Summary of the annual 2022 Sablefish (Anoplopoma fimbria) trap survey, October 3 – November 19, 2022

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2023

SUMMARY OF THE ANNUAL 2022 SABLEFISH (*ANOPLOPOMA FIMBRIA*) TRAP SURVEY, OCTOBER 3 - NOVEMBER 19, 2022

by

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The 2022 British Columbia Sablefish research and assessment survey methods and results are described in this technical report. This coastal survey was comprised of stratified random sets (StRS) at five depth-stratified areas, standardized sets at one traditional inlet locality. Six sets were dedicated to bottom contact research with three deep-water autonomous cameras mounted on a 60 trap string. Biological sampling was conducted for Sablefish and incidentally captured Shortraker Rockfish, Yelloweye Rockfish, and Rougheye/Blackspotted Rockfish. Sablefish were randomly sampled from every third trap on all sets, up to a maximum sample count of 50. The tag and release study conducted annually since 1991 was continued in 2022.

A total of 45,500 Sablefish were caught on StRS survey sets in 2022, of which 4,406 were used for biological samples and 8,698 were tagged and released. Due to weather conditions, 86 out of 111 planned StRS blocks and 5 out of 20 mainland inlets sites were surveyed. Survey CPUE and biological data are presented in relation to previous years to illustrate trends over time. The Sablefish stratified random survey (StRS) biomass index in 2022 went up 10% from 2021; the second highest index value since start of survey in 2003.

RÉSUMÉ

Hardy, S.M., Lacko, L.C. and Holt, K.R. 2023. Summary of the annual 2022 Sablefish (*Anoplopoma fimbria*) trap survey, October 3 - November 19, 2022. Can. Tech. Rep. Fish. Aquat. Sci. nnn: vii + 52 p.

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1 Introduction

Fishery-independent research surveys using longline trap gear have been conducted along British Columbia's (B.C) continental shelf by the Department of Fisheries and Oceans (DFO) in collaboration with the Canadian Sablefish Association (CSA) since 1988. Developments in survey practices have advanced over the years with 1. standardized fishing sets (1988 - 2010) and traditional tagging sets (1991 - 2007) conducted at offshore indexing localities; 2. traditional tagging sets conducted at offshore tagging localities (1995 - 2008); 3. standardized fishing sets conducted at mainland inlet localities (1994 - 2019, 2021, 2022); and 4. stratified random sets conducted within five spatial strata (2003-2022).

Since 2003, the stratified random survey has been used to collect catch and effort data, gather quantitative biological samples, capture oceanographic measurements, record video imagery of gear bottom contact (2013-2017, 2021, 2022) and acquire tag release and recapture data. These data provide a fishery-independent source for assessing the biological status of the Sablefish stock and evaluating the fisheries management tools of the coastal Management Strategy Evaluation (Johnson et al. 2023). In 2021 and 2022, the Canadian Sablefish Association supported a benthic contact study with camera equipment to understand and quantify movement of longline trap gear.

2 Methods

2.1 SURVEY DESIGN

The 2022 Sablefish research and assessment survey design followed previous survey protocols using a stratified random sampling (StRS) component and a traditional standardized inlet component. Additional survey sets were dedicated to a benthic contact video component. The methods for these components are described in Sections 2.1.1, 2.1.2, and 2.1.3 respectively.

2.1.1 STRATIFIED RANDOM SAMPLING SURVEY COMPONENT

The StRS design was piloted in 2003 with the goal of releasing tagged fish at random, collecting biological data and developing an annual time-series of the catch rates (Wyeth and Kronlund 2003). The StRS spatial boundaries were originally determined by outlining the areas of commercial trap fishing with the bathymetric terrain (Wyeth et al. 2007). This design provided an alternative to the historic traditional offshore component of the survey which occurred from 1990 to 2010 at fixed tagging and indexing localities.

Five spatial strata (S_1 to S_5) and three depth strata (RD_1 to RD_3) were used to define the survey area (Figure 1). The five spatial strata were identified as: S_1 (South West Coast Vancouver Island or SWCVI), S_2 (North West Coast Vancouver Island or NWCVI), S_3 (Queen Charlotte Sound or QCS), S_4 (South West Coast of Haida Gwaii or SWCHG), and S_5 (North West Coast of Haida Gwaii or NWCHG). The three targeted depth ranges have been established as: 100-250 fathoms (RD_1), 250-450 fathoms (RD_2), and 450-750 fathoms (RD_3). The area within each of these 15 strata were sectioned into 2 km x 2 km grid cells or 'fishing blocks' from which set locations were randomly chosen.

From 2003 through 2005, five grid cells were randomly selected in each spatial-depth stratum for a total of 75 targeted survey blocks. From 2006 through 2010, the number was increased to six blocks per stratum. An analysis was completed for the 2011 survey to optimize the allocation of the blocks to strata for the 2011 and 2012 surveys. The sampling rate was increased to a target of 110 blocks. In order to lower survey costs, the number of blocks were reduced for the 2013 survey, from 110 to 91 offshore blocks while maintaining the same relative allocation of blocks to strata. This target number of blocks (91) has been in place on all subsequent surveys, including 2022 (Table 1).

2.1.2 TRADITIONAL MAINLAND INLET SURVEY COMPONENT

Under the traditional mainland inlet design, sets were allocated to five specific polygons in each of the following 4 areas: Portland Inlet, Gil Island, Finlayson Channel, and Dean/Burke Channel (Figure 1). In 2022, only Finlayson Channel Inlet locality was fished.

2.1.3 BENTHIC CONTACT VIDEO COMPONENT

Benthic contact video research occurred as a part of the StRS component from 2013 through 2017, and again in 2021 and 2022. In 2021 and 2022, the benthic contact video study expanded to include sets with up to 15 strings of 60 traps, with 5 sets in each of the three depth strata.

The objectives for the benthic contact video component were: 1. validate estimates of gear movement derived from the algorithm developed from 25-trap strings of Sablefish gear; 2. estimate bottom-contact and gear movement from 60-trap strings in BC coastal fishing grounds, by collecting movement data near the ends and middle of the string.

Data to support the first research objective were collected via the deployment of trap cameras on selected sets from the StRS design component. The target number of 25-trap StRS sets with cameras was 5 within each spatial strata for a total of 25 (Table 2). There were no specific requirements for which StRS sets the camera package should be deployed on; however, on days in which 60-trap experimental gear movement sets were done (described below), attempts were made to deploy in the same depth range. On days with no experimental gear movement sets, attempts were made to spread the sets over depth strata.

Data to support the second research objective was collected by adding dedicated sets that simulate commercial fishing sets with 60 traps on a string. Set locations were selected by the Fishing Master and were only planned for days that could accommodate the deployment and retrieval of traps without affecting StRS survey operations. Experimental sets were required to be set at least 1 nautical mile away from any survey blocks that had not yet been fished and were not used for abundance indexing purposes.

No species caught on the experimental gear movement sets were sampled, with the exception of Sablefish tag recoveries. If these were encountered, they were retained for biological sampling.

2.2 GHNMCA AND HAIDA HERITAGE SITE

The Archipelago Management Board (AMB) of the Gwaii Haanas National Marine Conservation Area Reserve (GHNMCA) granted approval for the Sablefish survey to operate in the multi-use protection zones of the reserve from 2021 through 2023. The Gwaii Haanas Gina 'Waadluxan KilGuhlGa Land-Sea-People Management Plan is provided at https://parks.canada.ca/pn-np/bc/gwaiihaanas/info/consultations/gestion-management-2018. Any survey blocks that landed in a strict protection zone during the selection process were replaced with alternate blocks.

2.3 VESSEL

The 2022 survey of 97 fishing sets and 6 gear movement sets were chartered aboard the F/V Pacific Viking (Figure 2), skippered by Albert (Deacon) Melnychuk between Oct 3 - Nov 19 , 2022 (Appendix A). Information about the vessel can be found at http://marinetraffic.com.

2.4 FISHING GEAR

The longline trap gear for StRS and inlet sets consisted of a groundline resting on the ocean floor with 25 baited traps attached to beckets at 150 foot intervals along its length and 90 pound anchors at each end. A flagpole was required for at least one end of the set to improve visibility for retrieval. The traps were steel frame with a bottom hoop diameter of 54 inches and covered with an North American #84 black braided nylon web of 2.75 inch mesh. Figures of the gear are found in the 2021 survey report (Lacko et al. 2023).

The tunnels were made of green braided, knotless, 1.25 inch mesh. The traps did not include escape rings, however included a 'rot panel' of # 21 cotton located above the middle ring. Standard bait bags (6 by 12 inches) made of 1/8 inch web with a nylon drawstring and #7 stainless trolling snaps were included with the traps.

2.5 FISHING OPERATIONS

During normal survey fishing operations gear was deployed on alternate days. Prior to deployment, the Fishing Master inspected the block to determine fishability and if it was within the targeted depth range. The goal was to have as much gear as possible within the block boundaries. If unfishable, an adjacent block was chosen as a replacement, either to the east or west of the original block, or failing that, to the north or south. If none of those blocks met the criteria, an alternate block in the same area and depth stratum was randomly chosen.

Two science staff recorded information associated with the deployment of the gear. One science member was positioned in the wheelhouse and entered data in the Electronic Data Acquisition System (EDAS) GFBioField Bridge Log form (Olsen 2010). The Bridge Log form consisted of nine separate pages (Header, Fishing, Spatial, Gear Specs, Depths, Environment, Comment, Usability, Finish) that recorded the many important details about the survey set. National Marine Electronics Association (NMEA) formatted data from the global positioning system (GPS) and depth sounder were collected by EDAS and reviewed in the "NMEA attributes plot series" available on the Bridge Log form. Details on electronic entry of the EDAS GFBioField forms mentioned in this document are available in the GFBio Field User Guide 2022 (provided upon request).

A set paper log was filled out on the deck by the science recorder who had maximum visibility of the crew setting the traps over the stern rail. The set log included the deployment time and identity of the first and last buoys, the times that the first and last traps were deployed, a tally of beckets and traps, as well as the information about the data recorders that were deployed (which trap they were in, and the unique identifying number of each data recorder). An set log example is found in the 2021 survey report (Lacko et al. 2023). The science recorder on the back deck also ensured that each trap deployed was correctly baited and not damaged.

2.5.1 Stratified Random Component (StRS)

Sets in StRS blocks had a targeted soak time of 24 hours +/- 2 hours. Fishing sets were designated useable if hauled between 22 and 26 hours. Traps were baited with 10 pounds of loose offshore Pacific Hake (*Merluccius productus*) and 2 pounds of bagged squid.

2.5.2 Traditional Standardized Inlet Component

Fishing sets in inlet localities had a targeted soak time of 18 hours +/- 2 hours. These sets were designated useable if hauled between 16 and 20 hours, compatible with the historic inlet survey protocols. Traps were baited with 2 pounds of bagged squid.

2.5.3 Benthic Contact Video Component

2.5.4 25 Trap Strings

For the subset of StRS sets selected for gear movement research, TRAPCAM and associated equipment (Section 2.10.1) were placed in an open, unbaited trap positioned in the middle (trap 13) on a 25 trap string of gear. On these sets,the total number of traps is increased to 26 so that the remaining 25 traps were fished as part of the StRS design.

2.5.5 60 Trap Strings

These sets were intended to replicate commercial fishing practices, and as such, closed traps were baited at the discretion of the Fishing Master as per commercial fishing practices. Soak time was also at the discretion of the Fishing Master, with gear deployed and retrieved at times convenient to other operations. Trap cameras were deployed in open, unbaited traps located at positions 5, 35, and 55 on the 60-trap string.

2.6 CATCH PROCESSING

The skipper modified haulback speed as needed, to allow the science crew to accurately record catch as each trap came on board. Two science staff were positioned on deck at the haul card station; one recorded the catch and the other managed the movement of baskets. First, the catch recorder entered set details into the EDAS GFBioField Bridge Log. These included the haul start and end times, the buoy numbers, the buoy retrieval times, the first and last trap retrieval times, and the trap number which contained the data recorder.

As the groundline was hauled, each becket and trap was entered in the EDAS GFBioField Trap Catch form which is accessed via the EDAS GFBioField Haul Card form. Crew members alerted

the recorder about any damage to a trap (i.e. holes) which was then recorded in the EDAS GFBioField Trap Usability form.

The crew sorted catch by species from every trap, and counted the catch into baskets. Catch counts for each basket of fish were recorded, and weighed to the nearest 0.2 kg on a motion compensating scale. Each basket was given a basket use code of D, A, T, SD or F. Code D designated fish species as discards or commercial catch; code A allocated fish to age samples; code T allocated Sablefish to be tagged and released; code SD identified sublegal Sablefish discards; code F represented fish frames with amphipod or hagfish damage.

If catch from a trap was not designated for tagging (T) or for sampling (A), then the crew sorted Sablefish into legal-sized and sublegal fish so that the sublegal fish could be released promptly after weighing.

2.6.1 Sablefish Allocation Details

Prior to 2018, Sablefish were tagged from 1/3 of the traps on StRS sets and 1/2 of the traps on the inlet sets (basket code T). Due to high catch numbers, the survey protocol was revised in 2018 to designate up to 125 Sablefish to be tagged from 1/3 of the traps on all sets. The established protocol was continued in 2021. When catches were high, traps targeted for tagging were spread throughout the string to avoid tagging the first 125 fish.

A biological sample was collected from the coded “A” traps with the goal of selecting 50 to 60 fish. If CPUE was high, the new survey protocol of 2018 designated a minimum of two traps to be used for samples. If the 2 traps contained more than 60 Sablefish total, then 50-60 specimens were randomly selected from the sample. If catch rates were low, a sufficient number of traps not designated for tagging (T), were coded as ‘A’ traps, to ensure that the biosample contained 50-60 pieces.

The remaining traps were allocated to the discard category and sorted by size into either legal (D) or sublegal (SD) discards. The SD (sublegal discards) code was added during the 2017 survey to account for the large numbers of juvenile Sablefish that were encountered, and to facilitate their quick return to the ocean. Legal discards (basket code D) of Sablefish were kept by the vessel and processed as commercial catch.

2.7 BIOLOGICAL SAMPLING (LWSMO)

Biological samples were collected from Sablefish and incidentally captured species of Shortraker Rockfish, Yelloweye Rockfish, and Rougheye/Blackspotted Rockfish on the EDAS GFBioField Fish Recording form. Measurements were electronically recorded for fork length (L), body weight (W), sex (S) and maturity level (M). Sagittal otoliths (O) were collected and stored for potential ageing by the sclerochronology laboratory located at the Pacific Biological Station in Nanaimo, BC. In 2022, Shortraker Rockfish, Yelloweye Rockfish, and Rougheye/Blackspotted Rockfish were sampled for LWSMO (~ 25 pieces/set). Tissue samples (fin clips in vials containing 95% ethanol) for DNA extraction were collected from Yelloweye Rockfish and Rougheye/Blackspotted Rockfish.

On Groundfish surveys, fin clips are routinely collected from the Rougheye/Blackspotted Rockfish complex for later species confirmation using genetic methods. Since this complex of two distinct species (Orr and Wildes 2008) have similar appearances with slight variations in colour markings and dorsal fin lengths, the sampler visually identifed each specimen as either a Rougheye, a Blackspotted or a hybrid species. All rockfish and legal-sized Sablefish (fork length > 55 cm) that were sacrificed for biological samples were dressed, frozen, and landed as commercial catch.

Biological sampling of Lingcod (*Ophiodon elongatus*) was a special sample request for 2021. Samples were collected for the specific purpose of supporting a paired ageing study comparing fin ages and otolith ages, so both ageing structures were collected from sampled fish. The goal of Lingcod sampling on the Sablefish survey in 2021 was to increase the number of very large Lingcod included in the length-stratified samples for the study, so a subset of large Lingcod were opportunistically collected for sampling.

Length (L) and weight (W) measurements were collected from all Pacific Halibut (*Hippoglossus stenolepis*) before they were released at sea. Only the length (L) was recorded for Pacific Sleeper Sharks (*Somniosus pacificus*) before release.

2.8 SABLEFISH TAGGING

Fish destined to be tagged were transferred from the sorting area to a tagging tank. A vessel crew member was positioned to retrieve Sablefish from the tank and provide assistance with fish handling. A scientist stood at the sample station and tagged fish with a Mark II Long Tagging gun loaded with Floy FD-94 T-bar anchor tags. The tag was inserted on the left side of the fish, 1 cm below and 2-3 cm behind the anterior insertion of the first dorsal fin. Fork length (mm to the nearest ½ cm) measurements taken on the Scantrol measuring board were electronically transferred to the EDAS GFBioField Fish Recording form (Olsen 2010). Before release, any sampling errors, injuries or damage to the fish were documented on the Fish Recording form by a second scientist who was stationed at the sample computer. Tag checks were performed systematically to ensure tag numbers on the data form matched those on the fish specimen.

Water temperature in the tagging tank was measured at 1 minute intervals by a standard oceanographic temperature-depth recorder (TDR), which was installed in the tank during the haul.

2.9 SABLEFISH TAG RECOVERY

Any previously tagged fish brought aboard were treated in one of two ways. First, Sablefish with Canadian tags were re-released with a new tag and the previous tag was removed. In addition, any wounds from the old tag were recorded. Second, Sablefish with a foreign agency tag or Sablefish that had sustained numerous injuries were retained for biological sampling. For these specimens, the tag and otoliths were stored in a bar-coded vial that was later scanned into the EDAS GFBioField Tag Recovery Entry form by DFO staff (Olsen 2010). The department later returned any foreign tags to their country of origin through the Canadian Sablefish Association

tag rewards program.

2.10 CAMERA AND OCEANOGRAPHIC SENSOR DATA COLLECTION

2.10.1 25 TRAP STRINGS

For StRS sets used for gear movement research, an open, unbaited trap with a deep-water autonomous camera (TRAPCAM) was added to the middle of a string of gear, for a total of 26 traps. A deep-water autonomous camera (TRAPCAM), a standard oceanographic temperature-depth recorder (TDR) and an Actigraph xGT3X-BT accelerometer (AXL) were attached inside the trap.

The TRAPCAM system consisted of a pressure housing with high intensity LEDs for lighting and a GoPro camera for collecting image data. Both were controlled by a microcontroller that also had an onboard accelerometer and depth recorder. The camera unit was programmed to record when triggered by movement or by depth value. The unit was placed in a bracket and mounted inside the top of the trap, with the camera facing out of the tunnel. After the data was uploaded, video footage was synced with the accelerometer measurements using software developed for this purpose.

The TDRs were housed in a PVC housing which was clipped to the inside of the trap with carabiners. They were programmed to record temperature and depth (pressure) at either 3 second intervals when deployed with a camera or accelerometer, and at 60 second intervals if deployed alone.

Accelerometers were programmed to record movement at 100 Hz, were secured in a pressure housing, which was installed in a bracket. The bracket was then bolted to the top of the trap frame. An accelerometer was also attached to the rail next to the trap hauler to provide information about the movement of the vessel during hauling.

A target number of sets were allocated for the camera trap deployments in each of the fifteen StRS area-depth strata (Table 2). Data from the TDRloggers were processed after the set was complete using tools on the GFBioField Upload Sensor Data form to prepare it for upload to the Groundfish database (GFBio).

2.10.2 60 TRAP STRINGS

In order to measure trap gear movement and seabed contact that is characteristic of those deployed in the commercial fishery in coastal BC., 60 traps were set with electronic gear in up to three of the traps. The traps with electronic gear were closed with a full cape and tunnel and contained no bait. The electronic gear consisted of: i) A deep-water autonomous camera (TRAPCAM) that produces motion-activated and fixed-interval high definition video; ii) A standard oceanographic temperature-depth recorder (TDR) that measures in-situ depth and temperature data; iii) A tri-axial accelerometer (AXL) that measures quasi-continuous 3-axis motion and orientation of a trap.

