

# United Kingdom. Progress report on cetacean research, April 2006 to May 2007, with statistical data for the calendar year 2006

ALICE MACKAY & SIMON NORTHRIDGE

*Sea Mammal Research Unit, Gatty Marine Laboratory, University of St Andrews, St Andrews, Fife, KY16 8LB*

This report summarises information obtained from:

Name of agency/institute	Abbreviation (use in rest of report)	Contact e-mail address
British Antarctic Survey	<b>BAS</b>	Tony Martin (arm@bas.ac.uk)
Cetacean Conservation Pakistan	<b>CCP</b>	Mauvis Gore (mauvisgore@netscape.net)
Centre for Research into Ecological and Environmental Modelling, University of St. Andrews	<b>CREEM</b>	Len Thomas (len@mcs.st-andrews.ac.uk)
Cetacean Research & Rescue Unit	<b>CRRU</b>	Kevin Robinson (kev.robinson@crru.org.uk)
Ceredigion County Council; Countryside Council for Wales	<b>CCW</b>	Mandy McMath (m.mcmath@ccw.gov.uk)
FUNDEMAR, Dominican Republic	<b>FUND</b>	Chris Parsons (ecm-parsons@earthlink.net)
Hebridean Whale and Dolphin Trust	<b>HWDT</b>	Peter Stevick (research@hwdt.org)
Institute of Zoology	<b>IOZ</b>	Rob Deaville (rob.deaville@ioz.ac.uk)
International Fund for Animal Welfare	<b>IFAW</b>	Anna Moscrop (amoscrop@ifaw.org)
George Mason University, Fairfax	<b>GMU</b>	Chris Parsons ecm-parsons@earthlink.net
Marine Environmental Monitoring	<b>MEM</b>	Rod Penrose (rodpenrose@cix.co.uk)
National Museums Scotland	<b>NMS</b>	Jerry Herman ( <a href="mailto:j.berman@nms.ac.uk">j.berman@nms.ac.uk</a> ) Andrew Kitchener (a.kitchener@nms.ac.uk)
Natural History Museum	<b>NHM</b>	Richard Sabin (rcs@nhm.ac.uk)
Organisation Cetacea	<b>ORCA</b>	Kelly Macleod ( km53@st-andrews.ac.uk)
Scottish Agricultural College, Veterinary Services Division	<b>SACVSD</b>	Bob Reid ( bob.reid@sac.co.uk)
Scottish Natural Heritage	<b>SNH</b>	Karen Hall (Karen.Hall@snh.gov.uk)
University of Durham, School of Biological and Biomedical Sciences	<b>UDSBS</b>	A.R. Hoelzel (a.r.hoelzel@durham.ac.uk)
University of Aberdeen, Dept. of Zoology	<b>UAZD</b>	Graham Pierce ( g.j.pierce@abdn.ac.uk)
University of Aberdeen School of Biological Sciences, Lighthouse Field Station	<b>UASBS</b>	Paul Thompson ( nhi519@aben.ac.uk)
University of St Andrews, Sea Mammal Research Unit	<b>SMRU</b>	Phil Hammond ( <a href="mailto:psh2@st-andrews.ac.uk">psh2@st-andrews.ac.uk</a> ) Tony Martin (arm@bas.ac.uk) Simon Northridge (spn1@st-andrews.ac.uk)
University (of London) Marine Biological Station Millport	<b>UMBSM</b>	Mauvis Gore (mauvisgore@netscape.net)

## 1. SPECIES AND STOCKS STUDIED

Common name	IWC recommended	Area/stock(s)	Items referred to
Harbour porpoise	<i>Phocoena phocoena</i>	UK (Wales, Scotland); European Atlantic shelf; South Atlantic	2.1.1, 2.1.2, 4.3, 8,
Finless porpoise	<i>Neophocaena phocaenoides</i>	Pakistan coast	2.1.1; 2.2; 4.3
Bottlenose dolphin	<i>Tursiops truncatus</i>	UK, European Atlantic shelf, Southern Atlantic; Pakistan coast, Dominican Republic	2.1.1, 2.1.2, 3.1.1, 4.3, 4.4, 8, 9
Striped dolphin	<i>Stenella coeruleoalba</i>	UK, Ireland	4.3, 8
Spinner dolphin	<i>Stenella longirostris</i>	Pakistan offshore	2.1.1; 2.2
Shortbeaked common dolphin	<i>Delphinus delphis</i>	UK, European Atlantic shelf, Ireland	2.1.1, 2.1.2, 4.3, 4.4, 8
White-beaked dolphin	<i>Lagenorhynchus albirostris</i>	European Atlantic shelf	2.1.1, 4.3, 4.4, 8
Atlantic white sided dolphin	<i>Lagenorhynchus acutus</i>	UK, Ireland	4.3, 4.4, 8

Atlantic spotted dolphin	<i>S. frontalis</i>	Dominican Republic	2.1.1; 3.11
Pantropical spotted dolphin	<i>Stenella attenuata</i>	Southern Atlantic	2.1.2, 3.1.1,
Risso's dolphin	<i>Grampus griseus</i>	UK – Wales; Pakistan - offshore	2.1.1, 2.2, 8
Rough tooth dolphin	<i>Steno bredanensis</i>	Southern Atlantic	2.1.2, 3.1.1,
Humpback dolphin	<i>Sousa chinensis (plumbea)</i>	Pakistan coast & creeks	2.1.1; 2.2; 3.1.1
Long-finned pilot whale	<i>Globicephala melas</i>	UK	8
Killer whale	<i>Orcinus orca</i>	UK (Clyde Sea Scotland and NE Atlantic); Pakistan	2.1.1, 2.1.2, 2.2, 3.1.1, 4.4
Boto	<i>Inia geoffrensis</i>	Brazil	2.1.1, 3.1.2
Tucuxi	<i>Sotalia fluviatilis</i>	Brazil	2.1.1, 3.1.2
Sperm whale	<i>Physeter macrocephalus</i>	UK; Pakistan;	4.3, 8, 9
Northern bottlenose whale	<i>Hyperoodon ampullatus</i>	UK	4.3, 8
Cuviers beaked whale	<i>Ziphius cavirostris</i>	UK	4.3
Sowerby's beaked whale	<i>Mesoplodon bidens</i>	UK	4.3, 8
Minke whale	<i>Balaenoptera acutorostrata</i>	UK – Scotland, European Atlantic	2.1.1, 2.1.2, 3.1.1, 4.3, 8, 9
Humpback whale	<i>Megaptera novaeangliae</i>	UK (Scotland); Southern Atlantic; Pakistan coast, Dominican Republic, Scotia Sea	2.1.1, 2.1.2, 2.2, 3.1.1, 8
Blue whale	<i>Balaenoptera musculus</i>	North Atlantic – Iceland, Scotia Sea	2.1.1,
Fin whale	<i>Balaenoptera physalus</i>	North Atlantic – Iceland, European Atlantic shelf; Pakistan, Scotia Sea	2.1.1, 8
Bowhead whale	<i>Balaena mysticetus</i>	NE Atlantic - Norway	2.1.1,

