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Underreporting of Marine Mammal Take:

SELF-REPORTING IN THE CALIFORNIA SET GILLNET FISHERY UNDERSCORES THE NEED FOR THIRD-PARTY FISHERY OBSERVERS

Caitlynn Birch, Pacific Marine Scientist, Oceana
Geoff Shester, PhD, Oceana
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Photo Credit: Robert Schwemmer, NOAA.
Sea Lions at Gull Island Marine Reserve

Underreporting of Marine Mammal Take: *Self-Reporting in the California Set Gillnet Fishery Underscores the Need for Third-Party Observers*

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The unintended catch and discarding of marine life is widely considered among the top ecological impacts of fisheries, and can be a major threat to many populations of marine wildlife. Fishery managers are often limited by available data and must rely upon observer data and self-reporting to quantify impacts and adjust management accordingly. While observer data is considered the gold standard for quantifying catch, bycatch, and protected species interactions, limited resources often restrict observer coverage to minimal levels. In California set gillnets, targeting white seabass and California halibut, fishery observers have been present on a small portion of total fishing effort in 6 of the last 15 years, and observed zero fishing in 8 of those years. Federal regulations also require each commercial permittee to report all marine mammal interactions within a 48 hour period, and fishermen must maintain an accurate and complete record of catch in logbooks. In the absence of observer data, managers may rely upon logbook data to fill key information gaps. However, the usefulness of this information is reliant on accurate reporting.

To understand the gap between self-reported marine mammal interactions and total marine mammal take in the fishery, Oceana compared self-reported marine mammal takes in the CA set gillnet fishery obtained through a Freedom of Information Act (FOIA) request to federal estimates of marine mammal take based on observer data. Recently, state managers of the fishery have indicated the need for better data on bycatch is needed, and are scoping potential options for increased observer coverage or electronic monitoring to fill these information gaps. The credibility of logbook reporting, particularly in relation to protected species, emphasizes the need for increased observer coverage to ensure accurate data for fishery managers as they quantify impacts on bycatch and protected species.

From FOIA records, self-reports in the California set gillnet fishery from 2002 – 2022 have recorded 7 marine mammal species, and have reported a total of 196 interactions. Eighty-two percent of self-reports involve the CA sea lion, followed by the harbor seal at 14 percent. Rarer event species represent 4 percent of total reported interactions, and involve the common dolphin, the pacific white sided dolphin, harbor porpoise, northern elephant seal, and gray whale (Table 1). Annual self-reports from 2002 to 2022 for the fishery average 8 marine mammal interactions per year. The full dataset, with species, date, and number of animals involved in each interaction is shown in Table 4.

Total self-reports (2002 - 2022):	**196**
% CA sea lion	82.14%
% Harbor seal	13.78%
% All other mammal	4.08%

Table 1. Self-reported marine mammal interactions in the CA set gillnet fleet from 2002 – 2022.

The National Marine Fisheries Service (NMFS) estimates annual marine mammal take per fishery based on the number of interactions observed by federal biological observers. The number of marine mammal interactions observed during the proportion of fishing overseen is extrapolated to estimate total marine mammal serious injury and mortality based upon total annual fleetwide fishing effort. These estimates are based upon unbiased subsamples of fishing data collected by federal biologists, and do not typically include self-reporting data to estimate total marine mammal take. These estimates are intended to be the best estimate of total marine

mammal take available for fisheries, and if fishermen are reporting all interactions with protected species as required by federal law, these self-reports should be close in number to these estimates.

California set gillnets are fished in Southern California federal waters (3 – 200nm) with exceptions around the Channel Islands. The gear is intended to target white seabass, California halibut, and other marketable species, though the gear type and fishery have high rates of bycatch, including protected species. Oceana compared self-reported marine mammal takes obtained through our FOIA request to total estimated marine mammal takes for the set gillnet fishery from 2005 to 20022 as published in the federal the Stock Assessment Reports. Estimates based on observer data and specific to the set gillnet fishery are only available for CA sea lion and harbor seal stocks, and not for the other marine mammal species reported in the self-reports. Stock Assessment Reports estimating take in the fishery are unavailable for the harbor seal stock past 2012, limiting the data available for comparison to 2005 – 2012. Estimates for the CA sea lion are available 2005 – 2016.