As with the 25 trap strings, an AXL was attached to the rail next to the trap hauler to provide information about vessel movement during hauling.

2.11 ELECTRONIC MONITORING (EM) VIDEO DATA COLLECTION

The survey vessel's electronic monitoring (EM) system provided by Archipelago Marine Research, Inc. (AMR), records video and logs vessel sensor data during the survey trip. The video data from activities at the rail, the hopper, and the scale were reviewed by a pair of science staff directly from the AMR hard drive the following day. One science member would watch the video and call out each trap, the species found in the baskets and where each basket was allocated (Aging, Tagging, or Discard). A second science member would check off the corresponding trap and basket records in the GFBioField Trap Catch datasheet.

3 Results and Discussion

3.1 FISHING

The 2022 survey was 47 days long, starting in Nanaimo, BC on October 4, with crew changes on October 20 at Port Hardy and November 3 at Skidegate Narrows. The survey was completed on November 19 with a loss of 9 weather days. In total, 97 sets were completed (Appendix B): 86 StRS sets at random sites (Figure 3), six 60-trap experimental sets for gear movement research (Figure 3) and five standardized sets at Finlayson inlet locality (Figure 4).

Of the 91 original blocks for the StRS portion of the survey, 5 blocks were deemed unfishable due to the weather and timing (Figure 5).

3.2 CATCH PER UNIT EFFORT (CPUE)

Catch per unit effort (CPUE) statistics for 2022 are presented in relation to the available time series for each of the survey components used to index abundance: (i) StRS (2003-2022) and (ii) traditional mainland inlet indexing sites (1991-2022).

3.2.1 Stratified Random Set CPUE

Catch rates (catch per unit effort; CPUE) as indexed by kilograms of Sablefish per trap (Figure 6) and numbers of fish per trap (Figure 7) were generally higher in the middle depth strata over the survey time series (2003-2022). In 2022, the kg/trap and #fish/trap in the middle depth strata (RD_2) were lower than the peak reached in 2019 in areas S_2, S_3, S_4 and S_5. In area S_1 (South West Coast Vancouver Island), the 2022 kg/trap and #fish/trap in the middle depth strata (RD_2) were lower than the peaks reached in 2020 and 2021.

The mean weight of captured Sablefish in 2022 was similar or slightly higher compared to 2021 in the deep (RD_3) and middle depth (RD_2) waters of areas S_2, S_3, S_4 and S_5. In the shallow (RD_1) waters, the mean weight in 2022 was slightly higher in areas S_2 and S_4 (Figure 8).

The stratified mean survey abundance in 2022 is up 10% from 2021; the second highest index since 2003. (Figure 9).

3.2.2 Mainland Inlet CPUE

CPUE in the mainlaind inlets from has varied over time (1995-2022) with peak CPUE occurring every 5-8 years (Figure 10). At Dean/Burke Channel, Gil Island and Portland Inlet, the average CPUE peaks were observed in 1999, 2004 (2003 at Portland Inlet), 2011 and 2019. At Finlayson Channel, the average CPUE peaks were observed in 1999, 2005, 2012 and 2019.

The highest catch rates of the 26 year time series observed at Dean/Burke Channel, Finlayson Channel, Gil Island, Portland Inlet occurred in 2019 with 42 kg/per trap, 51 kg/per trap, 74 kg/per trap and 75 kg/per trap respectively. No inlets were surveyed in 2020. Dean/Burke Channel was the only mainland inlet locality surveyed in 2021. Finlayson Inlet was the only mainland inlet locality surveyed in 2022.

3.3 CATCH COMPOSITION

A total of forty-nine taxonomic groups were represented in the 2022 catch from StRS sets (Table 4). These included ten roundfish species, twelve rockfish species, three flatfish species and twenty-three invertebrate species. Other than Sablefish, the most common species, by weight, were Lingcod (*Ophiodon elongatus*), Spiny Dogfish (*Squalus acanthias*), Pacific Halibut (*Hippoglossus stenolepis*) and Rougheye/Blackspotted Rockfish complex (*Sebastes aleutianus*).

A total of three taxonomic groups were represented in the catches from traditional standardized sets conducted in mainland inlet localities in 2022 (Table 5). These included one roundfish species, no rockfish species, one flatfish species and one invertebrate species. The most common species captured, in terms of total weight, other than Sablefish was Pacific Halibut (*Hippoglossus stenolepis*).

3.4 SABLEFISH SAMPLING

A detailed breakdown of the fate of the Sablefish catch in each trap for the 2022 survey is listed in Appendix D. Over all sets, 316 traps with Sablefish were sampled and 460 traps with Sablefish were tagged.

During the 2022 StRS survey component, a total of 45,500 Sablefish were caught. Of that total, 8,795 were tagged and released and 4,406 were retained for biological sampling. Of the tagged fish, 97 were previously tagged fish that were re-released with a new tag. There were 3 previously tagged fish retained for sampling (Appendix E).

Out of the 2,263 Sablefish captured during the 2022 traditional survey component (inlet standardized sets), 595 were tagged and released, 256 were used for biological sampling and 5 were previously tagged fish re-released with a new tag (Appendix E).

The four dedicated 60-trap gear movement sets that deployed cameras captured 7,666 Sablefish. Sublegal Sablefish and other species were returned to the water, except for those fish permitted for retention under the Section 52 licence. There were 17 previously tagged fish retained for sampling (Appendix E).

Overall, the StRS sets had a higher proportion of females than males over the spatial strata S_1, S_2, S_3 and S_4. More females than males were caught in the shallow depth stratum (RD_1) within all spatial strata (S_1 - S_5). In the mid depth stratum (RD_2), there were more males than females in S_1, S_2, S_3 and S_5. The deepest depth stratum (RD_3) saw more females in spatial strata S_1 and S_2 (Table 6).

3.5 SABLEFISH FORK LENGTH

Differences in length distributions between female and male Sablefish are exhibited in the data collected from the StRS portion of the 2003 - 2022 surveys. Over these 20 years, the mean fork length ($\bar{x}$) was 64.8 cm for females and 58.1 cm for males (Figure 11).

In 2022, the average mean fork length for the 2,278 females was 62.3 cm and the average mean fork length for the 2,013 males was 56.3 cm. The average length of males reached their lowest mean size since 2003 (Figure 12).

On average, female Sablefish grow faster and reach a far greater size (Figure 13 a) compared to males (Figure 13 b).

3.6 SABLEFISH MATURITY

Sablefish maturity stages are macroscopically identified . . . (Figure 14).

3.7 SABLEFISH SUB-LEGAL ENCOUNTERS

More than half of the sub-legal specimens were captured in the mid-depth waters of i) the northern strata of S_4 and S_5 in 2017 and 2018, ii) all spatial strata in 2019, iii) S_1, S_4 and S_5 in 2020, and iv) S_1, S_2, S_3 and S_5 in 2021 (Figure 15).

3.8 RECOVERED TAGGED SABLEFISH

Of the 426 Canadian tagged fish that were recovered on the survey, the majority (62%) had travelled no more than 50 kilometers from the release site. More than half of the recoveries (67%) were recaptured within 5 years at liberty (Table 7).

3.9 OTHER FISH SAMPLING

Length, sex, maturity, otoliths and DNA samples were collected for 234 Rougheye/Blackspotted Rockfish specimens. The science samplers visually identified 19 specimens as Rougheye, 114 specimens as Blackspotted and 1 specimen as a hybrid species (Appendix F).

Length, sex, maturity and otoliths were collected for Shortraker Rockfish, and Yelloweye Rockfish (Appendix **??**).

3.10 SABLEFISH AGES

The highest proportion of female ages in StRS sets for 2003 through to 2010 were 3, 4, 5, 6, 7, 8, 9 and 10 years of age, respectively. Then, another cohort appeared in 2011 through to 2015, showing up as 3, 4, 5, 6 and 7 year olds. In 2016, 2017 and 2018 the highest proportion of female Sablefish were ages 3, 4, and 5 year olds. Last, the years 2019, 2020 and 2021 were dominated by 3, 4 and 5 year old female Sablefish, respectively (Figure 16 a). This pattern suggests a large 2016 recruitment event with fish from this cohort dominating StRS catch in recent years.

The highest proportion of male ages in StRS sets for 2003 through to 2011 were 3, 5, 5, 6, 8, 8, 8, 10 and 12 years of age, respectively. Another cohort dominated StRS catch starting in 2012, appearing first as 4 year olds in 2012, followed by 5 year olds in 2013, 7 year olds in 2014, 7 year olds in 2015 and 8 year olds in 2016. The years 2019, 2020 and 2021 were represented by 3, 4 and 5 year old males, respectively (Figure 16 b), as was seen for females.

The maximum reported age in B.C. for females is 92 years, collected in 2003. The maximum reported age in B.C. for males is 96 years, collected in 2018.

3.11 OCEANOGRAPHIC TEMPERATURES AND DEPTHS

As with previous years, the 2022 survey data exhibited a trend of decreasing temperature with depth over 1-degree latitude intervals from southwest Vancouver Island to northwest Haida Gwaii (Figure 17).

SBE 39 recorders have been deployed on survey fishing sets since 2006. In the shallow waters, the lowest average temperature of 4.1 °C was recorded in 2016 (latitude zone 52° - 53°); the highest average temperature was 7.4 °C in 2016 (50° - 51°). In the mid-depth waters, the lowest average temperature was 2.9 °C in 2019 (52° - 53°); the highest average temperature was 6.4 °C in 2013 (50° - 51°). In the deepest waters, the lowest average temperature was 2.2 °C in 2016 (54° - 55°) and the highest average temperature was 4.1°C in 2016 (48° - 49°) (Figure 18).

3.12 ACKNOWLEDGEMENTS

We are grateful for the review of this document provided by xx and xx. The stock assessment survey and data report is the result of the collaborative efforts of many individuals. The Canadian Sablefish Association has provided coordination and support of the annual Sablefish survey since 1994. The scientific staff that conducted the 2022 Sablefish research charter included Ian Hamilton, Thomas Giguere, Leila Kadivar, Josef Vavra of Archipelago Marine Research Ltd (AMR); Schon Acheson, Aislyn Adams, Travis Bell, Kristina Castle, Kathryn Temple and Malcolm Wyeth of Fisheries and Oceans, Canada.

A special thanks to the Vessel Master and crew of the F/V Pacific Viking, whose hard work made the survey successful. In 2022, the crew consisted of Deacon Melnychuk (skipper), Darkat Forsyth, Kevin Groulx, Dave Holomego, Braxton Tanaka, Nick Gallant.

4 Tables

Table 1. Spatial and depth stratum allocation and completed set counts (blue) for the 2022 Sablefish research and assessment survey.

Spatial Strata	Depth Strata						Total	Total 2022
	RD_1	RD_1 2022	RD_2	RD_2 2022	RD_3	RD_3 2022		
S_1 (South West Coast Vancouver Island or SWCVI)	6	6	8	8	5	5	19	19
S_2 (North West Coast Vancouver Island or NWCVI)	6	6	7	7	5	5	18	18
S_3 (Queen Charlotte Sound or QCS)	8	6	6	6	5	3	19	15
S_4 (South West Coast Haida Gwaii or SWCHG)	6	6	6	6	5	5	17	17
S_5 (North West Coast Haida Gwaii or NWCHG)	6	6	7	7	5	4	18	17
Total	**32**	**30**	**34**	**34**	**25**	**22**	**91**	**86**

Table 2. Target number of 25-trap camera survey sets and completed counts (blue) for the 2022 Sablefish research and assessment survey.

Strata	Sets in Depth Strata						Total	Total 2022
	RD_1	RD_1 2022	RD_2	RD_2 2022	RD_3	RD_3 2022		
S_1 (SWCVI)	2	2	2	2	1	0	5	4
S_2 (NWCVI)	2	0	2	2	1	1	5	3
S_3 (QCS)	2	0	2	1	1	1	5	2
S_4 (SWCHG)	2	1	2	0	1	1	5	2
S_5 (NWCHG)	2	2	2	3	1	1	5	6
Total	**10**	**5**	**10**	**8**	**5**	**4**	**25**	**25**

Table 3. Details of completed 60 trap camera movement sets. Seabird temperature and pressure recorder (SBE39), Actigraph accelerometer (AXL) and camera (CAM) are indicated with an 'x'.

Spatial Strata	Set	Becket id	Trap id	SBE39	AXL	CAM
S_1 (SWCVI)	5	4	4	x	x	x
		30	30	x	x	x
		54	54	x	x	x
S_1 (SWCVI)	11	3	3	x	x	x
		30	30	x	x	x
		54	54	x	x	x
S_1 (SWCVI)	18	5	5	x	x	x
		30	30	x	x	x
		54	54	x	x	x
S_1 (SWCVI)	21	5	5	x	x	x
		30	30	x	x	x
		54	54	x	x	x
S_2 (NWCVI)	30	5	5	x	x	x
		30	30	x	x	x
		54	54	x	x	x
S_5 (NWCHG)	64	5	5	x	x	x
		30	30	x	x	x
		54	54	x	x	x

Table 4. Summary of species captured during the 2022 survey StRS sets conducted by the Pacific Viking. No value in both weight and count fields indicate trace weights.

Category	Common Name	Scientific Name	Count	Weight(kg)
Roundfish Species	Sablefish	ANOPLOPOMA FIMBRIA		95,661
	Lingcod	OPHIODON ELONGATUS		1,242
	North Pacific Spiny Dogfish	SQUALUS ACANTHIAS		1,214
	Pacific Grenadier	CORYPHAENOIDES ACROLEPIS		220
	Pectoral Rattail	ALBATROSSIA PECTORALIS		179
	Pacific Sleeper Shark	SOMNIOSUS PACIFICUS		7
	Pacific Cod	GADUS MACROCEPHALUS		5
	Brown Cat Shark	APRISTURUS BRUNNEUS		1
	Darkfin Sculpin	MALACOCOTTUS ZONURUS	1	
	Threadfin Sculpin	ICELINUS FILAMENTOSUS	1	
Rockfish Species	Rougheye/Blackspotted Rockfish Complex	SEBASTES ALEUTIANUS		390
	Redbanded Rockfish	SEBASTES BABCOCKI		228
	Yelloweye Rockfish	SEBASTES RUBERRIMUS		209
	Shortraker Rockfish	SEBASTES BOREALIS		158
	Shortspine Thornyhead	SEBASTOLOBUS ALASCANUS		81
	Yellowmouth Rockfish	SEBASTES REEDI		10
	Canary Rockfish	SEBASTES PINNIGER		7
	Rosethorn Rockfish	SEBASTES HELVOMACULATUS		6
	Bocaccio	SEBASTES PAUCISPINIS		5
	Longspine Thornyhead	SEBASTOLOBUS ALTIVELIS		1
		SEBASTES		1
	Aurora Rockfish	SEBASTES AURORA		1
Flatfish Species	Pacific Halibut	HIPPOGLOSSUS STENOLEPIS		859
	Arrowtooth Flounder	ATHERESTHES STOMIAS		165
	Fragile Sea Urchin	MICROSTOMUS PACIFICUS		8
Invertebrate Species	Grooved Tanner Crab	CHIONOECETES TANNERI		165
		ALLOCENTROTUS FRAGILIS		51
	Oregontriton	FUSITRITON OREGONENSIS		21
	Brown Box Crab	LOPHOLITHODES FORAMINATUS		19
	Red Queen Crab	LITHODES COUESI		10
	Giant Pacific Octopus	ENTEROCTOPUS DOFLEINI		9
		NEPTUNEA		4
		PARALOMIS MULTISPINA		1
	Inshore Tanner Crab	CHIONOECETES BAIRDI		1
	Prawn	PANDALUS PLATYCEROS	3	
	Morning Sun Starfish	SOLASTER DAWSONI	2	
	Sea Mouse	APHRODITA	1	
	Vermillion Starfish	MEDIASTER AEQUALIS	1	
	Whitespotted Sea Cucumber	PARASTICHOPUS LEUKOTHELE	1	
	Fish-Eating Star	STYLASTERIAS FORRERI	1	
	Heart Urchins	ATELOSTOMATA	1	
	Gastropods	GASTROPODA		
		AMPHIOPHIURA PONDEROSA		
		CROSSASTER		
	Sponges	PORIFERA		
	Mud Star	CTENODISCUS CRISPATUS		
	Ophiuroidea	OPHIUROIDEA		
	Rose Starfish	CROSSASTER PAPPOSUS		

Table 5. Summary of species captured by the Pacific Viking during the 2022 survey standardized sets conducted at Finlayson inlet locality. No value in both weight and count fields indicate trace weights.

Category	Common Name	Scientific Name	Count	Weight(kg)
Roundfish Species	Sablefish	ANOPLOPOMA FIMBRIA		5256
Flatfish Species	Pacific Halibut	HIPPOGLOSSUS STENOLEPIS		15
Invertebrate Species	Mud Star	CTENODISCUS CRISPATUS	17	

Table 6. Summary of Sablefish sex ratios and mean fork length measurements collected during the 2022 stratified random sets by spatial and depth stratum.

Strata			Proportion		Mean Fork Length (mm)		
Spatial	Depth	barpolt	Males	Females	Males	Females	Tagged
S_1	RD_1		0.33	0.67	557	597	579
	RD_2		0.65	0.35	540	578	548
	RD_3		0.35	0.65	559	633	592
			0.44	**0.56**	**552**	**603**	**573**
S_2	RD_1		0.32	0.68	598	632	601
	RD_2		0.64	0.36	543	594	561
	RD_3		0.36	0.64	569	651	610
			0.44	**0.56**	**570**	**626**	**591**
S_3	RD_1		0.28	0.72	594	638	604
	RD_2		0.61	0.39	565	611	573
	RD_3		0.53	0.47	590	654	608
			0.47	**0.53**	**583**	**634**	**595**
S_4	RD_1		0.26	0.74	610	663	636
	RD_2		0.50	0.50	559	583	564
	RD_3		0.50	0.50	592	659	611
			0.42	**0.58**	**587**	**635**	**604**
S_5	RD_1		0.28	0.72	581	633	605
	RD_2		0.63	0.37	546	590	563
	RD_3		0.66	0.34	551	625	590
			0.52	**0.48**	**559**	**616**	**586**

Table 7. Canadian tag recovery counts from all sets during the 2021 survey, by distance from release site and years at liberty. Distances were determined using the great circle distance between the release location and recovery location.

