Appendix 3D: Sablefish Bycatch in the Eastern Bering Sea

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In recent years, sablefish bycatch increased in the Eastern Bering Sea (EBS) pelagic and non-pelagic trawl fisheries (Table 3D.1), and since 2020, this data has been tracked in an appendix to the sablefish SAFE (Goethel et al. 2022, appendix D). This appendix includes complete information from the previous year (2022) and available data from the current year (2023). In 2022, sablefish bycatch reached a high in non-pelagic EBS trawl fisheries but dropped to its lowest amount since 2017 in pelagic trawl fisheries (Table 3D.1). While there does not appear to be many small sablefish (i.e., age-1, which are <40 cm) in the lengths collected during 2022 (Figures 3D.1 and 3D.2), there is evidence of the 2022 year class appearing in 2023 (i.e., age-1 sablefish) pelagic trawl fisheries (Figure 3D.1). Almost no small sablefish were present in trawl catch data from 2022 (hauls with mean sablefish weight <0.5 kg), but a high amount of small sablefish bycatch is evident in 2023 (Table 3D.2), particularly in the 0 to 100 m depth range of the pelagic trawl fishery (Figure 3D.3). Age-1 sablefish are typically found in shallow waters during the first 100 days of the year (Figure 3D.4), so it may be possible to detect a signal of a strong year class early in the following year. This signal was evident in 2015, 2017, and 2020, which related to large year classes from 2014, 2016, and 2019 respectively. The spatial extent of sablefish bycatch in trawl fisheries in the EBS had generally been contracting since 2020 (Figures 3D.5 and 3D.6). However, in 2023, the spatial range of sablefish bycatch in non-pelagic trawl fisheries increased dramatically, as sablefish were encountered throughout most of the EBS shelf (Figure 3D.5). Locations of sablefish catch in the pelagic trawl fishery in 2023 continued the trend seen in 2022, with catch occurring in areas of historical maxima, particularly in nearshore areas concentrated near Unimak Pass (Figure 3D.6). We will have a better understanding of 2023 sablefish bycatch trends once we have a complete dataset, as we expect more catch data and additional lengths taken from the pelagic trawl fishery subsequent to this report. However, given the preliminary evidence of a probable strong 2022 year class, we expect elevated levels of sablefish bycatch (i.e., age-2 fish) by weight at all depths in 2024.

References

Goethel, D. R., C. J. Rodgveller, K. B. Echave, S. K. Shotwell, K. A. Siwicke, D. H. Hanselman, P. W. Malecha, M. Cheng, M. Williams, K. Omori, and C. R. Lunsford. 2022. Assessment of the sablefish stock in Alaska. In Stock assessment and fishery evaluation report for the groundfish resources of the GOA and BS/AI. North Pacific Fishery Management Council.

Tables

Table 3D.1. Annual sablefish bycatch (t) in the non-pelagic and pelagic trawl fisheries occurring in the Eastern Bering Sea. Data provided by the NORPAC catch database accessed via the Alaska Fishery Information Network (AKFIN) on Oct. 31, 2023.

Year	Non-pelagic	Pelagic	Total
2010	29	<1	29
2011	44	<1	44
2012	92	<1	92
2013	133	<1	133
2014	34	0	34
2015	17	<1	17
2016	238	20	258
2017	587	107	694
2018	624	424	1,048
2019	1,270	1,260	2,530
2020	1,062	2,570	3,632
2021	1,383	788	2,171
2022	2,089	157	2,249
2023*	1,978	96	2,074

*2023 catch data will not be complete until 2024.

Table 3D.2. Annual number of observed hauls for the Eastern Bering Sea pelagic and non-pelagic trawl fisheries that included sablefish, and the percentage of hauls with average sablefish weight <0.5 kg, which are assumed to be predominantly age-1 fish. Data provided by the NORPAC catch database accessed via the Alaska Fishery Information Network (AKFIN) on Oct. 31. 2023.

