



NOAA Technical Memorandum NMFS-AFSC-509

The 2025 Longline Survey of the Gulf of Alaska on the *FV Alaskan Leader*: Cruise Report AL-25-01

K. Siwicke and P. Malecha

February 2026

U.S. DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric
Administration
National Marine Fisheries Service
Alaska Fisheries Science Center

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The 2025 Longline Survey of the Gulf of Alaska on the *FV Alaskan Leader*: Cruise Report AL-25-01

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ABSTRACT

In 2025, the Alaska Fisheries Science Center completed the 47th longline survey in the Gulf of Alaska. The 2025 survey sampled demersal waters of the upper continental slope and shelf and provided stock assessment information related to sablefish (*Anoplopoma fimbria*) and several other groundfish species. The primary objectives of the survey were to determine 1) relative abundance of groundfish species through a standardized longline survey, 2) age composition of sablefish through otolith collection, and 3) movement patterns of selected groundfish species through a tag and recapture program. This report provides a summary of raw data and details of operations from the 2025 longline survey as well as trends observed on the survey over the last 20 years. Changes to the survey occurred in 2025 following a cancelled survey in 2024, and these are also documented herein.

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INTRODUCTION

On 2 September 2025, the Alaska Fisheries Science Center (AFSC) completed the 47th longline survey of Alaska sablefish (*Anoplopoma fimbria*) and other groundfish resources of the upper continental slope and shelf (Fig. 1). This survey was designed to continue the time series (1979–1994) of the Gulf of Alaska (GOA) portion of the Japan-U.S. cooperative longline survey that was initiated in 1978 (the first year was experimental) and discontinued after 1994 (Sigler and Zenger 1989, Kimura and Zenger 1997). The National Marine Fisheries Service (NMFS) surveyed the GOA annually from 1988 to 2023, following a preliminary survey conducted in 1987 (Kimura and Zenger 1997). Beginning in 1996, the eastern and central Aleutian Islands (AI) were surveyed in even years and the eastern Bering Sea (BS) was surveyed in odd years (Rutecki et al. 2016). Since the survey's inception, the government contracted a freezer longliner on a zero-dollar cost-recovery basis, whereby the vessel contractor retained survey catches and sold them to cover their operating costs. Due to an anticipated financial loss to the vessel contractor related to declining sablefish prices, the survey was not conducted in 2024. A new contract structure was devised that shifted market risk from the contractor to the government, and included a modified sampling plan. In 2025, only the GOA (Western - WGOA, Central - CGOA, and Eastern - EGOA which is further divided into West Yakutat - WY and East Yakutat/Southeast - EYSE) was sampled (Fig. 1). The 2025 survey did not sample the BS or AI nor any GOA stations not used in index calculations (shallow gullies and experimental) and additionally omitted two minimally informative stations historically used in index calculations. The plan for the 2026 longline survey is to sample all stations used in index calculations in the BS and AI. Beyond that, the GOA would be sampled in odd years and the BS and AI in even years. The purpose of this document is to provide detailed survey operations, summarize raw survey data, and compare historical and current observations. Data generated from the longline survey are used for calculating relative population numbers and weights and is used for assessing stock status of Alaska groundfish. Stock Assessment and Fishery Evaluation reports can be found at: <https://www.npfmc.org/safe-stock-assessment-and-fishery-evaluation-reports>, and historical catch data is available by management area and station for a subset of species at: <https://www.fisheries.noaa.gov/resource/map/alaska-longline-survey-data-map>.

METHODS

Survey Objectives

1. Collect relative abundance and size composition data of the most commercially important groundfish species: sablefish, shortspine thornyhead (*Sebastolobus alascanus*), Greenland turbot (*Reinhardtius hippoglossoides*), Pacific cod (*Gadus macrocephalus*), rougheye rockfish (*Sebastes aleutianus*), blackspotted rockfish (*S. melanostictus*), and shortraker rockfish (*S. borealis*).
2. Collect relative abundance and size composition data of other groundfish species caught during the survey including arrowtooth flounder (*Atheresthes stomias*), Kamchatka flounder (*A. evermanni*), grenadiers (Macrouridae), skates (Rajidae), and spiny dogfish (*Squalus acanthias*).
3. Collect sablefish otoliths to study the age composition of the population.
4. Tag and release sablefish, shortspine thornyhead, and Greenland turbot throughout the cruise to determine movement patterns.
5. Conduct special projects related to groundfish biology, stock assessment, and marine mammal interactions.

Vessel and Gear

Survey operations in 2025 were conducted using the FV *Alaskan Leader*, a chartered U.S. freezer longline vessel. The 46-m (150-ft) long vessel carried standard longline hauling gear and was equipped with radios, radars, GPS receivers, a processing line, plate freezers, and refrigerated holds. Vessel personnel generally consisted of a captain, mate, two engineers, cook, two scientists, two contract biologists, six deckhands, and five processors.

Gear configuration was standardized and has been consistent for all survey years starting in 1988 (Sigler and Zenger 1989). Each longline set consisted of a flag and buoy array at each end followed sequentially by varying lengths by depth of 9.5-mm diameter nylon buoy line, a 92-m (50-fm) section of 9.5-mm (0.375-in) polypropylene floating line, a 16-kg (35-lb) piece of chain (to dampen the effect of wave surge on the buoy line), 92 m (50 fm) of 9.5-mm nylon line, a 27-kg (60-lb) halibut anchor, and 366 m (200 fm) of 9.5-mm (0.375-in) nylon running line. Units of gear (hereafter referred to as skates) were 100-m (55-fm) long and contained 45 size

13/0 kirbed circle hooks. Hooks were attached to 38-cm (15-in) gangions that were secured to beackets tied into the groundline at 2-m (6.5-ft) intervals. Five meters (16 ft) of groundline were left bare at each skate end. Gangions were constructed of medium lay #60 thread nylon, becket material was medium lay #72 thread nylon, and groundline was medium lay 9.5-mm (0.375-in) diameter nylon. The groundline was weighted with 3.2-kg (7-lb) lead balls between each skate. Hooks were hand baited with chopped squid (*Illex* sp.) at a rate of about 5.7 kg (12.5 lb) per 100 hooks. Squid eyes and tentacles were not used for bait. Additional details on AFSC longline survey protocols can be found at: <https://www.fisheries.noaa.gov/resource/document/survey-protocol-alaska-sablefish-longline-survey>.

Operations

The 2025 charter was scheduled for June 1 through July 22, but delays in contracting led to the survey starting on 15 July in Dutch Harbor, Alaska, and ending on 2 September in Dutch Harbor. The charter period was divided into three legs (Table 1). The regions sampled during each leg were as follows: Leg 1, from the western end of Umnak Island and extending eastward to Yakutat; Leg2, from Yakutat to near the U.S.-Canada boundary and back to Yakutat; and Leg 3, from Yakutat to Dutch Harbor (Fig. 1).

The longline survey has gone through changes throughout its history, and a brief history from Rutecki et al. (2016) follows. From 1988 to 1990 the survey period was from 26 June to 12 September. The survey periods in 1991 through 1994 were about 18 days later than in 1988 through 1990. The 1991–1994 surveys were delayed to avoid the commercial trawl fishery that started 45 days later than in 1988 through 1990. Starting in 1995, the survey period was moved back to near the 1988–1990 time period because of the extensive increase in length of the fishing season resulting from the implementation of the Individual Fishing Quota (IFQ) system in the sablefish and Pacific halibut (*Hippoglossus stenolepis*) longline fisheries. Beginning in 1998, the order in which the stations were sampled was changed to avoid conflict with an early July rockfish fishery in the CGOA. Instead of continuing to sample in an easterly direction from Sand Point to Dixon Entrance, the survey vessel transited to Dixon Entrance at the end of Leg 2 during early July and resumed sampling in a westerly direction going from Dixon Entrance to Sand Point. Sampling order remained the same from 1998 to 2023. From 2009 to 2023, the survey starting and ending dates were several days earlier than previous years. This was done to

accommodate the vessel's schedule and to finish the survey prior to the start of the fall Pacific cod season.

The 2024 longline survey was cancelled and the 2025 survey was modified from recent operations. The primary reason the 2024 survey was cancelled was related to the financial structure of the vessel contract. Historically a cost-recovery model allowed the contract vessel to sell fish caught on the survey to cover their costs and provide a nominal profit. However, recent declines in fish prices (primarily sablefish), made this financial arrangement untenable to vessel contractors. In response, the contract was restructured to guarantee the contractor a daily rate that is offset by revenues from the sale of the catch. Additionally, since prospective contract vessels indicated that the length of the survey would need to be shortened to accommodate their fishing season, shallow gully stations, non-index stations, station 75 (CGOA index station), station 106 (EYSE index station), and experimental stations, were not sampled. The two removed index stations were selected to minimize data loss by considering the historical sampling frequency by depth strata and region relative to the area sizes. The progression of sampling also changed as stations were leap-frogged from west to east for the first half of the survey, then returning east to west for the second half. Starting in 2025, the plan is to sample the GOA in odd years and the BS and AI in even years (beginning in 2026).

The gear was set from shallow to deep and was retrieved in the same order, except on occasions when the groundline parted or sea conditions dictated that it be pulled from the opposite direction. Setting began at about 0630 hours Alaska Daylight Time. Retrieval began at about 0930 hours (i.e., minimum soak time of 3 hours) and was completed by about 1730 hours. At each station along the upper continental slope, two baited groundlines were laid end-to-end; the total groundline set each day was 18 km (9.7 nautical miles [nmi]) long and contained 180 skates and 8,100 hooks (note that 160 skates [7,200 hooks] was the amount of gear fished in a typical day prior to 2020). At deep-gully stations, a single groundline of 90 skates was set, with two deep-gully stations sampled per day. Specific information regarding longline survey protocols and additional details about the survey gear can be found at: <https://www.fisheries.noaa.gov/resource/document/survey-protocol-alaska-sablefish-longline-survey>.