	Distance (km) from Release Location							
Years at Liberty	**<10**	**11-50**	**51-100**	**101-250**	**251-500**	**501-1000**	**1000+**	**Recovery count**
1	38	23	8	8	1	0	0	78
2-5	83	41	13	38	28	2	4	209
6-10	21	13	3	16	8	3	1	65
11+	24	21	8	12	6	1	2	74
Total Counts	166	98	32	74	43	6	7	426

5 Figures

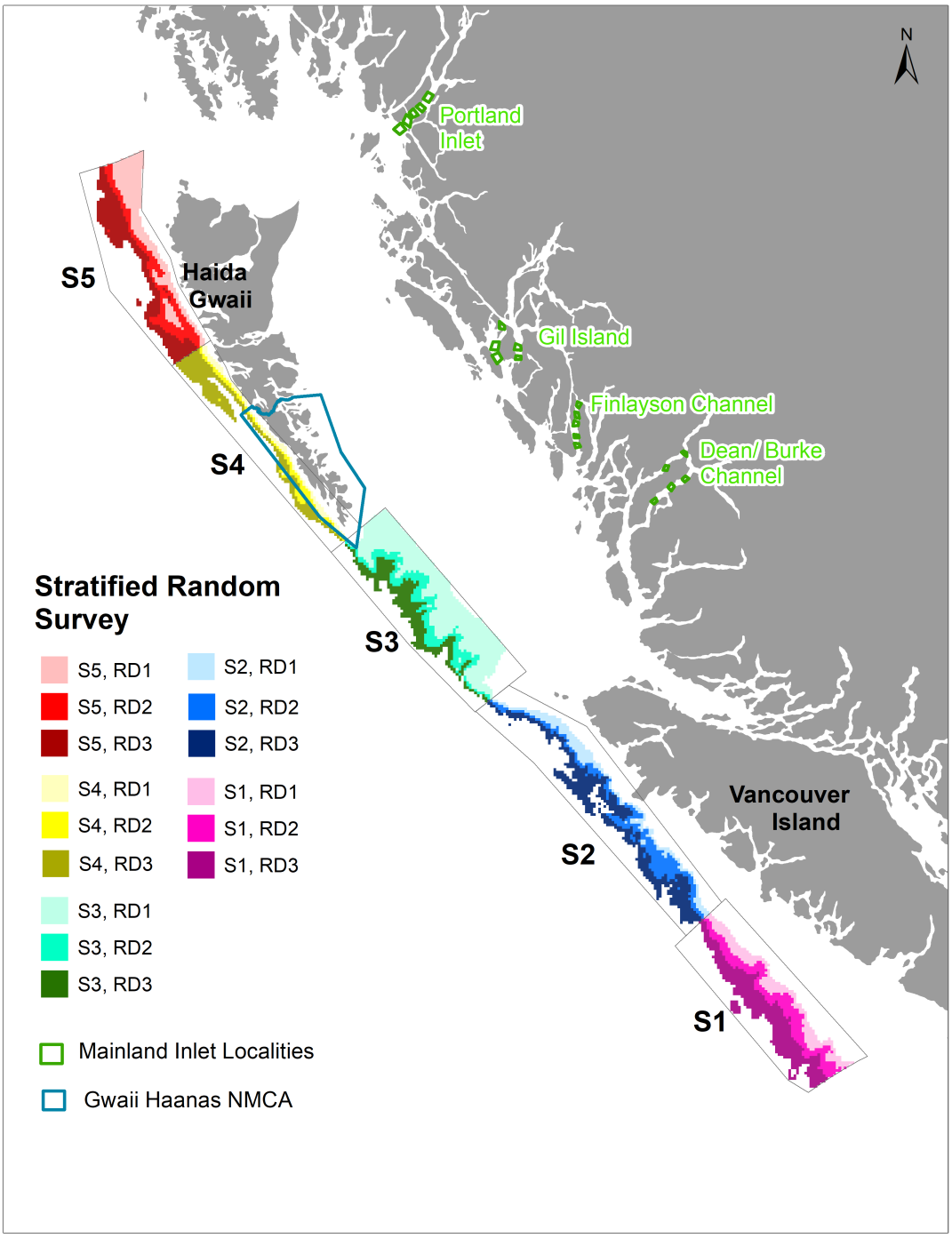

Figure 1. Location of the survey design boundaries of the mainland inlet localities, and the five spatial areas (S_1-S_5) of the stratified random survey design. The three depths strata (RD_1-RD_3) are colour-coded and nested within each of the five spatial strata.

Figure 2. Image of the F/V Pacific Viking used for the 2022 Sablefish research and assessment survey. Photo credit: Schon Hardy.

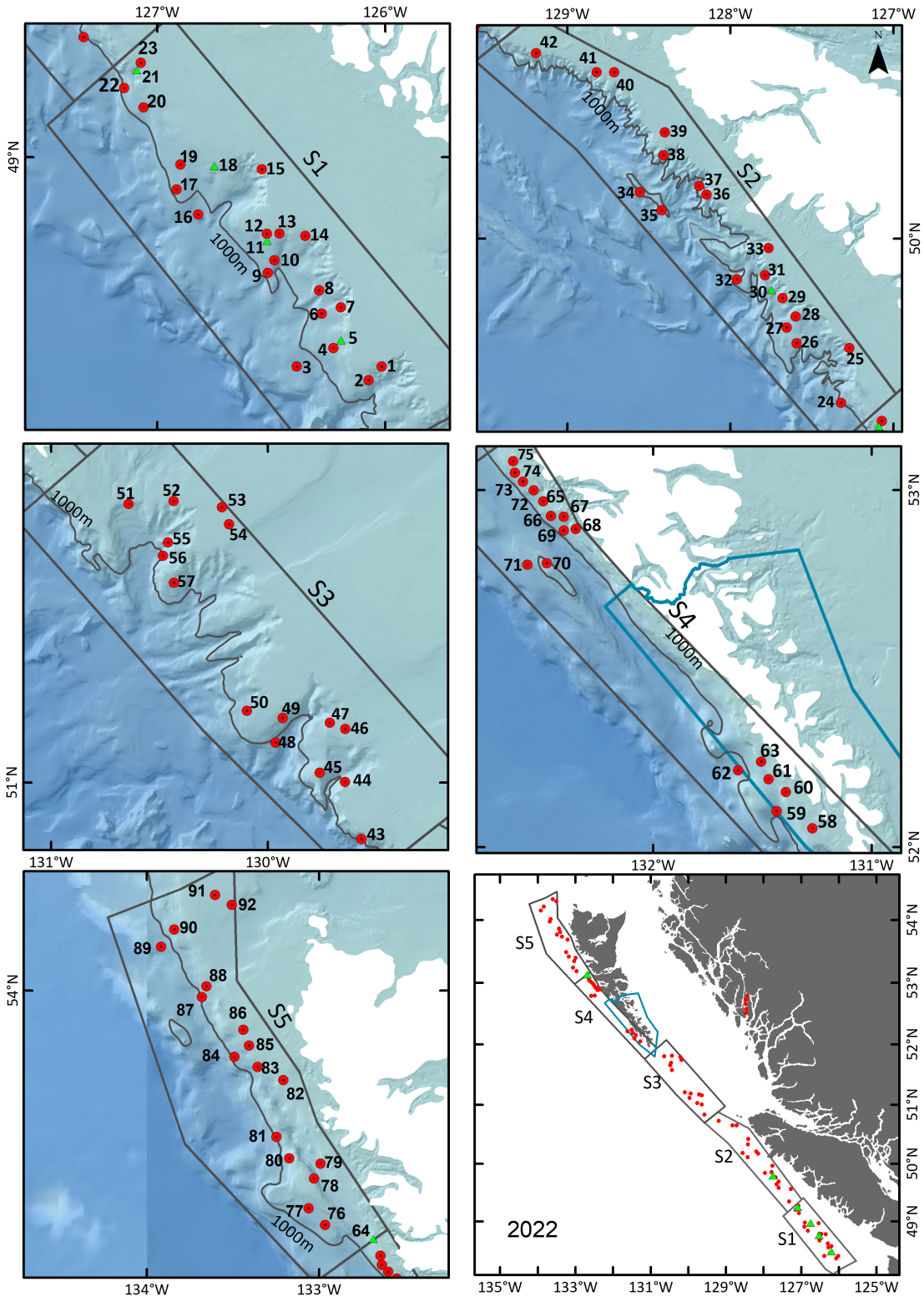

Figure 3. Start locations of survey sets (red markers) conducted in 2022 for the stratified random survey areas S_1 through S_5. Green triangle symbols represent movement/deep-water autonomous camera sets.

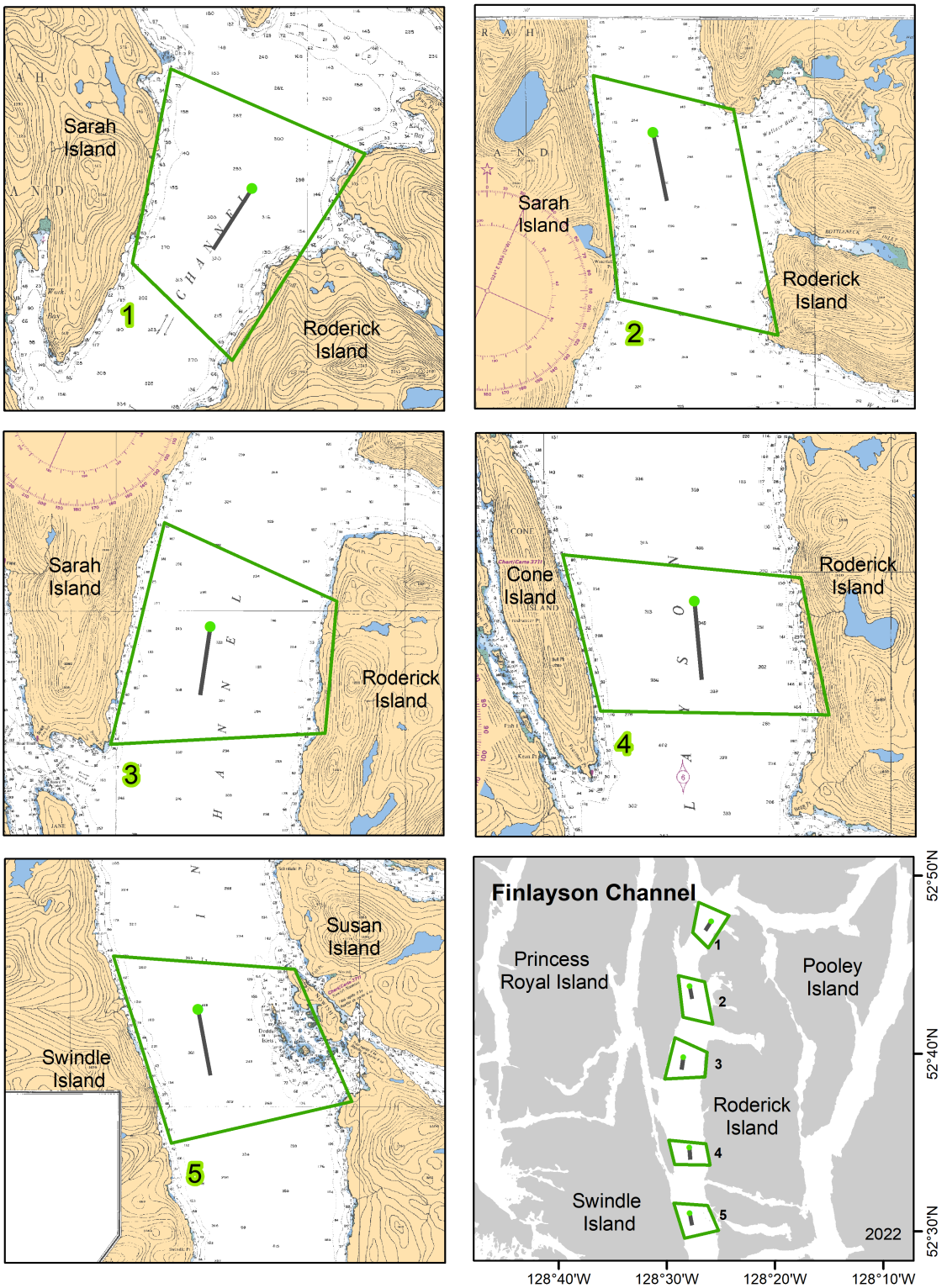

Figure 4. Location of the 2022 standardized sets within the Finlayson Channel mainland inlet locality.

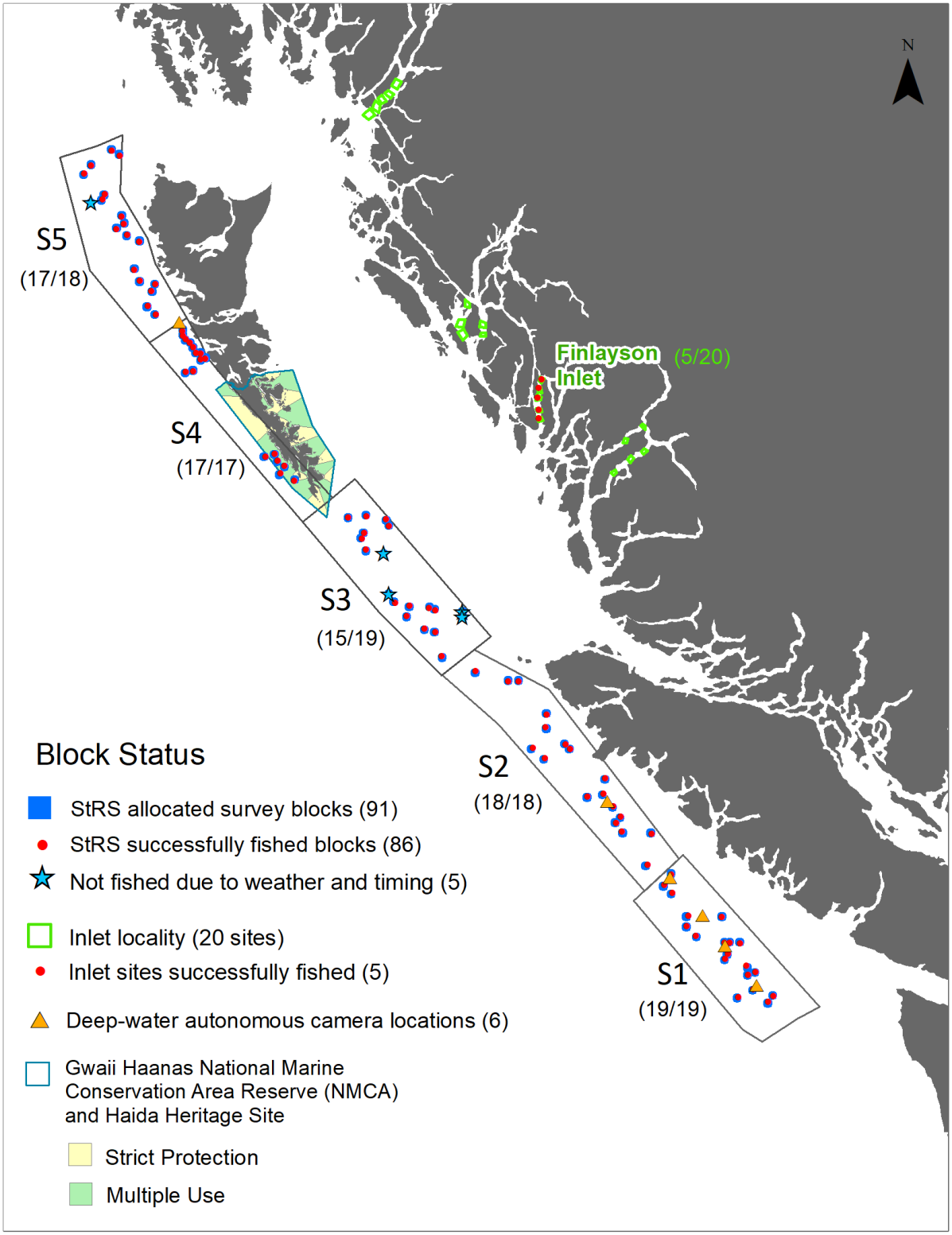

Figure 5. Map of allocated vs completed survey blocks for the 2022 survey sets. Star symbols depict rationale for dropped survey blocks.

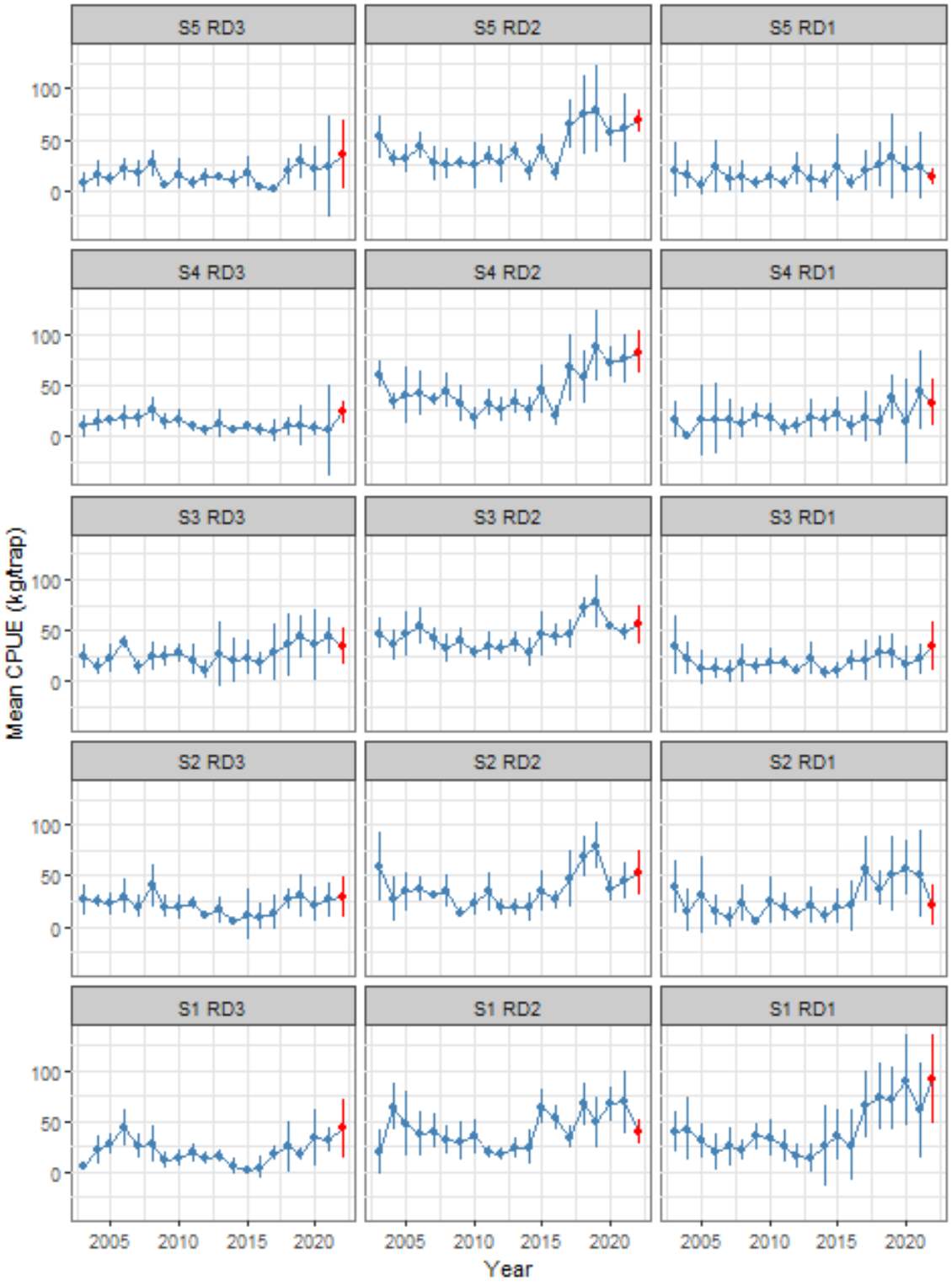

Figure 6. Average Sablefish catch per unit effort (CPUE; mean +/- 95% CIs) by survey strata since 2003. Panels run deep to shallow (left to right) and north to south (top to bottom).

