Kogia breviceps (de Blainville, 1838)

English: Pygmy sperm whale
German: Zwergpottwal
Spanish: Cachalote pigmeo
French: Cachalot pygmée

Family Kogiidae

1. Description

Pygmy sperm whales are somewhat 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. Pygmy sperm whales reach a maximum size of about 3.8 m total length and a body mass of 450 kg and are larger than dwarf sperm whales. 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 often referred to as a "false gill". Teeth are only found in the lower jaw and are very sharp and thin, lacking enamel (McAlpine, 2002).

Although the two currently recognized *Kogia* species are not so obvious to distinguish at sea by non-specialists , the morphological evidence backed by recent genetic analyses confirm species-level differences (Chivers et al. 2005). Duffield et al. (2003) even developed a method to distinguish both species based on myoglobin and hemoglobin differences.

2. Distribution

http://www.iucnredlist.org/details/11047/0/rangemap

Distribution of Kogia breviceps*: deep temperate, subtropical, and tropical waters beyond the continental shelf (Taylor et al. 2008a; © IUCN).*

While the precise distribution of the pygmy sperm whale is unknown (Mcalpine, 2009), it is evidently an oceanic species that lives mostly beyond the edge of the continental shelf in tropical and temperate waters around the world. It ranges north to Nova Scotia, the Azores, The Netherlands, Miyagi on the east coast of Honshu, Hawaii, and northern Washington State. It ranges south to the Cape Province, the Tasman Sea, Islas Juan Fernández, and Chile (Rice, 1998), and Argentina (Bastida and Rodríguez, 2003). It appears to be relatively common off the southeastern coast of the USA and around southern Africa, south-eastern Australia, and New Zealand (Carwardine, 1995).

A total of 28 strandings were reported for Europe until 1991 (Duguy, 1994). Further strandings were recorded in Hawaii (Mazzuca et al. 1999), Sable Island, Nova Scotia (Lucas and Hooker, 2000), Spain (Abollo et al. 1998), Veracruz, Mexico (Delgado et al. 1998), Chile (Sanino and Yañez, 1997), France (Duguy, 1991), Micronesia (Eldredge, 1991) and South Australia (Kemper and Ling, 1991). There was a sighting off Vietnam (Smith et al. 1997).

It is unknown whether the populations are isolated (Carwardine, 1995). However, Martin and Heyning (1999) reported the cyamid amphipod species *Isocyamus kogiae* Sedlak-Weinstein,

1992 for the first time from a *K. breviceps* stranded in southern California, extending the known range of this amphipod from Moreton Island, Queensland, Australia, to the northeastern Pacific. This ectoparasite suggests that pygmy sperm whales from both sides of the Pacific are not isolated from each other.

3. Population size

In areas where they frequently strand, members of the genus *Kogia* are considered to be one of the most common species to come ashore. While many large males strand, many *Kogia* strandings also consist of a female and small calf or a female that has given birth only recently. However, as with *K. sima*, there are no real estimates of abundance (Caldwell and Caldwell, 1989). Mcalpine (2009) summarizes that neither population size or trend are known.

The best U.S. Atlantic abundance estimate for *Kogia* sp., 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 pygmy 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 7,138 pygmy sperm whales are found in the outer EEZ of Hawaii. 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.

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4. Biology and Behaviour

Habitat: *K. breviceps* seems to prefer warmer waters: there are records from nearly all temperate, subtropical, and tropical seas. It is rarely seen: it tends to live a long distance from shore and has inconspicuous habits. It is often confused with the dwarf sperm whale (*K. sima*), with which it had been synonymized until Handley in 1966 again recognised and re-described them as separate species. With few field records, it was long uncertain whether the two can be distinguished reliably except at very close range (Caldwell and Caldwell, 1989).

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.

However, this spatial segregation was not apparent in the study of Mullin et al. (1994) who, by aerial observation, found both species over water depths of 400-600m in the North-Central Gulf of Mexico. These waters of the upper continental slope were also characterised by high zooplankton biomass (Baumgartner et al. 2001).

Behaviour: When seen at sea, they generally appear slow and sluggish, with no visible blow (Jefferson et al. 1993). *K. breviceps* is said to be very easy to approach, lying quietly at the

surface practically until touched although it will not approach boats by itself and is rather timid, slow moving and deliberate. Like its congener, *K. breviceps* spends considerable time lying motionless at the surface with the back of the head exposed and the tail hanging down loosely. *K. breviceps* is reported to float higher in the water with more of the head and back exposed than *K. sima* (Caldwell and Caldwell, 1989). Dive times of up to 18 minutes were recorded from a rehabilitated animal, although most dive durations are shorter (Scott et al. 2001).

Schooling: Most sightings of pygmy sperm whales around Hawaii were of single individuals (Barlow, 2006), but Mcalpine (2009) summarizes that group size ranges between 1-6.

Food: Studies of feeding habits, based on stomach contents of stranded animals, suggest that this species feeds in deep water on cephalopods and, less often, on deep-sea fishes and shrimps (Caldwell and Caldwell, 1989; Jefferson et al. 1993; Santos and Haimovici, 1998).

Beatson (2007) investigated the stomach contents of pygmy sperm whales stranded on New Zealand beaches between 1991 and 2003. The diet was found to include fish and crustaceans, but is comprised primarily by 23 species of cephalopods, dominated by juvenile individuals of the families Histioteuthididae and Cranchiidae.

