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FAROE ISLANDS PROGRESS REPORT ON MARINE MAMMALS 2015

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I. INTRODUCTION

This report summarises research on cetaceans and pinnipeds conducted in the Faroe Islands in 2015. Research has been conducted by the Museum of Natural History and the Environment Agency.

II. RESEARCH BY SPECIES 2015

II.a Species/Stocks studied

- Grey seal (*Halichoerus grypus*) – hunting statistics
- Pilot whale (*Globicephala melas*) – landed animals
- Bottlenose whale (*Hyperoodon ampullatus*) – stranded animals

II.b Field work

In 2015, a total of 226 samples were collected from **pilot whales** by the Natural History Museum, from 3 drives – Miðvágur on 06 June (154 samples), Sandavágur on 12 August (61) and Fuglafjørður on 30 November (11). This is a continuation of a small-scale sampling programme, with the plan to complement with a more comprehensive monitoring programme, one priority being age determination of all landed individuals. A sample typically refers to recording and sampling total length, weight (when possible), sex, teeth, reproductive organs and stomach as well as muscle, blubber, kidney and liver tissues. Foetuses are sampled when available.

On August 24 the Museum tagged five **pilot whales** with satellite transmitters. A small pod counting seven whales, spotted in the northern part of the archipelago, was driven to the bay of Fuglafjørður. The pod was forced gently towards the shore of the authorized whaling beach, where all animals stranded. Satellite transmitters were attached to the dorsal fin of five whales during the two-hour tagging operation. Thereafter, the pod swam to sea again. This is the fifth tagging in a dedicated tracking programme, with the objective to study movements and distributions of pilot whales recruiting to the hunt in the Faroe Islands.

In 2015, the Environment Agency took samples of **pilot whales** in connection with grinds in Miðvágur 6 June, Hvannasund 29 June and Tórshavn 23 July.

On 09 August, two **bottlenose whales** stranded in Sandvík on Suðuroy. Stomachs and lower jaws were delivered to the Museum of Natural History for examinations.

II.c Laboratory work

The biological material collected from **pilot whales** in 2015 has been prepared ready for finalizing examinations of age, diet and reproduction.

The Environment Agency are collecting **pilot whale** samples (blubber, muscle, liver and kidney) for regular pollutants monitoring which includes heavy metals cadmium and mercury and selenium and persistent organic pollutants like PCB, DDT, chlordane's and other pesticides, but also including perfluorinated alkyl compounds and polybrominated diphenyl ethers. The aim is to collect samples from preferentially 3 schools a year, not less, so as to monitor the pollutant level. In addition to the monitoring, research that aims to elucidate potential negative impact of pollutants on pilot whales are undertaken when funding allows.

In 2015, a small workshop was arranged where staff at the Museum of Natural History and the Environment Agency were trained in assessing sexual /reproductive history of **pilot whale** individuals from gonadal tissue inspection. The initiative was founded by a larger research application for 2015, to support the strengthening and establishment of research capabilities on pilot whales in particular- where several branches of biological and chemical sciences were included, and would have given a good core of scientist focusing on pilot whale biology - in particular the parts that relates to genetics, histology and environmental pollutants in various tissues including the brain - in addition to the general ecological studies. The project proposal was not successful in attracting funding, but the overall study aims are still relevant and although resources are limited, the plan is to carry out the planned tasks, although progress will be slow until funding has been secured.

On request from the Food and Veterinary Agency, the Environment Agency provided blubber samples from 18 **pilot whale** individuals, from two the 2015 pods, for analysis of dioxin and PCB; in a particular survey of dioxin-toxicity carried in pilot whale blubber with regard to consumption by humans. In addition to these analyses of pollutants, the Food and Veterinary Agency received blubber and muscle samples from 15 juveniles and adults of both sexes, from 2015, to be analysed for fatty acids, carnitin and Vitamin D.