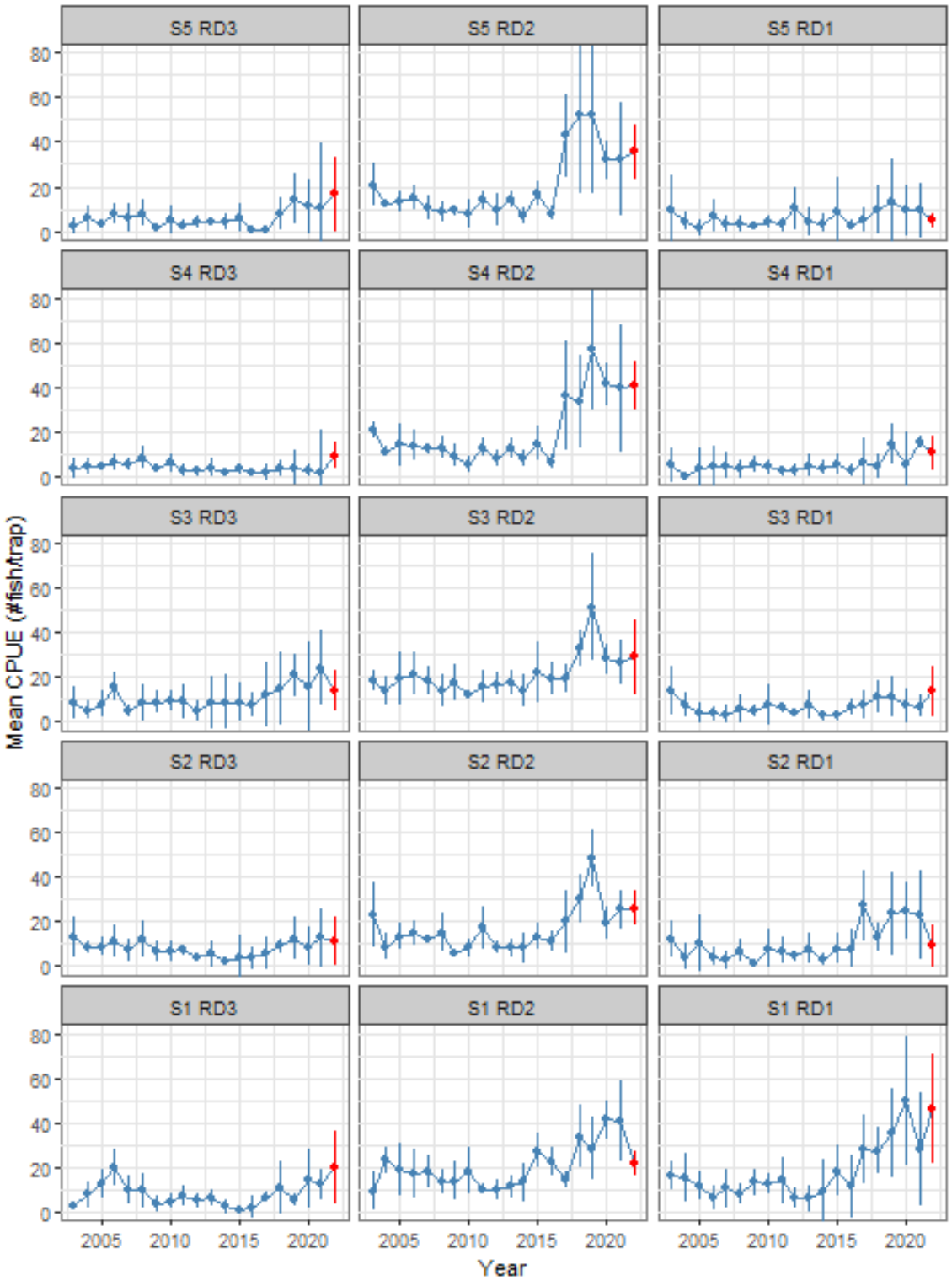

Figure 7. Average number of Sablefish per trap (mean +/- 95% CIs) by StRS survey strata over time. Panels run deep to shallow (left to right) and north to south (top to bottom).

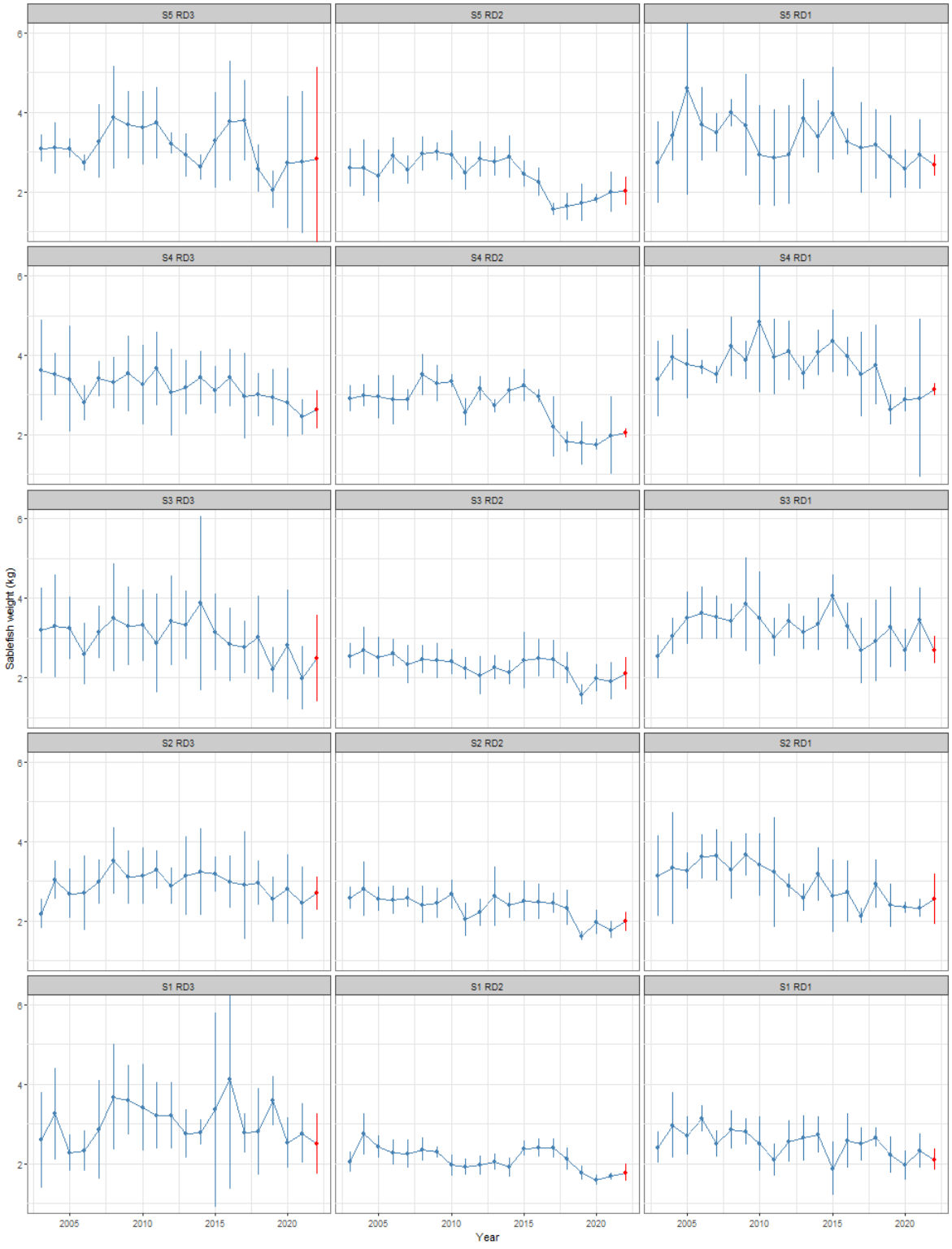

Figure 8. Average weight of Sablefish (mean +/- 95% CIs) by survey strata over time. Panels run deep to shallow (left to right) and north to south (top to bottom).

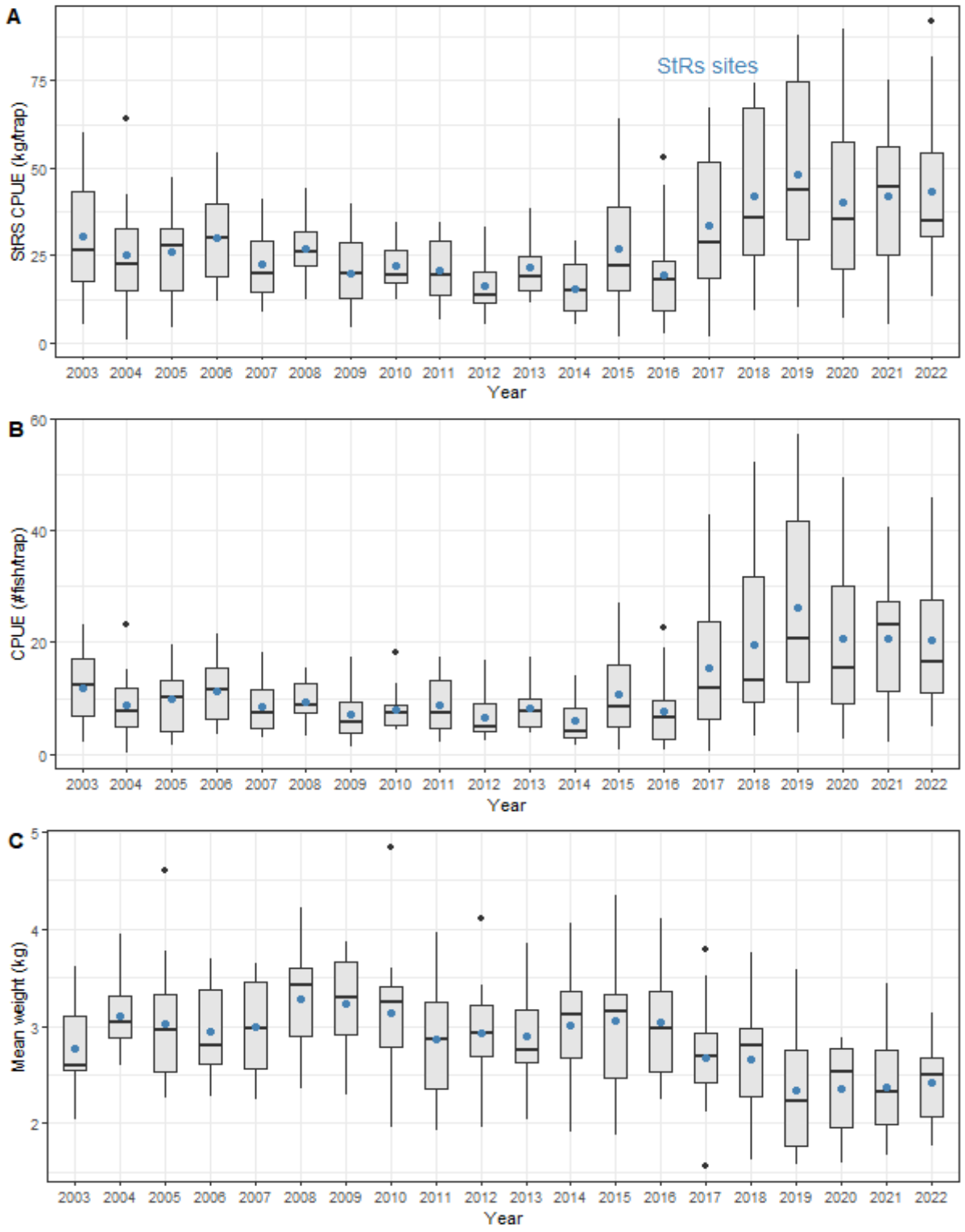

Figure 9. (A) Annual mean weight of Sablefish per trap (kg/trap); (B) annual mean number of Sablefish per trap (#fish/trap); (C) annual mean weight of Sablefish (kg) by StRS survey strata over time. Horizontal line is median and blue dots are arithmetic mean.

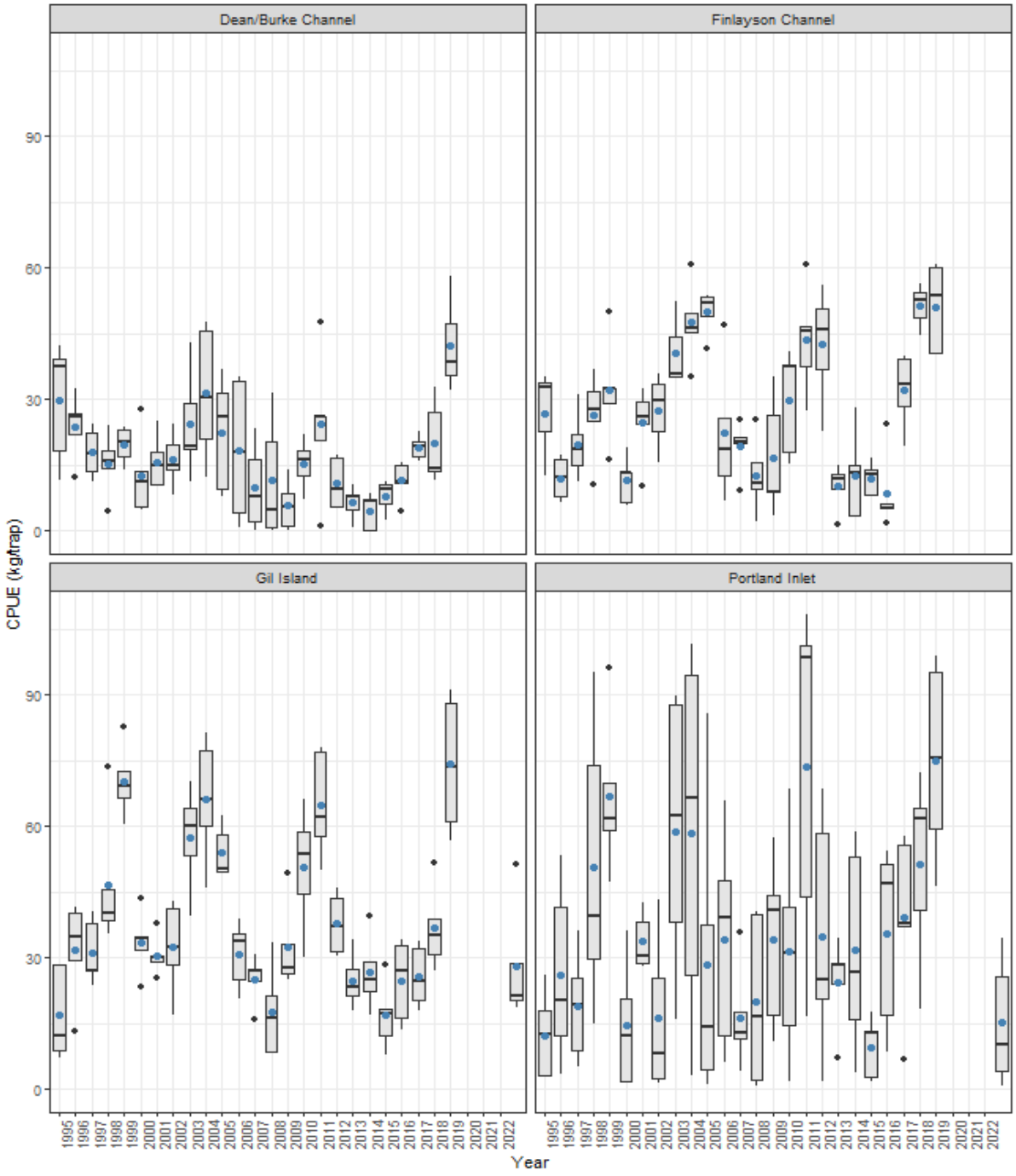

Figure 10. Annual distributions of catch statistics over the four mainland inlet indexing sets between 1994 and 2022 with CPUE in units of weight of Sablefish per trap (kg/trap). Horizontal line is median, grey shading shows the 25th and 75% percentiles, and blue dots show arithmetic means. No inlets were surveyed in 2020. Dean/Burke Channel inlet was the only inlet surveyed in 2021; Finlayson Inlet was the only inlet surveyed in 2022.

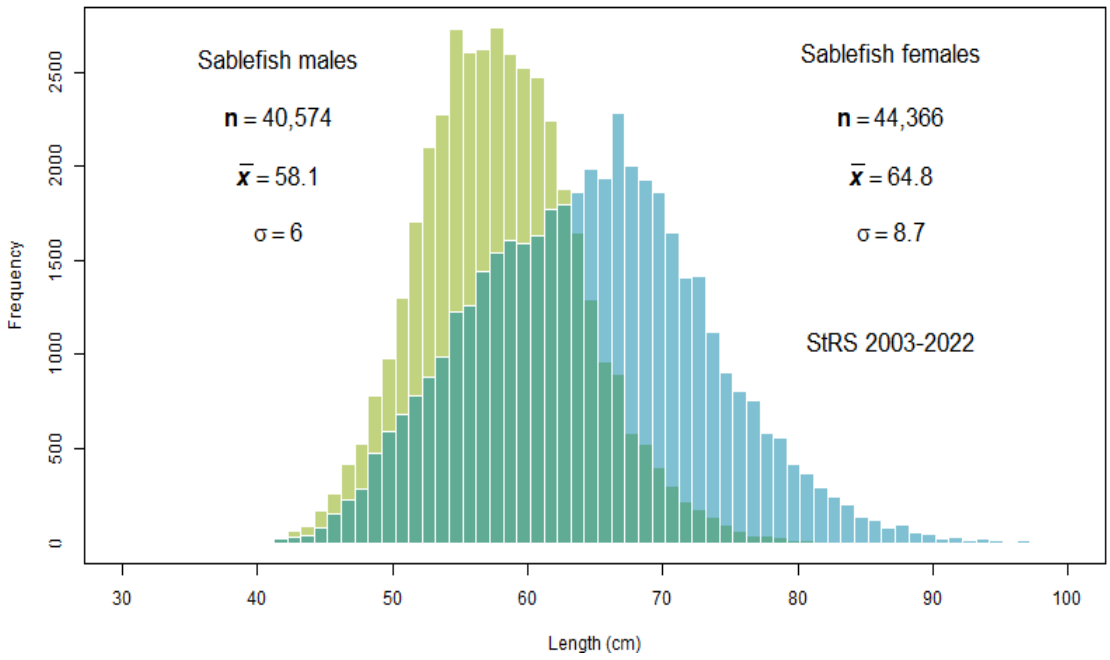

Figure 11. Length frequencies for female (grey) and male Sablefish (steel blue) up to 2022 for all StRS sets. Specimen number (n), mean ($\overline{x}$) and standard deviation (σ) are displayed.

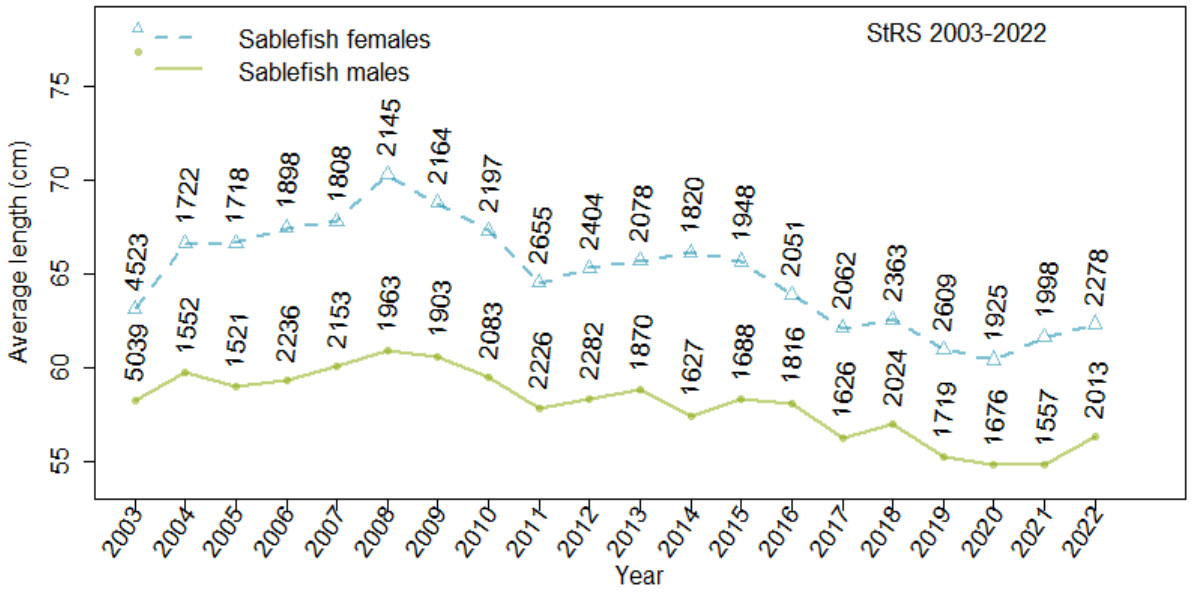

Figure 12. Average length of male and female Sablefish by year. Counts by sex are labelled.

