

F

False Killer Whale

Pseudorca crassidens

ROBIN W. BAIRD

I. Characteristics and Taxonomy

The false killer whale is one of the larger members of the family Delphinidae, with adult males reaching lengths of almost 6 m and females reaching up to 5 m. The common name comes from similarity not in external appearance to the killer whale (*Orcinus orca*) but rather in skull morphology of these two species. In fact, the two species do not appear to be closely related; based on genetic similarity, false killer whales appear to be most closely related to the Risso's dolphin (*Grampus griseus*), melon-headed whale (*Peponocephala electra*), pygmy killer whale (*Feresa attenuata*), and pilot whales (*Globicephala* spp.). There is evidence of geographic variation in skull morphology (Kitchener *et al.*, 1990), but no subspecies are currently recognized.

Largely black or dark gray in color (usually with a lighter blaze on the ventral surface between the flippers), it is easily recognizable with its rounded head, gracile shape (Fig. 1), small falcate



Figure 1 The highly acrobatic false killer whale (*Pseudorca crassidens*) leaping while chasing prey. The false killer whale does not resemble the killer whale (*Orcinus orca*) in external appearance, although the skulls of the two species are quite similar. Photograph © Robin W. Baird.

dorsal fin located at the midpoint of the back, and distinctive flippers (with a bulge on the leading edge). Scars from inter- and intra-specific interactions eventually are re-pigmented, unlike in the closely related Risso's dolphin. False killer whales are slightly sexually dimorphic, with the melon of males protruding farther forward than in females. Their teeth are large and conical, with 7–11 in each of the upper jaws and 8–12 in each lower jaw.

II. Distribution and Abundance

False killer whales are found in all tropical and warm temperate oceans of the world, and occasional records of their presence in cold temperate waters have also been documented. Although they are typically characterized as pelagic in habits, they do approach close to shore and utilize shallow waters around oceanic islands. These oceanic habits have hindered the study of this species in the wild, and most of what is known comes from stranded individuals, captive animals, and limited observations of groups around oceanic islands. In the Pacific there is evidence of limited gene flow, and the population around the main Hawaiian Islands is demographically isolated from the rest of the tropical Pacific (Chivers *et al.*, 2007). No estimates of worldwide population size are available, although false killer whales appear to be naturally uncommon throughout their range. Regional estimates for the Hawaiian Islands Exclusive Economic Zone suggest a small population size, in the low hundreds of individuals. No information on population trends is available.

III. Ecology

False killer whales are one of the handful of species that regularly mass strand, with the largest stranding recorded of 835 individuals. The diet appears to be diverse, in terms of both species and size of prey (Fig. 2). In general they feed on a variety of oceanic squid and fish but have also been documented feeding on smaller delphinids being released from tuna purse-seines in the eastern tropical Pacific. One case of predation on a humpback whale (*Megaptera novaeangliae*) calf has also been recorded, and they have been documented attacking sperm whales (*Physeter macrocephalus*). Nonaggressive



Figure 2 A false killer whale attacking a mahi-mahi (*Coryphaena hippurus*). Prey sharing in the wild and in captivity is frequently observed for this species. Photograph © Daniel J. McSweeney.

interspecific associations with bottlenose dolphins (*Tursiops truncatus*) and rough-toothed dolphins (*Steno bredanensis*) have also been reported. No predators of false killer whales have been reported, although large sharks and killer whales likely take some individuals.

IV. Behavior and Physiology

False killer whales are considered to be extremely social, usually traveling in groups of 20 to 100 individuals. Long-term (15 years) associations among individuals have been documented in Hawaiian waters, and analyses of associations of photo-identified individuals indicate strong bonds among individuals (Baird *et al.*, 2008). Such bonds are also evident from their propensity to strand *en masse*, and by the affiliative behavior of stranded animals. False killer whales are active during the day, and food sharing in the wild has been regularly recorded. Little is known about the diving behavior of this species; one tagged animal dove for up to 12 min and to depths of over 230 m.

V. Life History

Life history information comes entirely from stranded individuals. Because the deposition rate of growth layer groups in the teeth has not been calibrated, there is some uncertainty in life history parameters. Both sexes are thought to mature between about 8 and 14 years of age, although there is some suggestion that males may mature later. Maximum longevity has been estimated at 57 years for males and 62 years for females (Kasuya, 1986). Calving interval for one population has been reported as almost 7 years, and calving may occur year-round, with a peak in late winter.

