



**NATURAL
HISTORY
MUSEUM**



Out of the Blue

The UK Whale & Dolphin Stranding Scheme

Out of the Blue

Overview – Dr Michael Dixon, Director

I've yet to meet anyone who hasn't dreamed of swimming with dolphins or watching whales. These intelligent and acrobatic marine mammals have firmly established themselves in the hearts of people across the world. And yet we still know very little about them.

Every year in the UK, between 350-800 whales, dolphins and porpoises (collectively known as cetaceans) are washed ashore. The number of dead animals is increasing each year and we urgently need to understand the devastation happening in our waters.

Through the work of the UK Whale & Dolphin Stranding Scheme the Natural History Museum and its partners are collecting vital information to increase our understanding of whales, dolphins and porpoises. Our scientists provide accurate and essential data for other researchers, government agencies, conservationists and animal welfare groups on stranding numbers and the causes of death in order to help our understanding and hopefully their conservation in the future.

This report outlines the extensive work carried out by the Natural History Museum in monitoring and researching whales, dolphins and porpoises, including:

- > recording the number of strandings year on year
- > the identification of UK stranding patterns
- > highlighting areas of the UK that experience the highest frequency of stranded marine mammals
- > working in partnership with other scientific institutions on joint research initiatives, including diet, age, causes of death and behaviour
- > working with local and regional agencies and environmental groups to identify marine animals and build upon existing records and information for future research



Stranded killer whale

The UK Whale & Dolphin Stranding Scheme

The Natural History Museum has been recording and investigating incidents of whale, dolphin and porpoise strandings from around the coasts of the UK for more than 100 years. It is one of the longest-running scientific investigations of its kind and has helped to build valuable information on marine species un-paralleled elsewhere in the world.

Through a nation-wide network of surveyors it closely monitors the trends in strandings to increase our understanding and to aid the survival of some of the UK's most charismatic marine creatures. The scheme is uniquely placed to react quickly to marine conservation and political issues. Analytical reports can be rapidly compiled on cetacean distribution, biology, ecology and causes of death.

The UK Whale & Dolphin Stranding Scheme is the centre of a coordinated investigation, funded since 1990 by the Department for Environment, Food and Rural Affairs (Defra), into the biology and ecology of cetacean populations around the United Kingdom. It contributes to the UK's programme of research on the North Sea and its response to ASCOBANS (the Agreement on the conservation of Small Cetaceans of the Baltic and North Seas). Investigations are carried out in association with the Zoological Society of London which has responsibility for autopsies.

Library of Life

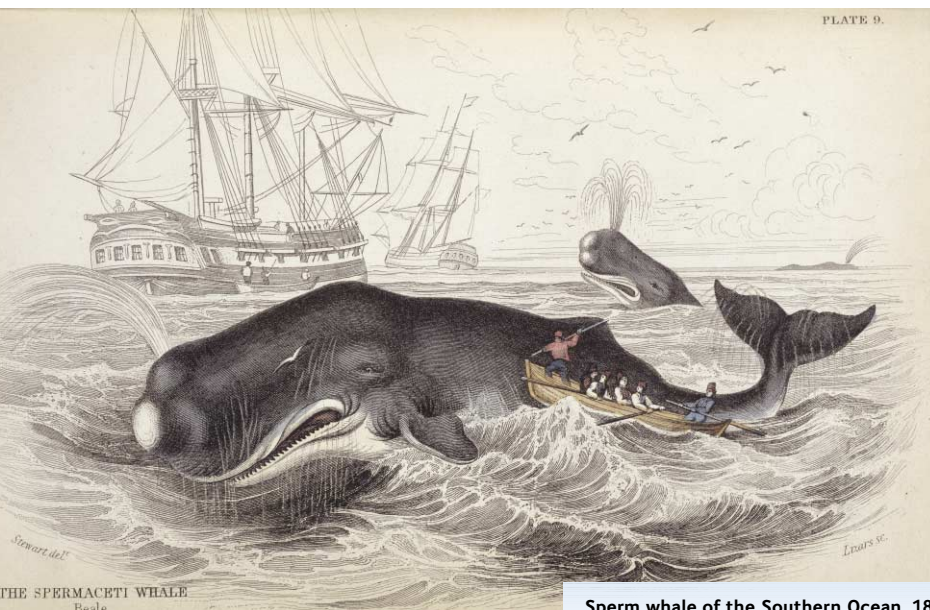
The Museum's collections of over 70 million plant, animal, fossil and mineral specimens include 5,800 specimens of marine mammals. Our collections inspire thousands of visitors every day but also provide an invaluable research resource helping scientists and conservationists across the world understand marine wildlife.

