

Underreporting of Marine Mammal and Sea Turtle Bycatch in the California Swordfish Drift Gillnet Fishery

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Prepared by B. Enticknap, G. Shester and T. Brock, Oceana

Bycatch in commercial fishing gear is a major threat to many populations of marine wildlife. Unfortunately, inadequate observer coverage and a lack of reliable self-reporting hampers the ability of managers to limit and reduce bycatch and leads to a dearth of accurate information. This leaves fishery managers, scientists, and the public in the dark about the true level of fishery impacts. Federal regulations, however, require vessel owners/operators to report all marine mammal interactions within 48 hours (per 50 CFR § 229.6) and they must maintain “an accurate and complete record of catch” (50 CFR § 660.708).¹ At face value these reports should be the best source of information for total marine mammal and sea turtle bycatch. To get a more complete understanding of marine mammal and sea turtle bycatch in the California drift gillnet fishery when an observer is not onboard, Oceana submitted a Freedom of Information Act (FOIA) request to the National Marine Fisheries Service (NMFS) for the number of self-reported interactions with protected species in the California large mesh drift gillnet fishery, since 2001, when observers were not on board the vessels. Oceana requested the date, species, and location of each self-reported interaction, if known.

Set at night off the California coast, fishermen using mile-long large mesh drift gillnets target swordfish, but also capture, injure, and or kill many other fish species plus sea turtles, whales, dolphins, seals and other protected marine life. Onboard fishery observers monitor approximately 20 percent of the drift gillnet fishing effort, on average. The other 80 percent of the bycatch must be estimated through extrapolation (ratio estimates) or using statistical ‘regression tree’ estimates.

The regression tree methodology has been determined by NMFS to be the method that produces the best scientific information available for estimating rare species bycatch absent 100 percent monitoring.² Regression tree estimates, however, are only released periodically and provide little utility for in-season management actions. The federal Pacific Fishery Management Council voted unanimously to recommend NMFS implement 100 percent monitoring of the fleet, along with previous recommendations to establish hard caps that limit the take of certain marine mammals and sea turtles.

Oceana compared self-reported marine mammal and sea turtle takes obtained through our FOIA request to observed and total estimated protected marine life takes from 2001 to 2018 as published in the Carretta 2020 NOAA Technical Memo, “Estimates of marine mammal, sea turtle and seabird bycatch in the California large-mesh drift gillnet fishery 1990-2018”.³ From the FOIA data, we found that from

¹ “Catch” is defined in regulation as “any activity that results in killing any fish or bringing any live fish on board a vessel.” 50 C.F.R. § 600.10. “Fish” is further defined to mean “any finfish, mollusk, crustacean, or parts thereof, and *all other forms of marine animal and plant life other than marine mammals and birds.*” *Id.* (emphasis added).

² National Marine Fisheries Service (September 2018). Agenda Item H.6.a Supplemental NMFS Report I. Available: <https://www.pcouncil.org/documents/2018/09/agenda-item-h-6-a-supplemental-nmfs-report-1.pdf/>

³ James V. Carretta. 2020. Estimates of marine mammal, sea turtle, and seabird bycatch

2001-2018, when an observer was not onboard, there were 28 self-reported marine mammal takes, comprising at least 6 different species (table 1) and no reported sea turtle takes. This is compared to 292 marine mammals and 4 sea turtle takes over the same time period reported by onboard observers, comprised of 16 different species (Carretta 2020). 80% of the fishing effort over this time was unobserved, yet there were 264 fewer marine mammals reported when no observer was present (figure 1).

Using the Carretta 2020 total regression tree estimates, the expected number of marine mammal takes on unobserved vessels would be the difference between the total estimate and the takes on observed trips (1,511 – 292) which equals 1,219 estimated takes on unobserved trips. However, the number of self-reported takes on these trips is only 28, which means that approximately 98% of marine mammal takes, or approximately 1,191 takes, were not reported as required by law (figure 1).⁴

