

UK Progress Report on Cetacean Research, April 2001 to April 2002, with statistical data for the calendar year 2001

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This report summarises information obtained from: or on behalf of fifteen research bodies: Centre for Environment, Fisheries and Aquaculture Science (CEFAS); Cornwall Wildlife Trust (CWT), Chelonia Research (Chelonia); Durlston Marine Project (DMP); Environmental Investigation Agency (EIA); Hebridean Whale and Dolphin Trust (HWDT); Institute of Zoology (IoZ); Joint Nature Conservation Committee (JNCC); National Museum of Scotland (NMS); Natural History Museum (NHM), Scottish Agricultural College Veterinary Science Division (SACVSD); Sea Mammal Research Unit (SMRU); Sea Watch Foundation (SWF), University of Aberdeen Zoology Department (UAZD), University Marine Biological Station Millport (UMBSM). Individuals include Ben Wilson and Russell Leaper. Contact details are given at the end of the report. Not all organisations conducting research on cetaceans in the UK are represented here. This is either because they did not reply to the annual questionnaire this year, or because their work was unknown to the editors of this report. Apologies are extended to any groups in the latter category, who are requested to contact the Sea Mammal Research Unit for inclusion in the annual questionnaire.

1. Species and stocks studied:

Common name	Scientific name	Area/stock(s)	Items referred to
Harbour porpoise	<i>Phocoena phocoena</i>	UK & Ireland	2.1.1, 2.1.2, 4.2, 4.3, 4.4, 5, 7.1, 8, 9
Common dolphin	<i>Delphinus delphis</i>	UK & Ireland	4.2, 4.3, 4.4, 5, 7.1, 8
Striped dolphin	<i>Stenella coeruleoalba</i>	UK & Ireland	4.3, 5, 7.1, 8
Bottlenose dolphin	<i>Tursiops truncatus</i>	UK & Sea of Abaco, Bahamas	2.1.1, 2.2, 2.1.2, 3.1.1, 4.3, 8, 9
Risso's dolphin	<i>Grampus griseus</i>	UK	4.3, 8
Pilot whale	<i>Globicephala melas</i>	UK	4.3, 8
Killer whale	<i>Orcinus orca</i>	UK	3.1.1, 4.3, 8
Northern bottlenose whale	<i>Hyperoodon ampullatus</i>	UK	4 3, 8
Atlantic white-sided dolphin	<i>Lagenorhynchus acutus</i>	UK & Ireland	4 3, 8
White-beaked dolphin	<i>Lagenorhynchus albirostris</i>	UK	4 3, 8
Humpback whale	<i>Megaptera novaeangliae</i>	UK	4.3, 8
Sowerby's beaked whale	<i>Mesoplodon bidens</i>	UK	4 3, 8
Minke whale	<i>Balaenoptera acutorostrata</i>	UK	2.1.1, 2.1.2, 4.3, 6.2, 8
Sei whale	<i>Balaenoptera borealis</i>	UK	4.3, 8
Pygmy sperm whale	<i>Kogia breviceps</i>	Ireland	4.3
Finless porpoise	<i>Neophocaena phocaenoides</i>	Hong Kong, China	9
Indo-pacific hump-backed dolphin	<i>Sousa chinensis</i>	Hong Kong, China, Saudi Arabia	2.1.2, 3.1.1, 9
White whale	<i>Delphinaterus leucas</i>	Svalbard, Norway	3.1.3
Peale's dolphin	<i>Lagenorhynchus australis</i>	Falkland Islands	2.2
Commerson's dolphin	<i>Cephalorhynchus commersonii</i>	Falkland Islands	2.2
Hourglass dolphin	<i>Lagenorhynchus cruciger</i>	Falkland Islands	2.2
Boto	<i>Inia geoffrensis</i>	Brazilian Amazon	2.1.1, 3.1.2
Tucuxi	<i>Sotalia fluviatilis</i>	Brazilian Amazon	2.1.1, 3.1.2

2. Sightings data

2.1 Field work

2.1.1 SYSTEMATIC

UAZD (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* in the core areas within the inner Moray Firth as well as boat-based photo-ID surveys of *Tursiops* in the Sea of Abaco, Bahamas.