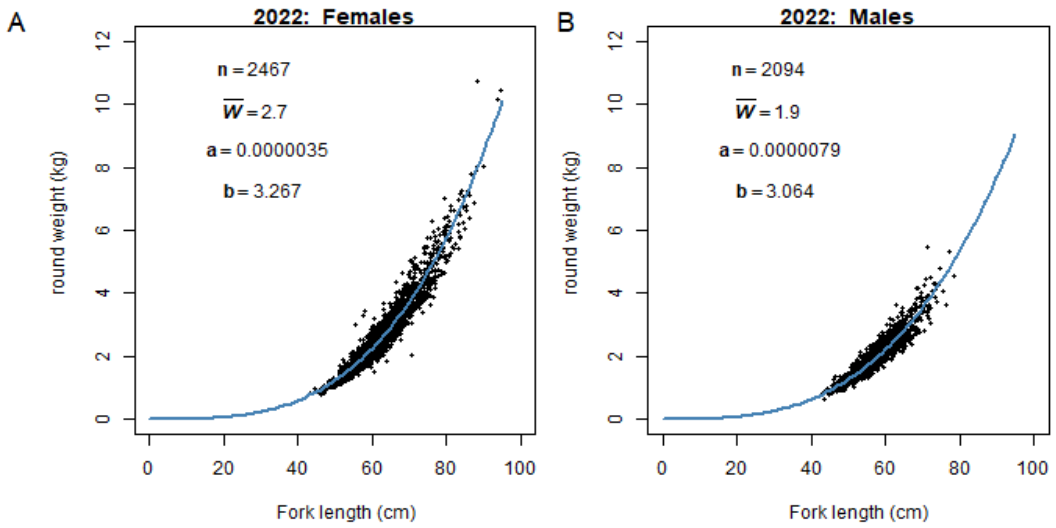

Figure 13. Sablefish fork length (L in cm) vs weight (W in kg) for females (A) and males (B) for the 2022 survey.

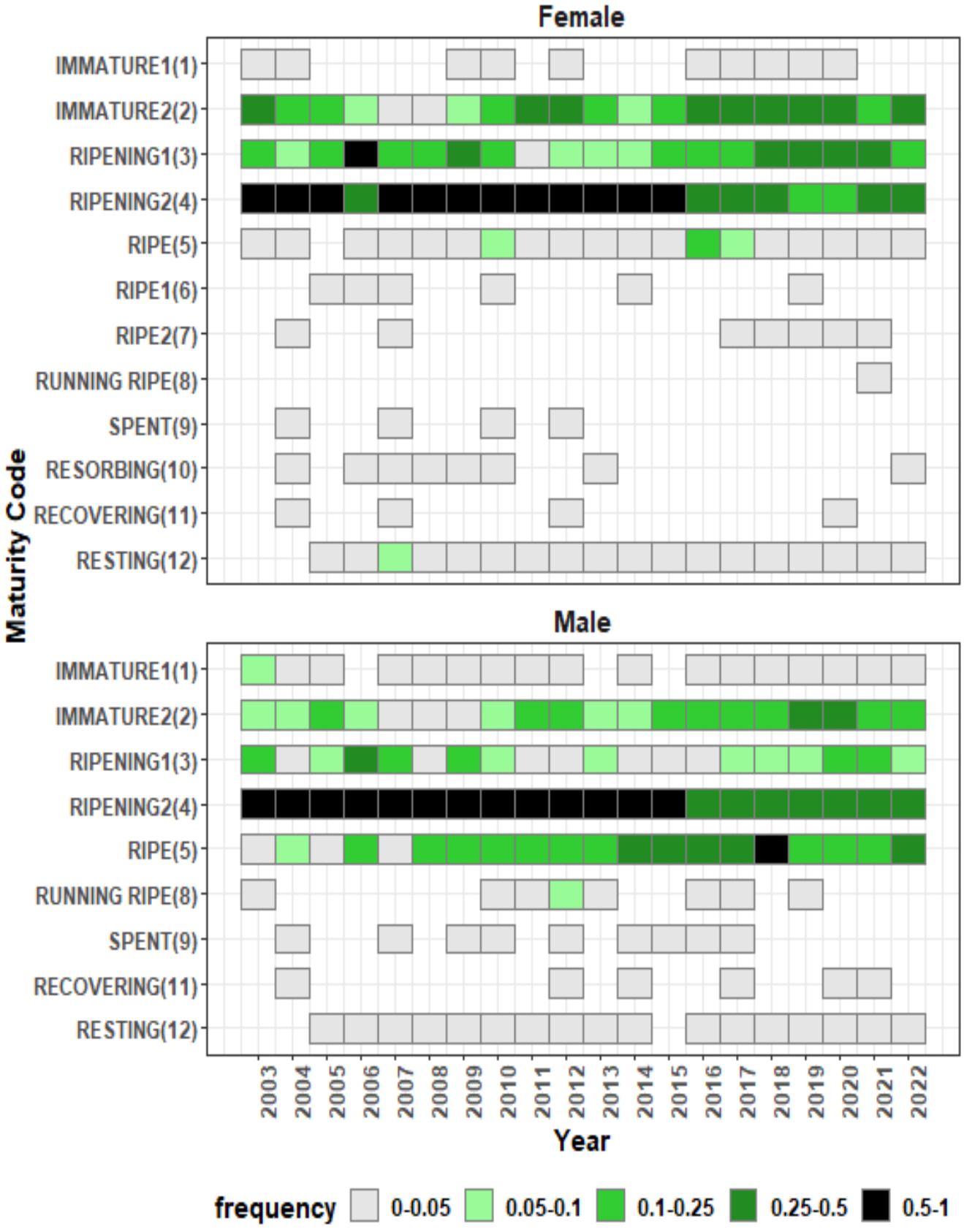

Figure 14. Relative frequency of maturity codes by survey year for female and male Sablefish caught on StRS sets. Frequencies are calculated within each maturity stage for every year.

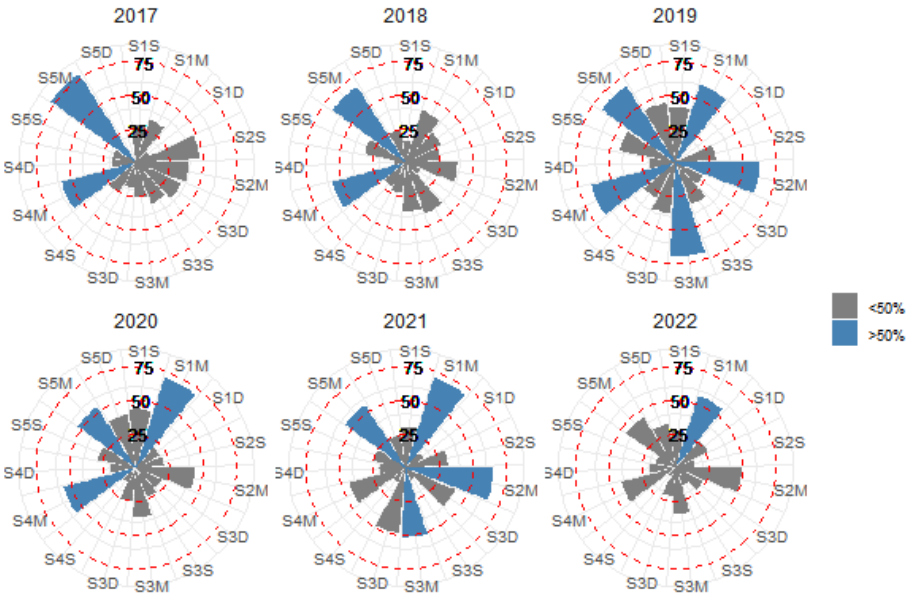

Figure 15. The percentage of sub-legal Sablefish (<55 cm fork length) sampled by spatial (S_1-S_5) and depth strata (S=shallow, RD_1; M=mid, RD_2; D=deep, RD_3) over time. Sub-legal specimen count above 50% sampled shown in blue.

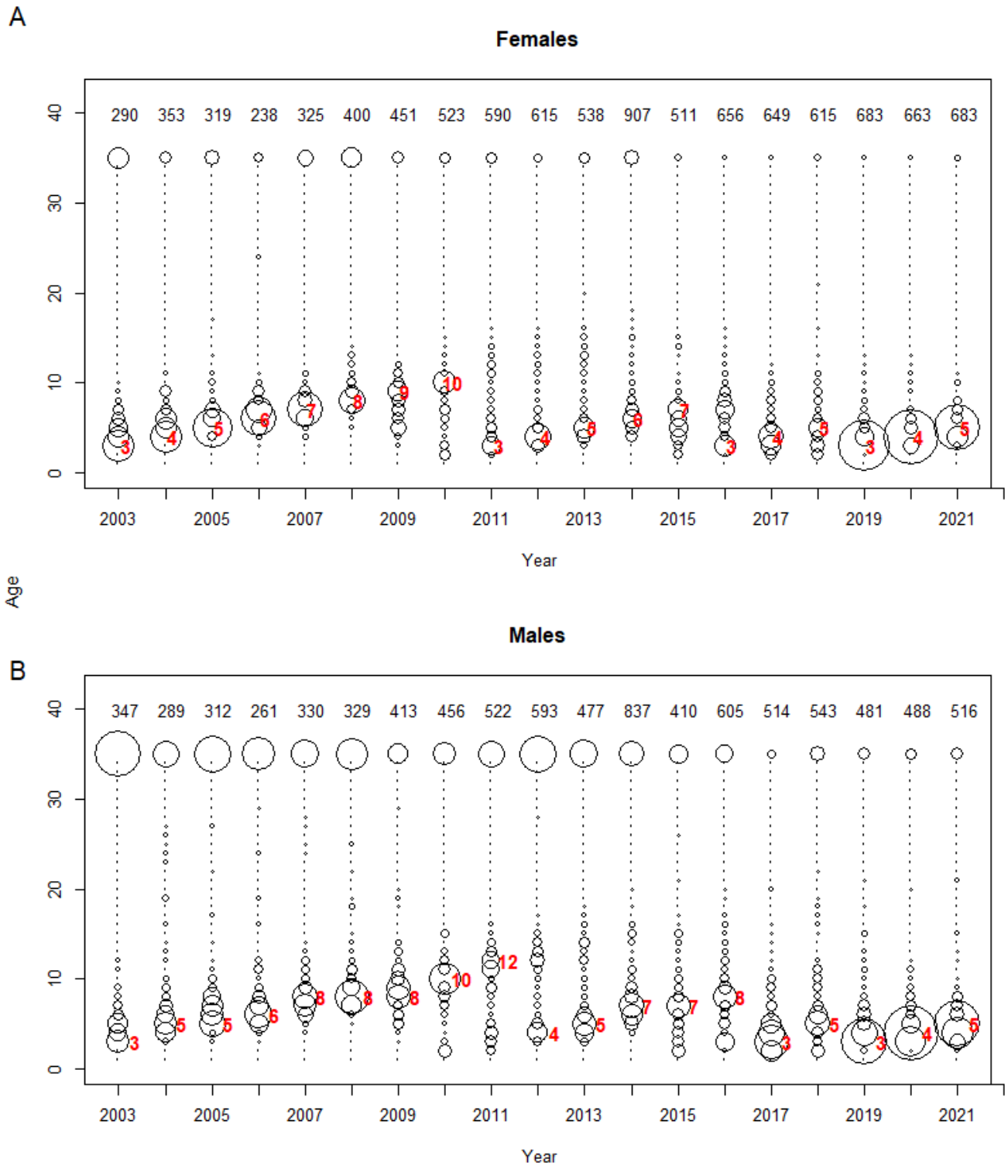

Figure 16. Bubble plot for female (A) and male (B) Sablefish ages by survey year from StRS sets that have been aged. The sizes of the circles are proportional to the number of fish with given ages. Fish age 35 and older are included in one bubble. The total number of fish aged are listed across the top of each panel. The ages with the highest ratios are posted to the right of each bubble.

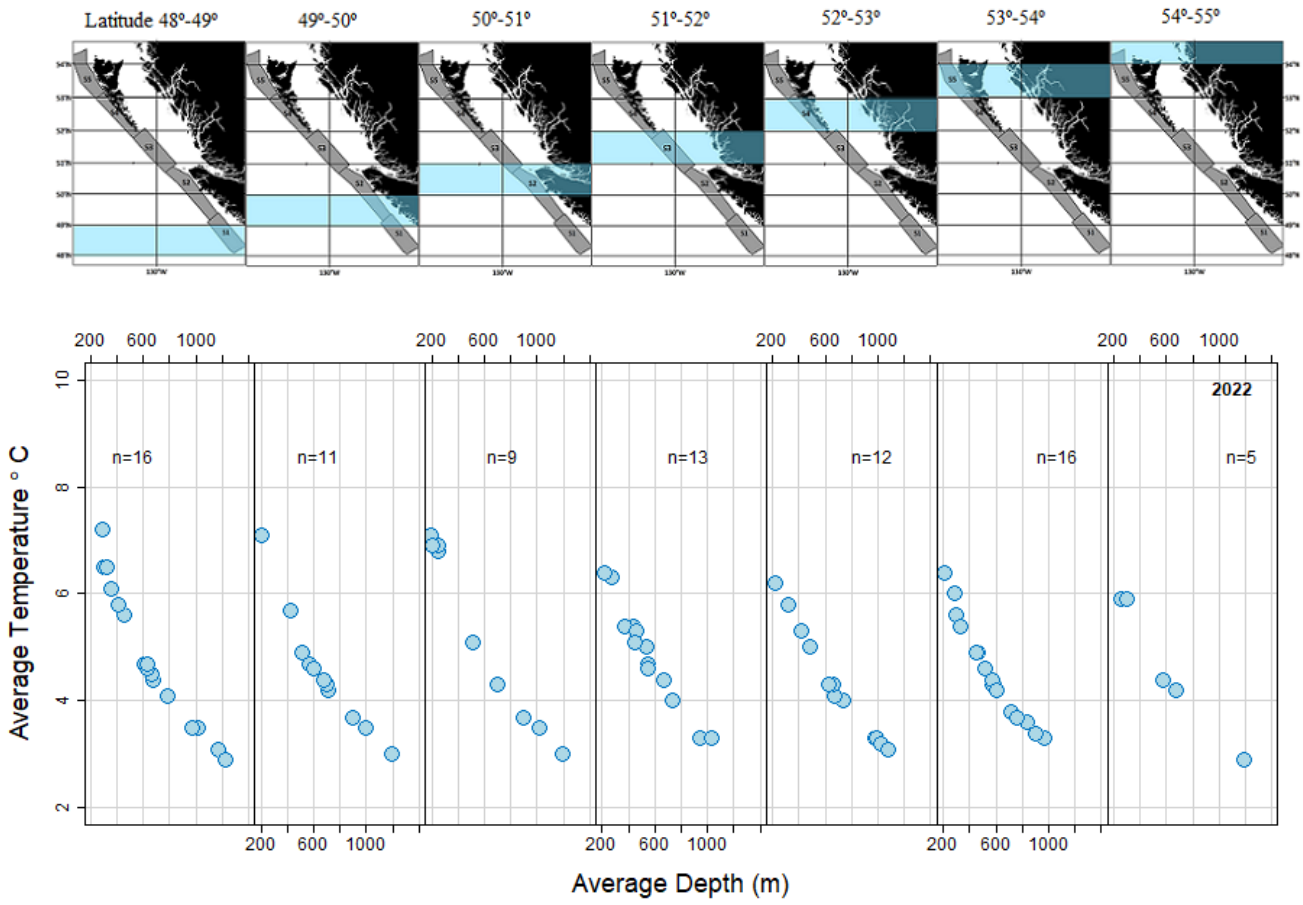

Figure 17. Coplot of average depth (m) vs average temperature (°C) for a given 1-degree latitude range (blue bands) for 2022. The number of fishing sets deployed with a SBE 39 recorder are represented by n.

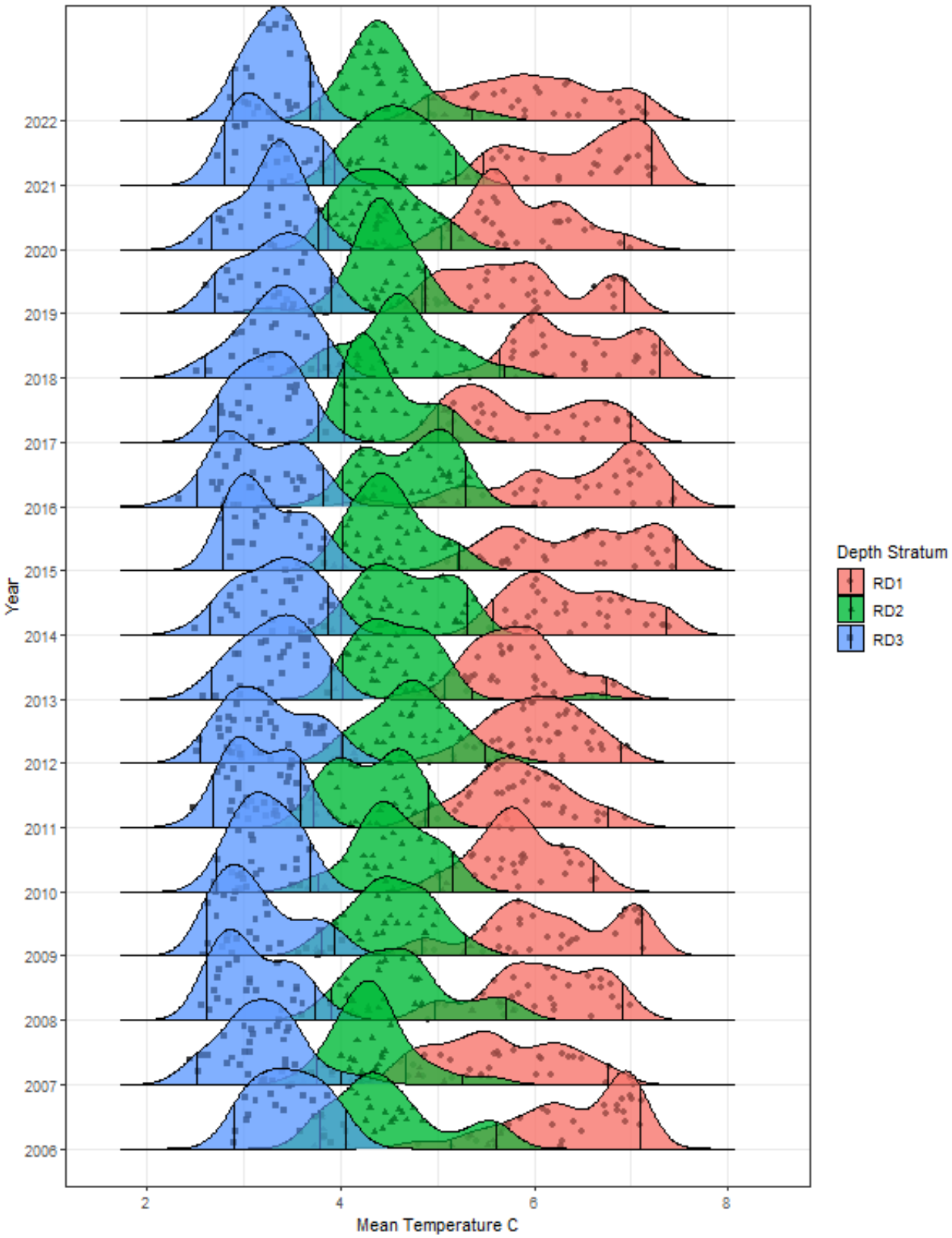

Figure 18. Vertical density ridgeplots of mean temperatures per year as reported by set from the Sea-bird SBE 39 loggers on traps at three depth intervals, RD_1 = shallow (100-450 m), RD_2 = mid (450-850 m), RD_3 = deep (850-1400 m). Lines indicate the 2.5% and 97.5% tails.

