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Unintended consequences of using dolphins to catch tuna: examining the extent and nature of hook and line fishery interactions with pantropical spotted dolphins off the island of Hawai'i

[Robin Baird](#) [Daniel Webster](#)

In Hawai'i fishermen use a variety of hook and line methods to catch tuna associated with pantropical spotted dolphins. In response to reports of dolphins being hooked in fisheries, the National Marine Fisheries Service (NMFS) proposed re-categorizing two fisheries ("charter vessel" and "trolling, rod and reel") in 2011 from Category III (those having a remote likelihood of serious injury/mortality) to Category II (those having occasional serious injury/mortality). After reviewing comments received in response to the proposal, NMFS did not re-categorize the fisheries, in part because of statements that fishing effort around dolphins may have been overestimated and that many vessels just trolled near dolphins, not through groups. We used photo-identification of individually distinctive vessels fishing in association with dolphin groups and observations on the number and behavior of vessels with dolphins to examine the extent and nature of interactions between fishing vessels and spotted dolphins off Hawai'i Island. Since 2010, 34.5% of spotted dolphin encounters had fishing vessels present within the group envelope of the dolphins (mean=3.7, SD=3.5, range=1-19, n=57 of 165 encounters). Two primary fishing methods were used, either trolling through groups of dolphins or repeatedly transiting through a group at high speed to the advancing front of the group and stopping and fishing as the group passed by, with some vessels alternating methods during encounters. Since 2010, 133 different vessels were documented fishing in association with dolphins; of these, 38 (28.6%) were documented on two or more occasions, and 26 were documented in two or more years. A mark-recapture abundance estimate of the number of vessels fishing in association with spotted dolphins in 2012 and 2013 was 322 (CV=0.05). In 2015 NMFS recognized three distinct island-associated populations of spotted dolphins in Hawai'i, including one off Hawai'i Island, thus the population of dolphins involved in these interactions is smaller than originally expected. While many factors likely influence the probability of boats fishing associated with dolphin groups, continued reports of occasional hooking combined with the relatively large number of vessels "fishing" dolphins suggest the fisheries categories should be re-evaluated.

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