

False Killer Whales in Hawai'i

by Robin Baird, Ph.D.

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A false killer whale grinds a fresh mahimahi.

—Dan McSweeney photo <www.cascadiaresearch.org>

Whale Buoy

■ In the last couple of years, we've deployed satellite tags on individuals in three different groups of false killer whales off the North Kona Coast, and the tags have lasted an average of a month. During that time the individuals ranged regularly onto the windward side of the Big Island and among the islands as far as Kaua'i, but there is a conspicuous lack of movements along the entire southeast coast of the Big Island between South Point and Hilo.

I'm interested in finding out from anyone who may fish out of Hilo or Miloli'i or launch at any of the sites along the southeast coast of the island how fishing there may compare to other areas around the Big Island. The tagged false killer whales spent a lot of time off the Hamakua Coast and the North Kona area, so it would be particularly interesting to compare fishing to those areas.

The other question I have is whether anyone has actually seen false killer whales along that coastline. There are no records from aerial surveys or ship surveys (although there have been few ship surveys, and it so rough along that coastline that most aerial surveys have been pretty limited).

False killer whales are feeding on a wide variety of game fish—mahimahi, ono, yellowfin tuna, skipjack tuna, albacore tuna and swordfish—so comparisons with sport or commercial catches should be a pretty good indicator of how the feeding is for them.

*Thanks very much,
Robin W. Baird, Ph.D.*

Cascadia Research Collective
<rwbaire@cascadiaresearch.org>

P.S. If you are interested you can download a report showing some of these movements at <<http://www.cascadiaresearch.org/robin/falsekillerwhale.htm>>.



False killer whale with a satellite tag in its dorsal fin.

—Daniel Webster photo

■ False killer whales are a tropical and subtropical large odontocete (toothed whale) typically found only in the open ocean. They are uncommon everywhere, but in Hawai'i waters they utilize near-shore waters. Studies of this population have been ongoing since 2000. From this work, evidence has emerged that the insular population is genetically differentiated from false killer whales in offshore Hawai'i waters (Chivers et al. 2007). Photographs obtained by researcher Dan McSweeney (of the Wild Whale Research Foundation) from the mid-1980s and 1990s have been used to demonstrate that this population has long shown fidelity to the area (Baird et al. 2008). The most recent population estimate for the insular population is just 123 individuals (Baird et al. 2005).

Like the killer whale (not particularly closely related but with a similar skull), false killers are long-lived (into their 60s), slow to reproduce (having one calf only every six or seven years), and do not start reproducing until their teens. Thus, false killer whale populations would be very slow to recover from any anthropogenic impacts. Also like killer whales, false killers are upper-trophic level predators, thus are likely to accumulate high levels of toxins and be impacted by competition with human fisheries.



False killer whales with yellowfin tuna.

—Dan McSweeney photo <www.cascadiaresearch.org>



Offshore false killer whales on Jaggar Seamount.

—Erin Oleson photo

Recent evidence indicates the insular population of false killer whales in Hawai'i has declined dramatically over the last 20 years (Reeves et al. 2009). Five years of aerial surveys undertaken from 1993 through 2004 by Joe Mobley of the University of Hawai'i West O'ahu have shown a steep decline in sighting rates. Group sizes of the largest groups documented in surveys undertaken by Steve Leatherwood and Randy Reeves in 1989 were almost four times larger than the entire current population estimate (Reeves et al. 2009).

A significant decline has been noted in the sighting rate of false killer whales around the main Hawaiian islands in aerial surveys undertaken by Joe Mobley of the University of Hawai'i West O'ahu (with thanks to Joe Mobley for providing survey and sighting details). These surveys were undertaken at the same time of the year each year covering the entire main Hawaiian islands.

False killer whales are closely related to pygmy killer whales, short-finned pilot whales and melon-headed whales, all of which are also found in Hawaiian waters.

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A group of false killer whales from the insular population.—Deron Verbeck photo <iamaquatic.com>

False Killers ...continued



False killer whale carrying prey, followed by wedge-tailed shearwaters. —Erin Oleson photo



A false killer whale from the offshore population leaping while chasing prey. —Robin Baird photo



A small population of about 123 false killer whales resides near the Hawaiian Isles.—Robin Baird photo

HAWAI‘I’S FALSE KILLER WHALES ARE AT RISK: SHOULD THEY BE INCLUDED AS A “RESOURCE” IN THE HAWAIIAN ISLANDS HUMPBACK WHALE NATIONAL MARINE SANCTUARY?

