Revised 12/15/2003

CUVIER'S BEAKED WHALE (*Ziphius cavirostris*): Hawaiian Stock

STOCK DEFINITION AND GEOGRAPHIC RANGE

Cuvier's beaked whales occur in all oceans and major seas (Heyning 1989). In Hawaii, strandings have been reported from Midway Islands, Pearl and Hermes Reef, Oahu, and Hawaii Islands (Shallenberger 1981; Galbreath 1963; Richards 1952; Nitta 1991). Sightings have been reported off Lanai and Maui (Shallenberger 1981). Recent sighting locations around the main Hawaiian Islands (Mobley et al. 2000) are shown in Figure 1. Nothing is known about stock structure for this species. For the Marine Mammal Protection Act (MMPA) stock assessment reports, Cuvier's beaked whales within the Pacific U.S. Exclusive Economic Zone (EEZ) are divided into three discrete, non-contiguous areas: 1) Hawaiian waters (this report), 2) Alaskan waters, and 3) waters off California, Oregon and Washington.

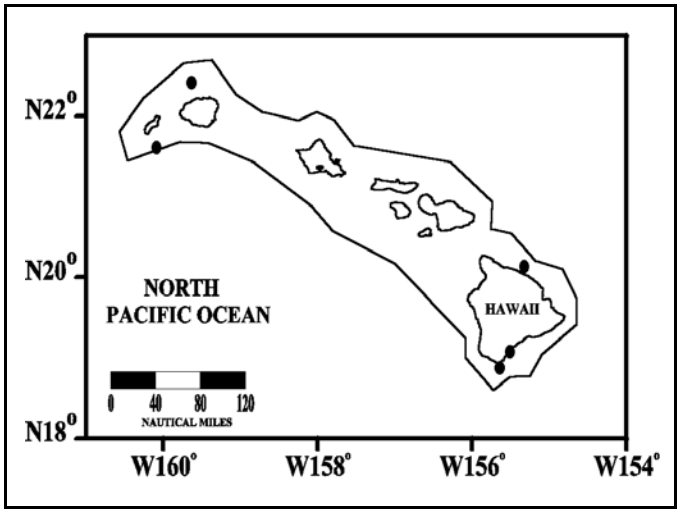

Figure 1. Cuvier's beaked whale sighting locations during 1993-98 aerial surveys within about 25 nmi of the main Hawaiian Islands (see Appendix 2 for details on timing and location of survey effort). Outer line indicates approximate boundary of survey area.

POPULATION SIZE

Wade and Gerrodette (1993) made an estimate for Cuvier's beaked whales in the eastern tropical Pacific, 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. Seven sightings of Cuvier's beaked whales were made. An abundance estimate of 43 (CV=0.51) Cuvier's beaked whales was recently calculated from the combined survey data (Mobley et al. 2000). This abundance underestimates the total number of Cuvier's beaked 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. Furthermore, this species is known to spend a large proportion of time diving, causing additional downward bias in the abundance estimate. A line-transect vessel survey of the Hawaiian archipelago EEZ was completed in 2002 and is expected to provide a more comprehensive estimate of abundance for Cuvier's beaked whales in the near future.

Minimum Population Estimate

The log-normal 20th percentile of the combined 1993-98 abundance estimate is 29 Cuvier's beaked whales. As with the best abundance estimate above, this includes only areas within about 25 nmi of the main Hawaiian Islands and does not include a large proportion of animals that were diving and therefore unavailable to be seen.

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 (29) times one half the default maximum net growth rate for cetaceans (½ 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 0.3 Cuvier's beaked

whales per year.

HUMAN-CAUSED MORTALITY AND SERIOUS INJURY

Fishery Information

Information on fishery-related mortality of cetaceans in Hawaiian waters is limited, but the gear types used in Hawaiian fisheries are responsible for marine mammal mortality and serious injury in other fisheries throughout U.S. waters. Gillnets 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). In Hawaii, no mortality of Cuvier's beaked whales has been observed in inshore gillnets, but these fisheries are not observed or monitored. Regulations governing the use of nearshore gillnets (lay nets) are currently under review by the State of Hawaii.