	Non-pelagic		Pelagic	
Year	Total hauls	% hauls <0.5 kg	Total hauls	% hauls <0.5 kg
2015	216	68.0%	16	62.5%
2016	455	0.9%	337	0.9%
2017	682	3.4%	831	44.0%
2018	574	0.2%	900	1.2%
2019	1,076	1.1%	1,693	2.0%
2020	920	5.4%	2,037	10.2%
2021	1,158	0.2%	858	2.3%
2022	1,319	0%	282	0%
2023*	975	1.5%	266	68.8%

*Catch data is not complete for 2023 and will be updated in 2024.

Figures

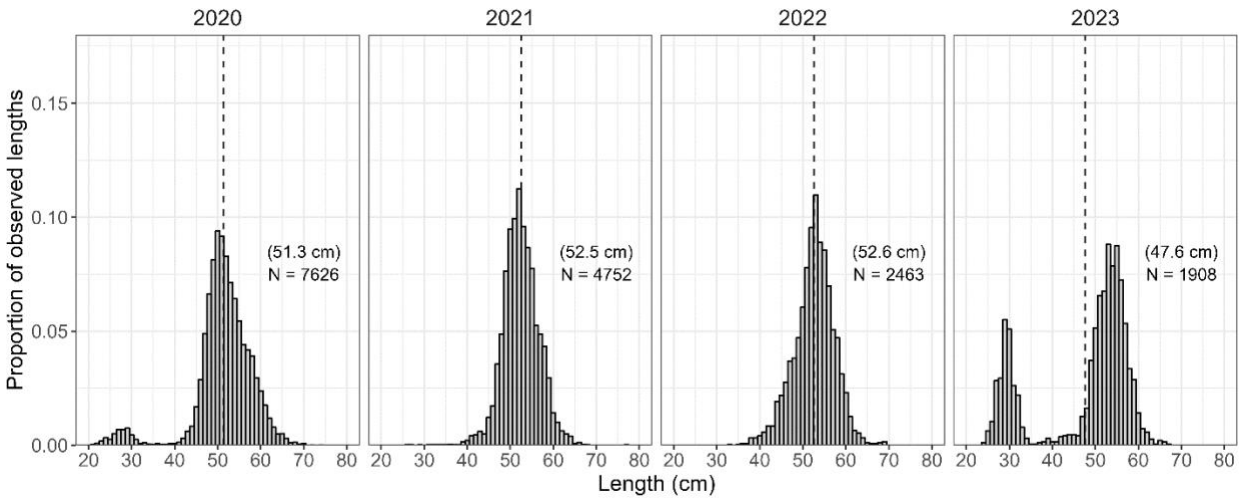

Figure 3D.1. Proportions of sablefish lengths measured by observers in Eastern Bering Sea pelagic trawl fisheries. The vertical dashed line indicates the mean length each year (value shown in parentheses, with sample size, N, below). Note that complete length data taken in 2023 will not be available until next year. Data provided by the NORPAC length database accessed via the Alaska Fishery Information Network (AKFIN) on Oct. 31, 2023.

