

**ICELAND. PROGRESS REPORT ON CETACEAN RESEARCH, JUNE 2006 TO APRIL 2007 WITH
STATISTICAL DATA FOR THE CALENDAR YEAR 2006.**

COMPILED BY

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This report summarises information obtained from: the Marine Research Institute (MRI), Reykjavík, Iceland and cooperating institutes.

1. Species and stocks studied

Common name	Scientific name	Area/stock(s)	Items referred to
Fin whale	<i>Balaenoptera physalus</i>	Icelandic and adjacent waters	2.1.2, 2.2, 4.4, 6.1, 9
Blue whale	<i>Balaenoptera musculus</i>	Icelandic and adjacent waters	3.2
Humpback whale	<i>Megaptera novaeangliae</i>	Icelandic and adjacent waters	3.1.1, 3.2
Common minke whale	<i>Balaenoptera acutorostrata</i>	Icelandic and adjacent waters	2.1.2, 3.1.3, 4.2, 4.4, 5, 6.1, 6.2, 6.2.1, 6.2.3, 9
Sperm whale	<i>Physeter macrocephalus</i>	Icelandic and adjacent waters	2.2
Northern bottlenose whale	<i>Hyperoodon ampullatus</i>	Icelandic and adjacent waters	2.2, 4.3, 6.2.1
White-beaked dolphin	<i>Lagenorhynchus albirostris</i>	Icelandic and adjacent waters	3.1.1, 3.1.3,
Killer whales	<i>Orcinus orca</i>	Icelandic and adjacent waters	3.1.1, 4.3, 6.2.1

2. Sightings data

2.1 Field work

2.1.1 SYSTEMATIC

No systematic sightings surveys were conducted in 2006. Iceland will participate in an extensive multinational sightings survey (TNASS) in 2007 (SC/59/O19). The Icelandic contribution to TNASS will be similar to that in NASS-2001.

2.1.2 OPPORTUNISTIC, PLATFORMS OF OPPORTUNITY

As a part of the whale research programme, all effort and whales sighted during the catch operation are recorded. During the commercial fin whaling in October, time budget and sightings data was collected as in earlier fin whaling seasons.

MRI and a whale watching company operating in SW Iceland co-operated in reporting and compiling sightings data during whale watching excursions.

2.2 Analyses/development of techniques

A new abundance estimate for fin whales in the central North Atlantic based on a sightings survey conducted in 2001 of 25,800 animals (approx. 95% confidence intervals 20,300-33,000) was agreed at a joint NAMMCO/IWC Workshop in early 2006 and confirmed by the IWC Scientific Committee at its Annual Meeting in 2006 (IWC 2007). Recent changes in distribution and abundance of fin whales in the Irminger Sea/Denmark Strait coincided

with changes in some hydrographical parameters (Vikingsson and Valdimarsson 2006). New abundance estimates for killer whales in central North Atlantic based on the four NASS surveys 1987-2001 ranged from 4,400 (1995) to 26,800 (1989) (SC/59/SM5).

In 2006 large effort was placed on analysis of data from the North Atlantic Sightings survey (NASS) series 1987-2001. The results of these analyses will be published in a Special Volume of NAMMCO Scientific Publications later this year (2007), including new information on distribution, abundance and trends of blue, fin, minke, humpback, sperm, and N-Bottlenose whales (see the following "For Information" documents: 47, 47, 48 and 51 submitted to this meeting).

3. Marking data

3.1 Field work

3.1.1 NATURAL MARKING DATA

The MRI continues its long-term research projects based on photo-identification of cetaceans, notably blue, humpback and killer whales and white-beaked dolphins. No designated cruise for collection of natural marking data was conducted in 2006, but photos of cetaceans taken during whale watching excursions and from other opportunistic platforms in 2004-2005 were archived at MRI.

3.1.2 ARTIFICIAL MARKING DATA

3.1.3 TELEMETRY DATA

Unsuccessful attempts were made to instrument common minke whales with satellite and TDR tags in summer and fall of 2006. Seven animals were tagged in 2004, as a part of the Icelandic minke whale research programme. One of these animals migrated to waters off the coast of West Africa (Vikingsson and Heide-Jørgensen 2005). These experiments will be continued in the fall 2007.

