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September 29, 2023

Mr. Eric Sklar, President
California Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090
Agenda Item 18: General Public Comment: Marine Mammal Bycatch Underreporting in the Set Gillnet Fishery

Dear President Sklar and Members of the Commission:

We are writing to express our strong support for the Commission's efforts to increase observer coverage in the set gillnet fishery targeting California halibut and white seabass. The availability of accurate data on marine mammal interactions and protected species is vital for informed decision-making and responsible fisheries management.

The analysis provided in our attachment compares self-reported data to observer-based estimates of marine mammal take in the set gillnet fishery, finding that only 6% of marine mammal interactions were reported. The substantial gaps in bycatch self-reporting underscore the critical importance of reliable data in evaluating the impacts on populations and ensuring compliance with state and federal wildlife protection laws. The wide disparities between self-reported and estimated marine mammal takes in the fishery highlight a pressing issue of underreporting, which can have significant consequences for both marine life conservation and sustainable management practices if relied upon without independent observer data.

In light of these findings, we commend the Commission for its proactive steps towards improving data on bycatch and the work the California Department of Fish and Wildlife continues to do to explore options for increased observer coverage, electronic monitoring, and logbook requirements in the set gillnet fishery. Increasing observer coverage is a pivotal move towards transparency and accuracy in data collection. We urge the California Fish and Game Commission to continue its efforts to expand observer coverage in the California set gillnet fishery to ensure that decision-makers have access to credible, objective, and verifiable information. By doing so, the Commission will not only enhance its ability to safeguard marine life but also promote responsible and sustainable fishing practices that are crucial for the long-term health of our ocean ecosystems. We look forward to the Commission's Marine Resource Committee meeting in November where the Committee will be considering recommendations for management and monitoring improvements in the fishery.

Thank you for your dedication to preserving California's marine resources, and we look forward to our continued work with you on these critical initiatives.

Sincerely,

Geoffrey Shester, Ph.D.
California Campaign Director & Senior Scientist

Caitlynn Birch
Marine Scientist

Attachment: Underreporting of Marine Mammal Takes in the California Set Gillnet Fishery Underscores Need for Observers

OCEANA Protecting the World's Oceans

Underreporting of Marine Mammal Takes in the California Set Gillnet Fishery Underscores the Need for Observers

September 2023

C. Birch, Pacific Marine Scientist
G. Shester, Ph.D., Senior Scientist

Collecting accurate data on the catch of sensitive or protected species is critical for fishery managers to evaluate impacts to populations and ensure fisheries comply with state and federal wildlife protection laws. Fishery managers are often limited by available data such as landings data that does not include discards; and must rely upon observer data and self-reported data from fishermen to quantify impacts and adjust management accordingly. Independent and accurate fisheries observer data is considered the gold standard for quantifying catch, bycatch, and protected species interactions because it comes from objective sources that are trained to document and identify species. However, limited resources often limit or preclude desired levels of observer coverage. In the California set gillnet fishery 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 trips in 8 of those years, with no observer coverage since 2017.

In the absence of independent observer data, managers rely upon logbook and self- reporting data to fill key information gaps. Federal regulations under the Marine Mammal Protection Act (MMPA) require each commercial permittee to report all marine mammal interactions to the National Marine Fisheries Service (NMFS) within a 48-hour period, and fishermen must maintain an accurate and complete record of catch in logbooks. However, the value of this information is reliant on accurate reporting. In this analysis we find a significant difference between the number of self-reported and estimated marine mammal takes based on observer data in the California set gillnet fishery, suggesting underreporting of marine mammals is taking place in the fishery. A lack of verifiable independent observer data poses a major challenge to the conservation and management of this fishery and the wildlife it catches.

After conducting a bycatch inquiry under the California Marine Life Management Act in 2023 for the California halibut set gillnet fishery, the California Fish and Game Commission recommended improving data on bycatch and tasked the California Department of Fish and Wildlife with scoping potential options for increased observer coverage, electronic monitoring, and logbook requirements to fill information gaps.

To quantify self-reported marine mammal interactions and total estimated marine mammal take in the fishery, Oceana compared self-reported marine mammal takes in the California set gillnet fishery obtained through a Freedom of Information Act (FOIA) request to federal estimates of marine mammal take based on observer data. Each self-report includes the species, date, and location.

