

Iceland. Progress report on cetacean research, May 2008 to April 2009, with statistical data for the *calendar year* 2008

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This report summarises information obtained from:

Name of agency/institute	Abbreviation (use in rest of report)	Contact e-mail address
Marine Research Institute	MRI	
Institute of Natural History	INH	
University of Iceland	UI	
Húsavík Research Centre	HRC	
Húsavík Whale Museum	HWM	
Innovation Centre, Iceland	ICI	

Information was also obtained from private commercial platforms such as whaling and whale watching companies.

1. SPECIES AND STOCKS STUDIED

IWC common name	IWC recommended	Area/stock(s)	Items referred to
Fin whale	<i>Balaenoptera physalus</i>	Icelandic waters	2.2; 3.2; 4.3; 4.4; 5; 8; 9
Blue whale	<i>Balaenoptera musculus</i>	Icelandic waters	3.1; 3.2
Humpback whale	<i>Megaptera novaeangliae</i>	Icelandic waters	2.2.;3.1.1; 3.1.3, 8
Common minke whale	<i>Balaenoptera acutorostrata</i>	Icelandic waters	2.1.2; 2.2; 3.1.3;4.2;4.4; 4.4.1; 4.4.2; 5; 6.1.6.2; 8;
Sperm whale	<i>Physeter macrocephalus</i>	Icelandic waters	8
N-bottlenose whale	<i>Hyperoodon ampullatus</i>	Icelandic waters	2.1.2;4.3; 8
Killer whale	<i>Orcinus orca</i>	Icelandic watters	2.1.2.

2. SIGHTINGS DATA

2.1 Field work

2.1.1 Systematic

In the summer of 2008 the MRI conducted an aerial cetacean sightings survey south west of Iceland in the Faxaflói Bay area (SC/61/RMP11). This survey was the 8th time that this area is covered in mid summer since 1986. In addition the area has been covered twice in the autumn and spring as a component of the wide ranging research programme on common minke whales initiated in 2003 (Víkingsson *et al.* 2005).

2.1.2 Opportunistic, platforms of opportunity

During 18. August - 6. October a group of five Northern Bottlenose whales resided in a small shallow area in the inner part of the fjord Eyjafjörður in northern Iceland. One of the animals got killed after getting entangled in fishing gear. This opportunity was used as a subject of a field course in the University of Iceland.

Monitoring of sightings during whale watching operations was conducted in two bays, Faxaflói and Skjálfandi. Sighting and effort data is stored at each whale watching company and data from Skjálfandi is also stored and analysed at the HWM. A rarely sighted event was recorded and filmed from a whale watching boat in Skjálfandi Bay in July when a pod of 20-30 killer whales attacked and killed a minke whale. Although there are several accounts of killer whale predation on marine mammals in Icelandic waters this is the first one documented photographically.

The HWM carried out its third year of sightings and environmental variable collection in Skjálfandi Bay.

2.2 Analyses/development of techniques

Details of the 2008 survey in Faxaflói Bay and a comparison with earlier surveys are given in (SC/16/AS/04). The distribution of common minke whales and humpback whales was noticeably concentrated in the shallow waters of the bay. The frequency of minke whale sightings in 2008 was in total similar to the average from earlier surveys in mid summer. By far the lowest mid summer frequency was observed in 2007, on the level with spring surveys, but the highest in 2004, the next mid summer survey before.

Analyses of data from the 2007 international sightings survey TNASS of abundance estimates is ongoing and abundance estimates for the primary target species presented at NAMMCO working group meetings in April 2008 (Víkingsson *et al.* 2008, Desportes and Halldórsson 2008, Gunnlaugsson 2008, Pike and Gunnlaugsson 2008, Pike *et al.* 2008a,b).

3. MARKING DATA

3.1 Field work

3.1.1 Natural marking data

Catalogues of individuals based on natural marking data are held at the MRI for blue, humpback and killer whales. In 2008 new material on all three species was added to the catalogue. No cruises were conducted in 2008 specifically to collect photo-id data. Collection of photos of white-beaked dolphins and common minke whales were collected from whale watching platforms in Faxaflói Bay. The HWM has collected photo id pictures obtained in whale watching operations in Skjálfandi Bay from mid May to mid September 2008.