## 2. SIGHTINGS DATA

### 2.1 Field work

#### 2.1.1 Systematic

CCP conducted surveys for marine cetaceans in the Sindh Coasts of Pakistan in June, November and December 2006 and January 2007 resulting in a total of 1,786 sightings. CCP also conducted a survey in the Balochistan Coast of Pakistan in February 2007 which resulted in 1072 cetacean sightings.

CCW has contracted the Sea Watch Foundation to monitor bottlenose dolphins within the Cardigan Bay and Pen Llyn ar Sarnau SACs between 2004 and 2007, to provide information on the number of dolphins in the SACs, trends in abundance and usage of the site. This information will be used by CCW to report on the condition of the bottlenose dolphins as a feature of the SAC.

CCW has grant-aided the Whale and Dolphin Cetacean Society (WDCS) to survey Risso's dolphins and harbour porpoises in north Cardigan Bay and including Pen Llyn ar Sarnau SAC, throughout 2005-2007. A conservation plan for Risso's dolphins will be produced and harbour porpoise data will support selection of SACs for this species.

CCW has grant-aided Marine Awareness North Wales to undertake further land and boat based surveys of harbour porpoise, 2006-2009 to support selection of SACs for this species. Analysis of data gathered in a previous study period (2002-2004) showed that a relatively high density of porpoise is found during the summer months. Distribution is not homogeneous with particular areas showing higher densities than others.

CCW has grant-aided common dolphin surveys in the Celtic Deep and St Georges Channel from 2004 to 2007 in order to gain an abundance estimate and understand the importance of the area for this species. Information derived from acoustic monitoring using towed hydrophones shows significantly lower whistle parameters for Celtic Sea common dolphins than those in the English Channel. This suggests that either they represent two distinct populations or that dolphins in the Channel may have shifted their whistle frequencies upward to avoid masking by traffic noise.

CRRU continued to conduct systematic line-transect surveys along an 82-kilometre stretch of coastline comprising the southern outer Moray Firth between the ports of Lossiemouth and Fraserburgh, Scotland. The transect routes are divided into 4 track lines, each comprising 4 sub-routes and covering a total area of approx 860 square kilometres. Shipboard surveys are carried out annually between the months of May and October on a weekly to fortnightly basis; the total survey area being covered between 1 and 3 times per calendar month. Between May & Oct 2006, the CRRU's focal research studies concentrated on minke whales (*Balaenoptera acutorostrata*), bottlenose dolphins (*Tursiops truncatus*) and harbour porpoise (*Phocoena phocoena*).

FUND/GMU have been conducting surveys year round off the south coast of the Dominican Republic, for bottlenose and Atlantic spotted dolphins and Humpback whales. (Contact ECM Parsons-GMU or Rita Sellares – FUND)

IFAW conducted research on cetaceans around Iceland from RV Song of the Whale between June and August 2006, following on from a previous study in 2004. The overall objective of the research was to further develop the use of passive acoustic techniques with a particular emphasis on blue and fin whales. Towed hydrophones were continuously monitored, using detection algorithms to classify clicks and tonal calls, during 680 hours at sea. The project also included 2600km of sightings effort.

SMRU (Cormac Booth) continues to carry out visual and passive acoustic surveys of the Inner and Outer Hebrides for harbour porpoises in collaboration with the HWDT and SNH.

SMRU (Vincent Janik), surveyed the Lofoten Sea for bowhead whales in collaboration with the Norwegian Polar Institute

SMRU coordinated the Small Cetaceans in the European Atlantic and North Sea (SCANS-II) project <http://biology.st-andrews.ac.uk/scans2/>, funded by the European LIFE Nature programme and 12 European governments. The project generated precise and unbiased estimates of abundance for the harbour porpoise, bottlenose, common and white-beaked dolphin and minke whale in European Atlantic shelf waters from 36°-62°N in July 2005. The abundance estimates will contribute to the development of a management procedure to set safe bycatch limits for the harbour porpoise. Recommendations for monitoring small cetacean populations in between major decadal-scale absolute abundance surveys will also be made by the project (Contact: Philip Hammond)

As a follow up to SCANS-II, SMRU is coordinating the Cetacean Offshore Distribution and Abundance (CODA) project, which will survey European Atlantic waters outside the continental shelf from 42°-62°N in July 2007, using visual and acoustic methods. The project is supported by governments and institutions in France, Ireland, Spain and the UK. Focal species are bottlenose and common dolphin, fin whale and deep-diving species. Further development will be made on the management procedure to set safe bycatch limits for small cetaceans, focussing on the common dolphin (contact: Philip Hammond ).

UASBS (Lighthouse Field Station) continued to conduct boat-based photo-ID surveys in Northeast Scotland for bottlenose dolphins. They also conduct land-based visual and acoustic studies of fine-scale behaviour and distribution of *Tursiops* and harbour porpoises within the Moray Firth. UASBS (Lighthouse Field Station)/ SMRU/ SAMS/ SNH are conducting boat-based photo-ID surveys of bottlenose dolphin around the west and north coast of Scotland. (contact Simon Ingram)

In collaboration with the Brazilian National Institute of Amazonian Research (INPA), SMRU carried out daily boat-based surveys of botos and tucuxis in the Mamirauá Reserve, Brazil. This is a long-term study of marked and unmarked animals, looking at population biology and ecology.