Species	Number Self-Reported
Sea lion	161
Harbor seal	27
Pacific white-sided dolphin	3
Common dolphin	2
Harbor porpoise	1
Northern elephant seal	1
Gray whale	1
Total	**196**

Table 1. Total self-reported marine mammal interactions by the set gillnet fleet 2002 – 2022. Source: NMFS FOIA Response 2023.

From NMFS-released FOIA records, self-reports in the California set gillnet fishery from 2002 – 2022 accounted for a total of 196 protected species interactions comprising 7 different marine mammal species. Eighty-two percent of self-reports involve the California 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.

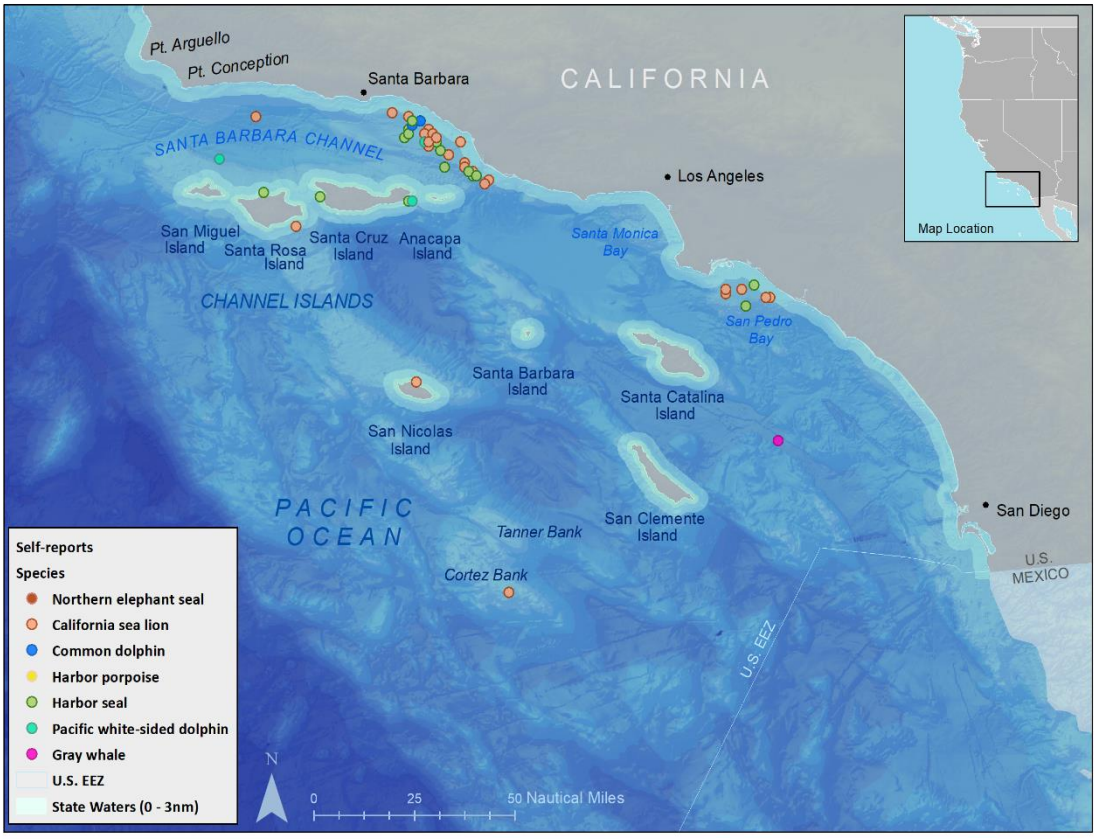

Figure 1. Locations of all (n = 170) non-erroneous marine mammal interactions self-reported to NMFS in the set gillnet fishery from 2002 – 2022. Twenty-six reports contained erroneous coordinates not within the fishing area that were removed. Each data point may represent more than 1 interaction.