Data Collection

Catch data were recorded on hand-held ruggedized computers. During gear retrieval a biologist stationed at the vessel's rail recorded the species of each hooked fish and the condition of each unoccupied hook (baited or ineffective [i.e., absent, straightened, broken, or tangled]). Time of day was recorded as each hook was tabulated, and depth was entered at the beginning of the first, last, and every fifth skate, in addition to when crossing into a new depth stratum (0–100 m, 101–200 m, 201–300 m, 301–400 m, 401–600 m, 601–800 m, 801–1,000 m, and 1,001–1,200 m).

Length data were collected with a barcode-configured measuring board and barcode readers connected to ruggedized computers. Length was recorded by depth stratum for sablefish, Pacific cod, grenadiers, arrowtooth flounder, Kamchatka flounder, Greenland turbot, shortspine thornyhead, spiny dogfish, rougheye rockfish, blackspotted rockfish, shortraker rockfish, and multiple other rockfish species. Length and catch data for rougheye and blackspotted rockfish were combined, as these fish were not distinguished by species. Lengths of sablefish, giant grenadier (*Albatrossia pectoralis*), spiny dogfish, and Pacific cod were recorded by sex.

Sablefish, shortspine thornyhead, and Greenland turbot were randomly tagged at a rate of 4.4% of the gear by selecting these species caught on skates 10, 30, 50, and 70 of each set. Catch and length frequency data were transferred to a computer for quality control and storage in a database before being backed up on an external drive. As in previous surveys, the charter vessel was allowed to retain species of value (except prohibited species such as salmon, halibut, and crab) once the scientific data were recorded.

Sablefish otoliths were randomly collected throughout the survey to be used in determining their age composition for the stock assessment. When a sablefish was caught on the first hook of a skate (~2.2%) its length, weight, and sex were determined, and otoliths were stored in a glycerin-thymol solution. Samples are randomly selected for ageing after the survey.

Trend Analysis

In an effort to understand annual longline survey data in the context of longer-term trends, several metrics are presented as a time series for up to 20 years. The proportion of skates

that had killer whale depredation, sperm whale presence, and sperm whale depredation are shown for stations that are included in abundance indices. Subsurface temperature has been recorded on the AFSC longline survey since 2005, and a detailed analysis shows that there has been slight warming across all regions in recent years (Siwicke 2022). This information was updated with 2025 temperature data. To detect changes in sablefish catch rates, we used catch per unit effort (CPUE), or the number of sablefish caught divided by the number of effective hooks per skate. The mean and standard deviation were calculated across all depths within each region for stations that are included in abundance index calculations. To detect changes in the size of sablefish over time, the mean and standard deviation of male and female fork length are also calculated across all depths within each region for stations that are included in abundance index calculations. Sablefish data were raw observations and not scaled by the depth-stratified area sizes as is done for data used in stock assessments.

Trends in catch data, including the return of baited or empty hooks, at the regional and depth strata level were used to help understand how various species catches may interact with one another through time. We included stations that are used for abundance index calculations, skates that had 5 or fewer ineffective hooks, and skates that did not have killer whale depredation. For each region and depth strata combination, the mean and standard deviation of annual CPUE (i.e., annual proportion of effective hooks) are determined for sablefish, Pacific cod, Pacific halibut, rougheye/blackspotted/shortraker rockfish, shortspine thornyhead, giant grenadier, hooks with bait, empty hooks, and all other species combined into an “Other spp.” category. These are then standardized in each region-depth strata combination as follows:

$$I_{i,y} = \frac{C_{i,y} - \mu_i}{\sigma_i},$$

where $C_{i,y}$ is the CPUE of species i in year y , μ_i is the 20-year mean CPUE of species i , σ_i is the 20-year CPUE standard deviation of species i , and $I_{i,y}$ is the standardized CPUE for species i in year y . The standardized data will each have a mean of 0 and a standard deviation of 1. If mean CPUE for a species in a region-depth stratum combination was less than 0.025 (i.e., < 2.5% catch rate), standardized CPUE was not included on the subsequent plot. The “Other spp.” category was also not shown on the standardized CPUE plot as the numerous species in this group made it uninformative.

RESULTS AND DISCUSSION

In 2025, a total of 43 stations along the upper continental slope of the GOA were sampled at a rate of one station per day (Fig. 1). Surveyed depths ranged from approximately 200 to 1,000 m, although at some stations depths less than 200 m or more than 1,000 m were sampled. In addition, 6 deep-gully stations of 90 skates each were sampled two in a day at Spencer Gully, Ommaney Trench, and Dixon Entrance. Stations spanned a variety of management areas and habitat types, and all were used in abundance index calculations for stock assessments.

Ninety-two longline hauls were set during normal survey operations in 2025 (Table 3). Sablefish was the most frequently caught species, followed by giant grenadier, shortspine thornyhead, Pacific cod, rougheye/blackspotted rockfish, shortraker rockfish, and Pacific halibut (Table 4). Catch of the most abundant species by station is presented in Table 5. Sablefish was also the highest catch by estimated weight, followed by giant grenadier, Pacific cod, and Pacific halibut (Table 6). Length and sex were recorded by region and depth stratum for 93,164 sablefish with a greater proportion of females (58.1%) being caught (Fig. 2). Lengths were also recorded for 4,347 shortspine thornyhead, 3,392 rougheye/blackspotted rockfish, 2,652 Pacific cod, 1,898 giant grenadier, and 1,738 shortraker rockfish among others.

A total of 3,998 sablefish and 197 shortspine thornyhead were tagged with external numbered tags and released during the survey. Otoliths and length-weight data were collected from 2,869 sablefish. The survey caught 19 previously tagged sablefish (including 1 from Fisheries and Oceans Canada), of which 3 were re-tagged and released. Information on previously tagged fish can be found at: <https://www.fisheries.noaa.gov/resource/map/alaska-groundfish-tagging-map>.

Killer whale (*Orcinus orca*) depredation on the catch occurred at 2 stations in the WGOA, and 2 stations in the CGOA (Table 7). Since 1990, data from the portions of the gear affected by killer whale depredation during domestic longline surveys have been excluded from stock assessment abundance calculations. The proportion of skates from stations used in abundance calculations in 2025 that were excluded due to killer whale depredation was slightly down in the WGOA and slightly up in the CGOA, but within the normal ranges for both (Fig. 3).

Sperm whale (*Physeter macrocephalus*) observations have been recorded during the longline survey since 1998 (Hill et al. 1999). Sperm whales were observed during survey operations at 15 stations in 2025 (Table 8). Sperm whale depredation is defined as sperm whales being present with the occurrence of damaged sablefish. Sperm whales were observed at five stations in the CGOA with depredation evident at four, five stations in the WY region with depredation evident at two, and four stations in the EYSE region with no depredation evident at any. Sperm whale depredation is directly estimated using an Alaska-wide Generalized Linear Mixed Model (GLMM) with year, depth strata, station, management area, and total number of effective hooks as explanatory variables (Hanselman et al. 2018). While longline survey catch reported herein have not been adjusted for sperm whale depredation, the sablefish stock assessment model estimates a depredation coefficient to inflate sablefish catches at survey stations with sperm whale depredation evidence. The proportion of skates that included this inflation factor was down in 2025 compared to the previous year, and all regions were at or below historical averages (Fig. 3).

NMFS has requested the assistance of the fishing fleet to avoid annual longline survey stations since the inception of sablefish IFQ management in 1995. We request that fishermen stay at least 5 nm away from each survey station for 7 days before and 3 days after the planned sampling date (3 days allow for survey delays). Survey calendars were mailed to each IFQ holder before the beginning of each fishing season until 2020, and starting in 2021 the survey calendar was made available online (<https://www.fisheries.noaa.gov/resource/document/alaska-sablefish-longline-survey-station-schedule>) to reduce printing and mailing expenses. While the survey is being conducted, the skipper of the vessel makes announcements on the radio detailing the planned set locations for the upcoming days. Vessels encountered near survey stations are contacted by the survey vessel captain and interviewed to determine potential effects on survey catches and these interactions are noted. Beginning in 1998, we also revised the longline survey schedule to avoid the July 1 rockfish trawl fishery opening as well as other short fisheries. In 2025, the survey started about 45 days later than scheduled due to contracting issues. As a result, the fishing fleet did not have much advance notice. Combined with the change in survey design in 2025, some stations were sampled at different times than the recent past.

Fishermen cooperation, distribution of the survey schedule to IFQ permit holders, radio announcements from the survey vessel, and discussions of a regulatory rolling closure have had intermittent success at reducing the annual number of longline survey/fishery interactions. During the past several surveys, fishing vessels have been contacted by the survey vessel when they were spotted close to survey stations. Typically, vessels have been aware of the survey and have not been fishing close to survey locations. Vessels usually are willing to communicate where they had set and/or are willing to change their fishing locations to accommodate the survey. There are generally few interactions during the survey but even with communication, there are some instances where survey gear is fished nearby commercial fishing gear or where commercial fishing had recently occurred. In 2025, there were four instances of vessel interactions that may have impacted survey catch or required the survey vessel to move the day's sets from their originally intended locations (1 in WGOA, 1 in CGOA, and 2 in EGOA).

Gear damage and loss occurs during survey operations and may have impacts on catch. In 2025, the gear parted at 4 stations (80, 88, 104, and 149). When gear parted, it was retrieved by hauling from the opposite end of the set. Gear loss included 4 skates at station 104 and 3 skates at station 149 (Table 3).