II.d Other studies

In the Faroe Islands **grey seals** are solely killed at salmon sea farms, when interfering with the installations. In 2010, a logbook system of seal culls was implemented, and fish farmers were motivated to deliver statistics on an annual basis. Unfortunately, the reporting system is still not optimal in providing a full overview of grey seal removals.

II.e Research results

A study, integrating **pilot whale** samples from Faroe Islands, the Iberian Peninsula, UK and US, explored the population diversity and structure of the species in Atlantic waters, assessed through biogeochemical (fatty acids and stable isotopes) and genetic (mitochondrial DNA) markers (Monteiro et al., 2015). Combining these markers will have the powerful strategy to identify population diversity and structure over different timescales. The genetic analysis did show genetic differences between all sample regions, except UK and US. The analysis did not support any clear separation between north-western and north-eastern Atlantic, mainly due to the high frequency of one ancestral haplotype, the only of six haplotypes common to all regions. The biogeochemical analysis did not reveal any regional differences. Results from biogeochemical tracers supported previous dietary studies, revealing geographic and ontogenetic dietary variation in pilot whales. Fatty acids revealed ecological differentiation between all regions analysed, while stable isotopes showed an overlap between some sampling regions. Although the present study show clear evidence of population structure,

based on both genetic and biogeochemical markers, in pilot whales from the North Atlantic, it seems difficult to define robust stocks to be used in a management context.

Results of PFAS analysis of **pilot whales** were partially presented in Sunderland et al. (see Figure 1) at the Goldschmidt 2015 Conference in Prague, 17 August 2015. The results show that, in contrast to the declining trend observed a few years ago, even PFOS in pilot whale muscle appears to be increasing again (Figure 2).

Temporal trends in perfluorinated alkylated substances (PFASs) in North Atlantic seawater and pilot whales

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Figure 1. Authors and affiliations for the Sunderland et al., 2015 presentation.

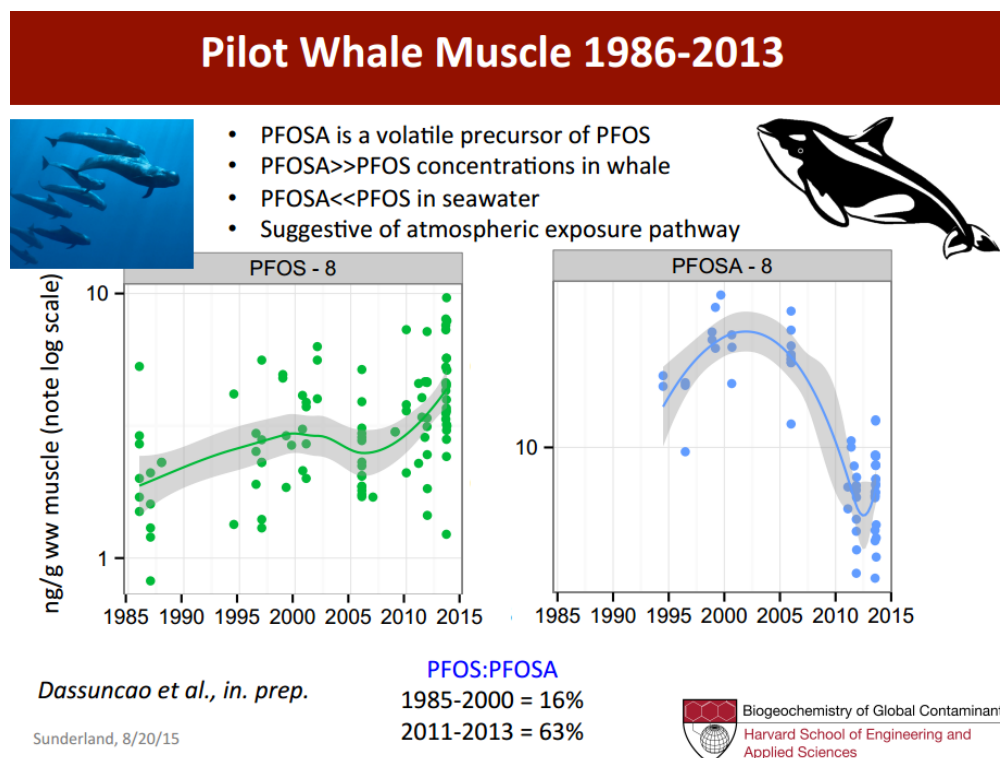


Figure 2. Slide from the Sundeland et al., 2015 presentation.