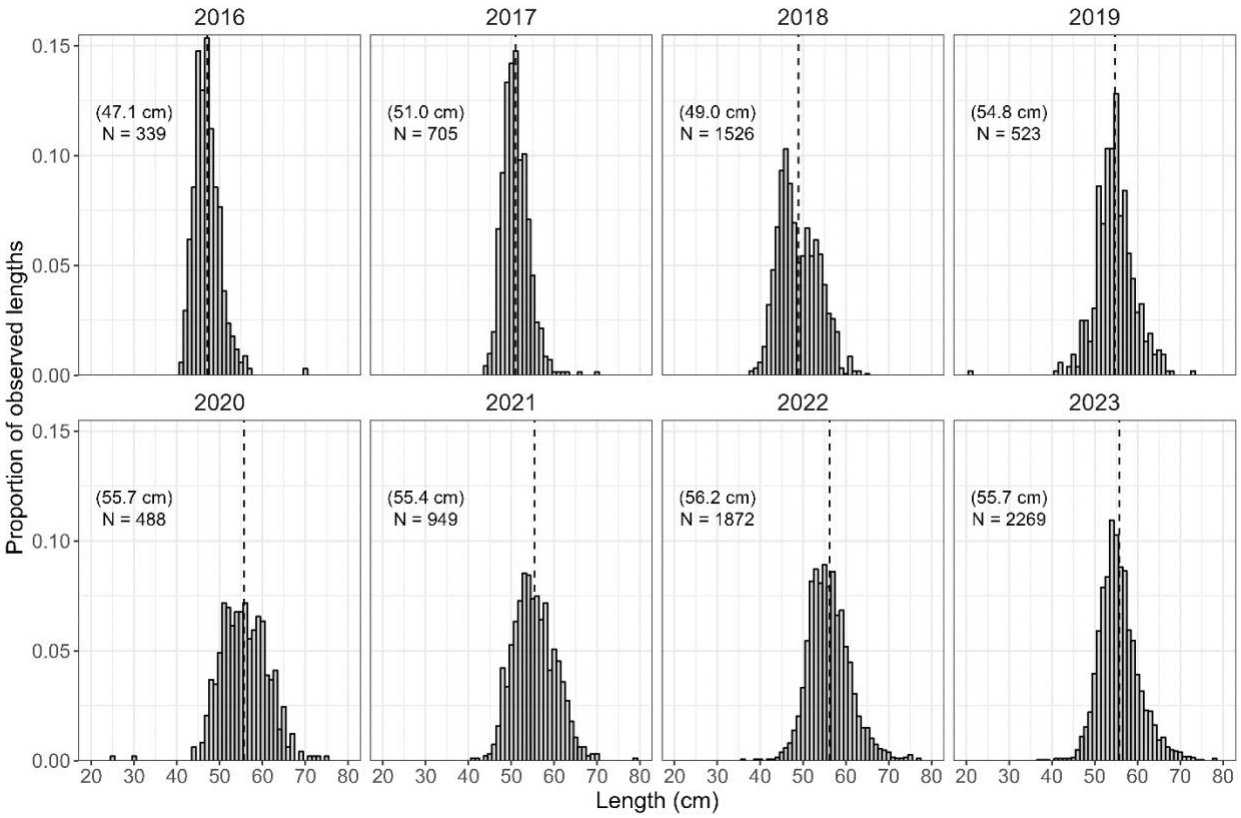

Figure 3D.2. Proportions of sablefish lengths measured by observers in Eastern Bering Sea non-pelagic trawl fisheries. The vertical dashed line indicates the mean length each year (value shown in parentheses, with sample size, N, below). Note that complete length data taken in 2023 will not be available until next year. Data provided by the NORPAC length database accessed via the Alaska Fishery Information Network (AKFIN) on Oct. 31, 2023.