In 2025, several special projects were conducted. A fourth year of sablefish eye collections from across the survey region was completed to examine isotopic growth layers of the eye lens of adult sablefish and obtain individual chronologies (young-of-year to time of collection) of their dietary and migratory behavior. Additionally, eye samples were collected to conduct eye lens-based age validation of sablefish and shorttraker rockfish, which will involve application of the radiocarbon chronometer, as well as a novel approach based on amino acid racemization. Furthermore, DNA from these fish will be used to construct draft epigenetic clocks with validated age estimates from eye lens core C¹⁴ analysis. Temperature profiles were used to continue a time series starting in 2005 (Siwicke 2022), where the 2025 246–255-m temperature index shows a slightly below average WGOA, near mean in the CGOA, and slightly above average EGOA (Fig. 4). Note that the change in survey timing is not accounted for in this index. Temperatures represent what the survey experienced and comparison to previous years may be misleading.

At the region level, sablefish CPUEs remain relatively high for the recent time series (Figure 5), and mean sablefish lengths observed on the AFSC longline survey either increased or remained stable from 2023 (Figure 6). Catch trends vary by depth and region, with sablefish somewhat ubiquitous, Pacific halibut common in shallower depths throughout, Pacific cod dominating shallower depths in western regions, giant grenadier dominant at deeper depths particularly in western regions, and various rockfish species and thornyheads more common deeper than 300 m (Figs. 7–10). The dominant longline survey CPUE trends in recent years continue to show above average for sablefish and decreasing to below average for most other species, though in some instances these trends have stabilized (Figs. 7–10).

It is a desirable trait for a longline survey to have some bait returning on each skate, as this means the unit of gear is not saturated and the assumption that catch linearly relates to abundance is less likely to be violated. The rate of baits returning in 2025 in the GOA remained relatively higher in shallower depths (< 400m), but there has been a drop in the rate of baits returning in deeper depths (> 400m) (Figs. 7–10). There is often an inverse relationship with baits and empty hooks, and this continued to be present in 2025 (Figs. 7–10). This can result from numerous causes that are difficult to identify and have different implications. For example, an increase in baits lost during setting or a high abundance of a small aggressive fish that quickly remove baits from hooks may preclude other fish from locating or competing for the baits. Alternatively, a high abundance of benthic invertebrates (e.g., crab or sea stars) could be consuming baits over several hours, thus, baited hooks would still be sufficiently available to capture fish over an extended period. While the former examples are problematic, the latter example may not be. As such, further investigations into gear saturation and hook competition will remain a topic of interest.

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Table 1. -- Leg numbers, dates, and personnel for the 2025 AFSC longline survey.

Leg	Dates	Personnel	Affiliation
1	15 Jul–31 Jul	Kevin Siwicke	AFSC – ABL
		Pete Hulson	AFSC – ABL
		Jade Renner	Contract Biologist
		James Millsaps	Contract Biologist
2	31 Jul–16 Aug	Katy Echave	AFSC – ABL
		Brenna Hsieh	AFSC – REFM
		Jade Renner	Contract Biologist
		James Millsaps	Contract Biologist
3	16 Aug–2 Sep	Kristen Omori	AFSC – ABL
		Ben Williams	AFSC – ABL
		Jade Renner	Contract Biologist
		James Millsaps	Contract Biologist

AFSC – ABL: Alaska Fisheries Science Center – Auke Bay Laboratories

AFSC – REFM: Alaska Fisheries Science Center – Resource Ecology and Fisheries Management

Table 2. -- Stations fished in 2025 AFSC longline survey. “Management area” refers to the North Pacific Fishery Management Council sablefish management areas, “Habitat” refers to the station habitat type (“Slope” = Upper continental slope and “Deep gully” = Deep cross-shelf gully), and “Abundance” indicates whether or not station data were used in stock assessment abundance index calculations.

Station	Management area	Habitat	Abundance
62	Western Gulf of Alaska	Slope	Yes
63	Western Gulf of Alaska	Slope	Yes
64	Western Gulf of Alaska	Slope	Yes
65	Western Gulf of Alaska	Slope	Yes
66	Western Gulf of Alaska	Slope	Yes
67	Western Gulf of Alaska	Slope	Yes
68	Western Gulf of Alaska	Slope	Yes
69	Western Gulf of Alaska	Slope	Yes
70	Western Gulf of Alaska	Slope	Yes
71	Western Gulf of Alaska	Slope	Yes
72	Central Gulf of Alaska	Slope	Yes
73	Central Gulf of Alaska	Slope	Yes
74	Central Gulf of Alaska	Slope	Yes
76	Central Gulf of Alaska	Slope	Yes
77	Central Gulf of Alaska	Slope	Yes
78	Central Gulf of Alaska	Slope	Yes
79	Central Gulf of Alaska	Slope	Yes
80	Central Gulf of Alaska	Slope	Yes
81	Central Gulf of Alaska	Slope	Yes
82	Central Gulf of Alaska	Slope	Yes
83	Central Gulf of Alaska	Slope	Yes
84	Central Gulf of Alaska	Slope	Yes
85	Central Gulf of Alaska	Slope	Yes
86	Central Gulf of Alaska	Slope	Yes
88	Central Gulf of Alaska	Slope	Yes
89	Eastern Gulf of Alaska	Slope	Yes
90	Eastern Gulf of Alaska	Slope	Yes
91	Eastern Gulf of Alaska	Slope	Yes
92	Eastern Gulf of Alaska	Slope	Yes
93	Eastern Gulf of Alaska	Slope	Yes
94	Eastern Gulf of Alaska	Slope	Yes

95	Eastern Gulf of Alaska	Slope	Yes
96	Eastern Gulf of Alaska	Slope	Yes
97	Eastern Gulf of Alaska	Slope	Yes
98	Eastern Gulf of Alaska	Slope	Yes
99	Eastern Gulf of Alaska	Slope	Yes
100	Eastern Gulf of Alaska	Slope	Yes
101	Eastern Gulf of Alaska	Slope	Yes
102	Eastern Gulf of Alaska	Slope	Yes
104	Eastern Gulf of Alaska	Slope	Yes
105	Eastern Gulf of Alaska	Slope	Yes
107	Eastern Gulf of Alaska	Slope	Yes
108	Eastern Gulf of Alaska	Slope	Yes
142	Eastern Gulf of Alaska	Deep gully	Yes
143	Eastern Gulf of Alaska	Deep gully	Yes
144	Eastern Gulf of Alaska	Deep gully	Yes
145	Eastern Gulf of Alaska	Deep gully	Yes
148	Eastern Gulf of Alaska	Deep gully	Yes
149	Eastern Gulf of Alaska	Deep gully	Yes

Table 3. -- Set information by station and haul for the 2025 AFSC longline survey. Positions are in decimal degrees (DD) format and depths are in meters (m).

Station	Haul	Date	Skates retrieved	Start latitude	Start longitude	End latitude	End longitude	Start depth	End depth
64	1	07/16	90	53.20	-166.86	53.12	-166.90	192	314
64	2	07/16	90	53.12	-166.91	53.05	-166.95	317	931
62*	3	07/17	88	52.66	-169.01	52.61	-169.09	136	651
62	4	07/17	90	52.61	-169.11	52.56	-169.17	508	602
63	5	07/18	90	52.97	-168.14	52.93	-168.21	109	131
63	6	07/18	90	52.92	-168.21	52.85	-168.23	297	629
65	7	07/19	89	53.58	-165.69	53.51	-165.73	117	299
65	8	07/19	90	53.51	-165.73	53.45	-165.79	285	435
67	9	07/20	90	53.97	-163.27	53.91	-163.32	113	344
67	10	07/20	90	53.91	-163.33	53.87	-163.42	358	602
69	11	07/21	90	54.32	-161.06	54.26	-161.15	168	386
69	12	07/21	90	54.27	-161.16	54.21	-161.23	383	850
71*	13	07/22	90	54.51	-159.26	54.44	-159.31	136	279
71*	14	07/22	90	54.43	-159.33	54.38	-159.43	300	633
74	15	07/23	90	55.24	-156.68	55.18	-156.75	146	283
74	16	07/23	90	55.17	-156.74	55.10	-156.74	327	838
77	17	07/24	90	56.05	-154.57	55.98	-154.57	228	517
77	18	07/24	90	55.97	-154.58	55.89	-154.57	565	885
79	19	07/25	92	56.30	-153.11	56.25	-153.19	220	426
79	20	07/25	88	56.27	-153.21	56.20	-153.29	544	940
81	21	07/26	90	57.04	-151.29	57.09	-151.26	565	360
81	22	07/26	90	57.03	-151.30	56.96	-151.32	613	713
84	23	07/27	90	57.97	-149.17	57.92	-149.24	163	465
84	24	07/27	90	57.92	-149.26	57.85	-149.32	482	741
88	25	07/28	80	59.15	-147.61	59.09	-147.63	250	459
88	26	07/28	80	59.07	-147.63	59.01	-147.63	552	906
91	27	07/29	90	59.52	-144.72	59.48	-144.84	180	507
91	28	07/29	90	59.49	-144.84	59.45	-144.94	385	769
94	29	07/30	90	59.39	-142.16	59.42	-142.29	231	491
94	30	07/30	90	59.43	-142.30	59.41	-142.40	393	1007
97	31	08/01	90	58.47	-139.47	58.46	-139.60	194	480
97	32	08/01	90	58.47	-139.61	58.42	-139.70	461	660
99	33	08/02	90	57.88	-137.38	57.88	-137.51	205	667

