

FALSE KILLER WHALE (*Pseudorca crassidens*): Palmyra Atoll 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 known from southern Japan, Hawaii, and the eastern tropical Pacific. Four on-effort sightings of false killer whales were recorded during a 2005 shipboard survey of the U.S. Exclusive Economic Zone (EEZ) of Palmyra Atoll (Figure 1; Barlow & Rankin 2007). This species also occurs in U.S. EEZ waters around Hawaii (Barlow 2006, Bradford et al. 2012), Johnston Atoll (NMFS/PIR/PSD unpublished data), and American Samoa (Johnston et al. 2008, Oleson 2009).

Genetic analyses indicate restricted gene flow between false killer whales sampled near the main Hawaiian Islands (MHI), the Northwestern Hawaiian Islands (NWHI), and in pelagic waters of the Eastern (ENP) and Central North Pacific (CNP) (Chivers et al. 2007, 2010, Martien et al. 2011). The Palmyra Atoll stock of false killer whales remains a separate stock, because comparisons amongst false killer whales sampled at Palmyra Atoll and those sampled from the insular stock of Hawaii and the pelagic ENP revealed restricted gene flow, although the sample size remains low for robust comparisons (Chivers et al. 2007, 2010). NMFS will obtain and analyze additional tissue samples from Palmyra and the broader tropical Pacific for genetic studies of stock structure, and will evaluate new information on stock ranges as it becomes available.

For the Marine Mammal Protection Act (MMPA) stock assessment reports, there are currently five Pacific Islands Region management stocks (Chivers et al. 2008, Martien et al. 2011): 1) the Hawaii insular stock, which includes animals inhabiting waters within 140 km (approx. 75 nmi) of the main Hawaiian Islands, 2) the Northwestern Hawaiian Islands stock, which includes false killer whales inhabiting waters within 93 km (50 nmi) of the NWHI and Kauai, 3) the Hawaii pelagic stock, which includes false killer whales inhabiting waters greater than 40 km (22 nmi) from the main Hawaiian Islands, 4) the Palmyra Atoll stock, which includes false killer whales found within the U.S. EEZ of Palmyra Atoll, and 5) the American Samoa stock, which includes false killer whales found within the U.S. EEZ of American Samoa. Estimates of abundance, potential biological removal, and status determinations for the Palmyra Atoll stock are presented below; the Hawaii Stock Complex and American Samoa Stocks are presented in separate reports.

POPULATION SIZE

A 2005 line transect survey in the U.S. EEZ waters of Palmyra Atoll produced an estimate of 1,329 (CV = 0.65) false killer whales (Barlow & Rankin 2007). This is the best available abundance estimate for false killer whales within the Palmyra Atoll EEZ.

Minimum Population Estimate

The log-normal 20th percentile of the 2005 abundance estimate for the Palmyra Atoll EEZ (Barlow & Rankin 2007) is 806 false killer whales.

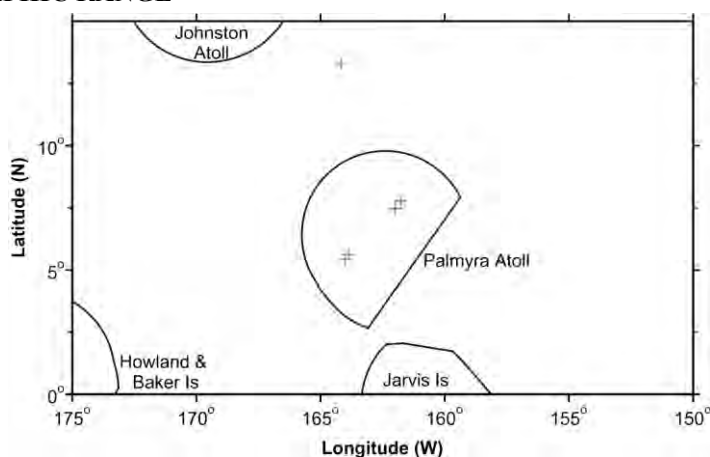


Figure 1. False killer whale on-effort sighting locations during a 2005 standardized shipboard survey of the Palmyra U.S. EEZ and pelagic waters of the central Pacific south of the Hawaiian Islands (gray crosses, Barlow and Rankin 2007). Solid lines represent approximate boundary of U.S. EEZs.

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 Palmyra Atoll waters.

POTENTIAL BIOLOGICAL REMOVAL

The potential biological removal (PBR) level for the Palmyra Atoll false killer whale stock is calculated as the minimum population size (806) times one half the default maximum net growth rate for cetaceans ($\frac{1}{2}$ of 4%) times a recovery factor of 0.40 (for a stock of unknown status with a mortality and serious injury rate $CV > 0.80$; Wade and Angliss 1997), resulting in a PBR of 6.4 false killer whales per year.