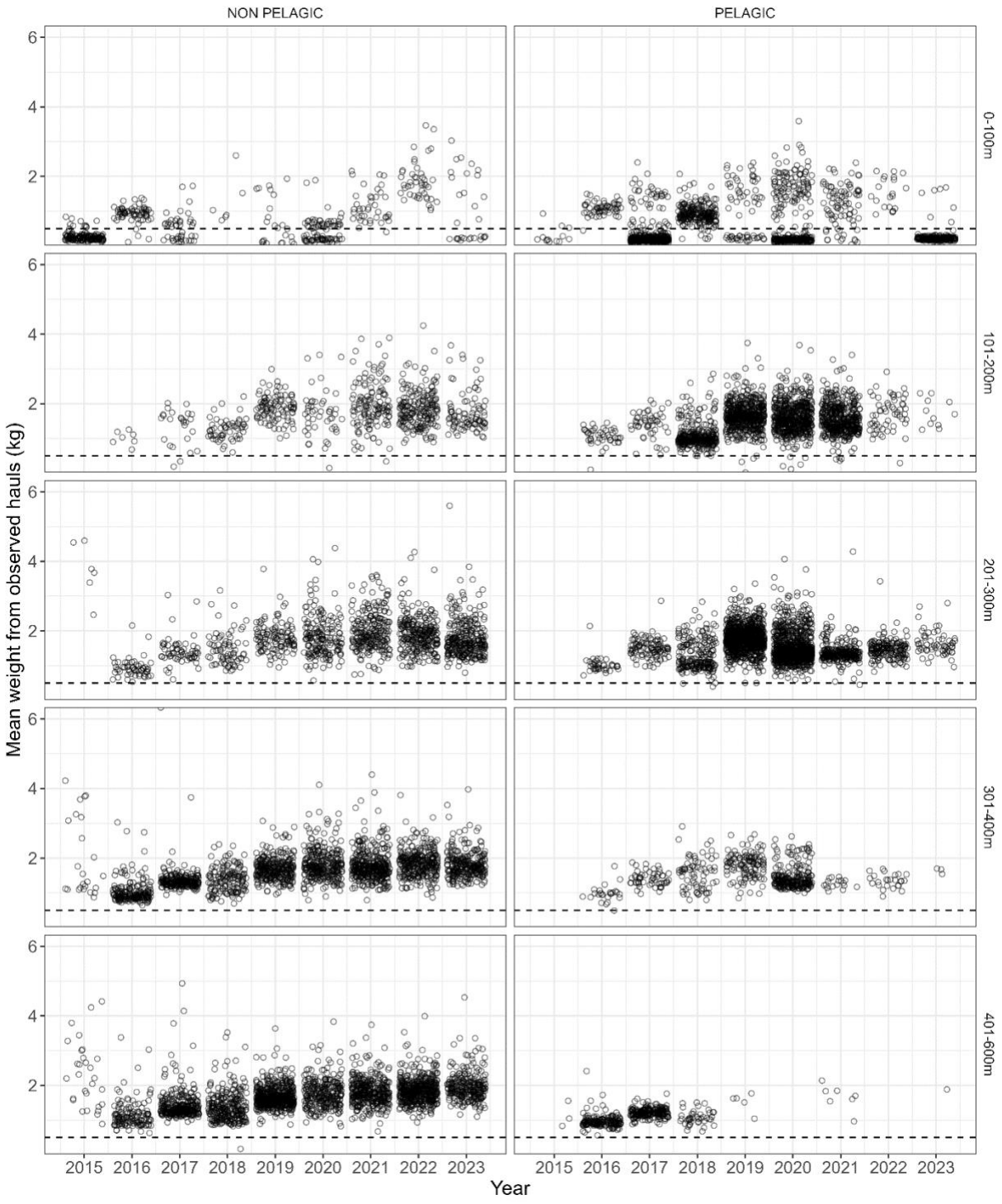

Figure 3D.3. Distributions of the mean weight of sablefish from observed hauls in the Eastern Bering Sea non-pelagic (left) and pelagic (right) trawl fisheries by year. Catches are binned by 100- or 200-m depth bins (increasing in depth from top to bottom panels). The horizontal dashed lines at 0.5 kg delineate likely age-1 sablefish dominating the catch when more of the distribution is below the line. Catch data from 2023 is incomplete. Data provided by the NORPAC catch database accessed via the Alaska Fishery Information Network (AKFIN) on Oct. 31, 2023.

