

HAWAIIAN ISLAND POPULATIONS OF FALSE KILLER WHALES AND SHORT-FINNED PILOT WHALES REVEALED BY GENETIC ANALYSIS

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Although there are no obvious barriers to movement across the Pacific, we found evidence of population structure for false killer whales (*Pseudorca crassidens*) and short-finned pilot whales (*Globicephala macrorhynchus*) inhabiting the eastern and central North Pacific. We sequenced 957 base pairs of the mitochondrial DNA control region for 63 *P. crassidens* and 157 *G. macrorhynchus*. Nearly all samples were collected from animals biopsied at sea in the eastern North Pacific (n = 37 *P. crassidens*; n = 99 *G. macrorhynchus*) and around Hawaii (n = 19 *P. crassidens*; n = 50 *G. macrorhynchus*). The remaining samples were collected in the western Pacific, Indian and western North Atlantic Oceans, and the resulting sequences provided additional information about intra-specific genetic diversity. Nucleotide diversity was fairly low for *P. crassidens* (0.41%) and *G. macrorhynchus* (0.28%) compared to other delphinids (*i.e.*, 1-2%), and only 17 haplotypes were identified for *P. crassidens* and 14 for *G. macrorhynchus*. Phylogenetic analyses revealed divergent haplotypes unique to animals sampled off Hawaii in both species suggesting long-term reproductive isolation of those populations. Additional evidence of population structure was found in *G. macrorhynchus* sampled off Clipperton Island and the Galapagos Islands in the eastern tropical Pacific. Each island group had haplotypes not found elsewhere. Although our data provide evidence for population structure within the eastern North Pacific Ocean (*P. crassidens* $\Phi_{st} = 0.68$; *G. macrorhynchus* $\Phi_{st} = 0.90$) when tested against a null hypothesis of panmixia, geographic boundaries for the populations cannot yet be identified. However, because both of these species have been observed taken in the pelagic longline fishery, we suggest that the Hawaiian exclusive economic zone (EEZ) continue to be recognized as a management unit and consideration be given to managing the animals impacted by the pelagic longline fishery outside the Hawaiian EEZ separately.

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