BAS continued a project to quantify baleen whale abundance and distribution in and around the Scotia Sea, using visual sightings on line transects and acoustic data from recording devices (the latter in collaboration with Cornell University).

### 2.1.2 Opportunistic, platforms of opportunity

Primary species	Area	Data type/ method	Collected by	Platform	Contact person/institute and refs
Harbour porpoise, common dolphin and minke whale	West coast of Scotland	Sightings data collected using line transect methods	Trained and experienced observers.	Passenger ferries	C.D. Macleod (UAZD)
Pan-tropical spotted dolphin, humpback whale, bottlenose dolphin, rough-toothed dolphin	Saint Helena	Sightings; Photo ID	Local fisheries department	Land and small motor boat	C.D. Macleod (UAZD)
All cetacean species	northern North Sea	Sightings data	Volunteers	Passenger Ferry	C.D. Macleod (UAZD)
Harbour porpoise	Clyde Sea Area, Scotland	WSLMV tagging, Observer network sightings	West Scotland Large Marine Vertebrate Group	Vessels & land-based	M Gore (UMBSM)

Bottlenose dolphin	Clyde Sea Area, Scotland	WSLMV tagging, Observer network sightings	West Scotland Large Marine Vertebrate Group	Vessels & land-based	M Gore (UMBSM)
Minke whale	Clyde Sea Area, Scotland	WSLMV tagging, Observer network sightings	West Scotland Large Marine Vertebrate Group	Vessels & land-based	M Gore (UMBSM)
Killer whale	Clyde Sea Area, Scotland	WSLMV tagging, Observer network sightings	West Scotland Large Marine Vertebrate Group	Vessels & land-based	M Gore (UMBSM)
Humpback whale	Clyde Sea Area, Scotland	WSLMV tagging, Observer network sightings	West Scotland Large Marine Vertebrate Group	Vessels & land-based	M Gore (UMBSM)

CCW has grant-aided Friends of Cardigan Bay in 2006 to survey bottlenose dolphins in north Cardigan Bay, and including Cardigan Bay and Pen Llyn ar Sarnau SACs, in conjunction with diver habitat surveys in order to identify important foraging areas. Two offshore Sams and estuary confluences were surveyed. Sarn Cynfelin was identified as a possible hotspot for cetacean activity, mainly foraging.

ORCA (<http://orcaweb.org.uk>) continues to conduct opportunistic surveys from platforms of opportunity, with experienced observers collecting distance-sampling data, as on standard line transect projects. All data collected contributes to ORCA's database and are made available to conservation and education projects. Currently surveys are conducted on the southern England to northern Spain and the England to Norway ferry routes. A new partnership with a major shipping company will allow further data collection, and will build on the charities focus of long-term monitoring of cetaceans in these waters. ORCA observers joined the International Bottom Trawl Survey for the third time during winter 2006/2007 in collaboration with IFREMER.

UASBS (Lighthouse Field Station) is conducting photo-id surveys of killer whales around Shetland and opportunistically in other locations around Scotland (contact: Andy Foote [a.d.foote@abdn.ac.uk](mailto:a.d.foote@abdn.ac.uk))

UAZD is carrying out regular surveys along six fixed transect routes on the west coast of Scotland using passenger ferries as research platforms. Data are collected using standard line-transect methods by trained and experienced observers. This work aims to study factors that affect the fine-scale spatial and temporal distribution of cetacean species in this area, as well as investigating the structure of the cetacean community. Species studied include harbour porpoises, minke whales, common dolphins and bottlenose dolphins (contact: Sarah Bannon: [s.bannon@abdn.ac.uk](mailto:s.bannon@abdn.ac.uk)).

UAZD in collaboration with local researchers is involved in a project investigating the occurrence and distribution of cetaceans around the Island of Saint Helena, South Atlantic Ocean. Work includes land and boat-based surveys for habitat use as well as collection of pictures for photo identification. Species studied include pan-tropical spotted dolphins, bottlenose dolphins, rough-toothed dolphins and humpback whales (Contact Colin MacLeod: [c.d.macleod@abdn.ac.uk](mailto:c.d.macleod@abdn.ac.uk))

UAZD is also involved in undertaking surveys using passenger ferries in the North Sea between Aberdeen and the northern isles (contact Colin MacLeod [c.d.macleod@abdn.ac.uk](mailto:c.d.macleod@abdn.ac.uk)). Volunteers collect data.

## 2.2 Analyses/development of techniques

CREEM is working on a number of projects designed to improve methods for estimating cetacean abundance. These projects include the development of estimation methods for towed acoustic platforms; improving methods for spatial modelling from line transect data; and the development of unequal coverage design-based estimation methods. Contact Len Thomas.

## 3. MARKING DATA

### 3.1 Field work

#### 3.1.1 Natural marking data

Species	Feature	Area/stock	No. photo-id'd	Catalogue (Y/N)	Catalogue total	Contact person/institute; refs
Atlantic spotted dolphin	Dorsal fin	Dominican Republic	17	Y		Rita Sellares, FUND
Bottlenose dolphin	Dorsal fin	UK, Wales		Y		CCW
Bottlenose dolphin	Dorsal fin	UK; Scotland		Y		UASBS, SMRU, SAMS

Bottlenose dolphin	Dorsal fin	Dominican Republic	25	Y		Rita Sellares, FUND
Humpback dolphin	Dorsal fin	Pakistan coast	Not yet estimated	Y	Not yet estimated	M Gore, CCP
Humpback whale	Fluke	St Helena, South Atlantic		Y		UAZD
Pan-tropical spotted dolphin	Dorsal fin	St Helena, South Atlantic		Y		UAZD
Rough-toothed dolphin	Dorsal fin	St Helena, South Atlantic		Y		UAZD
Minke Whale	Dorsal fin	UK, Scotland		Y		CRRU, HWDT
Humpback whale	Dorsal fin	Dominican Republic	Not yet estimated	Y		Rita Sellares, FUND

The CRRU continues to collect photo-ID data on minke whales in northeast Scotland and is currently collaborating with HWDT on the West coast to cross reference sightings data. 2006 saw the further development of a minke whale database and recaptures of animals recorded back to 2001 were made as a result of further efforts in this area.

