

# **Summary of the Annual 2018 and 2019 Sablefish (*Anoplopoma fimbria*) Trap Surveys, October 9 - November 19, 2018 and October 8 - November 25, 2019**

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## **Canadian Technical Report of Fisheries and Aquatic Sciences nnn**



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by

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## ABSTRACT

Lacko, L.C. and Acheson, S.M. and Connors, B.M. 2020. Summary of the Annual 2018 and 2019 Sablefish (*Anoplopoma fimbria*) Trap Surveys, October 9 - November 19, 2018 and October 8 - November 25, 2019. Can. Tech. Rep. Fish. Aquat. Sci. nnn: viii + 66 p.

This document describes sampling activities and summarizes results from the 2018 and 2019 British Columbia Sablefish research and assessment surveys. It is also intended to provide a historical reference for researchers. The two surveys utilized the same sampling strategies at stratified random (StRS) sites and all traditional inlet sites. The random component was comprised of StRS sets at five depth-stratified areas and the traditional component employed standardized sets at four inlet localities on the mainland.

As in previous surveys, biological sampling for sablefish included collection of length, weight, sex, maturity and age structures. Sablefish were randomly sampled from every third trap on all sets, up to a maximum sample size of 60 sablefish. Biological samples (length, weight, sex, maturity and otoliths) were taken for yelloweye rockfish, shortraker rockfish and rougheye/blackspotted rockfish species from catch in all traps. In addition, genetic samples were taken for the rough-eye/blackspotted rockfish complex and yelloweye rockfish. Length and weight measurements were collected from all Pacific halibut while only lengths were obtained from Pacific sleeper sharks.

A sablefish tag and release study has been conducted annually since 1991 and was continued in 2018 and 2019. Sablefish were selected randomly for tag and release from every third trap up to a maximum of 125 fish.

In total, 58,415 sablefish were caught in 2018, of which 5,741 were used for biological samples and 11,965 were tagged and released. Of those released, 208 were recaptured tagged fish. Five recaptured fish were retained for samples and the remaining 203 were fitted with a new tag and released back into the water. In 2019, a total of 78,836 sablefish were caught, of which 5,659 were used for biological samples and 12,042 were tagged and released. Of those released, 154 were recaptured tagged fish. Two recaptured fish were retained for samples and the remaining 152 were fitted with a new tag and released back into the water.

Other than sablefish, 53 and 18 taxonomic groups were represented in the 2018 catches from StRS sets and mainland inlet localities, respectively. In 2019, 50 and 12 taxonomic groups other than sablefish were captured from StRS sets and mainland inlet localities, respectively. Catch per unit effort (CPUE) is an important product from this survey. They can be used to infer population trends which are critical data elements used in stock assessment. CPUE from stratified random sets in the shallow depth stratum have shown a gradual decline in numbers of fish per trap from 2003 to 2009. CPUE rose again in 2010 and gradually declined from 2011 through 2014 to levels seen in 2009. An increase occurred again in 2015 and 2016, similar to those in 2010 and 2011. Last, CPUE surged in 2017, 2018 and 2019 to historic levels.

Within all years, the highest CPUE was achieved in the middle depth stratum. CPUE showed a gradual decline from 2003 to 2010, then an increase in 2011 to those levels seen in 2004. CPUE dropped once again and fluctuated during 2012, 2013 and 2014. In 2015, a significant rise in numbers of fish per trap occurred, followed by a drop in 2016 to levels seen in 2004. Finally, a

significant steady increase was seen in 2017, 2018 and 2019.

CPUE in the deep depth stratum (RD3) increased from 2003 to 2006 but declined in 2007. From 2008 through 2016, CPUE declined and remained low. A slight increase appeared in 2017, followed by another in 2018. In 2019, CPUE returned to those seen in 2006.

## RÉSUMÉ

Lacko, L.C. and Acheson, S.M. and Connors, B.M. 2020. Summary of the Annual 2018 and 2019 Sablefish (*Anoplopoma fimbria*) Trap Surveys, October 9 - November 19, 2018 and October 8 - November 25, 2019. Can. Tech. Rep. Fish. Aquat. Sci. nnn: viii + 66 p.

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## 1 Introduction

Sablefish (*Anoplopoma fimbria*) are a commercially valuable species that are harvested in British Columbia (BC) using trap, longline and trawl gear as part of the integrated groundfish fishery. For the past ten years (2010 to 2019), BC fishermen have landed an average of 2,122 metric tons of sablefish annually. The majority of sablefish in 2018 were captured by longline hook gear (51%) and longline trap gear (39%). The majority of sablefish in 2019 were captured by longline trap gear (51%) and longline hook gear (43%). Commercial harvest of sablefish typically occurs at depths up to 985 fathoms, along the steep-walled slopes off the west coast of Haida Gwaii (formerly Queen Charlotte Islands), in the complex troughs of Queen Charlotte Sound, and in the steep canyons and ridges off the west coast of Vancouver Island.

Fishery-independent research and assessment surveys for sablefish have been conducted in BC coastal waters since 1988. Survey procedures have evolved over time, but each year, the surveys consisted of fishing sets using trap gear at randomly selected and/or index sites. These surveys are used to obtain catch rate data, gather biological samples and collect oceanographic and tag release and recapture data. This information is in turn used as the key contemporary index of abundance for assessing the biological status of the sablefish stock, and to condition an operating model that serves as the biological basis of the coastal Management Strategy Evaluation that has guided the sablefish fishery since 2008 (DFO 2020).

Since 2011, the design of the sablefish survey has remained relatively consistent, and has been comprised of a stratified random sampling (StRS) design for sites along BC's continental shelf and the continuation of sampling at standardized index sites in four mainland inlets. For details about past survey designs, see the historic overview provided by (Wyeth and Kronlund 2003) and (Wyeth et al. 2004a). For details on specific surveys conducted from 1988 through 1993 see (Smith et al. 1996); for surveys in 1994 and 1995 see (Downes et al. 1997); for surveys from 1996 to 2000 see (Wyeth and Kronlund 2003). For the 2001 through 2006 surveys see (Wyeth and Kronlund 2003), (Wyeth et al. 2004b), (Wyeth et al. 2004a) and (Wyeth et al. 2006), respectively.

In this technical report we describe survey operations and summarize data collected on the 2018 chartered survey aboard the F/V Ocean Pearl and the 2019 chartered survey aboard the F/V Pacific Viking. Tables and figures referred to in the main text are numbered sequentially. Tables and figures in the appendices are labelled with a letter code.

## 2 Methods

### 2.1 SURVEY DESIGN

Methodology for the 2018 and 2019 Sablefish research and assessment surveys employed a stratified random sampling (StRS) design component and a traditional standardized inlet component. The standard survey protocol requires the StRS component to be completed first, fishing from South to North. Next, the traditional inlet component must be conducted, fishing from North to South. If weather impacts the survey plan, the inlet sites are fished before

completing the northern StRS sites in order to reduce the total number of fishing days.

### **2.1.1 STRATIFIED RANDOM SAMPLING SURVEY DESIGN COMPONENT**

Since 2011, the StRS design has been conducted in all offshore survey areas. The StRS design began on the 2003 survey with the purpose of distributing tag releases at random, collecting biological samples and developing a catch-rate based index of abundance (Wyeth and Kronlund 2003). It also provided an alternative design to the historic traditional offshore component of the survey (1990 to 2010) which occurred at fixed locations.

Under the StRS design the offshore survey area is partitioned into five spatial strata ( $S_1$  to  $S_5$ ) and three depth strata ( $RD_1$  to  $RD_3$ ) for a total of 15 strata (Figure 1). The 5 spatial strata are  $S_1$  (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 are 100-250 fathoms ( $RD_1$ ), 250-450 fathoms ( $RD_2$ ) and 450-750 fathoms( $RD_3$ ). The area within each of the 15 strata is sectioned into 2 km x 2 km grid cells or ‘fishing blocks’ from which set locations are randomly chosen.

From 2003 through 2005, five grid cells were randomly selected in each spatial-depth stratum. Then from 2006 through 2010, the number of grid cells randomly selected in each spatial-depth stratum were increased to six. An analysis was completed for the 2011 survey to optimize the allocation of the blocks to strata for the 2011 and 2012 survey. However, in order to lower survey costs, the number of blocks allocated to each strata were further reduced for the 2013 survey, from a total of 110 offshore blocks to 91 offshore blocks while maintaining the same relative allocation of blocks to strata. This total number of blocks has been in place on all subsequent surveys (Table 1). The start locations of the 2018 survey are shown in Figure 2 (top), while the start locations of the 2019 survey are shown in Figure 2 (bottom).

### **2.1.2 TRADITIONAL STANDARD SURVEY COMPONENTS**

Standardized fishing sets under the traditional component of the survey have specific gear, bait, and sampling protocols. The original intent of the standardized sets was to collect catch rate data in order to index trends in abundance, tag fish and obtain biological samples. A list of the historic standardized localities and a timeline marking notable changes to these traditional components over the survey years is presented in Appendix A.

In 2010 the offshore portion of the traditional standardized survey was terminated because it was shown that the continued use of the standardized survey, in combination with the StRS, resulted in greater frequency of stock assessment errors than use of just the StRS (Cox et al. 2011). Since then only standardized fishing sets within four mainland inlet localities have continued, including during the 2018 and 2019 survey. A string of twenty-five (25) traps were set at five specific localities in each of the following four (4) areas: Portland Inlet, Gil Island, Finlayson Channel, and Dean/Burke Channel. The geographic boundaries of these localities are shown in Figure 1 and fished set lines shown in Figure 3. Trap gear was deployed near the center of each

of the five localities in order to avoid the steep slopes characteristic of these channels/fjords.

## 2.2 VESSELS

This survey is completed using a chartered commercial fishing vessel. The 2018 survey of 111 sets was conducted aboard the 35.66 meter F/V Ocean Pearl, skippered by Darcy Nichols and Mike Derry between Oct 9 - Nov 19 , 2018. The 2019 survey of 109 sets was conducted aboard the 25.34 meter F/V Pacific Viking, skippered by Albert (Deacon) Melnychuk between Oct 8 - Nov 25 , 2019. Images and information about the vessels can be found at <http://marinetrack.com> A complete list of vessels and sets on sablefish research and assessment surveys is found in Appendix B.

## 2.3 FISHING GEAR

The longline trap gear consisted of a groundline resting on the ocean floor with 25 baited traps attached to beackets at 150 foot intervals along its length and 90 pound anchors at each end (Figure 4, b). A flagpole was required for at least one end of the set to improve visibility for retrieval. The traps (Figure 4, a) 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. The tunnels were made of green braided, knotless, 1.25 inch mesh. The traps did not include escape rings; but instead 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. The bait methods for each survey component are listed in Table 2.

## 2.4 FISHING OPERATIONS

During normal survey fishing operations gear was deployed on alternate days and soaked between 22 and 26 hours. Prior to deploying gear the Fishing Master inspected the targeted block to ensure it was fishable and fell within the targeted depth range. The goal was to have as much of the gear as possible within the block boundaries. However, there are instances when a randomly chosen block cannot be fished for a variety of reasons ie. unfishable bottom, etc. If this occurs, the survey protocol dictates that an alternate block is to be chosen after the exploration of adjacent blocks to the east or west of the original, then north and south. If none of those blocks meet the targeted criteria, an alternate block for the same area and depth strata is randomly chosen.

Two science staff recorded information associated with the deployment of the gear. One science member was positioned in the wheelhouse and entered the required fields on the GFBioField bridge log form within the Electronic Data Acquisition System (EDAS). The Global positioning system (GPS) and bottom sounder data were logged continuously for the duration of the survey and designated fields on the bridge log were auto-populated. Details on electronic entry of the all

GFBioField forms mentioned in this document is available in the GFBio Field User Guide 2018 and (Olsen 2010).

A set 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 time and identity of the first and last buoys, anchor time, a tally of beackets and traps as well as the unique identifying numbers for any sensors deployed.

#### **2.4.1 Stratified Random Component**

Sets in StRS blocks had a targeted soak time of 24 hours with useable fishing sets hauled as early as 22 hours or as late as 26 hours. The traps were baited with 10 pounds of loose offshore Pacific Hake (*Merluccius productus*) and 2 pounds of bagged squid (Table 2).

#### **2.4.2 Traditional Standardized Inlet Component**

Fishing sets in inlet localities had a targeted soak time of 18 hours with useable fishing sets hauled between 16 hours and 20 hours. Traps in the inlets were baited with 2 pounds of bagged squid (Table 2). The reason the soak times for these inlet sets is shorter than the offshore StRS sets is so that they are comparable to historic inlet sets which were based on this shorter soak time.

### **2.5 CATCH PROCESSING**

Sets were hauled at a speed well timed for the science crew to accurately record the catch. Two science staff were positioned on deck at the haul card station; one person recorded the catch and the other person managed the movement of baskets. In addition, the catch recorder entered the haul start and end times into the GFBioField Bridge Log. As the groundline was hauled, each becket and trap were entered in the GFBioField Sablefish Trap Catch form. Crew members alerted the recorder about any damage to a trap (i.e. holes) which was then recorded in the GFBioField Trap Usability form.

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

### **2.5.1 Sablefish Allocation Details**

Prior to 2018, sablefish were tagged from 1/3 of the traps on StRS and 1/2 of the traps on the inlet sets. Due to high catch numbers, the survey protocol was revised in 2018 to designate ~125 sablefish to be tagged (T) from 1/3 of the traps on all sets. 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 minimal of two traps to be used for samples. If these two traps contained more than 60 sablefish, a random process was used to select ~60 specimens.

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

## **2.6 BIOLOGICAL SAMPLING (LWSMO)**

Biological sampling were collected from sablefish, yelloweye rockfish (*Sebastodes ruberrimus*), shortraker rockfish (*Sebastodes borealis*) and rougheye/blackspotted rockfish (*Sebastodes aleutianus*/*Sebastodes melanostictus*) specimens on the 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. In addition, tissue for DNA was collected from the rougheye/blackspotted rockfish complex for later species determination. Since this complex of two distinct species (Orr and Hawkins 2008) have similar appearances with slight variations in colour markings and dorsal fin lengths, the sampler visually identified each specimen as either a rougheye, 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.

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.

## **2.7 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 science team member was stationed at the tag sample computer to record errors, injuries and ensure correct tag numbering. A third science team member 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 1/2 cm) measurements taken on the Scantrol measuring board were electronically transferred to the GFBioField Fish Recording form.

Before release, any sampling errors, injuries or damage to the fish were documented on the Fish Recording form. Tag checks were performed systematically to ensure tag numbers on the data form matched those on the fish specimen.

## **2.8 SABLEFISH TAG RECOVERY**

Any previously tagged fish brought aboard may have been 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 to be scanned into the GFBioField Tag Recovery Entry form. The Department later returns those tags released by other countries.

In previous years, re-releases of recovered tagged sablefish with the same tag occurred during the survey years 1992 through 1997 and 2004. Re-releases of recovered tagged sablefish with a new tag began in 2005.

## **2.9 OCEANOGRAPHIC SENSOR DATA COLLECTION**

A Sea-bird Bird SBE 39 temperature and pressure logger was placed in a protective plastic pipe and attached to the inside of the middle or end traps. Data was successfully collected from 107 sets in 2018 (Appendix C) and 105 sets in 2019 (Appendix D). A SBE 39 was also placed in the tagging tank on hauling days to record water temperature.

In order to evaluate the impact of fishing gear on benthic habitat, Nuytco autonomous camera systems and HOBO Pendant G accelerometers were attached to traps to capture images and movement (2012 through 2017). During the 2018 and 2019 surveys, only accelerometers were deployed. Data was successfully collected from 109 sets in 2018 (Appendix C) and 66 sets in 2019 (Appendix D). Last, a single accelerometer was stationed just forward of the hauler post.

A Concerto CTD (conductivity, temperature and depth) sensor was placed inside the middle or end traps on 15 sets in 2018 and 13 sets in 2019. Data from the accelerometers, CTD sensors, SBE temperature and pressure loggers were processed after the set was complete using tools on the GFBioField Upload Sensor Data form.

## **2.10 ELECTRONIC MONITORING VIDEO DATA COLLECTION**

At the time of hauling gear, the electronic monitoring (EM) system cameras were activated by the hydraulic sensor. Three standard analog cameras were positioned at optimal viewing angles to record survey activities. Two cameras were stationed along the mast to record the catch as it was processed at the hopper. A third camera was stationed on the side of the wheelhouse to record the traps as they were brought over the rail. The video data from each set was reviewed by science staff the following day to provide quality control on catch data.

### **3 Results and Discussion**

#### **3.1 FISHING**

##### **3.1.1 2018 Survey**

The 2018 survey was 42 days long and divided into three legs of 14, 16 and 14 days for a total of 34 fishing days. Inclement weather during the second leg required fishing to commence in Dean/Burke Channel, Finlayson Inlet and Gill Island prior to fishing the StRS sites in Queen Charlotte Sound. This ensured that no fishing days were lost.

Of the 91 original blocks for the StRS portion of the survey, five were replaced at-sea. One block was rejected after on-ground inspection and four were rejected based on absence of target depth requirements.

##### **3.1.2 2019 Survey**

The 2019 survey was 46 days long and divided into three legs of 17, 14 and 17 days for a total of 34 fishing days. Inclement weather during the survey caused a loss of seven fishing days, five during the first leg and two during the third leg. Two blocks were left unfished in strata five as the vessel moved to the inshore inlets.

Of the 91 original blocks for the StRS portion of the survey, one was attempted but not successfully fished, one was replaced due to on-ground inspection, three were replaced due to skipper knowledge (unfishable habitat) and two more were replaced based on absence of target depth requirements.

#### **3.2 CATCH PER UNIT EFFORT (CPUE)**

Figure 5 Figure 6 Figure 7 Figure 8

The annual CPUE (number of sablefish/number of traps) for StRS sets are summarized in Figure 5 for each depth stratum ( $RD_1$ - $RD_3$ ) since the stratified random sampling program began in 2003.

The annual CPUE at mainland inlet locations are summarized since 1994 in Figure 9.

##### **3.2.1 Shallow depth stratum ( $RD_1$ )**

CPUE in the shallow depth stratum have shown gradual decline from 2003 to 2009 (~11 to 5 fish per trap). CPUE rose again to an average of 8 fish per trap in 2010 and gradually declined from 2011 to 2014 (~7 to 4 fish per trap). An increase occurred in 2015 and 2016 (~8 and 6 fish per trap, respectively) and then surged in 2017, 2018 and 2019 (~14, 13 and 19 fish per trap,

respectively). The shallow depth stratum typically exhibited the least among block variability in CPUE with a cv=0.73.

### **3.2.2 Middle depth stratum (RD<sub>2</sub>)**

Across all years the highest CPUE typically occurred in the middle depth stratum (Figure ??). CPUE in the middle depth stratum showed a gradual decline from 2003 to 2010 (~18 to 10 fish per trap) but an increase in 2011 (~14 fish per trap). Over 2012, 2013 and 2014, CPUE fluctuated (~10, 12 and 10 fish per trap, respectively). In 2015, a significant rise to ~19 fish per trap occurred, followed by a drop in 2016 (~14 fish per trap). In the past three years, 2017, 2018 and 2019, a significant increase was observed (~26, 37 and 47 fish per trap, respectively). The middle depth stratum typically exhibited the least among block variability in CPUE with a cv=0.39.

### **3.2.3 Deep depth stratum (RD<sub>3</sub>)**

CPUE in the deep depth stratum (RD3) increased from 2003 to 2006 (~6 to 12 fish per trap) but declined in 2007 (~7 fish per trap). It rose again in 2008 (~9 fish per trap) but showed a significant drop in 2009 (~5 fish per trap). In 2010, 2011 and 2013, CPUE averaged ~6 fish per trap, similar to those levels seen in the first two years of the survey. In 2012 and 2014, CPUE dropped again to ~4 fish per trap. During 2015, 2016 and 2017, CPUE remained low (~5, 3 and 6 fish per trap, respectively). Once again, ~9 fish per trap (2008) were seen in 2018. In 2019, CPUE was the highest at 12 fish per trap. The deep depth stratum typically exhibited the least among block variability in CPUE with a cv=0.59.

