at about 5 years, although, males of this species likewise seem to mature at shorter length than females, at about 2.4 m. Gestation is believed to be 11–12 months for both *Kogia* spp., with newborns averaging 1.0 m for *K. sima* and 1.2 m for *K. breviceps*. In South African waters parturition is reported to occur December through March. Females that are both pregnant and lactating demonstrate that some females produce young 2 years in succession. Maximum life span for both species is reported to be about 22 years.

VI. Interactions With Humans

The scarcity of pygmy and dwarf sperm whales and the fact that they are rarely encountered at sea suggest that direct effects from humans are probably few. However, there is growing evidence that *Kogia* spp. show a propensity to ingest ocean debris such as plastic bags, latex gloves, and balloons. In several cases such items have resulted in intestinal blockage and death in these whales (Stamper et al., 2006). The habit of *Kogia* spp. to lie quietly at the surface seems to have led to occasional ship strikes. While bycatch in the pelagic driftnet and long-line fisheries has been observed, fisheries mortality appears to be limited. In the 1990s molecular methods identified pygmy sperm whale among various cetaceans whose meat was sold for human consumption in the Japanese retail market. Recent media reports suggest some harvesting of dwarf sperm whales for local consumption in the Philippines using dynamite and machetes. There is increasing evidence that the use of mid-frequency sonar, mainly for military purposes, may lead to stranding events by whales, including *Kogia* spp. (Parsons et al., 2008; Baird, 2016).

See Also the Following Articles

Distribution ■ Echolocation ■ Predation on Marine Mammals ■ Skull ■ Sperm Whale ■ Toothed Whales (Odontoceti)

References

Baird, R.W. (2016). *The Lives of Hawai'i's Dolphins and Whales: Natural History and Conservation.* University of Hawai'i Press, Honolulu, Hawai'i.

Chivers, S.J., LeDuc, R.D., Robertson, K.M., Barros, N.B., and Dizon, A.E. (2005). Genetic variation of *Kogia* spp. With preliminary evidence for two species of *Kogia sima*. *Mar. Mamm. Sci.* **21**, 619–634.

Clarke, M.R. (2003). Production and control of sound by the small sperm whales, *Kogia breviceps* and *K. sima* and their implications for other Cetacea. *J. Mar. Biol. Ass. UK* **83**, 241–263.

Dunphy-Daly, M.M., Heithaus, M.R., and Claridge, D.E. (2008). Temporal variation in dwarf sperm whale (*Kogia sima*) habitat use and group size off Great Abaco Island, Bahamas. *Mar. Mamm. Sci.* **24**, 171–182.

Lambert, O. (2011). New discoveries of fossil toothed whales from Peru: our changing perspective of beaked whale and sperm whale evolution. *Quad. Mus. S. Nat. Livorno* **23**, 13–27.

McAlpine, D.F. (2014). Family Kogiidae (Pygmy Sperm Whales). In "Handbook of the Mammals of the World. Volume 4 Cetacea" (D.E. Wilson and R.A. Mittermeier, Eds), pp. 318–325. Lynx Edicions, Barcelona.

Ohishi, K., Katsumata, E., Uchida, K., and Maruyama, T. (2007). Two stranded pygmy sperm whales (*Kogia breviceps*) with anti-*Brucella* antibodies in Japan. *Vet. Rec.* **160**, 628–629.

Parsons, E.C.M., Dolman, S.J., Wright, A.J., Rose, N.A., and Burns, W.C.G. (2008). Navy sonar and cetaceans: just how much does the gun need to smoke before we act? *Mar. Pollut. Bull.* **56**, 1248–1257.

Plön, S. (2004). *The status and natural history of pygmy (Kogia breviceps) and dwarf (Kogia sima) sperm whales off southern Africa. PhD thesis.* Rhodes University, Grahamstown.

Poynton, S.L., Whitaker, B., and Heinrich, A.B. (2001). A novel trypanoplasm-like flagellate *Jarrellia altramenti* n. g., n. sp. (Kinetoplastida: Bononidae) and ciliates from the blowhole of a stranded pygmy sperm whale (*Kogia breviceps*) (Physeteridae): morphology, life cycle, and potential pathogenicity. *Dis. Aquat. Org.* **44**, 191–201.

Scott, M.D., Hohn, A.A., Westgate, A.J., Nicolas, J.R., Whitaker, B.R., and Campbell, W.B. (2001). A note on the release and tracking of a rehabilitated pygmy sperm whale (*Kogia breviceps*). *J. Cetacean Res. Manage.* **3**, 87–94.

