 continue the summer monitoring census of the **grey seal** population. Research will include tagging more animals and camera trap monitoring at vital haul-out locations, for investigating haul-out behaviour and to induce a correction factor for missed animals, in order to have a total population estimate.

The Faroese Environment Agency will continue to sample **pilot whales** for pollution monitoring in 2024. Co-operations with researcher from Harvard University on PFAS contamination in pilot whale and researchers from the University in Bergen regarding analyses of effects of pollutants on pilot whales are in progress.

Biological sampling from drive hunts and marine mammal standings' continues as a standard monitoring routine.

IV. ADVICE GIVEN AND MANAGEMENT MEASURES TAKEN

The NAMMCO Scientific Committee Dolphin Working Group provided, at its meeting in 2023, for the first time, management advice for **white-sided dolphins** in the Faroe Islands. The advice has been passed on to the NAMMCO Scientific Committee 2024 meeting for review and approval, and will be presented finally to the NAMMCO Council in March 2024.

Law no. 65, from 14. May 2020, bans all culling of marine mammals in connection with fish farming activities. Prior to this, aquaculture farms were allowed to cull **grey seals** interacting with the farms, but the new law enforcement stop this cull completely. Recreational hunting of grey seals has no tradition and is not practiced.

The Fisheries Inspection has followed the recommendations from NAMMCO, that the Faroes should monitor potential **by-catch** of marine mammals in the pelagic fisheries targeting mackerel, herring and blue whiting, and has conducted observations. For all fisheries, fishermen are mandated to record and deliver by-catch information of marine mammals, both in the electronic and paper logbooks.

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e. V. PUBLICATIONS AND DOCUMENTS

Clerck, S. De. 2023. Movements of Atlantic white-sided dolphins tagged in the Faroe Islands. *NAMMCO SC/30/DWG/13*. Working paper presented to the NAMMCO Dolphin Working Group, Copenhagen, November 2023. 7 pp.

Gose M-A, E Humble, A Brownlow, B Mikkelsen, C Loftus, D Wall, E Rogan, M ten Doeschate, N Davison, R Ogden, Stranding collections indicate broad-scale connectivity across the range of a pelagic marine predator, the Atlantic white-sided dolphin (*Lagenorhynchus acutus*). *ICES Journal of Marine Science*, Volume 80, Issue 4, May 2023, Pages 1120–1128, https://doi.org/10.1093/icesjms/fsad050

Mikkelsen, B., and Hoydal, K. 2023. Faroe Islands – Progress report on Marine Mammals 2022. Presented to the NAMMCO Council, 1-2 March 2023, Oslo, Norway. 6pp.

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Mikkeslen, B., Akralíð, R., Ofstad, L. H. 2023. Age, growth and reproduction of white-sided dolphins (*Lagenorhynchus acutus*) in the Faroe Islands. *NAMMCO SC/30/DWG/12*. Working paper presented to the NAMMCO Dolphin Working Group, Copenhagen, November 2023. 18 pp.

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Hoydal, K. S., Reinert, H. W. (2023). In utero maternal transfer of heavy metals in long-finned pilot whale mother-foetus pairs. Poster SETAC 33rd Annual Meeting in Dublin, Ireland, 30. April–4. May 2023.