The majority (45%) of reported marine mammal interactions occurred in the Santa Barbara Channel (Figure 1). This is an area of high relative fishing effort,[1] with a shallow shelf feature allowing for set net fishing just outside the state waters 3 nautical mile (nm) boundary, and close to Santa Barbara and Ventura ports. Nine percent of reported interactions occurred in San Pedro Bay, another shallow shelf area close to shore and coastal ports. Reported interactions around the main Channel Islands represented 10% of total reports, while 23% occurred around Cortez Bank, San Nicolas Island and East of San Clemente Island. While protected species takes at Cortez Bank occurred at a singular location, there were two reported interactions that involved 24 and 18 California sea lions at this location. The single self-reported gray whale interaction occurred East of San Clemente Island offshore from Huntington Beach. Thirteen percent of location coordinates associated with reports were erroneous [e.g., on land or outside the area where set gillnets are authorized] and are not displayed on the map in Figure 1. All reports and locations were self-reported by set gillnet fishermen.

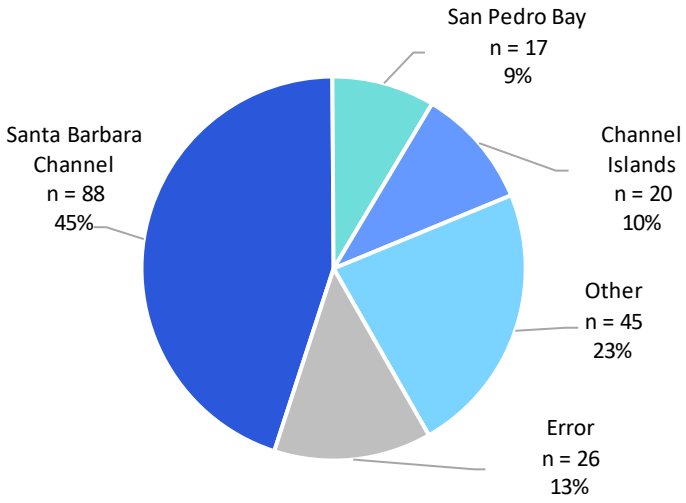

Figure 2. Proportion of self-reported marine mammal interactions by location in the Southern California Bight, 2002 – 2022. Source: NMFS FOIA Response 2023.

NMFS estimates annual marine mammal takes in Marine Mammal Stock Assessment Reports (SARs) by extrapolating the number of marine mammal interactions observed during the proportion of fishing effort observed to the total annual fleetwide fishing effort. These total estimates are based upon unbiased subsamples of fishing data collected by trained observers and do not typically include self-reported data. These estimates are intended to be the best estimate of total marine mammal take, although they are likely underestimates and do not include extrapolated estimates of post-release or entanglement mortality associated with fishing gear. The Pacific Marine Mammal Center and other marine mammal rescue centers frequently rescue and euthanize mammals entangled in fishing gear, many of which are caused by monofilament netting consistent with set gillnets. These mortalities represent additional mortalities not included in the NMFS estimates based purely on observer data. However, if fishermen are self-reporting all interactions with protected species as required by federal law, the self-reports should be consistent in number to the total estimated number of marine mammal takes based on federal observer data.

California set gillnets are fished in Southern California federal waters (3 – 200 nm) with exceptions (1-3 nm in state waters around the Channel Islands). Two gillnet mesh sizes are used including 6.5-inch mesh intended to target white seabass and 8.5-inch mesh to target California halibut. Many other species are retained and landed, and there are high relative rates of discards including bycatch of protected species. The NMFS observer program summary data combines both mesh sizes and presents the data as a single California set gillnet fishery targeting California halibut and white seabass.

Oceana compared self-reported annual marine mammal takes obtained through our FOIA request to total NMFS estimated annual marine mammal takes for the set gillnet fishery from 2005 to 2022 as published in the

[1] California Department of Fish and Wildlife, pers. comms. (2022). Fishing effort by California halibut landed (mt) for the California halibut set gillnet fishery.

federal Marine Mammal SARs.[2,3,4,5,6] The NMFS estimates based on observer data and specific to the set gillnet fishery are only available for California sea lion and harbor seal stocks beginning in 2005, and not for the other marine mammal species reported in the self-reports. SARs estimated 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 California sea lion are available from 2005 – 2016 (Table 2).

