INTER-ISLAND MOVEMENTS AND RESIGHTINGS OF MELON-HEADED WHALES WITHIN THE HAWAIIAN ARCHIPELAGO

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Why this is interesting

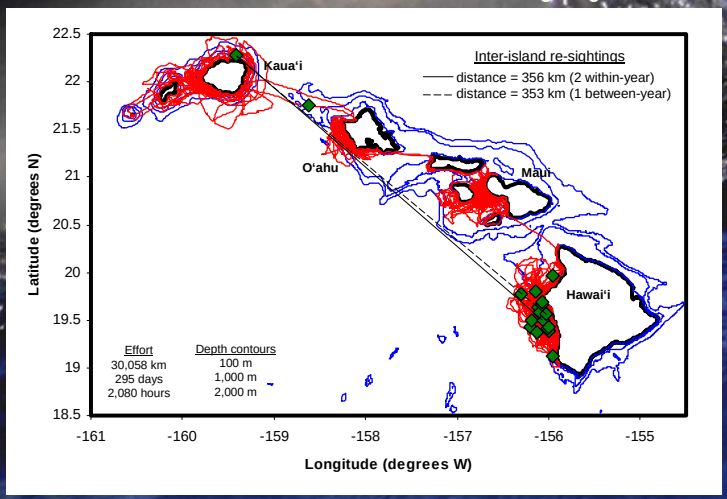
- Though distributed throughout the tropics world-wide, information on population size and movements of melon-headed whales is extremely limited.
- Aerial surveys provide the only population estimate for the main Hawaiian Islands (Mobley et al. 2000) of 154 individuals (CV = 0.88).
- Unlike other oceanic species in this area (rough-toothed dolphins, bottlenose dolphins, and spinner dolphins), melon-headed whales appear to move frequently between islands.

What we did

Approximately 30,000 km of trackline around the main Hawaiian Islands were surveyed between 2000 and 2005 as part of a multi-species assessment of odontocete populations. We used small research vessels (6-18 m) to obtain identification photos and biopsy samples from all four "island areas": Hawai'i, Kaua'i/Ni'ihau, Maui/Lana'i, and O'ahu (see map for sightings and effort).

Melon-headed whales were encountered on 18 occasions, once off Kaua'i, once off O'ahu, and 16 times off the island of Hawai'i. These encounters represent 3.1% of all odontocete sightings and place melon-headed whales as the sixth-most frequently encountered odontocete. Despite a relatively low sighting frequency, they rank second in estimated total number of animals seen (over 5,400). This is attributed to large group sizes, which ranged from 17 to 800 individuals (mean = 304, SD = 189).

Effort distribution and melon-headed whale sightings



What we found

Over 9,000 photos of melon-headed whales were taken during the study. Although photographic matching is still underway, using only good quality photos and long-term markings we have thus far documented 338 distinctive individuals – 18 from O'ahu, 66 from Kaua'i, and 254 from Hawai'i. Distinctive individuals had from 0 to 10 notches (mean = 3.99, SD = 1.9) on the trailing edge of the dorsal fin.

For more information on our Hawai'i odontocete research see:

- Poster by McSweeney et al. on pygmy killer whale site fidelity/population size (Session A, Bay 1, Poster 10)
- Poster by Webster et al. on rough-toothed dolphin site fidelity (Session B, Bay 13, Poster 11)
- Poster by Martien et al. on Hawai'i bottlenose dolphin stock structure (Session A, Bay 17, Poster 7)
- Talk by Baird et al. on Hawai'i beaked whale diving behavior (Tuesday, 5:30 PM, in "Conservation III")

Or visit www.cascadiaresearch.org/robin/hawaii.htm

Inter-island movements and long-term residency

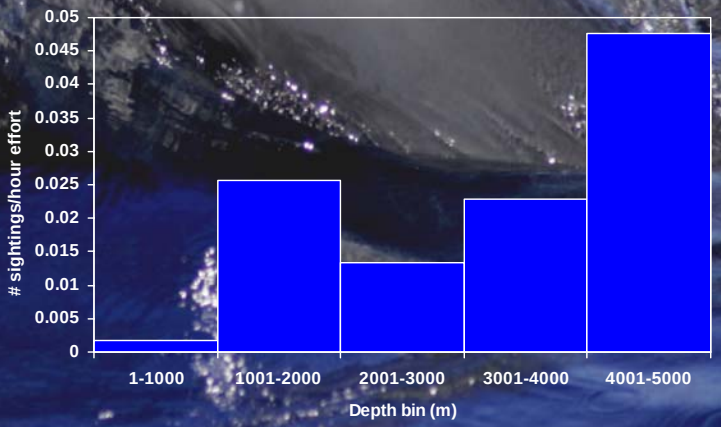
So far we have found nine within-year and 12 between-year re-sightings off the island of Hawai'i. This includes one match to a pre-study photograph from 1995, suggesting long-term residency to the area. Three individuals have been re-sighted between Kaua'i and the island of Hawai'i, two within- and one between-years. Given the overall low level of re-sightings, these findings suggest frequent movements among the islands.

Frequent associations with other species

On all but one occasion melon-headed whales were very approachable, and associations with other species were frequently observed: rough-toothed dolphins (4), short-finned pilot whales (2), humpback whales (1), and pantropical spotted dolphins (1). Avoidance of killer whales was noted on one occasion.

Melon-headed whales show preference for deeper (>1,000 m) waters

Melon-headed whales were found in depths ranging from 250 to 4,400 m (mean = 1,999 m, SD = 1,167 m). Only one sighting occurred in waters less than 500 m, even though nearly half of our effort was in those depths. An analysis of depth distribution in relation to effort indicate a preference for the deeper (>1,000 m) areas surveyed.



Plans for future work

Once matching is completed we intend to do a mark-recapture population estimate. Based on the existing catalog size, the sizes of the groups encountered, and the relatively small number of matches, the population estimate will be much greater than that available from the aerial surveys.

Additional photographs available from 1985-1999 will be examined to look at long-term residency.

References

Mobley, J.R, S.S. Spitz, K.A. Forney, R.A. Grotefendt, and P.H. Forestell. 2000. Distribution and abundance of odontocete species in Hawaiian waters: preliminary results of 1993-98 aerial surveys. National Marine Fisheries Service Southwest Fisheries Science Center Administrative Report LJ-00-14C.

Acknowledgements

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