Stamper, M.A., Whitaker, B.R., and Schofield, T.D. (2006). Case study: morbidity in a pygmy sperm whale, *Kogia breviceps*, due to ocean-borne plastic. *Mar. Mamm. Sci.* **22**, 719–722.

West, K.L., Walker, W.A., Baird, R.W., White, W., Levine, G., Brown, E., and Schofield, D. (2009). Diet of pygmy sperm whales (*Kogia breviceps*) in the Hawaiian Archipelago. *Mar. Mamm. Sci.* **25**, 931–943.

PYGMY KILLER WHALE

Feresa attenuata

Robin W. Baird

The pygmy killer whale is one of the least-known members of the Family Delphinidae. They were first described from two skulls, both from unknown locations, one in 1827 and one in 1874. The second half of the binomial, *attenuata*, comes from the narrowing rostrum of the 1874 specimen. Based on the small number of relatively large teeth, they were thought to be closely related to killer whales (*Orcinus orca*). It was not until 1952 that another specimen, an animal killed by whalers off Japan, was first examined, and the name "lesser" or "pygmy killer" was suggested as a common name. Sightings of live animals in the wild were not reported until the 1960s.

I. Characteristics and Taxonomy

Pygmy killer whales are often confused with melon-headed whales (*Peponocephala electra*), and there are a number of erroneous reports of both species. Pygmy killer whales have a rounded head when viewed both from the side and from above, and rounded tips to the flippers, while melon-headed whales have a pointed head when viewed from above and pointed tips to the flippers. Both have a relatively large falcate dorsal fin located in the middle of the back. The anterior half of the body is fairly chunky, and narrows behind the dorsal fin (Figs 1 and 2). Pygmy killer whale calves are light gray when born and gradually darken. Juveniles and adults have a well-defined dark gray dorsal cape that extends down at a relatively shallow angle below the dorsal fin, while melon-headed whales have a cape with a diffuse boundary that extends down at a steep angle below the fin. Pygmy killer whales have lighter gray sides, and a darker gray crown. They have white lips and white that extends onto the face in older animals, as well as a white patch around the genitals, and adults in tropical areas typically have extensive scarring on the belly from cookie-cutter shark (*Isistius* spp.) bites. They often have paired white linear scars on the body. These are tooth rakes from interactions with other pygmy killer whales, and eventually re-pigment. They are born at about 80 cm and reach a maximum length of 2.6 m. There is no obvious sexual dimorphism in body length, although adult males possess a distinct postanal ventral keel. The teeth are relatively large, and they have 8–11 pairs in the upper jaws and 11–13 in the lower jaws, whereas melon-headed whales have more than 19 pairs in both upper and lower jaws. Pygmy killer whales are most closely related to melon-headed

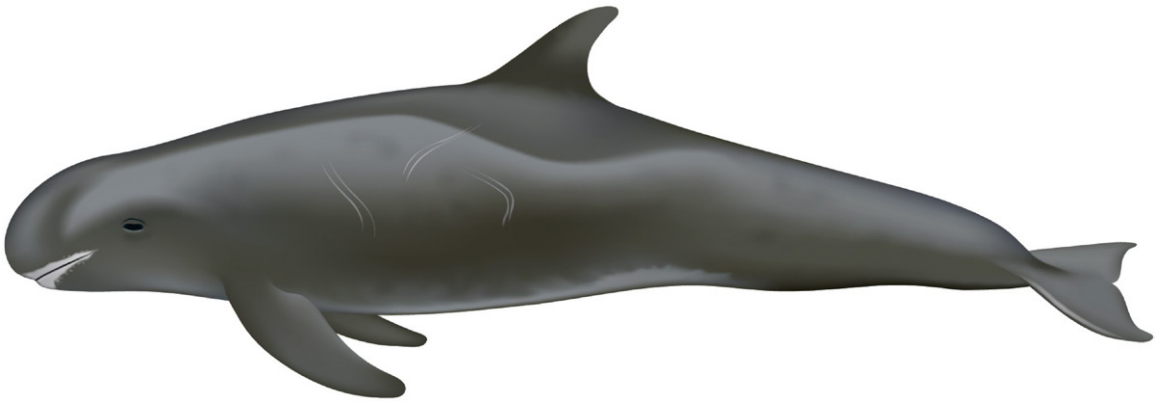


Figure 1 *Pygmy killer whale,* Feresa attenuata *(Illustration by Uko Gorter).*

Figure 2 *A pygmy killer whale approaching the bow of a motionless research vessel off O'ahu, showing the rounded head, white belly, white scarring, and relatively large dorsal fin. Although the flippers appear pointed, this is an artifact of distortion from the water (Photo by Robin W. Baird/Cascadia Research Collective).*

whales, false killer whales (*Pseudorca crassidens*), and pilot whales (*Globicephala* spp.).While no subspecies are currently recognized, there has been little assessment of geographic variability due to the limited availability of either skeletal or genetic specimens. Ongoing genetic analyses suggest the species' taxonomy needs revision.