From 2005 – 2012, looking at only California sea lion and harbor seal reports for which we have comparable take estimates from the stock assessment reports, a total of 100 sea lion and seal takes were self-reported by fishery participants, averaging 12 mammals per year. 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. This indicates that 6% of the estimated annual marine mammal interactions were self-reported by fishery participants during this period (Figure 3 & 4).

While the NMFS estimates for annual California sea lion and harbor seal take are not available in more recent years due in part to the absence of observer data, the number of self-reports per year remain extremely low, and indicate underreporting is likely still occurring. From 2002 to 2012 the number of self-reports averaged 13.6, whereas for years 2013 to 2022, an average of 4.6 mammals were reported each year. Underreporting of bycatch and protected species takes is a global issue occurring in many fisheries despite regulations requiring fishermen to report all marine mammal interactions.[7,8] For instance, Oceana conducted a similar analysis with comparable results in the California swordfish drift gillnet fishery.[9] In theory, bycatch reporting in mandatory fishing logbooks could be a cost-effective, scientifically valuable way to monitor protected species bycatch. However, results from this analysis and others show significant under-reporting and use of such data typically results in negatively biased estimates of bycatch rates, supporting that logbooks in their current form are not reliable for use in management.[10,11,12] This chronic underreporting of protected species underscores the importance of independent federal or state fisheries observers and electronic monitoring to ensure unbiased data is available for fishery managers, and that human impacts on marine mammals and other species are accurately quantified.

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[2] NMFS. California Sea Lion (U.S stock) Stock Assessment Report 2018. Table 1, pg. 3. https://media.fisheries.noaa.gov/dam-migration/po2014slca_508.pdf

[3] NMFS. California Sea Lion (U.S stock) Stock Assessment Report 2014. Table 1, pg. 3. https://media.fisheries.noaa.gov/dam-migration/po2014slca_508.pdf

[4] NMFS. California Sea Lion (U.S stock) Stock Assessment Report 2008. Table 1, pg. 4. https://media.fisheries.noaa.gov/dam-migration/po2011slca_508.pdf

[5] NMFS. Harbor Seal (California stock) Stock Assessment Report 2014. Table 1, pg. 10. https://media.fisheries.noaa.gov/dam-migration/po2014sehr-ca_508.pdf

[6] NMFS. Harbor Seal (California stock) Stock Assessment Report 2011. Table 1, pg. 12 . https://media.fisheries.noaa.gov/dam-migration/po2011sehr-ca_508.pdf

[7] Basran, Charla Jean, and Guðjón Már Sigurðsson. (2021) "Using Case Studies to Investigate Cetacean Bycatch/Interaction Under-Reporting in Countries With Reporting Legislation." *Frontiers in Marine Science* 8.. https://doi.org/10.3389/fmars.2021.779066.

[8] Mucientes, Gonzalo, Marisa Vedor, David W. Sims, and Nuno Queiroz. (2022) "Unreported Discards of Internationally Protected Pelagic Sharks in a Global Fishing Hotspot Are Potentially Large." *Biological Conservation* 269: 109534. https://doi.org/10.1016/j.biocon.2022.109534.

[9] Oceana,(2021). Underreporting of Marine Mammal and Sea Turtle Bycatch in the California Swordfish Drift Gillnet Fishery. https://usa.oceana.org/wp-content/uploads/sites/4/593/marine_mammal_bycatch_is_grossly_underreported.pdf

[10] Wade, Paul R., Kristy J. Long, Tessa B. Francis, André E. Punt, Philip S. Hammond, Dennis Heinemann, Jeffrey E. Moore, et al. (2021) "Best Practices for Assessing and Managing Bycatch of Marine Mammals." *Frontiers in Marine Science* 8.. https://www.frontiersin.org/articles/10.3389/fmars.2021.757330.

