

# UK. PROGRESS REPORT ON CETACEAN RESEARCH, April 2002 TO April 2003 WITH STATISTICAL DATA FOR THE CALENDAR YEAR 2002

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## 1. Species and stocks studied

Common name	Scientific name	Area/stock(s)	Items referred to
Common Bottlenose dolphin	<i>Tursiops truncatus</i>	Moray Firth & NE Scotland	2.11;
Common Bottlenose dolphin	<i>Tursiops truncatus</i>	Dorset & S. coast of England	2.1.1, 2.3
Common Bottlenose dolphin	<i>Tursiops truncatus</i>	Bahamas	2.11
Common Bottlenose dolphin	<i>Tursiops truncatus</i>	Cardigan Bay, Wales	2.2
Common Bottlenose dolphin	<i>Tursiops truncatus</i>	Sarasota Bay, USA	9
Common Bottlenose dolphin	<i>Tursiops truncatus</i>	West Scotland	2.1.1, 2.1.2, 3.1.1
Indian Ocean Bottlenose dolphin	<i>Tursiops aduncus</i>	Shark Bay, W Australia	9
Harbour porpoise	<i>Phocoena phocoena</i>	UK	2.2
Harbour porpoise	<i>Phocoena phocoena</i>	Shetland	2.1.1
Harbour porpoise	<i>Phocoena phocoena</i>	Wales	2.2
Harbour porpoise	<i>Phocoena phocoena</i>	West Scotland	2.1.2
Minke whale	<i>Balaenoptera acutorostratus</i>	West Scotland	2.1.1, 2.1.2, 3.1.1
Rissos Dolphin	<i>Grampus griseus</i>	Cardigan Bay, Wales	2.2
Sperm whale	<i>Physeter macrocephalus</i>	NE Atlantic	2.1.2
Beaked whales	<i>Mesoplodon</i> spp.	NE Atlantic	2.2
Killer whale	<i>Orcinus orca</i>	British Columbia, Canada	9
Killer whale	<i>Orcinus orca</i>	West Scotland	2.1.2, 3.1.1
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

HWDT is initiating a 3-year programme of standardised surveys in Southwest Scotland between the Small Isles and the Kintyre peninsula. 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. Preliminary studies show changes in habitat use through the summer and autumn as well as some evidence of boat traffic effecting minke whale behaviour.

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

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.

UAZD is carrying out small-scale systematic boat surveys and coastal surveys for bottlenose dolphins in and around Aberdeen, NE Scotland (contact: Sarah Canning: [s.canning@abdn.ac.uk](mailto:s.canning@abdn.ac.uk)). UAZD is also carrying out small-scale systematic surveys of harbour porpoises in Shetland using TPOD acoustic data loggers at three sites within Yell Sound. Abundance, local movements and behaviour were also recorded during three co-ordinated watches in March, September and October with two observers at each of the three TPOD sites (contact Paul Fisher: [prfisher@lineone.net](mailto:prfisher@lineone.net))

DMP carry out land-based, visual surveys between Peveril Point and Anvil Point on the Dorset coast (south coast of England). Survey effort this year has amounted to approximately 35 hours per week. Dolphin watch teams also undertake quantified effort surveys at Portland Bill to the west and Hengistbury Head to the east.

The IFAW Song of the Whale research team and collaborators conducted combined visual and acoustic surveys for harbour porpoises in the Baltic and adjacent waters during the summers of 2001 and 2002. Data collected in 2001 also included transects in the English Channel and North Sea. Acoustic data were collected at all times using a towed automatic high frequency click detector. During daylight hours, in sea states of Beaufort two or less, two visual observers were stationed on a platform at an eye height of approximately 5.3m.

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

### **2.1.2 OPPORTUNISTIC, PLATFORMS OF OPPORTUNITY**

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). This distribution data has been correlated with environmental data (e.g. depth & tide) to investigate minke whale habitat use and seasonal changes in distribution patterns.

Photo-ID surveys of minke whales, bottlenose dolphins and killer whales are also conducted from these vessels of opportunity.

Whale-watching vessels were utilised as a platform of opportunity by HWDT to investigate how hydrographical factors effected bottlenose dolphin distribution in the coastal waters of the Isle of Islay, Scotland

Surveys using passenger ferries as platforms of opportunity have been conducted in South West Scotland in 2002 by HWDT and plans are progress for further surveys in 2003.

UAZD has carried out opportunistic cetacean surveys on various ferry routes on the west coast of Scotland (contact Colin MacLeod: [c.d.Macleod@abdn.ac.uk](mailto:c.d.Macleod@abdn.ac.uk)).

