

Globicephala macrorhynchus (Short-finned Pilot Whale)

Family: Delphinidae (Oceanic Dolphins and Killer Whales)

Order: Cetacea (Whales and Dolphins)

Class: Mammalia (Mammals)



Fig. 1. Short-finned pilot whale, *Globicephala macrorhynchus*.

[<http://whaleopedia.org/animalfund/oceanic-dolphins/globicephala/short-finned-pilot-whales/short-finned-pilot-whale-photo/>, downloaded 10 November 2016]

TRAITS. The short-finned pilot whale has a characteristic large globular head (Fig. 1), lacking the distinct beak of most of the dolphin family, which is more highly developed in males and can actually project over the mouth (Arkive.org, 2016). Males have an average length of 5.5m and weight of 3,000kg, whereas females are smaller with an average length of 4.3m and weight of 1,500kg. The body is a brown-black colour with a large grey saddle patch located behind the dorsal fin. On the ventral side of the body, a grey line extends from the front of the body to the genital area and this gets darker with the age of the individual (Wurtz-Artescienza, 2010). The dorsal fin measures approximately 30cm and is curved, broad and thick (Fig. 2). Inside the mouth of the short-finned pilot whale 7-9 short, tough teeth are located on either side of the jaws.

ECOLOGY. The Short-finned pilot whale is known occur in warm-temperate and tropical waters worldwide (Fig. 3) (Kasuya and Marsh, 1984) at the outer edges of continental shelves. G.

macrorhynchus frequents waters that are relatively warm with surface temperatures above 15-16°C. In the Pacific Ocean off northern Japan, occurrences of the short-finned pilot whale are seasonal due to their diet of squid (Kasuya and Marsh, 1984). In the Atlantic Ocean, short-finned pilot whales are known to have populations along North and South America and into the Gulf of Mexico. Populations in the North Atlantic are known to move south during colder times of the year during spring and late winter. The short-finned pilot whale is known to prefer deep waters which vary from 600-1,000m deep, located at continental shelves and canyons, in which they hunt large prey such as giant squid (Wurtz-Artescienza, 2010).

SOCIAL ORGANIZATION AND BEHAVIOUR. The social organization of the short-finned pilot whale is relatively varied according to the location of the population. This is by no means a solitary species as they are most found in stable female-based groups ranging up to several hundred members in a pod (Wurtz-Artescienza, 2010). Social bonds are strong between pod members and they are rarely ever seen alone. Figure 4 shows a pod of short-finned pilot whales from the air. Bernard and Reilly (1999) described three types of social organization in California; travelling and hunting groups, feeding groups, and loafing groups. In travelling and hunting groups, also known as chorus lines, members are seen swimming in a rank system that can span up to 3km wide. Members are separated according to sex and age. In feeding groups, all individuals swim in the same direction but the formation of the group is not distinct as some members are independent of one another. Lastly, the loafing group of pod social organization can be described as an aggregation of relatively stationary individuals. These pods can have up to 12-30 members and can display a variety of behaviours which include mating. The individuals float at the surface and are described to be quite close to each other and even touch one another. In the Pacific a relatively small percentage (15%) of short-finned pilot whales are sighted with other cetaceans such as tuna-dolphin aggregations (*Thunnus albacares* and *Stenella* spp.) and most commonly bottlenose dolphins (*Tursiops truncatus*) (Bernard and Reilly, 1999; Wurtz-Artescienza, 2010). The short-finned pilot whale are unfortunately subjected to frequent mass stranding events as they are found in such large pods. Pods of short-finned pilot whales are seen lobtailing (slapping their flukes on the surface of the water), spyhopping (simply poking their heads above the water surface) (Fig. 5) and surfing.