In 2007, the CRRU continued to work on the joint SEERAD funded project with the Lighthouse Field Station, University of Aberdeen. Further collaboration with the Sea Watch Foundation and University of Aberdeen (Dept. of Zoology), assisting with the assembly of a photo-identification archive for bottlenose dolphins off the coast of Aberdeen, is also currently in progress.

CCW has contracted the Sea Watch Foundation SWF contracted by CCW, continued to collect photo-ID data in Cardigan Bay, Wales for bottlenose dolphins.

SMRU (Janik) have continued to collect photo-id of bottlenose dolphins in St Andrews Bay, Scotland and surrounding waters.

UASBS (Lighthouse Field Station) continued to collect photo-ID data in Northeast Scotland for bottlenose dolphins, and have been used to underpin monitoring programmes for the Moray Firth SAC.

UASBS (Lighthouse Field Station) are analysing photo-id data of killer whales from across the NE Atlantic as part of a collaborative study to examine population structure around (contact Andy Foote a.d.foote@abdn.ac.uk)

### 3.1.2. Artificial marking data

In collaboration with the Brazilian National Institute of Amazonian Research (INPA), SMRU (contact Tony Martin) marked 35 botos with freeze-brands in the Mamirauá Reserve, Brazil, bringing the total marked population to 431. A further 44 botos were recaptured and, when necessary, re-marked. Two tucuxis were recaptured and re-marked.

### 3.1.3 Telemetry data

None reported.

## 3.2 Analyses/development of techniques

SMRU (Douglas Gillespie [dg50@st-andrews.ac.uk](mailto:dg50@st-andrews.ac.uk)) in collaboration with Heriot Watt University, UK (Ron McHugh [R.McHugh@hw.ac.uk](mailto:R.McHugh@hw.ac.uk)), Scripps Institution of Oceanography USA (Aaron Thode [athode@ucsd.edu](mailto:athode@ucsd.edu)) and Oregon State University USA (David Mellinger [David.Mellinger@oregonstate.edu](mailto:David.Mellinger@oregonstate.edu)) are developing open source passive acoustic monitoring software for the detection and localisation of cetacean vocalisations. Applications include mitigation monitoring around seismic surveys and other noise polluting activities and abundance surveys. Further information is available at [www.pamguard.org](http://www.pamguard.org)

## 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
Bottlenose dolphin	East of Scotland	2006/ 24 collected	N	In progress	24	SMRU (Vincent)

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

Not applicable to UK

### 4.3 Samples from stranded animals

Species	Area/stock	Tissue type(s)*	No. collected	Archived (Y/N)	No. analysed	Contact person/institute
Harbour porpoise	UK	Various	102	Y	N/A	Rob Deaville (IoZ)/ Bob Reid (SACVSD)
Short-beaked common dolphin	UK	Various	21	Y	N/A	Rob Deaville (IoZ)/ Bob Reid (SACVSD)
Atlantic white-sided dolphin	UK	Various	5	Y	N/A	Rob Deaville (IoZ)/ Bob Reid (SACVSD)
Striped dolphin	UK	Various	4	Y	N/A	Rob Deaville (IoZ)/ Bob Reid (SACVSD)
Bottlenose dolphin	UK	Various	4	Y	N/A	Rob Deaville (IoZ)/ Bob Reid (SACVSD)
Northern bottlenose whale	UK	Various	4	Y	N/A	Rob Deaville (IoZ)/ Bob Reid (SACVSD)
White beaked dolphin	UK	Various	3	Y	N/A	Rob Deaville (IoZ)/ Bob Reid (SACVSD)
Sperm whale	UK	Various	2	Y	N/A	Rob Deaville (IoZ)/ Bob Reid (SACVSD)
Minke whale	UK	Various	1	Y	N/A	Rob Deaville (IoZ)/ Bob Reid (SACVSD)
Sowerby's beaked whale	UK	Skull, skin, blubber	1	Y	N/A	Richard Sabin (NHM)
Harbour porpoise	UK	Skull	19	Y	N/A	NMS
Common dolphin	UK	Skull	1	Y	N/A	NMS
Common dolphin	UK	Skeleton	2	Y	N/A	NMS
Common dolphin	Ireland	Skull	1	Y	N/A	NMS
Striped dolphin	Ireland	Skull	3	Y	N/A	NMS
Atlantic white-sided dolphin	UK	Skull	3	Y	N/A	NMS
Atlantic white-sided dolphin	Ireland	Skull	1	Y	N/A	NMS
Sowerby's beaked whale	UK	Skull	2	Y	N/A	NMS
Sowerby's beaked whale	UK	Skeleton	1	Y	N/A	NMS
Bottlenose whale	UK	Skeleton	1	Y	N/A	NMS
Cuvier's beaked whale	UK	Skeleton	1	Y	N/A	NMS
Finless porpoise	Pakistan	Skin,	3	Y	N/A	M Gore (UMBSM)
Finless porpoise	Pakistan	Skull	1	Y	N/A	M Gore (UMBSM)
Humpback dolphin	Pakistan	Skull	2	Y	N/A	M Gore (UMBSM)
Cuvier's beaked whale	Pakistan	Skull	1	y	N/A	M Gore (UMBSM)

\*e.g. liver, skin, blubber etc.

### 4.4 Analyses/development of techniques

SMRU (Sinéad Murphy) continued analysis of life history parameters in small cetaceans, with particular focus on common dolphins in the Northeast Atlantic. Biological data were obtained from UK strandings and observer bycatch projects, and also from the Galician (Spain) and Portuguese stranding projects. This research is funded by the UK Department of Environment, Food and Rural Affairs, and EU NECESSITY project.

UDSBS is working on the population genetics of *Lagenorhynchus*, *Delphinus*, *Tursiops* and *Orcinus* sp., around the UK using stranded material.