Studies conducted from commercial whale watching vessels included a photo-id study on common minke whales and white-beaked dolphins in Faxaflói Bay in 2008.

3.1.2. Artificial marking data

3.1.3 Telemetry data

During 4.-7. November two common minke whales and two humpback whales were instrumented with a satellite tag by MRI staff in Eyjafjörður, N-Iceland. Signals were received from the humpback whales until early December. One of the animals stayed in Eyjafjörður and nearby areas while the other humpback whale moved counter clockwise along the coast of Iceland to the SW corner where it spent three weeks apparently moving between concentrations of herring (see: <http://www.hafro.is/images/frettir/2008/hnufubakur04.JPG>).

Species	Tag type	No. successfully deployed	Maximum time transmitting	Contact person/institute; refs
Minke whale	Satellite	2	0	MRI
Humpback	Satellite	2	27 days	MRI

3.2 Analyses/development of techniques

Analysis of all available photo-id material on humpback whales in Icelandic waters (archived at the MRI) is at a final stage. In the Icelandic central N Atlantic humpback whale photo-id catalogue maintained by the MRI one new match was made with a humpback whale taken the Bequia hunt in the Carabian Sea.

The blue whale photo ID catalogue of the Azores was compared with blue whale sightings in Iceland showing no matches.

The WMH has collected data and photo id pictures obtained in whale watching operations in Skjálfandi Bay since 2001. The total number of individuals documented, showing significant features is 394. The MRI and HWM collaborate with the College of the Atlantics in Main, US, on humpback whale photo ID based research.

4. TISSUE/BIOLOGICAL SAMPLES COLLECTED

4.1 Biopsy samples (summary only)

Species	Area/stock	Calendar year/ season - no. collected	Archived (Y/N)	No. analysed	Total holdings	Contact person/institute
Common minke whale	Iceland	1	Y	0	x	MRI
Humpback whale	Iceland	1	Y	0	x	MRI

4.2 Samples from directed catches (commercial, aboriginal and scientific permits) or bycatches

Species	Area/stock	Tissue type(s)*	No. collected	Archived (Y/N)	No. analysed	Contact person/institute
Common minke whale	N. Atlantic	s, b, m,r	36	Y	0	MRI

*s= skin, b=blubber, m=muscle, r=reproductive organs

4.4 Analyses/development of techniques

Progress in analysis of samples and data from the minke whale research programme is summarized below. Further information is given in SC/61/O10.

Feeding and energetics

Diet composition

Prey species identification from all forestomach samples is completed. Determination of age and length of fish prey from otoliths was completed in 2008 (Víkingsson and Galan 2009).

Two samples of 8 common prey species each have been prepared for measurements of stable isotopes, fatty acids. Further processing is underway.

Energetics

Laboratory analysis on the energy density of muscle, blubber and visceral fat from all animals from 2003, 2004 and 2005 and liver and kidneys from 25 animals from 2003 and 2004 is finished. Evaluation of this data is ongoing.

25 samples each of muscle, skin and blood, 75 samples in total, have been analysed for stable isotopes. Evaluation of results awaits results from prey species for comparison. Two samples of 8 common prey species each were prepared for measurements of energy density. Further processing is underway.

Pathology

Work continued on the various aspects of pathology of common minke whales such as hematology and serology, microbiology, virology and histology. The details of these analyses were outlined in previous progress reports.

Parasites

External parasites from all samples have been analysed.

Biological parameters

Gonads from all sampled minke whales have been analysed for sexual maturity for both sexes and reproductive history for females.

Analyses of amino acid racemisation (AAR) in 100 eye lenses from 86 animals sampled in 2003, 2004 and 2005 are completed. AAR analyses of lenses collected in 2006 and 2007 are ongoing.

For verification of the amino acid racemisation method, eye lenses from 50 Antarctic minke whales (*Balaenoptera bonaerensis*) from the JARPA project are being analysed. The results will be compared to age readings already obtained from ear plug readings for those same animals.

5. POLLUTION STUDIES

Detailed studies on organic and inorganic contaminants in various tissues of 25 common minke whales are at a final stage (see SC/61/O10).

Interpretation and diagnostic work on trace elements with reference to biological parameters (age, size, sex, etc), pathology, trophic status, body condition and geographical variation is underway.