99	34	08/02	90	57.89	-137.52	57.90	-137.65	715	728
102	35	08/03	90	56.85	-136.00	56.90	-136.09	214	588
102	36	08/03	90	56.94	-136.10	56.98	-136.13	724	860
144	37	08/04	90	55.93	-134.90	56.01	-134.92	195	365
145	38	08/04	90	56.03	-134.93	56.09	-135.02	367	328
107	39	08/05	90	54.90	-134.29	54.97	-134.35	222	300
107	40	08/05	90	54.96	-134.36	55.02	-134.46	444	819
148	41	08/06	90	54.60	-133.02	54.60	-132.93	408	380
149	42	08/06	87	54.60	-133.02	54.60	-133.14	408	398
108	43	08/07	90	54.46	-133.92	54.50	-134.00	264	249
108	44	08/07	90	54.50	-134.01	54.56	-134.08	268	434
105	45	08/08	90	55.56	-134.97	55.58	-135.07	249	661
105	46	08/08	90	55.58	-135.05	55.63	-135.13	472	516
104	47	08/09	90	55.98	-135.44	56.03	-135.56	336	722
104	48	08/09	86	56.03	-135.54	56.10	-135.62	602	864
101	49	08/10	90	57.19	-136.23	57.22	-136.35	214	831
101	50	08/10	90	57.22	-136.34	57.29	-136.37	767	841
100	51	08/11	90	57.62	-136.53	57.61	-136.67	220	733
100	52	08/11	90	57.62	-136.66	57.68	-136.76	678	691
142	53	08/12	100	57.92	-137.01	57.92	-137.16	444	382
143	54	08/12	90	57.97	-137.21	57.97	-137.07	236	426
98	55	08/13	84	58.14	-138.73	58.16	-138.86	229	606
98	56	08/13	96	58.17	-138.87	58.19	-139.01	722	616
96	57	08/14	90	58.69	-140.79	58.69	-140.79	233	716
96	58	08/14	90	58.69	-140.78	58.74	-140.90	502	564
95	59	08/15	90	59.05	-141.34	59.04	-141.50	300	603
95	60	08/15	90	59.05	-141.52	59.05	-141.65	521	900
93	61	08/17	90	59.55	-142.56	59.58	-142.70	129	614
93	62	08/17	90	59.64	-142.68	59.57	-142.82	590	660
92	63	08/18	90	59.56	-143.66	59.56	-143.76	160	706
92	64	08/18	90	59.56	-143.81	59.59	-143.95	658	450
90	65	08/19	90	59.50	-145.53	59.52	-145.68	158	665
90	66	08/19	90	59.52	-145.68	59.53	-145.83	604	463
89	67	08/20	90	59.26	-146.85	59.21	-146.97	189	639
89	68	08/20	90	59.22	-146.98	59.16	-147.09	588	1024
86	69	08/21	90	58.69	-148.33	58.61	-148.35	280	431
86	70	08/21	90	58.62	-148.32	58.54	-148.37	494	650

85	71	08/22	90	58.29	-148.62	58.22	-148.68	237	525
85	72	08/22	90	58.22	-148.65	58.14	-148.71	512	827
83	73	08/23	90	57.63	-149.92	57.59	-149.95	397	573
83	74	08/23	90	57.56	-149.96	57.49	-149.99	546	894
82	75	08/24	90	57.40	-150.57	57.32	-150.59	214	550
82	76	08/24	90	57.32	-150.61	57.24	-150.60	506	765
80*	77	08/25	90	56.48	-152.22	56.42	-152.29	142	588
80*	78	08/25	90	56.42	-152.31	56.34	-152.37	471	609
78	79	08/26	90	55.99	-154.03	55.91	-154.02	250	541
78	80	08/26	90	55.92	-154.03	55.84	-154.05	516	916
76	81	08/27	90	55.76	-155.14	55.70	-155.18	161	323
76	82	08/27	90	55.68	-155.18	55.63	-155.27	348	601
73	83	08/28	90	54.85	-157.74	54.79	-157.82	189	343
73	84	08/28	90	54.78	-157.82	54.71	-157.86	382	604
72*	85	08/29	90	54.63	-158.58	54.56	-158.64	129	393
72*	86	08/29	90	54.58	-158.66	54.50	-158.70	330	830
70	87	08/30	90	54.37	-160.24	54.30	-160.31	145	301
70	88	08/30	90	54.29	-160.30	54.22	-160.34	366	680
68	89	08/31	90	54.13	-161.64	54.09	-161.73	123	262
68	90	08/31	90	54.09	-161.76	54.05	-161.88	400	930
66	91	09/01	90	53.74	-164.47	53.68	-164.57	137	330
66	92	09/01	90	53.68	-164.53	53.62	-164.64	340	700

*Station catch was entirely or partially impacted by killer whale depredation.

Table 4. -- Total catch in numbers of major species (>100 individuals) caught in the 2025 AFSC longline survey by management area: WGOA = Western Gulf of Alaska, CGOA = Central Gulf of Alaska, WY = West Yakutat, and EYSE = East Yakutat and Southeastern Alaska.

Species common name	WGOA	CGOA	WY	EYSE	Total
Sablefish	29,126	41,930	21,462	33,781	126,299
Giant grenadier	2,999	6,117	993	775	10,884
Shortspine thornyhead	1,768	1,640	666	1,078	5,152
Pacific cod	2,544	607	173	184	3,508
Rougeye/blackspotted rockfish	790	523	409	1,705	3,427
Shorthead rockfish	225	265	756	605	1,851
Pacific halibut	546	413	499	287	1,745
Pacific grenadier	21	790	360	37	1,208
Redbanded rockfish	83	136	154	526	899
Arrowtooth flounder	222	285	66	62	635
Longnose skate	121	69	131	277	598
Aleutian/Bering/Alaska skate	323	144	22	56	545
Yelloweye rockfish	194	25	68	35	322
Sea anemone	29	129	18	78	254
Sea star	36	107	10	20	173
Walleye pollock	84	12	0	8	104

Table 5. -- Catch in numbers by station for major species in the 2025 AFSC longline survey. SF = sablefish, PC = Pacific cod, GR = giant grenadier, PH = Pacific halibut, ATF = arrowtooth flounder, GT = Greenland turbot, RF = rougheye, blackspotted, and shortraker rockfish, ST = shortspine thornyhead, SK = skate, OS = Other Species.

Station	SF	PC	GR	PH	ATF	GT	RF	ST	SK	OS
62*	1,989	299	277	16	0	0	279	324	17	138
63	3,023	235	267	32	20	0	197	181	20	89
64	3,923	3	176	11	17	0	187	111	9	64
65	2,814	545	268	70	42	0	16	64	38	179
66	2,836	285	488	38	13	0	50	104	11	38
67	3,661	381	259	65	16	0	116	139	23	222
68	1,926	196	121	123	30	0	128	496	8	76
69	3,580	5	790	28	35	0	24	171	6	24
70	3,054	370	149	106	11	0	5	66	8	72
71*	2,320	225	204	57	38	0	13	112	22	55
72*	1,686	274	452	53	11	0	37	105	4	59
73	2,226	5	176	9	55	0	78	65	2	32
74	4,656	0	200	3	21	0	9	223	2	26
76	1,886	168	289	66	38	0	43	46	11	275
77	3,719	0	874	0	3	0	24	71	0	50
78	2,411	1	286	13	24	0	128	176	11	177
79	3,355	0	1,015	0	12	0	83	95	1	84
80*	1,487	28	163	53	21	0	136	179	6	76
81	2,894	0	1,137	1	9	0	41	70	0	178
82	2,688	6	134	45	14	0	11	54	1	21
83	3,150	0	409	0	0	0	3	69	0	91
84	2,753	120	480	54	22	0	20	110	17	285
85	3,450	0	109	14	28	0	27	112	12	27
86	2,805	0	127	95	21	0	76	117	4	18
88	2,764	5	266	7	6	0	72	148	10	162
89	2,961	90	116	66	10	0	55	43	12	253
90	2,045	37	189	200	9	0	217	46	17	133
91	2,570	45	117	52	7	0	180	118	23	115
92	2,416	0	198	27	16	0	38	45	9	21
93	2,988	0	75	100	0	0	18	103	7	71
94	2,480	1	109	25	12	0	93	149	25	93
95	3,170	0	114	18	6	0	371	95	21	41

96	2,832	0	75	11	6	0	193	67	22	36
97	1,391	8	58	22	5	0	116	189	19	53
98	2,371	0	160	4	1	0	172	9	3	43
99	1,705	0	136	19	5	0	43	24	12	126
100	3,307	1	31	11	2	1	31	42	3	25
101	3,042	0	87	8	8	0	41	40	9	31
102	3,203	1	124	15	7	0	31	60	5	32
104	3,309	0	32	1	0	0	317	81	3	22
105	3,198	11	64	33	0	0	198	47	32	96
107	1,915	2	17	4	0	0	840	59	20	72
108	1,649	0	47	9	0	0	407	76	10	137
142	2,297	0	16	0	2	0	5	25	11	1
143	1,715	0	3	7	0	0	3	4	6	16
144	852	24	0	45	12	0	76	171	41	66
145	1,950	0	0	17	3	0	9	111	17	48
148	789	137	0	61	17	0	5	78	37	231
149	1,088	0	0	31	0	0	16	62	61	29

*Station catch was entirely or partially impacted by killer whale depredation.

Table 6. -- Total estimated catch in weight (kg) of major species (>100 kg) caught in the 2025 AFSC longline survey by management area: WGOA = Western Gulf of Alaska, CGOA = Central Gulf of Alaska, WY = West Yakutat, and EYSE = East Yakutat/Southeast. Catch biomass was estimated by converting numbers caught to weight using species-specific length-weight relationships when length data were collected or proxy average weights from longline fisheries when survey length data were not available.