MIGRATION. The short-finned pilot whale is a nomadic species with north-south movement patterns in relation to prey and water temperatures. They move inshore and offshore based on prey movements such as spawning squid as seen in Japan. In Hawaii and the Canary Islands, populations are found to be present throughout the year which indicates sufficient prey and optimum water temperatures. Of the few studies done for home range establishment of the short-finned pilot whale, one pod consisting of 20-30 individuals were recorded living in the same area of southern California since the 1970s (Wurtz-Artescienza, 2010).

ACTIVITY. Short-finned pilot whales are active both during the night and the day. During the day, they are more social as they rest and travel more. At night, they feed therefore hunting activities lend to them being quite social and active (Kasuya and Marsh, 1984). Hunting for prey results in the short-finned pilot whale travelling long distances.

FORAGING BEHAVIOUR. The short-finned pilot whale predominantly feeds on squid and sometimes small fish. They commonly make dives of up to 600m (Whaleopedia.org, 2013). These

whales forage throughout the day and night and can dive for as long as 21 minutes for a maximum depth of 1,018m as recoded by Soto et al. (2008), who referred to short-finned pilot whales as the 'cheetahs of the deep sea'. As seen with many whales and dolphin species, echolocation plays an important role in foraging behaviour and the short-finned pilot whale utilizes long series of echolocation clicks interspersed with buzzes (Soto et al., 2008). Dives during the day are generally deeper than night dives. The dive of the short-finned pilot whale consists of a sprint downward, resembling a cheetah's chase after prey, which can reach a speed of up to 9m/s. These dives occur in the day and are quite deep reaching up to 1km deep. Dives are quite expensive as each might last up to 15 minutes and a large proportion, from 19-79 seconds, is allocated to sprinting. The foraging behaviour of the short-finned pilot whales have evolved in a manner so that oxygen consumption is reduced and the maximum foraging depth is optimized in order to hunt specific prey such as giant squid which are large and nutritious (Soto et al., 2008). They eat up to 45kg of cephalopods daily which they acquire from deep sea dives.

COMMUNICATION. The short-finned pilot whale communicate in many ways which include visually, physically and acoustically.

Acoustic communication: As with most cetacean species, the short-finned pilot whale communicates acoustically with conspecifics to navigate, hunt and explore. Their communication signals are made up of calls and whistles, each having its own purpose. According to Pilot-whales.org (2016), whistles are calls that are subjectively tonal to the human ear. The tonal signals and clicks produced by the short-finned pilot whale are used for echolocation; the location of objects using reflected sound. The short-finned pilot whales dive very long distances in order to hunt therefore at these deep depths, air in the nasal system must be recycled in order to maintain sound production. Jensen et al. (2011) showed that the short-finned pilot whale can produce communication calls while hunting in dives of up to 800m. These dives can be made by individuals or small groups. Calls are shorter in the deep as compared to ones made at the surface or at shallower depths. The calls of the short-finned pilot whale and the long-finned pilot whale are quite distinct from each other (Rendell et al., 1999).

Physical communication: This involves slapping of the tail and breaching. Physical communication is often seen between mother and young as the mother nudges young to the surface. As seen in figure 6, mother and young are usually very close to each other for protection and teaching skills such as hunting.

Visual communication: This type of communication is coupled with acoustic communication. The short-finned pilot whale's eyes are specially adapted to deep water conditions as this is where they usually hunt.

SEXUAL BEHAVIOUR. The age at which the short-finned pilot whale reaches sexual maturity is at 9 years for females and at 16 years for males (Kasuya and Marsh, 1984). They mate seasonally and produce a single calf at multiyear intervals (Olson, 2009). The short-finned pilot whale is sexually receptive for most of the year even though mating was never observed during winter time. They do not mate with the same individual for life as multiple partners are normal. The females mate with males who are not from their own pod. The young are taken care of by the mother and other female members of the pod. In a female's lifetime, she will give birth around 4-5 times with a calf being born every seven years as they reach menopause around the age at 40. Males on the other hand, breed until death which is usually between 40-50 years (Kasuya and Marsh, 1984).