UASBS is conducting genetic analysis of strandings of killer whale from the UK and samples from other NE Atlantic locations (contact: Andy Foote a.d.foote@abdn.ac.uk)

## 5. POLLUTION STUDIES

During 2006, samples from 100 UK-stranded cetaceans were submitted for toxicological analysis to the CEFAS Burnham Laboratory, Essex. Data will be generated on the flame retardant compounds hexabromocyclododecane (HBCD) and tetrabromobisphenol A (TBBP-A)

## 6. STATISTICS FOR LARGE CETACEANS

### 6.1 Corrections to earlier years' statistics for large whales

None.

## 6.2 Direct catches of large whales (commercial, aboriginal and scientific permits) for the calendar year 2006

Not applicable to the UK

## 6.3 Anthropogenic mortality of large whales for the calendar year 2006

### 6.3.1 Observed or reported ship strikes of large whales (including non-fatal events)

None reported

### 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	16-8-06	Dunbar, Lothian	D	<i>Lobster</i>	FPO	DA	SAC
Minke whale	?	1	19-9-06	Off Clyth Lighthouse, Highlands	D	<i>Lobster</i>	FPO	DA	SAC

## 7. STATISTICS FOR SMALL CETACEANS

### 7.1 Corrections to earlier years' statistics for small cetaceans

None

### 7.2 Direct catches of small cetaceans for the calendar year 2006

Not applicable to UK

### 7.3 Anthropogenic mortality of small cetaceans for the calendar year 2006

#### 7.3.1 Observed or reported ship strikes of small cetaceans (including non fatal events)

None reported

#### 7.3.2 Fishery bycatch of small cetaceans

Species	Sex	No.	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
Harbour porpoise	-	20	2006	SW UK	D	<i>Various</i>	GEN	M	SMRU
Common dolphin	-	25	2006	SW UK	D	<i>Sea Bass</i>	PTM	M	SMRU
Common dolphin	-	7	2006	SW UK	D	<i>Various</i>	GEN	M	SMRU

## 8. STRANDINGS

The Cornwall Wildlife Trust (CWT) has initiated the Bycatch Evidence Evaluation Project (BEEP), that aims to establish the accuracy of an optimal diagnostic method that will be open to audit via photographic evidence. The project welcomes participation of strandings workers in other counties. Contact Nick Tregenza [nick@cheloniamonitoring.co.uk](mailto:nick@cheloniamonitoring.co.uk) The CWT also maintains its own stranding database, with all information feeding into the NHM database

The IoZ, together with NHM, SACVSD and MEM, are contracted by Defra to investigate diseases and causes of death in 100 cetacean strandings per annum in the UK. IoZ maintain the national pathology database and IoZ and SACVSD maintain tissue archives derived from those UK stranded animals that have been necropsied.



The NHM are the strandings co-ordinator for England and collate strandings data for all of the UK, database UK records, report strandings trends, and archive cetacean specimens in the national research collection.

<http://www.nhm.ac.uk/research-curation/projects/strandings/>

Species	No. strandings	No. post mortems	Contact person(s)/ Institute(s)	Contact email address(es)
Harbour porpoise	419	102	Richard Sabin (NHM)/ Rob Deaville (IoZ)/ Bob Reid (SACVSD)	NHM/ IoZ/SACVSD - see contact list
Short-beaked common dolphin	131	21	Richard Sabin (NHM)/ Rob Deaville (IoZ)/ Bob Reid (SACVSD)	NHM/ IoZ/SACVSD - see contact list
Minke whale	18	1	Richard Sabin (NHM)/ Rob Deaville (IoZ)/ Bob Reid (SACVSD)	NHM/ IoZ/SACVSD - see contact list
Atlantic white-sided dolphin	15	5	Richard Sabin (NHM)/ Rob Deaville (IoZ)/ Bob Reid (SACVSD)	NHM/ IoZ/SACVSD - see contact list
White beaked dolphin	12	3	Richard Sabin (NHM)/ Rob Deaville (IoZ)/ Bob Reid (SACVSD)	NHM/ IoZ/SACVSD - see contact list
Long-finned pilot whale	11	0	Richard Sabin (NHM)/ Rob Deaville (IoZ)/ Bob Reid (SACVSD)	NHM/ IoZ/SACVSD - see contact list
Bottlenose dolphin	11	4	Richard Sabin (NHM)/ Rob Deaville (IoZ)/ Bob Reid (SACVSD)	NHM/ IoZ/SACVSD - see contact list
Sperm whale	10	2	Richard Sabin (NHM)/ Rob Deaville (IoZ)/ Bob Reid (SACVSD)	NHM/ IoZ/SACVSD - see contact list
Striped dolphin	9	4	Richard Sabin (NHM)/ Rob Deaville (IoZ)/ Bob Reid (SACVSD)	NHM/ IoZ/SACVSD - see contact list
Risso's dolphin	5	0	Richard Sabin (NHM)/ Rob Deaville (IoZ)/ Bob Reid (SACVSD)	NHM/ IoZ/SACVSD - see contact list
Northern bottlenose whale	4	4	Richard Sabin (NHM)/ Rob Deaville (IoZ)/ Bob Reid (SACVSD)	NHM/ IoZ/SACVSD - see contact list
Humpback whale	4	0	Richard Sabin (NHM)/ Rob Deaville (IoZ)/ Bob Reid (SACVSD)	NHM/ IoZ/SACVSD - see contact list
Fin whale	3	0	Richard Sabin (NHM)/ Rob Deaville (IoZ)/ Bob Reid (SACVSD)	NHM/ IoZ/SACVSD - see contact list
Sowerby's beaked whale	2	0	Richard Sabin (NHM)/ Rob Deaville (IoZ)/ Bob Reid (SACVSD)	NHM/ IoZ/SACVSD - see contact list
Cetacean (indeterminate species)	87	0	Richard Sabin (NHM)/ Rob Deaville (IoZ)/ Bob Reid (SACVSD)	NHM/ IoZ/SACVSD - see contact list
Fin whales	9	2	Liam O'Flynn. TCD	oflynn@guinness.com

## 9. OTHER STUDIES AND ANALYSES

CRRU is studying the distribution and habitat use of minke whales and ongoing studies include an MPhil/PhD study on the diving ecology and foraging behaviour of coastally-occurring minke whales in the outer Moray Firth, NE Scotland (co-supervised by Drs Kevin Robinson (CRRU) and Graham Pierce (University of Aberdeen)) and a PhD on the meta-analysis of habitat preference and site fidelity of minke whales (co-supervised by Drs Kevin Robinson and Gay Mitchelson-Jacob (University of Wales, Bangor)).

