



AFRICAN UNION
**INTERAFRICAN BUREAU
FOR ANIMAL RESOURCES**

The sperm whale (*Physeter microcephalus*)

A Marine Mammal

CONSERVING MARINE ECOSYSTEM BIODIVERSITY TO INCREASE PRODUCTIVITY



Introduction:

The sperm whale is the largest toothed predator and can be found anywhere in the open ocean. The marine mammal has the largest brain of any animal on earth, more than five times heavier than a human's. Sperm whales can live for more than 60 years. In the past maximum length of 20 m has been recorded for male sperm whales but due to variety of reasons, including anthropologic and environmental pressures, today, however, males larger than 18 m are rare. The maximum recorded length of the female sperm whales is 12 m (Berzin, 1971). The sperm whale occurs in all oceans - particularly between 40°N & 40°S. Adult males may venture beyond 50°N or S. Most frequent off South American and African coasts, waters of the North Atlantic, Arabian sea, waters between Australia and New Zealand, western North Pacific, and all along the equator (particularly in the Pacific).

Sperm whales receive their common name for the massive spermaceti organ located in the forehead region. This organ can hold up to 1,900 liters (500 gal.) of wax-like oil. Opinions differ as to the purpose of the spermaceti. Some scientists believe that variations in oil density may assist the sperm whale in adjusting its buoyancy during dives.

Though there have been several sightings of these animals in offshore waters adjacent to Africa, also several stranded or landed on Africa beaches, the potential socio-economic importance of these mammals are yet to be fully understood by many AU member states. These marine mammals have potentials to contribute to the economies of AU member states through tourism development. This realization is yet to be dawned on African countries. These reasons might be attributed to lack or inadequate detailed knowledge on their temporal and spatial distribution, seasonal migration pattern and schooling behaviours in the waters of Africa. This knowledge would enable AU MS to tap into the availability of these waters in the coastal waters for tourism development. Sensitization and awareness campaigns amongst the coastal communities to release the animals when washed onshore, for example, need to be put in place by the member states. Their ecological role in the food chain to maintain balanced ecosystems need to be packaged and disseminated as well as their contribution to marine ecosystems productivity.



Kilifi residents pose for photos with the carcass of a sperm whale that beached at Kilifi Creek, Kenya. PHOTO | GEORGE KIKAMI | NATION, June 2014

Physical features and behavioural pattern

The body shape is easily recognized. One of the main distinguishing features of sperm whale is the unusually large head that is about one-third of its total body length. It is the only living cetacean that has a distinctively single blow hole asymmetrically situated on the left side of the head near the tip. The Y-shaped lower jaw on the underside of the head contains two rows of 20-30 erupted teeth (Merril et al, 1984). The sperm whale does not have any dorsal fin. The animal however has a hump or a series of humps present along the dorsal surface of the tailstock. The skin of the trunk is corrugated into many series of longitudinal ripples.

Sperm whales have a strong tendency for schooling behaviour, forming schools of females and young males, and mixed ages and

sexes. Female sperm whales are smaller than the males and can weigh up to 45 tonnes. The older adult males are generally solitary and migrate to higher latitudes (Best 1979) than do the females and younger animals which occur primarily in warm waters. These mammals are seldom found in coastal regions; they are completely adapted to deeper waters and ability to make prolonged deep dives. Two large adult male sperm whales were observed diving off Durban, South Africa, in water over 3,193 m deep Clarke (1976). These animals feed on giant squid, octopus and fish.

Distribution and Occurrence in Africa

Critical determining factors for their distribution are the availability of their food source and suitable conditions for breeding. Another factor is their distribution pattern is the sex and age composition of the groups. In the Atlantic Ocean, Sperm whales have been discovered to occur year-round off the coasts of southern Africa and South America (Berzin, 1971). The information on the occurrence and distribution of sperm whales in the Gulf of Guinea is scanty; however females and juveniles are believed to present throughout the year beyond the continental shelf. This is evidenced by dead sperm whales washed ashore Ghana beaches in 1994 and 2002. In the Indian Ocean Bannister (1969) hypothesized that the availability of three stocks of sperm whales; One off the southeast coast of Africa, an oceanic stock around Amsterdam and St. Paul Islands, and an eastern stock off western Australia.



The sperm whale's blowhole is highly skewed to the left of the head (de.Wikipedia User:Stahlkocher, 2004)

There have been numerous sightings of sperm whales on coasts of Africa. Sightings of Sperm whale offshore African coasts have been reported in Côte d'Ivoire, Sao Tome, Angola, DR Congo and Mauritius. The mammal have been found stranded at beaches in Ghana in 1994 and 2002 in the Gulf of Guinea and Kenya in 2014, Tanzania in 2016 in the Southwest Indian Ocean. In terms of landings, hundreds of sperm whales were landed in Angola, Gabon and Sao Tome between 1920s to late 1950s. Sperm whales in Southern Hemisphere waters have their peak calving period during February and March (Best et al. 1984) but seasonality affect their abundance in certain locations; Weir (2008a) found that sightings offshore of Angola peaked between January and May. Nursery groups were also confirmed off Angola, where mean group size was 9.2 animals and 55% of groups included immature animals. The Coast of Africa sperm whale ground included the waters off Annobón (Equatorial Guinea), Gabon, Congo, the DRC, Angola and St Helena. Townsend (1935) describes the year-round 'Coast of Africa' sperm whaling ground between 3 and 23°S. Best (1974) defined the West African sperm whale stock as occurring between 20°W and 20°E.