### **3.2.4 Mainland Inlets**

CPUE in the mainland inlets have varied in a predictable manner over time with peak CPUE occurring every 5-8 years (Figure ??). The mean CPUE remained consistent in the mid 1990s, from 1994 through 1997 (~8 to 10 fish per trap), then increased in 1998 (~15 fish per trap) and again in 1999 (~23 fish per trap) before declining from 2000 through 2002 (~8 to 11 fish per trap). CPUE peaked again in 2003 and 2004 (~20 and 21 fish per trap, respectively) and 2011 (~22 fish per trap). In 2018, CPUE returned (~23 fish per trap) to the high rates seen in early years. In 2019, the highest catches rates of the 26 year time series were seen (~35 fish per trap).

## **3.3 CATCH COMPOSITION**

### **3.3.1 2018 Survey**

A total of fifty-three taxonomic groups were represented in the catches in StRS sets in 2018 (Table 3). These included ten roundfish species, thirteen rockfish species, three flatfish species and twenty-seven invertebrate species. Other than sablefish, the most common species, by

weight, were Spiny dogfish (*Squalus acanthias*), Pacific halibut (*Hippoglossus stenolepis*), Lingcod (*Ophiodon elongatus*), Yelloweye rockfish (*Sebastodes ruberrimus*) and Arrowtooth flounder (*Atheresthes stomias*).

A total of eighteen taxonomic groups were represented in the catches from traditional standardized sets conducted in mainland inlet localities in 2018 (Table 4). These included two roundfish species, four rockfish species, two flatfish species and ten invertebrate species. The most common species captured, in order of total weights, other than sablefish were Spiny dogfish (*Squalus acanthias*) and Pacific halibut (*Hippoglossus stenolepis*).

### **3.3.2 2019 Survey**

A total of fifty taxonomic groups were represented in StRS sets in 2019 (Table 5). These included eleven roundfish species, thirteen rockfish species, four flatfish species and twenty-two invertebrate species. Other than sablefish, the most common species, by weight, were Lingcod (*Ophiodon elongatus*), Pacific halibut (*Hippoglossus stenolepis*), Spiny dogfish (*Squalus acanthias*), Rougheye rockfish (*Sebastodes aleutianus*) and Redbanded rockfish (*Sebastodes babcocki*).

A total of twelve taxonomic groups were represented in the catches from traditional standardized sets conducted in mainland inlet localities in 2019 (Table 6). These included three roundfish species, no rockfish species, three flatfish species and six invertebrate species. The most common species, by weight, other than sablefish were Pacific halibut (*Hippoglossus stenolepis*) and Spiny dogfish (*Squalus acanthias*).

## **3.4 SABLEFISH SAMPLING**

A breakdown of the use of sablefish catch, by trap, in the 2018 and 2019 survey is listed in Appendix E and Appendix F, respectively.

During the 2018 StRS, a total of 46,808 sablefish were caught. Of that total, 8,458 were tagged and released and 4,663 were retained for biological sampling. Of the tagged fish, 126 were previously tagged fish that were re-released with a new tag. Another 5 previously tagged fish were retained for sampling (Appendix G).

Out of the 11,607 sablefish captured during the 2018 traditional survey (inlet standardized sets), 2,507 were tagged and released, 1,078 were used for biological sampling and 82 were previously tagged fish re-released with a new tag.

Overall, the StRS sets had a higher proportion of females than males over the spatial strata S<sub>1</sub>, S<sub>2</sub>, S<sub>3</sub> and S<sub>4</sub> with the exception of S~5 where the sex ratio was equal (Table 7). More females than males were seen in the shallow depth stratum within the spatial strata S<sub>1</sub>, S<sub>2</sub>, S<sub>3</sub>, S<sub>4</sub> and S<sub>5</sub>. In the mid depth stratum, there were more males than females in S<sub>1</sub>, S<sub>2</sub>, S<sub>3</sub>, S<sub>4</sub> and S<sub>5</sub>. The deepest depth stratum saw more females in spatial strata S<sub>1</sub>, S<sub>2</sub> and S<sub>3</sub>. More females than males were sampled in all traditional mainland inlet localities and samples ranged from 58 to 74 percent females (Table 7).

During the 2019 StRS, a total of 60,965 sablefish were caught. Of that total, 9,143 were tagged and released and 4,591 were retained for biological sampling. Of the tagged fish, 98 were previously tagged fish that were re-released with a new tag. Another 2 previously tagged fish were retained for sampling (Appendix H).

Out of the 17,871 sablefish captured during the 2019 traditional survey (inlet standardized sets), 2,899 were tagged and released, 1,068 were used for biological sampling and 56 were previously tagged fish re-released with a new tag.

Overall, the StRS design sets had a higher proportion of females to males over the spatial strata S<sub>1</sub>, S<sub>2</sub>, S<sub>3</sub>, S<sub>4</sub> and S<sub>5</sub> (Table 8). The sex ratio was females biased in the shallow depth stratum within the spatial strata S<sub>1</sub>, S<sub>2</sub>, S<sub>3</sub>, S<sub>4</sub> and S<sub>5</sub>. In the mid depth stratum, there were more males than females in S<sub>1</sub> and S<sub>3</sub>. The deepest depth stratum saw more females in spatial strata S<sub>1</sub>, S<sub>2</sub> and S<sub>3</sub>. More females than males were sampled in all traditional mainland inlet localities and samples ranged from 68 to 71 percent females (Table 8).

Figure 10 (top) shows the length frequency histograms for the 38,165 female and 35,328 male sablefish sampled for length and sex during the StRS portion of the 2003 - 2019 surveys. Out of the 73,577 sablefish sampled for length and sex, 84 were looked at but no sex could be determined. The mean fork length ( $\bar{x}$ ) for females was 65.3 cm and the mean fork length ( $\bar{x}$ ) for males was 58.5 cm.

Figure 10 (bottom) graphs the average length of male and female sablefish by year. In 2018, the average mean fork length for the 2,363 females was 62 cm and the average mean fork length for the 2,024 males was 57 cm. In 2019, the average mean fork length for the 2,609 females was 61 cm and the average mean fork length for the 1,719 males was 55 cm.

The length (cm) weight (kg) relationships for male and female sablefish are shown by the 2018 survey year (Figure 11, left) and the 2019 survey year (Figure @ref(fig:figure11, right)). These figures illustrate that on average female sablefish grow faster and reach flarger length and weight compared to males.

### 3.5 SABLEFISH SUB-LEGAL ENCOUNTERS

The percentage of sub-legal sablefish (<55 cm fork length) sampled in each the StRS strata are shown in Figure 15 since the winter of 2013-14, when a warm body of water dubbed “The Blob” was detected (Bond et al. 2015). More than half of the specimens that were sub-legal were found in the southern strata (S<sub>1</sub>) mid-depth waters (RD<sub>2</sub>) in 2014 and shallow waters (RD<sub>1</sub>) in 2015. The sub-legal specimen count was above 50% in both 2017 and 2018 in the northern strata of S<sub>4</sub> and S<sub>5</sub> mid-depth waters (RD<sub>2</sub>). In 2019, the sub-legal specimens dominated with over 50% found in all StRS survey strata (S<sub>1</sub> to S<sub>5</sub>) mid-depth waters (RD<sub>2</sub>).

### 3.6 OTHER FISH SAMPLING

The biological data collected during the 2018 and 2019 surveys from species other than sablefish are listed in Appendix I and Appendix J, respectively. Length, sex, maturity, otoliths and DNA

samples were collected for 147 (2018) and 195 (2019) specimens of the Rougheye/Blackspotted Rockfish complex. Length, sex, maturity, otoliths were collected for 25 (2018) and 11 (2019) Shortraker Rockfish. In addition, length, sex, maturity, otoliths and DNA were collected for 150 (2018) and 49 (2019) Yelloweye Rockfish.

For Pacific Halibut, only length samples were taken on 147 (2018) and 247 (2019) specimens. Last, a length sample was taken for 1 (2019) Pacific Sleeper shark.

### **3.7 RECOVERED TAGGED SABLEFISH**

During the 2018 and 2019 sablefish surveys, 208 and 154 previously tagged fish were released live with a new tag, respectively. Table 9 lists the counts of DFO tagged fish released and recovered from 1991 through 2019 up to the time of this report. Every year, the highest number of recovered tags has occurred one year after release.

### **3.8 SABLEFISH AGES**

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 appeared in 2012 through to 2016 as 4, 5, 7, 7 and 8 year olds. Last, another cohort appeared to arrive in 2017 which was dominated by 3 year olds and 2018 by 5 year olds. (Figure 13, top).

The highest proportion of female ages in the 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 (Figure 13, bottom).

Historic data from all samples lists the oldest female sablefish at 92 years of age collected in 2003 where as the oldest male sablefish with the age of 96 years old was documented for the year 2018.

### **3.9 OCEANOGRAPHIC TEMPERATURES AND DEPTHS**

Co-plots of average temperatures and average depths by 1-degree latitude intervals from southwest Vancouver Island to northwest Haida Gwaii are depicted in Figure 14. Although the number of sets that deployed Sea-bird SBE 39 loggers varied in each 1-degree latitude zone, the general trend shows that the average temperatures decrease with increasing depth.

In the shallow waters, the lowest average temperature was 4.9 °C (2010) within the 54°- 55° latitude band. The highest average temperature was 7.3 °C (2015) in the southern 50° - 51° latitude band. Moving into the mid-depth waters, from 458-823 meters, the lowest average temperature was 4 °C (2007) within the 52°-53 ° latitude band. The highest average temperature was 5.2 °C (2006) in the southern 48°- 49° latitude band. In the deepest waters, the lowest

average temperature of 2.6 °C (2016) was found in the 54°- 55° latitude band and the highest average temperature was 3.9°C (2013) in the southern 49°-50° latitude band (Figure 15).

### **3.10 ACKNOWLEDGEMENTS**

The stock assessment survey and data report is the result of the collaborative efforts of many individuals. Wild Canadian Sablefish has provided coordination and support of the annual Sablefish survey since 1994. The scientific staff that conducted the 2018 sablefish research charter included Kevin Baker, Guy Boxall and Talyn Ridgway of Archipelago Marine Research Ltd (AMR); and Schon Acheson, Brendan Connors, Grant Garner, Kathryn Temple, Daniel Williams, and Malcolm Wyeth of Fisheries and Oceans, Canada. The scientific staff that conducted the 2019 sablefish research charter included Guy Boxall and Olivia Schaefer of AMR; and Schon Acheson, Travis Bell, Brendan Connors, Lindsay Dealy, Kathryn Temple, Daniel Williams, and Malcolm Wyeth of Fisheries and Oceans, Canada.

A special thanks to the skipper and crew of the F/V Ocean Pearl, whose efforts made the 2018 survey successful. In 2018, the crew consisted of Mike Derry (skipper), D'Arcy Nichols (skipper), Travis Anderson, Alec Fraumeni, Dan Heslop, Dylan Holstein, Jason Johnston and Alex Pugh. Also, much appreciation to the skipper and crew of the F/V Pacific Viking, whose efforts made the 2019 survey successful. In 2019, the crew consisted of Deacon Melnychuk (skipper), Cody Melnychuk, Dave Holomego, Rick Schneider, Mike Zboovsky and Rory Johnson.

## 4 Tables and Figures

Table 1. Spatial strata allocation for the 2018 and 2019 sablefish research and assessment surveys.

| Spatial Strata                                  | Depth Strata     |                  |                  | Total |
|---|------------------|------------------|------------------|-------|
|   | RD1 (100-250 fm) | RD2 (250-450 fm) | RD3 (450-750 fm) |       |
| S1 (South West Coast Vancouver Island or SWCVI) | 6                | 8                | 5                | 19    |
| S2 (North West Coast Vancouver Island or NWCVI) | 6                | 7                | 5                | 18    |
| S3 (Queen Charlotte Sound or QCS)               | 8                | 6                | 5                | 19    |
| S4 (South West Coast Haida Gwaii or SWCHG)      | 6                | 6                | 5                | 17    |
| S5 (North West Coast Haida Gwaii or NWCHG)      | 6                | 7                | 5                | 18    |
| Total   | 32               | 34               | 25               | 91    |

Table 2. Components of the 2018 and 2019 sablefish research and assessment surveys.

| Component                         | Bait   | Locations   |
|-----------------------------------|--|---|
| Stratified random sampling (StRS) | 2 lbs frozen squid (bagged)<br>10 lbs Hake (loose) | Five spatial strata (S1-S5)   |
| Traditional Inlet Standardized    | 2 lbs frozen squid (bagged)                        | Dean/Burke Channel<br>Finlayson Channel<br>Gil Island<br>Portland Inlet |

Table 3. Summary of species captured during the 2018 survey StRS sets conducted by the Ocean Pearl. No value in the weight column indicates that the catch was not weighed. No value in both weight and count indicates trace weights of less than 1 kg recorded.

| Category             | Common Name           | Scientific Name                      | Count | Weight(kg) |
|----------------------|-----------------------|--------------------------------------|-------|------------|
| Roundfish Species    | Sablefish             | <i>ANOPLOPOMA FIMBRIA</i>            | 99246 |            |
|                      | Spiny dogfish         | <i>SQUALUS ACANTHIAS</i>             | 2973  |            |
|                      | Lingcod               | <i>OPHIODON ELONGATUS</i>            | 1912  |            |
|                      | Pectoral rattail      | <i>ALBATROSSIA PECTORALIS</i>        | 377   |            |
|                      | Pacific grenadier     | <i>CORYPHAENOIDES ACROLEPIS</i>      | 332   |            |
|                      | Pacific cod           | <i>GADUS MACROCEPHALUS</i>           | 11    |            |
|                      | Pink snailfish        | <i>PARALIPARIS ROSACEUS</i>          | 10    |            |
|                      | Pacific flatnose      | <i>ANTIMORA MICROLEPIS</i>           | 8     |            |
|                      | Black hagfish         | <i>EPTATRETUS DEANI</i>              | 1     |            |
|                      | Spotted ratfish       | <i>HYDROLAGUS COLLIEI</i>            | 1     |            |
| Rockfish Species     | Yelloweye rockfish    | <i>SEBASTES RUBERRIMUS</i>           | 1158  |            |
|                      | Redbanded rockfish    | <i>SEBASTES BABCOCKI</i>             | 389   |            |
|                      | Rougheye rockfish     | <i>SEBASTES ALEUTIANUS</i>           | 342   |            |
|                      | Shortraker rockfish   | <i>SEBASTES BOREALIS</i>             | 80    |            |
|                      | Shortspine thornyhead | <i>SEBASTOLOBUS ALASCANUS</i>        | 58    |            |
|                      | Canary rockfish       | <i>SEBASTES PINNIGER</i>             | 17    |            |
|                      | Rosethorn rockfish    | <i>SEBASTES HELVOMACULATUS</i>       | 2     |            |
|                      | Silvergray rockfish   | <i>SEBASTES BREVISPINIS</i>          | 2     |            |
|                      | Pacific ocean perch   | <i>SEBASTES ALUTUS</i>               | 1     |            |
|                      | Sharpchin rockfish    | <i>SEBASTES ZACENTRUS</i>            | 1     |            |
|                      | Aurora rockfish       | <i>SEBASTES</i>                      | 1     |            |
|                      | Longspine thornyhead  | <i>SEBASTES AURORA</i>               | 1     |            |
| Flatfish Species     | Longspine thornyhead  | <i>SEBASTOLOBUS ALTIVELIS</i>        | 2     |            |
|                      | Pacific halibut       | <i>HIPPOGLOSSUS STENOLEPIS</i>       | 2492  |            |
|                      | Arrowtooth flounder   | <i>ATHERESTHES STOMIAS</i>           | 678   |            |
| Invertebrate Species | Dover sole            | <i>MICROSTOMUS PACIFICUS</i>         | 8     |            |
|                      | Grooved Tanner Crab   | <i>CHIONOECETES TANNERI</i>          | 119   |            |
|                      | Red Queen Crab        | <i>LITHODES COUESI</i>               | 14    |            |
|                      | Brown box crab        | <i>PARALOMIS MULTISPINA</i>          | 10    |            |
|                      | Oregon triton         | <i>ALLOCENTROTUS FRAGILIS</i>        | 8     |            |
|                      | Anemone               | <i>LOPHOLITHODES FORAMINATUS</i>     | 4     |            |
|                      | Fish-eating star      | <i>FUSITRITON OREGONENSIS</i>        | 3     |            |
|                      | Golden king crab      | <i>NEPTUNEIDAE</i>                   | 2     |            |
|                      |                       | <i>NEPTUNEA</i>                      | 1     |            |
|                      |                       | <i>ACTINIARIA</i>                    | 1     |            |
| Ophiuroidea          |                       | <i>STYLASTERIAS FORRERI</i>          | 1     |            |
|                      |                       | <i>LITHODES AEQUISPINA</i>           | 1     |            |
|                      |                       | <i>RATHBUNASTER CALIFORNICUS</i>     | 4     |            |
|                      |                       | <i>PORANIIDAE</i>                    | 1     |            |
|                      |                       | <i>OPHIUROIDEA</i>                   | 1     |            |
|                      |                       | <i>PANDALUS PLATYCEROS</i>           | 1     |            |
|                      |                       | <i>HOLOTHUROIDEA</i>                 | 1     |            |
|                      |                       | <i>PSEUDOSTICHOPUS MOLLIS</i>        | 1     |            |
|                      |                       | <i>MOLPADIA INTERMEDIA</i>           |       |            |
|                      |                       | <i>CRINODEA</i>                      |       |            |
|                      |                       | <i>CROSSASTER PAPPOSUS</i>           |       |            |
|                      |                       | <i>PAGURIDAE</i>                     |       |            |
|                      |                       | <i>METRIDIUM</i>                     |       |            |
|                      |                       | <i>TRITONIA</i>                      |       |            |
|                      |                       | <i>OPHIOSCOLEX</i>                   |       |            |
|                      |                       | <i>AMPHIOPHIURA PONDEROSA</i>        |       |            |
|                      |                       | <i>HETEROZONIAS ALTERNATUS</i>       |       |            |
|                      |                       | <i>LOPHASTER FURCILLIGER VEXATOR</i> |       |            |

Table 4. Summary of species captured by the Ocean Pearl during the 2018 survey standardized sets conducted at mainland inlet localities. Null values indicate the catch was not counted or weighed. No value in both weight and count indicates trace weights of less than 1 kg recorded.

| Category             | Common Name           | Scientific Name         | Count | Weight(kg) |
|----------------------|-----------------------|-------------------------|-------|------------|
| Roundfish Species    | Sablefish             | ANOPLOPOMA FIMBRIA      | 1     | 19908      |
|                      | Codfishes             | GADIDAE                 |       |            |
| Rockfish Species     | Shortraker rockfish   | SEBASTES BOREALIS       | 6     |            |
|                      | Shortspine thornyhead | SEBASTOLOBUS ALASCANUS  |       |            |
|                      | Rougheye rockfish     | SEBASTES ALEUTIANUS     |       |            |
|                      | Aurora rockfish       | SEBASTES AURORA         |       |            |
| Flatfish Species     | Pacific halibut       | HIPPOGLOSSUS STENOCEPIS | 495   |            |
|                      | Arrowtooth flounder   | ATHERESTHES STOMIAS     |       |            |
| Invertebrate Species | Mud star              | CTENODISCUS CRISPATUS   | 15    |            |
|                      | Oregon triton         | FUSITRITON OREGONENSIS  |       |            |
|                      | Redclaw crab          | CHORILIA LONGIPES       |       |            |
|                      | Sea cucumber          | HOLOTHUROIDEA           |       |            |
|                      | Vermillion starfish   | MEDIASTER AEQUALIS      |       |            |
|                      |                       | MAIIDAE                 |       |            |
|                      |                       | NEPTUNEA                |       |            |
|                      | Anemone               | ACTINIARIA              |       |            |
|                      | Cookie star           | CERAMASTER PATAGONICUS  |       |            |
|                      | Heart urchins         | ATELOSTOMATA            |       |            |