Robin W. Baird

Cascadia Research Collective, Olympia, WA www.cascadiaresearch.org
(rwbaire@cascadiaresearch.org)

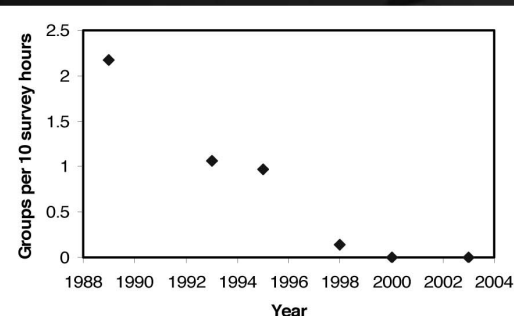
THERE IS A SMALL ISLAND-ASSOCIATED POPULATION OF FALSE KILLER WHALES IN HAWAI‘I

- Genetic and photo-identification evidence indicates there are two populations of false killer whales in Hawai‘i, an insular population and an offshore population (Chivers et al. 2007; Baird et al. 2008a)
- The most recent estimate for the insular population indicates the population is very small (123 individuals, CV = 0.72; Baird et al. 2005)
- Sighting and satellite tagging data from false killer whales indicate regular use of the Hawaiian Islands Humpback Whale National Marine Sanctuary (HIHWNMS) waters (Baird et al. 2008a, 2008b)

A VARIETY OF FACTORS PLACE HAWAIIAN FALSE KILLER WHALES AT RISK

- A NMFS EEZ-wide survey in 2002 found that false killer whales had the smallest population size of any of the 18 species of odontocetes (Barlow 2006)
- Bycatch of false killer whales in the Hawai‘i long-line fishery has exceeded the Potential Biological Removal (PBR) level since 2000 (Carretta et al. 2007)
- They are long-lived, slow-to-reproduce upper trophic level predators

THERE ARE MULTIPLE LINES OF EVIDENCE FOR A LARGE DECLINE OF THE INSULAR POPULATION



Aerial survey data (J. Mobley, University of Hawai‘i) from 1993 to 2003 indicate a strong decline in sighting rates. The largest groups documented in a 1989 survey (Reeves et al. 2009) were ~4 times larger than the entire estimated population size between 2000-2004. False killer whales were the 3rd-most frequently observed species in the 1989 survey (16.7% of odontocete sightings); in boat-based surveys from 2000-2008 they are the 9th-most frequently encountered species (2.6% of odontocete sightings).

POSSIBLE CAUSES OF THE DECLINE

- Bycatch in near-shore “short” (<1 mile) long-lines – there is no monitoring of this fishery so impossible to assess the extent of bycatch
- Shooting of whales by fishermen when whales take their catch
- Bycatch in the offshore long-line fishery – no genetic samples of bycaught animals <200 km from the islands have been collected so impossible to assess what proportion of the bycaught individuals are insular versus offshore
- Reduction in their prey base – false killer whales in Hawai‘i feed on large game fish whose populations have declined
- High levels of persistent organic pollutants may lead to immuno-suppression

WHAT CAN BE DONE?

- Management action often follows only after political or legal pressure
- Hawaiian false killer whales lack a constituency – most residents are unaware of their existence, fishermen dislike them due to their tendency to take fish off lines
- Addition as a Sanctuary “resource” to the Hawaiian Islands Humpback Whale National Marine Sanctuary would raise public awareness for this population and the factors influencing it
- Addition as a Sanctuary “resource” would also encourage the Sanctuary to consider issues that don’t influence humpback whales in Hawai‘i – accumulation of persistent organic pollutants and competition between humans and cetaceans over fish stocks

WHAT ELSE SHOULD BE DONE?

- Bycatch has exceeded PBR since 2000. This should have triggered the formation of a Take Reduction Team. Forming a TRT is needed to help address the bycatch issue
- Solving the bycatch issue is going to be difficult, but reducing uncertainty in the situation is much more feasible – studies should be undertaken to reduce the uncertainty in population size of the insular population, assess how often insular individuals use areas where long-line (both “short” and offshore) fishing occurs, examine the reactions of insular animals to playbacks of fishing vessel noise, and monitoring the short long-line fishery for bycatch

FOR MORE INFORMATION

www.cascadiaresearch.org/robin/falsekillerwhale.htm

• Baird, R.W., A.M. Gorgone, D.L. Webster, D.J. McSweeney, J.W. Durban, A.D. Ligon, D.R. Salden, and M.H. Deakos. 2005. False killer whales around the main Hawaiian Islands: an assessment of inter-island movements and population size using individual photo-identification. Report prepared under Order No. J1133F04SE0120 from the Pacific Islands Fisheries Science Center, NMFS, Honolulu, HI.

• Baird, R.W., A.M. Gorgone, D.J. McSweeney, D.L. Webster, D.R. Salden, M.H. Deakos, A.D. Ligon, G.S. Schorr, J. Barlow, and S.D. Mahaffy. 2008a. False killer whales (*Pseudorca crassidens*) around the main Hawaiian Islands: long-term site fidelity, inter-island movements, and association patterns. *Mar. Mamm. Sci.* 24:591-612.

• Baird, R.W., G.S. Schorr, D.L. Webster, D.J. McSweeney, M.B. Hanson, and R.D. Andrews. 2008b. Movements of satellite-tagged false killer whales around the main Hawaiian Islands. Document PSRG-2008-13 submitted to the Pacific Scientific Review Group, Kilauea, HI, November 2008.

• Chivers, S.J., R.W. Baird, D.J. McSweeney, D.L. Webster, N.M. Hedrick and J.C. Salinas. 2007. Genetic variation and evidence for population structure in eastern North Pacific false killer whales (*Pseudorca crassidens*). *Can. J. Zool.* 85:785-794.

• Reeves, R.H., S. Leamanwood, and R.W. Baird. 2009. Evidence of a possible decline since 1989 in false killer whales (*Pseudorca crassidens*) around the main Hawaiian Islands. *Pac. Sci.* 63:253-261.

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