Species common name	WGOA	CGOA	WY	EYSE	Total
Sablefish	63,827	99,513	59,475	94,198	317,013
Giant grenadier	8,327	17,916	3,023	2,913	32,179
Pacific cod	9,206	2,068	567	467	12,308
Pacific halibut	3,222	2,437	2,945	1,694	10,298
Rougeye/blackspotted rockfish	971	771	722	3,326	5,790
Longnose skate	902	514	977	2,065	4,458
Shortspine thornyhead	1,362	1,299	459	936	4,056
Shortraker rockfish	364	457	1,426	1,110	3,357
Redbanded rockfish	147	241	273	934	1,595
Pacific grenadier	29	667	320	35	1,051
Arrowtooth flounder	355	447	121	115	1,038
Yelloweye rockfish	560	72	196	101	929
Blue shark	0	0	0	423	423
Skates unidentified	178	51	20	30	279
Lingcod	0	8	164	57	229
Walleye pollock	119	17	0	11	147
Spiny dogfish	0	0	16	122	138
Octopus	101	25	0	0	126

Table 7. -- Stations and skates depredated by killer whales during the 2025 AFSC longline survey. Number of skates affected refers to skates determined to be depredated and removed from abundance calculations.

Station	Region	Number of skates affected	Number of skates retrieved
62	Western Gulf of Alaska	66	178
71	Western Gulf of Alaska	133	180
72	Central Gulf of Alaska	151	180
80	Central Gulf of Alaska	142	180

Table 8. -- Stations that had sperm whales present during hauling operations in the 2025 AFSC longline survey. Depredation is defined as sperm whales being present with the occurrence of damaged fish on the line.

Station	Region	Present	Depredation
65	Western Gulf of Alaska	Yes	No
76	Central Gulf of Alaska	Yes	Yes
77	Central Gulf of Alaska	Yes	Yes
78	Central Gulf of Alaska	Yes	Yes
82	Central Gulf of Alaska	Yes	Yes
86	Central Gulf of Alaska	Yes	No
89	West Yakutat	Yes	No
91	West Yakutat	Yes	No
92	West Yakutat	Yes	Yes
93	West Yakutat	Yes	Yes
96	West Yakutat	Yes	No
97	East Yakutat/Southeast	Yes	No
99	East Yakutat/Southeast	Yes	No
142	East Yakutat/Southeast	Yes	No
143	East Yakutat/Southeast	Yes	No

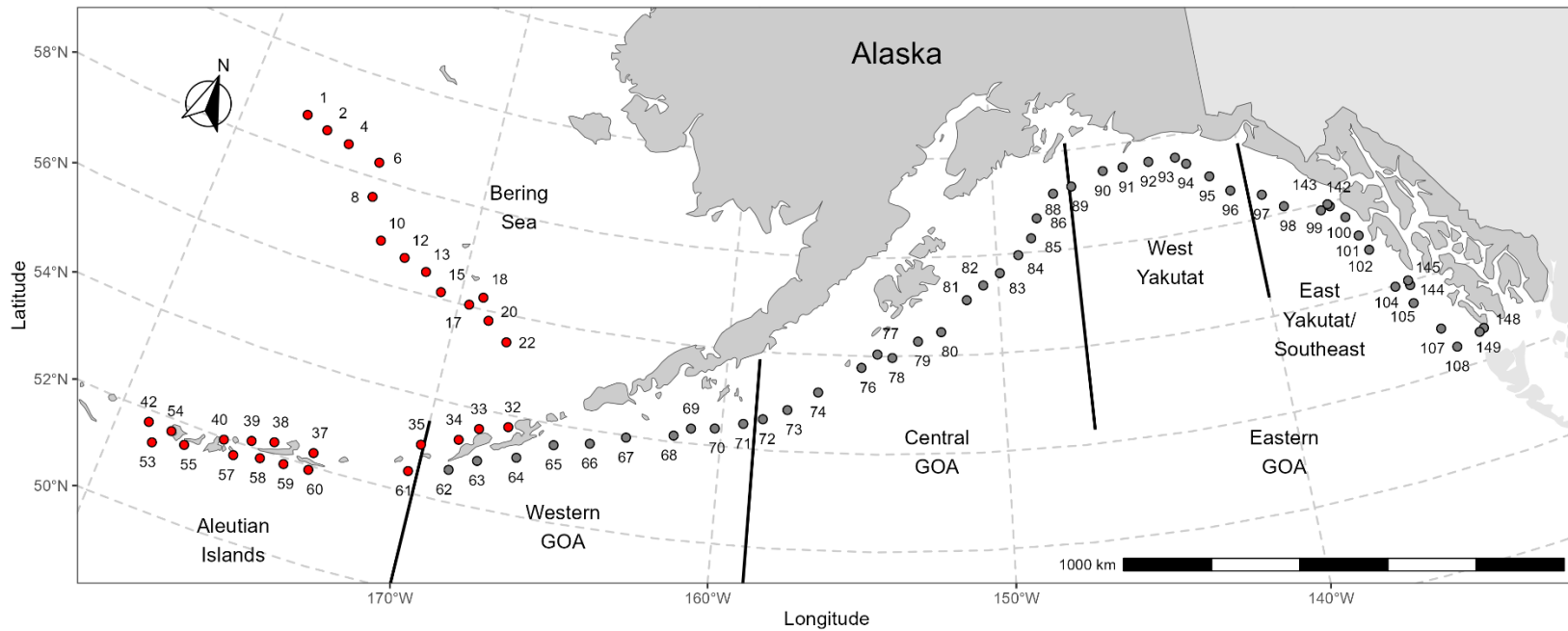


Figure 1. -- Map of NMFS-AFSC longline survey station locations for the 2025/2026 design. Bering Sea and Aleutian Islands stations (red) will be sampled in 2026, and Gulf of Alaska (GOA) stations (grey) were sampled in 2025.

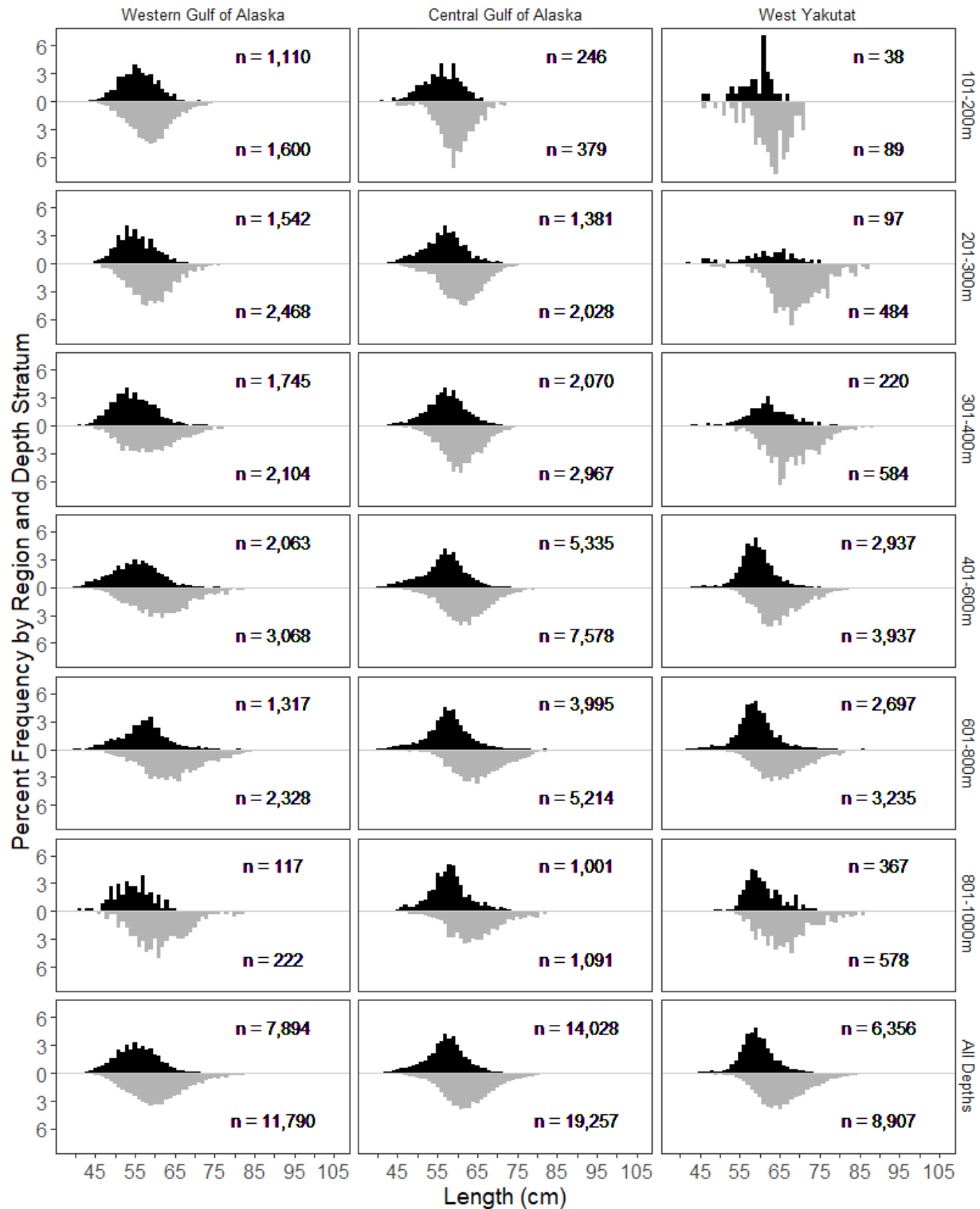


Figure 2. -- Size composition of sablefish measured during the 2025 AFSC longline survey by region and depth stratum. Males are shown in black and females are shown in grey below the x-axis. Data not shown when there were less than 50 total lengths.