Table 5. Summary of species captured during the 2019 survey StRS sets conducted by the Pacific Viking. No value in the weight column indicates that the catch was not weighed. No value in both weight and count indicates trace weights of less than 1 kg recorded.

| Category             | Common Name                  | Scientific Name           | Count  | Weight(kg) |
|----------------------|------------------------------|---------------------------|--------|------------|
| Roundfish Species    | Sablefish                    | ANOPLOPOMA FIMBRIA        | 111296 |            |
|                      | Lingcod                      | OPHIODON ELONGATUS        | 1888   |            |
|                      | Spiny dogfish                | SQUALUS ACANTHIAS         | 1318   |            |
|                      | Pacific grenadier            | CORYPHAEENOIDES ACROLEPIS | 172    |            |
|                      | Pectoral rattail             | ALBATROSSIA PECTORALIS    | 150    |            |
|                      | Pacific sleeper shark        | SOMNIOSUS PACIFICUS       | 12     |            |
|                      | Pacific cod                  | GADUS MACROCEPHALUS       | 10     |            |
|                      | Pacific flatnose             | ANTIMORA MICROLEPIS       | 7      |            |
|                      | Pink snailfish               | PARALIPARIS ROSACEUS      | 7      |            |
|                      | Darkfin sculpin              | MALACOCOTTUS ZONURUS      | 1      |            |
| Rockfish Species     | Threadfin sculpin            | ICELINUS FILAMENTOSUS     |        |            |
|                      | Rougheye rockfish            | SEBASTES ALEUTIANUS       | 502    |            |
|                      | Redbanded rockfish           | SEBASTES BABCOCKI         | 386    |            |
|                      | Yelloweye rockfish           | SEBASTES RUBERRIMUS       | 168    |            |
|                      | Shortraker rockfish          | SEBASTES BOREALIS         | 45     |            |
|                      | Shortspine thornyhead        | SEBASTOLOBUS ALASCANUS    | 31     |            |
|                      | Yellowmouth rockfish         | SEBASTES REEDI            | 5      |            |
|                      | Silvergray rockfish          | SEBASTES BREVISPINIS      | 3      |            |
|                      | Rosethorn rockfish           | SEBASTES HELVOMACULATUS   | 3      |            |
|                      | Canary rockfish              | SEBASTES                  | 3      |            |
|                      | Aurora rockfish              | SEBASTES PINNIGER         | 2      |            |
|                      | Longspine thornyhead         | SEBASTES AURORA           | 1      |            |
|                      | Sharpchin rockfish           | SEBASTOLOBUS ALTIVELIS    | 4      |            |
| Flatfish Species     | Sharpchin rockfish           | SEBASTES ZACENTRUS        | 2      |            |
|                      | Pacific halibut              | HIPPOGLOSSUS STENOLEPIS   | 1884   |            |
|                      | Arrowtooth flounder          | ATHERESTHES STOMIAS       | 229    |            |
|                      | Dover sole                   | MICROSTOMUS PACIFICUS     | 8      |            |
| Invertebrate Species | Petrale sole                 | EOPSETTA JORDANI          | 7      |            |
|                      | Grooved Tanner Crab          | CHIONOECETES TANNERI      | 143    |            |
|                      | Oregontriton                 | FUSITRITON OREGONENSIS    | 9      |            |
|                      | Red Queen Crab               | LITHODES COUESI           | 9      |            |
|                      | Giant pacific octopus        | ENTEROCTOPUS DOFLEINI     | 3      |            |
|                      | Brown box crab               | LOPHOLITHODES FORAMINATUS | 1      |            |
|                      |                              | ALLOCENTROTUS FRAGILIS    | 1      |            |
|                      |                              | PARALOMIS MULTISPINA      | 1      |            |
|                      |                              | NEPTUNEA                  | 6      |            |
|                      |                              | ZOROASTERIDAE             | 1      |            |
| Starfish             |                              | ASTERIODEA                | 1      |            |
|                      |                              | PTERASTER                 | 1      |            |
|                      |                              | RATHBUNASTER CALIFORNICUS | 1      |            |
|                      |                              | SOLASTER                  | 1      |            |
|                      |                              | HIPPASTERIA               | 1      |            |
|                      |                              | SOLASTERIDAE              |        |            |
|                      |                              | TARSASTER ALASCANUS       |        |            |
|                      |                              | AMPHIOPHIURA PONDEROSA    |        |            |
|                      |                              | BUCCINIDAE                |        |            |
|                      | Jellyfish                    | SCYPHOZOA                 |        |            |
| Ophiuroidea          | Ophiuroidea                  | OPHIUROIDEA               |        |            |
|                      | Rose starfish                | CROSSASTER PAPPOSUS       |        |            |
|                      | Sea lilies and feather stars | CRINODEA                  |        |            |

Table 6. Summary of species captured by the Pacific Viking during the 2019 survey standardized sets conducted at mainland inlet localities. Null values indicate the catch was not counted or weighed. No value in both weight and count indicates trace weights of less than 1 kg recorded.

| Category             | Common Name           | Scientific Name         | Count | Weight(kg) |
|----------------------|-----------------------|-------------------------|-------|------------|
| Roundfish Species    | Sablefish             | ANOPLOPOMA FIMBRIA      | 30270 | 7          |
|                      | Spiny dogfish         | SQUALUS ACANTHIAS       |       |            |
| Flatfish Species     | Pacific sleeper shark | SOMNIOSUS PACIFICUS     | 1     | 247        |
|                      | Pacific halibut       | HIPPOGLOSSUS STENOLEPIS |       |            |
|                      | Arrowtooth flounder   | ATHERESTHES STOMIAS     |       |            |
|                      | Dover sole            | MICROSTOMUS PACIFICUS   |       |            |
| Invertebrate Species |                       | NEPTUNEA                |       |            |
|                      | Heart urchins         | ATELOSTOMATA            |       |            |
| Inshore Tanner Crab  |                       | CHIONOECETES BAIRDII    |       |            |
|                      | Mud star              | CTENODISCUS CRISPATUS   |       |            |
|                      | Oregon triton         | FUSITRITON OREGONENSIS  |       |            |
|                      | Vermillion starfish   | MEDIASTER AEQUALIS      |       |            |

Table 7. Summary of sablefish biological data collected during the 2018 stratified random sets by spatial and depth stratum.

| Spatial            | Depth | Proportion  |             | Mean Fork Length (mm) |            |            |
|--------------------|-------|-------------|-------------|-----------------------|------------|------------|
|                    |       | Males       | Females     | Males                 | Females    | Tagged     |
| S1                 | RD1   | 0.43        | 0.57        | 580                   | 635        | 611        |
|                    | RD2   | 0.71        | 0.29        | 570                   | 600        | 565        |
|                    | RD3   | 0.33        | 0.67        | 558                   | 621        | 585        |
|                    |       | <b>0.49</b> | <b>0.51</b> | <b>569</b>            | <b>619</b> | <b>587</b> |
| S2                 | RD1   | 0.26        | 0.74        | 591                   | 636        | 607        |
|                    | RD2   | 0.56        | 0.44        | 557                   | 624        | 574        |
|                    | RD3   | 0.22        | 0.78        | 569                   | 653        | 625        |
|                    |       | <b>0.35</b> | <b>0.65</b> | <b>572</b>            | <b>638</b> | <b>602</b> |
| S3                 | RD1   | 0.19        | 0.81        | 557                   | 628        | 610        |
|                    | RD2   | 0.68        | 0.32        | 564                   | 628        | 576        |
|                    | RD3   | 0.31        | 0.69        | 568                   | 655        | 603        |
|                    |       | <b>0.39</b> | <b>0.61</b> | <b>563</b>            | <b>637</b> | <b>596</b> |
| S4                 | RD1   | 0.21        | 0.79        | 618                   | 649        | 658        |
|                    | RD2   | 0.59        | 0.41        | 545                   | 561        | 548        |
|                    | RD3   | 0.65        | 0.35        | 613                   | 676        | 640        |
|                    |       | <b>0.48</b> | <b>0.52</b> | <b>592</b>            | <b>629</b> | <b>615</b> |
| S5                 | RD1   | 0.28        | 0.72        | 585                   | 633        | 590        |
|                    | RD2   | 0.60        | 0.40        | 551                   | 543        | 526        |
|                    | RD3   | 0.62        | 0.38        | 592                   | 634        | 602        |
|                    |       | <b>0.50</b> | <b>0.50</b> | <b>576</b>            | <b>603</b> | <b>573</b> |
| Dean/Burke Channel |       | 0.34        | 0.66        | 487                   | 539        | 521        |
| Finlayson Channel  |       | 0.42        | 0.58        | 516                   | 560        | 541        |
| Gil Island         |       | 0.26        | 0.74        | 511                   | 565        | 540        |
| Portland Inlet     |       | 0.29        | 0.71        | 528                   | 567        | 546        |
|                    |       | <b>0.33</b> | <b>0.67</b> | <b>510</b>            | <b>558</b> | <b>537</b> |

Table 8. Summary of sablefish biological data collected during the 2019 stratified random sets by spatial and depth stratum.

| Spatial            | Depth | Depth Strata/Locality |             | Proportion |            | Mean Fork Length (mm) |  |  |
|--------------------|-------|-----------------------|-------------|------------|------------|-----------------------|--|--|
|                    |       | Males                 | Females     | Males      | Females    | Tagged                |  |  |
| S1                 | RD1   | 0.32                  | 0.68        | 544        | 606        | 578                   |  |  |
|                    | RD2   | 0.69                  | 0.31        | 535        | 588        | 541                   |  |  |
|                    | RD3   | 0.06                  | 0.94        | 627        | 685        | 667                   |  |  |
|                    |       | <b>0.36</b>           | <b>0.64</b> | <b>569</b> | <b>626</b> | <b>595</b>            |  |  |
| S2                 | RD1   | 0.25                  | 0.75        | 581        | 616        | 590                   |  |  |
|                    | RD2   | 0.47                  | 0.53        | 545        | 570        | 548                   |  |  |
|                    | RD3   | 0.40                  | 0.60        | 560        | 635        | 603                   |  |  |
|                    |       | <b>0.37</b>           | <b>0.63</b> | <b>562</b> | <b>607</b> | <b>580</b>            |  |  |
| S3                 | RD1   | 0.21                  | 0.79        | 556        | 645        | 610                   |  |  |
|                    | RD2   | 0.53                  | 0.47        | 532        | 547        | 538                   |  |  |
|                    | RD3   | 0.48                  | 0.52        | 554        | 607        | 574                   |  |  |
|                    |       | <b>0.41</b>           | <b>0.59</b> | <b>547</b> | <b>600</b> | <b>574</b>            |  |  |
| S4                 | RD1   | 0.23                  | 0.77        | 609        | 612        | 609                   |  |  |
|                    | RD2   | 0.45                  | 0.55        | 551        | 560        | 540                   |  |  |
|                    | RD3   | 0.54                  | 0.46        | 613        | 669        | 619                   |  |  |
|                    |       | <b>0.41</b>           | <b>0.59</b> | <b>591</b> | <b>614</b> | <b>589</b>            |  |  |
| S5                 | RD1   | 0.23                  | 0.77        | 581        | 626        | 572                   |  |  |
|                    | RD2   | 0.40                  | 0.60        | 531        | 558        | 532                   |  |  |
|                    | RD3   | 0.57                  | 0.43        | 557        | 630        | 567                   |  |  |
|                    |       | <b>0.40</b>           | <b>0.60</b> | <b>556</b> | <b>605</b> | <b>557</b>            |  |  |
| Dean/Burke Channel |       | 0.32                  | 0.68        | 513        | 553        | 534                   |  |  |
| Finlayson Channel  |       | 0.32                  | 0.68        | 504        | 554        | 532                   |  |  |
| Gil Island         |       | 0.29                  | 0.71        | 520        | 558        | 536                   |  |  |
| Portland Inlet     |       | 0.31                  | 0.69        | 521        | 549        | 538                   |  |  |
|                    |       | <b>0.31</b>           | <b>0.69</b> | <b>514</b> | <b>554</b> | <b>535</b>            |  |  |

Table 9. Count of tagged fish released since 1991 (including re-released fish) and counts of verified tag recoveries by year including any recoveries that had no reported year. The total count of tag recoveries represent the sum of all verified recoveries.

| Year | Release | 91 | 92  | 93  | 94  | 95  | 96   | 97   | 98   | 99   | 00   | 01   | 02   | 03   | 04   | 05   | 06   | 07   | 08  | 09  | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19   | Total | no<br>year |
|------|---------|----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-------|------------|
| 1991 | 2447    | 16 | 112 | 49  | 40  | 30  | 24   | 18   | 16   | 8    | 9    | 11   | 5    | 5    | 3    | 1    | 1    | 3    | 1   | 3   | 3   | 3   | 0   | 0   | 1   | 0   | 0   | 0   | 0   | 372  | 7     |            |
| 1992 | 3586    | 0  | 15  | 131 | 99  | 66  | 51   | 33   | 45   | 31   | 9    | 20   | 15   | 6    | 3    | 4    | 3    | 4    | 3   | 4   | 7   | 0   | 4   | 2   | 2   | 0   | 1   | 0   | 0   | 574  | 16    |            |
| 1993 | 7019    | 0  | 0   | 7   | 432 | 228 | 89   | 94   | 98   | 72   | 44   | 42   | 30   | 8    | 10   | 13   | 9    | 9    | 9   | 4   | 9   | 3   | 8   | 6   | 1   | 3   | 0   | 1   | 0   | 0    | 1256  | 27         |
| 1994 | 7044    | 0  | 0   | 0   | 13  | 421 | 253  | 238  | 229  | 127  | 77   | 61   | 46   | 14   | 17   | 21   | 10   | 5    | 8   | 2   | 6   | 6   | 5   | 4   | 0   | 2   | 0   | 1   | 0   | 0    | 1582  | 16         |
| 1995 | 15907   | 0  | 0   | 0   | 0   | 84  | 1573 | 957  | 606  | 372  | 247  | 164  | 90   | 50   | 57   | 26   | 43   | 22   | 15  | 13  | 12  | 16  | 15  | 3   | 7   | 6   | 6   | 3   | 3   | 1    | 4485  | 94         |
| 1996 | 28379   | 0  | 0   | 0   | 0   | 0   | 494  | 2326 | 1363 | 674  | 458  | 373  | 239  | 88   | 87   | 88   | 85   | 64   | 56  | 51  | 25  | 33  | 23  | 20  | 14  | 12  | 11  | 11  | 6   | 4    | 6721  | 116        |
| 1997 | 19782   | 0  | 0   | 0   | 0   | 0   | 0    | 1244 | 2326 | 913  | 496  | 369  | 244  | 94   | 72   | 93   | 100  | 62   | 60  | 34  | 20  | 18  | 29  | 21  | 8   | 6   | 5   | 5   | 3   | 0    | 6345  | 123        |
| 1998 | 21966   | 0  | 0   | 0   | 0   | 0   | 0    | 321  | 1746 | 1107 | 752  | 489  | 185  | 170  | 203  | 213  | 112  | 85   | 57  | 38  | 35  | 39  | 17  | 14  | 18  | 6   | 10  | 11  | 0   | 5687 | 59    |            |
| 1999 | 27411   | 0  | 0   | 0   | 0   | 0   | 0    | 0    | 234  | 2280 | 1433 | 938  | 354  | 397  | 334  | 280  | 164  | 122  | 61  | 56  | 58  | 43  | 42  | 23  | 18  | 16  | 19  | 24  | 3   | 6952 | 53    |            |
| 2000 | 22915   | 0  | 0   | 0   | 0   | 0   | 0    | 0    | 0    | 0    | 149  | 2046 | 931  | 320  | 313  | 288  | 233  | 139  | 108 | 66  | 80  | 39  | 49  | 15  | 16  | 24  | 8   | 14  | 11  | 5    | 4893  | 39         |
| 2001 | 18271   | 0  | 0   | 0   | 0   | 0   | 0    | 0    | 0    | 0    | 0    | 136  | 1565 | 418  | 468  | 383  | 396  | 187  | 155 | 69  | 60  | 33  | 45  | 42  | 15  | 23  | 10  | 11  | 0   | 4083 | 57    |            |
| 2002 | 19857   | 0  | 0   | 0   | 0   | 0   | 0    | 0    | 0    | 0    | 0    | 95   | 907  | 712  | 483  | 400  | 203  | 159  | 126 | 131 | 44  | 48  | 35  | 28  | 32  | 18  | 9   | 13  | 1   | 3484 | 40    |            |
| 2003 | 24659   | 0  | 0   | 0   | 0   | 0   | 0    | 0    | 0    | 0    | 0    | 0    | 166  | 1278 | 1037 | 635  | 356  | 271  | 183 | 119 | 89  | 82  | 46  | 30  | 36  | 23  | 16  | 16  | 3   | 4431 | 45    |            |
| 2004 | 19328   | 0  | 0   | 0   | 0   | 0   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 144  | 1376 | 880  | 470  | 300  | 184 | 151 | 86  | 86  | 56  | 32  | 37  | 13  | 18  | 14  | 0   | 3889 | 42    |            |
| 2005 | 16511   | 0  | 0   | 0   | 0   | 0   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 128  | 1175 | 572  | 327  | 184 | 142 | 76  | 67  | 50  | 35  | 19  | 16  | 11  | 12  | 3   | 2855 | 38    |            |
| 2006 | 19334   | 0  | 0   | 0   | 0   | 0   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 288  | 1333 | 678  | 366 | 271 | 133 | 129 | 80  | 48  | 44  | 24  | 19  | 28  | 5   | 3483 | 37    |            |
| 2007 | 16598   | 0  | 0   | 0   | 0   | 0   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 203  | 1003 | 548 | 367 | 193 | 145 | 115 | 50  | 64  | 36  | 22  | 17  | 3   | 2806 | 40    |            |
| 2008 | 8300    | 0  | 0   | 0   | 0   | 0   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 71   | 378 | 278 | 132 | 82  | 54  | 30  | 30  | 22  | 14  | 10  | 0   | 1115 | 14    |            |
| 2009 | 7474    | 0  | 0   | 0   | 0   | 0   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 62  | 487 | 261 | 175 | 100 | 42  | 54  | 18  | 21  | 16  | 5   | 1253 | 12    |            |
| 2010 | 9921    | 0  | 0   | 0   | 0   | 0   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0   | 20  | 402 | 349 | 179 | 71  | 86  | 55  | 35  | 26  | 5   | 1249 | 21    |            |
| 2011 | 12541   | 0  | 0   | 0   | 0   | 0   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0   | 0   | 48  | 610 | 396 | 230 | 216 | 104 | 52  | 56  | 18  | 1749 | 19    |            |
| 2012 | 8725    | 0  | 0   | 0   | 0   | 0   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0   | 0   | 0   | 0   | 81  | 462 | 243 | 230 | 113 | 69  | 63  | 13   | 1289  | 15         |
| 2013 | 7978    | 0  | 0   | 0   | 0   | 0   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0   | 0   | 0   | 0   | 0   | 77  | 329 | 300 | 161 | 74  | 66  | 9    | 1033  | 17         |
| 2014 | 6425    | 0  | 0   | 0   | 0   | 0   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0   | 0   | 0   | 0   | 0   | 0   | 34  | 392 | 173 | 101 | 68  | 11   | 788   | 9          |
| 2015 | 9788    | 0  | 0   | 0   | 0   | 0   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0   | 0   | 0   | 0   | 0   | 0   | 1   | 35  | 325 | 208 | 168 | 31   | 779   | 11         |
| 2016 | 8586    | 0  | 0   | 0   | 0   | 0   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 31  | 369 | 260 | 50  | 719  | 9     |            |
| 2017 | 15693   | 0  | 0   | 0   | 0   | 0   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 70  | 573 | 109 | 759 | 7    |       |            |
| 2018 | 10965   | 0  | 0   | 0   | 0   | 0   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 41  | 111 | 153 | 1   |      |       |            |
| 2019 | 12042   | 0  | 0   | 0   | 0   | 0   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0    |       |            |