Fishes Royal – marine mammals and the law

In 1324, a law was passed that granted the Crown all rights to cetaceans stranded on, or caught in the waters of England and Wales. Similar rights were claimed for the Crown of Scotland. These animals were described as 'Fishes Royal'. The rights were transferred to the Natural History Museum in 1913 and since then over 11,000 animals have been recorded.

Among the collections are specimens dating back to 1575, rare species such as the narwhal, usually found in the Arctic around Greenland, and Fraser's dolphin recorded in UK waters for the first time in 1996.

Today's research depends on a comprehensive and continually developing collection. Local reports of dead carcasses are acted upon quickly by Museum staff to preserve the remains for scientific research and to aid future conservation.



Sperm whale of the Southern Ocean, 1836
by Sir William Jardine

In 1927 an entire population of 168 false killer whales were stranded on the north east coast of Scotland. With the help of many local people the stranded animals were examined, measured, sampled, dissected and preserved at the site and finally transported to the Museum to form part of the national collection, providing a groundbreaking study of an entire population of false killer whales. Until 1927, false killer whales had only been known in the UK from sub-fossil remains found in the Lincolnshire fens.

Research Matters

Much is still unknown about population size, distribution, seasonality, behaviour and causes of death in marine mammals around the UK. Without this knowledge it is difficult to judge the significance of an individual stranding or the sudden death of a large number of animals.

In 1992 more than 100 dolphins were accidentally drowned in fishing nets off southwest England, in 1988 a new-born bottle-nosed dolphin found stranded in Cardigan Bay, Wales demonstrated very high levels of pollution, and in 2003 the highest number of stranded cetaceans was reported around the United Kingdom since records began in 1913. This dramatic increase emphasises the value and need for long-term monitoring and analysis of information.

Over the years the UK Whale & Dolphin Stranding Scheme has developed in range and scope, with carcasses being recovered from around the coast and brought to London for detailed examination.

Today the Museum's research is focused upon:

- > finding out how many whales, dolphins and porpoises are stranded or wash up on the coasts of England, Wales, Scotland and Northern Ireland per year
- > determining what species they are and where and when they strand
- > examining their age and sex profile
- > looking at long-term feeding strategies and seasonal distribution
- > undertaking post-mortems with the Zoological Society of London to uncover the cause of death

White-sided dolphin stranded in Sussex



The ages of stranded cetaceans are examined by looking at growth lines in their teeth. Cetacean stomach contents are analysed to help researchers understand the nature of their ecology and parasites found both internally and externally are identified.

Working in Partnership

Without the help and cooperation of volunteers and a network of conservation, animal welfare, professional bodies and other scientific institutes, the work of the Natural History Museum would not be possible.

Experienced surveyors supervise individuals and teams of volunteers who check key sites and coastlines for stranded animals. Their quick response often helps the recovery of a carcass before it is washed away by the tide or becomes too decomposed to be of any scientific value. Reports made quickly can help scientists discover more precisely the circumstances surrounding the animal's death.

Stranding Trends

The UK Whale & Dolphin Stranding Scheme provides a detailed overview of stranded cetacean numbers and a valuable insight into distribution patterns over time.

Figure 1 shows the total number of strandings over a ten year period (1994-2004). The last five years (1999-2004) have seen increasing numbers of UK stranded cetaceans, predominantly due to winter strandings of short-beaked common dolphins (*Delphinus delphis*) and harbour porpoises (*Phocoena phocoena*) in south west England. This increase appears to reflect a genuine rise in net entanglement-related deaths (bycatch). Long term monitoring and detailed post-mortem analysis of strandings provide us with vital evidence of the causes of death and the ability to apply this knowledge for future conservation measures.