Socio-economic and Cultural importance

The sperm whale was commercially hunted in the 18th and 19th centuries for its spermaceti oil, blubber (also for oil) and their meat. The animals were targeted for oil and ambergris, a substance that forms around squid beaks in a whale's stomach. Spermaceti was used in lubricants, oil lamps, and candles. Ambergris, a waste product from its digestive system, is still used as a fixative in perfumes (<http://animals.nationalgeographic.com/animals/mammals/sperm-whale/>). Whale ivory and bone were taken from beached whales for cultural reasons. In the Pacific countries, whales' or cachalots' teeth were the most-demanded article of ornament or value. They are found often in necklaces.



A sperm whale washed onshore in Kilwa, on Tanzanian shores of Indian Ocean (Photographer: Salim Ali Mohamed on 17-10-2010)

Whales in general play a very crucial role in the health of the aquatic environment and our understanding of marine mammals as well as playing an important role in helping growing economies that rely on whale watching and other spectator activities bring in capital through tourism. Whale watching has become a huge international spectator activity and tourism booster over the last several decades. Billions of dollars have been spent by people hoping to get a glance of these majestic creatures in their natural habitat. The growing interest in whale watching has become an increasingly important component for economies that are looking to increase their global presence and attract the interests of other countries. Certainly the occurrence of the sperm whales in Africa EEZs would bring considerable measures of benefits to the economies of these countries through tourism.

When it comes to the environment and the oceans ecosystem whales help regulate the flow of food by helping to maintain a stable food chain and ensuring that certain animal species do not overpopulate the ocean. At first it may appear that other species are benefiting from no longer having to face a predator such as whales, but over time these animals will overpopulate and possibly destroy the population of other species that it feeds on, so whales play an important role in maintaining the balance of the ecosystem by making sure other species do not overpopulate and destroy the species below them in the food chain.

Studies have shown that the nutrients in sperm whale poop help stimulate the growth of phytoplankton which pulls carbon from the atmosphere to provide a cleaner and healthier breathing environment for all animals. In addition to feeding carbon fighting phytoplankton the fact that whale poop stimulates the growth of phytoplankton means that it also helps feed other species that feed on phytoplankton for their survival. Phytoplankton helps feed the fish, e.g. small pelagics, allowing them to thrive and reproduce, and the fish feed many other species that require fish to survive, thus keeping the food chain stable.

Threats to populations

The sperm whale population is threatened majorly by entanglement in fishing nets and collisions with ships. Such collisions with ships, entanglement in fishing gear (known as bycatch), and pollution injure and kill whales. In addition, several species of small whales are caught as bycatch in fisheries for other species. Also, the animals are disoriented by shipping activity and oil and gas development; the noise from ships, oil and mining activities can disrupt or even damage whales' hearing. Such environmental disturbance can inhibit whales from reaching critical feeding and breeding grounds due to disruption of their migratory paths. Each year, thousands of whales become stranded on shorelines around the world. Left unaided, many die within a day or two.

There also exist environmental threats to the survival of these animals. Ocean warming due to Climate change can affect the habitats and food of whales. Ocean debris, including plastic waste, contaminant, pollution from toxic wastes are also significant threats to the populations of Sperm whales. Sperm whales are now occasionally found with pieces of plastic in their stomachs.

Population, regulations and management

Cetaceans are collectively considered as marine living resources and therefore nations are obliged under UNCLOS (United Nations Convention of the Law of the Seas) to limit any harvest of these animals to sustainable levels in their EEZs (Exclusive Economic Zones) and ABNJ (Area Beyond national Jurisdiction). The treaty requires nations to cooperate, to conserve and protect migratory marine mammals.

The classical assessment methods of fish populations have been difficult to apply to assess the population number of sperms. Most of the assessments have been based on invalid information (Whitehead, 2002). The methods often required parameters such as catch, fishing effort, mortality rates and recruitments which are not readily available. Therefore total number of sperm whales in the world is unknown, but is thought to be in the hundreds of thousands. The International Whaling Commission is the body charged with regulating whaling and also addresses the vast number of other threats to whales, dolphins and porpoises in World's oceans such as shipping, climate change, and

bycatch. The species is presently protected by a whaling moratorium, and is currently listed as vulnerable by the International Union for the Conservation of Nature and Natural Resources (IUCN)

Despite indications of large population drops due to whaling, sperm whales are still fairly numerous. There is very disregard on the moratorium on commercial whaling and the ban on international trade of whale products by some powerful nations which continue to hunt whales for their markets. Over 1000 whales a year are killed for such commercial purposes (<http://www.worldwildlife.org/species/whale>).

Some of the measures that have been proposed for the protection of these species include training on biology, identification, threats, and conservation and rescue techniques for stranded whales. Such training not only helps ensure the safety of stranded whales, it also increases people's appreciation for the animals and cultivates environmental stewardship. National and regional fisheries policies and legislations of AU member states should envisage the protection of the mammals by incorporating management and regulatory measures in their fisheries policies and regulatory instruments which should be coherent or harmonized with the Tourism sector. Under biodiversity conservation, actions should be developed focussing majorly on sensitization and awareness campaigns with regards to their conservations. The Ministry in charge on fisheries should develop joint sensitization programmes with the Tourism departments. The AU should assist member states on adopting appropriate African positions on international forums (e.g. Convention of International Trade in Endangered species, CITES) with regards to whaling.

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