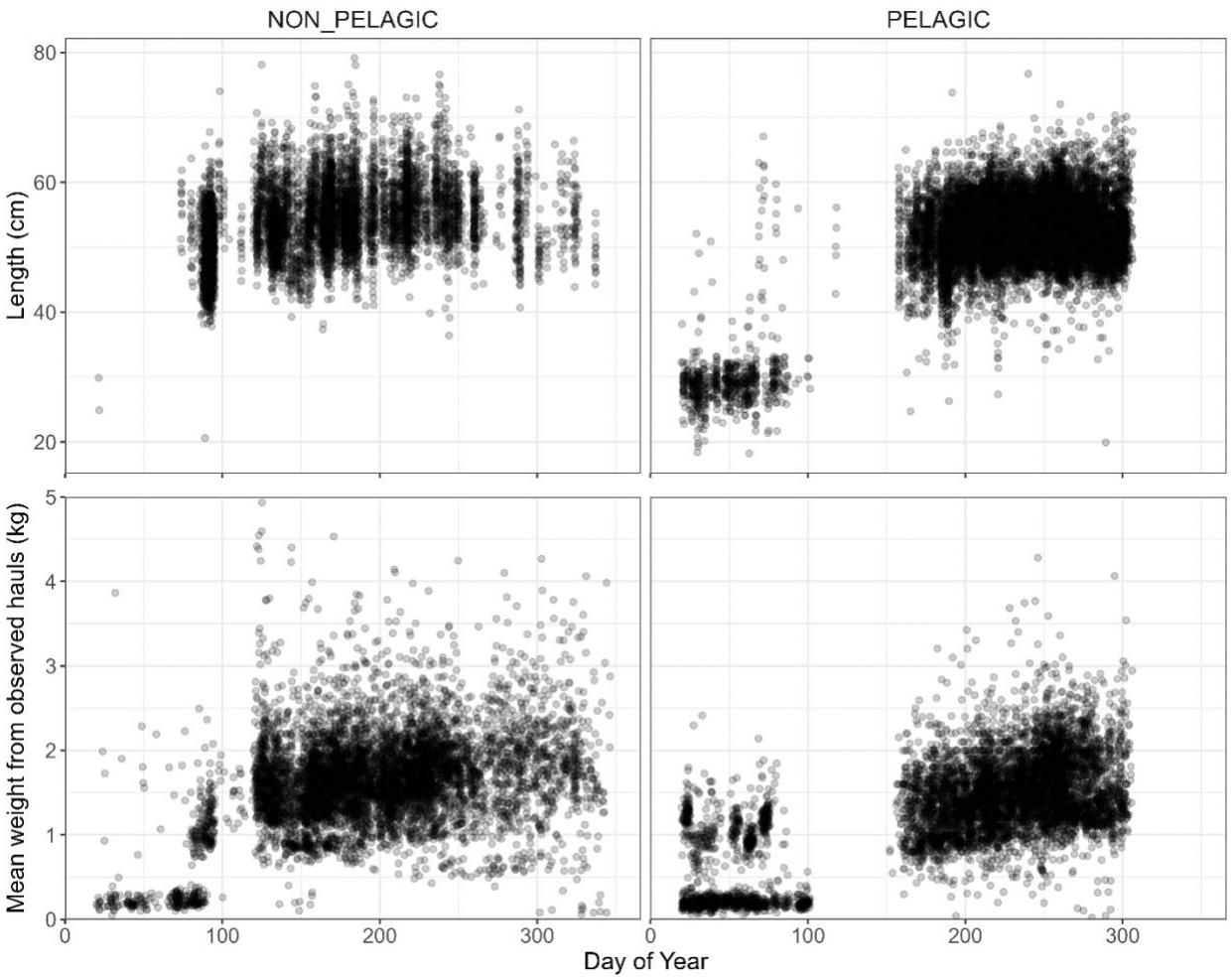

Figure 3D.4. Sablefish bycatch by lengths (top) and average weight (bottom) throughout the year from all available observer data in the Eastern Bering Sea between 2010 and 2023 for non-pelagic (left) and pelagic (right) trawl fisheries. Length and catch data provided by the NORPAC length and catch database accessed via the Alaska Fishery Information Network (AKFIN) on Oct. 31, 2023.