From 2005 – 2012, looking at only CA sea lion and harbor seal reports for which we have comparable take estimates from the stock assessment reports, 100 sea lions and seals were reported by the fishery. The average number of mammals reported by the fishery were 12 mammals annually. Over this same period (2005 – 2012), NMFS estimates total marine mammal serious injury/mortality for California sea lions and harbor seals in the fishery to be 1,698, with an average of 212 marine mammal takes per year, indicating that only 6% of annual marine mammal interactions were self-reported by the fishery during this period.

Oceana has done a similar analysis with comparable results in the California drift gillnet fishery, and underreporting of bycatch and protected species is likely occurring in many fisheries despite federal regulations. Fishery managers in the state of California have already concluded better streams of data are needed to assess bycatch impacts in the set gillnet fishery, and are currently in the process of scoping observer and electronic monitoring programs to fill such gaps. This chronic underreporting of protected species underscores the importance of third-party fisheries observers and electronic monitoring to ensure accurate data is available for managers, and human impacts on marine mammals and other species are accurately quantified.

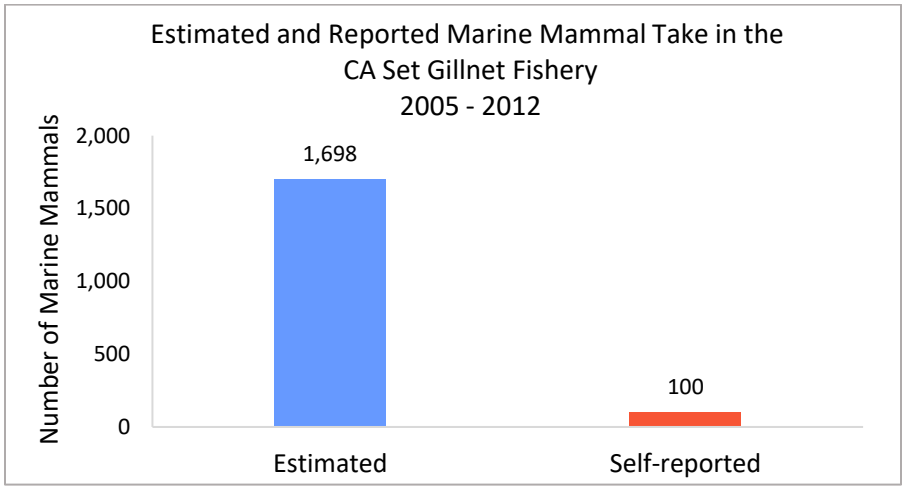

Figure 1. California set gillnet marine mammal bycatch, 2005-2012, comparing self-reported bycatch to estimated take of the California sea lion and harbor seal.