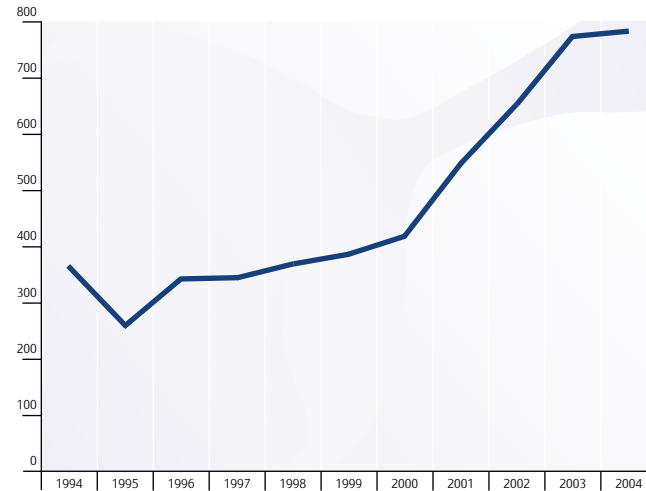


Figure 1: Total number of reported UK strandings (1994 to 2004)

Threats to Marine Mammals

Although the absolute numbers of whales, dolphins and porpoises are unknown, many conservation groups believe that the current numbers of dead stranded animals represent a significant, and unsustainable, impact on populations. Comparing the overall total of 782 strandings in 2004 with 360 strandings in 1994 reveals that reported strandings have risen by 422, effectively doubling in the last 10 years.

There are a variety of causes of death to UK whales and dolphins:

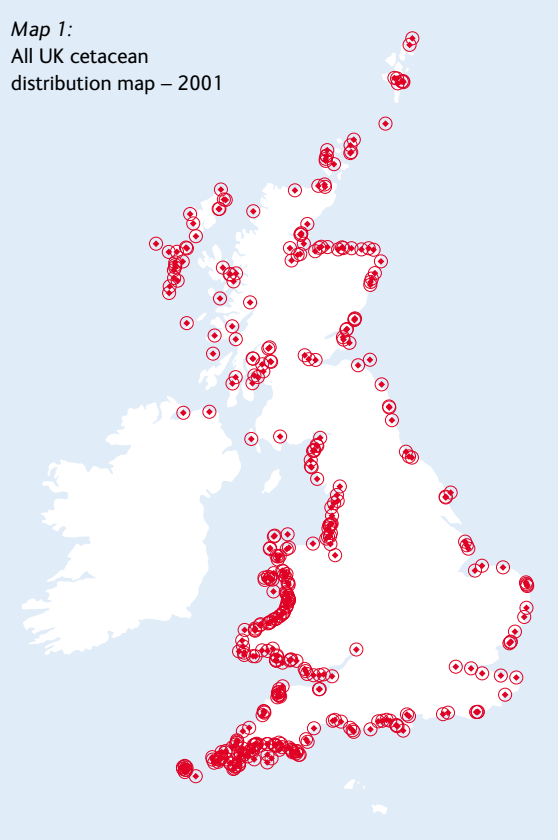
- > entanglement in fishing nets, known as bycatch
- > marine pollution – a wide range of pollutants are discharged into the sea including heavy metals such as mercury, pesticides and industrial chemicals. Untreated sewage may also present the threat of infection
- > infectious diseases – parasitic lung infection, pneumonia or fungal infections
- > starvation
- > over-fishing – mackerel, herring, sprats and sand eels have all declined in British waters, depriving cetaceans of food
- > disturbance and accidental collision with boats and propellers
- > noise pollution – anthropogenic noise, including commercial dredging, potential effects of naval sonar, busy shipping lanes