[11] Walsh, W. A., Kleiber, P., and McCracken, M. (2002). Comparison of logbook reports of incidental blue shark catch rates by Hawaii-based longline vessels to fishery observer data by application of a generalized additive model. Fish. Res. 58, 79–94. doi: 10.1016/S0165-7836(01)00361-7

[12] Emery, T. J., Noriega, R., Williams, A. J., and Larcombe, J. (2019). Changes in logbook reporting by commercial fishers following the implementation of electronic monitoring in Australian Commonwealth fisheries. Mar. Policy 104, 135–145. doi: 10.1016/j.marpol.2019.01.018

California fishery managers recently recommended increased observer coverage for the set gillnet fishery, given the fishery has not been observed since 2017. The California Department of Fish and Wildlife is currently in the process of scoping observer coverage, electronic monitoring, and new logbook requirements to fill such data gaps. For accurate estimates of species commonly taken in set nets, like California sea lions, 20 to 30% observer coverage may be adequate provided this coverage occurs every year and is free of sampling bias.[13] However, detecting and accurately estimating bycatch of rare interactions (such as sea turtles) likely requires nearly 100% observer coverage.[14] Accuracy of electronic monitoring technologies to correctly estimate bycatch has not been examined for California set gillnets, and this should be an area of future inquiry to determine its potential. In summary, this analysis suggests that self-reporting of protected species interactions and other bycatch species greatly underestimates actual bycatch, is not reliable, and highlights the need for increased observer coverage.

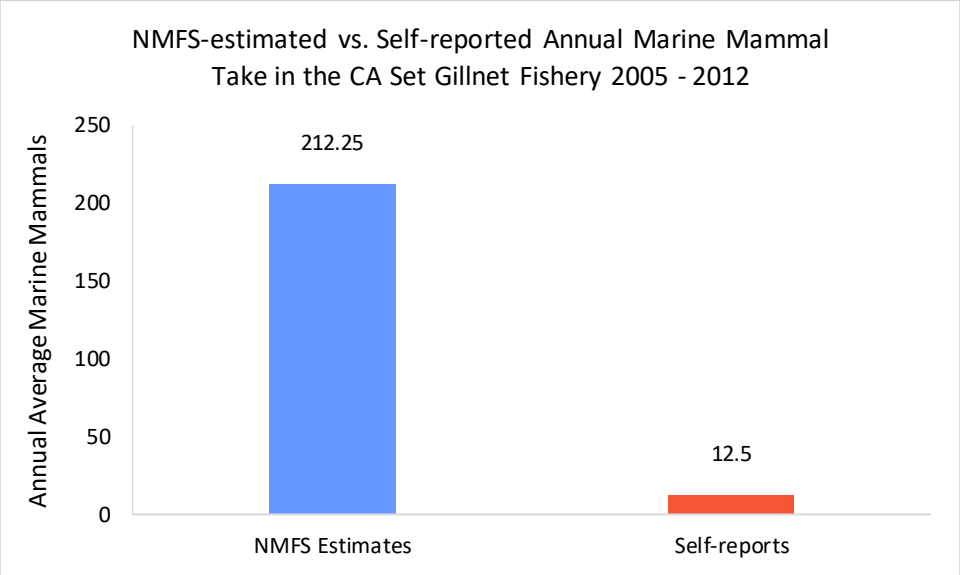

Figure 3. California set gillnet marine mammal take, 2005-2012, comparing the average annual self-reported bycatch to NMFS's estimated average annual take of California sea lions and harbor seals. NMFS estimates an average of 212 animals per year experience serious injury/mortality in this fishery. Over this same period, self-reported interactions averaged 12.5 per year. Source: Marine Mammal Stock Assessment Reports, (SARs) California Sea Lion and Harbor Seal Stock; NMFS FOIA Response 2023.

[13] National Marine Fisheries Service,(2011). U.S. National Bycatch Report [W. A. Karp, L. L. Desfosse, S. G. Brooke, Editors]. U.S. Dep. Commer., NOAA Tech. Memo. pg. 359. Available: https://repository.library.noaa.gov/view/noaa/31335

[14] Curtis, K. & Carretta, James. (2020). ObsCovgTools: Assessing observer coverage needed to document and estimate rare event bycatch. Fisheries Research. 225. 105493. 10.1016/j.fishres.2020.105493.