In 2006 the Marine Research Institute participated in a multinational research project for the study of acoustics and movements of white beaked dolphins in Icelandic waters. Two animals were captured and released after acoustic experimentation. One of the animals was instrumented with a satellite tag. Transmissions were received from the time of tagging in August 2006 until February 2007. During this period the animal moved extensively but never left the western part of the Icelandic continental shelf area.

3.2 Analyses/development of techniques

Analysis of all available photo-id material on humpback whales in Icelandic waters is at a final stage.

Analysis of 89 blue whales photo-identified off Iceland during 1996-2003 yielded no matches with a large catalogue (400 individuals) from the Gulf of St Lawrence, the Nova Scotia shelf and the Gulf of Maine. In 2005, a blue whale was photographed off Mauritania, West Africa and was identified to be the same as one previously photographed off Iceland on two occasions, in 1997 and 1999. This is the first match between Iceland and any other region for this species and represents the longest range re-identification of blue whales in the North Atlantic or 5200 km (Sears *et al.* 2005).

4. Tissue/biological samples collected

4.1 Biopsy samples (June 2006 April 2007)

No biopsy samples were taken in 2006.

4.2 Samples from directed catches or bycatches (2006)

Species*	Area	Calendar year/ season no. collected	Archived (Y/N)	Tissue types**	Contact institute
Minke	N-Iceland	2006-Mar: 1	Y	bl, mu, di	MRI
Minke	66°01N 22°38W	2006-Oct: 1	Y	bl, mu, sk, go, di, pl, ey	MRI
Fin	W-Iceland	2006-Oct: 7	Y	bl, mu, sk, go, di, pl, ey	MRI

* large cetaceans

** te=teeth, mu=muscle, bl=blubber, sk=skin, di=diet, go=gonads, ey=eyes, pl=ear plugs

In addition extensive sampling took place from 58 minke whales taken under scientific permit in June - August 2006. The detailed sample list is presented in SC/59/O16.

4.3 Samples from stranded animals (2006)

Species*	Area	Calendar year/ season no. collected	Archived (Y/N)	Tissue types**	Contact institute
Killer	N-Iceland	2006-Feb: 1	Y	mu, di	MRI
Northern bottlenose	SE-Iceland	2006-Sep: 1	Y	mu, di, bl	MRI

* and ** - see 4.2

4.4 Analyses/development of techniques

The analyses for the different subprojects of the minke whale research programme (Marine Research Institute 2003) are in progress (see SC/59/O16)

Samples of fin whales from Iceland 1981-1989 (n=1069), Spain 1985 (n=46), Norway (n=57), West Greenland (n=16) and East Canada (n=38) were statistically analysed for 9 microsatellite loci in order to study the temporal and micro- & macrogeographical structure of Northeast Atlantic fin whales (Daníelsdóttir *et al.* 2005a; 2006; see SC/58/PFI7). A sub-sample of the total fin whale samples (Iceland 1985, 1987 and 1989 (n=128); Spain 1985 (n=43); Norway (n=39); West Greenland (n=16) and East Canada (n=13) was analysed further. They were screened and statistically analysed for mtDNA sequences and 6 microsatellite loci (same as in Bérubé *et al.* 1998; see paper SC/58/PFI6) and also 16 microsatellite loci (Bérubé *et al.* 2002; see SC/58/PFI7 and SC/58/PFI9). Reanalysis of North Atlantic fin whale allozyme data is presented in SC/58/PFI8.

Data on life history parameters for fin whales caught in 1967 to 1989 has been revalidated and reanalysed in particular with respect to spatial and temporal segregation (SC/58/PFI3).

5. Pollution studies

Various tissue samples for pollution studies have been routinely collected during dissections of stranded or by-caught cetaceans in recent years. These are stored frozen at the MRI.

Ongoing study on pollutants in minke whale as a part of a research program under a special permit includes samples from 36, 25 and 34 animals taken in 2003 and 2004 respectively (SC/59/O16). The pollution studies focus on analyses on contaminant levels (trace elements and organochlorines) in muscle, blubber and various internal organs with reference to i) biological parameters, ii) trophic level, iii) body condition and health status, iv) geographical variation on a small and large scale and v) the applicability of biopsy sampling for estimation of pollutant burden. The status of the analyses is discussed in SC/59/O16.