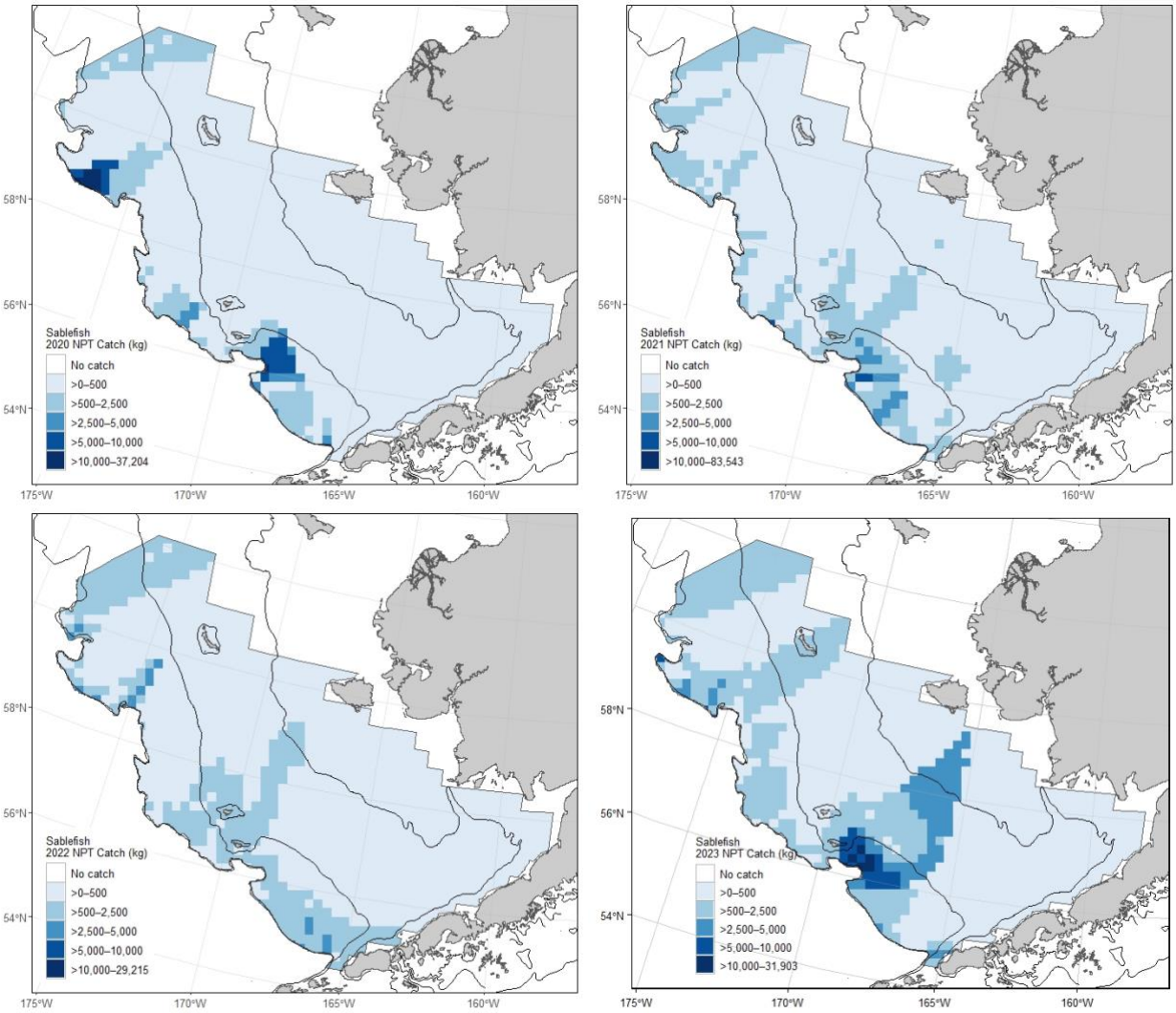

Figure 3D.5. Spatial distribution of observed sablefish bycatch in weight occurring in non-pelagic trawl gear in the eastern Bering Sea from 2020 to 2023. Data provided by the NORPAC catch database accessed via the Alaska Fishery Information Network (AKFIN) on October 31, 2023. Locations shown have been generalized to generic center locations of a 20 x 20 sq. km grid if there were 3 or more unique vessels, as per NOAA/NMFS regulations.