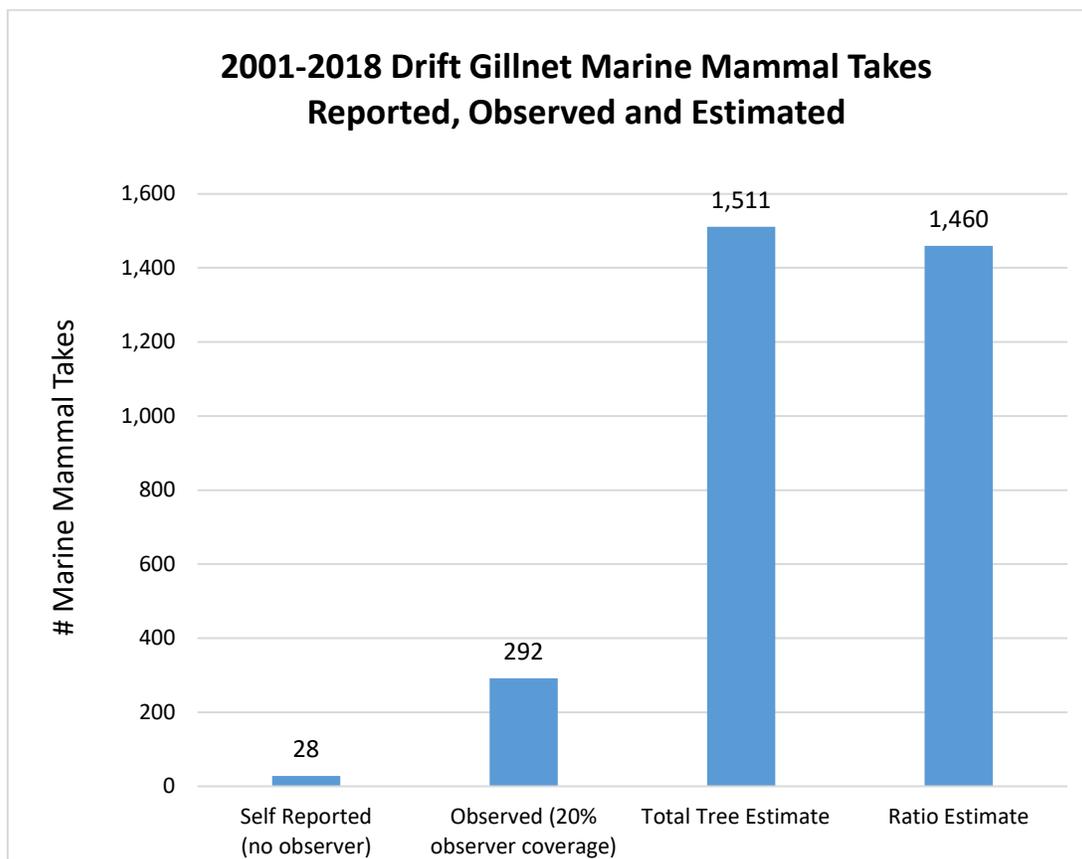


Figure 1. California drift gillnet marine mammal bycatch, 2001-2018, comparing self-reported bycatch to observed and total regression tree estimates and ratio estimates (as in Carretta 2020). Eighty percent of DGN sets were unobserved during this time frame.

There were zero self-reported marine mammal takes in 9 out of 18 years from 2001-2018 when no observer was onboard (table 1). There were also zero self-reported sea turtle takes while there were 4

in the California large-mesh drift gillnet fishery:1990-2018, U.S. Department of Commerce, NOAA Technical Memorandum NMFS-SWFSC-632.

⁴ Id.

observed takes (2 leatherback sea turtles and 2 loggerhead sea turtles) and 37 expected sea turtle takes during this time based on total regression tree estimates (figure 2).