APPENDIX A LIST OF SABLEFISH RESEARCH AND ASSESSMENT SURVEYS.

Year	Dates	Vessel	Captain	Set Count	GFBIO Trip id
1988	Oct 28 - Nov 24	VICIOUS FISHER	VANCE FLETCHER	16	43990
1989	Oct 19 - Nov 18	LA PORSCHE	SIGURD BRYNJOLFSON	29	43910
1990	Nov 8 - Nov 18	VIKING STAR	DOUG FARRINGTON	24	43750
1991	Oct 9 - Oct 29	W. E. RICKER	ALAN FARRINGTON	32	43673
1992	Oct 13 - Nov 4	W. E. RICKER	RON ROBERTS	38	43670
1993	Oct 19 - Nov 11	W. E. RICKER	ALAN FARRINGTON	42	43650
1994	Oct 13 - Oct 31	LA PORSCHE	RICHARD BEAUVAIS	39	43630
1994	Oct 18 - Nov 13	WESTERN VIKING	RICK JONES	27	43390
1995	Oct 8 - Oct 20	OCEAN PEARL	ROBERT FRAUMENI	29	43270
1995	Oct 11 - Oct 28	VICTOR F	MICHAEL DERRY	34	43330
1995	Oct 1 - Oct 31	VIKING SUNRISE	JASON OLSEN	40	43350
1996	Sep 26 - Oct 10	OCEAN PEARL	MICHAEL DERRY	32	43039
1996	Sep 30 - Oct 22	VIKING STAR	OTTO ELVAN	49	43210
1996	May 10 - May 30	VIKING SUNRISE	ALBERT (DEACON) MELNYCHUK	42	43024
1997	Sep 26 - Oct 21	OCEAN PEARL	MICHAEL DERRY	74	42699
1997	May 20 - Jun 10	VIKING SUNRISE	ALBERT (DEACON) MELNYCHUK	42	42760
1998	Sep 22 - Oct 17	OCEAN PEARL	MICHAEL DERRY	89	41122
1999	Sep 29 - Oct 30	OCEAN PEARL	MICHAEL DERRY	109	40589
2000	Oct 8 - Nov 14	PACIFIC VIKING	ALBERT (DEACON) MELNYCHUK	131	40517
2001	Oct 6 - Nov 6	OCEAN PEARL	MICHAEL DERRY	134	43233
2002	Oct 4 - Nov 7	PACIFIC VIKING	ALBERT (DEACON) MELNYCHUK	125	48120
2002	Oct 5 - Nov 13	VIKING SUNRISE	JASON OLSEN	90	48110
2003	Oct 15 - Nov 13	OCEAN PEARL	MICHAEL DERRY	94	52100
2003	Oct 7 - Nov 10	VIKING STAR	JIM FARRINGTON	84	52120
2004	Oct 5 - Nov 15	MILBANKE SOUND	DON QUAST	95	58145
2004	Oct 5 - Nov 3	OCEAN MARAUDER	ALBERT (DEACON) MELNYCHUK	84	57360
2005	Oct 4 - Nov 2	PACIFIC VIKING	ALBERT (DEACON) MELNYCHUK	84	60529
2005	Oct 7 - Nov 17	VIKING SUNRISE	RORY JOHNSON	88	60503
2006	Oct 1 - Nov 1	PACIFIC VIKING	ALBERT (DEACON) MELNYCHUK	98	62966
2006	Oct 2 - Nov 15	SENA II	TIM JOYS	98	62666
2007	Oct 7 - Nov 12	PACIFIC VIKING	ALBERT (DEACON) MELNYCHUK	99	65106
2007	Oct 8 - Nov 12	VIKING TIDE	JASON OLSEN	91	65107
2008	Sep 29 - Nov 16	OCEAN PEARL	ROBERT FRAUMENI	157	67007
2009	Oct 8 - Nov 25	OCEAN PEARL	ROBERT FRAUMENI	155	69067
2010	Oct 9 - Nov 30	OCEAN PEARL	ROBERT FRAUMENI	153	70787
2011	Oct 9 - Nov 21	OCEAN PEARL	DARCY NICHOLS	132	72067
2012	Oct 9 - Nov 17	OCEAN PEARL	DARCY NICHOLS	135	73190
2013	Oct 11 - Nov 17	PACIFIC VIKING	ALBERT (DEACON) MELNYCHUK	111	74872
2014	Oct 9 - Nov 17	OCEAN PEARL	DARCY NICHOLS	111	76150
2015	Oct 9 - Nov 20	PACIFIC VIKING	ALBERT (DEACON) MELNYCHUK	111	77830
2016	Oct 7 - Nov 22	OCEAN PEARL	DARCY NICHOLS	111	80471
2017	Oct 6 - Nov 21	PACIFIC VIKING	ALBERT (DEACON) MELNYCHUK	109	82790
2018	Oct 9 - Nov 19	OCEAN PEARL	DARCY NICHOLS	111	84250
2019	Oct 8 - Nov 25	PACIFIC VIKING	ALBERT (DEACON) MELNYCHUK	109	85230
2020	Oct 7 - Nov 21	PACIFIC VIKING	ALBERT (DEACON) MELNYCHUK	87	85690
2021	Oct 6 - Nov 21	PACIFIC VIKING	ALBERT (DEACON) MELNYCHUK	81	86130
2022	Oct 3 - Nov 19	PACIFIC VIKING	ALBERT (DEACON) MELNYCHUK	97	86530

APPENDIX B SURVEY SET DETAILS 2022.

Details of sets completed during the 2022 survey program (F/V Pacific Viking). Sets are listed by stratum/inlet name, set type, depth stratum, start date, end of gear deployment time and duration in minutes. The depth strata for type 3 tagging sets include RD_1 (100-250 fathoms), RD_2 (250-450 fathoms) and RD_3 (450-750 fathoms). The position data includes the major area and start and end latitude and longitude in degrees decimal minutes. The bottom depths (in meters) of the fishing set are shown with the mean bottom depth calculated from recordings at one minute intervals between the start and end of the set. The number of traps fished for each set excludes open traps, while holed or fouled traps have been included. Sets that successfully deployed a Seabird SBE temperature and pressure recorder (SBE 39), an accelerometer (AXL) or a camera (CAM) are indicated with an 'x'.

Set	Spatial Stratum	Type	Depth Stratum	Date	Time	Duration (minutes)	Area	Start Latitude	Start Longitude	End Latitude	End Longitude	Start Depth (m)	End Depth (m)	Mean Depth (m)	Traps Fished	TDR	AXL	CAM
1	S1	StRS	RD1	Oct 5	08:06	1326	3C	48°3.4'N	126°0.9'W	48°3.3'N	126°1.8'W	302	281	300	25	x		
2	S1	StRS	RD2	Oct 5	09:26	1366	3C	48°1'N	126°4.4'W	48°0.8'N	126°5.3'W	496	471	472	25	x		
3	S1	StRS	RD3	Oct 5	11:54	1393	3C	48°3.4'N	126°23.3'W	48°3.4'N	126°24.3'W	1230	1277	1254	25	x		
4	S1	StRS	RD2	Oct 5	13:54	1535	3C	48°6.6'N	126°13.7'W	48°6.5'N	126°14.6'W	656	695	676	25	x		
5		Movement		Oct 5	15:08	1327	3C	48°8'N	126°11.6'W	48°8.1'N	126°13.9'W	466	603	529	58	x	x	x
6	S1	StRS	RD2	Oct 5	16:36	1485	3C	48°2.7'N	126°16.7'W	48°2.6'N	126°17.7'W	665	687	676	25	x	x	x
7	S1	StRS	RD2	Oct 5	18:00	1487	3C	48°3.8'N	126°11.7'W	48°3.5'N	126°12.7'W	479	639	567	25	x		
8	S1	StRS	RD2	Oct 7	08:07	1323	3C	48°6.8'N	126°17.4'W	48°6.2'N	126°17.9'W	565	700	617	25	x		
9	S1	StRS	RD3	Oct 7	10:23	1345	3C	48°9.8'N	126°30.9'W	48°9.7'N	126°31.8'W	1012	1035	1025	25	x		
10	S1	StRS	RD2	Oct 7	11:50	1349	3C	48°2'N	126°29.2'W	48°1.7'N	126°30.1'W	661	669	648	25	x		
11		Movement		Oct 7	13:39	1343	3C	48°5.4'N	126°31'W	48°4.7'N	126°32.9'W	415	562	479	58	x	x	x
12	S1	StRS	RD1	Oct 7	15:04	1464	3C	48°6.6'N	126°31.1'W	48°6.5'N	126°32'W	336	378	355	25	x	x	x
13	S1	StRS	RD1	Oct 7	16:22	1556	3C	48°6.7'N	126°27.8'W	48°6.4'N	126°28.7'W	294	315	305	25	x		
14	S1	StRS	RD1	Oct 7	17:53	1578	3C	48°6.3'N	126°21'W	48°6.2'N	126°22.1'W	306	333	325	25	x		
15	S1	StRS	RD1	Oct 9	08:04	1328	3C	48°7.9'N	126°32.4'W	48°7.4'N	126°33.2'W	272	414	366	25	x		
16	S1	StRS	RD3	Oct 9	10:35	1381	3C	48°0'N	126°49.2'W	48°0'N	126°50.3'W	1209	1214	1198	25	x		
17	S1	StRS	RD3	Oct 9	13:06	1355	3C	48°4.4'N	126°54.9'W	48°4.3'N	126°55.9'W	965	1011	990	25	x		
18		Movement		Oct 9	14:55	1379	3C	48°8.4'N	126°45'W	48°8.3'N	126°47.4'W	409	530	461	58	x	x	x
19	S1	StRS	RD2	Oct 9	16:01	1518	3C	48°8.7'N	126°53.9'W	48°8.6'N	126°55.1'W	775	821	798	25	x	x	x
20	S1	StRS	RD2	Oct 11	08:02	1329	3D	49°0.6'N	127°3.6'W	49°0.5'N	127°4.6'W	677	747	708	25	x		
21		Movement		Oct 11	09:31	1620	3D	49°5'N	127°5.3'W	49°5'N	127°7.6'W	380	538	464	58	x	x	x
22	S1	StRS	RD3	Oct 11	10:47	1289	3D	49°2'N	127°8.8'W	49°1.9'N	127°9.8'W	967	1081	1025	25	x		
23	S1	StRS	RD1	Oct 11	12:08	1318	3D	49°6.3'N	127°4.3'W	49°6.3'N	127°5.4'W	197	213	205	25	x	x	x
24	S2	StRS	RD3	Oct 11	14:16	1567	3D	49°0.7'N	127°19.3'W	49°0.7'N	127°20.3'W	1074	1199	1191	25	x		
25	S2	StRS	RD1	Oct 11	16:51	1572	3D	49°3.8'N	127°16.3'W	49°4'N	127°17.4'W	313	461	401	25	x		
26	S2	StRS	RD2	Oct 11	19:15	1595	3D	49°5'N	127°35.7'W	49°4.2'N	127°36'W	539	762	670	25	x		
27	S2	StRS	RD2	Oct 13	08:01	1331	3D	49°8.8'N	127°39.3'W	49°8.7'N	127°40.4'W	524	580	529	25	x		
28	S2	StRS	RD2	Oct 13	09:24	1387	3D	49°1.4'N	127°36'W	49°1.4'N	127°37.1'W	551	605	577	25	x		
29	S2	StRS	RD2	Oct 13	10:37	1421	3D	49°5.9'N	127°40.8'W	49°5.8'N	127°42'W	586	711	672	25	x		
30		Movement		Oct 13	12:29	1414	3D	49°7.8'N	127°44.9'W	49°7.6'N	127°47.2'W	433	557	532	58	x	x	x
31	S2	StRS	RD2	Oct 13	14:05	1469	3D	49°1.3'N	127°47.3'W	49°1.1'N	127°48.3'W	570	615	570	25	x	x	x
32	S2	StRS	RD3	Oct 13	15:34	1505	3D	49°0.3'N	127°57.7'W	49°0.2'N	127°58.8'W	856	896	882	25	x		
33	S2	StRS	RD1	Oct 13	18:20	1488	3D	49°7.7'N	127°46'W	49°7.7'N	127°47.3'W	258	395	375	25	x		
34	S2	StRS	RD3	Oct 15	07:13	1302	3D	50°1.1'N	128°33.4'W	50°1.1'N	128°34.5'W	980	1180	1063	25	x		
35	S2	StRS	RD3	Oct 15	09:14	1309	3D	50°0.7'N	128°25.4'W	50°0.7'N	128°26.5'W	1087	1225	1186	25	x		
36	S2	StRS	RD2	Oct 15	11:44	1302	3D	50°0.5'N	128°8.8'W	50°0.5'N	128°9.9'W	519	650	580	25	x		
37	S2	StRS	RD3	Oct 15	13:14	1312	3D	50°2.5'N	128°11.5'W	50°2.4'N	128°12.7'W	958	1264	1086	25	x	x	x
38	S2	StRS	RD2	Oct 15	15:29	1322	3D	50°9.7'N	128°24.7'W	50°9'N	128°24.6'W	653	740	668	25	x	x	x
39	S2	StRS	RD1	Oct 15	16:58	1353	3D	50°5.1'N	128°24.2'W	50°5.2'N	128°25.3'W	201	205	203	25	x		
40	S2	StRS	RD1	Oct 18	08:05	1325	5A	50°9.3'N	128°42.8'W	50°9.4'N	128°43.9'W	195	200	199	25	x		
41	S2	StRS	RD1	Oct 18	09:10	1356	5A	50°9.3'N	128°49.4'W	50°9.4'N	128°50.6'W	221	231	236	25	x		
42	S2	StRS	RD1	Oct 18	11:54	1362	5A	50°3.7'N	129°11.5'W	50°3.2'N	129°12.1'W	235	292	258	25	x		

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continued.

Set	Spatial Stratum	Type	Depth Stratum	Date	Time	Duration (minutes)	Area	Start Latitude	Start Longitude	End Latitude	End Longitude	Start Depth (m)	End Depth (m)	Mean Depth (m)	Traps Fished	TDR	AXL	CAM
43	S3	StRS	RD3	Oct 18	14:55	1357	5A	50° 0.1'N	129° 34.1'W	50° 9.6'N	129° 33.5'W	838	1136	988	25	x	x	x
44	S3	StRS	RD2	Oct 18	17:06	1367	5A	51° 0.1'N	129° 38.6'W	51° 0.2'N	129° 39.7'W	465	545	514	25	x	x	x
45	S3	StRS	RD2	Oct 18	18:20	1393	5A	51° 0.7'N	129° 45.6'W	51° 0.2'N	129° 46.3'W	459	445	459	25	x		
46	S3	StRS	RD1	Oct 22	00:21	1244	5A	51° 0.4'N	129° 38.5'W	51° 0.4'N	129° 39.9'W	270	273	271	25	x		
47	S3	StRS	RD1	Oct 22	01:25	1280	5A	51° 0.5'N	129° 42.8'W	51° 0.4'N	129° 43.8'W	423	383	427	25	x		
48	S3	StRS	RD3	Oct 22	03:30	1311	5A	51° 0'N	129° 57.9'W	51° 0'N	129° 58.9'W	1023	985	1019	25	x		
49	S3	StRS	RD2	Oct 22	04:57	1335	5A	51° 1.3'N	129° 55.9'W	51° 1.3'N	129° 56.9'W	548	513	532	25	x		
50	S3	StRS	RD2	Oct 22	06:19	1373	5A	51° 2.5'N	130° 5.8'W	51° 2.4'N	130° 6.8'W	727	783	751	25	x		
51	S3	StRS	RD1	Oct 24	16:53	1210	5B	51° 8.4'N	130° 38.6'W	51° 8.2'N	130° 39.8'W	408	422	415	25	x		
52	S3	StRS	RD1	Oct 24	18:42	1224	5B	51° 8.9'N	130° 26.1'W	51° 8.9'N	130° 27.2'W	336	340	346	25	x		
53	S3	StRS	RD1	Oct 24	20:47	1221	5B	51° 7.8'N	130° 12.7'W	51° 7.8'N	130° 13.7'W	213	212	210	25	x		
54	S3	StRS	RD1	Oct 24	22:10	1254	5B	51° 4.9'N	130° 10.8'W	51° 4.8'N	130° 11.6'W	219	221	218	25	x		
55	S3	StRS	RD2	Oct 25	00:33	1276	5B	51° 1.8'N	130° 27.7'W	51° 1.8'N	130° 28.7'W	541	719	602	25	x		
56	S3	StRS	RD3	Oct 25	01:46	1307	5B	51° 9.4'N	130° 29.1'W	51° 9.6'N	130° 30.1'W	889	1082	972	25	x		
57	S3	StRS	RD2	Oct 25	03:35	1305	5B	51° 4.8'N	130° 26.1'W	51° 4.7'N	130° 27.2'W	612	574	565	25	x		
58	S4	StRS	RD1	Oct 31	08:03	1325	5E	52° 0.2'N	131° 16.3'W	52° 0.2'N	131° 17.2'W	212	218	219	24	x		
59	S4	StRS	RD3	Oct 31	10:00	1341	5E	52° 0.1'N	131° 26.1'W	52° 0.1'N	131° 27.1'W	1016	1095	1049	25	x		
60	S4	StRS	RD1	Oct 31	11:42	1340	5E	52° 0.3'N	131° 23.6'W	52° 0.4'N	131° 24.6'W	217	520	366	25	x		
61	S4	StRS	RD2	Oct 31	12:52	1392	5E	52° 1.5'N	131° 28.3'W	52° 1.5'N	131° 29.3'W	735	804	759	25	x		
62	S4	StRS	RD3	Oct 31	14:39	1407	5E	52° 3'N	131° 36.7'W	52° 3'N	131° 37.6'W	953	1052	1017	25	x		
63	S4	StRS	RD2	Oct 31	16:08	1418	5E	52° 4.5'N	131° 30.4'W	52° 4.5'N	131° 31.4'W	587	759	668	25	x		
64		Movement		Nov 2	06:18	273	5E	53° 0.3'N	132° 41'W	53° 0.3'N	132° 43.7'W	424	596	495	58	x	x	x
65	S4	StRS	RD2	Nov 6	06:01	1327	5E	52° 8.2'N	132° 30.3'W	52° 8.2'N	132° 31.4'W	590	653	632	25	x		
66	S4	StRS	RD2	Nov 6	07:27	1361	5E	52° 5.7'N	132° 28.2'W	52° 5.8'N	132° 29.3'W	516	736	618	25	x		
67	S4	StRS	RD1	Nov 6	08:44	1402	5E	52° 5.6'N	132° 24.7'W	52° 5.5'N	132° 25.8'W	407	402	438	25	x		
68	S4	StRS	RD1	Nov 6	10:01	1431	5E	52° 3.6'N	132° 21.3'W	52° 3.6'N	132° 22.6'W	428	453	446	25	x		
69	S4	StRS	RD3	Nov 6	11:20	1480	5E	52° 3.3'N	132° 24.6'W	52° 3.3'N	132° 25.8'W	825	977	982	25	x		
70	S4	StRS	RD3	Nov 6	12:57	1505	5E	52° 7.9'N	132° 29.3'W	52° 7.8'N	132° 30.7'W	921	989	965	25	x	x	x
71	S4	StRS	RD3	Nov 6	14:24	1520	5E	52° 7.6'N	132° 34.6'W	52° 7.6'N	132° 35.9'W	1147	1190	1151	25			
72	S4	StRS	RD1	Nov 8	06:01	1333	5E	53° 0'N	132° 32.9'W	52° 9.8'N	132° 33.9'W	413	515	455	25	x		
73	S4	StRS	RD2	Nov 8	07:22	1366	5E	53° 0.4'N	132° 35.9'W	53° 0.6'N	132° 37.1'W	514	671	603	25	x		
74	S4	StRS	RD2	Nov 8	08:41	1418	5E	53° 0.9'N	132° 38.1'W	53° 0'N	132° 39.3'W	497	719	585	25	x		
75	S4	StRS	RD1	Nov 8	09:55	1472	5E	53° 0.8'N	132° 38.6'W	53° 0.7'N	132° 40'W	215	402	288	24	x	x	x
76	S5	StRS	RD2	Nov 8	12:23	1470	5E	53° 1.3'N	132° 57.9'W	53° 1'N	132° 59.1'W	771	782	774	25	x	x	x
77	S5	StRS	RD2	Nov 8	13:47	1500	5E	53° 4.8'N	133° 3.6'W	53° 4.5'N	133° 4.8'W	711	731	721	25	x		
78	S5	StRS	RD1	Nov 8	15:30	1510	5E	53° 1'N	133° 1.7'W	53° 0.4'N	133° 1.1'W	415	404	442	25	x		
79	S5	StRS	RD2	Nov 11	06:04	1324	5E	53° 4.1'N	132° 59.5'W	53° 4.1'N	133° 0.7'W	556	618	591	25	x		
80	S5	StRS	RD2	Nov 11	07:28	1362	5E	53° 5.2'N	133° 10.4'W	53° 5.2'N	133° 11.4'W	526	676	598	25	x		
81	S5	StRS	RD3	Nov 11	08:57	1379	5E	53° 9.7'N	133° 14.8'W	53° 9.5'N	133° 15.9'W	815	995	933	25	x		
82	S5	StRS	RD1	Nov 11	11:23	1376	5E	53° 1.5'N	133° 12.5'W	53° 1.4'N	133° 13.9'W	207	225	216	25	x	x	x
83	S5	StRS	RD2	Nov 11	12:33	1407	5E	53° 4.2'N	133° 21.3'W	53° 4.2'N	133° 22.9'W	541	643	590	25	x	x	x
84	S5	StRS	RD3	Nov 11	13:56	1440	5E	53° 6.3'N	133° 29.5'W	53° 6.2'N	133° 30.7'W	821	897	856	25	x	x	x

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continued.