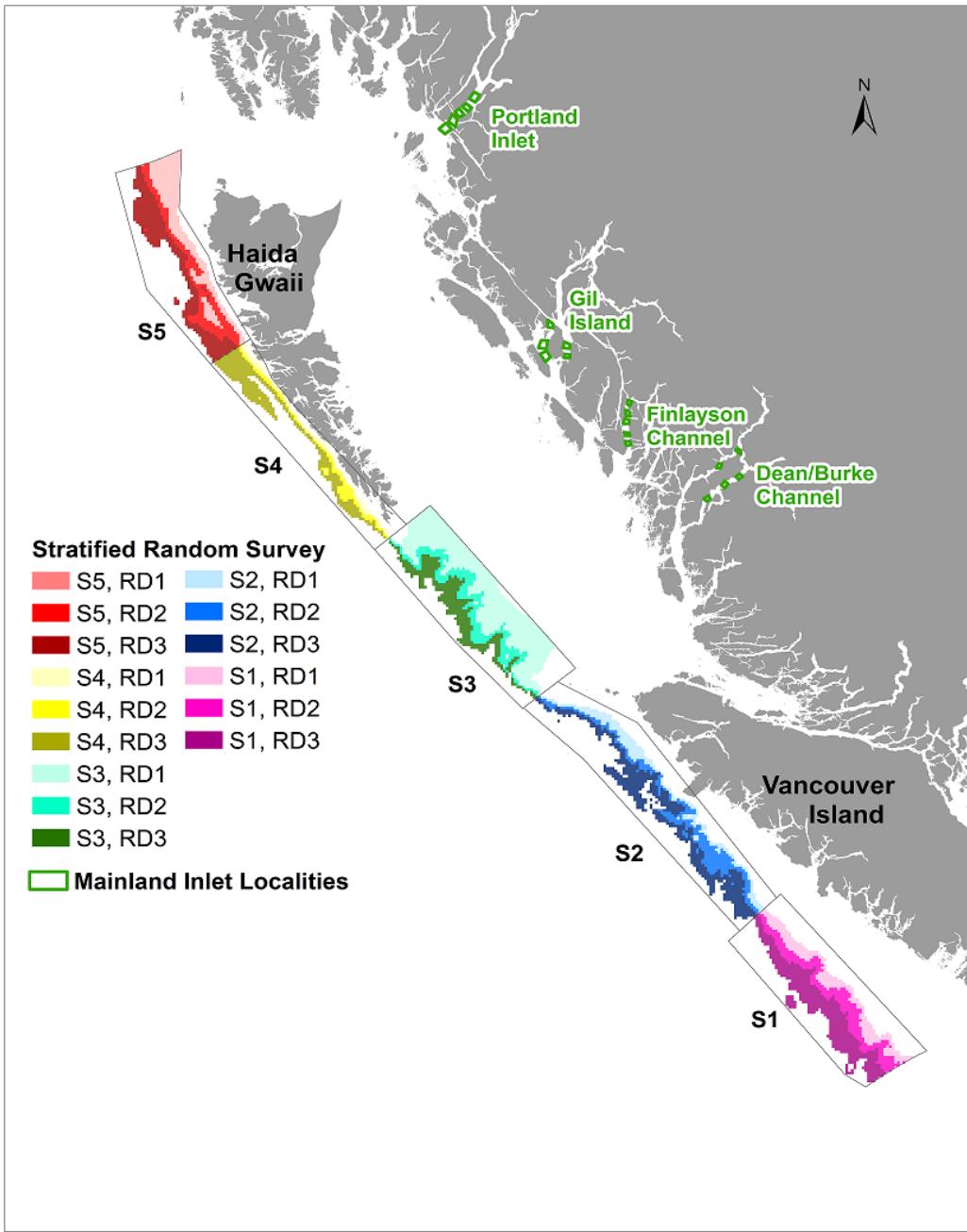


Figure 1. Location of the boundaries of the mainland inlet localities, and the five spatial areas ( $S_1$ - $S_5$ ) of the stratified random survey design. The three depths strata ( $RD_1$ - $RD_3$ ) are colour-coded and nested within each of the five spatial strata.

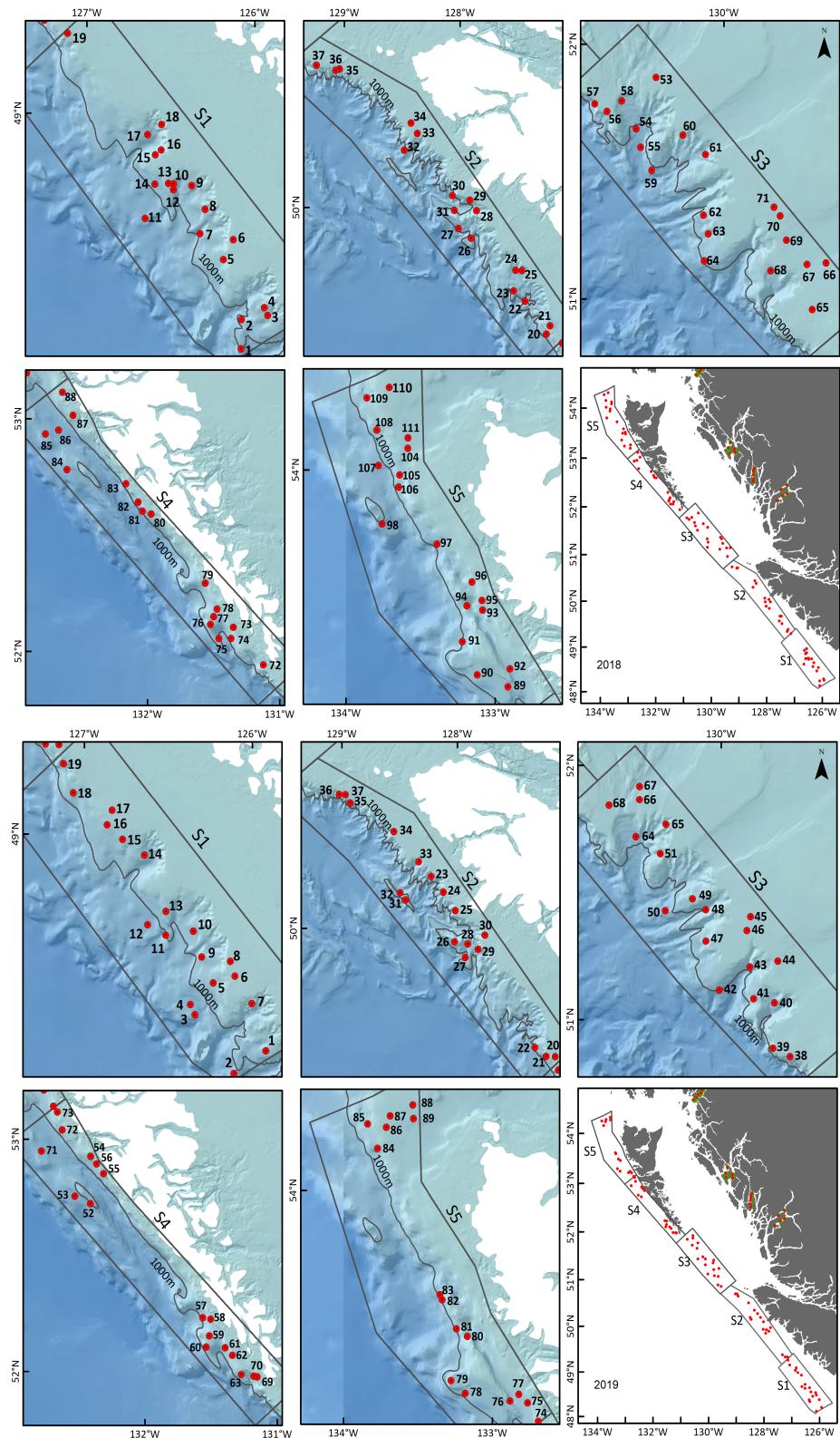


Figure 2. Start locations of survey sets (red markers) conducted in 2018 (top) and 2019 (bottom) for the stratified random survey areas  $S_1$  through  $S_5$ .

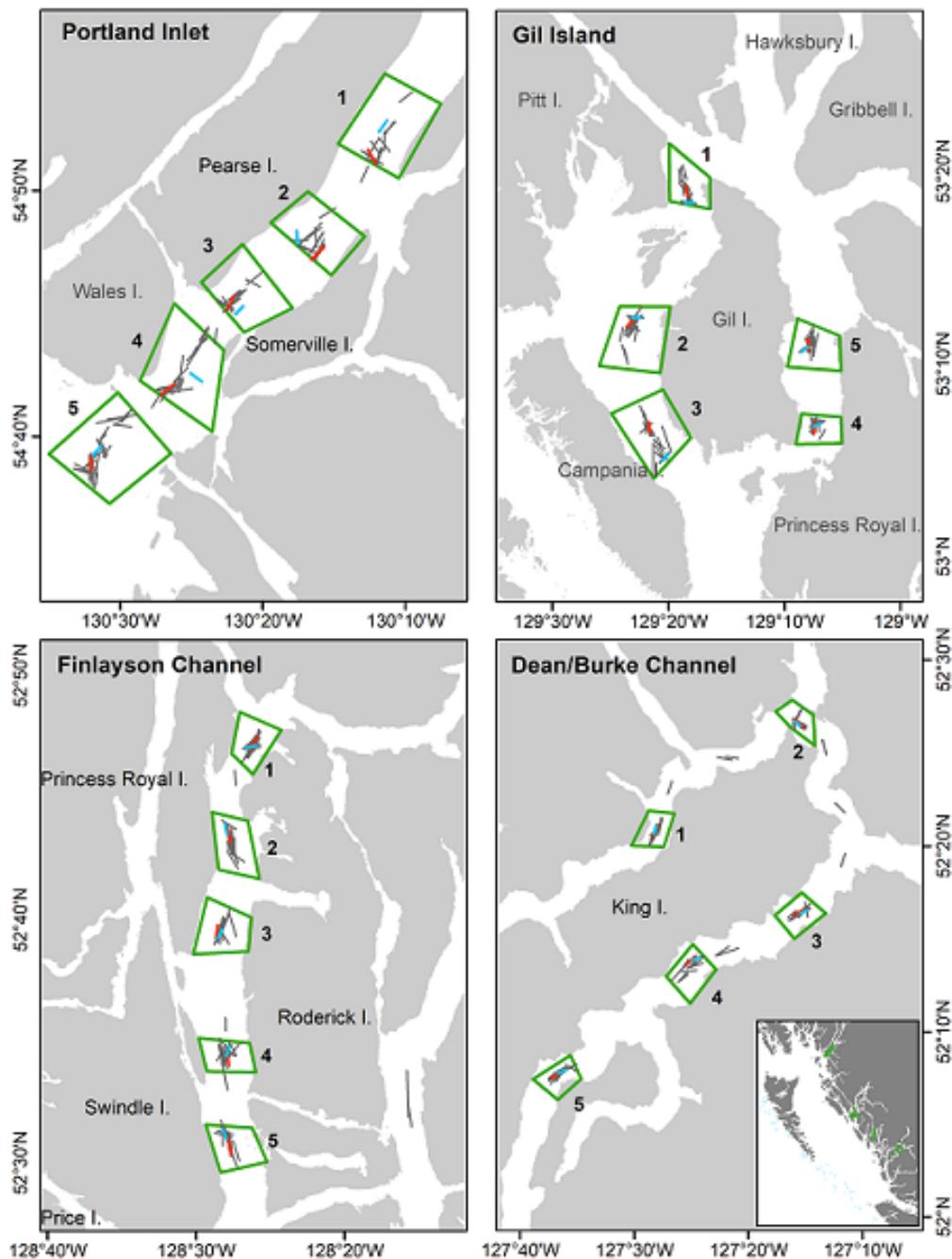


Figure 3. Location of the traditional survey sets within the mainland inlet localities since 1994. The setlines for 2018 are shown in blue and setlines for 2019 are shown in red.

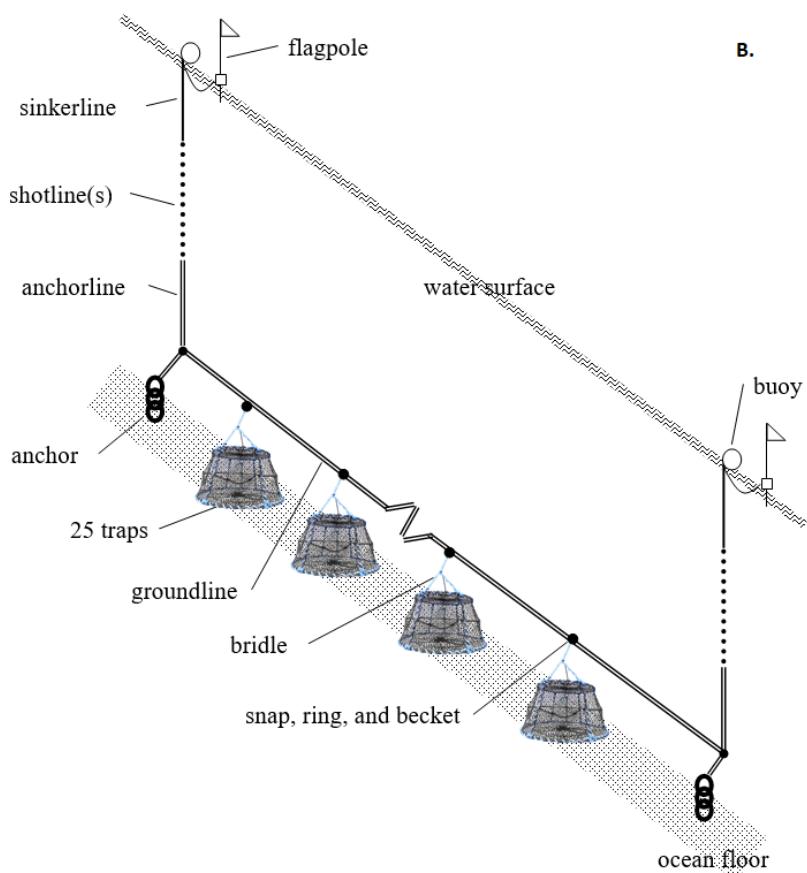
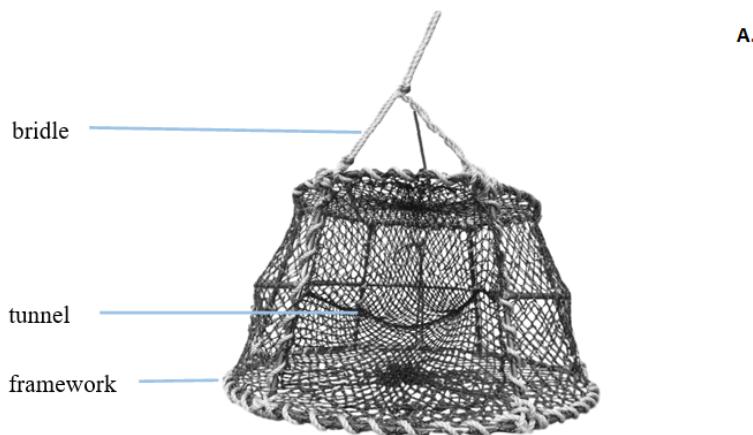


Figure 4. a: Trap elements. b: Trap gear elements consisting of 25 baited traps snapped to beackets along a groundline.

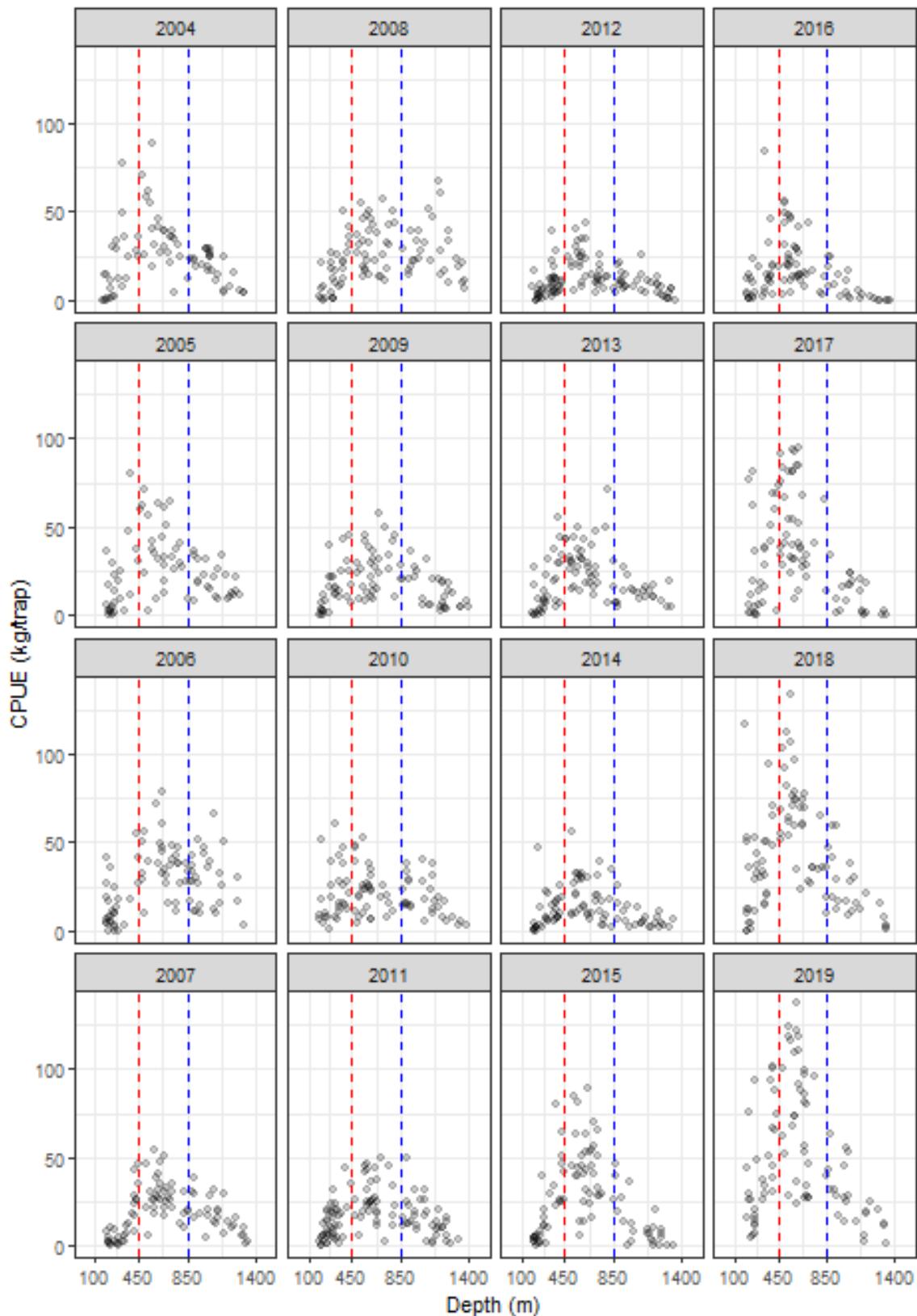


Figure 5. Sablefish catch per unit effort (CPUE) by depth and year for StRS sets. Dashed lines delineate depth strata (shallow(RD<sub>1</sub>) = 100-450m, mid(RD<sub>2</sub>) = 450-850m, deep(RD<sub>3</sub>) = 850-1400m).