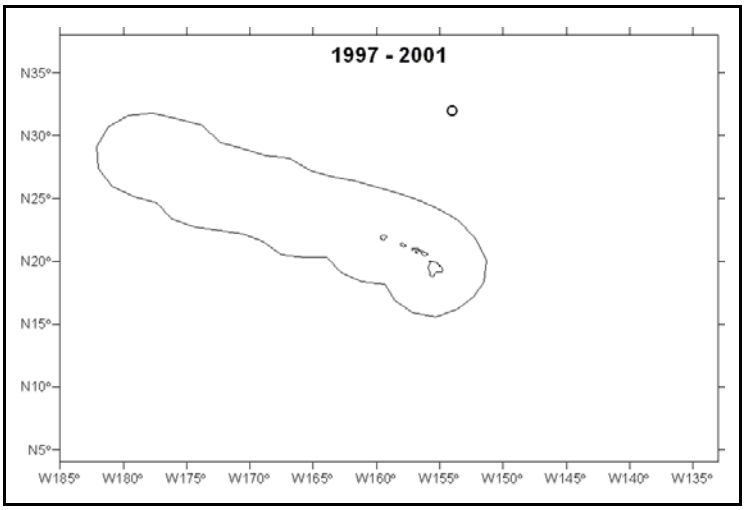

Figure 2.Location of a single observed interaction with a possible beaked whale (○) in the Hawaiian longline fishery, 1997-2001. The solid line surrounding the Hawaiian Islands represents the U. S. Exclusive Economic Zone (EEZ).

Interactions with cetaceans are reported for all pelagic fisheries (Nitta and Henderson 1993), but no takes of Cuvier's beaked whales have been documented. Between 1997 and September 2001, no identified Cuvier's beaked whales were observed taken in the Hawaiian longline fishery (Figure 2), with approximately 4-23% of all effort observed each year. However, there was one interaction with an unidentified whale that may have been a Cuvier's beaked whale, outside the Hawaiian Islands EEZ. Not all interactions result in the death or serious injury of cetaceans. Cetaceans may ingest a hook, become hooked in the mouth or other body part, or become entangled in fishing line, causing varying levels of injury. Following the guidelines of a 1997 Serious Injury Workshop (Angliss and DeMaster 1998), small cetaceans that ingest a hook, are hooked in the mouth or head, are swimming abnormally, or are entangled and released trailing gear are considered seriously injured (defined under the MMPA as likely to result in mortality). The unidentified cetacean was hooked in the fluke and released alive; therefore, it would not be considered seriously injured. During the five most recent years for which data are available (1997-2001), the estimated mortality or serious injury for Cuvier's beaked whale in the entire fishery is zero.

Other Mortality

In recent years, there has been increasing concern that loud underwater sounds, such as active sonar and seismic operations, may be harmful to beaked whales (Malakoff 2002). The use of active sonar from military vessels has been implicated in mass strandings of beaked whales in the Mediterranean Sea during 1996 (Frantzis 1998), the Bahamas during 2000 (U.S. Dept. of Commerce and Secretary of the Navy 2001), and the Canary Islands 2002 (Martel, 2002). No estimates of potential mortality or serious injury are available for U.S. waters.

STATUS OF STOCK

The status of Cuvier's beaked whales in Hawaiian waters relative to OSP is unknown, and there are insufficient data to evaluate trends in abundance. They are not listed as "threatened" or "endangered" under the Endangered Species Act (1973), nor as "depleted" under the MMPA. Although information on Cuvier's beaked whales in Hawaiian waters is limited, this stock would not be considered strategic under the 1994 amendments to the MMPA because there has been no reported fisheries related mortality within the Hawaiian Islands EEZ. However, the effect of potential interactions of unidentified beaked whales (which may have been Cuvier's beaked whales) with the Hawaiian longline fishery in international waters is not known. Insufficient information is available to determine whether the total fishery mortality and serious injury for Cuvier's beaked whales is insignificant and approaching zero mortality and serious injury rate.

The increasing levels of anthropogenic noise in the world's oceans has been suggested to be a habitat concern for whales (Richardson et al. 1995), particularly for deep-diving whales like Cuvier's beaked whales that feed in the oceans' "sound channel".

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