III. ONGOING (CURRENT) RESEARCH

The Museum of Natural History will continue to track **pilot whales** by satellite telemetry, in order to monitor migration patterns and the distribution area of pilot whales recruiting to the Faroese harvest.

A PhD study at the Environment Agency on effects of pollutants on hormone and vitamin concentrations in **pilot whales** is in progress.

IV. CATCH DATA

Appendix 1. Data available at the NAMMCO secretariat.

V. BY-CATCH DATA

The electronic logbook system for all fishing vessels larger than 15 GRT, with mandatory reporting of marine mammal by-catches, has been in function for three years now, still for some selected fleets. Reported by-catches are given in Appendix 2. The rare incidences with by-catches of large whales have traditionally been reported directly to the Museum.

VI. ADVICE GIVEN AND MANAGEMENT MEASURES TAKEN

None

VII. PUBLICATIONS AND DOCUMENTS

Mikkelsen, B. and Dam, M. 2015. Faroe Islands – Progress report on Marine Mammals 2014. Paper presented to the NAMMCO Scientific Committee, Tórshavn, Faroe Islands. 5pp.

Monteiro, S. S., Méndez-Fernandez, P., Piertney, S., Moffat, C. F., Ferreira, M., Vingada, J. V., López, A., Brownlow, A., Jepson, P., Mikkelsen, B., Niemeyer, M., Carvalho, J. C. and Pierce, G. J. 2015. Long-finned pilot whale population diversity and structure in Atlantic waters assessed through biogeochemical and genetic markers. *Mar. Ecol. Prog. Ser.* 536:243-257.

Víkingsson Gísli A., Pike Daniel G., Valdimarsson Héðinn, Schleimer Anna, Gunnlaugsson Thorvaldur, Silva Teresa, Elvarsson Bjarki Þ., Mikkelsen Bjarni, Øien Nils, Desportes Geneviève, Bogason Valur, Hammond Philip S. 2015. Distribution, abundance, and feeding ecology of baleen whales in Icelandic waters: have recent environmental changes had an effect? *Front. Ecol. Evol.* 3, 1-18. <http://dx.doi.org/10.3389/fevo.2015.00006>

Katrin S. Hoydal, Robert J. Letcher, David A.D. Blair, Maria Dam, Christina Lockyer, Bjørn M. Jenssen. Legacy and Emerging Organic Pollutants in Liver and Plasma Sample Pairs of Long-finned Pilot Whales (*Globicephala melas*) From Waters Surrounding the Faroe Islands. *Science of the Total Environment* 520 (2015) 270–285.

APPENDIX 1 – CATCH DATA

Pilot whale drives in the Faroe Islands in 2015.			
Date	Locality	Number of whales	Samples taken
06 June	Miðvágur	154	154
29 June	Hvannasund	22	0
23 July	Bøur	111	0
23 July	Tórshavn	142	0
12 August	Sandavágur	61	61
30 November	Fuglafjørður	11	11
2015	6 pods	501 whales	226

APPENDIX 2 – BY-CATCH DATA

By-catch of marine mammals in the Faroe Islands in 2015.					
Date	Locality	Species	Gear	Number	Samples
25 September	Faroese EEZ	Whale	Trawl	1	na
27 November	Faroese EEZ	<i>Balaenoptera acutorostrata</i>	Trawl	1	na
2015				2	

APPENDIX 3 - STRANDINGS

Marine mammal stranding in the Faroe Islands in 2015.				
Date	Locality	Species	Number	Samples
09 August	Sandvík, Suðuroy	<i>Hyperoodon ampullatus</i>	2	2
2015			2	2