

Distribution and diet of fish-eating killer whales around the Aleutian Islands, with relevance to fisheries interactions

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In the productive waters around the western Gulf of Alaska and Aleutian Islands, a high density of killer whales overlaps in distribution with extensive commercial fisheries. Killer whale depredation on long-lines is commonly reported, and killer whales have also been observed to feed on the discards of trawlers. We report the results of shipboard surveys for killer whales in these waters from 2001-2005, to provide baseline data to interpret potential fishery interactions. 176 sightings of killer whales were made between June and August in coastal waters ranging from the western Gulf of Alaska to the central Aleutian Islands. Genetic analyses of 156 biopsy tissue samples documents mtDNA lineages that are consistent with the ecotypic separation into the “resident”, “transient” and “offshore” types found in better studied regions of the NE Pacific. Furthermore, chemical analyses of these tissue samples demonstrates that the distinct dietary preferences of these ecotypes also exists in these northern waters, with fish-eating residents being the most frequently encountered ecotype (112 sightings). Regional groups of residents show distinct west-to-east differences in fatty acid and stable isotope profiles between the central Aleutian Islands (CAI), eastern Aleutian Islands (EAI) and Gulf of Alaska (GOA). These differences are consistent with CAI whales foraging in deeper, more pelagic waters, whereas GOA and EAI whales forage on prey found in shallower waters on the continental shelf, and differences in prey specializations are likely to exist. Both the EAI and GOA whales are likely consuming salmon as a substantial part of their diets, whereas the CAI residents may also be consuming locally available, demersal prey. We compare the distribution of resident killer whale sightings to commercial and research long-line catches of demersal fish species, and the spatial overlap between whales and fisheries emphasizes the potential magnitude and extent of interactions.