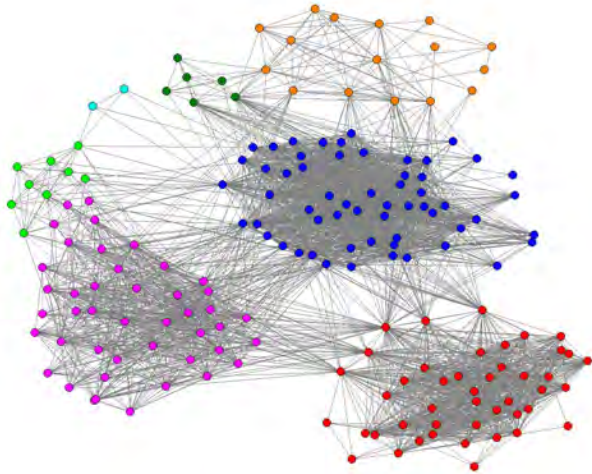


Using social networks to assess populations:



Similar to the Facebook social network, we visualize social networks of whales or dolphins with each individual as a circle connected by lines to their “friends” to assess social structure. This network displays associations among false killer whales from the endangered main Hawaiian Islands insular population. The clustering shows three main social groups – long-term associations among individuals similar to killer whale “pods”, that we call clusters 1, 2 and 3, as well as several smaller social groups.



Management of populations

Our work is regularly presented to the Pacific Scientific Review Group (an advisory body for NMFS), we participate in the False Killer Whale Take Reduction Team, and we present information at scientific conferences and workshops, as well as publishing papers on our results. Copies of publications and reports can be downloaded

at: www.cascadiaresearch.org/Hawaii/publications.htm



Seabirds of Hawai‘i - We also record and photograph unusual seabirds, and contribute sightings and photos to the Bishop Museum and to the Hawai‘i Birding Group.

www.cascadiaresearch.org/Hawaii/HIseabirds.htm

Cascadia coordinates field efforts but our work is a collaborative effort with researchers from Wild Whale Research Foundation, University of Alaska Fairbanks/Alaska SeaLife Center, the Northwest Fisheries Science Center, Southwest Fisheries Science Center, Pacific Islands Fisheries Science Center, Woods Hole Oceanographic Institution, and Hawai‘i Pacific University. Other researchers on the water also provide photographs of many species that help us understand movements of different species among the islands.

Got photos? You can help research by sending photos of toothed whales, dolphins, or fin whales in Hawai‘i to us.

Contact Robin Baird at:

rwbaird@cascadiaresearch.org or 425-879-0360



Photos by:
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Daniel L Webster
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This work is conducted under NMFS Scientific Research Permits

Studies of Hawai‘i’s resident whales and dolphins



www.cascadiaresearch.org/hawaii.htm

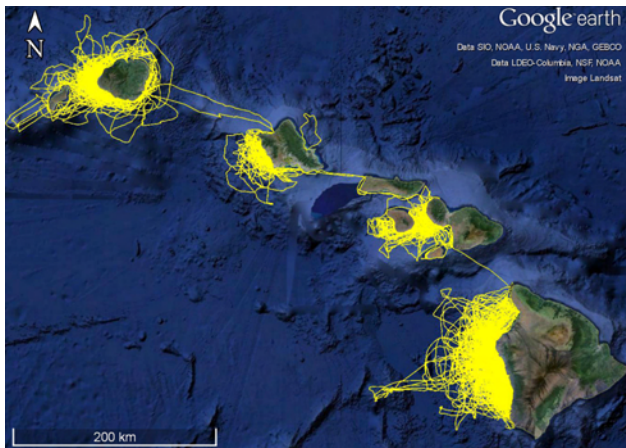


18 species of toothed whales and dolphins reside year-round in the Hawaiian Islands!

Short-finned pilot whales	Pygmy killer whales
Pantropical spotted dolphins	Sperm whales
Rough-toothed dolphins	False killer whales
Spinner dolphins	Striped dolphins
Bottlenose dolphins	Risso's dolphins
Dwarf sperm whales	Pygmy sperm whales
Cuvier's beaked whales	Fraser's dolphins
Melon-headed whales	Killer whales
Blainville's beaked whales	Longman's beaked whales



We work with all species but focus on the lesser-studied ones. Our highest priority species are false killer whales, pygmy killer whales, beaked whales, and melon-headed whales. Our effort over the last 16 years is shown below.



Since 2000, we've covered over 67,000 miles of survey tracklines around the main Hawaiian Islands and have documented almost 2,500 sightings of 18 species of toothed whales and dolphins.

Questions we are trying to answer

How large are the populations?

By using photos, we identify individuals and track them over time. We have 11 photo-ID catalogs of toothed whales and dolphins as well as a fin whale catalog. With these catalogs we've estimated the population sizes of six species. For Cuvier's beaked whales, the population off the west side of the island of Hawai'i numbers only about 50 individuals.



Melon-headed whales

Photo-ID has revealed two populations in Hawai'i, a large population that moves offshore and among the islands and a small resident population off Kohala, Hawai'i Island.



How many populations are there?

We are collaborating with geneticists at Southwest Fisheries Science Center, Scripps Institution of Oceanography, and Oregon State University to examine stock structure of a number of species: false killer whales, rough-toothed dolphins, short-finned pilot whales, among others. This work has shown the existence of multiple populations of some species in Hawai'i - for bottlenose dolphins there are discrete populations around each of the main island groups.



What levels of pollutants are they dealing with?

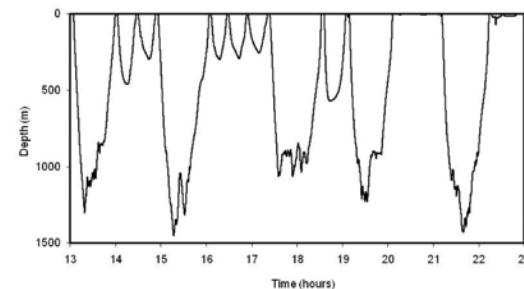
Working with the Northwest Fisheries Science Center we discovered that false killer whales have high levels of persistent organic pollutants in their blubber - levels are high enough that they may influence the immune system. We are now working with NWFSC and Hawai'i Pacific University to examine pollutant levels in a number of species.

www.cascadiaresearch.org/hawaii.htm

What do they do at night and at depth?



Using suction-cup attached time-depth recorders, we are able to examine behavior even when these animals are not at the surface.



Cuvier's beaked whales are susceptible to impacts from Navy sonar. Our work on diving behavior using suction-cup attached tags (10 hours of data shown above) has helped explain why this species may be impacted more often than others. Cuvier's dive to over 9,000 feet and hold their breath for up to 90 minutes.



How are these species utilizing different habitats?

Using longer-term satellite tags, we are able to examine movements and habitat use. Two satellite tagged pygmy killer whales remained strongly associated with the island of Hawai'i, providing evidence the population is resident (see map below).