VI. Interactions with Humans

A number of types of interactions between humans and false killer whales have been documented. In Hawaii they are regularly encountered by commercial whale- or dolphin-watching vessels and often bowride. They have been maintained in captivity in a number of aquaria around the world, including in Japan, the United States, the Netherlands, Hong Kong, and Australia. They have been successfully bred in captivity in several locations, and there they have produced viable interspecies hybrids with bottlenose dolphins. False killer whales are one of several species of odontocetes that occasionally steal fish from both commercial and recreational fishermen, with these types of interactions noted in Japan, Hawaii, the Indian Ocean, and the Gulf of Mexico.

Conflicts with fisheries have resulted in direct killing in Japan. Small numbers have been occasionally taken in fisheries, both directly and incidentally as bycatch. In Hawaiian waters the number killed or seriously injured incidentally in the longline fishery is greater than the population is thought to be able to sustain. They are one of a growing list of species that has been recorded ingesting discarded plastic, and high levels of toxins have been documented in tissues collected from stranded animals. It is unknown, however, whether such toxins contribute to immunosuppression in this species.

See Also the Following Articles

Delphinids ■ Indo-West Pacific Marine Mammals

References

Acevedo-Gutierrez, A., Brennan, B., Rodriguez, P., and Thomas, M. (1997). Resightings and behavior of false killer whales (*Pseudorca crassidens*) in Costa Rica. *Mar. Mamm. Sci.* **13**, 307–314.

- Baird, R.W. *et al.* (10 authors). (2008). False Killer Whales (*Pseudorca crassidens*) around the main Hawaiian Islands: long-term site fidelity, inter-island movements, and association patterns. *Mar. Mamm. Sci.* **24**, 591–612.
- Brown, D. H., Caldwell, D. K., and Caldwell, M. C. (1966). Observations on the behavior of wild and captive false killer whales, with notes on associated behavior of other genera of captive delphinids. *Los Angeles County Mus. Contrib. Sci.* **95**, 1–32.
- Chivers, S. J., Baird, R. W., McSweeney, D. J., Webster, D. L., Hedrick, N. M., and Salinas, J. C. (2007). Genetic variation and evidence for population structure in eastern North Pacific false killer whales (*Pseudorca crassidens*). *Can. J. Zool.* **85**, 783–794.
- Kasuya, T. (1986). False killer whales. In “Report of Investigation in Search of Solution for Dolphin-Fishery Conflict in the Iki Island Areas” (T. Tamura, S. Ohsumi, and S. Arai, eds). Japan Fisheries Agency, Tokyo.
- Kitchener, D. J., Ross, G. J. B., and Caputi, N. (1990). Variation in skull and external morphology in the false killer whale, *Pseudorca crassidens*, from Australia, Scotland and South Africa. *Mammalia* **54**, 119–134.
- Koen Alonso, M., Pedraza, S. N., Schiavini, A. C. M., Goodall, R. N. P., and Crespo, E. A. (1999). Stomach contents of false killer whales (*Pseudorca crassidens*) stranded on the coasts of the Strait of Magellan, Tierra del Fuego. *Mar. Mamm. Sci.* **15**, 712–724.
- Odell, D. K., and McClune, K. M. (1999). False killer whale *Pseudorca crassidens* (Owen, 1846). In “Handbook of Marine Mammals” (S. Ridgway, ed.), Vol. 6, pp. 213–243. Academic Press, New York.
- Palacios, D. M., and Mate, B. R. (1996). Attack by false killer whales (*Pseudorca crassidens*) on sperm whales (*Physeter macrocephalus*) in the Galapagos Islands. *Mar. Mamm. Sci.* **12**, 582–587.
- Purves, P. E., and Pilleri, G. (1978). The functional anatomy and general biology of *Pseudorca crassidens* (Owen) with a review of hydrodynamics and acoustics in Cetacea. *Invest. Cetacea* **9**, 67–227.
- Stacey, P. J., and Baird, R. W. (1991). Status of the false killer whale, *Pseudorca crassidens*, in Canada. *Can. Field-Nat.* **105**, 189–197.
- Stacey, P. J., Leatherwood, S., and Baird, R. W. (1994). *Pseudorca crassidens*. *Mamm. Sp.* **456**, 1–6.