

Kogia sima (Owen, 1866)

English: Dwarf sperm whale

German: Kleinpottwal

Spanish: Cachalote enano

French: Cachalot nain

Family Kogiidae

1. Description

Kogia spp. are superficially porpoise-like in body shape, and robust, with a distinctive underslung jaw, not unlike sharks. They have the shortest rostrum among cetaceans and the skull is markedly asymmetrical. Dwarf sperm whales are smaller than pygmy sperm whales and reach a maximum size of only about 2.7m total length and a body mass of 272 kg. Colouration in adults is dark bluish grey to blackish brown on the back with a light venter. On the side of the head, between the eye and the flipper, there is often a crescent-shaped, light-coloured mark referred to as a "false gill". The teeth (up to three pairs of vestigial teeth are also found in the upper jaw) are very sharp and thin, lacking enamel (McAlpine, 2002). Baird (2005) found that photographs of several individual dwarf sperm whales showed distinctive marks on the dorsal fins, demonstrating that individual photo-identification is possible with this species.

Chivers et al. (2005) found that the results of comparisons of mitochondrial DNA and morphological differences are consistent with species-level differences between **two** *K. sima* clades, one in the Atlantic and one in the Indo-Pacific: The combined gene sequence haplotypes have accumulated 44 fixed base pair differences between these two clades compared to 20 fixed base pair differences between the recognized sister species *K. sima* and *K. breviceps*. However, recognition of a third *Kogia* species awaits supporting evidence that these two apparently allopatric clades represent reproductively isolated groups of animals.

2. Distribution

<http://www.iucnredlist.org/details/11048/0/rangemap>

Distribution of Kogia sima: deep temperate, subtropical, and tropical waters of the northern and southern hemispheres (Taylor et al. 2008b; © IUCN).

Kogia spp. are not easy to positively distinguish at sea (Caldwell and Caldwell, 1989), as a consequence, most reliable records of either species are based on stranded individuals or occasionally on ones taken in fisheries.

Rice (1998) summarises that *K. sima* lives mainly over the continental shelf and slope off tropical and temperate coasts of all oceans. Range includes the western Atlantic from Virginia south to Rio Grande do Sul in Brazil, including the Antilles; the eastern Atlantic from the Mediterranean Sea south to Cape Province; The Indian Ocean from Cape Province north to Oman, east at least as far as Lombok in Indonesia, and south to South Australia; the western Pacific from Chiba prefecture on the east coast of Honshu, and the Mariana Islands, south to Hauraki Gulf in New Zealand; and the eastern Pacific from Vancouver Island south to Valpa-

raiso in Chile (Rice, 1998). Mcalpine (2009) summarizes that *K. sima* prefers warmer seas than *K. breviceps*.

Recent strandings have been reported from Sable Island, Nova Scotia (Lucas and Hooker, 2000), the Gulf of Mexico (Delgado et al. 1998), British Columbia, Canada (Willis and Baird, 1998), the Azores (Goncalves et al. 1996), Ecuador (Felix et al. 1995), the Antilles (Debrot and Barros, 1992), the coast of France (Duguy, 1990) and Japan (Sylvestre, 1988), supporting the notion of a wide distribution in temperate zones of the world oceans.

3. Population size

Because of the lack of sightings at sea, which may be more because of its inconspicuous behaviour than true abundance, and the fact that *Kogia* spp. are only rarely encountered in commercial fisheries where such records may be kept, there are no real estimates of abundance for either *Kogia* species (Caldwell and Caldwell, 1989, Mcalpine, 2009).

The best U.S. Atlantic abundance estimate for both *Kogia* spp., 395 (CV=0.40), stems from two 2004 surveys, where the estimate from the northern U.S. Atlantic is 358 (CV=0.44), and from the southern U.S. Atlantic is 37 (CV=0.75). This joint estimate is considered the best because together these two surveys had the most complete coverage of the species' habitat. A separate estimate of dwarf sperm whale abundance could not be provided due to the uncertainty of species identification at sea. Furthermore, the available information was judged insufficient to evaluate trends in population size for the western North Atlantic (Waring et al. 2007).