UAZD is studying the distribution of sperm whales in the Northeast Atlantic using passive acoustic techniques onboard the FRV Scotia oceanographic cruises carried out by the FRS Marine Laboratory (contact Sónia Mendes: [s.mendes@abdn.ac.uk](mailto:s.mendes@abdn.ac.uk)). This study will build on the work carried out by Hastie *et al.*, 2002.

DMP carries out opportunistic land and boat-based sightings of all species through 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 permanent, fixed hydrophone and a TPOD unit are used to monitor cetacean presence acoustically.

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.

The CWT continues to collect coastal sightings of cetaceans. SWF continues to collect opportunistically obtained sightings records from its network of volunteers.

JNCC (funded by the Department of Environment Northern Ireland) conducted one cruise in northern Irish waters [focused around seabird colonies, but with opportunistic observations of cetaceans]. JNCC also conducted two 2 cruises off the Inner Hebrides. Unpublished trip reports are held by JNCC.

## *2.2 Analyses/development of techniques*

DMP is examining seasonal distribution patterns and community structure and association patterns within the bottlenose dolphin groups along the Dorset coast, as well as ranging movements of bottlenose dolphins along the south coast from Cornwall to Dorset. DMP is also carrying out correlation studies between presence/distribution of bottlenose dolphins and a range of environmental and anthropogenic factors

UAZD, in association with JNCC, is investigating the ecological niches occupied by beaked whales in the North Atlantic through the analysis of the distribution of beaked whales in relation to oceanographic variables. UAZD is also aiding in the compilation of a global database of beaked whale records (contact: Colin MacLeod: [c.d.macleod@abdn.ac.uk](mailto:c.d.macleod@abdn.ac.uk)).

In response to the conclusion of the EC Habitats Committee meeting in December 2000, CCW commissioned the Sea Watch Foundation in collaboration with UAZD to analyse harbour porpoise sightings data from the Joint Cetacean Database, using sequential scaling GIS methods. Criteria were set with a view to identifying areas important for the continuous or regular presence of the harbour porpoise (subject to seasonal variation), areas of high population density (in relation to neighbouring areas) and areas with high calf to adult ratios. JNCC commissioned the University of St Andrews to analyse the JCD to identify areas within north-west European waters in which harbour porpoises possibly occur regularly or at high densities in order to define sites for potential protection. The (unpublished) report is held by JNCC. These two reports form the basis of a review into methodological considerations with a view to identifying potential Special Areas of Conservation under the EU Habitats Directive for the species.

CCW is developing and testing monitoring protocols (for bottlenose dolphin & harbour porpoise). This will involve a joint survey of the whole of Cardigan Bay. There is a significant amount of land-based cetacean data that is collected by volunteers and methods will be reviewed and recommendations made to ensure a degree of standardisation. Disturbance is an important factor in the management of Annex II sites and the monitoring methods and strategies for it will also need to be addressed.

CCW are funding, or contributing to, a number of other projects examining population abundance and structure including:

1. A Cetacean sightings database for Wales.
2. A further survey of Risso's dolphins, harbour porpoises and other cetaceans in northern Cardigan Bay (Whale and Dolphin Conservation Society)
3. Risso's dolphin and other cetacean boat-based surveys in southern Cardigan Bay (Friends of Cardigan Bay)
4. Research review of Cardigan Bay: project development (Friends of Cardigan Bay) –to develop survey and data sharing protocols, and identify research needs to provide information about populations and activities that may be affecting cetaceans
5. North Anglesey surveys of harbour porpoise (Marine Awareness North Wales)
6. Harbour porpoise occurrence: Carmarthen Bay-Gower peninsula- Swansea Bay (Swansea Biodiversity Steering Group) - to evaluate automatic data loggers or PODs against sightings observation data.
7. Re-examination of distribution data for harbour porpoise around Wales and the UK with a view to site selection for this species (Sea Watch Foundation)

JNCC, in collaboration with the Sea Watch Foundation and the Sea Mammal Research Unit is really finalising an Atlas of cetacean distribution in NE Atlantic waters.

Falklands Conservation conducted 4 cruises in Falkland Island waters and one cruise in South Georgia waters [for seabirds, with opportunistic cetacean observations], funded by the FI and South Georgia Governments respectively. Unpublished trip reports are held by JNCC.

