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Mouthline injuries as an indicator of fisheries interactions for false killer whales and pygmy killer whales in Hawai'i

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Evidence from strandings and anecdotal reports indicate that a number of odontocete species interact with near-shore fisheries in Hawai'i. In the absence of observer programs in these fisheries, we evaluated mouthline injuries from known resident populations of false killer whales and pygmy killer whales, to assess the viability of this method to document injuries associated with hook and line fishery interactions. All individuals with mouthlines visible were selected from photo-ID catalogs and scored for presence of mouthline injuries consistent with fisheries interactions. Ninety-seven false killer whales and 47 pygmy killer whales had $\geq 50\%$ of the mouthline visible using fair to excellent quality photos, with a mean of 67% and 59% mouthline visible, respectively. Preliminary analysis suggests that main Hawaiian Islands insular false killer whales have high rates of mouthline injuries- 20% of adult and sub-adult individuals with $\geq 50\%$ mouthline visible have injuries consistent with fisheries interactions, supporting studies using dorsal fin injuries that indicate individuals from this population regularly interact with fisheries. Pygmy killer whales also appear to interact with fisheries at high rates. Of adult and sub-adult individuals off Hawai'i and O'ahu with $\geq 50\%$ of the mouthline visible, 31% have injuries consistent with fisheries interactions. Since pygmy killer whales feed primarily at night, and there are few reports of them depredating lines, mouthline injury analysis provides new insight into fisheries interactions for this species. Scars on pygmy killer whales heal white and are easier to detect than healed injuries on false killer whales, thus a greater proportion of individuals with such injuries may be detected for pygmy killer whales. With both species, the proportion of mouthline visible increased the likelihood of mouthline injuries being detected. Injury rates are negatively biased, since those individuals scored as having no mouthline injury may not have had their entire mouthline visible. Further efforts will aim to identify injury rates in short-finned pilot whales and rough-toothed dolphins. An examination of differences in injury rates between age classes, and multi-species comparisons will also be undertaken to better understand fisheries interactions.

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