Barlow (2006) estimates that a total of 17,519 dwarf sperm whales are found in the outer EEZ of Hawaii. Dolar (1999) estimated the population size in the eastern Sulu Sea at 650. Using corrections for missed animals, Ferguson and Barlow (2001) re-estimated the abundance as approximately 150,000 of both species in the eastern tropical Pacific.

4. Biology and Behaviour

Habitat: The dwarf sperm whale is an inconspicuous animal and generally lives a long way from shore (Jefferson et al. 1993). Being the smallest of the whales and even smaller than some dolphins, it is rarely seen at sea, except in extremely calm conditions.

Mullin et al. (1994) sighted dwarf sperm whales in the Gulf of Mexico over water depths between 400 and 600m. The species accounted only for 1% of the cetaceans seen and occurred in 12% of the herds observed during the aerial survey. These waters of the upper continental slope were also characterised by high zooplankton biomass (Baumgartner et al. 2001).

Caldwell and Caldwell (1989) suggested that *K. breviceps* lives in oceanic waters beyond the edge of the continental shelf while *K. sima* lives over or near the edge of the shelf. Wang et al. (2002) compared the diet of both *Kogia* spp. off coastal Taiwan and conclude that pygmy sperm whales fed on much larger cephalopods such as *Taonius pavo* compared to those ingested by dwarf sperm whales, while dwarf sperm whales ingested more *Histioteuthis miranda* than did pygmy sperm whales. These results support the view that pygmy sperm whales live seaward of the continental shelf and that dwarf sperm whales live more in coastal waters, i.e. the opposite of what Caldwell and Caldwell (1989) suggested.

Behaviour: Rises to the surface slowly and deliberately and, unlike most other small whales (which roll forward at the surface), simply drops out of sight. Probably does not approach boats. May occasionally breach; leaping vertically out of the water and falling back tail-first or with a belly flop. Some records suggest that, when resting at the surface, it floats lower in the water than the pygmy sperm whale. Probably dives to depths of at least 300m (Carwardine, 1995).

One of the few reported behavioural observations at sea stems from Scott and Cordado (1987) who report sighting a mother and calf after a purse-seine set was deployed on yellowfin tuna, *Thunnus albacares*, associated with a mixed school of spotted dolphins, *Stenella attenuata*, and spinner dolphins, *S. longirostris*. The dwarf sperm whales were accidentally encircled. While inside the net, the female released into the water a cloud of reddish material, presumably faeces, 6-8 times during the course of the set. The mother released the faeces whenever a dolphin approached the calf; she then appeared to hide herself and the calf in the middle of the opaque cloud.

In Hawaiian waters *Kogia* sp. were sighted most frequently in deeper portions of the study area (mean depth, 1,425 m) and in calm sea conditions (mean Beaufort sea state < 1). One group of six dwarf sperm whales containing two mother-infant pairs did not dive for more than a few minutes at a time (Baird, 2005).

Schooling: Group sizes tend to be small, most often less than 5 individuals, although groups of up to 10 have been recorded (Jefferson et al. 1993; Mcalpine, 2009).

Reproduction: In at least one area, there appears to be a calving peak in summer (Jefferson et al. 1993).

Food: Dwarf sperm whales appear to feed primarily on deep-water cephalopods (Jefferson et al. 1993) as well as on fish and crustaceans (Caldwell and Caldwell, 1989).

5. Migration

Duguay (1994) suggests that the species does not migrate extensively, since it can be observed year-round off South African coasts.

6. Threats

Direct catch: Some small scale catches of dwarf sperm whales have been reported (Caldwell and Caldwell, 1989 and refs. therein). *K. sima* was encountered in a small harpoon fishery for pilot whales at St. Vincent in the Lesser Antilles, in Japan and occasionally in an aboriginal industry on Lombok Island in Indonesia, and has been reported from fish markets in Sri Lanka.