## **3. Marking data**

### *3.1 Field work*

#### **3.1.1 NATURAL MARKING DATA**

None to report

### 3.1.2. ARTIFICIAL 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
Killer whale	Dorsal fin	Scotland		Yes	12+	HWDT
Boto	Dorsal fin	Brazilian Amazon	120	Y	297	Tony Martin
Tucuxi	Dorsal fin	Brazilian Amazon	3	Y	6	Tony Martin

### 3.1.3 TELEMETRY DATA

*None*

*3.2 Analyses/development of techniques*

### 4. Tissue/biological samples collected

*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	5	Y	Various	Paul Jepson (IoZ)

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

*4.3 Samples from stranded animals*

Species	Area/stock	Calendar year/season total	Archived (Y/N)	Tissue type(s)*	Contact person/institute
Harbour porpoise	UK	119	Y	Various	Paul Jepson (IoZ)
Shortbeaked Common dolphin	UK	44	Y	Various	Paul Jepson (IoZ)
Striped dolphin	UK	6	Y	Various	Paul Jepson (IoZ)
Atlantic white-sided dolphin	UK	4	Y	Various	Paul Jepson (IoZ)
White-beaked dolphin	UK	4	Y	Various	Paul Jepson (IoZ)
Pilot whale	UK	1	Y	Various	Paul Jepson (IoZ)
Sowerby's beaked whale	UK	1	Y	Various	Paul Jepson (IoZ)
Common Bottlenose dolphin	UK	2	Y	Various	Paul Jepson (IoZ)
Risso's dolphin	UK	2	Y	Various	Paul Jepson (IoZ)
Minke whale	UK	3	Y	Various	Paul Jepson (IoZ)
Sperm whale	UK	1	Y	Various	Paul Jepson (IoZ)
Cuvier's beaked whale	UK	1	Y	Various	Paul Jepson (IoZ)
Pygmy sperm whale	UK	1	Y	Skin, blubber, skull, scapula	NHM (Richard Sabin)

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

#### 4.4 Analyses development of techniques

UAZD is analysing bone samples from beaked whales from around the North Atlantic to investigate trophic and dietary ecology through stable isotope analysis (contact: Colin MacLeod: c.d.macleod@abdn.ac.uk).

#### 5. Pollution studies

During 2002, analysis of contaminant levels (organochlorines, heavy metals, butyltins and polybrominated flame retardants) in a number of UK-stranded harbour porpoises between 1996-2001 was completed by the CEFAS Burnham Laboratory, Essex. Eco-toxicological investigations into potential relationships between these contaminants and health status of stranded harbour porpoises were delayed until early 2003 (due to the 2002 PDV epizootic in UK seals). The research is collaborative between IoZ, SACVSD and CEFAS (funded by DEFRA). Preliminary results consolidate previously published associations between elevated PCBs and mercury levels and infectious disease mortality in UK-stranded harbour porpoises, but utilise significantly increased sample sizes. The detailed results of these analyses should be presented to the IWC meeting in 2004. 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) and will be completed in mid-2003.

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.

#### 6. Statistics for large cetaceans

##### 6.1 Direct catches - Not applicable to UK

In collaboration with Hvalur H.F., Iceland, Tony Martin (BAS) took 6 blue whales, 3 northern right whales and 15 spectacled porpoises in the NE Atlantic under special permit.

##### 6.2 Other non-natural mortality for the calendar year 2001

Last year the Committee agreed (IWC, 1997, p.59) to include information on whales killed as a result of collisions with ships or entanglement, along with the source of data and methodology used to determine cause of death. Again, a table probably provides the most convenient way to summarise the data. Please give references where appropriate.

Species	Area/stock	Males	Females	Total	Cause	Methodology
Minke whale	UK	0	2	2	Entanglement	Port mortem

##### 6.3 Earlier years' statistics

This would be a place to include any corrections to statistics presented in earlier years. It may also be appropriate to include references to studies that utilise time series of data here.

#### 7. Statistics for small cetaceans

##### 7.1 For the calendar year 2001

It was first agreed to include this information in a Commission resolution in 1976 (IWC, 1977, p.31)). Again a tabular format is most convenient. All direct, incidental and live-capture removals should be recorded but **not** stranded animals unless their cause of death can be attributed to either direct or incidental capture. Where appropriate, directed or incidental catches can be separated by fishery type (e.g. hand-harpoon) and locality, as is currently done in the very informative compilations included in the Japanese Progress Reports of recent years. Please indicate if removals are known to occur, but no data are available, with a 'yes'.

Species	Area/stock	Directed catch		Incidental mortality			Live-capture
		Reported	Est. total	Reported	Est. total	Source*	Reported
Harbour porpoise	UK			24		Stranded/necropsy	
Harbour porpoise	UK			5			
Shortbeaked Common dolphin	UK			29		Stranded/necropsy	
Shortbeaked common dolphin	Channel			8	-	Pair trawl fishery	