Set	Spatial Stratum	Type	Depth Stratum	Date	Time	Duration (minutes)	Area	Start Latitude	Start Longitude	End Latitude	End Longitude	Start Depth (m)	End Depth (m)	Mean Depth (m)	Traps Fished	TDR	AXL	CAM
85	S5	StRS	RD1	Nov 11	15:29	1437	5E	53° 8.6'N	133° 24.3'W	53° 8.6'N	133° 25.6'W	319	359	336	25	x		
86	S5	StRS	RD1	Nov 11	16:45	1450	5E	53° 1.8'N	133° 26.3'W	53° 1.7'N	133° 27.8'W	237	319	282	25	x		
87	S5	StRS	RD3	Nov 13	07:40	1331	5E	53° 8.6'N	133° 40.8'W	53° 8.6'N	133° 42'W	895	1065	968	25	x		
88	S5	StRS	RD2	Nov 13	08:57	1341	5E	54° 0.8'N	133° 39.2'W	54° 0.8'N	133° 40.3'W	649	719	683	25	x		
89	S5	StRS	RD3	Nov 13	11:22	1370	5E	54° 0'N	133° 55'W	54° 0.9'N	133° 56.1'W	1226	1218	1236	25	x		
90	S5	StRS	RD2	Nov 13	12:53	1366	5E	54° 2.5'N	133° 50.4'W	54° 2.5'N	133° 51.6'W	512	630	564	25	x	x	x
91	S5	StRS	RD1	Nov 13	15:06	1408	5E	54° 9.5'N	133° 36.3'W	54° 9.5'N	133° 37.5'W	259	260	259	25	x	x	x
92	S5	StRS	RD1	Nov 13	16:20	1428	5E	54° 7.5'N	133° 30.4'W	54° 7.5'N	133° 31.6'W	302	292	296	25	x		
93	Finlayson	Inlet		Nov 16	11:56	981	5C	52° 7.5'N	128° 25.9'W	52° 6.9'N	128° 26.5'W	564	591	577	25	x		
94	Finlayson	Inlet		Nov 16	12:57	1018	5C	52° 3.8'N	128° 27.9'W	52° 3.1'N	128° 27.7'W	600	595	598	25	x		
95	Finlayson	Inlet		Nov 16	13:51	1066	5C	52° 9.8'N	128° 28.5'W	52° 9.1'N	128° 28.6'W	564	581	585	25	x		
96	Finlayson	Inlet		Nov 16	15:06	1091	5C	52° 4.7'N	128° 27.9'W	52° 4'N	128° 27.8'W	681	648	657	25	x		
97	Finlayson	Inlet		Nov 16	15:50	1145	5C	52° 1'N	128° 27.9'W	52° 0.3'N	128° 27.7'W	774	808	800	25	x		

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APPENDIX C SUMMARY OF BASKET USE BY TRAP 2022.

Summary of the basket use by trap number for StRS and inlet sets during the 2022 Sablefish survey. The fate of the Sablefish catch for each set and trap is indicated using the following abbreviations: D = Discarded after weighing (processed as commercial catch), A = Sampled for LSMWO, T = Tagged and released, SD = Sublegal discarded, F= Frames, NULL = No Sablefish catch/trap missing. Standardized sets at mainland inlet localities are highlighted with green colour and StRS sets have no background colour. Those set numbers highlighted with purple colour had a camera deployed on the string of gear.

	Trap																									Total			
Set	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	A	D	T	-
1	T	D,SD		T	A	A	T	D,SD	D,SD	T	D,SD	D,SD	T	D,SD	A	T	D,SD	D	T	A		T	D,SD	D,SD	T		4	1	9	2
2	D	A	T	D,SD	D,SD	T		A	T	D	D,SD	T	D,SD	D,SD	T	D,SD	D,SD	T	D,SD	A	T	D,SD	D,SD	T	D,SD		3	2	8	1
3	A		A	D,SD		D,SD		T	D,SD		T	D,SD	A	T	D,SD	A	T			T	A	A	T	A	A		8	0	6	6
4	T	D,SD	A	T	D,SD	D,SD	T		A	T	D,SD	D,SD	T	D,SD	D,SD	T	D,SD	D,SD	D,SD		D,SD	D,SD	D,SD	D,SD	D,SD		2	0	6	2
6	D,SD	T	D,SD	A	T	D,SD	D,SD	T	D,SD	D,SD	D,SD	D,SD	A		D,SD	A	T	D,F	A	T	D,SD	A	T	D,SD	T	D,SD	5	1	7	0
7	T	D,SD	A	T	D,SD	D,SD	T	D,SD	A	T	D,SD	D,SD	T	D,SD	D,F	T	D,SD	A,F	T	D,SD	D,SD	D,SD	D,SD	D,SD	D,F		3	2	7	0
9	A	T	D,SD	A	T	D,SD	A	T	D,SD	D,SD	T	D,SD	D,SD	T	D,SD	D,SD	T	D,SD	D,SD	T	D,SD	D,SD	T	T,SD	D,SD		3	0	8	0
10	T	D,SD	A	D,SD	D,SD	D,SD	T	T,SD	D,SD	T	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	A	D,SD	D,SD	D,SD	D,SD	D,SD	T,SD	D,SD		2	0	3	0
12	D,SD	T	D,SD	A	D,SD	D,SD	D,SD	T	D,SD	D,SD	D,SD	T,SD	D,SD		D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	A	D,SD	D,SD	D,SD	D,SD	2	0	2	0
13	T	D,SD	A	T	D,SD	A	D,F	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD		2	1	2	0
14	D,SD	D,SD	T	D,SD	A	D,SD	D,F	D,SD	T	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	A	D,F	D,SD	D,SD	D,SD	D,SD		D,SD	D,SD		2	2	2	1
15	D,F	T,F	D,SD	A,F	T,F	D,F	D,F	T,F	D,SD	D,SD	T,F	D,SD	D,SD	D,SD	D,SD	A,F	D,F	D,SD	D,SD	D,F	D,SD	D,SD	D,SD	D,SD	D,F		2	6	4	0
17	A	A	T	T,SD	D,F	T	D,SD	T,SD	T	T,SD	D,SD	D,SD	D,SD	D,SD	T	T,SD	T	D,SD	T,SD	D,SD	T,SD	D,SD	T,SD	D,SD	T,SD		2	1	5	0
19	T	D,SD	A	T	D,SD	A	T,F	D,SD	D,SD	T		D,SD	T,F		A,F	D,SD	T,SD	A	D,SD		D,SD	D,SD	T,SD		D,SD	D,SD	4	0	5	3
20	D,SD	T	T	D,SD		T		D,SD	T	D,SD	A	T	D,SD		T	D,SD	D,SD	T		D,SD	T		D,SD	T			1	0	9	6
22	T	D,SD	D,SD	T	D,SD	A	D,SD	D,SD	D,SD	T	T,SD	D,SD	D,SD	D,SD	A	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	T	D,SD	D,SD	D,F	T,SD	2	1	4	0
23	D,F	T,SD		D,SD	T	T	D,SD	D,SD	T		D	D,SD					A	T	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD		1	2	4	6
24	A	T	T	D,SD	T	D,SD	A	T	D,SD	D,SD	T	D,SD	A	T	D	A	T	D	A	T	A	A	T	D,SD	A		8	2	9	0
25	T,F	D	A	T	D,SD	D,SD	T	D,SD	D,F	D,SD	T,F	A,F	T	D,SD	D,SD	D,SD	T,F	D,SD	T,F	D,F	D,SD	D,SD	D,SD	D,SD	D,F		2	4	7	0
26	D,SD	A	T		T,SD	T	D,SD	D,SD	T	D,SD	D,SD	D,SD	D,SD	A	T	D,SD	D,SD	T	D,SD	A	T	D,SD	D,SD	D,SD	D,SD		3	0	6	1
27	D,SD	T	D,SD	A	T	D,SD	T,SD	D,SD	D,SD	D,SD	T	D,SD	D,SD	T	D,SD	A	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	T,SD	D,SD	D,SD	2	0	4	0
28	T	D,SD	A	T	D,SD	D,SD	T	D,SD	D,SD	D,SD	D,SD	D,SD	T	D,SD	A	T	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	T,SD	D,SD		2	0	5	0
29	D,SD	A,F	T	D,SD	D,SD	T	D,SD	D,SD	T	T,SD	D,SD	T	D,SD	D,SD	T	D,SD	A	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD		2	0	5	0
31	T	D,SD	A	T	D,SD	D,SD	T	D,SD	A	T	D,SD	D,SD	T		A	T	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	3	0	6	0
33	A	T,F	D,F	A	T,F	D,F	D,F	T	D,SD	A,F	T,F	D,F	T,F	T,F	D,F	D,F	T,F	D,F	D,F	T	D,F	D,SD	T	D,F			3	10	9	1
34	T	D,SD	A	T	A	D,SD	T	D,SD	A			A	T	A	D,SD	T	D,SD	A	T	A	A	T	A	A	T		10	0	8	2
35	D,SD	A	T	D,SD	A		D	A	T	A	A	T	D,SD	A	T	A	D,SD	T	D	D,SD	T	D	D,SD	T	D,SD		7	3	7	1
36	A	T	D,SD		T	D,SD	A		D,SD	D,SD	T	D,SD	D,SD	T	D,SD	D,SD	T	D,SD	A	T	D,SD	A	T,F	D,SD	D,SD		4	0	7	2
37	T	D,SD	A	T	D,SD		T	D,SD	A	T	D,SD	A	T		A	T	D	A	T	D,SD	A	T	D,SD	A	T	D,SD	7	1	9	1
38	D,SD	A	T	D,SD	A	T	D,SD	D,SD	T	D,SD	D,SD	T	D,SD		T,F	D,SD	A	D,SD	D,SD	D,SD	D,F	D,SD	D,SD	D,SD	D,SD	D,SD	3	1	5	0
39			A	D,SD	T			T,F			A	T			A		A	A		A					A		7	0	3	14
40	D				A			A	A	T		A	T	A		T				A	A	T			T		7	1	5	12
41			T			T		A		D,SD	T	A		A				T				A					4	0	4	16
42		T		A	T	A	A,F		A	A	T			T	A	A		A	D	T		D					8	2	5	10
43			A	T	A	A	T	D,SD	A	T	D,SD	A	T		D,SD	T	D,SD	D,SD	T	D,SD	D,SD	T	D,SD	D,SD	T	D,SD	5	0	8	2
44	D,SD	D,SD	T	D,SD	A	T	D,SD	T,SD	T		D,SD	T	D,SD	D,SD	D,SD	D,SD	A	T	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	A	D	3	1	5	0
45	A	T	D	D,SD	T	D,SD	D,SD	A		T,SD	T	D,SD	T	T	D,SD		T	A	D,SD	T	A	T	D,SD	T	D,SD		4	1	9	2
46	T	D,SD	A	T	D,F	A	D,SD	D,SD	A	T		D,SD	T		A	T	D,SD	A	T	T,SD	A	T	D,SD	D,SD	T		6	1	8	2
47	D,SD	A	T	D,SD	D,SD	T	D,SD	A	T	D,SD	D,SD	T	D,SD	A	T	D,SD	D,SD	T	D,SD	A	T	D,SD	D,SD	D,SD	D,SD		4	0	7	0
48	A	T	D,SD	A	T	D,SD	D,SD	T	D,SD	D,SD	T	D,SD	A	T	D,SD	D,SD	T	D,SD	T,SD	T	D,SD	A	D,SD	D	D,SD		4	1	7	0
49	T	D,SD	A	T	D,SD	D,SD	T	D,SD	D,SD	T	D,SD	D,SD	T	D,SD	T	T	D	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD		1	1	7	0
50	D,SD	A	T	D,SD	D	D,F	D,SD	D,SD	T	D,SD	D,SD	T,SD	T,SD	D,SD	T,SD	D,SD	T,SD	D,SD	D,SD	A	T,SD	D,SD	D,SD	D,SD	T,SD		2	2	2	0
51	A	T	D,SD	D,SD	T	D,SD	D,SD	D,SD	D,SD	D,SD	T	D,SD	A	D,SD	D,SD	D,SD	T	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD		2	0	4	0
52	T	D,SD	A	T	D,SD	A	T	D	D	T	D,SD	D,SD	T	D,SD	D,SD	T	T,SD	A	T	D,SD	A	T	D,SD	T	T		4	2	10	0
53	D	A	T		A		A		T	A	A	T		A	T	A	A		A	A	T		D	T	D,SD		10	2	6	6
54	A	T	D,SD	A	T		A	T	D	A	T	D,SD	A	T	D,SD	A	T		A	T	D,SD	A	T	D			8	2	8	3

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continued.

	Trap																									Total			
Set	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	A	D	T	-
55	T	D,SD	A	T		D,SD	T	D,SD	D,SD	D,SD	D,SD	D,SD	T	D,SD	A	D,SD	D,SD	D,SD	T	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD		2	0	5	1
56	D,SD	A	T	D,SD	A	T	D,SD	D,SD	T	D,SD	D,SD	T	D,SD	A	T	D,SD	D,SD	T	D,SD	A	T	D,SD	D,SD	T	D,SD		4	0	8	0
57	A	T	D,SD	D,SD	D,SD	D,SD	T,SD	T	D,SD	D,SD	D,SD	D,SD	T	T	D,SD	T,SD	T	D,SD	D,SD	T	D,SD	A	D,SD	D,SD	T,SD		2	0	6	0
58					A	A			A		A	A	T						T					A			6	0	2	17
59	D	A	T	D,SD	A	T	D,SD	A	T	D	A	T	D,SD		T	A	A	T	A	A	T	D,SD	A		D		9	3	7	2
60	A	T	D	D,SD	T	D	A	T	D		T	D	D	T				A									3	5	5	11
61	T	D,SD	A	T	D	D,SD	T	D,SD	D,SD	T	D,SD	D,SD	D,SD	D,SD	A	D,SD	D,SD	D,SD	T	D,F	D,SD	D,SD	D,F	D,F	D,SD		2	4	5	0
62			T	A	A	T	D	A		D,SD	D,SD	T	D,SD	D,SD	T	D,SD	A	T	D,SD	A	T	D,SD	D,SD	T	D		5	2	7	3
63	A,F	T	D,SD	D,SD	T	D,SD	A,F	D,SD	D,SD	D,SD	T	D,SD	D,SD	D,SD	D,SD	D,SD	T	D,SD	A	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD		3	0	4	0
65	D,SD	A	T	D,SD	D,SD	T	D,SD	D,SD	T	D,SD	D,SD	T	D,SD	D,SD	D,SD	D,SD	A	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,F		2	1	4	0
66	A	T	D,SD	D,SD	D,SD	D,SD	T,SD	T	D,SD	D,SD	D,SD	D,SD	D,SD	T	D,SD	A	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD		2	0	3	0
67	T	D,SD	A	T	D,SD	A	T	D,SD	D,SD	T	T,SD	A	T	D,SD	A	T	D,SD	A	T	D,SD	D,SD	D,SD	D,SD	D	D,SD		5	1	7	0
68		A	T	D,SD	D,SD	T	D,SD	D,SD	T	T	D,SD	T	D,SD	A	T	D,SD	D,SD	T	D,SD	D,SD	T	D,SD	D,SD	D,SD	D,SD		2	0	8	1
70	T	D,SD	A	T	D,SD	D	T	D,SD	T,SD	T	D,SD	D,SD	D,SD		A	D,SD			T	T,SD	A	T	D,SD		D,SD	D,SD	3	1	6	3
71	D	A	T	A	A	T	A	A	T	A		T		A	T	A	A	T	A	A	T	A	A	T			13	1	8	3
72	A	T	D,SD	D,SD	T	D	D	T	D	T,SD	T	D,SD	A	T	D	A	T	D,SD	A	T	D,SD	D,SD	T	D,SD	D		4	5	8	0
73	T	D,SD	A	T	D,SD	T,SD	T	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD		1	1	3	0
74	D,SD	D,SD	T	D,SD	A	T	D,SD	D,SD	D,SD	D,SD	D,SD	T,SD	D,SD	D,SD	D,SD	D,SD	A	T	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD		2	0	3	0
75	A	T	D	A	T		D,SD	T	D,SD	A	T	D,SD							A	T				A			5	1	5	11
76	T	D,SD	D,SD	T,SD	D,SD	A	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	T		A	D,SD	D,SD	D,SD	D,SD	D,SD		D,SD	D,SD	D,SD	D,SD	D,SD	2	0	2	1
77	D,SD	A	T	T,SD	T,SD	D,SD	D,SD	D,SD	T,SD	T,SD	D,SD	D,SD	T,SD	D,SD	T	D,SD	A	T	D,SD	D,SD	D,SD	D,SD	T,SD	T,SD	D,SD		2	0	3	0
78	A	T	A	A	T	D,SD	A	T	D,SD	A	T	D,SD	D,SD	T		A	T	D		T	D,SD		T	A	D,SD		7	1	8	3
79	D,SD	T	A	T	D,SD	D,SD	T	D,SD	D,SD		D,SD	A	T	D,SD	D,SD	T	D,SD	A	T		T,SD	D,SD		D,SD	D,SD		3	0	6	3
80	D,SD	D,SD	T	D,SD	A	T	D,SD	D,SD	T	D,SD	D,SD	T	D,SD	A	D,SD	D,SD	D,SD	T	D,SD	D,SD	D,SD	D,SD	A	D,SD	D,SD		3	0	5	0
81	T	T	D,SD	A	T	D,SD	A	T	D,SD	T		D,SD	A	T	D,SD	D,SD	T	D,SD	D,SD	T	D,SD		T	D,SD	D,SD		3	0	9	2
82						A					A																2	0	0	23
83	D,SD	A	T	D,SD	D,SD	T	D,SD	D,SD	T	D,SD	D,SD	T	D,SD		D,SD	D,SD	A	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	2	0	4	0
84	A	T	D,SD	D,SD	T	D,SD	D,SD	D,SD	D,SD	D,SD	T	D,SD	A		D,SD	D,SD	T	D,SD	D,SD	T	D,SD	T,SD	T	T,SD	D,SD	D,SD	2	0	6	0
85			A		A		T	A	A		A	A	T	A	D,SD		T	D,SD		T	T				T		7	0	6	10
86	A	D,SD	T	D,SD		T			T	A		T		A		A	A	T			A	A	A	A	A		10	0	5	8
87	A	T	D,SD	A	T	D,SD	D,SD	T	D,SD	A	T	D,SD	D,SD	T	D,SD	D,SD	T	D,SD	D,SD	D,SD	D,SD	A	D,SD	D,SD	D,SD		4	0	6	0
88	T	D,SD	A	D,SD	D,SD	D,SD	T	D,SD	D,SD	D,SD	D,SD	D,SD	T	D,SD	D,SD	D,SD	D,SD	A	T	D,SD	D,SD	T	D,SD	D,SD	D,SD		2	0	5	0
89	D	A	T			T				A		T			T			T			T					2	1	6	16
90	A	T	D,SD	D,SD	T	D,SD	D,SD	D,SD	D,SD	D,SD	T	D,SD		D,SD	D,SD	A	T	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	D,SD	2	0	4	0
91	D	A		T	D,SD	A		D,SD		T			T			T					A			A	T	A	5	1	5	12

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APPENDIX D SUMMARY OF SABLEFISH BIOLOGICAL DATA 2022.