Howard & Parsons (2006a) investigated current perceptions of the urban public towards cetaceans and their conservation in Scotland. Overall the issues considered to be the greatest threats to cetacean populations were related to pollution: oil spills, and chemical and sewage pollution. Concern was also high regarding the depletion of cetacean prey from over-fishing, entanglement in fishing gear, marine litter and global warming. Conservation issues that are of specific concern to Scottish waters were also noted: military activities, fish farming and oil exploration. Least concern was expressed about whale-watching. Tourism is a major industry in Scotland, and whale-watching an important sector of this industry.. Thus, a survey was conducted to assess the awareness of, and interest in whale-watching in the Scottish public (i.e. potential domestic tourists; Howard & Parsons, 2006b).

SMRU (Luke Rendell) has continued sperm whale surveys and acoustic research in the northwest Atlantic (in collaboration with Whitehead, Dalhousie University, Canada) and around the Balearic Islands of the western Mediterranean.

SMRU (Vincent Janik) has conducted genetics, photo-ID and acoustics studies on the bottlenose dolphins around the UK, using data from stranded and live animals. Janik also continued to investigate the recognition and



learning abilities of bottlenose dolphins in the acoustic and visual domain. A study on the use of vocalizations in group encounters was finished in 2006.

SMRU are operating a national fishery observer scheme to monitor and assess the level of cetacean bycatch in fisheries, and continue to work on measures to limit cetacean bycatch. SMRU (Simon Northridge) are study the impacts of a marine tidal turbine on harbour porpoise in Strangford Lough, UK

## 10. LITERATURE CITED

Howard, C. and Parsons, E.C.M. 2006a. Attitudes of Scottish city inhabitants to cetacean conservation. *Biodiversity and Conservation* 15: 4335-4356

Howard, C. and Parsons, E.C.M. 2006b. Public awareness of whale-watching opportunities in Scotland. *Tourism in Marine Environments* 2: 103-109.

## 11. PUBLICATIONS

### 11.1 Published or 'In Press' papers only

Bailey, H. & Thompson, P.M. 2006. Quantitative analysis of bottlenose dolphin movement patterns and their relationship with foraging. *Journal of Animal Ecology*, 75, 456-465.

Cox, T.M., T.J. Ragen, A.J. Read, E. Vos, R.W. Baird, K. Balcomb, J. Barlow, J. Caldwell, T. Cranford, L. Crum, A. D'Amico, G. D'Spain, A. Fernández, J. Finneran, R. Gentry, W. Gerth, F. Gulland, J. Hildebrand, D. Houser, T. Hullar, P.D. Jepson, D. Ketten, C.D. MacLeod, P. Miller, S. Moore, D. Mountain, D. Palka, P. Ponganis, S. Rommel, T. Rowles, B. Taylor, P. Tyack, D. Wartzok, R. Gisiner, J. Mead, L. Benner. 2006 Understanding the Impacts of Anthropogenic Sound on Beaked Whales. *Journal of Cetacean Research and Management* 7: 177-187.

Dagleish, M. P., Patterson, I. A. P., Foster, G., Reid, R. J., Linton, C. and Buxton, D. 2006. Intracranial granuloma caused by asporogenic *Aspergillus fumigatus* in a harbour porpoise (*Phocoena phocoena*). *Veterinary Record* 159:458-460.

Dawson C.E., Perrett L.L., Young E.J., Davison N.J., Monies R.J. 2006. Isolation of *Brucella* from a bottlenose dolphin (*Tursiops truncatus*) *Veterinary Record* 158:831-832

Deecke, V.B. & Janik, V.M. 2006. Automated categorization of bioacoustic signals: avoiding perceptual pitfalls. *Journal of the Acoustical Society of America* 119: 645-653

Ferrer i Cancho R. & Lusseau D. 2006. Long-range correlation in the surface behaviour of dolphins. *Europhysics Letters* 74(6): 1095-1101.

Gore, M.A., Ahmad, E., Ali, Q.M., Culloch, R.M., Hameed, S., Hasnain S.A., Hussain, B., Kiani, S., Shaik, N., Siddiqui, P.J. and Ormond, R.F. 2007. Sperm whale, *Physeter macrocephalus*, stranding on the Pakistani coast. *J. Mar. Biol. Ass. UK* 87: 363-364.

Hastie, G.D., Wilson, B. & Thompson, P.M. 2006. Diving deep in a foraging hotspot: acoustic insights into bottlenose dolphin dive depths and feeding behaviour. *Marine Biology*, 148; 1181-1188.

Howard, C. and Parsons, E.C.M. 2006. Attitudes of Scottish city inhabitants to cetacean conservation. *Biodiv. Cons.* 15: 4335-4356

Howard, C. and Parsons, E.C.M. 2006. Public awareness of whale-watching opportunities in Scotland. *Tour. Mar. Environ.* 2: 103-109.

Janik V.M. 2006. Communication in marine mammals. In: Keith Brown (ed) *Encyclopedia of language and linguistics 2nd edition, Vol. 2. Elsevier, Oxford*, pp 646-654

Janik V.M., Sayigh L.S., Wells R.S. 2006. Signature whistle contour shape conveys identity information to bottlenose dolphins. *Proceedings of the National Academy of Sciences of the USA* 103: 8293-8297

Jiang, Y., Lück, M. and Parsons, E.C.M. 2007. Public Awareness and marine mammals in captivity. *Tourism Review International*: in press.

Laland K.L. & Janik V.M. 2006. The animal cultures debate. *Trends in Ecology and Evolution* 21: 542-547

Laland K.L. & Janik V.M. 2007. Response to Krützen *et al*: Further problems with the 'method of exclusion'. *Trends in Ecology and Evolution* 22: 7

Lawson, P. A., Collins, M. D., Falsen and Foster, G. 2006. *Catelicoccus marimammalium* gen. nov., sp. nov., a novel Gram-positive, catalase-negative coccus-shaped bacterium from porpoise and grey seal. *International Journal of Systematic and Evolutionary Microbiology* 56:429-432.