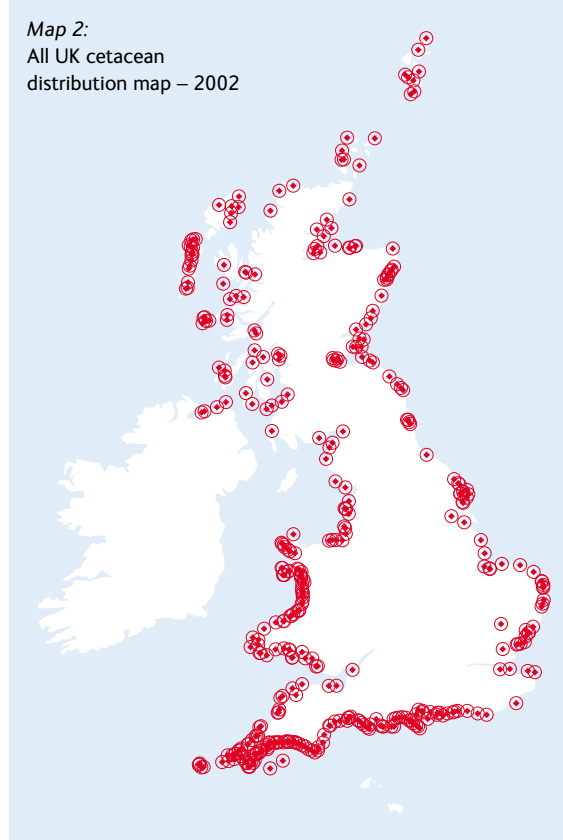
Sperm whale stranded at Gibraltar Point, Lincolnshire

Stranding Hotspots

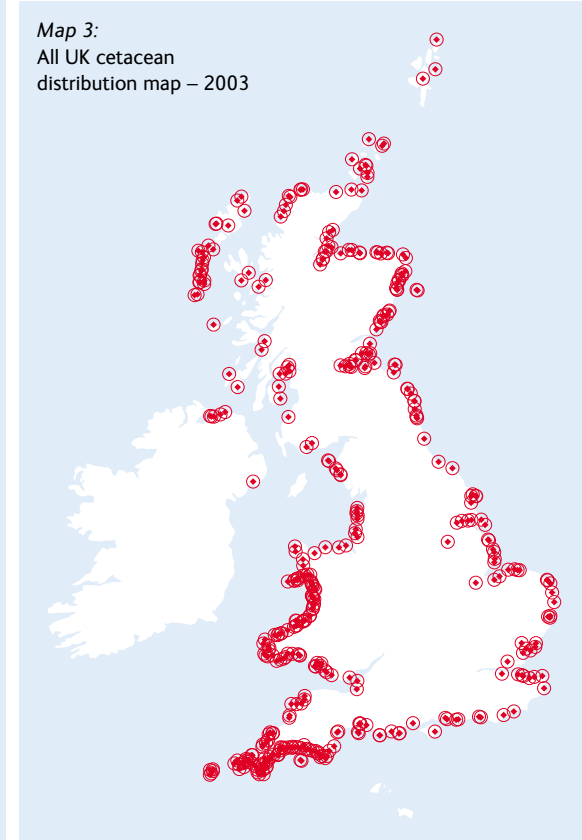
Map 1:
All UK cetacean
distribution map – 2001



Map 2:
All UK cetacean
distribution map – 2002



Map 3:
All UK cetacean
distribution map – 2003



The most commonly stranded species in the UK is the harbour porpoise, followed by the common dolphin. Harbour porpoises are found all around our coastline, while common dolphins are primarily concentrated in the southwest. White-beaked dolphins are common in the northern North Sea, while giants such as the sperm whale, the fin whale and the minke whale are rarer and more often found in Scottish waters.

Maps 1–3 represent the main distribution patterns of all stranded cetaceans in the UK. Strandings are concentrated around the coasts of Cornwall, west Wales, the Outer Hebrides and scattered along North Sea coasts from central East Anglia to the Shetland Islands.

Cornwall has by far the highest number of reported strandings year on year in England and for the UK. The Outer Hebrides has the highest number for Scotland and Gwynedd's coastal area has the highest number for Wales.

