

Data Report

Assessment of Incidental Interactions with Marine Mammals in the American Samoa Permitted Longline Fishery from 2016 through 2020.

Marti McCracken¹ and Brett Cooper²

¹Pacific Islands Fisheries Science Center, National Marine Fisheries Service

²Cooperative Institute for Marine and Atmospheric Research, University of Hawaii

The attached Excel Workbook (pir.asll.ceta.1620.xlsx) includes annual estimates and the estimated 5-year average of take and number of takes with a dead or serious injury determination (DSI) in the American Samoa permitted longline fishery for years 2016–2020. Estimates are provided for the fisheries' fishing grounds and within the American Samoa Exclusive Economic Zone (EEZ). The workbook includes a worksheet labeled 'key' that provides definitions of the column headings and the items being estimated. Methods for estimating the takes and DSI for 2020 are described in this report. McCracken (2019) describes the methods for estimating the takes for 2016–2019.

In 2020, COVID-19 affected the deployment of observers. When the World Health Organization declared a global COVID-19 pandemic on March 11, 2020, the American Samoa Government moved to declare a state of emergency in the territory and since March 22, 2020, has restricted air travel in or out of the territory to protect its population. On March 24, 2020, NOAA Fisheries issued a national emergency rule to waive observer coverage. This emergency rule was implemented to protect public health and to ensure the safety of fishermen, observers, and others. Because of these actions, only one observed trip occurred in 2020. Additionally, there are no records in the American Samoa Longline Logbook (2021) for approximately 21% of the 48 trips that landed in 2020. These vessel logbooks have not been received by PIFSC for data entry and it is unclear when they will be received. To determine the number of trips landed in 2020, the American Samoa Longline Logbook (2021) and American Samoa Longline Trip Log (2021a) were used.

The lack of observer coverage means that using a sample-based estimator to estimate take is inappropriate, and our ability to create an appropriate model-based estimator is limited by available data. The only explanatory variables that are known for all trips that landed in 2020 are the variables related to the vessel (name, permit number, etc.) and the date and port of the trip's departure and return. The lack of data also limits our ability to compare the fishing behavior from previous years to 2020. Based on the American Samoa Longline Trip Log (2021a) and the American Samoa Longline Logbook (2021) database, fewer trips occurred than in previous years: 48 trips in 2020 compared to 61, 58, 68, 61, 81, 99, 112, and 126 trips in 2019–2012. In 2020; 12 permit numbers fished compared to 15, 12, 14, 16, 18, 21, 22 and 22 in 2019–2012, respectively. For more information on the fishery and the data collected see McCracken (2019).

Under the data-poor circumstances, a straightforward estimator of take that could be used across species was chosen. Observations from the Longline Observer Data System (2021b) over years 2012–2020 were used to derive the 2020 estimates. First, for each calendar day of the year, the average take over all observed active trips was computed for the species of interest. For this computation, a trip was considered active between its departure and return dates and a set's take was assigned to the calendar day of the begin haul date. Each day's average was then multiplied by the number of unobserved active fishing trips on that day in 2020. The sum of these products over all days is the estimated take for unobserved trips.

The take from the observed trip added to this estimate is the estimated take for the fleet in 2020. For the estimated take within American Samoa EEZ, the average take was based on observed takes within the EEZ. There has only been one observed take outside of the EEZ and this was for a false killer whale in 2013.

Let us now consider some specifics. Selecting the years to include was based on balancing the advantage of a larger sample size and the disadvantage of including years where take rates are not similar to the 2020 rates. On 23 September 2011, the Western Pacific Pelagic Fisheries; American Samoa Longline Gear Modifications to Reduce Turtle Interactions Final Ruling (Federal Register 76 *FR* 52888) went into effect, and since this ruling may have affected the take rate of multiple species, data from years prior to 2012 were not used. Trips that did not land and depart from the port of Pago Pago were also excluded, as it is known that all trips in 2020 departed and returned to this port. The range of 2012–2020 provided an average of 14 and a minimum of 5 observed active trips per day. During these years, there were only 4 species of marine mammals observed bycaught: false killer whale, rough-tooth dolphin, striped dolphin, and short-finned pilot whale. The striped dolphin and short-finned pilot whale have only been observed bycaught once.

An estimator of the standard error was not derived because the data points are correlated, and this correlation is likely very complex. Hence, an appropriate estimator of standard error would likely be very complex, if not intractable. Furthermore, the standard error would not capture the uncertainty in the fleet's behavior and how it might have affected the 2020 take rates.

As the striped dolphin and short-finned pilot whale have only one observed take since 2012, their DSI was estimated using the same estimator for take described above but with the observed DSI determinations replacing the observed takes. Since the observed take for both species had a serious injury determination, the estimated take and estimated DSI are equivalent. The other two species had 6 and 8 observed takes; thus, the percent of these takes that had a DSI determination was multiplied by the estimated number of unobserved takes to derive the fleet's unobserved DSI. The number of observed DSI events in 2020 was added to this number to derive the species' 2020 DSI estimate.

References

- McCracken ML. 2019. American Samoa Longline Fishery Estimated Anticipated Take Levels for Endangered Species Act Listed Species. Pacific Islands Fisheries Science Center, PIFSC Data Report, DR-19-028, 23 p. <https://doi.org/10.25923/b8gs-j441>.
- Pacific Islands Fisheries Science Center. 2021. American Samoa Longline Logbook, <https://inport.nmfs.noaa.gov/inport/item/1775>.
- Pacific Islands Regional Office. 2021a. American Samoa Longline Trip Log, <https://inport.nmfs.noaa.gov/inport/item/16869>.
- Pacific Islands Regional Office. 2021b. Longline Observer Data System, <https://inport.nmfs.noaa.gov/inport/item/9027>.