Revised 6/4/2014

MINKE WHALE (*Balaenoptera acutorostrata scammoni*): Hawaii Stock

STOCK DEFINITION AND GEOGRAPHIC RANGE

The International Whaling Commission (IWC) recognizes 3 stocks of minke whales in the North Pacific: one in the Sea of Japan/East China Sea, one in the rest of the western Pacific west of 180°N, and one in the "remainder" of the Pacific (Donovan 1991). The "remainder" stock only reflects the lack of exploitation in the eastern Pacific and does not imply that only one population exists in that area (Donovan 1991). In the "remainder" area, minke whales are relatively common in the Bering and Chukchi seas and in the Gulf of Alaska, but are not considered abundant in any other part of the eastern Pacific (Leatherwood et al. 1982; Brueggeman et al. 1990). In the Pacific, minke whales are usually seen over continental shelves (Brueggeman et al. 1990). In the extreme north, minke whales are believed to be migratory, but in inland waters of Washington and in central California they appear to establish home ranges (Dorsey et al. 1990).

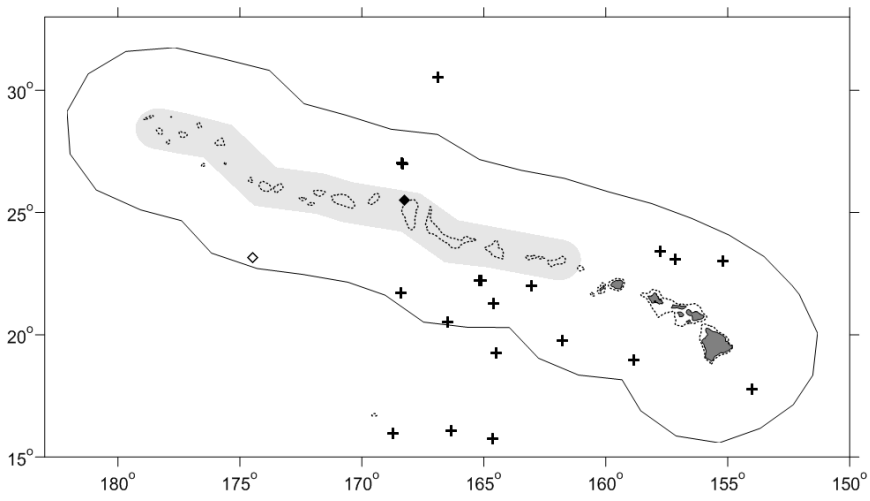

Figure 1. Locations of minke whale sightings from longline observer records (crosses; NMFS/PIR, unpublished data), and sightings made during the 2002 (open diamond) and 2010 (black diamond) shipboard surveys of U.S. EEZ waters surrounding the Hawaiian Islands (Barlow 2006, Bradford et al. 2013; see Appendix 2 for details on timing and location of survey effort). Outer line indicates approximate boundary of survey area and U.S. EEZ. Gray shading indicates area of Papahanaumokuakea Marine National Monument. Dotted line represents the 1000m isobath.

Minke whales occur seasonally around the Hawaiian Islands (Barlow 2003, Rankin and Barlow, 2005), and their migration routes or destinations are unknown. Minke whale “boing” sounds have been detected near the Hawaiian Islands for decades, with detections by the U.S. Navy during February and March (Thompson and Friedl 1982) and at the ALOHA Cabled Observatory 100km north of Oahu from October to May (Oswald et al. 2011). Minke whales were observed within 22km of Kauai in February 2005 (Rankin et al. 2007) and by observers in the Hawaii-based longline fishery since 1994 (Figure 1; NMFS/PIR unpublished data). Two confirmed sightings of minke whale were made, one in November 2002 and the other during October 2010 during surveys of waters within the U.S. Exclusive Economic Zone (EEZ) of the Hawaiian Islands (Barlow 2003; Bradford et al. 2013). There are no known stranding records of this species from the main islands (Nitta 1991; Maldini et al. 2005).