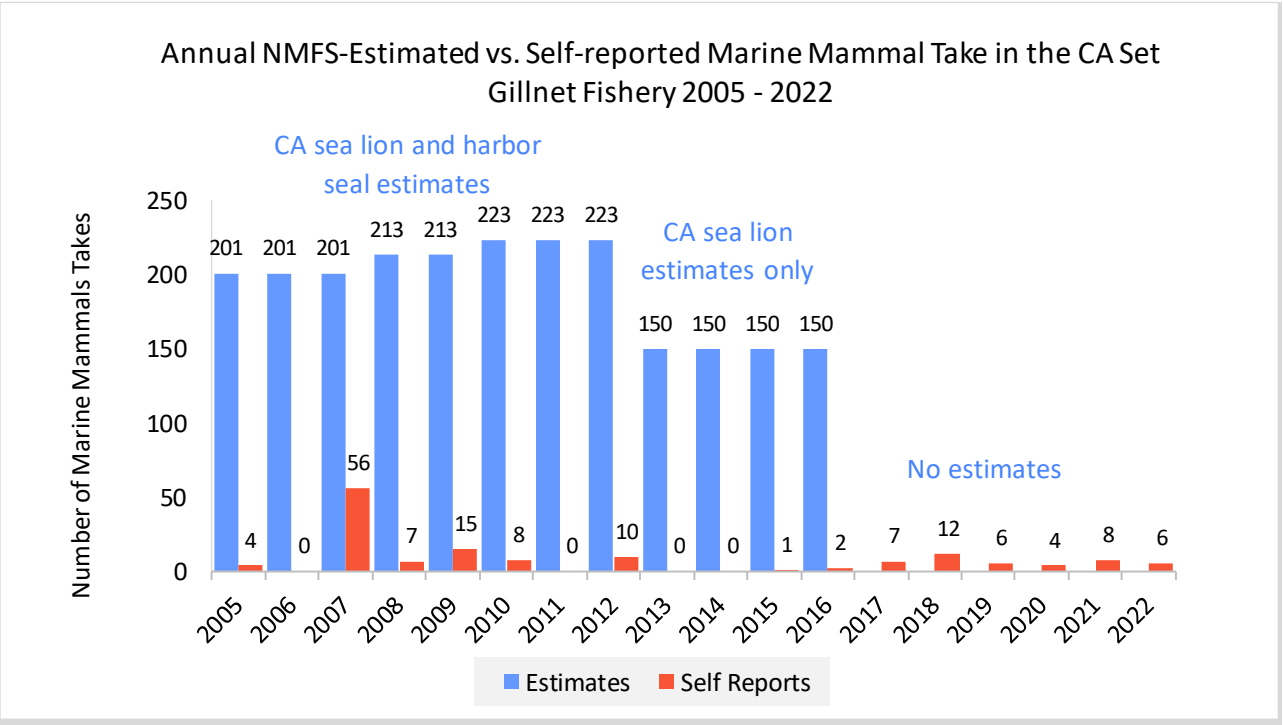

Figure 4. California set gillnet annual marine mammal take, 2005 – 2022, comparing self-reported annual marine mammal take to NMFS's annual estimated take for the California sea lion and harbor seal in the fishery. NMFS-estimated take for the harbor seal stock is available 2004 – 2012 for the set gillnet fishery. NMFS's California sea lion estimated take is available 2005 to 2016. From years 2017 to 2022 there are no NMFS' estimates of marine mammal take based on observer data. While recent NMFS 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 of operation for the current observer program in the fishery (with the exception of 12 sets observed in 2006), and is the year that had the highest observer coverage (17.5%) during which a clear increase in self-reports is evident. Source: Marine Mammal Stock Assessment Reports, (SARs) California Sea Lion and Harbor Seal Stock; NMFS FOIA Response 2023.

	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 take, 2005 – 2022, comparing self-reported annual marine mammal take to annual estimated take for the California sea lion and harbor seal. Estimated take for the harbor seal stock is available 2004 – 2012 for the set gillnet fishery. California sea lion estimated take is available 2005 to 2016. From 2017 to 2022 there are no estimates of marine mammal take based on observer data. Source: Marine Mammal Stock Assessment Reports, (SARs) California Sea Lion and Harbor Seal Stock; NMFS FOIA Response 2023.

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 California set gillnet fishery by species, 2002- 2022. Source: NMFS FOIA Response 2023.

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 California set gillnet fishery by date, species, and number of animals involved in each interaction. Source: NMFS FOIA Response 2023.