5. Migration

Stranding data of both Kogiidae do not seem to bear out any strong seasonal changes in distribution nor any migrations, although some writers have suggested such in very general terms (Caldwell and Caldwel, 1989). Duguy (1994) suggests that the species may migrate from the coast to the open sea in summer, since most strandings e.g. in Florida occurred during winter and fall. In Europe, there are more strandings in winter, which supports this hypothesis: Mcalpine (2009) remarks that in the NE Atlantic, most strandings occur in autumn and winter.

6. Threats

Direct catch: Pygmy sperm whales have never been hunted commercially. Small numbers have been taken in coastal whaling operations off Japan and Indonesia (Jefferson et al. 1993).

Incidental catch: A few have been killed in Sri Lanka's gillnet fisheries, and it is likely they are killed in gillnets elsewhere as well (Jefferson et al. 1993). Perez et al. (2001) report on occasional by-catches in fisheries in the north-east Atlantic. Waring et al. (2007) summarize that total annual estimated average fishery-related mortality and serious injury to this stock in the Western North Atlantic during 1999-2003 was 6 (CV=1.0) *Kogia* sp. Total fishery-related mortality and serious injury for this stock is not less than 10% of the calculated Potential Biological Removal (PBR = 2 in the western North Atlantic) and therefore, cannot be considered to be insignificant and approaching zero mortality and serious injury rate. This is a strategic stock because the 1999-2003 estimated average annual fishery-related mortality to pygmy sperm whales exceeds PBR.

Pollution: Watanabe et al. (2000) present data on organic pollutants found in small cetaceans stranded on the coast of Florida and Marcovecchio et al. (1994) summarise the available knowledge on environmental contamination in marine mammals off Argentina. However, Bustamente et al. (2005) analysed 12 trace elements (Al, Cd, Co, Cr, Cu, Fe, organic and total

Hg, Mn, Ni, Se, V, and Zn) in two stranded specimens and conclude that trace elements in whales on New Caledonia beaches, South Pacific, are below levels for concern.

Tarpley and Marwitz (1993) report on a young male pygmy sperm whale stranded alive on Galveston Island, Texas, USA, which died in a holding tank 11 days later. During necropsy, the first two stomach compartments (forestomach and fundic chamber) were found to be completely occluded by various plastic bags. Gastro-Intestinal blockage and subsequent death caused by plastic debris has also recently been documented by Stamper et al. (2006). Waring et al. (2007) also list that remains of plastic bags and other marine debris have been retrieved from the stomachs of 13 stranded pygmy sperm whales in the southeastern U.S.

Noise: Two pygmy sperm whales stranded in the Outer Banks, North Carolina, between 15 and 16 January 2005. Coincident with the stranding, one US Navy vessel was known to have used sonar for seven minutes about 90 nautical miles southeast of the stranding area (Kaufman, 2005, in Parsons, 2008).

7. Remarks

Known and hypothetical Range States (Taylor et al. 2008a) :
American Samoa; Angola; Anguilla; Antigua and Barbuda; Argentina; Aruba; Australia (Tasmania); Bahamas; Bangladesh; Barbados; Belize; Benin; Bermuda; Brazil; Brunei Darussalam; Cambodia; Cameroon; Canada (Nova Scotia); Cape Verde; Cayman Islands; Chile (Juan Fernández Is.); China; Colombia; Comoros; Congo; Congo, The Democratic Republic of the; Cook Islands; Costa Rica; Côte d'Ivoire; Cuba; Denmark; Djibouti; Dominica; Dominican Republic; Ecuador; El Salvador; Equatorial Guinea; Fiji; France; French Guiana; French Polynesia; Gabon; Gambia; Germany; Ghana; Gibraltar; Grenada; Guadeloupe; Guam; Guatemala; Guernsey; Guinea; Guinea-Bissau; Guyana; Haiti; Honduras; Hong Kong; India; Indonesia; Iran, Islamic Republic of; Ireland; Isle of Man; Jamaica; Japan (Honshu); Jersey; Kenya; Kiribati; Liberia; Madagascar; Malaysia; Maldives; Marshall Islands; Martinique; Mauritania; Mexico; Micronesia, Federated States of; Morocco; Mozambique; Myanmar; Namibia; Nauru; Netherlands; Netherlands Antilles; New Caledonia; New Zealand; Nicaragua; Nigeria; Niue; Northern Mariana Islands; Oman; Pakistan; Palau; Panama; Papua New Guinea; Peru; Philippines; Pitcairn; Portugal (Azores); Puerto Rico; Réunion; Saint Helena; Saint Kitts and Nevis; Saint Lucia; Saint Pierre and Miquelon; Saint Vincent and the Grenadines; Samoa; Sao Tomé and Principe; Senegal; Sierra Leone; Singapore; Solomon Islands; Somalia; South Africa (Eastern Cape Province, KwaZulu-Natal, Northern Cape Province, Western Cape Province); Spain; Sri Lanka; Suriname; Taiwan, Province of China; Tanzania, United Republic of; Thailand; Timor-Leste; Togo; Tonga; Trinidad and Tobago; United Arab Emirates; United Kingdom; United States of America (Hawaiian Is., Washington); Venezuela; Viet Nam; Virgin Islands, British; Virgin Islands, U.S.; Western Sahara; Yemen.

Classified as “Data deficient” by the IUCN. Not listed by CMS. Listed in Appendix II of CITES.

This species is insufficiently known with respect to all aspects of its biology and potential threats. Collection of by-catch and sighting data is strongly needed. For recommendations on Southeast Asian stocks, see Perrin et al. (1996).

8. Sources

For sources please see account on *Kogia sima*.