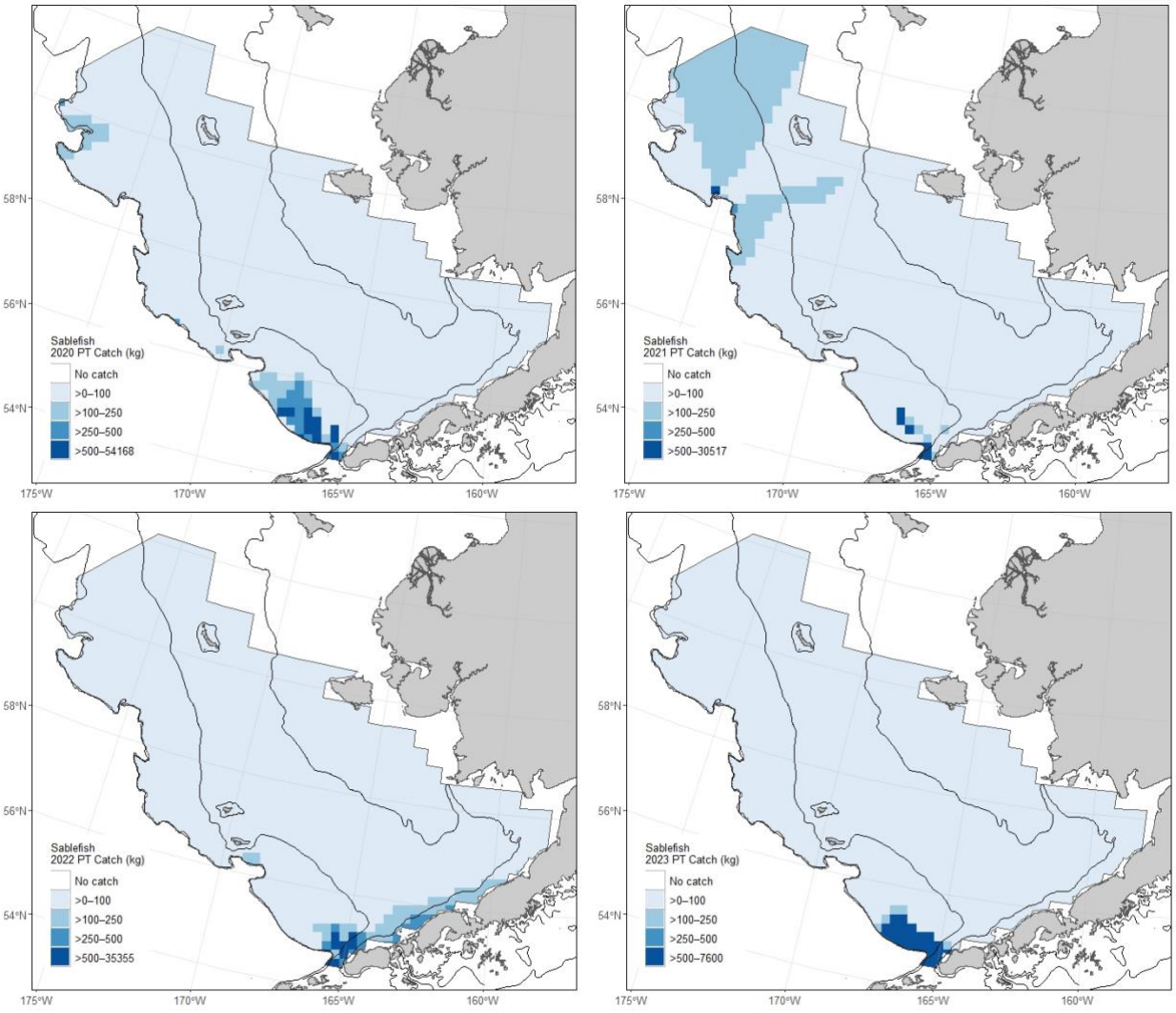

Figure 3D.6. Spatial distribution of observed sablefish bycatch in weight occurring in pelagic trawl gear in the eastern Bering Sea from 2020 to 2023. Data provided by the NORPAC catch database accessed via the Alaska Fishery Information Network (AKFIN) on October 31, 2023. Locations shown have been generalized to generic center locations of a 20 x 20 sq. km grid if there were 3 or more unique vessels, as per NOAA/NMFS regulations.