For the Marine Mammal Protection Act (MMPA) stock assessment reports, there are three stocks of minke whale within the Pacific U.S. EEZ: 1) a Hawaiian stock (this report), 2) a California/Oregon/ Washington stock, and 3) an Alaskan stock. The Hawaiian stock includes animals found both within the Hawaiian Islands EEZ and in adjacent high seas waters; however, because data on abundance, distribution, and human-caused impacts are largely lacking for high seas waters, the status of this stock is evaluated based on data from U.S. EEZ waters of the Hawaiian Islands (NMFS 2005).

POPULATION SIZE

Using passive acoustic detections from an array of seafloor hydrophones north of Kauai, Martin et al. (2012) estimate a preliminary average density of 2.15 ”boing” calling minke whales per 1000 km^2 during the period February through April and within an area of 8,767 km^2 centered on the seafloor array positioned roughly 50km from shore. However, the relationship between the number of whales present and the number of calls detected is not known, and therefore this acoustic method does not provide an estimate of absolute abundance for minke whales.

Summer/fall 2002 and 2010 shipboard line-transect surveys of the entire Hawaiian Islands EEZ each resulted in one 'off effort' sighting of a minke whale (Barlow 2003, Bradford et al. 2013). These sightings were not part of regular survey operations and, therefore, could not be used to calculate estimates of abundance (Barlow 2003; Bradford et al. 2013). The majority of this survey took place during summer and early fall, when the Hawaiian stock of minke whale would be expected to be farther north. There currently is no abundance estimate for this stock of minke whales, which appears to occur seasonally (about October - April) around the Hawaiian Islands.

Minimum Population Estimate

There is no minimum population estimate for the Hawaiian stock of minke whales.

Current Population Trend

No data are available on population size or current population trend.

CURRENT AND MAXIMUM NET PRODUCTIVITY RATES

No data are available on current or maximum net productivity rate for Hawaiian minke whales.

POTENTIAL BIOLOGICAL REMOVAL

The potential biological removal (PBR) level for the Hawaii stock of minke whales is calculated as the minimum population estimate 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 estimated fishery mortality or serious injury within the U.S. EEZ of the Hawaiian Islands; Wade and Angliss 1997). Because there is no minimum population estimate for Hawaii minke whales, the PBR is undetermined.

HUMAN CAUSED MORTALITY AND SERIOUS INJURY

New Serious Injury Guidelines

NMFS updated its serious injury designation and reporting process, which uses guidance from previous serious injury workshops, expert opinion, and analysis of historic injury cases to develop new criteria for distinguishing serious from non-serious injury (Angliss and DeMaster 1998, Andersen et al. 2008, NOAA 2012). NMFS defines serious injury as an "*injury that is more likely than not to result in mortality*". Injury determinations for stock assessments revised in 2013 or later incorporate the new serious injury guidelines, based on the most recent 5-year period for which data are available.

Fishery Information

Information on fishery-related mortality and serious injury 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. There are currently two distinct longline fisheries based in Hawaii: a deep-set longline (DSLL) fishery that targets primarily tunas, and a shallow-set longline fishery (SSLL) that targets swordfish. Both fisheries operate within U.S. waters and on the high seas. Between 2007 and 2011, no minke whales were observed hooked or entangled in the SSLL fishery (100% observer coverage) or the DSLL fishery (20-22% observer coverage) (McCracken 2013).

STATUS OF STOCK

The Hawaii stock of minke whales is not considered strategic under the 1994 amendments to the MMPA. The status of minke whales in Hawaiian waters relative to OSP is unknown, and there are insufficient data to evaluate trends in abundance. Minke whales are not listed as "threatened" or "endangered" under the Endangered Species Act (1973), nor designated as "depleted" under the MMPA. Because there has been no reported fisheries related mortality or serious injury within the Hawaiian Islands EEZ, the total fishery mortality and serious injury for minke whales can be considered insignificant and approaching zero mortality and serious injury rate. The increasing level of anthropogenic sound in the world's oceans has been suggested to be a habitat concern for whales (Richardson et al. 1995).

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