- Learmonth, J.A., MacLeod, C.D., Santos, M.B., Pierce, G.J., Crick, H.Q.P. and Robinson, R.A. 2006. Potential effects of climate change on marine mammals. *Oceanography and Marine Biology*, 44:
- Lewis, T., Gillespie, D., Lacey, C., Matthews, J., Danbolt, M., Leaper, R., McLanaghan, R. and A. Moscrop. 2007. Sperm whale abundance estimates from acoustic surveys of the Ionian Sea and Straits of Sicily in 2003. *J. Mar. Biol. Ass. U.K.* 87:353-357
- Lusseau, D., Wilson, B., Hammond, P.S., Grellier, K., Durban, J.W., Parsons, K.M., Barton, T.R. & Thompson, P.M. 2006. Quantifying the influence of sociality on population structure in bottlenose dolphins. *Journal of Animal Ecology*.75, 14-24.
- MacLeod, C.D., Reidenberg, J.S. , Weller, M., Santos, M.B., Herman, J., Goold J. and Pierce, G.J. In Press. Breaking symmetry: The marine environment, prey size and the evolution of asymmetry in cetacean skulls. *Anatomical Record*.
- MacLeod, C.D. and Bennett, E. 2007. Pan-tropical spotted dolphins (*Stenella attenuata*) and other cetaceans around Saint Helena in the tropical south-eastern Atlantic. *Journal of the Marine Biological Association of the United Kingdom*.
- MacLeod, C.D., Santos, M.B., Reid, R.J., Scott, B.E. and Pierce, G.J. 2007. Linking sandeel consumption and the likelihood of starvation in harbour porpoises in the Scottish North Sea: Could climate change mean more starving porpoises? *Biology Letters*. Published Online, DOI: 10.1098/rsbl.2006.0588.
- MacLeod, C.D., Weir, C.R., Pierpoint, C and Harland, E.J. 2007. The habitat preferences of marine mammals west of Scotland (UK). *Journal of the Marine Biological Association of the United Kingdom*.
- MacLeod, C.D., Santos, M.B, Pierce, G.J. and Lopez, A.. 2006. Relative prey size consumption in toothed whales: Implications for prey selection and level of specialisation. *Marine Ecology Progress Series*.
- Murphy, S., Herman, J.S., Pierce, G.J., Rogan, E. & Kitchener, A.C. 2006. Taxonomic status and geographical variation of common dolphins (*Delphinus*) in the eastern North Atlantic. *Marine Mammal Science* 22: 573-599.
- Parsons, E.C.M. Whale ecotourism. In: *Encyclopedia of Tourism and Recreation in Marine Environments* (Ed. M. Lück). CAB International.
- Parsons, E.C.M. 2006. Whalewatching and the International Whaling Commission: a report of the 2005 sub-committee meeting. *Tour. Mar. Environ.* 2: 134-138.
- Parsons, E.C.M. in press. Whalewatching Sub-Committee of the IWC. In: *Encyclopedia of Tourism and Recreation in Marine Environments* (Ed. M. Lück). CAB International, Oxford.
- Parsons, E.C.M. and Rose, N.A. in press. Aboriginal whaling. In: *Encyclopedia of Tourism and Recreation in Marine Environments* (Ed. M. Lück). CAB International, Oxford.
- Parsons, E.C.M. and Rose, N.A. 2006. Whalewatching and the International Whaling Commission: A report of the 2006 sub-committee meeting. *Tour Mar Environ*, 3: 191-195
- Parsons, E.C.M., Jasny, M. and Rose, N.A. Sonar. In: *Encyclopedia of Tourism and Recreation in Marine Environments* (Ed. M. Lück). CAB International.
- Parsons, E.C.M., Jasny, M. and Rose, N.A. Low Frequency Sonar. In: *Encyclopedia of Tourism and Recreation in Marine Environments* (Ed. M. Lück). CAB International.
- Parsons, E.C.M., Lewandowski, J. and Lück, M. 2006. Recent advances in whalewatching research: 2005-2006. *Tour. Mar. Environ.* 3: 179-189.
- Parsons, E.C.M., Lewandowski, J. and Lück, M. 2006. Recent advances in whalewatching research: 2004-2005. *Tour. Mar. Environ.* 2: 119-132.
- Parsons, E.C.M., Clark, J., Ross, A., and Simmonds, M.P. 2007. The conservation of British cetaceans: a review of the threats and protection afforded to whales, dolphins and porpoises in UK Waters. *Journal of International Wildlife Law and Policy*: in press.
- Parsons, E.C.M., Rose, N.A., Bass, C., Perry, C. and Simmonds, M.P. 2006. It's not just poor science – Japan's "scientific" whaling may be a human health risk too. *Marine Pollution Bulletin* 52: 1118-1120.
- Parsons, E.C.M., Bonnelly De Calventi, I, Whaley, A., Rose, N.A. and Sherwin, S. 2007. A note on illegal captures of bottlenose dolphins (*Tursiops truncatus*) in the Dominican Republic. *J. Internatl. Wild. Law Policy* 10: in press.
- Parsons, E.C.M., Romero, A., Kannada, S. and Rose, N.A. in press. Whaling. In: *Encyclopedia of Tourism and Recreation in Marine Environments* (Ed. M. Lück). CAB International, Oxford.