JUVENILE BEHAVIOUR. Male offspring usually leave the pod after weaning but females remain with the pod they are born into. After weaning for 24 months, young become independent only after 3 years. When surfacing, juveniles throw their entire bodies out of the water whereas with adults, only the top of the head is shown.

ANTIPREDATOR BEHAVIOUR. The only known predator of the short-finned pilot whale are humans. Humans hunt the species in various forms such as whaling and they are also caught sometimes as a part of bycatch.

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Fig. 2. Dorsal fin of the short-finned pilot whale.

[<http://www.arkive.org/short-finned-pilot-whale/globicephala-macrorhynchus/image-G43118.html>, downloaded 10 November 2016]

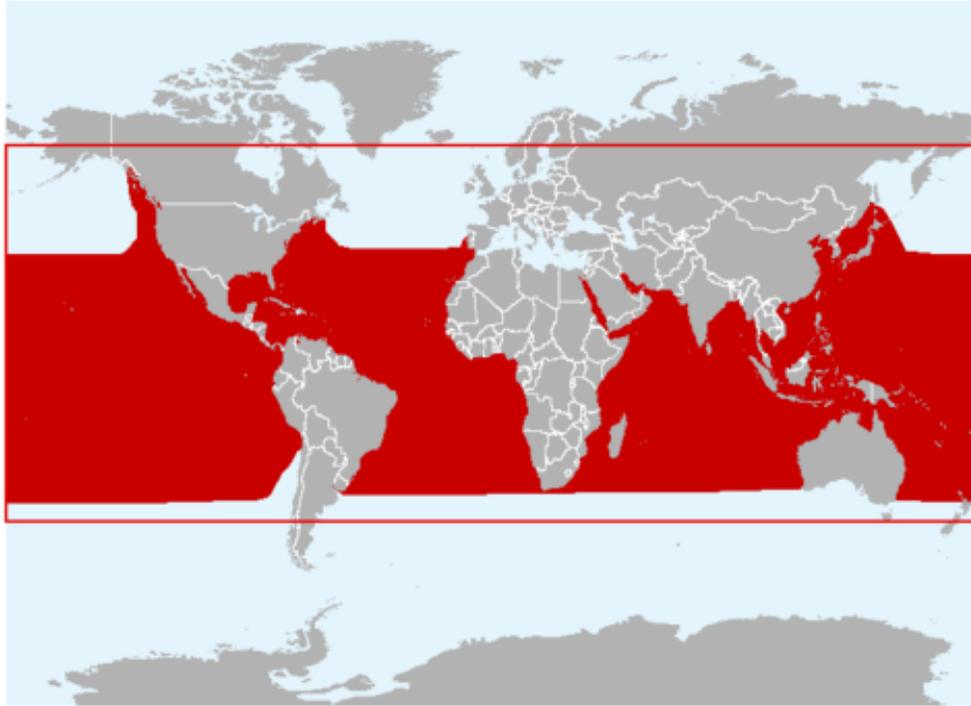


Fig. 3. Short-finned pilot whale geographic distribution.

[http://www.cms.int/reports/small_cetaceans/data/G_macrorhynchus/g_macrorhynchus.htm, downloaded 10 November 2016]



Fig. 4. Aerial view of short-finned pilot whale pod.

[<http://www.arkive.org/short-finned-pilot-whale/globicephala-macrorhynchus/image-G43745.html>, downloaded 15 November 2016]



Fig. 5. Spyhopping behaviour of the short-finned pilot whale.

[<http://www.arkive.org/short-finned-pilot-whale/globicephala-macrorhynchus/image-G43116.html>, downloaded 16 November 2016]



Fig. 6. Female short-finned pilot whale and her calf.

[<http://www.arkive.org/short-finned-pilot-whale/globicephala-macrorhynchus/image-G43111.html>, downloaded 16 November 2016]

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