

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

The Highly Migratory Species Management Team (HMSMT) met on May 13, 2021 to review the Council's drift gillnet performance metrics assignment and to discuss work underway to address it. Southwest Fisheries Science Center Marine Mammal and Turtle Division scientist James Carretta provided valuable contributions to the discussion.

The HMSMT presents updated performance metrics for calendar years 2018 and 2019 to align the timing of finfish performance metrics with the production cycle and periods used for producing marine mammal and sea turtle bycatch estimates. As directed by the Council, the HMSMT followed the same approach to reporting on performance metrics as in the June 2019 HMSMT report ([Agenda Item J.4.a, Supplemental HMSMT Report 1](#)). Tables 1 and 2 below show the updated performance metrics for finfish species and marine mammal and sea turtle species respectively. As seen in these tables, none of the bycatch performance metrics were exceeded in 2018 or 2019 for any of the species or species groupings requested in [September 2018 Council Motion 11 \(p. 26\)](#).

Additionally the HMSMT calculated the overall finfish retention rates for the 2018 and 2019 seasons, using the Council's prescribed formula (total number of fish that are landed, divided by all landed catch and fish thrown overboard dead, [June 2018 Agenda Item G.3.a HMSMT Report 1](#)). The Council's finfish retention rate performance metric is greater than 70 percent, which is lower than the retention rates calculated from the observer data for the 2018/2019 and 2019/2020 seasons of 89 percent and 93 percent, respectively.

Mr. Carretta briefed the HMSMT on a new method of selecting explanatory variables, which considers potential environmental predictors in groups instead of individually. Finfish bycatch for performance metric species are generally rare events which limit the ability to connect observed bycatch to environmental factors that explain it. The anticipated effect of this change on finfish bycatch estimates is minimal, as it is only applicable to species with greater than five historically observed bycatch events since the beginning of the observer program in 1990. Three of the finfish species included for performance metrics have no observed dead discards bycatch events that could be used to identify explanatory variables for bycatch count towards the performance metrics, while only two have an event count exceeding five over the entire history of the fishery, meeting the threshold which makes the variable selection procedure applicable. The new variable selection methodology is currently reflected in Table 2 bycatch estimates for marine mammals and turtles, while Table 1 utilizes the same approach used to produce finfish bycatch estimates the HMSMT reported in June 2019.

The HMSMT plans additional work at their June 2021 meeting to address a multiyear methodology for detecting high bycatch rates and the alternative variable selection approach for regression tree estimation of bycatch.

**Table 1. DGN performance metrics using the regression tree method, and DGN fishery performance in 2018 and 2019 calendar years for finfish species and species groups for which the Council established performance metrics.**

Species	Calendar Year 2018		Calendar Year 2019	
	Regression Tree Performance Metric*	Regression Tree Total Annual Bycatch Estimate	Regression Tree Performance Metric*	Regression Tree Total Annual Bycatch Estimate
Billfish (non-swordfish)	72.6	14.5	72.6	13.3
Prohibited sharks (megamouth, basking, white)	2.0	0.0	2.0	0.3
Scalloped hammerhead sharks	NA	0.0	NA	0.0
Manta ray	1.3	0.0	1.3	0.0

\*based on highest 2004 - 2013 calendar year estimate produced for June 2019 HMSMT Report

**Table 2. DGN performance metrics using the regression tree method, and DGN fishery performance in 2018 and 2019 calendar years for marine mammal and turtle species for which the Council established performance metrics.**

Species	Calendar Year 2018		Calendar Year 2019	
	Regression Tree Performance Metric*	Regression Tree Total Annual Bycatch Estimate	Regression Tree Performance Metric**	Regression Tree Total Annual Bycatch Estimate
Minke whale	2.3	0.2	2.8	0.1
Short-beaked common dolphin	57.7	18	62.1	35
Long-beaked common dolphin	5.6	1.5	5.4	0.4
Risso's dolphin	2.9	0.9	3.4	0.4
Northern right whale dolphin	8.1	6.4	10.3	0.9
Gray whale	2.1	1.1	4.1	0.3
Pacific white-sided dolphin	9.2	1	5.6	0.7
Sperm Whale	2.1	0.1	2.0	0
Humpback Whale	1.5	0	1.0	0
Fin Whale	0.3	0	0.3	0
Short-finned pilot whale	1.3	0.6	0.7	0.5
Bottlenose dolphin	4.2	0	1.5	0
Leatherback sea turtle	2.8	0.1	1.9	0
Loggerhead sea turtle	4.5	0.8	4.7	0.4
Olive ridley sea turtle	0.2	0	0.2	0
Green sea turtle	0.3	0	0.2	0

\*based on highest 2004 - 2013 calendar year estimate in Carretta et al. 2018

\*\*based on highest 2004 - 2013 calendar year estimate in Carretta et al. 2019