II. Distribution and Abundance

Pygmy killer whales are distributed in tropical open-ocean waters worldwide (Fig. 3), and they rarely approach nearshore except around oceanic islands. They are naturally rare, usually among the least common delphinids throughout their range. Most publications on this species in recent years have been confined to reports of single strandings or sightings. It is likely that there is considerable unrecognized population structure, but the only in-depth study of this species in the wild is in Hawai'i, where there is evidence of one or more resident island-associated populations in the central and eastern main Hawaiian Islands. Individuals off Hawai'i Island have been resighted over spans of up to 27 years. This population likely numbers in the low hundreds of individuals. Satellite tagging of individuals in Hawai'i indicates that movements are relatively limited (McSweeney et al., 2009).

III. Ecology

Pygmy killer whales likely do most of their feeding at night, as observations of feeding or foraging behavior during the day are extremely rare. Based on stomach contents they feed both on cephalopods (squid and octopus) and fish (Elorriaga-Verplancken et al., 2016). Reports of them attacking and feeding on injured dolphins being released from tuna purse seine nets in the eastern tropical Pacific likely reflect an ability to take advantage of new sources of food, rather than some regularity of feeding on other marine mammals. Based on scarring on free-ranging individuals observed in Hawai'i, they are likely regularly attacked by large sharks. Attacks by killer whales (*Orcinus orca*) have not been reported, but likely also occur.

IV. Behavior

Pygmy killer whales are typically found in relatively small groups, ranging from pairs of individuals to groups numbering 30 or 40 individuals (Fig. 4). Reports of groups in the hundreds may be cases of mistaken identity, given the difficulty in discriminating this species from the similar appearing melon-headed whale, which are typically found in groups numbering in the hundreds. Pygmy killer whales often appear very lethargic during the day, resting motionless at the surface, often with the dorsal fin submerged. Pygmy killer whales appear to live in long-term stable groups, with some long-term associations in Hawai'i documented both between adult females (up to 20 years), and between adult males (>10 years; Baird, 2016). They are one of a number of species that has been documented mass stranding, involving up to 28 individuals.

Associations with other species in the wild are relatively infrequent, but they have been seen most often associated with short-finned pilot whales (*Globicephala macrorhynchus*). In captivity this species can be aggressive, both toward humans and other delphinids. There are two reports of pygmy killer whales killing other delphinid species held with them.

V. Life History

Virtually nothing is known about the life history of pygmy killer whales, although they are probably long-lived and slow to mature, similar to closely related species such as false killer whales or pilot whales. One stranded female measured at 2.04 m was lactating, suggesting females may reproduce by the time they reach 2 m (Clua et al., 2014).

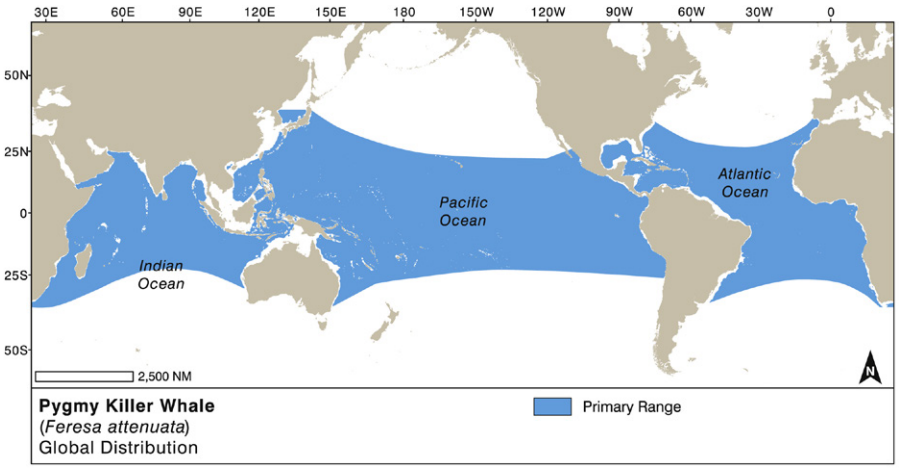


Figure 3 *Pygmy killer whale distribution. They are found throughout the tropics and subtropics worldwide, primarily in the open ocean and in continental slope waters. Adapted by Nina Lisowski from Jefferson, T.A., Webber, M.A., and Pitman, R.L. (2015). "Marine Mammals of the World: A Comprehensive Guide to Their Identification," 2nd ed. Elsevier, San Diego, CA.*