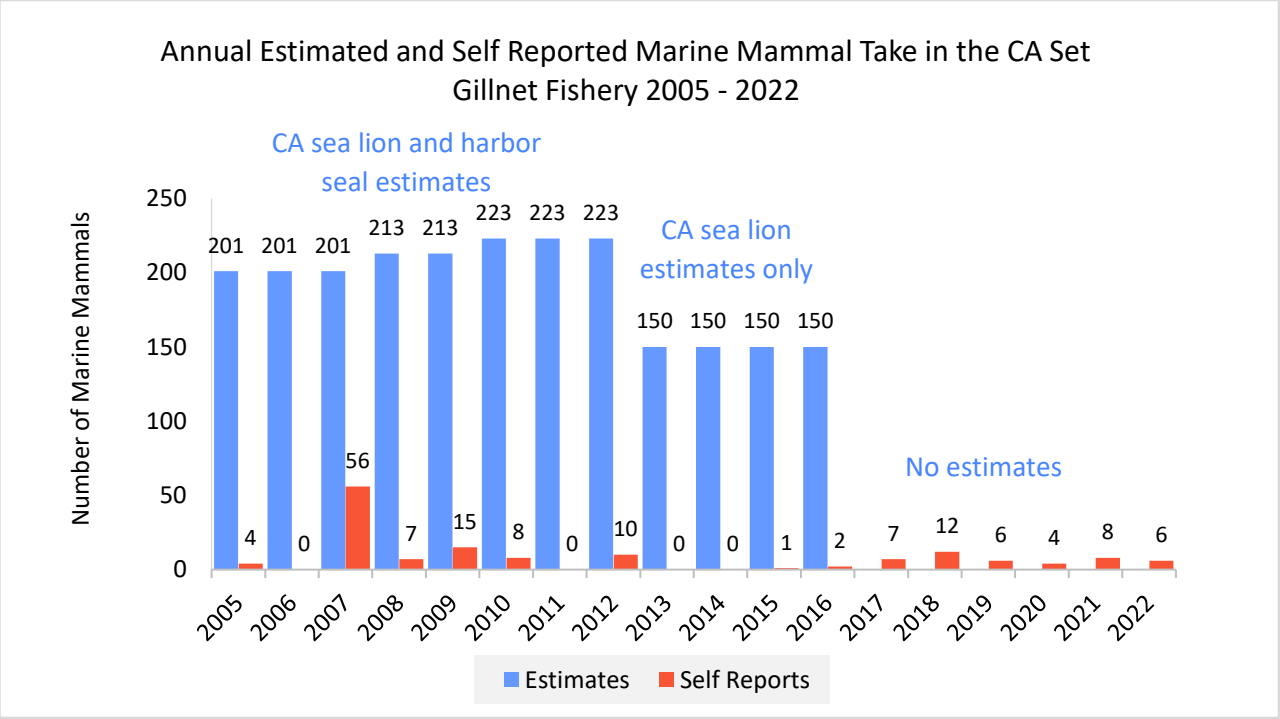

Figure 2. California set gillnet annual marine mammal bycatch, 2005 – 2022, comparing self-reported annual marine mammal take to annual estimated take for the CA sea lion and harbor seal in the fishery. Estimated take for the harbor seal stock is available 2004 – 2012 for the set gillnet fishery. CA sea lion estimated take is available 2005 to 2016. From years 2017 to 2022 there are no estimates of marine mammal take based on observer data. While recent estimates of marine mammal take in the fishery are unavailable, the trends in self-reported marine mammal interactions have remained low. Notably, 2007 is the first year the fishery was observed since the 1990's, during which a clear increase in self-reports is evident.

	California sea lion		Harbor seal		Other Mammals
Year	SARs Estimates	Self-Reports	SARs Estimates	Self-Reports	Self- Reports
2005	190	3	11	1	
2006	190		11		
2007	190	52	11	4	
2008	190	6	23		1
2009	190	15	23		
2010	200	7	23	1	
2011	200		23		
2012	200	10	23		
2013	150		NA		
2014	150		NA		
2015	150		NA		1
2016	150	2	NA		
2017	NA	3	NA	3	1
2018	NA	6	NA	4	2
2019	NA	5	NA		1
2020	NA	3	NA		1
2021	NA	7	NA		1
2022	NA	6	NA		

Table 2. California set gillnet annual marine mammal bycatch, 2005 – 2022, comparing self-reported annual marine mammal take to annual estimated take for the CA sea lion and harbor seal. Estimated take for the harbor seal stock is available 2004 – 2022 for the set gillnet fishery. CA sea lion estimated take is available 2005 to 2016. From year 2017 to 2022 there are no estimates of marine mammal take based on observer data.

Year	California sea lion	Harbor seal	Common dolphin	Pacific white-sided dolphin	Harbor porpoise	Northern Elephant seal	Gray whale	Total Annual Self-Reports
2002	9	5						14
2003	5							5
2004	22	9						31
2005	3	1						4
2006								0
2007	52	4						56
2008	6				1			7
2009	15							15
2010	7	1						8
2011								0
2012	10							10
2013								0
2014								0
2015							1	1
2016	2							2
2017	3	3	1					7
2018	6	4	1			1		12
2019	5			1				6
2020	3			1				4
2021	7			1				8
2022	6							6
Total	**161**	**27**	**2**	**3**	**1**	**1**	**1**	**196**

Table 3. Self-reported annual marine mammal take in the CA set gillnet fishery by species from 2002- 2022.

