

# Injury Determinations for Humpback Whales and Other Cetaceans Reported to NOAA Response Networks in the Hawaiian Islands During 2020

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Reports of injured and dead cetaceans in the U.S. Exclusive Economic Zone around the Hawaiian Islands (Hawaiian EEZ) are received each year by the Pacific Islands Region Marine Mammal Response Network (PIR-MMRN), which is coordinated by the NOAA Fisheries Pacific Islands Regional Office (PIRO), and the Hawaiian Islands Entanglement Response Network (HIERN), which is coordinated by the NOAA Hawaiian Islands Humpback Whale National Marine Sanctuary. Most of the injury reports involve humpback whales that are entangled in fishing gear or marine debris or have been struck by or otherwise injured by contact with a vessel. However, occasionally, reports of other cetacean species are received.

This Data Report provides a summary of the mortality and determinations of injury severity for cetaceans in the Hawaiian EEZ reported injured or killed by human causes to PIR-MMRN and HIERN during 2020. The last year of published injury determinations for cetaceans reported to these response networks was 2019 (Bradford and Lyman 2022). These determinations are based on injury reports that are opportunistic and not a part of a quantifiable and directed sampling scheme. Thus, the resulting determinations of serious injury<sup>1</sup> (or any reported mortalities) cannot be used to estimate undocumented mortality and serious injury (M&SI) from the same source. However, these serious injuries and mortalities can serve as minimum estimates of M&SI by source and should be included in the stock assessment reports (SARs) required by the U.S. Marine Mammal Protection Act (MMPA).

Previous summaries of mortality and injury determinations for cetaceans in the Hawaiian EEZ reported injured or killed by human causes to PIR-MMRN and HIERN were previously published as NOAA Technical Memorandums (Bradford and Lyman 2015, 2018, 2019, 2020). To further increase efficiency and data access, these summaries were transitioned to publication as annual Data Reports with supporting data files (CSV), starting with injury determinations from 2019 (Bradford and Lyman 2022). These reports only note any changes in the methodology described in previous summaries and provide a more concise summary of results.

No changes in methodology were required to process the response network reports from 2020. The PIR-MMRN database was accessed, and cetacean records in and around the Hawaiian EEZ during 2020 (n = 15) were extracted and reviewed to identify reports of cetaceans injured by human causes. The identified PIR-MMRN reports were supplemented with 14 confirmed injury reports from 2020 maintained in the HIERN database. Further supplementing the reports compiled from the network databases was an account of an injured short-finned pilot whale provided by R. Baird of the Cascadia Research Collective (CRC), which had not been incorporated into the PIR-MMRN database.

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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).

In total, 16 reports of cetaceans with human-caused injuries in the Hawaiian EEZ from 2020 were identified for injury determination. The reports consist of 14 humpback whales involved in vessel collisions, and 1 short-finned pilot whale and 1 common bottlenose dolphin, each hooked by fishing gear. In contrast to previous years (e.g., Bradford and Lyman 2022), there were no confirmed reports of humpback whales entangled in fishing gear during 2020, likely due to reductions in activity by ocean users during the COVID-19 pandemic.

Following discussions about questions raised in the injury determination review process, the independent reviewers (A. Henry, Northeast Fisheries Science Center, for the humpback whales; K. Forney, Southwest Fisheries Science Center, for the other cetaceans) agreed with the preliminary determinations made by the authors. Details of the reports and the resulting injury determinations are provided in the files “PIR.HI.RN.2020\_HW-ves.csv” and “PIR.HI.RN.2020\_OC-inj.csv”.<sup>2</sup> A key to the column headings of each CSV file is shown in Table 1 and Table 2, respectively, at the end of this document.