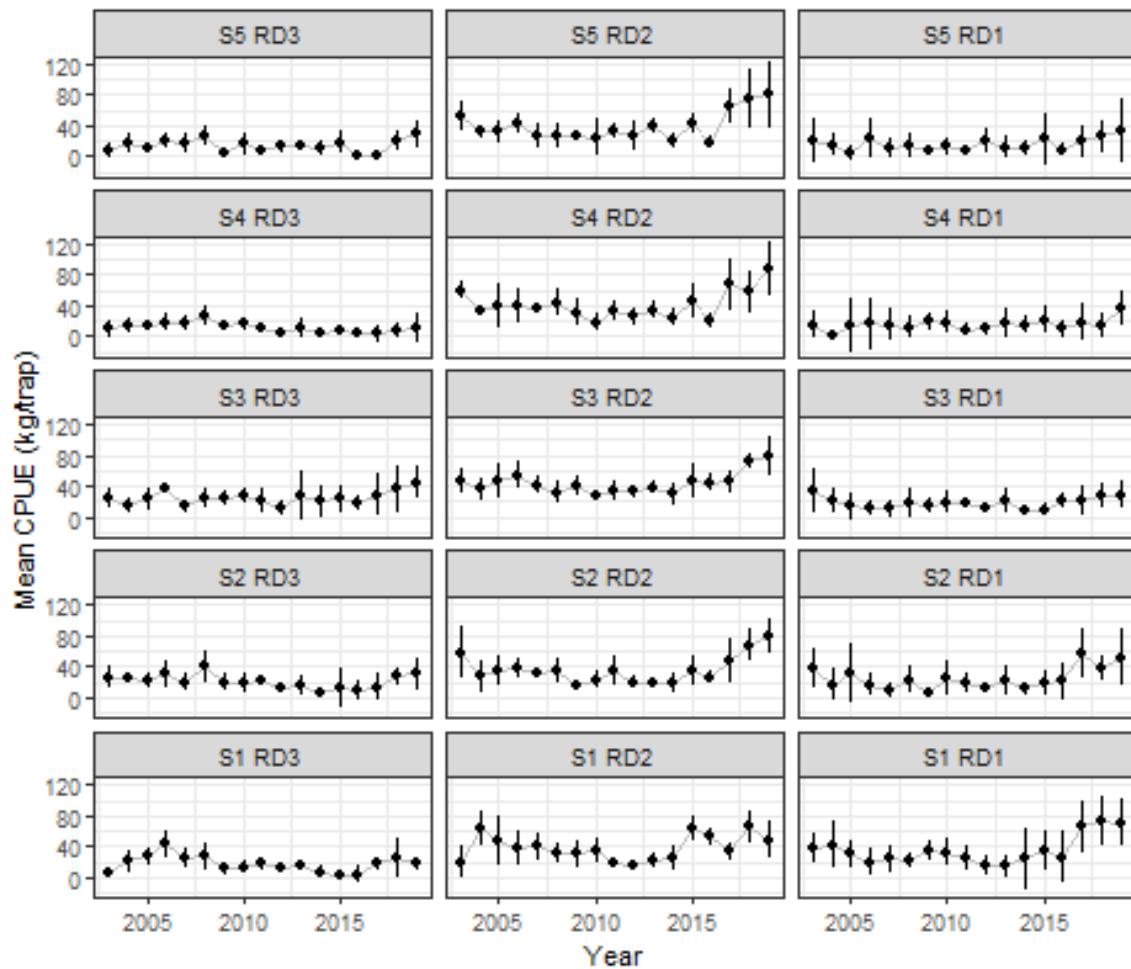


Figure 6. Average Sablefish catch per unit effort (CPUE; mean +/- 95% CIs) by survey strata over time. Panels run deep to shallow (left to right) and north to south (top to bottom).

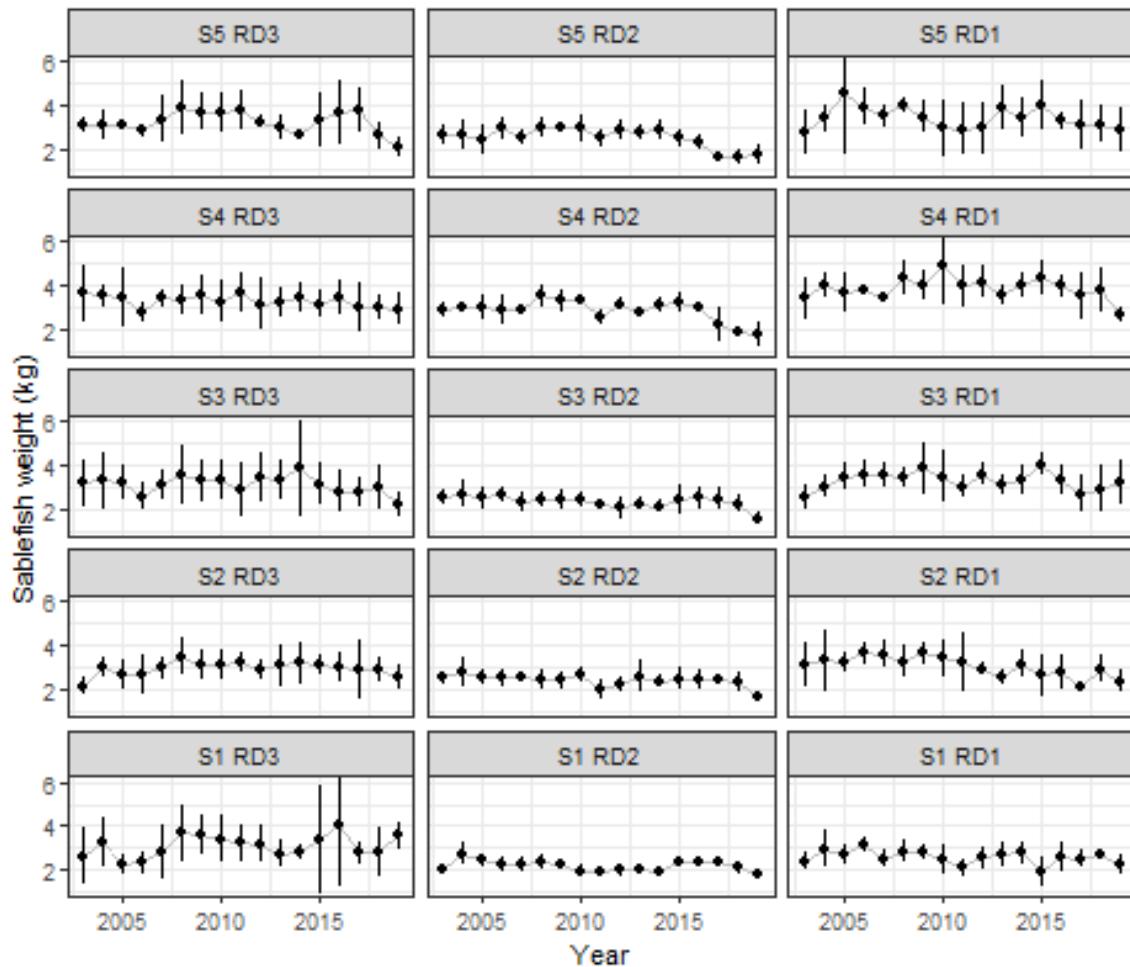


Figure 7. Average weight of Sablefish (mean +/- 95% CIs) by survey strata over time. Panels run shallow to deep (left to right) and south to north (top to bottom).

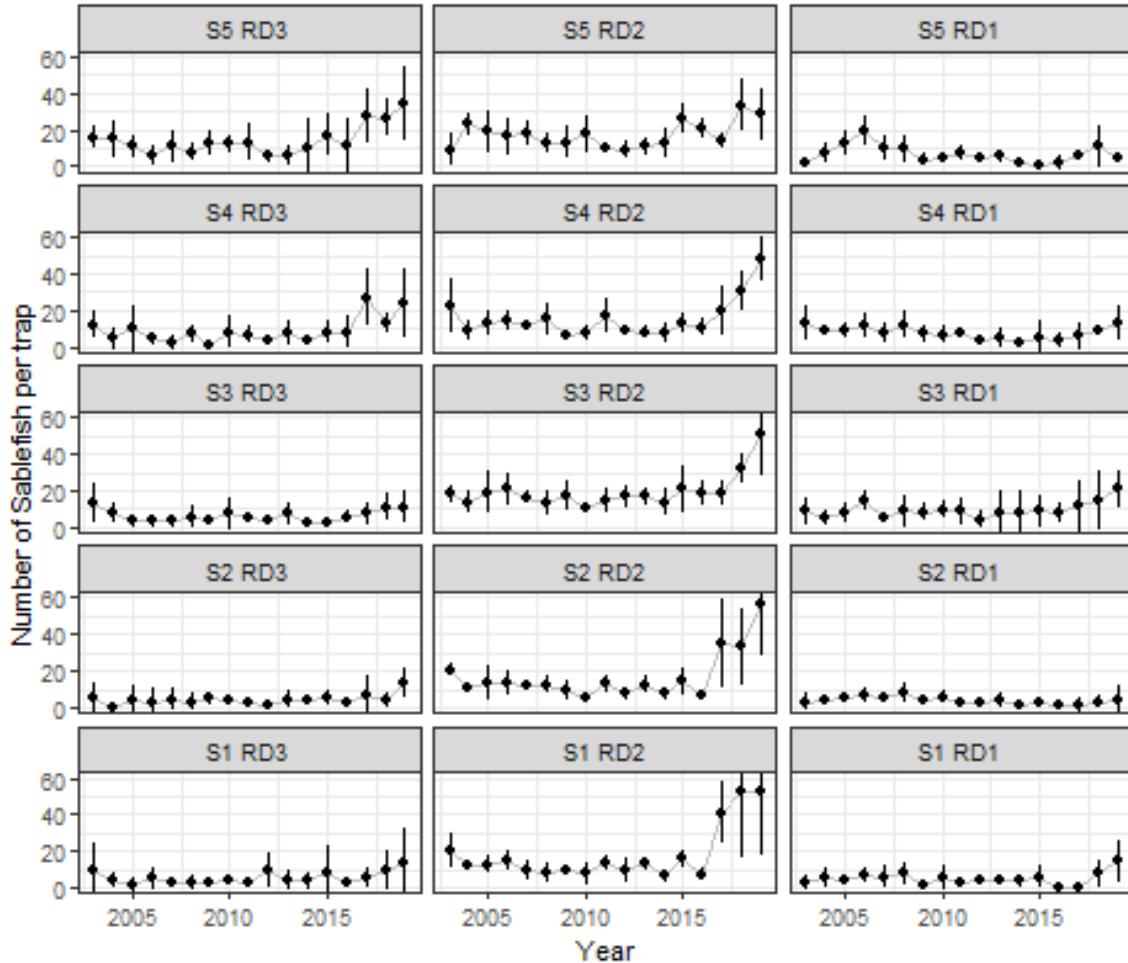


Figure 8. Average number of Sablefish per trap (mean +/- 95% CIs) by survey strata over time. Panels run shallow to deep (left to right) and south to north (top to bottom).

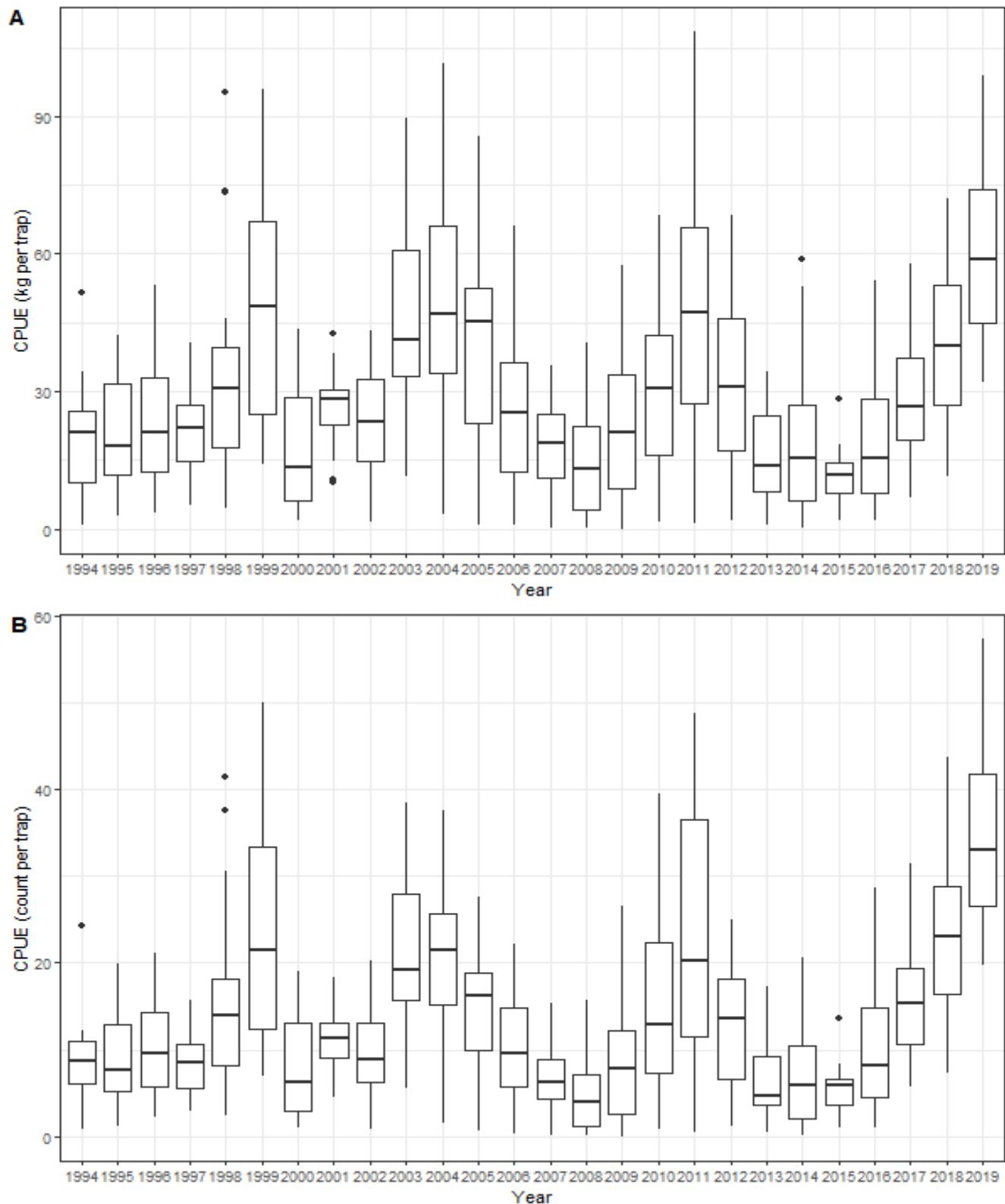


Figure 9. A: Average weight of Sablefish per trap (mean +/- 95% CIs) at mainland Inlet localities. B: Average number of Sablefish per trap (mean +/- 95% CIs) at mainland Inlet localities.

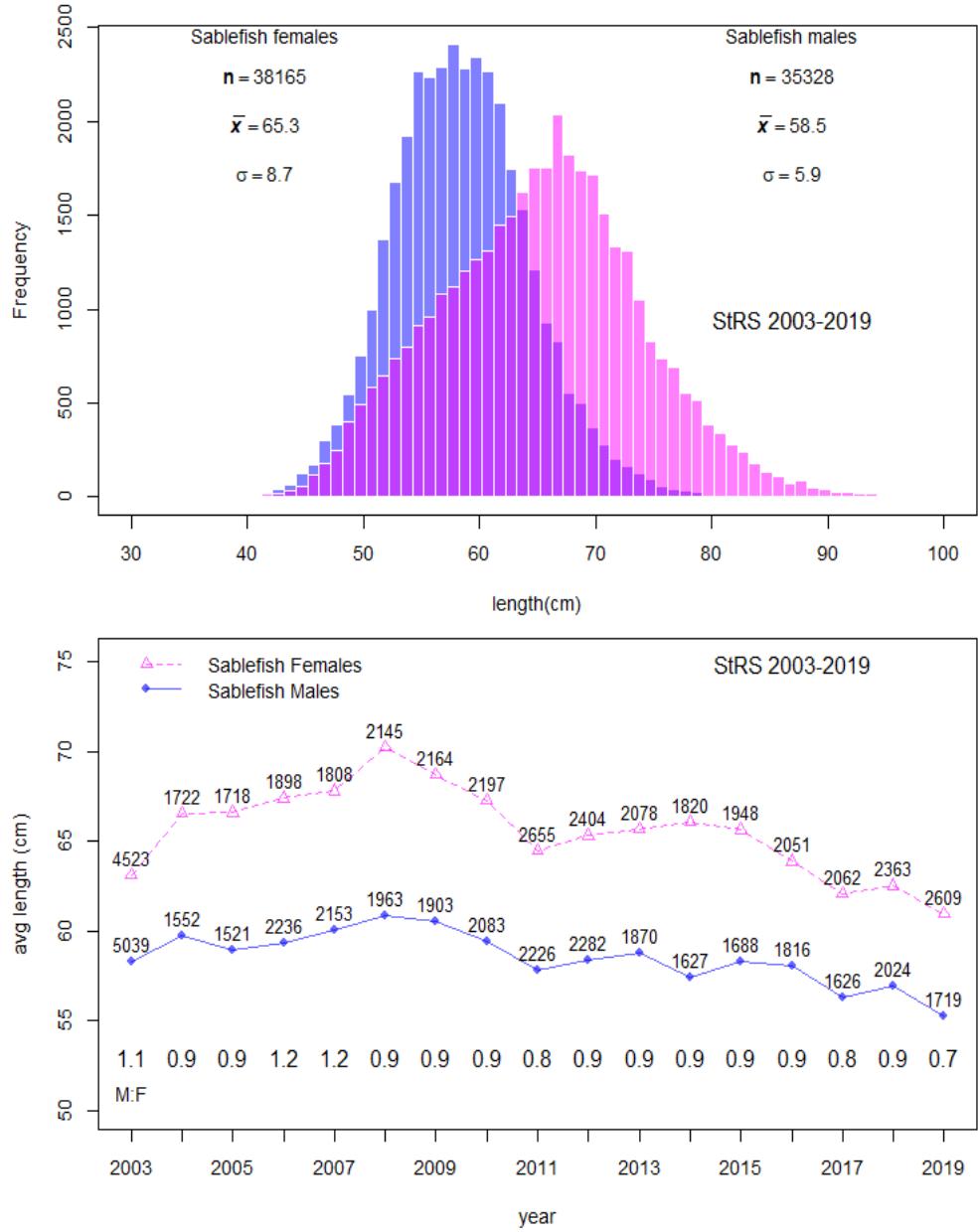


Figure 10. Top: Length frequencies for male sablefish (blue-violet) and female sablefish (fuchsia) up to 2019 for all StRS sets. The number of specimens is denoted by the letter  $n$ , the mean indicated by the  $x\bar{}$  and the standard deviation is represented by the symbol sigma  $\Sigma$ . Bottom: Average length and ratios of male and female sablefish by year. Counts by sex are shown across the top of the lines.