Incidental catch: Caldwell and Caldwell (1989) suppose that it is unlikely that *Kogia* spp. are significantly affected by humans. When taken in commercial fisheries the numbers are so few that either species is considered rare. This is confirmed by Waring et al. (2007): Total annual estimated average fishery-related mortality and serious injury to the North West Atlantic stock during 1999-2003 was zero.

However, Jefferson et al. (1993) believe that substantial numbers are taken each year in gillnets in the Indian Ocean, and possibly elsewhere. Zerbin and Kotas (2001) report on by-

catch in the Brazilian driftnet fishery. Because of their small size and habit of often lying at the surface, apparently oblivious to approaching vessels, a few *Kogia* are probably run down and injured or killed (Caldwell and Caldwell, 1989).

Pollution: Both species have been reported with plastic bags in their stomachs that may have prevented digestion of food and ultimately brought death. Perhaps the textural or visual quality of the plastic was similar to that of squid and thus enticed the whales to devour it (Caldwell and Caldwell, 1989).

7. Remarks

Range states (Taylor et al. 2008b):

American Samoa; Angola; Anguilla; Antigua and Barbuda; Argentina; Aruba; Australia; Bahamas; Bangladesh; Barbados; Belize; Benin; Bermuda; Brazil (Rio Grande do Sul); Brunei Darussalam; Cambodia; Cameroon; Canada (British Columbia); Cape Verde; Cayman Islands; Chile (Valparaíso); China; Colombia; Congo; Congo, The Democratic Republic of the; Cook Islands; Costa Rica; Cuba; Côte d'Ivoire; Djibouti; Dominica; Dominican Republic; Ecuador (Galápagos); El Salvador; Equatorial Guinea; Fiji; France; French Guiana; French Polynesia; Gabon; Gambia; Ghana; Gibraltar; Grenada; Guadeloupe; Guam; Guatemala; Guinea; Guinea-Bissau; Guyana; Haiti; Honduras; Hong Kong; India; Indonesia; Iran, Islamic Republic of; Jamaica; Japan (Honshu); Kenya; Kiribati; Kuwait; Liberia; Madagascar; Malaysia; Maldives; Marshall Islands; Martinique; Mauritania; Mexico; Micronesia, Federated States of; Morocco; Mozambique; Myanmar; Namibia; Nauru; Netherlands Antilles; New Caledonia; New Zealand (Kermadec Is., North Is.); Nicaragua; Nigeria; Niue; Northern Mariana Islands; Oman; Pakistan; Palau; Panama; Papua New Guinea; Peru; Philippines; Pitcairn; Portugal (Azores, Madeira); Puerto Rico; Qatar; Réunion; Saint Helena; Saint Kitts and Nevis; Saint Lucia; Saint Pierre and Miquelon; Saint Vincent and the Grenadines; Samoa; Sao Tomé and Príncipe; Senegal; Sierra Leone; Singapore; Solomon Islands; Somalia; South Africa; Sri Lanka; Sudan; Suriname; Taiwan, Province of China; Tanzania, United Republic of; Thailand; Timor-Leste; Togo; Tonga; Trinidad and Tobago; United Arab Emirates; United States of America (Hawaiian Is.); Venezuela; Viet Nam; Virgin Islands, British; Virgin Islands, U.S.; Wallis and Futuna; Western Sahara; Yemen

Classified as “Data Deficient” by the IUCN. Not listed by CMS. The species is listed in Appendix II of CITES.

Both *kogiid* species also occur in southern South America. Recommendations iterated by the scientific committee of CMS for small cetaceans in that area (Hucke-Gaete, 2000) also apply (see Appendix 1). For recommendations on south-east Asian stocks, see Perrin (1996) in Appendix 2.

8. Sources

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