Summary of biological data collected for Sablefish by set, catch weight in kilograms and numbers of fish. Sablefish counts by trap are represented by sparklines, with every string picked up from the end location in 2021. Tagged fish counts are recorded by number of fish recovered and re-released, fish sampled and fish tagged and released. Tagged fish fork lengths are listed by count and mean (millimeters). Specimen counts are listed by sample type; mean fork lengths are tabulated. Standardized sets at mainland inlet localities are highlighted with green colour and StRS sets have no background colour. Those set numbers highlighted with purple colour had a camera deployed on the string of gear. The 6 sets highlighted in blue colour represent the 60 trap sets that were deployed to evaluate gear bottom-contact.

Set	Total Catch			Tagged Fish Counts			Tagged Fork Lengths(mm)		Specimen Count						Mean Fork Length(mm)		
	kg	Count	Count by Trap	Recover-Rerelease	Tag Sample	Released	Count	Mean	Fork Length	Sex	Maturity	Otoliths	Weight	Count	Proportion Males	Males	Females
1	724	290		0	0	109	109	609	49	48	48	48	48	49	0.35	575	617
2	915	434		0	0	153	152	577	52	51	51	52	52	52	0.45	563	597
3	484	176		0	0	52	52	625	52	52	52	52	52	52	0.21	627	632
4	930	543		0	0	125	125	546	52	52	52	52	52	52	0.71	549	553
5	0	996		0	2	0	2	550	2	2	2	2	2	2	1	575	0
6	699	428		0	0	131	131	536	51	50	50	51	50	51	0.8	532	574
7	1105	520		0	0	121	121	582	51	51	51	51	51	51	0.65	588	593
8	1608	818		1	0	124	125	568	52	52	52	52	52	52	0.71	556	563
9	1170	503		1	0	123	124	600	56	56	56	55	56	56	0.32	576	641
10	1249	741		4	0	119	123	537	57	56	56	57	57	57	0.68	514	552
11	0	1780		0	1	0	1	565	1	1	1	1	1	1	1	565	0
12	2296	1154		0	0	121	121	565	55	53	53	54	55	55	0.38	559	602
13	2644	1390		0	0	130	130	567	53	53	53	53	53	53	0.28	540	587
14	2673	1384		0	0	153	153	561	54	53	53	53	53	54	0.47	549	589
15	3817	1957		0	0	118	118	583	123	50	50	50	50	123	0.34	551	589
16	470	136		1	0	46	47	667	50	50	50	50	50	50	0.06	653	663
17	1598	789		9	0	144	153	563	54	54	54	54	54	54	0.5	528	596
18	0	1225		0	4	0	4	530	3	4	4	3	3	4	0.5	545	585
19	684	471		2	0	126	127	513	50	50	50	50	50	50	0.56	511	598
20	548	362		2	0	111	113	525	50	50	50	50	50	50	0.66	512	575
21	0	1605		0	8	0	8	584	7	8	8	6	8	8	0.75	607	633
22	1630	828		5	0	118	123	577	53	51	51	51	51	53	0.65	546	602
23	1612	687		2	0	144	146	606	54	54	54	54	54	54	0.15	593	601

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continued.

Set	Total Catch			Tagged Fish Counts			Tagged Fork Lengths(mm)		Specimen Count						Mean Fork Length(mm)		
	kg	Count	Count by Trap	Recover-Rerelease	Tag Sample	Released	Count	Mean	Fork Length	Sex	Maturity	Otoliths	Weight	Count	Proportion Males	Males	Females
24	618	214		1	0	65	66	650	48	48	48	48	48	48	0.29	582	652
25	1226	535		0	0	121	121	596	58	56	56	56	56	58	0.34	574	601
26	914	536		1	0	153	154	530	51	51	51	51	51	51	0.82	534	565
27	2535	1024		3	0	157	160	586	54	54	54	54	54	54	0.44	565	644
28	1260	663		2	0	131	133	557	54	54	54	54	54	54	0.61	518	583
29	1352	719		2	0	129	131	567	54	54	54	54	54	54	0.67	553	584
30	0	1307		0	2	0	2	594	2	2	2	2	2	2	0.5	580	620
31	1029	509		0	0	125	125	560	53	53	53	53	53	53	0.58	549	593
32	1395	665		4	0	146	150	568	54	54	54	54	54	54	0.65	543	627
33	968	512		2	0	106	108	584	61	52	52	52	52	61	0.23	577	620
34	352	126		0	0	56	56	636	47	47	47	47	47	47	0.36	581	657
35	585	206		0	0	47	47	618	54	54	54	54	54	54	0.26	593	637
36	814	387		0	0	108	108	577	62	56	56	56	56	62	0.55	554	584
37	620	219		0	0	69	69	637	55	55	55	55	55	55	0.25	586	673
38	1360	766		0	0	153	152	554	59	59	59	59	59	59	0.76	541	564
39	168	58		0	0	10	10	679	44	43	43	43	43	44	0.21	574	643
40	61	30		1	0	13	14	563	15	15	15	15	15	15	0.47	554	640
41	352	132		0	0	45	45	620	45	45	45	45	45	45	0.29	583	638
42	333	95		0	0	15	15	680	51	48	48	48	48	51	0.46	665	673
43	649	260		0	0	90	89	612	56	56	55	56	56	56	0.34	618	649
44	1190	517		1	1	116	118	586	54	53	53	53	53	54	0.55	583	618
45	732	298		3	0	93	96	609	72	72	72	72	72	72	0.54	583	612
46	729	262		1	0	102	103	619	53	52	52	51	52	53	0.19	591	650

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continued.

Set	Total Catch			Tagged Fish Counts			Tagged Fork Lengths(mm)		Specimen Count						Mean Fork Length(mm)		
	kg	Count	Count by Trap	Recover-Rerelease	Tag Sample	Released	Count	Mean	Fork Length	Sex	Maturity	Otoliths	Weight	Count	Proportion Males	Males	Females
47	1091	412		0	0	135	135	606	51	51	51	51	51	51	0.25	619	615
48	908	442		2	0	122	123	570	53	53	53	53	53	53	0.66	564	618
49	1558	697		2	0	134	135	589	51	51	51	51	51	51	0.61	573	617
50	2093	1445		9	0	118	127	514	49	49	49	49	49	49	0.71	518	574
51	1851	848		0	0	128	128	584	52	51	51	52	52	52	0.67	591	650
52	635	253		3	0	76	79	601	53	53	53	53	53	53	0.38	582	601
53	248	84		0	0	14	14	608	51	51	51	51	51	51	0.14	614	659
54	475	154		0	0	53	51	635	53	53	53	53	53	53	0.06	578	648
55	1259	530		0	0	129	129	586	53	53	53	53	53	53	0.49	591	628
56	1025	361		0	0	119	119	646	52	52	52	52	52	52	0.6	604	696
57	1471	789		4	0	131	135	567	52	52	52	52	52	52	0.81	555	590
58	116	37		0	0	6	6	604	31	31	31	31	31	31	0.1	565	647
59	465	177		0	0	58	58	643	51	51	51	51	51	51	0.55	608	661
60	332	105		0	0	34	34	631	32	32	32	32	32	32	0.16	611	654
61	1352	650		0	0	126	125	570	53	52	52	48	52	53	0.5	554	571
62	523	184		0	0	32	32	649	52	52	52	52	52	52	0.44	600	693
63	1507	691		0	0	133	133	576	65	64	64	64	64	65	0.3	566	593
64	0	753		0	0	0	0	0	0	0	0	0	0	0	0	0	0
65	2054	1111		0	0	143	143	547	56	56	56	56	56	56	0.45	553	574
66	2481	1260		1	0	157	158	556	56	56	56	56	56	56	0.61	549	565
67	1304	406		1	0	123	124	635	59	58	58	58	58	59	0.21	620	681
68	1397	482		0	0	123	122	621	51	51	51	51	51	51	0.27	592	659
69	794	326		0	0	89	89	619	51	51	51	51	51	51	0.49	592	631

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continued.

Set	Total Catch			Tagged Fish Counts			Tagged Fork Lengths(mm)		Specimen Count						Mean Fork Length(mm)		
	kg	Count	Count by Trap	Recover-Rerelease	Tag Sample	Released	Count	Mean	Fork Length	Sex	Maturity	Otoliths	Weight	Count	Proportion Males	Males	Females
70	828	401		5	0	127	132	576	50	50	50	50	50	50	0.66	551	610
71	277	90		0	0	42	42	632	44	44	44	44	44	44	0.34	643	682
72	1218	367		1	1	122	123	655	53	53	53	53	53	53	0.45	613	674
73	2474	1154		1	1	123	124	567	54	51	51	52	52	54	0.65	564	582
74	2371	1128		1	0	178	178	572	51	51	51	51	51	51	0.57	575	610
75	365	120		1	0	30	31	642	49	49	49	49	49	49	0.27	626	660
76	2218	1498		1	0	173	174	522	52	52	52	52	52	52	0.71	506	564
77	1681	975		9	0	134	143	544	49	49	49	49	49	49	0.88	524	566
78	543	216		0	0	79	79	601	51	51	51	51	51	51	0.39	599	629
79	1289	485		1	0	122	123	607	53	53	53	49	53	53	0.49	595	598
80	1539	721		1	0	129	130	579	51	51	51	51	51	51	0.63	564	607
81	1044	497		1	0	143	144	579	47	47	47	47	47	47	0.62	559	609
82	5	2		0	0	0	0	0	2	2	2	2	2	2	0	0	620
83	1779	811		0	0	121	121	571	53	53	53	53	53	53	0.62	567	582
84	1209	596		3	0	121	124	580	52	52	52	52	52	52	0.65	540	581
85	275	111		0	0	33	32	600	56	55	55	55	55	56	0.35	564	619
86	304	119		0	0	47	47	602	41	40	40	40	40	41	0.45	578	620
87	1142	532		0	0	123	123	598	50	50	50	50	50	50	0.78	556	647
88	1562	852		0	0	141	141	561	55	55	55	55	55	55	0.71	538	588
89	95	19		0	0	13	13	731	5	5	5	5	5	5	0	0	793
90	1704	783		0	0	147	147	580	48	48	48	48	48	48	0.38	569	597
91	216	76		0	0	32	32	629	33	33	33	33	33	33	0	0	635

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continued.

Set	Total Catch			Tagged Fish Counts			Tagged Fork Lengths(mm)		Specimen Count						Mean Fork Length(mm)		
	kg	Count	Count by Trap	Recover-Rerelease	Tag Sample	Released	Count	Mean	Fork Length	Sex	Maturity	Otoliths	Weight	Count	Proportion Males	Males	Females
92	491	159		2	0	17	19	613	58	58	58	57	58	58	0.17	585	652
93	783	363		0	0	98	98	594	52	52	52	52	52	52	0.19	546	595
94	1382	610		1	0	136	137	595	50	50	50	50	50	50	0.22	542	600
95	1274	523		2	0	132	133	597	50	50	50	50	50	50	0.2	562	616
96	775	350		1	0	101	101	600	51	51	51	51	51	51	0.41	537	593
97	1041	417		1	0	123	124	615	53	53	53	49	53	53	0.36	535	664
Movement		7,666		0	17	0	17		15	17	17	14	16	17			
Other		47,763		102	3	9,288	9,377		4,662	4,548	4,547	4,539	4,554	4,662			
Total		**55,429**		**102**	**20**	**9,288**	**9,394**		**4,677**	**4,565**	**4,564**	**4,553**	**4,570**	**4,679**			

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APPENDIX E SUMMARY OF BIOLOGICAL DATA FOR THE ROUGHEYE/BLACKSPOTTED ROCKFISH COMPLEX.

Biological data collected for Rougheye/Blackspotted Rockfish complex. Each set is listed with counts of specimens sampled, calculations of mean fork lengths and the number of species visually identified as either a RE = Rougheye Rockfish, BS = Blackspotted Rockfish or a hybrid. All were captured on StRS sets.

	Specimen Count							Mean Fork Length(mm)				Sampler Visual id		
Set	Fork Length	Weight	Sex	Maturity	Otolith	DNA	Total Count	Proportion Males	Males	Females	No sex	RE	BS	Hybrid
2	1	1	1	1	1	1	2	0	0	495	0	1	0	0
12	7	7	7	7	7	7	7	0.57	528	505	0	0	0	0
27	1	1	1	1	1	1	1	0	0	470	0	1	0	0
45	13	13	13	13	13	13	13	0.85	528	533	0	1	12	0
47	6	6	6	6	6	6	6	0.17	590	439	0	3	3	0
51	1	1	1	1	1	1	1	0	0	430	0	0	1	0
52	17	17	17	17	17	17	17	0.41	464	410	0	4	13	0
60	7	7	7	7	7	7	7	0.71	460	495	0	0	6	1
67	9	9	9	9	9	9	9	0.56	472	504	0	1	8	0
68	7	7	7	7	7	7	7	0.71	474	318	0	0	7	0
72	24	24	24	24	24	24	24	0.71	471	468	0	0	24	0
78	25	25	25	25	25	22	124	0.72	468	484	0	1	24	0
79	2	2	2	2	2	2	2	0.5	500	430	0	0	2	0
80	5	5	5	5	5	5	5	0.6	478	495	0	0	5	0
85	8	8	8	8	8	8	8	0.5	513	473	0	0	8	0
90	1	1	1	1	1	1	1	1	450	0	0	0	1	0
	134	134	134	134	134	131	234					12	114	1

APPENDIX F SUMMARY OF BIOLOGICAL DATA FOR OTHER ROCKFISH SPECIES.

Biological data collected for other rockfish species. Each set is listed with counts of specimens sampled and calculations of mean fork lengths. All were captured on StRS sets.

		Specimen Count							Mean Fork Length(mm)			
Species Name	Set	Fork Length	Weight	Sex	Maturity	Otoliths	DNA	Total	Prop Males	Males	Females	No sex
SHORTRAKER ROCKFISH	27	2	2	2	2	2	0	2	0.50	710	710	0
	36	1	1	1	1	1	0	1	1.00	595	0	0
	44	7	7	7	7	7	0	7	0.71	652	560	0
	45	6	6	6	6	6	0	6	0.33	558	614	0
	47	1	1	1	1	1	0	1	1.00	595	0	0
	49	1	1	1	1	1	0	1	1.00	745	0	0
	55	2	2	2	2	2	0	2	0.50	645	765	0
	60	2	2	2	2	2	0	2	1.00	693	0	0
	63	1	1	1	1	1	0	1	0.00	0	545	0
	67	2	2	2	2	2	0	2	1.00	560	0	0
	68	4	4	4	4	4	0	4	0.75	647	555	0
	72	4	4	4	4	4	0	4	1.00	663	0	0
	74	1	1	1	1	1	0	1	0.00	0	550	0
	79	1	1	1	1	1	0	1	0.00	0	665	0
	80	1	1	1	1	1	0	1	0.00	0	520	0
	90	2	2	2	2	2	0	2	0.00	0	653	0
YELLOWEYE ROCKFISH	23	1	1	1	1	1	1	1	1.00	555	0	0
	40	2	2	2	2	2	2	2	0.50	370	580	0
	42	5	5	5	5	5	5	5	0.60	603	550	0
	53	15	15	15	15	15	13	15	0.33	602	494	0
	54	8	8	8	8	8	8	8	0.50	573	493	0
	58	17	17	17	17	17	17	17	0.76	536	485	0
	60	9	9	9	9	9	9	9	0.44	648	594	0
	75	2	2	2	2	2	2	2	1.00	613	0	0
	82	4	4	4	4	4	4	4	0.75	623	615	0

6 References

Johnson, S.D.N., Cox, S.P., Holt, K.R., Lacko, L.C., Kronlund, A.R., and Rooper, C.N. 2023. Stock status and management procedure performance for the BC sablefish (anoplopoma fimbria) fishery for 2022/23. DFO Can. Sci. Advis. Sec. Res. Doc. 2023/9999.

Lacko, L.C., Acheson, S.M., and Holt, K.R. 2023. Summary of the annual 2021 sablefish (*Anoplopoma fimbria*) trap survey, October 6 - November 21, 2021. Can. Data Rep. Fish. Aquat. Sci. 2023/3530: vii + 48 p.

Olsen, N. 2010. CA user's guide to GFBioField: The Pacific Region's at-sea data acquisition system for groundfish trawl surveys. Can. Tech. Rep. Fish.Aquat. Sci. 2010/2887: x + 76 p.

Orr, J., and Wildes, S. 2008. Species of the Rougheye Rockfish complex: Resurrection of *Sebastes melanostictus* (Matsubara, 1934) and a redescription of *Sebastes aleutianus* (Jordan and Evermann, 1898) (Teleostei: Scorpaeniformes). Fishery Bulletin- National Oceanic and Atmospheric Administration 106: 111–134.

Wyeth, M.R., and Kronlund, A.R. 2003. Sablefish (*Anoplopoma fimbria*) Research and Assessment Surveys conducted in British Columbia waters from 1996 through 2000. Can. Data Rep. Fish. Aquat. Sci. 2003/1116: 130 p.

Wyeth, M.R., Kronlund, A.R., and Elfert, M. 2007. Summary of the 2005 british columbia sablefish (*Anoplopoma fimbria*) Research and assessment survey. Can. Data Rep. Fish. Aquat. Sci. 2007/2694: xi + 105 p.