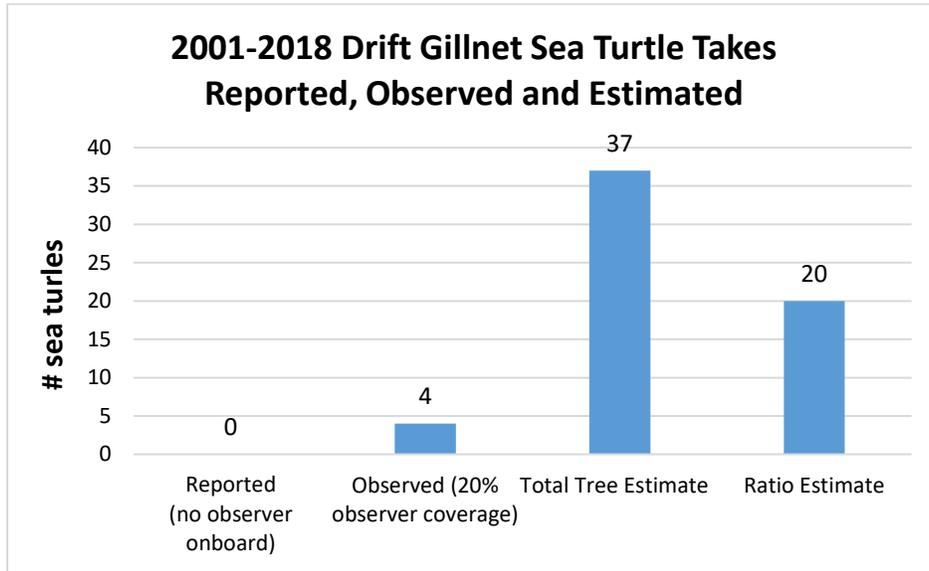


Figure 2. California drift gillnet sea turtle bycatch, 2001-2018, comparing self-reported bycatch to observed and total regression tree estimates and ratio estimates (as in Carretta 2020). 80 percent of sets were unobserved during this time frame.

Furthermore, when comparing self-reported bycatch rates to observed bycatch rates for common dolphin, California sea lions and Northern elephant seals, observed bycatch rates were up to 65x higher than self-reported bycatch rates when no observer was present (figure 3).

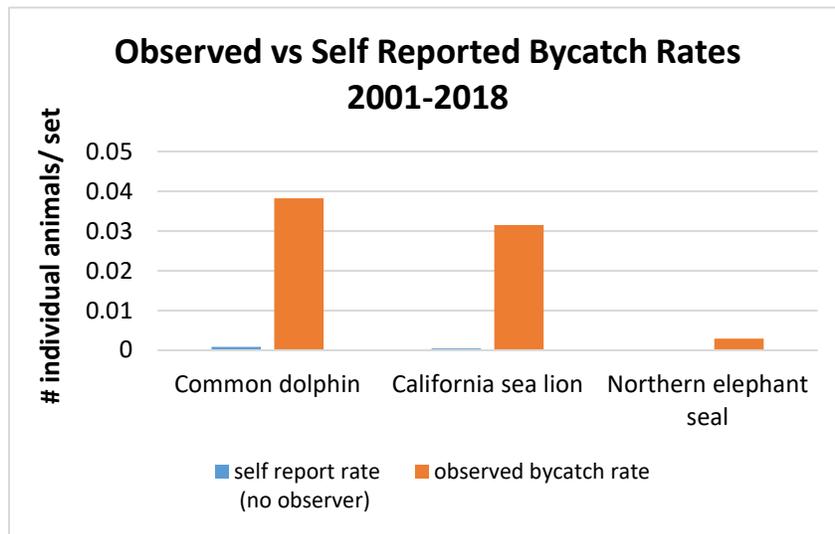


Figure 3. Observed bycatch rates (catch/ set) compared to self-reported bycatch rates in the California drift gillnet swordfish fishery when no observer was onboard. The bycatch rate of common dolphins was 43 x higher, California sea lion bycatch 65 x higher, and Northern elephant seal bycatch 36x higher when an observer was present.

Based on the findings of this FOIA request and analysis, we can only conclude California drift gillnet fishermen grossly underreport marine mammal and sea turtle interactions as required by law. Instead, it is most likely that when no observer is present marine mammals and sea turtles are discarded at sea unreported. This includes rare and endangered species like leatherback sea turtles, loggerhead sea turtles, sperm whales and humpback whales for which the Pacific Fishery Management Council previously recommended hard caps. This analysis highlights the importance of 100 percent monitoring to accurately assess protected marine life takes in the California drift gillnet swordfish fishery as well as hard caps that limit protected marine life bycatch. Ultimately, continued efforts are necessary to phase out the use of this fishing method and transition to selective deep-set buoy gear.

