

FALSE KILLER WHALE (*Pseudorca crassidens*): Hawaiian Stock

STOCK DEFINITION AND GEOGRAPHIC RANGE

False killer whales are found worldwide mainly in tropical and warm-temperate waters (Stacey et al. 1994). In the North Pacific, this species is well known from southern Japan, Hawaii, and the eastern tropical Pacific. It occurs around all the main Hawaiian Islands, but its presence around the Northwestern Hawaiian Islands has not yet been established (Nitta and Henderson 1993). Recent sighting locations around the main Hawaiian Islands (Mobley et al. 2000) are shown in Figure 1. There are only 4 stranding records from Hawaiian waters (Nitta 1991). Large numbers of false killer whales have been taken in direct fisheries in southern Japan, and small numbers have been taken incidental to fishing operations in the eastern tropical Pacific. Most knowledge about this species comes from outside Hawaiian waters (Stacey et al. 1994). For the Marine Mammal Protection Act (MMPA) stock assessment reports, there is a single Pacific management stock including only animals found within the U.S. Exclusive Economic Zone of the Hawaiian Islands.

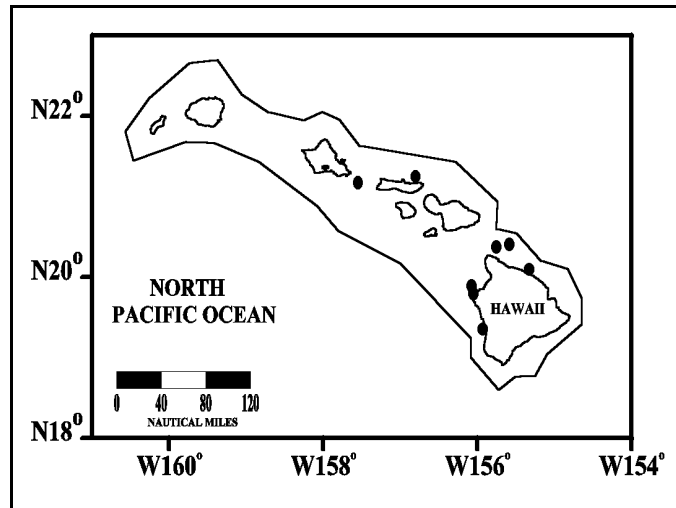


Figure 1. False killer whale sighting locations during 1993-98 aerial surveys within about 25 nmi of the main Hawaiian Islands (see Appendix 2 for details on timing and location of survey effort). Outer line indicates approximate boundary of survey area.

POPULATION SIZE

Population estimates for this species have been made from shipboard surveys in Japan (Miyashita 1993) and the eastern tropical Pacific (Wade and Gerrodette 1993), but it is not known whether these animals are part of the same population that occurs around the Hawaiian Islands. As part of the Marine Mammal Research Program of the Acoustic Thermometry of Ocean Climate (ATOC) study, a total of twelve aerial surveys were conducted within about 25 nmi of the main Hawaiian Islands in 1993, 1995 and 1998. An abundance estimate of 121 (CV=0.47) false killer whales was recently calculated from the combined survey data (Mobley et al. 2000). This abundance underestimates the total number of false killer whales within the U.S. EEZ off Hawaii, because areas around the Northwest Hawaiian Islands (NWHI) and beyond 25 nautical miles from the main islands were not surveyed.

Minimum Population Estimate

The log-normal 20th percentile of the combined 1993-98 abundance estimate is 83 false killer whales. As with the best abundance estimate above, this includes only areas within about 25 nmi of the main Hawaiian Islands and is therefore an underestimate.

Current Population Trend

No data are available on current population trend.

CURRENT AND MAXIMUM NET PRODUCTIVITY RATES

No data are available on current or maximum net productivity rate for this species in Hawaiian waters.

POTENTIAL BIOLOGICAL REMOVAL

The potential biological removal (PBR) level for this stock is calculated as the minimum population size (83) times one half the default maximum net growth rate for cetaceans ($\frac{1}{2}$ of 4%) times a recovery factor of 0.50 (for a species of unknown status with no known fishery mortality; Wade and Angliss 1997), resulting in a PBR of 0.8 false

killer whales per year.

HUMAN-CAUSED MORTALITY AND SERIOUS INJURY

Fishery Information

Although little is known about incidental mortality of false killer whales in Hawaiian waters (Nitta and Henderson 1993), mortality of other cetacean species has been observed in Hawaiian fisheries, and the gear types used in these fisheries are responsible for marine mammal mortality and serious injury in other fisheries throughout U.S. waters. Gillnets are used in Hawaiian waters and appear to capture marine mammals wherever they are used, and float lines from lobster traps and longlines can be expected to occasionally entangle whales (Perrin et al. 1994).

Interactions with cetaceans have been reported for all Hawaiian pelagic fisheries, and false killer whales have been identified in fishermen's logs as taking catches from pelagic longlines (Nitta and Henderson 1993). They have also been observed feeding on mahi mahi, *Coryphaena hippurus*, and yellowfin tuna, *Thunnus albacares*, and frequently steal large fish (up to 70 pounds) (Shallenberger 1981) from the trolling lines of both commercial and recreational fishermen (S. Kaiser, pers. comm.).