Year	Date	Species	Number of Interactions
2002	4/4/2002	California sea lion	1
2002	4/4/2002	Harbor seal	1
2002	4/29/2002	California sea lion	2
2002	4/29/2002	Harbor seal	1
2002	8/22/2002	California sea lion	1
2002	8/22/2002	Harbor seal	1
2002	8/23/2002	California sea lion	3
2002	8/23/2002	Harbor seal	2
2002	12/19/2002	California sea lion	2
2003	2/13/2003	California sea lion	3
2003	5/29/2003	California sea lion	2
2004	4/26/2004	California sea lion	2
2004	5/7/2004	Harbor seal	1
2004	5/7/2004	California sea lion	1
2004	5/8/2004	California sea lion	1
2004	5/8/2004	Harbor seal	1
2004	5/12/2004	Harbor seal	1
2004	5/12/2004	California sea lion	3
2004	5/13/2004	California sea lion	1
2004	5/13/2004	Harbor seal	1
2004	5/20/2004	California sea lion	3
2004	5/20/2004	Harbor seal	1
2004	5/22/2004	California sea lion	3
2004	5/22/2004	Harbor seal	1
2004	5/27/2004	Harbor seal	2
2004	5/27/2004	California sea lion	3
2004	6/22/2004	California sea lion	3
2004	6/22/2004	Harbor seal	1
2004	6/27/2004	California sea lion	1
2004	6/27/2004	California sea lion	1
2005	9/27/2005	California sea lion	2
2005	9/30/2005	California sea lion	1
2005	9/30/2005	Harbor seal	1
2007	1/24/2007	California sea lion	3
2007	1/24/2007	Harbor seal	1
2007	2/25/2007	California sea lion	3
2007	3/10/2007	California sea lion	24
2007	3/10/2007	California sea lion	18
2007	3/10/2007	California sea lion	1
2007	3/12/2007	California sea lion	1
2007	3/14/2007	Harbor seal	1
2007	3/16/2007	California sea lion	1
2007	4/11/2007	Harbor seal	1
2007	5/16/2007	California sea lion	1

2007	8/8/2007	Harbor seal	1
2008	3/30/2008	Harbor porpoise	1
2008	3/30/2008	California sea lion	1
2008	1/7/2008	California sea lion	5
2009	5/15/2009	California sea lion	1
2009	6/2/2009	California sea lion	2
2009	6/2/2009	California sea lion	1
2009	6/3/2009	California sea lion	2
2009	6/10/2009	California sea lion	1
2009	6/13/2009	California sea lion	3
2009	6/13/2009	California sea lion	1
2009	6/15/2009	California sea lion	1
2009	8/18/2009	California sea lion	3
2010	3/26/2010	California sea lion	1
2010	3/30/2010	California sea lion	2
2010	3/30/2010	Harbor seal	1
2010	4/7/2010	California sea lion	1
2010	4/8/2010	California sea lion	3
2012	2/2/2012	California sea lion	7
2012	2/10/2012	California sea lion	2
2012	10/4/2012	California sea lion	1
2015	7/30/2015	Gray whale	1
2016	4/27/2016	California sea lion	2
2017	4/21/2017	California sea lion	1
2017	4/21/2017	Harbor seal	1
2017	4/22/2017	Harbor seal	1
2017	5/4/2017	California sea lion	1
2017	5/4/2017	Common dolphin	1
2017	6/7/2017	California sea lion	1
2017	6/7/2017	Harbor seal	1
2018	3/8/2018	Common dolphin	1
2018	3/20/2018	Harbor seal	1
2018	4/8/2018	California sea lion	1
2018	5/1/2018	California sea lion	2
2018	5/1/2018	Harbor seal	1
2018	5/2/2018	California sea lion	1
2018	5/2/2018	Northern elephant seal	1
2018	5/2/2018	Harbor seal	1
2018	5/3/2018	Harbor seal	1
2018	5/3/2018	California sea lion	1
2018	12/8/2018	California sea lion	1
2019	5/23/2019	California sea lion	5
2019	6/16/2019	Pacific white-sided dolphin	1
2020	4/14/2020	California sea lion	2

2020	4/14/2020	Pacific white-sided dolphin	1
2020	5/21/2020	California sea lion	1
2021	2/19/2021	California sea lion	2
2021	6/1/2021	California sea lion	2
2021	6/1/2021	Pacific white-sided dolphin	1
2021	6/30/2021	California sea lion	3
2022	5/24/2022	California sea lion	6
Total	**2002 – 2022**	**7 species**	**196**

Table 4. Self-reported marine mammal take in the CA set gillnet fishery by date, species, and number of animals involved in each interaction.