DMP carry out land-based, visual surveys between Peveril Point and Anvil Point on the Dorset coast. These quantified effort surveys have recently been extended to include Portland Bill and Hengistbury Head along the Dorset coast. Survey effort this year has amounted to approximately 50 hours per week. The main species studied is the Bottlenose Dolphin.

HWDT is initiating a 3-year programme of standardised surveys in Southwest Scotland between the Small Isles and the Firth of Clyde. The surveys are primarily line-transect surveys but other methods will also be incorporated (photo-ID, acoustic surveys etc).

HWDT is conducting dedicated land-based surveys from the Ardnamurchan peninsula (W. Scotland) to investigate, in particular, minke whale habitat use and behaviour with respect to boat traffic.

HWDT is also conducting boat-based photo-ID and land-based sightings surveys of various bottlenose dolphin groups occurring in Western Scotland.

SMRU have continued small-scale systematic boat surveys for bottlenose dolphins, harbour porpoises and minke whales in and around St Andrews Bay, NE Scotland. SMRU (Tony Martin) have continued line and strip-transect surveys on the Solimoes and Japurá rivers, and Lake Tefé in Brazil, for botos and tucuxis.

2.1.2 OPPORTUNISTIC, PLATFORMS OF OPPORTUNITY

JNCC conducted four visual surveys in the waters to the west and east of Scotland in June and September 2001, with funding mainly from Scottish Natural Heritage, English Nature and the Countryside Council for Wales; unpublished cruise reports are held by JNCC in Aberdeen.

Falklands Conservation/JNCC conducted three visual surveys in the waters around the Falkland Islands during 2001 with funding from the Falkland Islands Government; unpublished cruise reports are held by JNCC in Aberdeen. Results of similar surveys undertaken between February 1998 and January 2001 appeared in White *et al.* (2002).

Analysis of reports from seismic survey vessels of observations made while fulfilling JNCC guidelines on minimising disturbance to marine mammals from seismic surveys are conducted annually by JNCC. The 1999 observations were published in 2001 (Stone, 2001), and those for 2000 are in press along with a four-year (1997-2000) analysis (Stone, in press a,b).

The SOSUS system in the NE Atlantic continues to be used for determining the relative distribution of large vocalising whales, in a project undertaken by Cornell University, managed by JNCC, with funding from a consortium of oil companies. UAZD (Lighthouse Field Station), in collaboration with Cornell University & JNCC, and with funding from the oil industry, continued acoustic surveys in the Faroes-Shetland Channel.

Several local groups co-ordinate sightings of cetaceans made by members of the public and SWF also co-ordinates the collation of such data nationally.

On the south coast DMP collect opportunistic land and boat-based sightings from members of the general public and regular marine users, including local fishermen and divers. Sightings are collected from all along the Dorset, Hampshire and Isle of Wight coasts. A system of fixed and towed hydrophones is also used by DMP to monitor cetacean presence acoustically. (An acoustic study launched in 2001 to investigate the presence of Harbour Porpoise within the Marine Research Area (MRA) has not yielded yet any positive identification of this species)

In Western Scotland HWDT have carried out surveys of minke whales, harbour porpoises and some delphinid species to assess relative abundance using commercial whale-watching vessels as platforms of opportunity, with automated data-logging equipment (Fairbairns *et al.* 1997; Leaper *et al.* 1997). Photo-ID surveys of minke whales, bottlenose dolphins and killer whales are also conducted from these vessels of opportunity.

In Cornwall the CWT continues to collect cetacean sightings data from the public.

Opportunistic photo-ID studies have started in Saudi Arabia on Indo-Pacific hump-backed dolphins and bottlenose dolphins – this project is being supervised by UMBSM.

2.2 Analyses /development of techniques

JNCC and the SWF in collaboration with SMRU established a joint cetacean database for the UK. Maps and text for a joint UK atlas of cetacean distribution were drafted for publication in 2002. JNCC analysed distribution patterns of Peale's, Commerson's and hourglass dolphins in the waters around the Falkland Islands and drafted a paper for publication. JNCC analysed distribution patterns of cetaceans around the Faroe Islands and produced two reports (Taylor & Reid 2001; Skov *et al.* 2002).