Strandings occur throughout the year. In some areas, like Cornwall, the majority occur between December to February. In others, like Norfolk or Northumberland, strandings can occur at any time. The areas where strandings take place can be determined by a variety of factors, including sea currents, local geography, prevailing winds, storms and fisheries activity.

The areas with the highest number of strandings year on year, or stranding hotspots, include:

- | | |
|-----------------|---|
| England | Mount's Bay, Cornwall
Whitsand Bay and Looe, Cornwall
Gerran's Bay & Veryan Bay, Cornwall
Thurlestone, Devon |
| Wales | Barmouth area, Gwynedd
Tywyn area, Gwynedd
Aberdaron area, Gwynedd |
| Scotland | Outer Hebrides
Firth of Forth
Grampian/Aberdeen area |



How to Help Stranded Whales and Dolphins

If you come across a whale, dolphin or porpoise
and the animal is alive you should phone

the RSPCA for England and Wales **0870 5555 999**

the Scottish SPCA for Scotland **0131 339 0222**

If you discover a dead whale, dolphin or porpoise
the stranding should be reported as soon as possible to:

The Natural History Museum for strandings in England
020 7942 5155

Scottish Agricultural College for strandings in Scotland
01463 243030

Marine Environmental Monitoring for strandings in Wales
01348 875000

In order to help Museum scientists please provide
the following information:

- > an accurate description of its location
(where possible a grid reference)
- > what you think it is (whale, dolphin, porpoise –
be as specific as you can – describing its colour,
shape and markings, and whether it has teeth or
baleen plates)

- > its condition/appearance (has it just washed up,
has it started to decompose?)

- > the approximate length of the animal

If possible tie a label around the tail, with your
name, date and where it was found. These help
with identification in case the animal is swept
out to sea and turns up elsewhere.

If the carcass is required for post-mortem
examination by the Zoological Society of London,
or for the Natural History Museum's research
collection, you may be asked to help secure the
body to stop it drifting away. Please remember
that diseases can be transmitted to humans from
the dead bodies of animals. Be careful, wear gloves
and wash your hands thoroughly after contact.
Most importantly, never put yourself at risk.

Humpback whale spout

Identification



Harbour porpoise
(*Phocoena phocoena*)

- > Small – up to 1.7m long
- > Distinctive small triangular dorsal fin with broad base
- > Dark grey upper body, usually no markings and a white underside
- > Head tapers to a point, with no beak
- > Present all year round, but most commonly seen off western Britain from April to August



Bottlenose dolphin
(*Tursiops truncatus*)

- > Large dolphin – up to 3.8m long
- > Tall and slender dorsal fin, usually sickle-shaped
- > Grey upper body with a paler grey underside
- > Short stubby distinct beak
- > Most frequently seen July to October



White-beaked dolphin
(*Lagenorhynchus albirostris*)

- > Up to 3.2m long
- > Large, sickle-shaped dorsal fin
- > Short, white beak
- > Black back with a white or grey area behind the dorsal fin, forming a pale 'saddle'
- > Most frequently seen June to October

Common dolphin (*Delphinus delphis*)

- > Up to 2.6m long
- > Dorsal fin can be curved or triangular and vary in colour.
- > Dark cape on their back with a v-shape under the dorsal fin, tan or yellowish patch on each side and a white underside with occasional yellow streaks. The flukes (tail) are dark on both sides.
- > Most frequently seen December to April off southwest England and May to July off south Wales



Long-finned pilot whale
(*Globicephala melas*)

- > Stocky body – up to 7m long
- > Low dorsal fin, twice as long as it is high
- > Black or dark grey with a paler stripe passing diagonally behind the eye
- > Anchor-shaped grey/white patch on chin
- > Bulbous head
- > Most frequently seen June to September

Minke whale
(*Balaenoptera acutorostrata*)

- > Medium sized whale – up to 10m long.
- > Dark grey/black back with a curved dorsal fin
- > White band on the outer side of the flippers.
- > Very pointed head.
- > Mouth contains plates of pale yellow baleen on either side of upper jaw
- > Most frequently seen May to September



UK Marine Mammals

Since 1913 the Natural History Museum has recorded 25 species of cetaceans in UK waters. New research techniques are helping us to learn whether they are residents or just passing through.