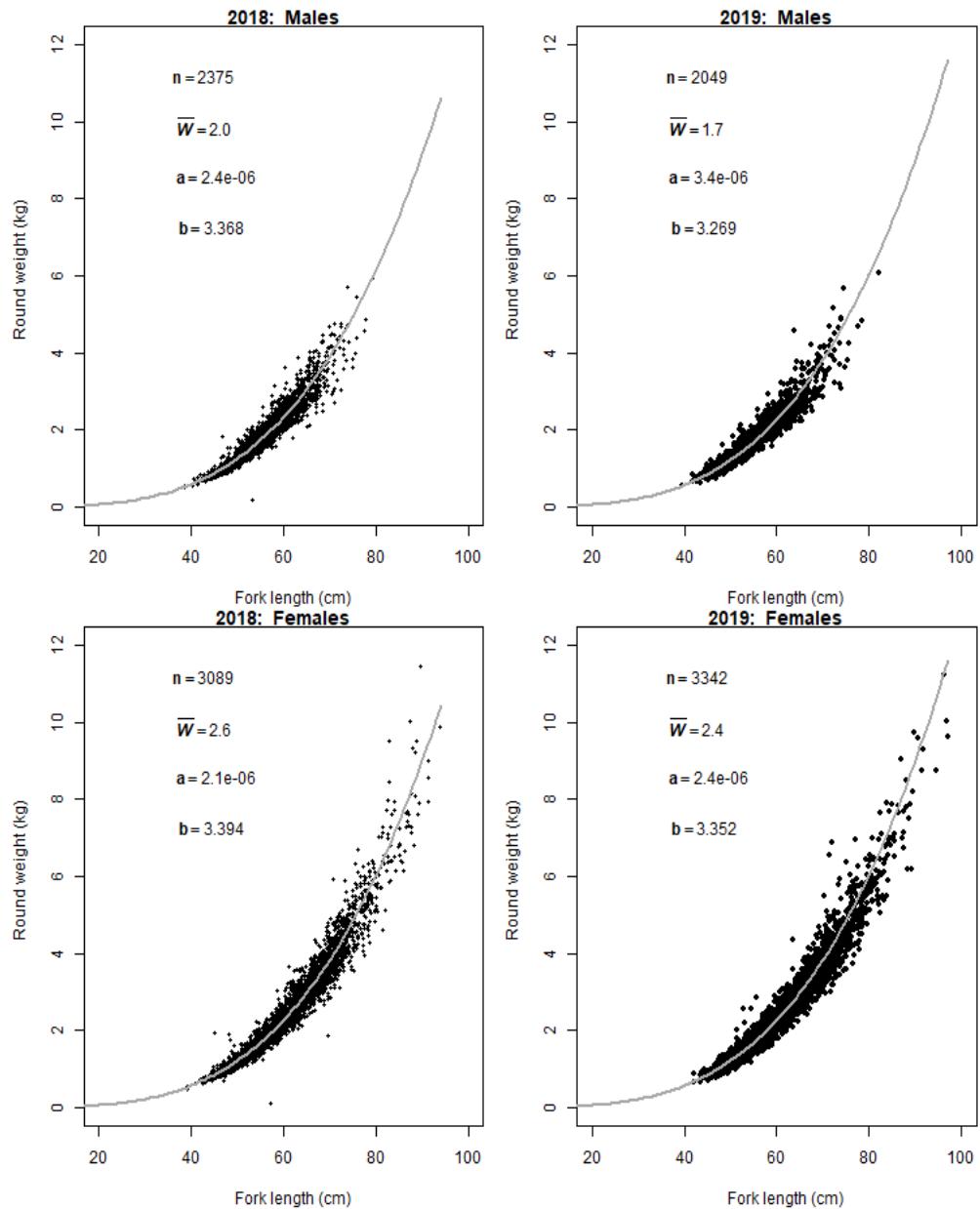


Figure 11. Sablefish fork length (L in cm) vs weight (W in kg) for males and females for the 2018 (left) and 2019 (right) surveys.

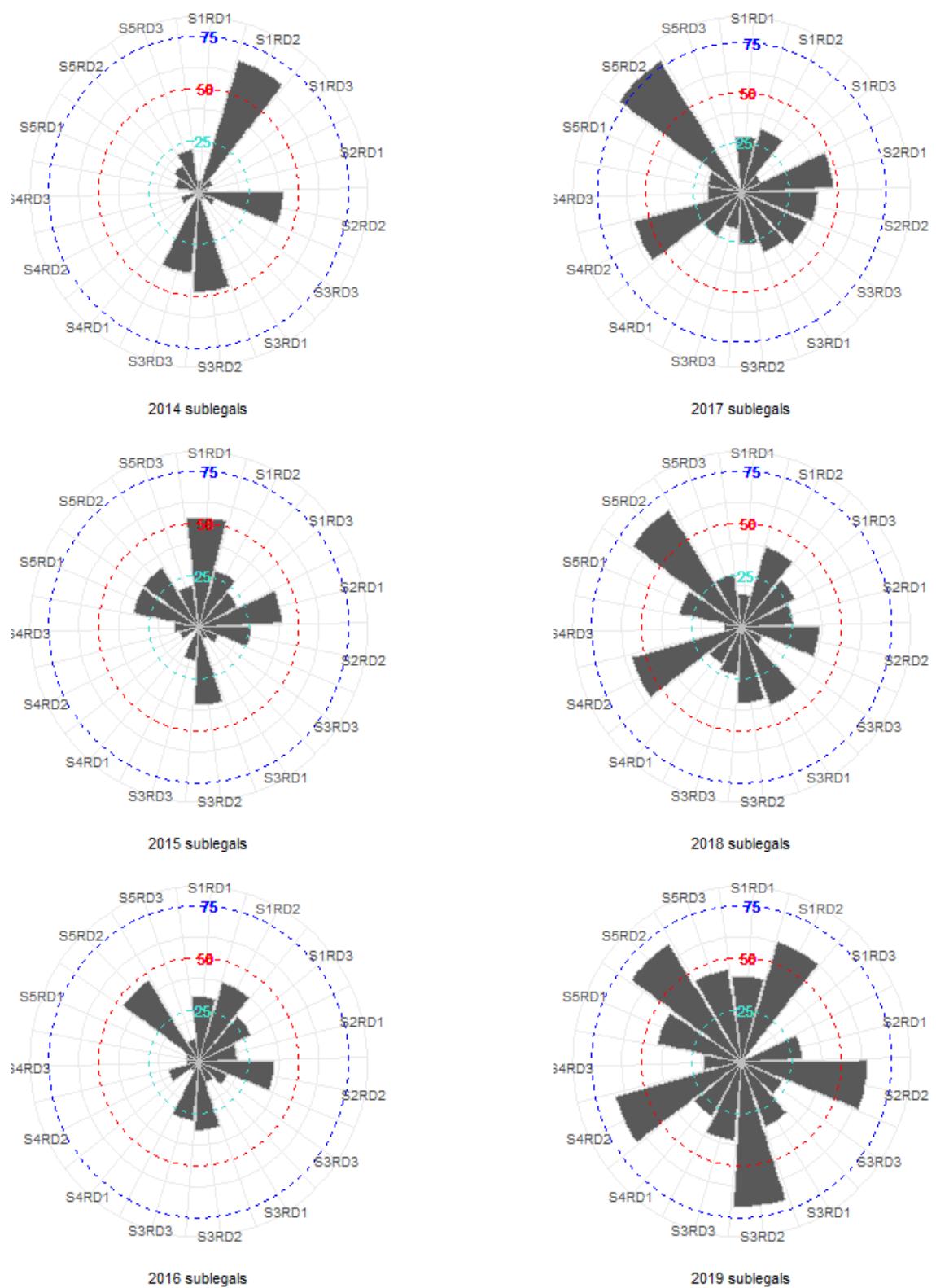


Figure 12. The percentage of sub-legal sablefish (<55 cm fork length) sampled in the StRS survey strata and depth strata since the year 2014, denoted by the green (25%), red (50%) and blue (75%) dashed lines.

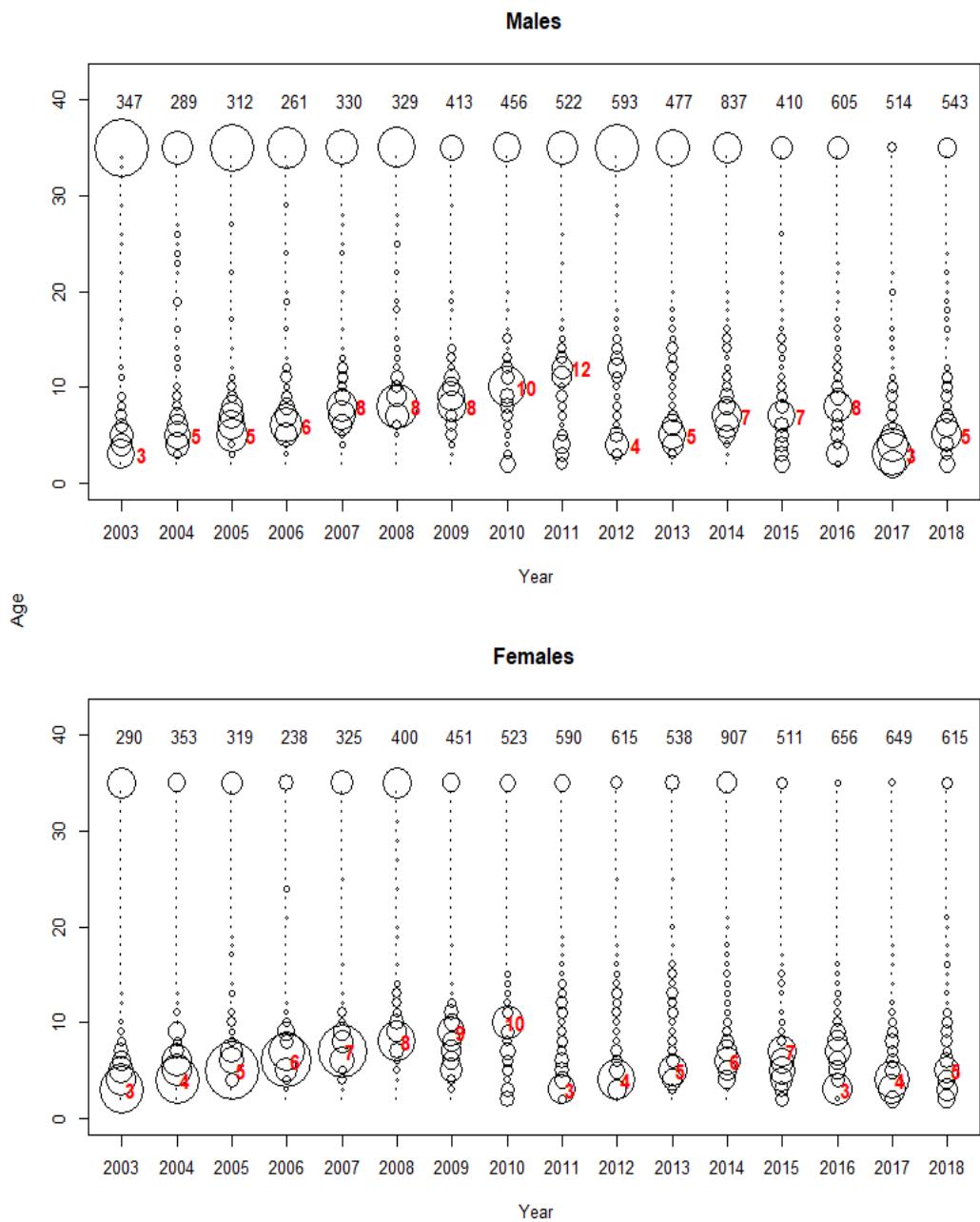


Figure 13. Bubble plot for male and female sablefish ages by survey year from StRS sets that have been aged. The sizes of the circles are proportional to the number of fish with given ages. Fish age 35 and older are included in one bubble. The total number(n) of fish aged are listed across the top of each panel. The ages with the highest ratios are posted to the right of each bubble.

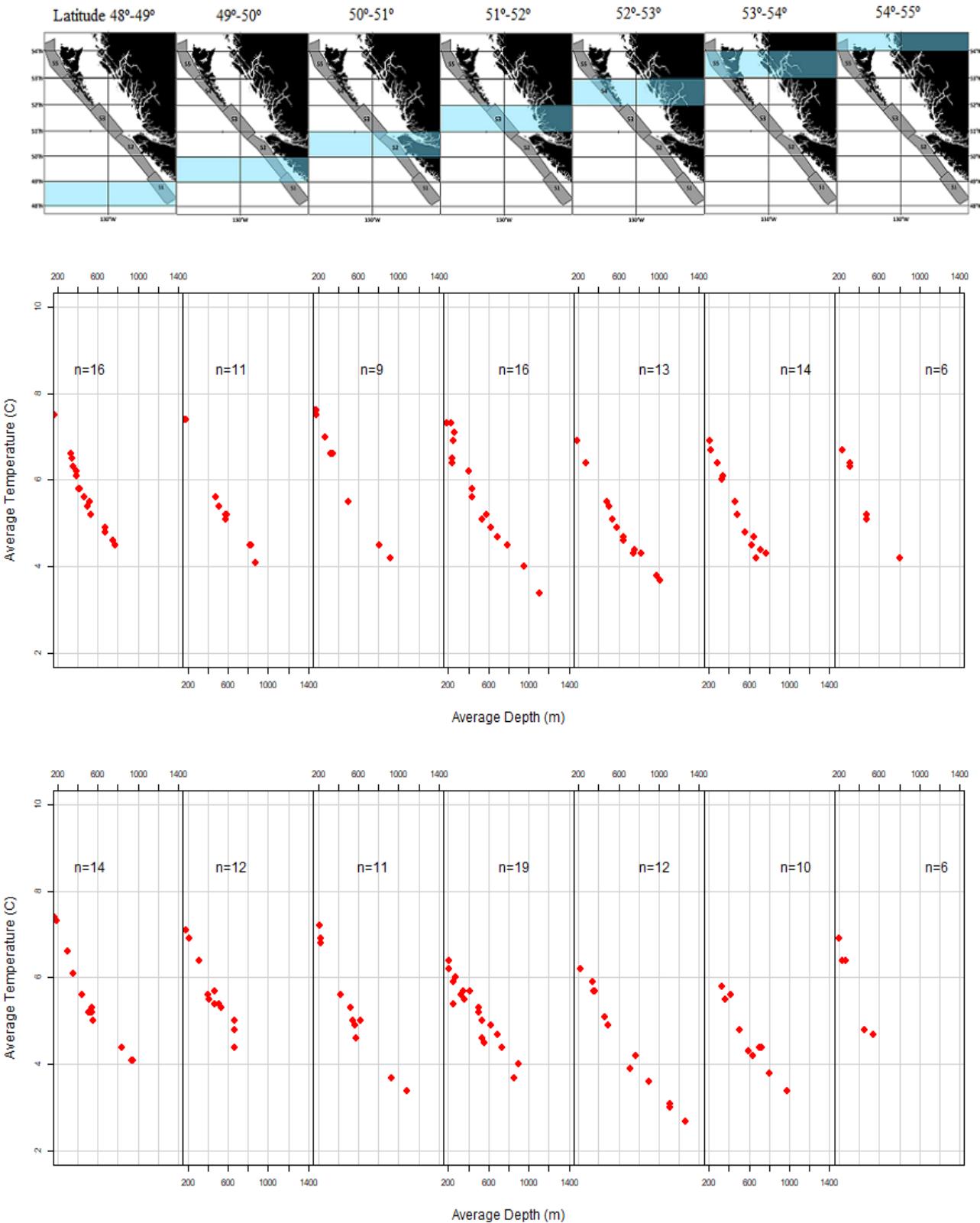


Figure 14. Coplot of average depth(m) vs average temperature ( $^{\circ}\text{C}$ ) for a given 1-degree latitude range (blue bands) for 2018 (top) and 2019 (bottom). The number of fishing sets deployed with a SBE 39 recorder are represented by n.

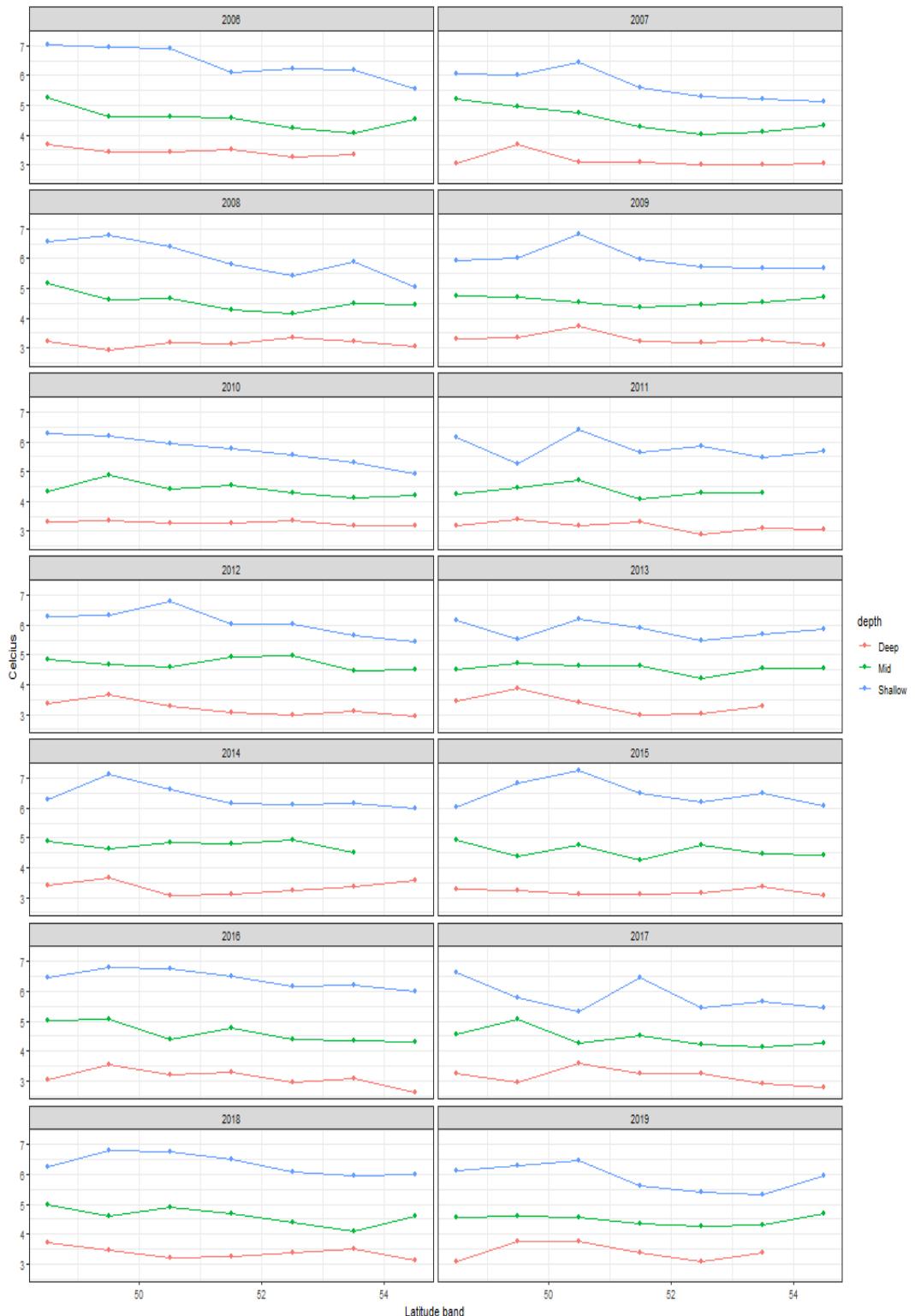


Figure 15. Average temperatures as reported from the Sea-bird SBE 39 loggers at 1-degree latitude intervals and three depth intervals: shallow: 100-250 fathoms (183 to 457 meters), medium: 250-450 fathoms (458-823 meters) and deep: 450-750 fathoms (824-1372 meters).