Table 1. Self-reported marine mammal takes in the California Drift Gillnet swordfish fishery, 2001 to 2020. This represents all self-reporting in the unobserved portion of the fleet. 80% of the fishing effort was unobserved, amounting to 12,448 unobserved sets.

| Date of Mortality/Injury | Species | Number of animals |
|---------------------------------|---|--------------------------|
| 9/22/2001 | Bottlenose dolphin | 1 |
| 10/10/2001 | California sea lion | 1 |
| 11/3/2001 | Unidentified small cetacean (porpoise or dolphin) | 1 |
| 11/5/2001 | Unidentified small cetacean (porpoise or dolphin) | 1 |
| 12/29/2001 | Common dolphin | 1 |
| 1/24/2002 | Common dolphin | 1 |
| 10/13/2002 | Unidentified small cetacean (porpoise or dolphin) | 2 |
| 12/27/2003 | Common dolphin | 1 |
| 11/4/2003 | California sea lion | 1 |
| 12/1/2005 | California sea lion | 1 |
| 10/5/2006 | Unidentified small cetacean (porpoise or dolphin) | 1 |
| 10/31/2006 | Common dolphin | 1 |
| 11/2/2006 | California sea lion | 1 |
| 1/17/2008 | Common dolphin | 1 |
| 11/17/2008 | Common dolphin | 2 |
| 11/12/2008 | California sea lion | 1 |
| 11/15/2008 | Common dolphin | 1 |
| 10/12/2008 | Harbor porpoise | 1 |
| 1/18/2009 | Humpback whale | 1 |
| 12/11/2009 | California sea lion | 1 |
| 10/31/2010 | Common dolphin | 1 |
| 11/11/2010 | California sea lion | 1 |
| 11/17/2017 | California sea lion | 1 |
| 11/17/2017 | Northern elephant seal | 1 |
| 11/18/2017 | Common dolphin | 2 |
| 9/6/2019 | California sea lion | 1 |
| 10/21/2020 | Pacific white-sided dolphin | 1 |

Table 2. Observed bycatch and total estimated bycatch from 2001-2018, showing total regression tree and ratio estimates as published in Carretta 2020 (footnote 3). From 2001 to 2018 there were 3,112 observed drift gillnet sets (20% of 15,560 sets were observed).

| SPECIES | OBSERVED 2001-2018 | TOTAL TREE ESTIMATE 2001-2018 | RATIO ESTIMATE 2001-2018 |
|---|-----------------------|-------------------------------------|--------------------------------|
| Minke whale | 1 | 5.7 | 5 |
| Fin whale | 0 | 0.9 | 0 |
| Gray whale | 3 | 13.7 | 15 |
| Humpback whale | 1 | 5.9 | 5 |
| Short-beaked common dolphin | 119 | 628.9 | 595 |
| Long-beaked common dolphin | 12 | 43.1 | 60 |
| Risso's dolphin | 6 | 43.6 | 30 |
| Short-finned pilot whale (dolphin) | 3 | 11.6 | 15 |
| Pacific white-sided dolphin | 11 | 44.6 | 55 |
| Northern right whale dolphin | 24 | 122.3 | 120 |
| Killer whale | 0 | 0.4 | 0 |
| Dall's porpoise | 1 | 9.4 | 5 |
| Bottlenose dolphin | 1 | 5.7 | 5 |
| Hubb's beaked whale | 0 | 0.2 | 0 |
| Stejneger's beaked whale | 0 | 0.2 | 0 |
| Unidentified Ziphiidae (beaked whales) | 0 | 0.2 | 0 |
| Unidentified Mesoplodon (beaked whales) | 0 | 0.7 | 0 |
| Sperm whale | 2 | 12.3 | 10 |
| Cuvier's beaked whale | 0 | 1.5 | 0 |
| Unidentified whale | 1 | 4.9 | 5 |
| Unidentified cetacean | 0 | 1 | 0 |
| California sea lion | 98 | 501.7 | 490 |
| Northern elephant seal | 9 | 50.9 | 45 |
| Steller sea Lion | 0 | 0.4 | 0 |
| Unidentified pinniped | 0 | 0.8 | 0 |
| Loggerhead sea turtle | 2 | 20.4 | 10 |
| Green sea turtle | 0 | 1 | 0 |
| Leatherback sea turtle | 2 | 13.3 | 10 |
| Olive ridley sea turtle | 0 | 0.8 | 0 |
| Unidentified turtle | 0 | 1 | 0 |
| Unidentified bird | 1 | 6.2 | 5 |
| Unidentified Cormorant | 1 | 2.3 | 5 |
| Northern Fulmar | 20 | 80 | 100 |
| TOTAL- All Species | 318 | 1635.6 | 1590 |
| Total Sea Turtles | 4 | 36.5 | 20 |
| Total Marine Mammals | 292 | 1510.6 | 1460 |