

# PALM BEACH DOLPHIN PROJECT FACT SHEET



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## SPERM WHALE

### *Physeter macrocephalus*

CLASS: Mammalia  
ORDER: Cetacea  
SUBORDER: Odontoceti  
FAMILY: Physeteridae  
GENUS: *Physeter*  
SPECIES: *macrocephalus*



The sperm whale is the largest toothed whale. It has been portrayed frequently in art and literature as a symbol of the great whales, and is best known as the leviathan Moby Dick in Melville's novel. Unique in appearance, the sperm whale seems to have social characteristics that, to date, also appear to be unique among whales. Females and their young travel in permanent units, whereas the much larger males rove between breeding and feeding grounds, as well as among groups of females when breeding.

**PHYSICAL DESCRIPTION:** The sperm whale is distinguished by its extremely large head, which takes up to 25 to 35% of its total body length. It is the only living cetacean that has a single blowhole asymmetrically situated on the left side of the head near the tip. Sperm whales have the largest brain of any animal (on average 17 pounds (7.8 kg) in mature males), however, compared to their large body size, the brain is not exceptional in size.

**COLOR:** Sperm whales are mostly dark gray, but oftentimes the interior of the mouth is bright white, and some whales have white patches on the belly.

**FINS AND FLUKES:** Their flippers are paddle-shaped and small compared to the size of the body, and their flukes are triangular in shape. They have small dorsal fins that are low, thick, usually rounded, located about two-thirds towards the back of the body.

**LENGTH AND WEIGHT:** Adult females may grow to lengths of 36 feet (11 m) and weigh 15 tons (13,607 kg). Adult males, however, reach about 52 feet (16 m) and may weigh as much as 45 tons (40,823 kg).

**FEEDING:** Because sperm whales spend most of their time in deep waters, their diet consists of many larger organisms, which also occupy deep waters of the ocean. Their principle prey are large squid weighing between 3.5 ounces and 22 pounds (0.1 kg and 10 kg), but they will also eat large demersal and mesopelagic sharks, skates, and fishes. The average dive lasts about 35 minutes and is usually down 1,312 feet (400 m), however dives may last over an hour and reach depths over 3,280 feet (1,000 m).

**MATING AND BREEDING:** Female sperm whales reach sexual maturity around 9 years of age when they are roughly 29 feet (9 m) long. At this point, growth slows and they produce a calf approximately once every five years. After a 14-16 month gestation period, a single calf about 13 feet (4 m) long is born. Although calves will eat solid food before one year of age, they continue to suckle for several years. Females are physically mature around 30 years and 35 feet (10.6 m) long, at which time they stop growing. For about the first 10 years of life, males are only slightly larger than females, but males continue to exhibit substantial growth until they are well into their 30s. Males reach physical maturity around 50 years and when they are 52 feet (16 m) long. Unlike females, puberty in males is prolonged, and may last between ages 10 to 20 years old. Even though males are sexually mature at this time, they often do not actively participate in breeding until their late twenties.

**DISTRIBUTION AND MIGRATION:** Sperm whales are found throughout the world's oceans in deep waters between about 60° N and 60° S latitudes. They can be seen close to the edge of pack ice in both hemispheres and are also common along the equator, especially in the Pacific. Their distribution is dependent on their food source and suitable conditions for breeding, and varies with the sex and age composition of the group. Sperm whale migrations are not as predictable or well understood as migrations of most baleen whales. In some mid-latitudes, there seems to be a general trend to migrate north and south depending on the seasons (whales move poleward in the summer). However, in tropical and temperate areas, there appears to be no obvious seasonal migration.

**NATURAL HISTORY:** Most females will form lasting bonds with other females of their family, and on average 12 females and their young will form a family unit. While females generally stay with the same unit all their lives in and around tropical waters, young males will leave when they are between 4 and 21 years old and can be found in "bachelor schools", comprised of other males that are closer to the same age and size. As males get older and larger, they begin to migrate to higher latitudes (toward the poles) and slowly bachelor schools become smaller, until the largest males end up alone. Large, sexually mature males, in their late 20s or older, will occasionally return to the tropical breeding areas to mate.

The sperm whale is the deepest diver of the great whales and can descend to depths of over 3,300 feet (1000 m) and stay submerged for up to two hours. Average dives are 20-50 minutes long to a depth of 980-1,970 feet (300-600 m). At such great depths there is little or no solar light. Sperm whales use their highly developed echolocation ability to locate food and to navigate, making nearly constant clicking sounds that pulse through the water. Sperm whales communicate using morse-code-like patterns of clicks called codas. There is also a theory that sperm whales may stun their prey with a burst of sound. The sperm whale's head houses a large reservoir containing spermaceti, a clear liquid oil that hardens to a wax-like consistency when cold, and has long been prized by whalers. Ambergris, a strange substance found in large lumps in the lower intestine of sperm whales, is formed around squid beaks that remain in the stomach. It is used in the making of perfume, and continues to be valuable in spite of its widespread replacement by synthetics.

**THREATS:** Historically, whaling was the dominant threat to sperm whales. Sperm whales were killed in two massive hunts, the Moby Dick whalers who worked mainly between 1740-1880, and the modern whalers whose operations peaked in 1964, when 29,255 were killed. Most recent estimates suggest a global population of about 360,000 animals, down from about 1,100,000 before whaling. Today they are threatened by ship strikes, entanglements in fishing gear (although these are not as great of a threat to sperm whales as they are to more coastal cetaceans), disturbance by anthropogenic noise notably in areas of oil and gas activities or where shipping activity is high, pollutants (e.g. polychlorobiphenyls (PCBs), chlorinated pesticides (DDT, DDE, etc.), polycyclic aromatic hydrocarbons (PAHs), and heavy metals). The potential impact of coastal pollution may be an issue for this species in portions of its habitat, though little is known.

Natural threats to sperm whales include killer whales, which have been documented killing at least one sperm whale in California. Typically, however, it is believed that most killer whale attacks are unsuccessful. Large sharks and giant squid may also be a threat, especially for young sperm whales. Sperm whales are also protected under the Marine Mammal Protection Act of 1972.

**BIBLIOGRAPHY:** For further details about common dolphins you may want to consult the following literature:

- The Sierra Club Handbook of Whales and Dolphins. Leatherwood, S.L. and R.R. Reeves. 1983. Sierra Club Books, San Francisco
- Sperm whales: social evolution in the ocean. Whitehead, H. 2003. Chicago, IL: University of Chicago Press

**ACKNOWLEDGMENTS:** The information contained in this document was gathered from various sources, including NOAA, ACS, and our own publications.

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*There is no seam between the doings of wild animals and human affairs.  
We can't go on losing them and not loose part of ourselves.*

Kenneth S. Norris