## APPENDIX A LIST OF TRADITIONAL LOCALITIES.

List of localities visited in the traditional component of the sablefish research and assessment surveys from 1988 through 2019. Standardized sets (light blue boxes and half boxes) were conducted in offshore indexing localities from 1988 to 2010. Sablefish were tagged and released (dark blue half boxes) from standardized sets at offshore indexing localities beginning in 1991 and ending in 2007. In 1995, offshore tagging localities where only traditional tagging sets (red boxes) occurred were added in 1995 and discontinued in 2008. Mainland Inlet localities where standardized sets (green boxes) were conducted began in 1994 and continued through to 2019. Starting in 2002 (dark green), five standard fishing areas were chosen to ensure the consistency with the positions of sets conducted in previous years.

| Offshore Indexing              | Year | 88 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03 04 05 06 07 08 09 10 |
|--------------------------------|------|--|
| Langara Island-North Frederick |      |  |
| Louis Point-Frederick Island   |      |  |
| Kunakun Point                  |      |  |
| Hippa Island                   |      |  |
| Buck Point                     |      |  |
| Tasu Sound-Marble Island       |      |  |
| Gowgaia Bay                    |      |  |
| Flamingo Inlet                 |      |  |
| Cape St. James                 |      |  |
| Triangle Island                |      |  |
| Quatsino Sound                 |      |  |
| Solander Island                |      |  |
| Esperanza Inlet                |      |  |
| Barkley Canyon                 |      |  |

| Offshore Tagging               | Year | 88 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03 04 05 06 07 |
|--------------------------------|------|---|
| Langara Island                 |      |   |
| Frederick Island               |      |   |
| Inside Hogback                 |      |   |
| Outside Hogback                |      |   |
| Rennell Sound                  |      |   |
| Chads Point                    |      |   |
| Tasu Sound                     |      |   |
| Anthony Island                 |      |   |
| Mitchell's Gully-Middle Ground |      |   |
| Pisces Canyon                  |      |   |
| Kyuquot Sound-Ouokinish Inlet  |      |   |
| Estevan Point                  |      |   |
| Father Charles Canyon          |      |   |

| Mainland Inlet     | Year | 88 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03 04 05 06 07 08 09 10 11-present |
|--------------------|------|---|
| Portland Inlet     |      |   |
| Gil Island         |      |   |
| Finlaysen Channel  |      |   |
| Mathieson Channel  |      |   |
| Dean/Burke Channel |      |   |

## APPENDIX B LIST OF SABLEFISH RESEARCH AND ASSESSMENT SURVEYS.

| Year | Dates           | Vessel         | Captain                   | Set.Count | GFBIO.Trip |
|------|-----------------|----------------|---------------------------|-----------|------------|
| 1988 | Oct 28 - Nov 24 | VIOUS 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      |

## **APPENDIX C SET DETAILS 2018.**

Details of sets completed during the 2018 survey program (F/V Ocean Pearl). 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<sub>1</sub> (100-250 fathoms), RD<sub>2</sub> (250-450 fathoms) and RD<sub>3</sub> (450-750 fathoms). The position data includes the major area along with the 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, a Hobo accelerometer or a Concerto CTD are indicated with an 'x'.

| Spatial Stratum | Set | Type  | Depth | Date   | Time  | Duration | Area | Latitude  | Longitude   | Latitude  | Longitude   | Start | End  | Mean | Traps Fished |   |   | SBE | Hobo | CTD |
|-----------------|-----|-------|-------|--------|-------|----------|------|-----------|-------------|-----------|-------------|-------|------|------|--------------|---|---|-----|------|-----|
|                 |     |       |       |        |       |          |      |           |             |           |             |       |      |      | 39           |   |   |     |      |     |
| S1              | 1   | StRS  | RD3   | Oct 10 | 12:03 | 1351     | 3C   | 48° 0.9'N | 126° 4.9'W  | 48° 0.9'N | 126° 4.1'W  | 1035  | 1100 | 1056 | 25           | x |   |     |      |     |
| S1              | 2   | StRS  | RD3   | Oct 10 | 14:11 | 1350     | 3C   | 48° 4.4'N | 126° 4.7'W  | 48° 4.4'N | 126° 5.6'W  | 857   | 949  | 890  | 25           | x |   |     |      |     |
| S1              | 3   | StRS  | RD2   | Oct 10 | 16:04 | 1361     | 3C   | 48° 5.3'N | 125° 55.4'W | 48° 4.7'N | 125° 55.5'W | 584   | 707  | 639  | 25           | x | x |     |      |     |
| S1              | 4   | StRS  | RD1   | Oct 10 | 18:05 | 1336     | 3C   | 48° 7.1'N | 125° 56.6'W | 48° 6.7'N | 125° 57.2'W | 377   | 430  | 404  | 25           | x | x | x   |      |     |
| S1              | 5   | StRS  | RD2   | Oct 10 | 20:13 | 1396     | 3C   | 48° 7.7'N | 126° 11.2'W | 48° 8.1'N | 126° 11.7'W | 466   | 458  | 467  | 25           | x | x |     |      |     |
| S1              | 6   | StRS  | RD1   | Oct 12 | 07:59 | 1325     | 3C   | 48° 2.1'N | 126° 7.6'W  | 48° 1.9'N | 126° 8.4'W  | 185   | 189  | 187  | 25           | x | x |     |      |     |
| S1              | 7   | StRS  | RD3   | Oct 12 | 10:03 | 1434     | 3C   | 48° 3.4'N | 126° 19.5'W | 48° 3.5'N | 126° 18.5'W | 1077  | 820  | 899  | 25           | x | x |     |      |     |
| S1              | 8   | StRS  | RD2   | Oct 12 | 12:02 | 1433     | 3C   | 48° 8.8'N | 126° 17.7'W | 48° 8.6'N | 126° 17'W   | 530   | 466  | 476  | 25           | x | x |     |      |     |
| S1              | 9   | StRS  | RD2   | Oct 12 | 14:13 | 1436     | 3C   | 48° 4.1'N | 126° 22.5'W | 48° 3.4'N | 126° 22.5'W | 553   | 725  | 635  | 25           | x | x |     |      |     |
| S1              | 10  | StRS  | RD2   | Oct 12 | 16:02 | 1448     | 3C   | 48° 4.4'N | 126° 28.9'W | 48° 4.3'N | 126° 28.1'W | 474   | 539  | 500  | 25           | x | x |     |      |     |
| S1              | 11  | StRS  | RD3   | Oct 12 | 18:23 | 1502     | 3C   | 48° 6.8'N | 126° 39.2'W | 48° 6.7'N | 126° 38.3'W | 1337  | 1338 | 1339 | 25           | x | x |     |      |     |
| S1              | 12  | StRS  | RD2   | Oct 14 | 08:01 | 1335     | 3C   | 48° 3.1'N | 126° 29'W   | 48° 2.5'N | 126° 29.1'W | 565   | 603  | 589  | 25           | x | x |     |      |     |
| S1              | 13  | StRS  | RD2   | Oct 14 | 10:02 | 1349     | 3C   | 48° 4.5'N | 126° 30.8'W | 48° 4.4'N | 126° 31.6'W | 461   | 497  | 481  | 25           | x | x |     |      |     |
| S1              | 14  | StRS  | RD3   | Oct 14 | 12:02 | 1377     | 3C   | 48° 4.4'N | 126° 35.7'W | 48° 4.4'N | 126° 36.6'W | 866   | 924  | 859  | 25           | x | x |     |      |     |
| S1              | 15  | StRS  | RD1   | Oct 14 | 14:03 | 1389     | 3C   | 48° 0.8'N | 126° 35.5'W | 48° 0.8'N | 126° 36.3'W | 382   | 434  | 408  | 25           | x | x |     |      |     |
| S1              | 16  | StRS  | RD1   | Oct 14 | 16:00 | 1396     | 3C   | 48° 1.9'N | 126° 33.4'W | 48° 1.7'N | 126° 32.5'W | 442   | 256  | 375  | 25           | x | x |     |      |     |
| S1              | 17  | StRS  | RD2   | Oct 14 | 18:03 | 1404     | 3C   | 48° 5.3'N | 126° 38.3'W | 48° 5.3'N | 126° 37.4'W | 533   | 659  | 589  | 25           | x | x | x   |      |     |
| S1              | 18  | StRS  | RD1   | Oct 14 | 20:04 | 1381     | 3C   | 48° 7.5'N | 126° 33.2'W | 48° 7.4'N | 126° 32.3'W | 430   | 207  | 322  | 25           | x | x |     |      |     |
| S1              | 19  | StRS  | RD1   | Oct 16 | 08:04 | 1328     | 3D   | 49° 7.4'N | 127° 6.9'W  | 49° 7.7'N | 127° 6.1'W  | 206   | 193  | 199  | 25           | x | x |     |      |     |
| S2              | 20  | StRS  | RD2   | Oct 16 | 09:54 | 1355     | 3D   | 49° 0.3'N | 127° 15.1'W | 49° 0.7'N | 127° 15.4'W | 643   | 627  | 608  | 25           | x | x |     |      |     |
| S2              | 21  | StRS  | RD1   | Oct 16 | 11:56 | 1358     | 3D   | 49° 2.9'N | 127° 13.3'W | 49° 3.5'N | 127° 13.3'W | 209   | 200  | 205  | 25           | x | x |     |      |     |
| S2              | 22  | StRS  | RD3   | Oct 16 | 14:09 | 1398     | 3D   | 49° 0.6'N | 127° 26.3'W | 49° 0.6'N | 127° 25.5'W | 921   | 948  | 925  | 25           | x | x |     |      |     |
| S2              | 23  | StRS  | RD2   | Oct 16 | 16:00 | 1412     | 3D   | 49° 3.9'N | 127° 32.2'W | 49° 3.7'N | 127° 32.8'W | 637   | 711  | 655  | 25           | x | x |     |      |     |
| S2              | 24  | StRS  | RD2   | Oct 16 | 18:04 | 1413     | 3D   | 49° 0.3'N | 127° 31.1'W | 49° 9.8'N | 127° 31.1'W | 685   | 637  | 651  | 25           | x | x | x   |      |     |
| S2              | 25  | StRS  | RD2   | Oct 16 | 19:32 | 1426     | 3D   | 49° 0.3'N | 127° 27.8'W | 49° 0.3'N | 127° 28.7'W | 552   | 579  | 559  | 25           | x | x |     |      |     |
| S2              | 26  | StRS  | RD2   | Oct 18 | 08:08 | 1332     | 3D   | 49° 0.4'N | 127° 54.1'W | 49° 1'N   | 127° 54.1'W | 718   | 751  | 739  | 25           | x | x |     |      |     |
| S2              | 27  | StRS  | RD3   | Oct 18 | 10:08 | 1352     | 3D   | 49° 3.5'N | 128° 0.7'W  | 49° 2.9'N | 128° 0.7'W  | 1120  | 1032 | 1046 | 25           | x | x |     |      |     |
| S2              | 28  | StRS  | RD2   | Oct 18 | 12:12 | 1367     | 3D   | 49° 9'N   | 127° 51.4'W | 49° 9.4'N | 127° 52'W   | 738   | 736  | 660  | 25           | x | x |     |      |     |
| S2              | 29  | StRS  | RD1   | Oct 18 | 14:04 | 1396     | 3D   | 50° 0.3'N | 127° 54.7'W | 50° 0.7'N | 127° 55.5'W | 194   | 406  | 334  | 25           | x | x | x   |      |     |
| S2              | 30  | StRS  | RD3   | Oct 18 | 16:14 | 1404     | 3D   | 50° 0.7'N | 128° 3.9'W  | 50° 0.4'N | 128° 3.9'W  | 1174  | 1143 | 1167 | 25           | x | x |     |      |     |
| S2              | 31  | StRS  | RD3   | Oct 18 | 18:11 | 1428     | 3D   | 49° 9.1'N | 128° 2.9'W  | 49° 9.1'N | 128° 3.9'W  | 1041  | 994  | 1035 | 25           | x | x |     |      |     |
| S2              | 32  | StRS  | RD3   | Oct 20 | 08:11 | 1415     | 3D   | 50° 7.8'N | 128° 28.9'W | 50° 8.4'N | 128° 28.9'W | 1027  | 1029 | 1011 | 25           | x | x |     |      |     |
| S2              | 33  | StRS  | RD1   | Oct 20 | 10:01 | 1413     | 3D   | 50° 3'N   | 128° 22.1'W | 50° 3.6'N | 128° 22.1'W | 208   | 202  | 205  | 25           | x | x |     |      |     |
| S2              | 34  | StRS  | RD1   | Oct 20 | 11:37 | 1402     | 3D   | 50° 6.3'N | 128° 25.4'W | 50° 6.9'N | 128° 25.4'W | 195   | 194  | 194  | 24           | x | x |     |      |     |
| S2              | 35  | StRS  | RD1   | Oct 20 | 15:35 | 1430     | 5A   | 50° 2.9'N | 129° 2.5'W  | 50° 2.5'N | 129° 2.2'W  | 221   | 301  | 318  | 25           | x | x | x   |      |     |
| S2              | 36  | StRS  | RD2   | Oct 20 | 17:04 | 1449     | 5A   | 50° 2.4'N | 129° 4.4'W  | 50° 2.4'N | 129° 5.3'W  | 555   | 609  | 533  | 25           | x | x |     |      |     |
| S2              | 37  | StRS  | RD1   | Oct 20 | 19:02 | 1440     | 5A   | 50° 4'N   | 129° 14.4'W | 50° 3.6'N | 129° 14.2'W | 278   | 304  | 347  | 25           | x | x |     |      |     |
| Dean/Burke      | 38  | Inlet |       | Oct 23 | 12:07 | 1078     | 5B   | 52° 0.7'N | 127° 36.8'W | 52° 0'N   | 127° 35.9'W | 438   | 440  | 441  | 25           | x | x |     |      |     |
| Dean/Burke      | 39  | Inlet |       | Oct 23 | 13:58 | 1130     | 5B   | 52° 3.8'N | 127° 25'W   | 52° 4'N   | 127° 24.2'W | 594   | 596  | 595  | 25           | x |   |     |      |     |
| Dean/Burke      | 40  | Inlet |       | Oct 23 | 16:09 | 1107     | 5B   | 52° 6.3'N | 127° 15.6'W | 52° 6.6'N | 127° 14.8'W | 578   | 578  | 579  | 25           | x | x | x   |      |     |
| Dean/Burke      | 41  | Inlet |       | Oct 23 | 18:11 | 1132     | 5B   | 52° 6.4'N | 127° 15.4'W | 52° 6.7'N | 127° 16'W   | 515   | 537  | 527  | 25           | x | x |     |      |     |
| Dean/Burke      | 42  | Inlet |       | Oct 23 | 19:56 | 1187     | 5B   | 52° 1.2'N | 127° 28.1'W | 52° 0.6'N | 127° 28.3'W | 505   | 516  | 513  | 25           | x | x |     |      |     |

continued.

| Spatial Stratum | Set | Type  | Depth | Date   | Time  | Duration | Area | Latitude  | Longitude   | Latitude  | Longitude   | Start | End  | Mean | Traps Fished | SBE 39 | Hobo | CTD |
|-----------------|-----|-------|-------|--------|-------|----------|------|-----------|-------------|-----------|-------------|-------|------|------|--------------|--------|------|-----|
| Finlayson       | 43  | Inlet |       | Oct 25 | 11:57 | 1093     | 5C   | 52° 7.1'N | 128° 25.9'W | 52° 7'N   | 128° 26.7'W | 572   | 576  | 576  | 25           | x      | x    |     |
| Finlayson       | 44  | Inlet |       | Oct 25 | 14:04 | 1098     | 5C   | 52° 4'N   | 128° 28.1'W | 52° 3.4'N | 128° 27.9'W | 710   | 634  | 665  | 25           | x      | x    | x   |
| Finlayson       | 45  | Inlet |       | Oct 25 | 16:07 | 1107     | 5C   | 52° 9.6'N | 128° 28.2'W | 52° 9.2'N | 128° 28.6'W | 644   | 591  | 627  | 25           | x      | x    |     |
| Finlayson       | 46  | Inlet |       | Oct 25 | 17:58 | 1117     | 5C   | 52° 4.8'N | 128° 27.7'W | 52° 4.3'N | 128° 28'W   | 754   | 643  | 677  | 25           | x      | x    |     |
| Finlayson       | 47  | Inlet |       | Oct 25 | 20:05 | 1115     | 5C   | 52° 1.4'N | 128° 28.2'W | 52° 0.9'N | 128° 27.9'W | 691   | 770  | 729  | 25           | x      | x    |     |
| Gil Island      | 48  | Inlet |       | Oct 27 | 12:58 | 1054     | 5C   | 53° 8.4'N | 129° 17.7'W | 53° 8.3'N | 129° 18.7'W | 540   | 522  | 539  | 25           | x      | x    |     |
| Gil Island      | 49  | Inlet |       | Oct 27 | 14:23 | 1092     | 5C   | 53° 2.4'N | 129° 22.3'W | 53° 2.4'N | 129° 23.2'W | 529   | 519  | 548  | 24           | x      | x    | x   |
| Gil Island      | 50  | Inlet |       | Oct 27 | 15:55 | 1125     | 5C   | 53° 0.4'N | 129° 19.9'W | 53° 0'N   | 129° 20.6'W | 683   | 683  | 687  | 25           | x      | x    |     |
| Gil Island      | 51  | Inlet |       | Oct 27 | 18:17 | 1141     | 5C   | 53° 0.6'N | 129° 8.6'W  | 53° 0.9'N | 129° 7.9'W  | 552   | 569  | 562  | 25           | x      | x    |     |
| Gil Island      | 52  | Inlet |       | Oct 27 | 20:02 | 1166     | 5C   | 53° 0.8'N | 129° 7.6'W  | 53° 0'N   | 129° 6.7'W  | 567   | 533  | 545  | 25           | x      | x    |     |
| S3              | 53  | StRS  | RD1   | Oct 29 | 08:08 | 1322     | 5B   | 51° 2.2'N | 130° 27.6'W | 51° 2.7'N | 130° 26.9'W | 285   | 270  | 275  | 25           | x      | x    |     |
| S3              | 54  | StRS  | RD3   | Oct 29 | 11:03 | 1353     | 5B   | 51° 0.2'N | 130° 35.6'W | 51° 0.6'N | 130° 35.1'W | 1074  | 1077 | 1079 | 25           | x      | x    |     |
| S3              | 55  | StRS  | RD3   | Oct 29 | 12:42 | 1421     | 5B   | 51° 5.9'N | 130° 33.8'W | 51° 6.3'N | 130° 33.2'W | 1339  | 1313 | 1321 | 25           | x      | x    |     |
| S3              | 56  | StRS  | RD1   | Oct 29 | 14:56 | 1453     | 5B   | 51° 4.3'N | 130° 47.5'W | 51° 4.7'N | 130° 48.2'W | 270   | 265  | 267  | 25           | x      | x    |     |
| S3              | 57  | StRS  | RD2   | Oct 29 | 16:57 | 1447     | 5B   | 51° 6.1'N | 130° 52.4'W | 51° 5.7'N | 130° 53'W   | 473   | 723  | 648  | 25           | x      | x    |     |
| S3              | 58  | StRS  | RD2   | Oct 29 | 19:00 | 1475     | 5B   | 51° 6.7'N | 130° 41.5'W | 51° 7.2'N | 130° 41.6'W | 562   | 506  | 535  | 24           | x      | x    |     |
| S3              | 59  | StRS  | RD3   | Oct 31 | 08:24 | 1475     | 5B   | 51° 0.4'N | 130° 29.3'W | 51° 0'N   | 130° 29.9'W | 1250  | 1322 | 1278 | 25           | x      | x    |     |
| S3              | 60  | StRS  | RD2   | Oct 31 | 11:13 | 1462     | 5B   | 51° 8.8'N | 130° 16.7'W | 51° 8.3'N | 130° 16.2'W | 460   | 560  | 518  | 25           | x      | x    | x   |
| S3              | 61  | StRS  | RD2   | Oct 31 | 12:47 | 1505     | 5B   | 51° 4.2'N | 130° 7.5'W  | 51° 4'N   | 130° 6.8'W  | 678   | 636  | 660  | 25           | x      | x    |     |
| S3              | 62  | StRS  | RD2   | Oct 31 | 15:29 | 1550     | 5B   | 51° 9.8'N | 130° 8.3'W  | 51° 9.4'N | 130° 8.2'W  | 770   | 767  | 801  | 25           | x      | x    |     |
| S3              | 63  | StRS  | RD3   | Oct 31 | 17:37 | 1573     | 5B   | 51° 5.4'N | 130° 6.4'W  | 51° 4.9'N | 130° 6.5'W  | 882   | 865  | 891  | 25           | x      | x    |     |
| S3              | 64  | StRS  | RD3   | Oct 31 | 19:44 | 1597     | 5A   | 51° 0'N   | 130° 8.1'W  | 51° 0.6'N | 130° 8.3'W  | 892   | 969  | 928  | 25           | x      | x    |     |
| S3              | 65  | StRS  | RD1   | Nov 2  | 08:04 | 1354     | 5A   | 50° 7.4'N | 129° 24.2'W | 50° 7'N   | 129° 23.7'W | 192   | 189  | 190  | 25           | x      | x    |     |
| S3              | 66  | StRS  | RD1   | Nov 2  | 10:08 | 1357     | 5A   | 51° 0.5'N | 129° 18.7'W | 51° 0'N   | 129° 19'W   | 247   | 260  | 254  | 25           | x      | x    |     |
| S3              | 67  | StRS  | RD1   | Nov 2  | 12:01 | 1352     | 5A   | 51° 0.2'N | 129° 26.4'W | 51° 0.9'N | 129° 25.5'W | 286   | 283  | 284  | 25           | x      | x    | x   |
| S3              | 68  | StRS  | RD2   | Nov 2  | 14:22 | 1365     | 5A   | 51° 0.7'N | 129° 41.1'W | 51° 0.9'N | 129° 41.8'W | 476   | 451  | 466  | 25           | x      | x    |     |
| S3              | 69  | StRS  | RD1   | Nov 2  | 16:19 | 1383     | 5A   | 51° 3.9'N | 129° 34.7'W | 51° 4.5'N | 129° 34.5'W | 282   | 280  | 283  | 24           | x      | x    |     |
| S3              | 70  | StRS  | RD1   | Nov 2  | 18:06 | 1385     | 5B   | 51° 9.7'N | 129° 37.3'W | 51° 9.1'N | 129° 37.1'W | 192   | 212  | 199  | 24           | x      | x    |     |
| S3              | 71  | StRS  | RD1   | Nov 2  | 20:06 | 1369     | 5B   | 51° 1.7'N | 129° 39.7'W | 51° 2.2'N | 129° 39'W   | 194   | 184  | 188  | 25           | x      | x    |     |
| S4              | 72  | StRS  | RD1   | Nov 4  | 07:10 | 1325     | 5B   | 51° 6.4'N | 131° 7.4'W  | 51° 5.9'N | 131° 6.7'W  | 370   | 258  | 338  | 24           | x      | x    |     |
| S4              | 73  | StRS  | RD1   | Nov 4  | 10:01 | 1354     | 5E   | 52° 0.3'N | 131° 21'W   | 52° 0.7'N | 131° 20.9'W | 217   | 208  | 206  | 24           | x      | x    |     |
| S4              | 74  | StRS  | RD2   | Nov 4  | 12:02 | 1361     | 5E   | 52° 0.4'N | 131° 22'W   | 52° 0.7'N | 131° 21.2'W | 700   | 486  | 563  | 25           | x      | x    |     |
| S4              | 75  | StRS  | RD3   | Nov 4  | 14:07 | 1417     | 5E   | 52° 0.4'N | 131° 27.6'W | 52° 0.2'N | 131° 26.6'W | 843   | 851  | 841  | 25           | x      | x    | x   |
| S4              | 76  | StRS  | RD2   | Nov 4  | 16:00 | 1507     | 5E   | 52° 0'N   | 131° 31.4'W | 52° 0.1'N | 131° 30.3'W | 513   | 740  | 604  | 25           | x      | x    |     |
| S4              | 77  | StRS  | RD2   | Nov 4  | 18:07 | 1501     | 5E   | 52° 0.1'N | 131° 29.9'W | 52° 0.6'N | 131° 29'W   | 674   | 791  | 717  | 25           | x      | x    |     |
| S4              | 78  | StRS  | RD2   | Nov 4  | 20:09 | 1509     | 5E   | 52° 1'N   | 131° 28.4'W | 52° 1.4'N | 131° 28.9'W | 804   | 804  | 813  | 24           | x      | x    |     |
| S4              | 79  | StRS  | RD1   | Nov 4  | 22:02 | 1567     | 5E   | 52° 7.8'N | 131° 33.7'W | 52° 7.2'N | 131° 33'W   | 202   | 185  | 199  | 25           | x      | x    |     |
| S4              | 80  | StRS  | RD1   | Nov 7  | 08:05 | 1331     | 5E   | 52° 5.6'N | 131° 58.2'W | 52° 5.3'N | 131° 59'W   | 217   | 502  | 307  | 25           | x      | x    |     |
| S4              | 81  | StRS  | RD3   | Nov 7  | 10:01 | 1354     | 5E   | 52° 6.3'N | 132° 2.2'W  | 52° 6.6'N | 132° 3.1'W  | 866   | 977  | 935  | 25           | x      | x    |     |
| S4              | 82  | StRS  | RD2   | Nov 7  | 12:00 | 1336     | 5E   | 52° 8.7'N | 132° 4.1'W  | 52° 8.5'N | 132° 5.2'W  | 519   | 676  | 589  | 25           | x      | x    |     |
| S4              | 83  | StRS  | RD2   | Nov 7  | 14:01 | 1344     | 5E   | 52° 3.4'N | 132° 9.7'W  | 52° 3.8'N | 132° 10.5'W | 439   | 659  | 544  | 26           | x      | x    | x   |

