

False killer whales (*Pseudorca crassidens*) around the main Hawaiian Islands: Long-term site fidelity, inter-island movements, and association patterns

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Despite their distribution throughout the tropics and sub-tropics world-wide, false killer whales (*Pseudorca crassidens*) are one of the lesser known large odontocetes. Although they are typically considered an open ocean species, genetic evidence suggests that false killer whales around the main Hawaiian Islands are a demographically isolated unit. Using data from directed surveys from 2000-2006 and opportunistic photographs from 1986-2007, we examine site fidelity, movements and association patterns of false killer whales from around the main Hawaiian Islands. False killer whales were infrequently encountered (2.1% of all odontocete sightings in directed surveys), and while found in depths from 31 to 4,330 m, sighting rates were greatest in depths >3000 m. A total of 152 distinctive individuals were photo-identified from 1986 through February 2007. Individual re-sighting rates were high, with an average of 78% of individuals within groups (SD = 32%) being documented on more than one occasion. Most individuals (86.8%) were linked by association into a single social network; only one large group (16 distinctive individuals), documented the furthest offshore (42-70 km), did not link by association, and may be part of an offshore population. A large proportion of individuals were documented moving among islands: 19 of 21 individuals off O'ahu were also recorded off the island of Hawai'i, a distance of approximately 262 km; 20 of 39 individuals from the 4-island area were also recorded off the island of Hawai'i. Despite a distance of only 164 km, only 2 of 21 individuals from O'ahu were recorded in the 4-island area, suggesting some structure within the Hawaiian Islands. Individuals were re-sighted up to 20.1 years after first being documented, suggesting long-term fidelity to the islands. Repeated associations among individuals were documented for up to 15 years, and association analyses suggest strong bonds among individuals.