6. STATISTICS FOR LARGE CETACEANS**6.1 Corrections to earlier years' statistics for large whales****6.2 Direct catches of large whales (commercial, aboriginal and scientific permits) for the calendar year 2008**

Please summarise the information here in the form of a table. However, it must be noted that this summary is not considered to fulfil the obligation to supply data to the Commission as specified in the Schedule.

Species	Type of catch	Area/stock	Males	Females	Total landed	Struck and lost
Common minke whales	Commercial	Central N Atlantic	29	7	36	2

6.3 Anthropogenic mortality of large whales for the calendar year 2008*6.3.1 Observed or reported ship strikes of large whales (including non-fatal events)*

No reports on ship strikes were received.

6.3.2 Fishery bycatch of large whales

Whale species	Sex	No.	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
Minke whale	f	1	21/06/08	JanMayen	D	Herring	TM	A	MRI
Comments:									

7. STATISTICS FOR SMALL CETACEANS

Reported to NAMMCO (see <http://www.nammco.no/>) in Víkingsson and Ólafsdóttir (2009).

8. STRANDINGS

Information on stranded cetaceans in Iceland is compiled by the MRI in cooperation with the INH and other relevant institutions (Table 1).. In 2008, 38 incidents of cetacean strandings were recorded by the MRI. Of these 29 stranding incidents involved large or medium sized whales. This is the highest number since regular monitoring of strandings was initiated by the MRI around 1980, more than doubling the previous record. The most commonly stranded cetacean species was the northern bottlenose whale.

Species*	No. strandings	No. post mortems	Contact person(s)/ Institute(s)	Contact email address(es)
Common minke whales	3	2	MRI	gisli@hafro.is
Fin whales	1	1	MRI	gisli@hafro.
Humpback whales	6	2	MRI	gisli@hafro.
Sperm whales	3	3	MRI	gisli@hafro.
Likely sperm whale	1	0	MRI	gisli@hafro.
N-Bottlenose whale	11	7	MRI	gisli@hafro.
Likely N-Bottlenose	1	0	MRI	gisli@hafro.
Beaked whales	2	2	MRI	gisli@hafro
Killer whale	1	1	MRI	gisli@hafro.

* large and medium sized cetaceans

9. OTHER STUDIES AND ANALYSES

A collaborative study between MRI scientists and colleagues from Norway and Scotland on stock structure and movements of killer whales in the Northeastern Atlantic (Foote *et al.* 2007) was continued in 2008. Another collaborative research project involving scientists from the University of St. Andrews, University of Tokyo, the MRI and HRC on the sound production, foraging, and social structure of killer whales in Icelandic waters was initiated in 2008.

Data collection and evaluation on the distribution of cetacean species in Skjálfandi Bay in relation to environmental variables was continued at HWM for the third year.

The HWM continued collection of data on dive time of minke and humpback whales for the third year. However, it was concluded that whale watching trips are not suitable for this research method, because the boats don't stay long enough with each individual. The investigation of ventilation patterns of these species in Skjálfandi Bay is therefore not being pursued any further.

The HRC and HWM will collaborate in a graduate student project on investigation on the annual distribution, abundance and habitat use of whales in Skjálfandi Bay, using the following methods: 1) Long-term acoustic recordings using sea-bed mounted hydrophones; 2) Shore-based observations using theodolite; 3) Boat-based visual and acoustic line transect surveys.

A large study on the potential effects of increased tourism on wild animal behaviour will be carried out in 2009-2011 (<http://www.thewildnorth.org/>). As a part of this, a student project was conducted in

Skjálfandi Bay in 2008. The HRC will continue a study on cetacean behaviour on the whale watching sites in this area.

Ecological Acoustic Recorders (EAR) were deployed in Skjálfandi Bay in 2008 as cooperation between University of Hawaii, UI and HRC.

Project on acoustic communication in killer whales around Vestmannaeyjar, S-Iceland was carried out jointly by graduate students from University of St Andrews, Scotland, Scientist from HRC, MRI and Zoovisions, Copenhagen, Denmark

A skeleton from a narwhal stranded in 2007 was collected, cleaned and archived at the Institute of Natural History in 2008. The Museum also archives mammal bone remains discovered from soil including marine mammals.

10. LITERATURE CITED

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11. PUBLICATIONS

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