- Parsons, K.M., Durban, J.W., Claridge, D.E., Herzing, D.L., Balcomb, K.C. & Noble, L.R. 2006. Population genetic structure of coastal bottlenose dolphins (*Tursiops truncatus*) in the northern Bahamas. *Marine Mammal Science*. 22; 276-298.
- Rommel, S.A., Costidis, A.M., Fernandez, A., Jepson, P.D., Pabst, A., McLellan, W., Houser, D.S., Cranford, T., van Helden, A., Allen, D. and Barrows, N. 2006. Elements of Beaked Whale Anatomy and Diving Physiology, and Some Hypothetical Causes of Sonar-related Stranding. *Journal of Cetacean Research and Management* 7: 189-209
- Sayigh LS, Esch HC, Wells RS, Janik VM (*in press*) Facts about signature whistles of bottlenose dolphins (*Tursiops truncatus*) *Animal Behaviour*
- Stachowitsch, M., Parsons, E.C.M. and Rose, N.A. 2006. State of the Cetacean Environment Report (SOCER) 2005. *J. Cet. Res. Manage.* 9 (Suppl.): 198-217.
- Thomas, L., R. Williams and D. Sandilands. (In press) Designing line transect surveys for complex survey regions. *Journal of Cetacean Research and Management*.
- Thompson, P.M. 2007. Developing water quality standards for coastal dolphins. *Marine Pollution Bulletin*, 54; 123-127.
- Whaley, A.R. Wright, A.J., Bonnelly De Calventi, I., and Parsons, E.C.M. 2007. Humpback whale sightings in southern waters of the Dominican Republic lead to proactive conservation measures. *Journal of the Marine Biological Association* 2: *Biodiversity Records*: in press.
- Williams, R., Leaper, R., Zerbini, A.N. and Hammond, P.S. 2007. Methods for investigating measurement error in cetacean line-transect surveys. *J. Mar. Biol. Ass. U.K.* 87: 313-320
- Williams R. & Lusseau D. 2006. Killer whale social networks can be vulnerable to targeted removals. *Biology Letters* 2; 497-500.
- Williams, R. and L. Thomas. (In press) Distribution and abundance of marine mammals in the coastal waters of British Columbia, Canada. *Journal of Cetacean Research and Management*
- Wiig Ø, Bachmann L, Janik V.M., Kovacs K.M., Lydersen C. (*in press*) Spitsbergen's bowhead whales revisited. *Marine Mammal Science*

### 11.2 Unpublished literature

- Jepson, P.D. *et al* 2006. Cetaceans strandings investigation and coordination in the UK: Final Report to Defra for the period 1st January 2000-31st December 2004  
<http://www.defra.gov.uk/wildlife-countryside/resprog/findings/cetacean05/index.htm>
- Jepson, P.D. Prah, S., Deaville, R. and Siebert, U. 2006. Postmortem Research Feasibility Study on Cetacean Ears. Final Report to the Department for Environment, Food and Rural Affairs. 16pp.  
<http://www.defra.gov.uk/wildlife-countryside/resprog/findings/index.htm>
- Northridge, S, 2006. Dolphin Bycatch: Observations And Mitigation Work In The UK Bass Pair Trawl Fishery 2005-2006 Season. *Occasional Report To DEFRA* October 2005.
- Northridge, S. Yvon Morizur, Yanis Souami, Olivier van Canneyt, 2006 PROJECT EC/FISH/2003/09 'PETRACET' Final Report to the European Commission 1735R07D MacAlister Elliott and Partners Ltd. Available at: [http://www.macalister-elliott.com/media/news/pdfs/5\\_1.pdf](http://www.macalister-elliott.com/media/news/pdfs/5_1.pdf)
- Penrose, R.S. 2006. Marine Mammal & Marine Turtle Strandings (Welsh Coast) Annual Report 2006 (<http://www.strandings.com/Graphics%20active/2006%20Turtle%20Strandings%20Report.pdf>)
- Sabin, R.C. *et al* (2006). Trends in Cetacean Strandings around the UK coastline, cetacean and marine turtle post-mortem investigations, 2005  
<http://www.defra.gov.uk/wildlifecountryside/resprog/findings/cetaceanar/index.htm>

**Appendix 1. FOA fishing descriptions and codes**

<b>FAO FISHING GEAR CATEGORIES:</b>		<b>FALLING GEAR</b>	
<b>SURROUNDING NETS</b>		Cast nets	FCN
With purse lines	PS	Falling gear (not specified)	FG
One-boat operated purse seines	PS1	<b>GILLNETS AND ENTANGLING GEAR</b>	
Two-boat operated purse seines	PS2	Set gillnets (anchored)	GNS
Without purse lines (lampara)	LA	Driftnets	GND
<b>SEINE NETS</b>		Encircling gillnets	GNC
Beach seines	SB	Fixed gillnets (on stakes)	GNF
Boat seines	SV	Trammel nets	GTR
Danish seines	SDN	Combined gillnet-trammel nets	GTN
Scottish seines	SSC	Gillnets and entangling gillnets (not specified)	GEN
Pair seines	SPR	Gillnets (not specified)	GN
Seine nets (not specified)	SX	<b>TRAPS</b>	
<b>TRAWLS</b>		Stationary uncovered pounds nets	FPN
Bottom trawls	TBB	Pots	FPO
Beam trawl	OTB	Fyke nets	FYK
Otter trawls (side or stern)	PTB	Stow nets	FSN
Pair trawls	TBN	Barriers, fences, weirs, etc	FWR
Nephrops trawls	TBS	Aerial traps	FAR
Shrimp trawls (not specified)	TM	Traps (not specified)	FIX
Midwater trawls		<b>HOOKS AND LINES</b>	
Otter trawls (side or stern)	OTM	Handlines and pole-lines (hand operated)	LHP
Pair trawls	PTM	Handlines and pole-lines (mechanised)	LHM
Shrimp trawls	TMS	Set longlines	LLS
Midwater trawls (not specified)	TM	Drifting longlines	LLD
Otter twin trawls	OTT	Longlines (not specified)	LL
Otter trawls (not specified)	OT	Trolling lines	LTL
Pair trawls (not specified)	PT	Hooks and lines (not specified)	LX
Other trawls (not specified)	TX	<b>GRAPPLING AND WOUNDING</b>	
<b>DREDGES</b>		Harpoons	HAR
Boat dredges	DRB	<b>HARVESTING MACHINES</b>	
Hand dredges	DRH	Pumps	HMP
<b>LIFT NETS</b>		Mechanised dredges	HMD
Portable lift nets	LPN	Harvesting machines (not specified)	HMX
Boat-operated lift nets	LNB	<b>MISCELLANEOUS GEAR</b>	MIS
Shore operated stationary lift nets	LNS	<b>RECREATIONAL FISHING GEAR</b>	RG
Lift nets (not specified)	LN	<b>GEAR NOT KNOWN OR NOT SPECIFIED</b>	NK
		<b>SHARK CONTROL NETS</b>	NSC
		<b>DERELICT FISHING GEAR</b>	