\*e.g. fishery type

### 7.2 Earlier years' statistics

A review of UK-stranded cetacean by-catches between September 1990 and December 2002 inclusive was recently conducted by IoZ. Within England and Wales, by-catch was the most common cause of mortality accounting for 156 (30% of established causes of death) harbour porpoises and 176 (66% of established causes of death) common dolphins. Harbour porpoise by-catches frequently demonstrated external injuries consistent with gillnet-type fishing gear and these strandings had a wide spatial and temporal distribution within England and Wales. In contrast, common dolphin by-catches almost exclusively stranded in Southwest England between December-April demonstrating a strong spatio-temporal correlation with winter mid-water pelagic trawl fisheries operating off the SW coastline of the UK. The number and proportion of by-caught harbour porpoises stranded within Wales/NW England and along the East Coast of England peaked in the mid-1990s and declined thereafter, whereas the number of stranded harbour porpoises and common dolphins diagnosed as by-catches in SW England increased annually between 1999 and 2002. In Scotland, only 14 stranded cetaceans by-catches were diagnosed between 1992-2002 consistent with the very low fisheries effort in Scottish waters during this period.

## 8. Strandings

The IoZ (with assistance from NHM) and SACVSD are contracted by DEFRA to investigate diseases and causes of death in marine mammal (mainly cetacean) strandings in the UK. IoZ and SACVSD maintain national databases and tissue archives derived from strandings necropsied in the UK.

The NHM have collected records on all stranded cetaceans found on the coasts of the United Kingdom, since 1913. 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.

In addition to the strandings co-ordination funded by DETR, the National Assembly for Wales is funding the Welsh Strandings Co-ordinator in conjunction with the Countryside Council for Wales (CCW), who collaborates with the IoZ/SACVSD/NHM scheme.

The Cornwall Wildlife Trust also maintains its own strandings data base, with information that also goes to the NHM.

## 9. Other studies and analyses

HWDT/UMBSM & Napier University have conducted a survey on provision of educational and interpretative materials on whale-watching boats in Scotland. It was found that the majority of whale-watching operations were one-man businesses, with the skipper being deck-hand, pilot and educator. Interpretative talks to passengers averaged 10 minutes, with information provided at regular intervals throughout the trip. Most operators had a small amount of written reference material, and the skipper was free to answer questions throughout the trip. There was a lukewarm reception to the proposal of a training course for whale-watching operators, but suggestions were made for improving the awareness of whale-watching to tourism bodies and statutory bodies. The main conclusion was that the main constraint upon whale-watching operators in Scotland for the provision of educational materials is

time: they are willing, more than able, and open to the idea of further learning opportunities for both themselves and their passengers, but time constrains their efforts.

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.

CCW is funding a study on *Net fisheries and interactions with marine wildlife around Wales* - This study is required to investigate net fisheries and the current level of interaction with marine wildlife including cetaceans around Wales.

During September 2002 the IFAW research vessel Song of the Whale conducted studies of minke whales around the Inner Hebrides, west coast of Scotland, as part of wider ranging research in the area that included studies of basking sharks (*Cetorhinus maximus*). One objective of the study was to facilitate exchange of research techniques between basking shark and cetacean researchers. The main aim of the minke whale research was to collect faecal samples for the purpose of genetic analysis to examine diet. In addition, samples of whole fish and fish scales were collected following feeding lunges from minke whales. Although no faecal samples were collected, collaborative work with one of the whale watch operators (Sea Life Surveys) did yield one sample. Photo-identification pictures were also taken and will be submitted to existing catalogues.

Vincent Janik (SMRU) conducted a playback study on bottlenose dolphins in Sarasota Bay, Florida in collaboration with Randy Wells from the Mote Marine Lab and Laela Sayigh from the University of North Carolina at Wilmington. They tested whether artificial dolphin whistles elicit the same responses as original recordings of dolphins. This study is ongoing and investigates whether identity information is carried in the frequency modulation of a whistle or in general voice features of the individual. Additional studies involving field playbacks were made in collaboration with Peter Tyack to investigate whether signature whistles can be used to address specific individuals. Vincent Janik is also conducting experiments in Shark Bay, Western Australia, using a dispersed hydrophone array to study the communication system of Indian Ocean bottlenose dolphins. This study looks at functions of dolphin calls and effective communication distances between individuals. In collaboration with Lars Bejder from Dalhousie University in Canada Vincent Janik also studied the effects of controlled boat approaches on the vocal behaviour of these animals.

Dr Volker Deecke from the School of Biology at the University of St Andrews finished his PhD on vocal communication in killer whales. He investigated classification methods to describe killer whale vocal repertoires and conducted playback experiments in which he played killer whale sounds to harbour seals (*Phoca vitulina*) in Johnstone Strait, British Columbia, Canada. He found that seals had learned to avoid mammal-eating killer whales while they tolerated the presence of residents. Volker Deecke also documented differences in the vocal repertoires of transient and resident killer whales of the area.

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## 11. Publications

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## APPENDIX: ORGANISATIONS/INDIVIDUALS AND CONTACT DETAILS

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