

Injury Determinations for Marine Mammals Observed Interacting with Hawaii and American Samoa Longline Fisheries During 2019

Amanda L. Bradford

Pacific Islands Fisheries Science Center, National Marine Fisheries Service

This Data Report provides a summary of the mortality and determinations of injury severity for marine mammals observed interacting with Hawaii and American Samoa longline fisheries during 2019. For the fully observed Hawaii shallow-set fishery, the number of deaths and serious injuries¹ represents total marine mammal bycatch during this period. For the partially observed Hawaii and American Samoa deep-set fisheries, the number of deaths and serious injuries is a sample of total marine mammal bycatch, which must be quantitatively estimated. Estimates of 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 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with a given SAR year (e.g., Bradford and Forney 2017), even though only the most recent year(s) of determinations was unpublished (e.g., Bradford and Forney 2016).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). The last year of published injury determinations for marine mammals observed interacting with Hawaii and American Samoa longline fisheries was 2018 (Bradford 2020). To further increase efficiency and data access, starting with the 2019 interactions, these summaries will be published as Data Reports with an associated CSV file. These reports will only note any changes in the methodology described in previous summaries and will provide a more concise summary of results.

No changes in methodology were required to process the marine mammal interactions from 2019. A total of 23 marine mammal interactions were observed in the three fisheries combined during 2019. Details of these interactions and the resulting injury determinations are provided in the file 'PIR.HI-AS-LL.2019.csv'². 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](#). One of the shallow-set interactions resulted in an injured U.S. West Coast pinniped that was evaluated by the Southwest Fisheries Science Center (SWFSC; Carretta et al. 2021). For the remaining interactions, the author and the independent reviewer (Karin Forney, SWFSC) discussed any questions raised or differences in determinations before establishing final consensus determinations. One determination changed following this discussion; specifically, the determination changed from "CBD" to "non-serious" for the Hawaii deep-set interaction on 12/15/19.

In 2019, the Hawaii deep-set fishery was observed interacting with 21 marine mammals, including 15 (71.4%) false killer whales, 2 (9.5%) unidentified cetaceans, 1 (4.8%) blackfish³, 1 (4.8%) Risso's dolphin, 1 (4.8%) rough-toothed dolphin, and 1 (4.8%) unidentified beaked whale. Four (19.0%) of the

¹ A serious injury is one that is more likely than not to result in mortality (NMFS Policy Directive PD 02-238).

² In the NOAA Institutional Repository, these data are under Supporting Files.

³ A "blackfish" is an unidentified cetacean determined to be either a false killer whale or short-finned pilot whale.

interactions were deaths (1 carcass was retained), 10 (47.6%) were serious injuries, and 7 (33.3%) were non-serious injuries. A majority of interactions (66.7%, n = 14) occurred outside the U.S. Exclusive Economic Zone (EEZ). The 7 (33.3%) interactions within the U.S. EEZ occurred around the Hawaiian Archipelago; 5 involved false killer whales from the pelagic stock and 1 involved a false killer whale from either the Northwestern Hawaiian Islands or pelagic stock. Ten Marine Mammal Authorization Program (MMAP) Mortality/Injury Reporting Forms (MMAP reports) were submitted by Hawaii deep-set longliners during 2019. Six of the reports were associated with observed interactions. The 4 exceptions involved interactions outside the U.S. EEZ that injured 2 unidentified cetaceans, 1 Risso's dolphin, and at least 1 short-finned pilot whale, although details of the reports were insufficient to make injury determinations. Short-finned pilot whales were not accounted for by the observed interactions.

One marine mammal was observed interacting with the Hawaii shallow-set fishery in 2019: an unidentified earless seal that was seriously injured outside the U.S. EEZ in the northeastern portion of the shallow-set fishing area near the U.S. West Coast EEZ. No MMAP reports were submitted by Hawaii shallow-set longliners during 2019.

One marine mammal was observed interacting with the American Samoa deep-set fishery in 2019: a striped dolphin that was seriously injured within the U.S. EEZ around American Samoa. No MMAP reports were submitted by American Samoa deep-set longliners during 2019.

Acknowledgments

Much appreciation goes to the on-board observers who collected the interaction data, as well as the staff of Pacific Islands Regional Office (PIRO) and the Pacific Islands Fisheries Science Center who manage the data. Jamie Marchetti (PIRO Observer Program) was particularly instrumental in this effort, responding quickly to frequent data requests and questions. Kevin Brindock (PIRO) also participated in the meetings with returning observers, assuming full responsibility of a few meetings when the author was out of the office. Thanks to Karin Forney for providing reviews of the injury determinations and to Lance Garrison (Southeast Fisheries Science Center) for providing additional reviews of the injury determinations made for false killer whales injured within the U.S. EEZ. The Pacific Scientific Review Group and PIRO performed an additional review of the full set of injury determinations. This report was improved by reviews from Karin Forney, Jamie Marchetti, Erin Oleson, and Nancy Young.

Literature Cited

- Bradford AL. 2018. Injury determinations for marine mammals observed interacting with Hawaii and American Samoa longline fisheries during 2015-2016. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-PIFSC-70. 27 pp.
- Bradford AL. 2020. Injury determinations for marine mammals observed interacting with Hawaii and American Samoa longline fisheries during 2018. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-PIFSC-99. 20 pp.
- Bradford AL, Forney KA. 2016. Injury determinations for marine mammals observed interacting with Hawaii and American Samoa longline fisheries during 2009-2013. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-PIFSC-50. 34 pp.
- Bradford AL, Forney KA. 2017. Injury determinations for marine mammals observed interacting with Hawaii and American Samoa longline fisheries during 2010-2014. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-PIFSC-62. 35 pp.

Carretta JV, Greenman J, Wilkinson K, Freed J, Saez L, Lawson D, Viezbicke J, Jannot J. 2021. Sources of human-related injury and mortality for U.S. Pacific West Coast Marine Mammal Stock Assessments, 2015-2019. Document PSRG-2021-02 submitted to the Pacific Scientific Review Group.

National Marine Fisheries Service. 2012. NOAA Fisheries Policy Directive 02-238-01: Process for distinguishing serious from non-serious injury of marine mammals. 42 pp. Available at: <http://www.nmfs.noaa.gov/op/pds/documents/02/238/02-238-01.pdf>.

Injury Determination Species Codes and CSV File Key

Table 1. Species code, common name, and scientific name of marine mammals relevant to the 2019 observation period of the Hawaii and American Samoa longline fisheries.

Code	Common name	Scientific name
BF	“Blackfish” = false killer or short-finned pilot whale	-
GG	Risso’s dolphin	<i>Grampus griseus</i>
MN	Humpback whale	<i>Megaptera novaeangliae</i>
PC	False killer whale	<i>Pseudorca crassidens</i>
SB	Rough-toothed dolphin	<i>Steno bredanensis</i>
SC	Striped dolphin	<i>Stenella coeruleoalba</i>
UC	Unidentified cetacean	-
US	Unidentified earless seal	Phocid pinniped
UZ	Unidentified beaked whale	Ziphiid whale

Table 2. Key to the column headings of the file ‘PIR.HI-AS-LL.2019.csv’, which contains details of the marine mammal interactions and resulting injury determinations for marine mammals observed interacting with Hawaii and American Samoa longline fisheries during 2019.

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 ¹
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 ²
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

¹ For false killer whales within the U.S. EEZ around Hawaii, the stock(s) occurring in the interaction location is indicated, where N = Northwestern Hawaiian Islands stock and P = pelagic stock.

² “Blackfish” is the only probable species designation that is considered for injury determination and bycatch estimation.