DMP have analysed seasonal bottlenose dolphin distribution patterns for the Dorset coast, community structure and association patterns within the Bottlenose dolphin groups using the MRA and ranging movements of bottlenose dolphins along the south coast from Cornwall to Dorset. They have also performed correlation studies between dolphin presence / distribution and environmental factors including water productivity, temperature, salinity, turbidity and weather parameters, and analyses of prey species abundance and distribution along the Dorset coast. DMP also undertake correlation studies between dolphin presence / distribution and anthropogenic factors including commercial and recreational boat traffic levels, underwater noise levels, seismic and naval activity.

3. Marking data

3.1 Field work

3.1.1 NATURAL MARKING DATA

Species	Feature	Area/stock	Calendar year/season/ no. photographed	Catalogued (Y/N)	Catalogue total	Contact person/institute
Minke whale	Scars/fin shape/ colouration	Scotland		Yes	70+	HWDT
Bottlenose dolphin	Dorsal fin	W. Scotland		Yes	10+	HWDT
Bottlenose dolphin	Dorsal fin	Saudi Arabia		Yes		UMBSM
Killer whale	Dorsal fin	Scotland		Yes	12+	HWDT
Indo-Pacific hump-backed dolphins	Dorsal fin	Saudi Arabia		Yes		UMBSM

3.1.2 ARTIFICIAL MARKING DATA

SMRU (Tony Martin) in collaboration with INPA has marked 30 boto and 3 tucuxis in the Brazilian Amazon by freeze branding and with plastic tags.

3.1.3 TELEMETRY DATA

SMRU in collaboration with the Norsk Polar Institute (Tromsø, Norway) captured 3 white whales at Svalbard and attached ARGOS linked CTD tags to them to examine animal movements and to collect information on the oceanography of Storfjorden during freeze up. The CTD tag enabled the creation of temperature and salinity profiles of the fjord.

3.2 Analysis/development of techniques

SMRU have adapted their SRDL (Satellite Relayed Data Logger), used widely on pinnipeds, for cetaceans with the addition of an oceanographic quality CT sensor. This device records many CTD profiles per day and then relays the deepest of these (see above).

4. Tissue/biological sampling

4.1 Biopsy samples

4.2 Samples from directed catches or bycatches

Species	Area/stock	Calendar year/ season total	Archived (Y/N)	Tissue type(s)*	Contact person/institute
Harbour porpoise	NORTH SEA	6	Y	Various	Paul Jepson (IoZ)
Common dolphin	IRELAND	1	Y	Skull	Jerry Herman (NMS)

4.3 Samples from stranded animals*

Species	Area/stock	Calendar year/ year total	Archived (Y/N)	Tissue type(s)*	Contact person/institute
Harbour porpoise	UK	112	Y	Various	Paul Jepson (IoZ) / Richard Sabin (NHM) NMS NMS
	UK	71	Y	Skulls	
	Ireland	11	Y	Skulls	
Common dolphin	UK	33	Y	Various	Paul Jepson (IoZ) / Richard Sabin (NHM) NMS NMS NMS
	Scotland	2	Y	Skeleton	
	Eng & Wales	8	Y	Skulls	
	Ireland	13	Y	Skulls	
Striped dolphin	UK	10	Y	Various	Paul Jepson (IoZ) NMS NMS
	UK	8	Y	Skulls	
	Ireland	4	Y	Skulls	
Atlantic white-sided dolphin	UK	4	Y	Various	Paul Jepson (IOZ) NMS NMS
	Scotland	4	Y	Skulls	
	Ireland	2	Y	Skulls	
White-beaked dolphin	UK	4	Y	Various	Paul Jepson (IOZ) NMS
	UK	2	Y	Skulls	
Pilot whale	UK	3	Y	Various	Paul Jepson (IoZ) NMS
	Scotland	1	Y	Skull	
Sowerby's beaked whale	UK	2	Y	Various	Paul Jepson (IOZ) NMS
	Scotland	2	Y	Skeletons	
Bottlenose dolphin	UK	3	Y	Various	Paul Jepson (IoZ) / Richard Sabin (NHM) NMS
	Scotland	2	Y	Skeleton	
Risso's dolphin	UK	2	Y	Various	Paul Jepson (IoZ) NMS
	Scotland	2	Y	Skeletons	
Minke whale	UK	2	Y	Various	Paul Jepson (IoZ) NMS
	Scotland	3	Y	Baleen	
Sei whale	UK	1	Y	Various	Paul Jepson (IoZ)