Baleen Whales

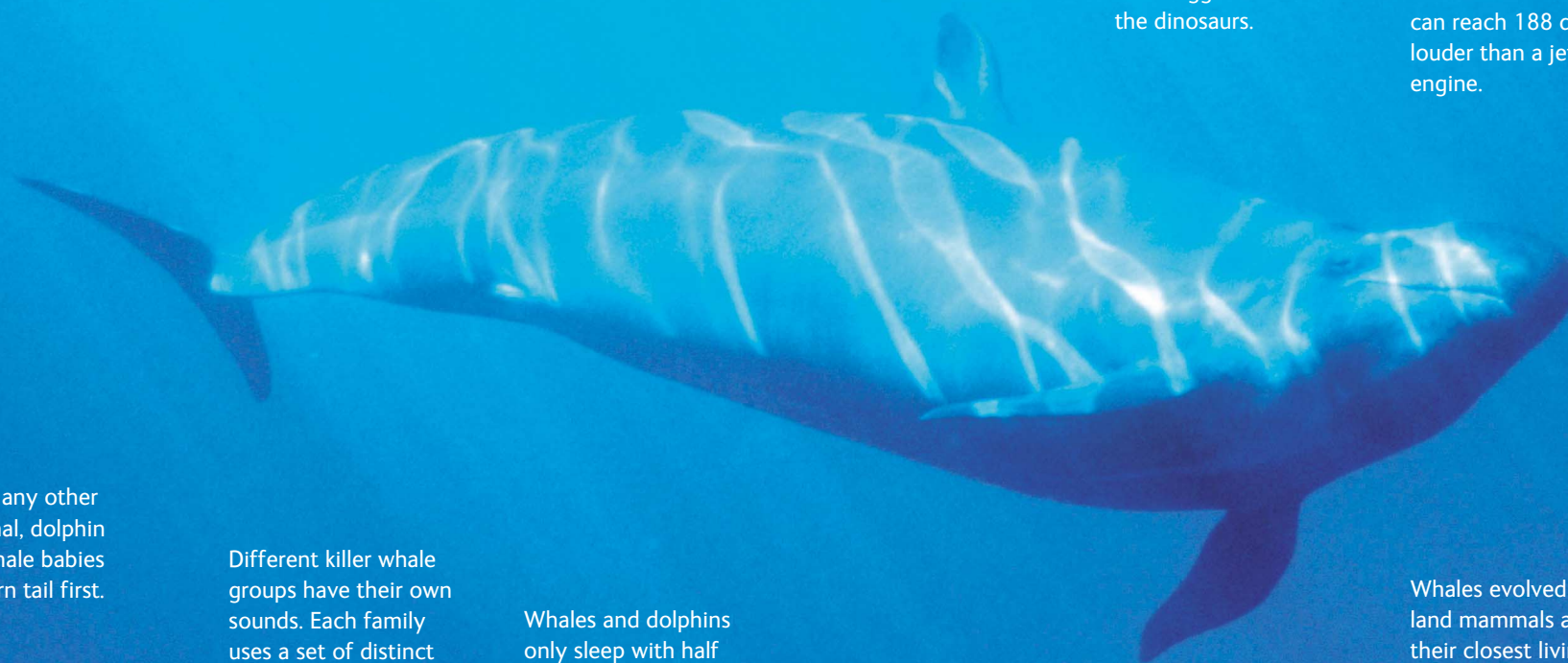
Black Right Whale	<i>Eubalaena glacialis</i>
Fin Whale	<i>Balaenoptera physalus</i>
Minke Whale	<i>Balaenoptera acutorostrata</i>
Blue Whale	<i>Balaenoptera musculus</i>
Sei Whale	<i>Balaenoptera borealis</i>
Humpback Whale	<i>Megaptera novaeangliae</i>