HUMAN-CAUSED MORTALITY AND SERIOUS INJURY

Fishery Information

Interactions with false killer whales, including depredation of catch, have been identified in logbooks and NMFS observer records from Hawaii pelagic longlines (Nitta and Henderson 1993, NMFS/PIR unpublished data). False killer whales have also been observed feeding on mahi mahi, *Coryphaena hippurus*, and yellowfin tuna, *Thunnus albacares*, and they have been reported to take large fish from the trolling lines of both commercial and recreational fishermen (Shallenberger 1981).

The Hawaii-based deep-set longline (DSL) fishery targets primarily tunas and operate within U.S. waters and on the high seas near Palmyra Atoll. Between 2006 and 2010, one false killer whale was observed taken in the DSL fishery within the Palmyra EEZ ($\geq 20\%$ observer coverage) (Forney 2011). Based on an evaluation of the observer's description of each interaction and following the most recently developed criteria for assessing serious injury in marine mammals (Andersen et al. 2008), the single false killer whale taken in the Palmyra EEZ was considered seriously injured (Forney 2011). The total estimated annual and 5-yr average mortality and serious injury of cetaceans in the DSL fishery operating around Palmyra (with approximately 20% coverage) are reported by McCracken (2011) (Table 1). Although M&SI estimates are shown as whole numbers of animals, the 5-yr average M&SI is calculated based on the unrounded annual estimates.

Because of high rates of false killer whale mortality and serious injury in Hawaii-based longline fisheries, a Take-Reduction Team (TRT) was established in January 2010 (75 FR 2853, 19 January 2010). The scope of the TRT was to reduce mortality and serious injury in the Hawaii pelagic, main Hawaiian Islands insular, and Palmyra stocks of false killer whales and across the DSL and SSL fisheries. The Team submitted a Draft Take-Reduction Plan to NMFS for consideration (Available at: http://www.nmfs.noaa.gov/pr/pdfs/interactions/fkwtrp_draft.pdf), and NMFS has recently published regulations based on this TRP (77 FR 71260, 29 November, 2012). The Team chose to exclude the Palmyra Atoll stock in the final implementation of the Plan due to low levels of M&SI of this stock for the past 5 years.

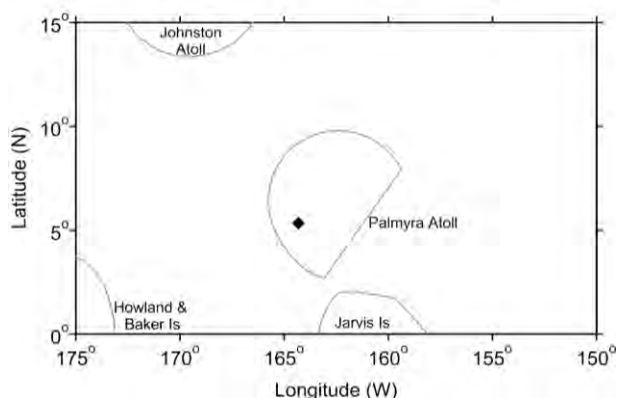


Figure 2. Locations of observed false killer whale takes in the Hawaii-based deep-set longline fishery, 2006-2010. Solid gray lines represent the U.S. EEZ. Fishery descriptions are provided in Appendix 1.

Table 1. Summary of available information on incidental mortality and serious injury of false killer whales (Palmyra Atoll stock) in the Hawaii-based longline fishery (McCracken 2011). Mean annual takes are based on 2006-2010 estimates unless otherwise indicated. Information on all observed takes (T) and combined mortality events & serious injuries (MSI) is included. Total takes were prorated to deaths, serious injuries, and non-serious injuries based on the observed proportions of each outcome.

Fishery Name	Year	Data Type	Percent Observer Coverage	Observed total interactions (T) and mortality events and serious injuries (MSI), and total estimated mortality and serious injury (M&SI) of false killer whales in the Palmyra Atoll EEZ	
				Observed T/MSI	Estimated Mean Annual Takes (CV)
Hawaii-based deep-set longline fishery	2006	observer data	22%	0/0	0 (-)
	2007		20%	1/1	2 (0.7)
	2008		22%	0/0	0 (-)
	2009		20%	0/0	0 (-)
	2010		21%	0/0	0 (-)
Minimum total annual takes within U.S. EEZ					0.3 (1.7)

STATUS OF STOCK

The status of false killer whales in Palmyra Atoll EEZ 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 stock. They are not listed as “threatened” or “endangered” under the Endangered Species Act (1973), nor as “depleted” under the MMPA. The rate of mortality and serious injury to false killer whales within the Palmyra Atoll EEZ in the Hawaii-based longline fishery (0.3 animals per year) does not exceed the PBR (6.4) for this stock and thus, this stock is not considered “strategic” under the MMPA. The total fishery mortality and serious injury for Palmyra Atoll false killer whales is less than 10% of the PBR and, therefore, can be considered to be insignificant and approaching zero. Additional injury and mortality of false killer whales is known to occur in U.S and international longline fishing operations in international waters, and the potential effect on the Palmyra stock is unknown.

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