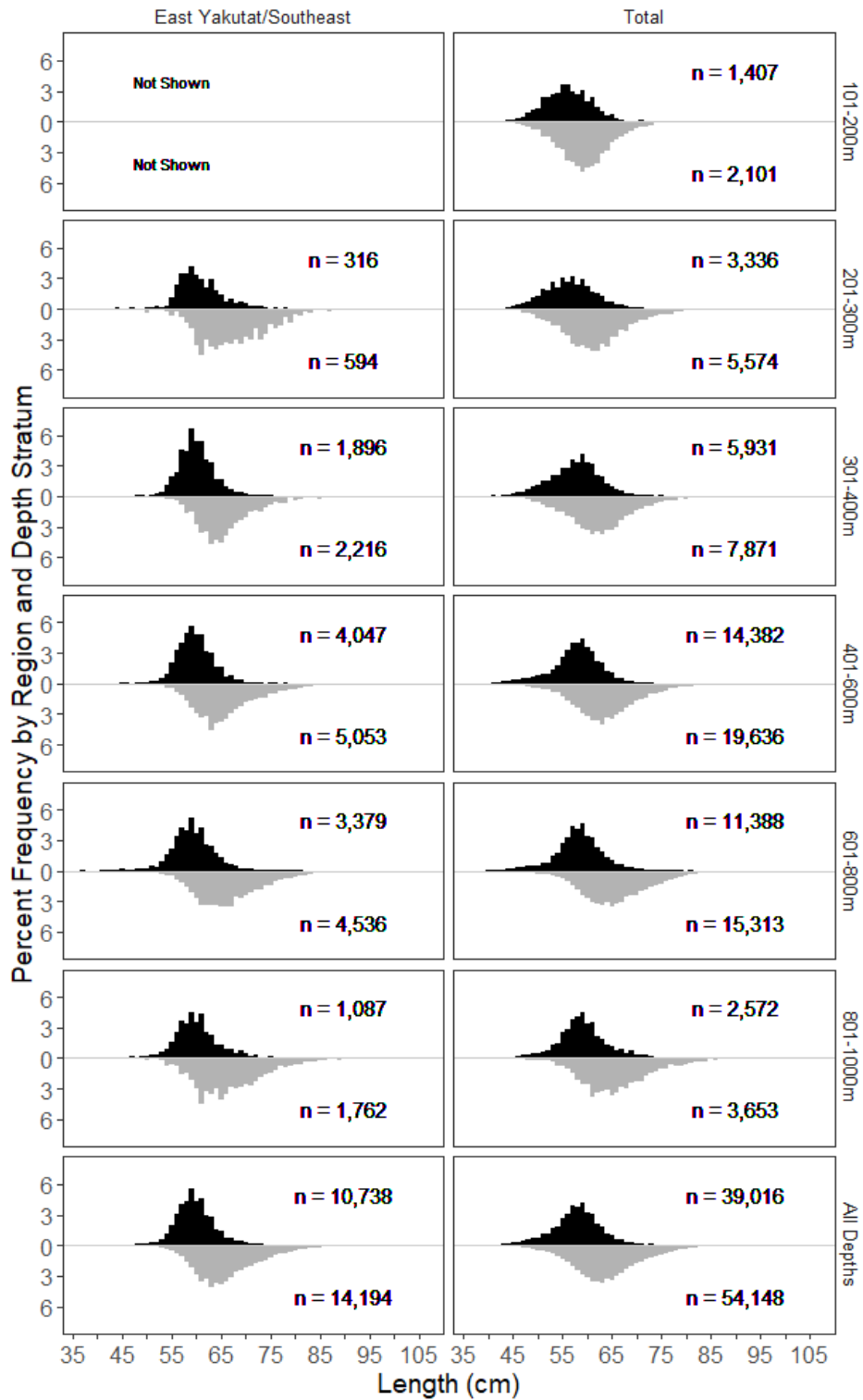


Figure 2. -- Continued.

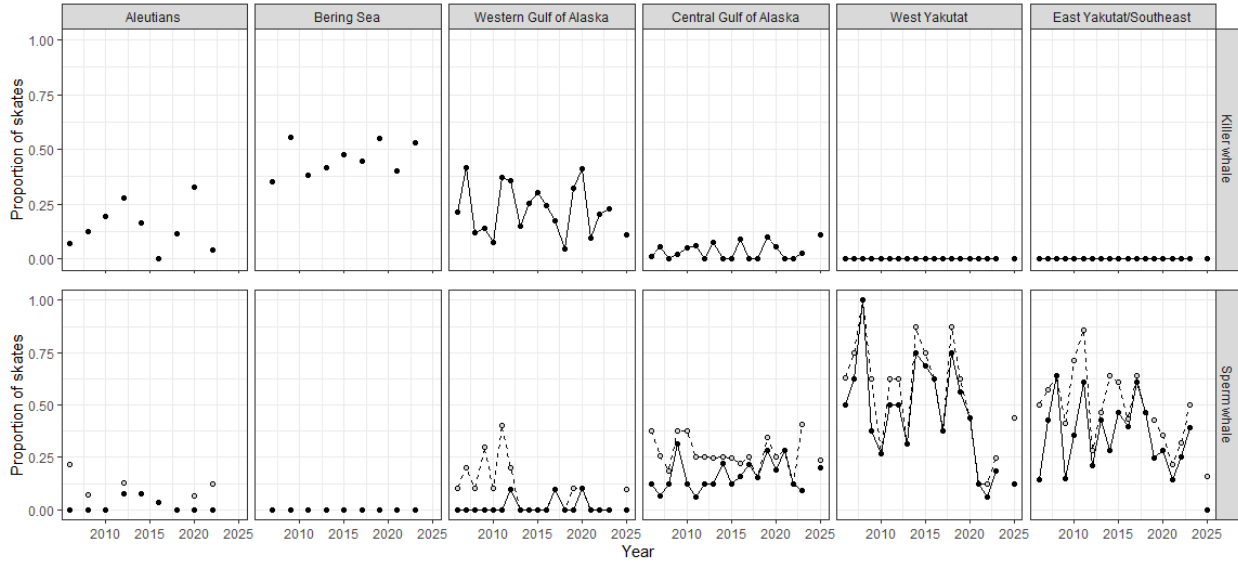


Figure 3. -- Trends in whale interactions on the AFSC longline survey, where the top panels show the proportion of skates with killer whale depredation which are removed from abundance calculations. The bottom panels show the proportion of skates with sperm whale presence (open circles and dashed line) and depredation (solid circles and solid line); these data are used to inflate catch rates to account for sperm whale losses as described in Hanselman et al. (2018).

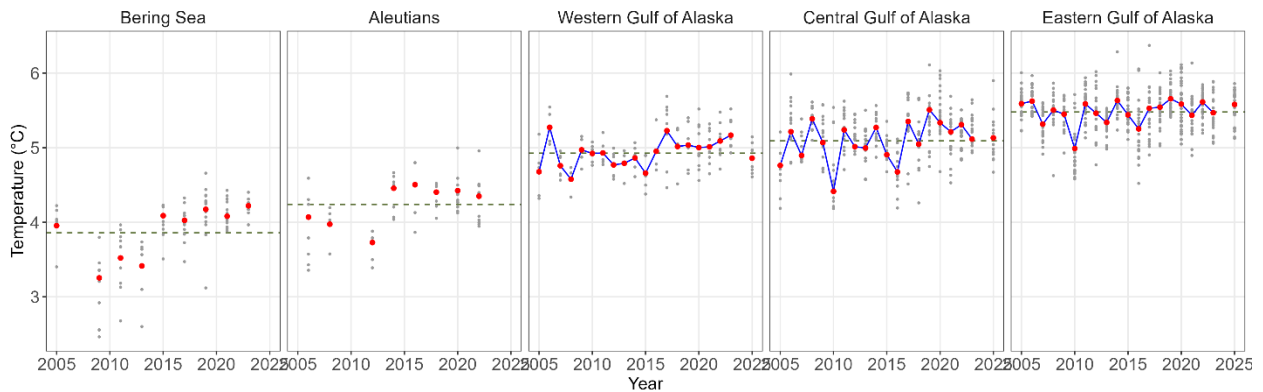


Figure 4. -- Regional subsurface temperature trends from the AFSC longline survey averaged from 1-m increments in the 246–255 m depth bin, where grey points are individual measurements and the red dots are area-weighted means. Horizontal dashed lines are regional time series means. For more details, see Siwicke (2022). The Eastern Gulf of Alaska is the combination of West Yakutat and East Yakutat/Southeast Alaska.

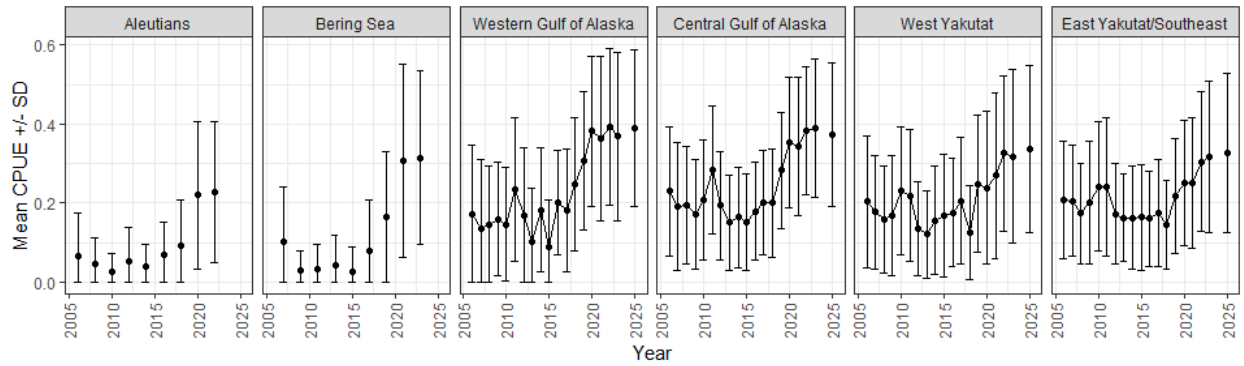


Figure 5. -- Trends in mean sablefish catch per unit effort (CPUE, number of sablefish per hook) from the AFSC longline survey by region. Error bars indicate +/- 1 standard deviation (SD).

