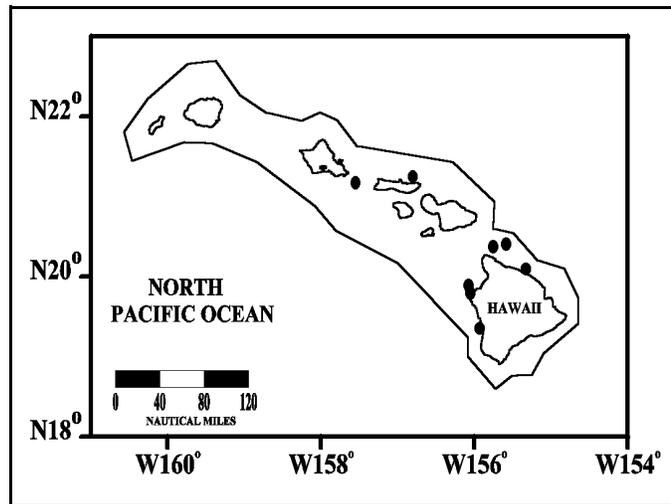


## FALSE KILLER WHALE (*Pseudorca crassidens*): Hawaiian Stock

### 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 and estimates are uncorrected for the proportion of diving animals missed from the survey aircraft. A line-transect vessel survey of the Hawaiian archipelago EEZ is planned for summer/autumn 2002 which will provide a more comprehensive estimate of abundance for this stock.

#### 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 0.5 (for a species of unknown status; Wade and Angliss 1997), resulting in a PBR of 0.8 false killer whales per year.

## HUMAN-CAUSED MORTALITY AND SERIOUS INJURY

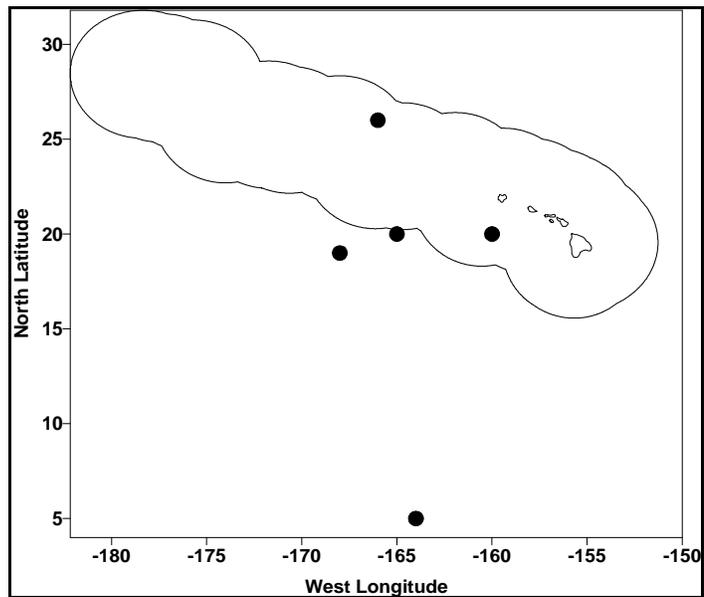
### Fishery Information

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.).

Five false killer whales were observed hooked in the Hawaiian longline fishery between 1997 and 2001 (1 each in 1997 and 1998 and 3 in 2001) (Figure 2). All three of the 2001 interactions occurred outside the U.S. EEZ.

Three of the observed false killer whales were reported to have been hooked in the mouth or to have ingested the hook, and two were released with trailing gear. 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 three observed false killer whales have been considered seriously injured (defined under the MMPA as likely to result in mortality). During the most recent five year period for which complete annual longline data are available (1996-2000), there were two observed false killer whale interactions within the U.S. EEZ. With approximately 5.7% annual observer coverage over these five years (2000 observer coverage exceeded 10%, all other years were approximately 4%), this interaction rate extrapolates to a total 5-year estimate of 35 (95% CI = 5-112) false killer whales, or an average of 7 interactions per year. The Hawaiian longline fishery currently operates under new restrictions which prohibit swordfish style fishing methods (deepest hooks fished at depths < 100 m, use of lightsticks, setting at night) in an effort to reduce sea turtle mortality (NMFS Western Pacific Pelagic Fisheries Biological Opinion 2001). Other sea turtle bycatch reduction methods implemented include time and area closures for tuna style fishing methods, limited access permit restrictions, gear modification research, and skipper workshops aimed at reducing sea turtle interactions. Changes in this fishery have not been in place long enough to assess their influence on the rate of cetacean interactions. From 1996-2000, the number of Hawaii-based vessels in the fishery has ranged from 104-125. The number of hooks set in the fishery has steadily increased from 1996-2000, with 14.4, 15.5, 17.3, 19.1, and 20.2 million hooks set, respectively. The corresponding number of sets for this period were 11,638, 11,846, 12,506, 12,776, and 12,930, respectively. A majority of the effort in this fishery occurs outside



**Figure 2.** Locations of observed false killer whale interactions in the Hawaiian longline fishery, 1997-2001. The solid line surrounding the Hawaiian Islands represents the U.S. Exclusive Economic Zone (EEZ).

the U.S. EEZ. An additional 40-50 longline vessels participate in a fishery west of California outside the U.S. EEZ and land their catch in California ports. It is unknown if this smaller fishery interacts with false killer whales.

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.

#### **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 (7 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. A line-transect vessel survey of the Hawaiian archipelago EEZ is planned for summer/autumn 2002 which will provide a more comprehensive estimate of abundance for this stock.

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