

An examination of the trophic ecology of odontocetes from the main Hawaiian Islands

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Ecological studies of cetaceans are rare, and those that have been undertaken have typically focused on a single species, usually inhabiting coastal shallow-water systems, rather than on multiple co-existing species inhabiting deep (>500 m) waters. Previous research on whales and dolphins around the Hawaiian Islands has demonstrated that a number of species of normally open-ocean and often deep-diving cetaceans are resident to the area. Here we evaluate the trophic ecology of several species of odontocetes as part of an ongoing, multidisciplinary study. Skin/blubber samples (n = 500) from 10 species of odontocetes were collected throughout the main Hawaiian Islands, including over 300 samples from odontocetes off the island of Hawai'i. Stable isotope analysis (C 13/12, N 15/14) was conducted on skin samples using standard techniques. Results indicate that groups odontocetes in waters off the Island of Hawaii appear to have similar feeding patterns. *Stenella longirostris* and *Steno bredanensis* exhibited the lowest trophic signatures (9.9 ± 1.1 , 10.4 ± 0.9 $\delta^{15}\text{N}$ respectively), while *Pseudorca crassidens* and *Mesoplodon densirostris* were the most enriched (13.6 ± 0.8 , 14.2 ± 0.9 , respectively). Samples of possible prey species were analyzed and indicated that *Feresa attenuata* and *Physeter macrocephalus* were feeding heavily upon local squid species. Signatures of odontocete samples collected across spatial and temporal scales in the main Hawaiian Islands will also be discussed.