6. Statistics for large cetaceans

6.1 Direct catches of large cetaceans (commercial, aboriginal and scientific permits) for the calendar year 2006

Species	Type of catch	Area/stock	Males	Females	Total landed	Struck and lost
Fin whale	commercial	EGI	3	4	7	0
Minke whales	commercial	CIC	0	1	1	0
Minke whales*	Special permit	CIC	31	27	58	2

*Detailed list in SC/59/O16

6.2 None-natural mortality of large cetaceans for the calendar year 2006

Species	Area	Males	Females	Total	Cause	Methodology
Minke whales	N-Iceland	?	?	1	gillnet entanglement	NR

6.2.1 STRANDINGS OR DEAD WHALES ENCOUNTERED AT SEA

Species	Sex	Location	Cause of death	Det.	Contact inst
large cetaceans		Lat N- Lon W			
Killer whales	F	63°47'.3N-16°47'.2W	U	U	MRI
Minke whales	U	64°29'N-22°14'W	U	U	MRI
Minke whales	U	64°00'N-22°33'W	U	U	MRI
Northern bottlenose whales	F?	65°33'.4N-23°57'.5W	U	U	MRI
Northern bottlenose whales	M	66°17'N-15°04'W	U	U	MRI

6.2.2 OBSERVED OR REPORTED SHIP STRIKES

No ship strikes were reported in 2006.

6.2.3 FISHERY BYCATCH OF LARGE CETACEANS

Species	Sex	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
Common minke whales	U	2006-03-09	66°03N 18°26W	K	Cod	Set gillnet (GNS)	A	MRI

Comments: Line wound around tail. A calf brought to harbour for local consumption.

6.3 Earlier years' statistics

7. Statistics for small cetaceans

To be reported to NAMMCO in Iceland Progress Report on Marine Mammals 2007 (see <http://www.nammco.no/>)

8. Strandings

Information on stranded cetaceans in Iceland is compiled by the Marine Research Institute in cooperation with the Institute of Natural History. A review of cetacean strandings in Iceland was published in 2006 (Víkingsson and Halldórsson 2006).

9. Other studies and analysis

Results from a collaborative study concerning health of harbour porpoises in the Northeast Atlantic were published in 2006 (Das *et al.* 2006, Siebert *et al.* 2006).

Various analyses were conducted in relation to the *pre-Implementation Assessment* of North Atlantic fin whales, including genetic and non-genetic indication on stock structure, abundance, catch history and biological parameters (SC/58/PFI3, SC/58/PFI5, SC/58/PFI6, SC/58/PFI7, SC/58/PFI8, SC/58/PFI9, SC/58/FW5, SC/58/FW7, SC/58/FW10, SC/58/FW12, SC/58/FW18). Further genetic studies of fin whales are at a final stage. A study comparing levels of sex hormones with reproductive status as determined by traditional biological methods in fin whales off Iceland was completed (Kjeld *et al.* 2006).

An evaluation of fin whales in the central North Atlantic with respect to the CITES criteria was submitted to a special workshop on the matter in late 2006 (Víkingsson and Gunnlaugsson 2006).

Skin samples (preserved in alcohol) from the commercial catch of seven fin whales were collected in Icelandic waters in the year 2006. Currently, protocols for the screening of fin whale samples at 16 microsatellite loci, one sex-linked loci and mitochondria DNA sequencing are being set up. Screening will be carried out on those seven individuals and additional 500 individuals from different localities across the North Atlantic.

Samples of skin and muscle from 58 minke whales from Icelandic waters were collected for genetic analyses under the scientific permit in 2006 (see SC/59/O16). Iceland is constructing a database of the DNA profile of Icelandic and Norwegian minke whales according to the Norwegian DNA database (Olaisen 1997; Dupuy & Olaisen 2002 IWC 1998; Daníelsdóttir *et al.* 2005b). The Icelandic databases will consist of every legally obtained minke whale in Iceland. The purpose is to establish a control system to detect illegal trades of the meat. The Icelandic DNA database will also be used to study population genetic structure of Icelandic minke whales as has been done for the Norwegian minke whales (Skaug & Oien 2004; Skaug *et al.* 2002; 2003; Martien *et al.* 2003; Andersen 2004). The DNA profile of each individual entered into the databases is composed of microsatellite DNA genotypes (allele sizes), sex chromosome genotypes (for sex determination) and mtDNA sequence data. The genetic analysis has been optimized at the Department of Population Genetics, Marine Research Institute, Iceland (DPG, MRI-IS). The genetic analysis for the Icelandic samples collected in 2003 – 2006 has been postponed until the year 2007.

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