Toothed Whales

Striped Dolphin	<i>Stenella coeruleoalba</i>
Common Dolphin	<i>Delphinus delphis</i>
Bottlenose Dolphin	<i>Tursiops truncatus</i>
White-sided Dolphin	<i>Lagenorhynchus acutus</i>
White-beaked Dolphin	<i>Lagenorhynchus albirostris</i>
Fraser's Dolphin	<i>Lagenodelphis hosei</i>
False Killer Whale	<i>Pseudorca crassidens</i>
Killer Whale	<i>Orcinus orca</i>
Risso's Dolphin	<i>Grampus griseus</i>
Long-finned Pilot Whale	<i>Globicephala melas</i>
Harbour Porpoise	<i>Phocoena phocoena</i>
Beluga Whale	<i>Delphinapterus leucas</i>
Narwhal	<i>Monodon monoceros</i>
Pygmy Sperm Whale	<i>Kogia breviceps</i>
Sperm Whale	<i>Physeter catodon</i>
Sowerby's Beaked Whale	<i>Mesoplodon bidens</i>
True's Beaked Whale	<i>Mesoplodon mirus</i>
Cuvier's Beaked Whale	<i>Ziphius cavirostris</i>
Northern Bottlenose Whale	<i>Hyperoodon ampullatus</i>

Striped dolphin breaching

Flukey Facts



Unlike any other mammal, dolphin and whale babies are born tail first.

Different killer whale groups have their own sounds. Each family uses a set of distinct calls that give them a unique dialect.

Whales and dolphins only sleep with half their brain inactive at a time. While one side catnaps, the other half stays vigilant and keeps the animal breathing (a voluntary action for whales and dolphins).

Cetaceans without teeth sieve krill and small fish through huge comb-like plates (baleen) that allow the water to filter out. Baleen is made from keratin, the same material as our hair and fingernails.

Whale milk tastes like a mixture of fish, liver, milk of magnesia, and castor oil. A baby blue whale drinks over 50 gallons of this nourishing mixture in a day.

Whales evolved from land mammals and their closest living relatives on land are hippos.

At up to 29m long blue whales are the largest creatures ever to have lived on Earth, even bigger than the dinosaurs.

The blue whale is the loudest animal on Earth and their calls can reach 188 decibels, louder than a jet engine.

A blue whale can eat four tonnes of krill a day – equivalent to eating 10,000 cans of beans.

The Ancient Greeks believed dolphins riding in a ship's wake was a good omen for a smooth voyage.

False killer whale showing threat display to warn off intruder

Learning About Our World

The success of the UK Whale & Dolphin Stranding Scheme relies heavily upon the efforts of the countless numbers of individuals and organisations that make regular reports to the Natural History Museum. They include:

H M Coastguard
Cornwall Wildlife Trust
Brixham Seawatch
Devon Wildlife Trust
National Marine Aquarium
Durlston Marine Project
Hampshire Wildlife Trust
Marine Environmental Monitoring
Ulster Museum
Environment Department, Jersey
Royal Scottish Museum, Edinburgh

Links

The Natural History Museum promotes education and awareness of the diversity of wildlife and their habitats. For further information on our work and the work of our partners please visit:

UK Whale & Dolphin Stranding Scheme	www.nhm.ac.uk/zoology/stranding
Zoological Society of London	www.zsl.org
Scottish Agricultural College	www.sac.ac.uk
Marine Environmental Monitoring	www.strandings.com
Defra	www.defra.gov.uk
The Wildlife Trusts	www.wildlifetrusts.org
British Divers Marine Life Rescue	www.bdmlr.org.uk
Brixham Sea Watch	www.brixhamseawatch.fsnet.co.uk
Durlston Marine Project	www.durlston.co.uk/marine
Hebridean Whale and Dolphin Trust	www.HWDT.org
RSPCA	www.rspca.org.uk
The Whale and Dolphin Conservation Society	www.wdcs.org
The Irish Whale and Dolphin Group	www.iwdg.ie



The UK Whale & Dolphin Stranding Scheme is funded by the Department for Environment, Food and Rural Affairs to monitor strandings of live animals, numbers of dead carcasses, to identify the species involved, their age, sex distribution, biology, ecology and causes of death.

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Surveying common dolphins

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