The 14 humpback whale vessel collisions led to 9 serious injuries for comparison to the potential biological removal (PBR) value reported in the SARs. The hooked short-finned pilot whale and common bottlenose dolphin (from the Hawaii Island stock) led to 1 serious injury and 1 mortality, respectively, for consideration with the MMPA List of Fisheries (LOF) and for comparison with PBR. Gear type and fishery are currently unknown in the cases of the hooked short-finned pilot whale and common bottlenose dolphin, but additional effort to identify these characteristics is warranted.

While the hooked common bottlenose dolphin represents a PIR-MMRN stranding record where a confirmed human-caused injury was presumed to be the cause of death, there were no stranding records during this period where a human-caused injury was documented but determined not to be the cause of death. Finally, although HIERN attempts to cross-match the injured humpback whales that were adequately photo-identified within its database, based on identification efforts to date, the common bottlenose dolphin reported non-seriously injured by a gunshot wound in 2018 (Bradford and Lyman 2020) and by a hooking and entanglement in 2019 (Bradford and Lyman 2022) is the only individual known to be injured by human causes more than once in the full injury determination record (Bradford and Lyman 2015, 2018, 2019, 2020, 2022).

### **Acknowledgments**

We thank PIR-MMRN and HIERN staff and volunteers, as well as the whale researchers, non-profit groups, and other ocean users who report and respond to dead and injured cetaceans in the Pacific Islands Region. Kristi West and her University of Hawaii Marine Mammal Stranding Program associates tirelessly conduct necropsy and follow-up work that is critical for understanding the factors contributing to cetacean mortality. Robin Baird and his CRC colleagues and associated network have diligently made sure that sightings of injured cetaceans do not fall through the cracks and are accruing important known outcome data for small cetaceans with human-caused injuries. Jamie Thompson and Cianna Beltran of PIRO provided access to the PIR-MMRN database and helpfully fielded questions about its contents. Rachel Finn, working for the Hawaiian Islands Humpback Whale National Marine Sanctuary, assisted with compiling data associated with the HIERN database. Allison Henry and Karin Forney reviewed the

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

humpback and other cetacean injury determinations, respectively. The Pacific Scientific Review Group and PIRO performed an additional review of the full set of injury determinations. This report was improved by a review from Nancy Young.

#### **Literature Cited**

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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>.

### Keys for Supporting Data Files

**Table 1.** Key to the column headings of the file “PIR.HI.RN.2020\_HW-ves.csv,” which contains injury determinations for humpback whales reported to be involved in vessel collisions in Hawaiian waters during 2020.

<b>Column heading</b>	<b>Explanation</b>
ReportDate	Date of injury report (m/d/yyyy)
AgeClass	Age class of injured whale
VesselLength	Length of vessel involved in collision, in ft
VesselSpeed	Speed of vessel involved in collision, in kn
EventSummary	Summary of reported injury event
ObservedInjury	Description of injuries observed on whale
InjuryCategories	Relevant injury categories from NMFS (2012)
InjuryDetermination	Injury determination using established criteria (NMFS 2012)
ForPBR	Value to be applied in PBR comparison

**Table 2.** Key to the column headings of the file “PIR.HI.RN.2020\_OC-inj.csv,” which contains injury determinations for cetaceans other than humpback whales reported to be injured in Hawaiian waters during 2020.

<b>Column heading</b>	<b>Explanation</b>
ReportDate	Date of injury report (m/d/yyyy)
Species	Species of injured cetacean
Stock	Stock of injured cetacean
AgeClass	Age class of injured cetacean
EventSummary	Summary of reported injury event
InjuryCategories_initial	Relevant injury categories from NMFS (2012) prior to follow-up
InjuryDetermination_initial	Initial injury determination using established criteria (NMFS 2012)
ForLOF	Value to be used in LOF consideration
ResponseOutcome	Outcome of any response or other follow-up activities
InjuryCategories_follow-up	Relevant injury categories from NMFS (2012) after follow-up
InjuryDetermination_follow-up	Follow-up determination using established criteria (NMFS 2012)
ForPBR	Value to be applied in PBR comparison
FisheryReview	Details of the fishery review and potential for further classification