					Richard Sabin (NHM)
Killer whale	UK	1	Y	Various	Paul Jepson (IoZ) Richard Sabin (NHM)
Humpback whale	UK	1	Y	Various	Paul Jepson (IoZ)
Northern bottlenose whale	UK Scotland	1 2	Y Y	Various Skeletons	Paul Jepson (IOZ) NMS
Pygmy sperm whale	UK	1	Y	Skull	NMS

** Note that bone samples curated by the NMS are mostly, but not entirely, derived from the same set of individuals from which samples held by IoZ/NHM are derived.*

4.4 Analyses/development of techniques

NMS is using morphometric analysis of skulls to investigate the stock structure of North East Atlantic populations of common dolphin (*Delphinus* species) and harbour porpoise (*Phocoena phocoena*), with University College, Cork, the Institute of Marine Research, Bergen and Arizona State University, USA.

The SMRU have continued to investigate the feeding habits of porpoises based on stomachs of animals recovered from fishing nets. Whiting dominate the list of fish species consumed, with smaller quantities of herring, cod, sprat, gobies and other species. The SMRU have also been examining the stomach contents of common dolphins stranded along UK Channel coasts having died as a result of fishery interactions. These animals were found to have been feeding very largely on sardines or pilchards and horse mackerel, with small quantities of mackerel and a few other species. (Gosselin, 2001).

5. Pollution studies

Ongoing collaborative research between IoZ, SACVSD and CEFAS (funded by DEFRA) into potential relationships between health status and exposure to persistent organic contaminants (PCBs, organochlorine pesticides, heavy metals, butyltins, polybrominated flame retardants) in harbour porpoises stranded and bycaught in the UK. A second collaboration between IoZ, SACVSD and CEFAS continued to investigate relationships between these contaminants and qualitative and quantitative indices of testicular development and fertility in harbour porpoises in UK waters. This study is being funded by the UK-World Wide Fund for Nature (WWF-UK).

The UAZD is co-ordinating a CEC Framework 5 project called Bioaccumulation Of Persistent Organic Pollutants In Small Cetaceans In European Waters: Transport Pathways And Impact On Reproduction (Biocet). As a part of this project, Jennifer Learmonth at the University of Aberdeen is undertaking fatty acid analysis of blubber samples and age determination using teeth and is establishing reproductive status from gonad samples from various cetacean species stranded in Scotland. Blubber samples from harbour porpoise, common, striped and bottlenose dolphins from France, Ireland, Spain and Holland will also be included in the fatty acid analysis study.

Ezra Clark (EIA) through his involvement with the 'Montreal Protocol on Substances that Deplete the Ozone Layer' has been conducting a literature review and desktop study on the state of the stratospheric ozone layer and the progress of the Montreal Protocol with respect to consequences for the cetacean environment. He and others at EIA have been investigating levels of organic and heavy metal contaminants in cetaceans from coastal waters.

6. Statistics for large cetaceans

6.1 Direct catches for the calendar year 2001.

Not applicable to UK

6.2 Other non-natural mortality for the years 2001

Species	Area/stock	Males	Females	Total	Cause	Methodology
Minke whale	England	1	0	1	Entanglement/by-catch	Post mortem

6.3 Earlier years' statistics

7. Statistics for small cetaceans

7.1 For the calendar year 2001

		Directed catch		Incidental mortality			Live-capture
Species	Area/stock	Reported	Est. total	Reported	Est. total	Source*	Reported
Harbour porpoise	UK			11		Stranded/necropsy	
Common dolphin	UK			20		Stranded/necropsy	
				52		Pelagic trawling	
Striped dolphin	UK			3		Stranded/necropsy	

7.2 Earlier years' statistics

No changes

8. Strandings

The NHM have collected records on all stranded cetaceans found on the coasts of the United Kingdom, since 1913 and continues to conduct this research under contract to the UK's DEFRA. The NHM maintains a national strandings database, and has retrospectively entered all strandings data gathered since 1913. The NHM collects skeletal material, parasites, stomach contents and tissue samples from animals stranded in the UK and makes these available through its national research collections. The IoZ (with assistance from NHM) and SACVSD are contracted by DEFRA to investigate diseases and causes of death in marine mammal strandings in the UK. IoZ and SACVSD maintain national databases and tissue archives derived from strandings necropsied in the UK. The NMS collects skeletal material from animals stranded in the UK and Eire, mainly via SACVSD, IoZ and University College Cork. The NHM and IoZ receive help from the Cornwall Wildlife Trust and Marine Environmental Monitoring for reporting and collection of carcasses for necropsy.