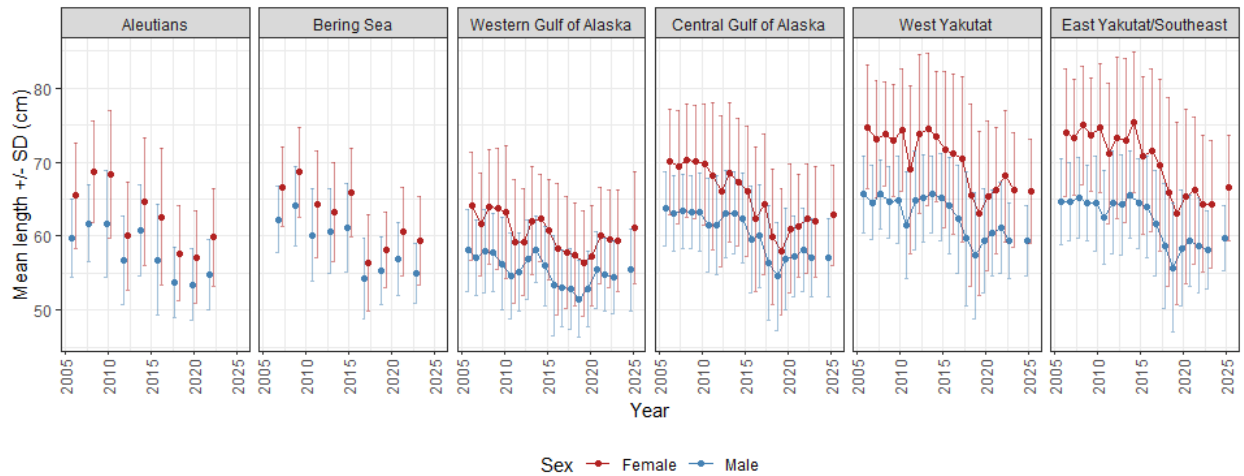


Figure 6. -- Trends in mean fork length of sablefish (female in red, male in blue) measured during the AFSC longline survey by. Error bars indicate +/- 1 standard deviation (SD).

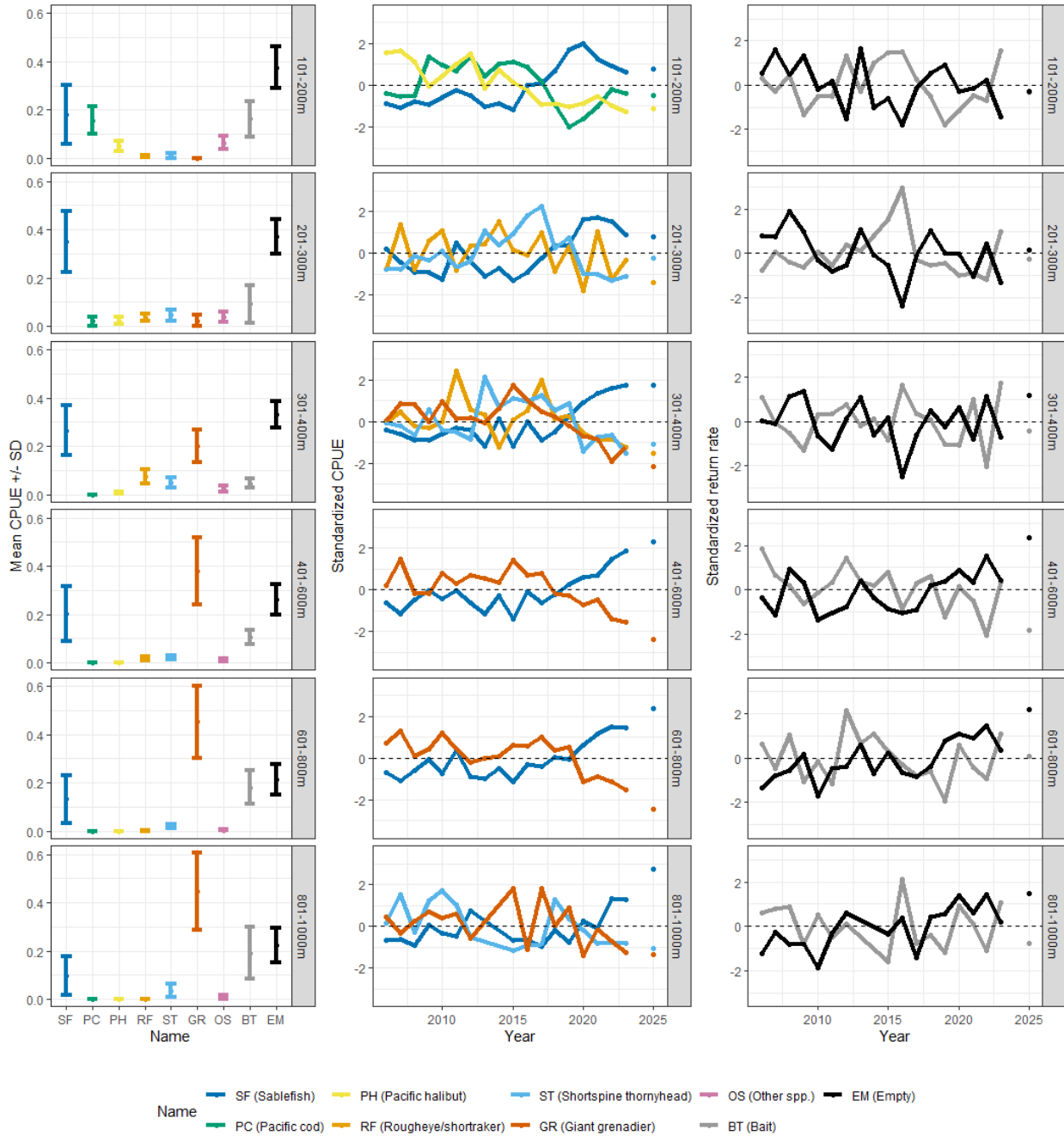


Figure 7. -- Western Gulf of Alaska annual catch trends by depth strata (2006–2025). The left column shows the mean catch per unit effort (CPUE) +/- 1 standard deviation (SD). The middle column shows the standardized (mean of 0, SD of 1) CPUE for species (except ‘Other spp.’) that had a mean CPUE > 0.025 (i.e., > 2.5% catch rate). The right column shows the standardized rate of hooks returning empty and with bait.

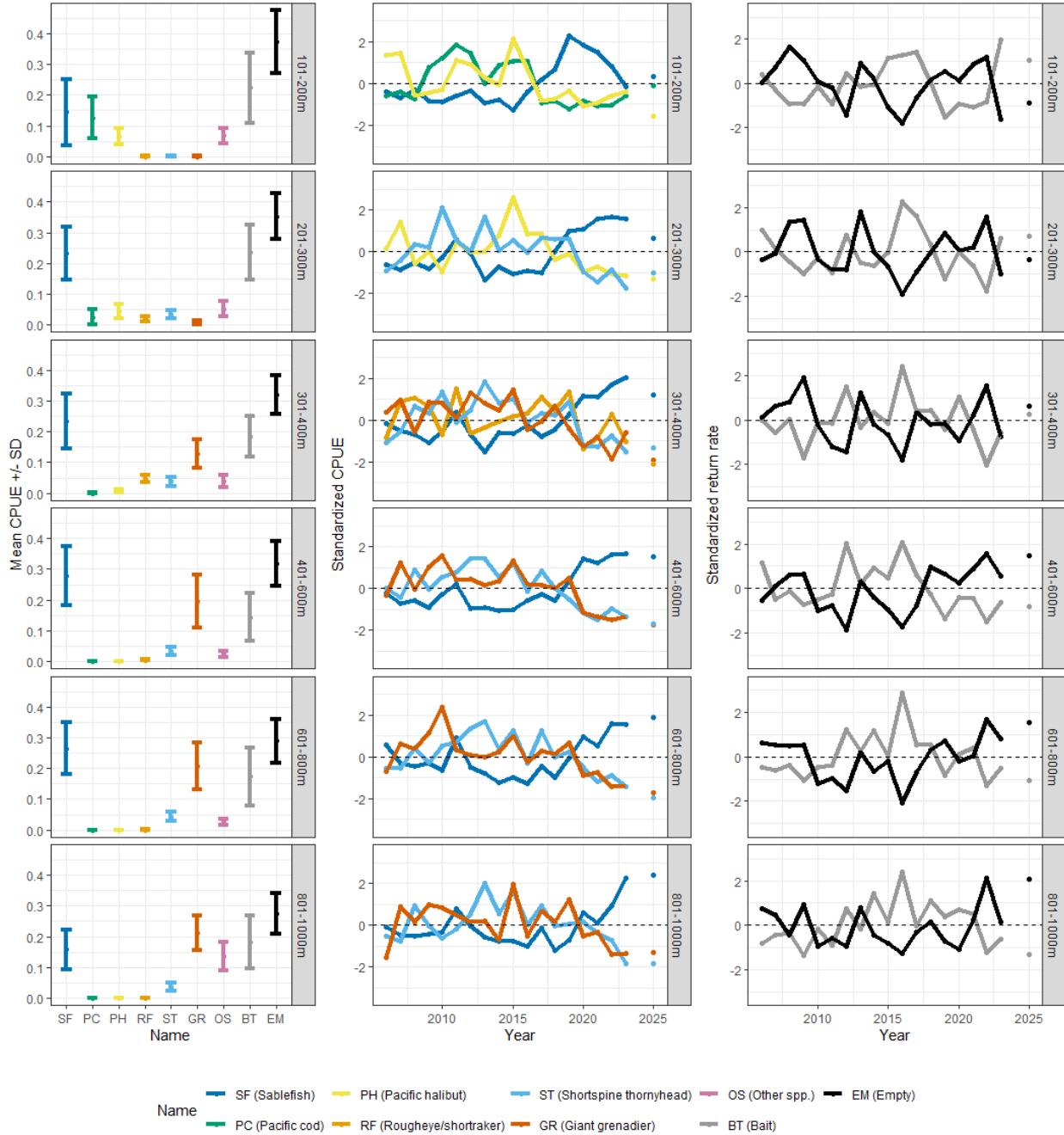


Figure 8. -- Central Gulf of Alaska annual catch trends by depth strata (2006–2025). The left column shows the mean catch per unit effort (CPUE) \pm 1 standard deviation (SD). The middle column shows the standardized (mean of 0, SD of 1) CPUE for species (except ‘Other spp.’) that had a mean CPUE $>$ 0.025 (i.e., $>$ 2.5% catch rate). The right column shows the standardized rate of hooks returning empty and with bait.

