

# Injury Determinations for Marine Mammals Observed Interacting with Hawaii Longline Fisheries During 2020

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This Data Report provides a summary of the mortality and determinations of injury severity for marine mammals observed interacting with Hawaii longline fisheries during 2020. This summary does not include interaction data from the American Samoa deep-set longline fishery due to confidentiality rules. The last year of published injury determinations for marine mammals observed interacting with Hawaii and American Samoa longline fisheries was 2019 (Bradford 2021). For the fully observed Hawaii shallow-set fishery, the number of deaths and serious injuries<sup>1</sup> reported here represents total marine mammal bycatch during 2020. For the partially observed Hawaii deep-set fishery, the number of deaths and serious injuries is a sample of total annual marine mammal bycatch, which must be quantitatively estimated. Estimates of annual mortality and serious injury by source are compiled and averaged over 5-year periods and included in the stock assessment reports (SARs) required by the U.S. Marine Mammal Protection Act.

Previous summaries of the outcomes of marine mammal interactions with these longline fisheries were published as NOAA Technical Memorandums and initially included injury determinations from all 5 years associated with a given SAR year (e.g., Bradford and Forney 2017), even though only the most recent year(s) of determinations was unpublished (e.g., Bradford and Forney 2016). To reduce redundancy and increase efficiency, these summaries were modified to only cover injury determinations that have not been previously published, starting with interactions observed during 2015 (Bradford 2018). To further increase efficiency and data access, these summaries were transitioned to publication as annual Data Reports with an associated data file (CSV), beginning with the interactions from 2019 (Bradford 2021). These reports only note any changes in the methodology described in previous summaries and provide a more concise summary of results.

In 2020, the Pacific Islands Region Longline Observer Data System (LODS, an Oracle database) was transitioned to the Pacific Islands Regional Office (PIRO) Observer Database (POD, an MS SQL database). Whereas interaction data were previously extracted from LODS using the Datatrawler interface, interaction data for this summary were extracted from POD using Program R (R Core Team 2021). Otherwise, no changes in methodology were required to process the marine mammal interactions from 2020. A total of 28 marine mammal interactions were observed in the two Hawaii fisheries combined during 2020. Details of these interactions and the resulting injury determinations are provided in the file 'PIR.HI-LL.2020.csv'<sup>2</sup>. The species codes relevant to these interactions are shown in Table 1, and a key to the column headings of the CSV file is shown in Table 2. Nine of the shallow-set interactions resulted in injured U.S. West Coast pinnipeds that were evaluated by the Southwest Fisheries Science Center (SWFSC; Carretta et al. 2022). For the remaining interactions, the author and the independent reviewer (Karin Forney, SWFSC) discussed any questions raised before establishing final consensus

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<sup>1</sup> A serious injury is an injury that is more likely than not to result in mortality (NOAA Fisheries Policy Directive PD 02-238).

<sup>2</sup> In the NOAA Institutional Repository, these data are under Supporting Files.

determinations. There were no differences in determinations from 2020 between reviewers so no determinations changed following this discussion.

In 2020, the Hawaii deep-set fishery was observed interacting with 18 marine mammals, including 5 (27.8%) rough-toothed dolphins, 4 (22.2%) false killer whales, 4 (22.2%) unidentified cetaceans, 2 (11.1%) Risso's dolphins, 1 (5.6%) common bottlenose dolphin, 1 (5.6%) pygmy or dwarf sperm whale, and 1 (5.6%) unidentified beaked whale. Two (11.1%) of the interactions were deaths (no carcasses were retained), 12 (66.7%) were serious injuries, 2 (11.1%) were non-serious injuries, and 2 (11.1%) were classified as "cannot be determined" (CBD). A majority of interactions (77.8%, n = 14) occurred outside the U.S. Exclusive Economic Zone (EEZ). The 4 (22.2%) interactions within the U.S. EEZ occurred around the Hawaiian Archipelago, with 1 involving a false killer whale from the pelagic stock. Three Marine Mammal Authorization Program (MMAP) Mortality/Injury Reporting Forms (MMAP reports) were submitted by Hawaii deep-set longliners during 2020. One of the reports was associated with an observed interaction. The other 2 reports involved interactions outside the U.S. EEZ that injured a common dolphin and a spinner dolphin. The common dolphin report indicates that the dolphin came free of a pectoral fin hooking, an injury that would be considered non-serious (Table 2 in NMFS, 2012). The spinner dolphin report contained insufficient details to make an injury determination. Neither species was accounted for by the observed interactions.

In 2020, the Hawaii shallow-set fishery was observed interacting with 10 marine mammals, including 7 (70.0%) Guadalupe fur seals, 2 (20.0%) unidentified fur seals, and 1 (10.0%) false killer whale. None of the interactions were deaths, 3 (30.0%) were serious injuries, and 7 (70.0%) were non-serious injuries. Most interactions (90.0%, n = 9) occurred outside the U.S. EEZ. The 1 (10.0%) interaction within the U.S. EEZ occurred around the Hawaiian Archipelago and involved a false killer whale from the pelagic stock. No MMAP reports were submitted by Hawaii shallow-set longliners during 2020.

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## Injury Determination Species Codes and Key for Supporting Data File

**Table 1.** Species code, common name, and scientific name of marine mammals relevant to the 2020 observation period of the Hawaii longline fisheries.

Code	Common name	Scientific name
AT	Guadalupe fur seal	<i>Arctocephalus townsendi</i>
GG	Risso's dolphin	<i>Grampus griseus</i>
PC	False killer whale	<i>Pseudorca crassidens</i>
SB	Rough-toothed dolphin	<i>Steno bredanensis</i>
TT	Common bottlenose dolphin	<i>Tursiops truncatus</i>
UA	Unidentified fur seal	Arctocephalin pinniped
UC	Unidentified cetacean	-
UK	Pygmy or dwarf sperm whale	<i>Kogia</i> sp.
UZ	Unidentified beaked whale	Ziphiid whale

**Table 2.** Key to the column headings of the file 'PIR.HI-LL.2020.csv', which contains details of the marine mammal interactions and resulting injury determinations for marine mammals observed interacting with Hawaii longline fisheries during 2020.

Column heading	Explanation
Fishery	Base of longline fishery, either Hawaii or American Samoa
Type	Fishery type, either shallow-set (SS) or deep-set (DS)
EEZ	Location of interaction relative to the U.S. EEZ <sup>1</sup>
Year	Calendar year when the vessel returned to port
Date	Date of the interaction (m/d/yyyy)
Species	Species code assigned to the interaction as defined in Table 1
Probable_sp	Candidate species for interactions unidentified to species
Size	Observer size estimates, reported in ft
Condition	Observed condition of the mammal, either injured or dead
Determination	Injury determination using established criteria (NMFS 2012)
Categories	NMFS (2012) categories associated with the injury determination
Details	Details of the observed interaction and case-specific injury determination factors

<sup>1</sup> For false killer whales within the U.S. EEZ around Hawaii, the stock(s) occurring in the interaction location is indicated, where P = pelagic stock.