Skeletal material from stranded and bycaught cetaceans from the UK and Ireland, largely collected by SACVSD, IoZ and University College Cork, is prepared and preserved by NMS.

In Cornwall, the CWT also maintains a regional strandings database, a subset of the national strandings records, which included 55 common dolphins, 24 harbour porpoises, 15 pilot whales, 2 striped dolphins, 15 other small cetaceans, 1 minke whale, and 1 sperm whale in 2001.

9. Other studies and analyses

UAZD (Lighthouse Field Station) has been studying the abundance, movement and population structure of *Tursiops* in the Bahamas, using a combination of molecular genetic and photo-identification techniques.

HWDT conducted a survey (Scott & Parsons, 2001) into levels of public awareness of the diversity of cetaceans in Southwest Scottish waters, and opinions conservation issues relating to cetaceans. The study showed a low level of awareness of the diversity and abundance of cetaceans occurring in the region and levels of cetacean awareness were very poor in urban sample sites compared to rural sample sites pollution and over-fishing were generally considered to be the main threats to these cetacean populations. Whale-watching was not considered to be a threat to cetacean populations. The general public in this region were almost universally opposed to commercial whaling (96.4%). There was support for cetacean specific conservation legislation being enacting in the UK.

HWDT also commissioned a study investigating the use of Acoustic Harassment Devices (seal-scrammers) in fish farms in West Scotland and assessed potential the impacts of the scale of use of these devices on

populations of coastal cetaceans, notably the harbour porpoise (Shrimpton, 2001). Thirty-two fish farms used AHDs and the potential exclusion/depletion zone for cetaceans around these farms could total over 1000km².

SEAQUEST/UMBSM conducted a review of the impact of boat traffic on Indo-Pacific Hump-backed dolphins and finless porpoises in the waters of Hong Kong for the Agriculture, Fisheries and Conservation Department of the Hong Kong Government, an area where a high level of ship-strikes have been reported.

Countryside Council for Wales and Chelonia have collaborated in the further development of self-contained odontocete click logging device for monitoring bottlenose dolphins in Cardigan Bay, and have succeeded in discriminating dolphins from porpoises, and cetacean click trains from boat sonar click trains.

CWT with Stockholm University and others have conducted studies of exclusion zones and recolonisation patterns by harbour porpoises exposed to acoustic pingers. Chelonia, in collaboration with the University of Barcelona in Spain has been studying bottlenose dolphin interactions with gill net fisheries.

The UADZ, with funding from the European Commission, completed a study of bycatch of cetaceans in pelagic trawl fisheries in Scottish fisheries during 2001. Observers spent 73 days at sea and monitored 69 pelagic trawl hauls between January and August 2001, with no reports of cetacean bycatch.

The SMRU, with funding from DEFRA, have continued monitoring of cetacean bycatch in gillnet and pelagic trawl fisheries throughout this reporting period. They have also been looking at gillnet gear characteristics in relation to porpoise bycatch, and have, with funding from DEFRA and in collaboration with the Institute of Marine Research in Bergen, the Scottish Pelagic Fishermen's Association and the Sea Fish Industry Authority in Hull, been designing and testing a dolphin exclusion grid for use in pelagic trawls.

The SMRU, in collaboration with AUZD and the SACVSD, has also been investigating the expansion in range of bottlenose dolphins off eastern Scotland during the last decade, using photo-identification data from surveys conducted in the inner and outer Moray Firth and in St Andrews Bay, and cause of death data from post-mortem examinations for harbour porpoises (specifically whether or not death was a result of a violent interaction with a bottlenose dolphin).

Ben Wilson, with funding from the Leverhulme Trust, has been examining the effects of odontocete clicks on fish behaviour.

10. Literature cited

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11. Publications

11.1 Published or 'in press' papers only

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