Two false killer whales were observed hooked in the Hawaiian longline fishery between 1994 and 1998 within the U.S. EEZ (Figure 2), with approximately 4.4% of all effort (measured as the number of hooks fished) observed. This interaction rate extrapolates to a total 5-year estimate of 45 (95% CI = 7-146) false killer whales, or an average of 9 interactions per year (Kleiber 1999). Both of the observed false killer whales were reported to have been hooked in the mouth or to have ingested the hook, and they were released with trailing gear. There were no longline fishery interactions with false killer whales reported during 1999-2000. Reports for other odontocetes indicate they may also become hooked in other parts of their body, and that they may occasionally become entangled in the fishing line. Following the guidelines of a 1997 Serious Injury Workshop (Angliss and DeMaster 1998), the two observed false killer whales have been considered seriously injured (defined under the MMPA as likely to result in mortality), and, therefore, the interaction rate of 9 animals per year represents an estimate of mortality and serious injury for this stock. Because of concern over incidental mortality of turtles and seabirds, the Hawaiian longline fishery is presently under a court order restricting effort and excluding fishing effort from a large area north of the Hawaiian Islands. This court order will expire when the National Marine Fisheries Service issues a final Environmental Impact Statement for the fishery, in early 2001. Observer coverage of this fleet has been increased in recent months, and overall fishing effort has decreased. This decrease in effort should reduce the likelihood of interactions with cetaceans, including false killer whales, unless the remaining effort is concentrated in areas where interactions are more likely. The two previously documented interactions with false killer whales were within 200 nmi of the Hawaiian Islands, but insufficient data are available to evaluate whether this is a meaningful pattern. Further changes in the longline fishery are likely in the near future, but potential effects of these changes on cetacean interactions are unknown.

Interaction rates between dolphins and the NWHI bottomfish fishery have been estimated based on studies conducted in 1990-1993, indicating that an average of 2.67 dolphin interactions, most likely involving bottlenose and rough-toothed dolphins, occurred for every 1000 fish brought on board (Kobayashi and Kawamoto 1995). Fishermen claim interactions with dolphins who steal bait and catch are increasing. It is not known whether these interactions result in serious injury or mortality of dolphins, nor whether false killer whales are involved.

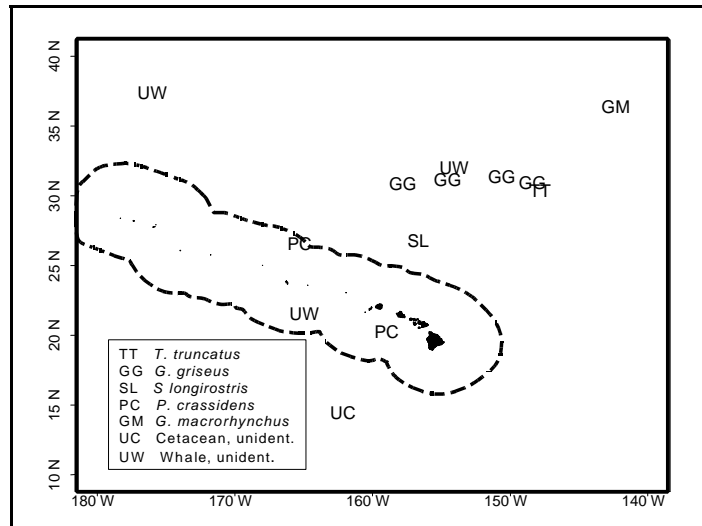


Figure 2. Locations of observed cetacean interactions in the Hawaiian longline fishery, 1994-98 (modified from Kleiber 1999). Dashed line is the U.S. Exclusive Economic Zone (EEZ); SL = spinner dolphin.

Other Removals

Since the early 1960's, at least 12 false killer whales have been live-captured by aquaria or the Navy (Pryor 1975; Shallenberger 1981; J. Thomas pers. comm.).

STATUS OF STOCK

The status of false killer whales in Hawaiian waters relative to OSP is unknown, and there are insufficient data to evaluate trends in abundance. No habitat issues are known to be of concern for this species. They are not listed as "threatened" or "endangered" under the Endangered Species Act (1973), nor as "depleted" under the MMPA. Because the rate of serious injury to false killer whales within the U.S. EEZ in the Hawaiian longline fishery (9 animals per year) exceeds the PBR (0.8), this stock is considered a strategic stock under the 1994 amendments to the MMPA. The total fishery mortality and serious injury cannot be considered to be insignificant and approaching zero, because it exceeds the PBR. However, the available abundance estimate, on which PBR is based, applies only to a portion of this species' range in Hawaiian waters, and additional studies of abundance, distribution, and fishery-related mortality and injury of false killer whales in Hawaiian waters will be required to re-evaluate this species' status in the future.

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