Figure 4 *A group of pygmy killer whales from the resident population off Hawai'i Island. The well-defined dorsal cape is clearly visible for several of the individuals (Photo by Deron S. Verbeck/iamaquatic.com).*

VI. Interactions With Humans

Pygmy killer whales occasionally are hooked in fishing gear, although whether they are attempting to take the bait or catch is unknown. They have also been accidentally killed in gillnet and other fisheries. They have been directly targeted in harpoon and driftnet fisheries off Taiwan, Indonesia, Sri Lanka, and in the Caribbean, and in drive fisheries off Japan and Sri Lanka. Although the numbers killed in any particular area are typically low, given their natural rarity and evidence of population structure from where they have been studied, it is possible that even small numbers of catches could impact local populations. They may be vulnerable to impacts from anthropogenic sound such as naval sonars (Wang and Yang, 2007).

While they will occasionally bowride on very slowly moving vessels, pygmy killer whales are typically fairly wary around vessels, often approaching closely only when vessels are motionless in the water. They will also occasionally approach swimmers.

References

Baird, R.W. (2016). *The Lives of Hawai'i's Dolphins and Whales: Natural History and Conservation.* University of Hawai'i Press, Honolulu, Hawai'i.

Clua, E.E., Manire, C.A., and Garrigue, C. (2014). Biological data of pygmy killer whale (*Feresa attenuata*) from a mass stranding in New Caledonia (South Pacific) associated with Hurricane Jim in 2006. *Aquat. Mamm.* **40**, 162–172.

Elorriaga-Verplancken, F.R., Rosales-Nanduca, H., Paniagua-Mendoza, A., Martínez-Aguilar, S., Nader-Valencia, A.K., Robles-Hernández, R., Gómez-Díaz, F., and Urbán, R.J. (2016). First record of pygmy killer whales (*Feresa attenuata*) in the Gulf of California, Mexico: diet inferences and probably relation with warm conditions during 2014. *Aquat. Mamm.* **42**, 20–26.

McSweeney, D.J., Baird, R.W., Mahaffy, S.D., Webster, D.L., and Schorr, G.S. (2009). Site fidelity and association patterns of a rare species: pygmy killer whales (*Feresa attenuata*) in the main Hawaiian Islands. *Mar. Mamm. Sci.* **25**, 557–572.

Wang, J.Y., and Yang, S.-C. (2007). Unusual cetacean stranding events of Taiwan in 2004 and 2005. *J. Cetacean Res. Manage.* **8**, 283–292.

PYGMY RIGHT WHALE

Caperea marginata

Catherine M. Kemper

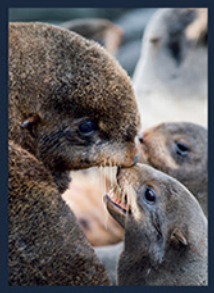
I. Characteristics and Taxonomy

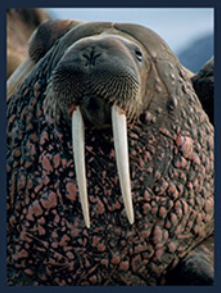
The pygmy right whale is the smallest baleen whale and the only extant member of the family Neobalaenidae (Fig. 1). Recent evidence points to it being a surviving member of the extinct family Cetotheriidae (Fordyce and Marx, 2012). The relationship to other baleen whales has not been resolved (Marx et al., 2013). Confirmed fossil neobalaenids have only very recently been described and a long period of morphological stability within the family has been suggested (Tsai and Fordyce, 2015). No subspecies or subpopulations are recognized.

Diagnostic external features of the pygmy right whale include long, narrow, creamy-white baleen plates with an outer margin of brown or black and very fine bristles; a clearly visible band of white gum at the base of the baleen; a moderately arched rostrum that becomes more pronounced as the animal grows; and a small,

ENCYCLOPEDIA OF MARINE MAMMALS

THIRD EDITION




EDITED BY
BERND WÜRSIG
J. G. M. THEWISSEN
KIT M. KOVACS