

MELON-HEADED WHALE (*Peponocephala electra*): Hawaiian Stock

STOCK DEFINITION AND GEOGRAPHIC RANGE

Melon-headed whales are found in tropical and warm-temperate waters throughout the world. The distribution of reported sightings suggests that the oceanic habitat of this species is primarily equatorial waters (Perryman et al. 1994). Small numbers have been taken in the eastern tropical Pacific, and they are occasionally killed in direct fisheries in Japan and elsewhere in the western Pacific. Large herds are seen regularly in Hawaiian waters, especially off the Waianae coast of Oahu, the north Kohala coast of Hawaii, and the leeward coast of Lanai (Shallenberger 1981). Recent sighting locations around the main Hawaiian Islands (Mobley et al. 2000) are shown in Figure 1. Little is known about this species elsewhere in its range, and most knowledge about its biology comes from mass strandings (Perryman et al. 1994). Ten strandings are known from Hawaii (Nishiwaki and Norris 1966; Shallenberger 1981; Nitta 1991). 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.

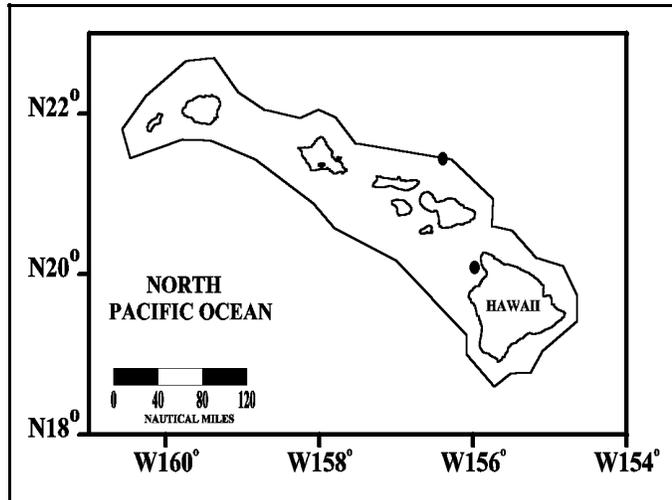


Figure 1. Melon-headed whale sighting locations during 1993-98 aerial surveys within about 25 nmi of the main Hawaiian Islands (see Appendix 2 for details on timing and location of survey effort). Outer line indicates approximate boundary of survey area.

POPULATION SIZE

An estimate of melon-headed whales is available for the eastern tropical Pacific (Wade and Gerrodette 1993), but it is not known whether any of 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 154 (CV=0.88) melon-headed whales was recently calculated from the combined survey data (Mobley et al. 2000). This abundance underestimates the total number of melon-headed 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 81 melon-headed 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.

Minimum Population Estimate

No data are available for making a minimum population estimate.

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.

POTENTIAL BIOLOGICAL REMOVAL

The potential biological removal (PBR) level for this stock is calculated as the minimum population size (81) 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 melon-headed whales per year.

HUMAN-CAUSED MORTALITY AND SERIOUS INJURY

Fishery Information

Melon-headed whales are not known to be taken directly or incidentally in Hawaiian waters and no mortality of this species has been documented in Hawaiian fisheries (Nitta and Henderson 1993). However, 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 (Nitta and Henderson 1993), but no interactions with melon-headed whales have been documented. None were observed hooked in the Hawaiian longline fishery between 1994 and 1998, with approximately 4.4% of all effort (measured as the number of hooks fished) observed (Kleiber 1999). 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 melon-headed whales are involved.

Historical Mortality

Peale (1848) reported that 60 whales of this species were driven ashore by natives in Hilo Bay, Hawaii in 1841. At least three melon-headed whales were live-captured for public display between 1966 and 1978 (Shallenberger 1981).

STATUS OF STOCK

The status of melon-headed 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. Although information on melon-headed whales in Hawaiian waters is limited, this stock would not be considered strategic under the 1994 amendments to the MMPA given the absence of reported fisheries related mortality. Insufficient information is available to determine whether the total fishery mortality and serious injury for melon-headed whales is insignificant and approaching zero mortality and serious injury rate.

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