HIGHLY MIGRATORY SPECIES MANAGEMENT TEAM REPORT ON DRIFT GILLNET BYCATCH PERFORMANCE REPORT

The Highly Migratory Species Management Team (HMSMT) reviewed the most recent estimates for bycatch in the large-mesh drift gillnet (DGN) fishery (Caretta, 2022) in order to create the performance metrics table for calendar years 2020 and 2021 for marine mammal and sea turtle bycatch estimates. Given the direction from the Council in September of 2022, the HMSMT did not create performance metrics for finfish species, but reviewed the National Marine Fisheries Service (NMFS) observer summaries for the 2021-2022 and 2022-2023 seasons.

Table 1 shows the updated performance metrics for marine mammal and sea turtle bycatch following the same methodology as in the June of 2019 HMSMT report (Agenda Item J.4.a, Supplemental HMSMT Report 1). As seen in the table, the only metric exceeded in either year was the humpback whale in 2021. The 2021 estimate reflects both humpback whales observed taken in the fishery that year, with the addition of an estimate of expected humpback whale bycatch in the unobserved portion of fishing effort. The HMSMT notes that of the two humpback whales observed caught in 2021, both were released alive, one with gear attached.

It is not possible to determine whether a single exceedance of a performance metric represents an increasing trend in bycatch in the DGN fishery or an anomaly. Humpback whale interactions have been rare events in the DGN fishery back to the beginning of the observer program in 1990 (Martin et al.). The last previously observed humpback whale take occurred during the 2004-2005 fishing season. Based on past experience, the occurrence of two humpback whale interactions in 2021 most likely does not indicate an increased risk of interactions in subsequent seasons. Should the humpback performance metric continue to be exceeded in subsequent years, the HMSMT advises that the Council discuss at that time whether additional management measures are practicable for the DGN fishery.

The summaries of observer data for the 2021-2022 and 2022-2023 seasons show that there was no observed take of any of the finfish species for which the Council previously requested performance metrics[1] and there is no unusual catch of any finfish species to raise concern. The HMSMT calculated the overall finfish retention rate for these two seasons and determined the 2021-2022 season had a retention rate of 60 percent, and the 2022-2023 season, 42 percent. These are substantially lower than the Council's 70 percent retention metric; however, these two seasons had low swordfish catch (as did all swordfish gears in 2021, and all non-harpoon gears in 2022) and high *Mola mola* catch (403 and 393 individuals, respectively), with all but one fish released alive. Post-release mortality is believed to be extremely low for this species due to several factors such as low metabolic demand, and typically short handling time to release mola from nets. Excluding *Mola mola* catch from the retention metric calculation (but leaving slender mola catch), results in retention rates of 94 percent for 2021-2022 and 88 percent for 2022-2023.

[1] Finfish species for which the Council requested performance metrics include billfish other than swordfish, megamouth, basking, white, and scalloped hammerhead sharks, and manta ray.

The HMSMT discussed the multiyear trend analysis that was produced for the first time in June 2021 for calendar years 2018 and 2019. This methodology was developed to address the Council's request to monitor trends in bycatch and intended to capture long-term trends in an ongoing fishery, in case future regulation is warranted. Given that the DGN fishery has been sunsetted by Congressional legislation with full closure scheduled for year-end 2027, it is unlikely that a break in trend could be detected in the four-year period the fishery will operate. Thus, the HMSMT recommends the Council forgo further work on this part of the assignment.

Several requests for the total number of sets in the DGN fishery have been received. NMFS has shared that the total number of sets for the 2022 calendar year was 148 sets for 7 vessels, with 28 observed sets for an observer coverage rate of 18.9 percent[2]. The total number of sets is included in the annual marine mammal and turtle bycatch estimation reports and used to determine total bycatch estimates using the regression tree methodology. That methodology has been endorsed by the Scientific and Statistical Committee and accepted by the Council and NMFS as best scientific information available for producing total bycatch estimates. The HMSMT notes that the Council previously determined that expansion estimators of bycatch are not an appropriate methodology for estimating rare event bycatch.

References:

Carretta, James V. 2022. Estimates of marine mammal, sea turtle, and seabird bycatch in the California large-mesh drift gillnet fishery: 1990-2021. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-SWFSC-671.
https://doi.org/10.25923/kh19-sk22

Martin, S.L., Stohs, S.M. and Moore, J.E., 2015. Bayesian inference and assessment for rare-event bycatch in marine fisheries: a drift gillnet fishery case study. *Ecological Applications*, *25*(2), pp.416-429.

[2] Total number of sets for the 2022-23 season was 112 for 6 vessels, with 20 observed sets for an observer coverage rate of 17.9 percent.

Table 1: Regression tree performance metric values and annual bycatch estimates for calendar years 2020 and 2021.

	Regression Tree Performance Metric	Calendar Year 2020 Regression Tree Total Annual Bycatch Estimate	Calendar Year 2021 Regression Tree Total Annual Bycatch Estimate
Minke whale	1.06	0	0
Short-beaked common dolphin	63.3	24	5.65
Long-beaked common dolphin	6.26	2.65	0.188
Risso's dolphin	3.79	0.58	1.23
Northern right whale dolphin	9.65	0.378	0.352
Gray whale	1.98	0.503	0
Pacific white-sided dolphin	7.9	0.427	0.171
Sperm whale	2.25	0	0
Humpback whale	1.22	0	2.05
Fin whale	0.339	0	0
Short-finned pilot whale	0.811	0	0
Bottlenose dolphin	0.751	0	0
Leatherback sea turtle	1.96	0	0
Loggerhead sea turtle	2.45	0.279	0
Olive ridley sea turtle	0.271	0	0
Green sea turtle	0.26	0	0

Based on highest 2004 - 2013 calendar year estimate in Carretta October 2022 (1990-2021)

PFMC
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