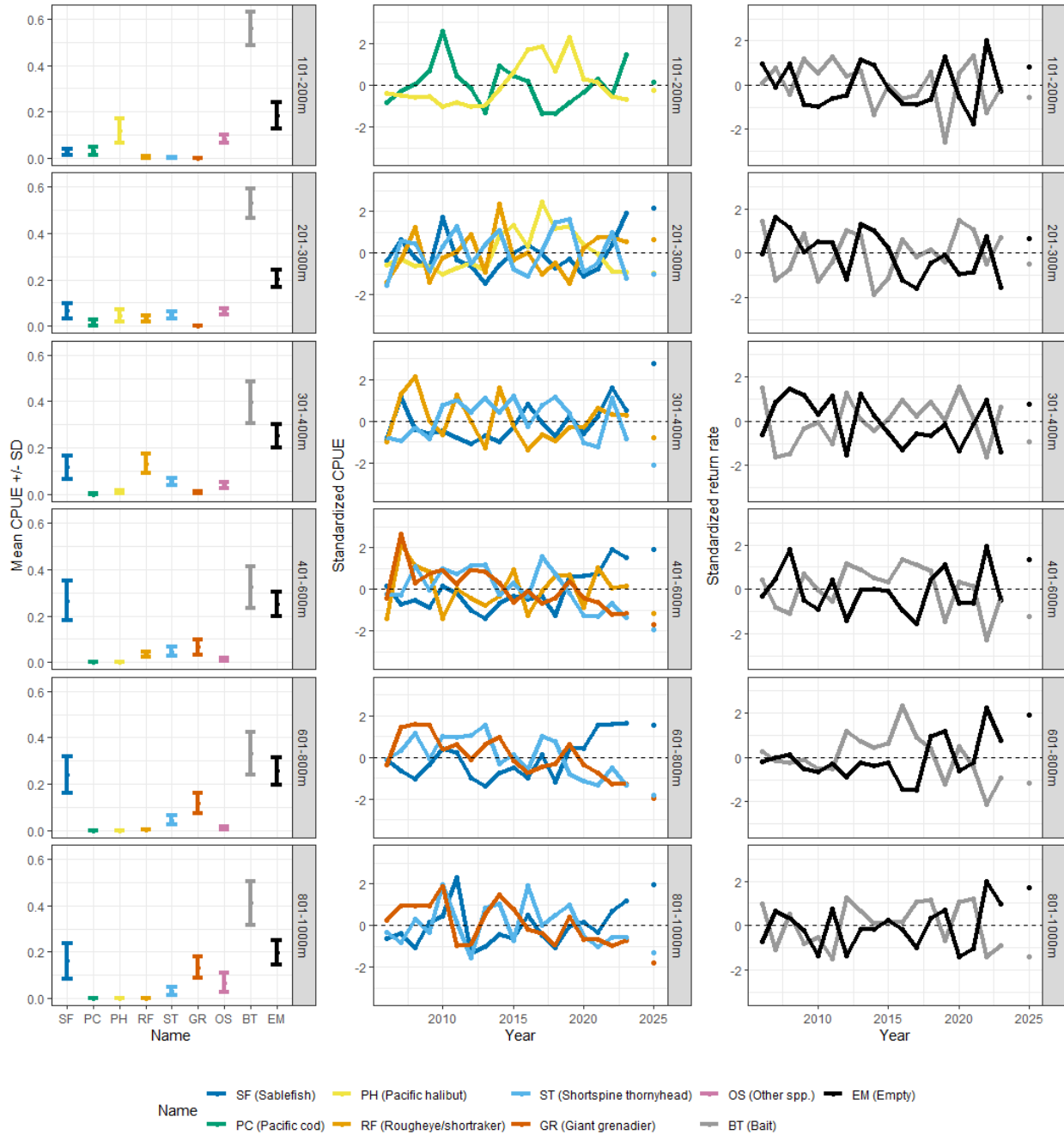


Figure 9. -- West Yakutat annual catch trends by depth strata (2006–2025). The left column shows the mean catch per unit effort (CPUE) +/- 1 standard deviation (SD). The middle column shows the standardized (mean of 0, SD of 1) CPUE for species (except ‘Other spp.’) that had a mean CPUE > 0.025 (i.e., > 2.5% catch rate). The right column shows the standardized rate of hooks returning empty and with bait.

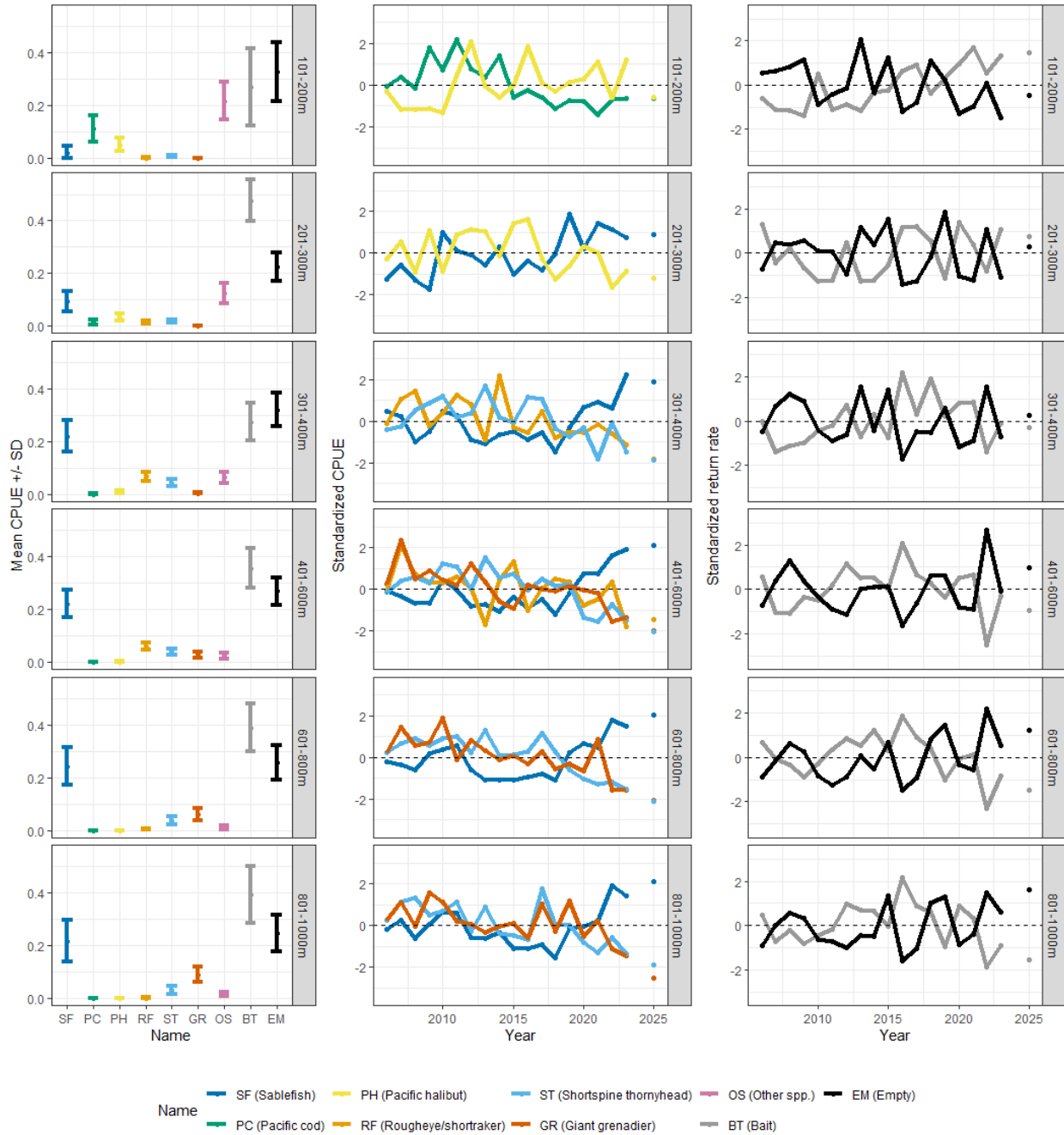


Figure 10. -- East Yakutat/Southeast annual catch trends by depth strata (2006–2025). The left column shows the mean catch per unit effort (CPUE) +/- 1 standard deviation (SD). The middle column shows the standardized (mean of 0, SD of 1) CPUE for species (except ‘Other spp.’) that had a mean CPUE > 0.025 (i.e., > 2.5% catch rate). The right column shows the standardized rate of hooks returning empty and with bait.



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