continued.

| Spatial Stratum | Set | Type  | Depth | Date   | Time  | Duration | Area | Latitude  | Longitude   | Latitude  | Longitude   | Start | End  | Mean | Traps Fished | SBE 39 | Hobo | CTD |
|-----------------|-----|-------|-------|--------|-------|----------|------|-----------|-------------|-----------|-------------|-------|------|------|--------------|--------|------|-----|
|                 |     |       |       |        |       |          |      |           |             |           |             |       |      |      |              |        |      |     |
| S4              | 84  | StRS  | RD3   | Nov 7  | 16:46 | 1403     | 5E   | 52° 7'N   | 132° 36.4'W | 52° 7.5'N | 132° 36.3'W | 1327  | 1300 | 1327 | 25           | x      | x    |     |
| S4              | 85  | StRS  | RD3   | Nov 7  | 18:53 | 1453     | 5E   | 52° 6.1'N | 132° 46.2'W | 52° 6.7'N | 132° 46.4'W | 1093  | 1168 | 1126 | 25           | x      | x    |     |
| S4              | 86  | StRS  | RD3   | Nov 9  | 08:04 | 1338     | 5E   | 52° 7.1'N | 132° 40.2'W | 52° 6.5'N | 132° 40'W   | 1333  | 1325 | 1337 | 25           | x      | x    |     |
| S4              | 87  | StRS  | RD1   | Nov 9  | 09:59 | 1334     | 5E   | 53° 0.9'N | 132° 33.7'W | 53° 0.6'N | 132° 33.2'W | 220   | 214  | 222  | 24           | x      | x    |     |
| S4              | 88  | StRS  | RD1   | Nov 9  | 12:06 | 1321     | 5E   | 53° 0.7'N | 132° 38.5'W | 53° 0.7'N | 132° 39.5'W | 270   | 441  | 359  | 25           | x      | x    |     |
| S5              | 89  | StRS  | RD2   | Nov 9  | 14:34 | 1339     | 5E   | 53° 1.7'N | 132° 54.8'W | 53° 1.1'N | 132° 54.9'W | 771   | 758  | 775  | 25           | x      | x    |     |
| S5              | 90  | StRS  | RD2   | Nov 9  | 16:32 | 1356     | 5E   | 53° 4.3'N | 133° 7.2'W  | 53° 4.2'N | 133° 6.2'W  | 734   | 741  | 737  | 25           | x      | x    |     |
| S5              | 91  | StRS  | RD3   | Nov 9  | 18:33 | 1379     | 5E   | 53° 1.8'N | 133° 13.2'W | 53° 1.5'N | 133° 12.4'W | 1049  | 974  | 1029 | 25           | x      | x    |     |
| S5              | 92  | StRS  | RD2   | Nov 9  | 20:32 | 1432     | 5E   | 53° 5.7'N | 132° 54'W   | 53° 5.4'N | 132° 53.1'W | 706   | 695  | 701  | 25           | x      | x    |     |
| S5              | 93  | StRS  | RD1   | Nov 11 | 08:03 | 1339     | 5E   | 53° 8.9'N | 133° 5'W    | 53° 9.4'N | 133° 5.1'W  | 360   | 327  | 341  | 25           | x      | x    |     |
| S5              | 94  | StRS  | RD2   | Nov 11 | 10:01 | 1354     | 5E   | 53° 9.9'N | 133° 11.3'W | 53° 0.5'N | 133° 11.4'W | 541   | 602  | 576  | 25           | x      | x    |     |
| S5              | 95  | StRS  | RD1   | Nov 11 | 12:02 | 1348     | 5E   | 53° 1'N   | 133° 5.3'W  | 53° 1.7'N | 133° 5.3'W  | 243   | 201  | 221  | 25           | x      | x    |     |
| S5              | 96  | StRS  | RD1   | Nov 11 | 14:00 | 1330     | 5E   | 53° 5.2'N | 133° 9.3'W  | 53° 5.8'N | 133° 9.1'W  | 440   | 431  | 415  | 25           | x      | x    |     |
| S5              | 97  | StRS  | RD3   | Nov 11 | 16:03 | 1390     | 5E   | 53° 3.6'N | 133° 23.4'W | 53° 4'N   | 133° 24.1'W | 819   | 856  | 837  | 24           | x      | x    |     |
| S5              | 98  | StRS  | RD3   | Nov 11 | 18:39 | 1448     | 5E   | 53° 8.1'N | 133° 45.5'W | 53° 8.6'N | 133° 45.9'W | 950   | 933  | 921  | 25           | x      | x    |     |
| Portland        | 99  | Inlet |       | Nov 13 | 14:55 | 1023     | 5D   | 54° 9.2'N | 130° 32'W   | 54° 9.6'N | 130° 31.3'W | 640   | 640  | 644  | 25           | x      | x    |     |
| Portland        | 100 | Inlet |       | Nov 13 | 16:34 | 1075     | 5D   | 54° 7.8'N | 130° 17.5'W | 54° 8.4'N | 130° 17.6'W | 484   | 466  | 473  | 25           | x      | x    |     |
| Portland        | 101 | Inlet |       | Nov 13 | 18:01 | 1104     | 5D   | 54° 2.9'N | 130° 11.3'W | 54° 2.4'N | 130° 11.9'W | 424   | 428  | 427  | 25           | x      | x    |     |
| Portland        | 102 | Inlet |       | Nov 13 | 19:34 | 1126     | 5D   | 54° 5.3'N | 130° 21.3'W | 54° 5'N   | 130° 21.9'W | 501   | 418  | 451  | 24           | x      | x    |     |
| Portland        | 103 | Inlet |       | Nov 13 | 21:00 | 1126     | 5D   | 54° 2.6'N | 130° 25.1'W | 54° 2.2'N | 130° 24.2'W | 507   | 478  | 490  | 25           | x      | x    |     |
| S5              | 104 | StRS  | RD1   | Nov 15 | 08:41 | 1331     | 5E   | 54° 0.8'N | 133° 35.1'W | 54° 0.4'N | 133° 35.9'W | 364   | 359  | 362  | 24           | x      | x    |     |
| S5              | 105 | StRS  | RD2   | Nov 15 | 10:01 | 1353     | 5E   | 53° 8.9'N | 133° 38.3'W | 53° 9.3'N | 133° 39.1'W | 607   | 575  | 585  | 25           | x      | x    |     |
| S5              | 106 | StRS  | RD3   | Nov 15 | 12:03 | 1333     | 5E   | 53° 6.2'N | 133° 38.8'W | 53° 5.8'N | 133° 38.3'W | 846   | 842  | 844  | 25           | x      | x    |     |
| S5              | 107 | StRS  | RD3   | Nov 15 | 14:04 | 1389     | 5E   | 54° 0'N   | 133° 46.9'W | 54° 0.6'N | 133° 47.3'W | 1096  | 1081 | 1087 | 25           | x      | x    |     |
| S5              | 108 | StRS  | RD2   | Nov 15 | 15:55 | 1398     | 5E   | 54° 0.8'N | 133° 47.6'W | 54° 0.1'N | 133° 46.8'W | 549   | 505  | 517  | 25           | x      | x    |     |
| S5              | 109 | StRS  | RD2   | Nov 15 | 18:06 | 1413     | 5E   | 54° 5.9'N | 133° 51.6'W | 54° 5.8'N | 133° 50.6'W | 584   | 511  | 548  | 25           | x      | x    |     |
| S5              | 110 | StRS  | RD1   | Nov 15 | 19:54 | 1434     | 5E   | 54° 8.2'N | 133° 42.6'W | 54° 8.3'N | 133° 41.5'W | 250   | 256  | 254  | 25           | x      | x    |     |
| S5              | 111 | StRS  | RD1   | Nov 15 | 21:57 | 1462     | 5E   | 54° 0.1'N | 133° 35'W   | 54° 0.6'N | 133° 34.7'W | 363   | 365  | 362  | 25           | x      | x    |     |

## **APPENDIX D SET DETAILS 2019.**

Details of sets completed during the 2019 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<sub>1</sub> (100-250 fathoms), RD<sub>2</sub> (250-450 fathoms) and RD<sub>3</sub> (450-750 fathoms). The position data includes the major area along with the 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, a Hobo accelerometer or a Concerto CTD are indicated with an 'x'.

| Spatial Stratum | Set | Type | Depth | Date   | Time  | Duration | Area | Latitude  | Longitude   | Latitude  | Longitude   | Start | End  | Mean | Traps Fished | SBE 39 | Hobo | CTD |
|-----------------|-----|------|-------|--------|-------|----------|------|-----------|-------------|-----------|-------------|-------|------|------|--------------|--------|------|-----|
| S1              | 1   | StRS | RD2   | Oct 9  | 07:35 | 1355     | 3C   | 48° 2'N   | 125° 55.1'W | 48° 2'N   | 125° 56.1'W | 679   | 722  | 703  | 25           | x      |      |     |
| S1              | 2   | StRS | RD3   | Oct 9  | 09:46 | 1365     | 3C   | 48° 0'N   | 126° 6.5'W  | 48° 0'N   | 126° 7.6'W  | 1188  | 1385 | 1318 | 25           | x      |      |     |
| S1              | 3   | StRS | RD3   | Oct 9  | 13:16 | 1336     | 3C   | 48° 0.1'N | 126° 20.5'W | 48° 0.1'N | 126° 21.5'W | 1203  | 1140 | 1171 | 25           | x      |      |     |
| S1              | 4   | StRS | RD3   | Oct 9  | 14:30 | 1354     | 3C   | 48° 2.3'N | 126° 22.1'W | 48° 2.4'N | 126° 23'W   | 1174  | 1195 | 1165 | 25           | x      | x    |     |
| S1              | 5   | StRS | RD2   | Oct 9  | 16:28 | 1346     | 3C   | 48° 7.1'N | 126° 13.9'W | 48° 7.1'N | 126° 14.9'W | 642   | 690  | 666  | 25           | x      | x    |     |
| S1              | 6   | StRS | RD1   | Oct 9  | 18:02 | 1361     | 3C   | 48° 8.6'N | 126° 6.2'W  | 48° 8.6'N | 126° 7.1'W  | 203   | 212  | 207  | 25           | x      | x    |     |
| S1              | 7   | StRS | RD1   | Oct 9  | 19:27 | 1393     | 3C   | 48° 2.5'N | 126° 0.1'W  | 48° 1.7'N | 126° 0.3'W  | 362   | 470  | 405  | 25           | x      | x    | x   |
| S1              | 8   | StRS | RD1   | Oct 11 | 07:56 | 1333     | 3C   | 48° 1.9'N | 126° 7.8'W  | 48° 2'N   | 126° 8.8'W  | 187   | 192  | 190  | 25           | x      |      |     |
| S1              | 9   | StRS | RD2   | Oct 11 | 09:34 | 1357     | 3C   | 48° 2.8'N | 126° 18.1'W | 48° 3'N   | 126° 19'W   | 670   | 730  | 698  | 25           | x      |      |     |
| S1              | 10  | StRS | RD2   | Oct 11 | 11:08 | 1366     | 3C   | 48° 8.6'N | 126° 21.1'W | 48° 8.6'N | 126° 22.2'W | 629   | 708  | 661  | 25           | x      |      |     |
| S1              | 11  | StRS | RD3   | Oct 11 | 12:49 | 1397     | 3C   | 48° 7.7'N | 126° 30.9'W | 48° 7.8'N | 126° 31.9'W | 1113  | 1282 | 1194 | 25           | x      | x    |     |
| S1              | 12  | StRS | RD3   | Oct 11 | 14:16 | 1430     | 3C   | 48° 0'N   | 126° 37.4'W | 48° 0.1'N | 126° 38.4'W | 1305  | 1314 | 1310 | 25           | x      | x    |     |
| S1              | 13  | StRS | RD2   | Oct 11 | 16:01 | 1427     | 3C   | 48° 3'N   | 126° 30.8'W | 48° 2.6'N | 126° 31.6'W | 555   | 619  | 585  | 25           | x      | x    |     |
| S1              | 14  | StRS | RD2   | Oct 11 | 18:25 | 1446     | 3C   | 48° 5.4'N | 126° 38.5'W | 48° 4.7'N | 126° 38.9'W | 516   | 580  | 543  | 25           | x      | x    |     |
| S1              | 15  | StRS | RD1   | Oct 11 | 19:51 | 1466     | 3C   | 48° 8.8'N | 126° 46.3'W | 48° 8.9'N | 126° 47.4'W | 414   | 457  | 432  | 25           | x      | x    | x   |
| S1              | 16  | StRS | RD1   | Oct 13 | 06:16 | 1316     | 3D   | 49° 0'N   | 126° 51.8'W | 49° 0'N   | 126° 52.7'W | 382   | 423  | 403  | 25           | x      |      |     |
| S1              | 17  | StRS | RD1   | Oct 13 | 07:36 | 1361     | 3D   | 49° 0.2'N | 126° 50'W   | 49° 0.2'N | 126° 51'W   | 204   | 214  | 208  | 25           | x      |      |     |
| S1              | 18  | StRS | RD2   | Oct 13 | 09:34 | 1384     | 3D   | 49° 0.1'N | 127° 4'W    | 49° 0.1'N | 127° 5'W    | 655   | 723  | 691  | 25           | x      |      |     |
| S1              | 19  | StRS | RD2   | Oct 13 | 11:19 | 1384     | 3D   | 49° 5.4'N | 127° 7.4'W  | 49° 5.2'N | 127° 8.5'W  | 498   | 677  | 588  | 25           | x      | x    |     |
| S2              | 20  | StRS | RD1   | Oct 13 | 13:33 | 1385     | 3D   | 49° 9.6'N | 127° 9.1'W  | 49° 9.6'N | 127° 10.1'W | 192   | 209  | 202  | 25           | x      | x    |     |
| S2              | 21  | StRS | RD2   | Oct 13 | 14:50 | 1400     | 3D   | 49° 9.7'N | 127° 13.9'W | 49° 9.7'N | 127° 14.8'W | 603   | 742  | 672  | 25           | x      | x    |     |
| S2              | 22  | StRS | RD3   | Oct 13 | 16:23 | 1447     | 3D   | 49° 2.6'N | 127° 19.7'W | 49° 2.6'N | 127° 20.7'W | 924   | 1132 | 1022 | 25           | x      | x    | x   |
| S2              | 23  | StRS | RD2   | Oct 18 | 08:14 | 1320     | 3D   | 50° 6.2'N | 128° 13.6'W | 50° 5.8'N | 128° 14.3'W | 449   | 629  | 569  | 25           | x      |      |     |
| S2              | 24  | StRS | RD1   | Oct 18 | 10:05 | 1332     | 3D   | 50° 1.3'N | 128° 7.2'W  | 50° 1'N   | 128° 8.2'W  | 323   | 488  | 380  | 25           | x      |      |     |
| S2              | 26  | StRS | RD2   | Oct 18 | 13:54 | 1349     | 3D   | 49° 5.8'N | 128° 1.3'W  | 49° 6.2'N | 128° 2.3'W  | 519   | 492  | 494  | 25           | x      | x    |     |
| S2              | 27  | StRS | RD3   | Oct 18 | 15:30 | 1399     | 3D   | 49° 0.9'N | 127° 55.8'W | 49° 0.9'N | 127° 56.9'W | 815   | 867  | 839  | 25           | x      | x    |     |
| S2              | 28  | StRS | RD2   | Oct 18 | 16:52 | 1416     | 3D   | 49° 5.1'N | 127° 54.5'W | 49° 4.6'N | 127° 54.8'W | 613   | 760  | 686  | 25           | x      | x    | x   |
| S2              | 29  | StRS | RD2   | Oct 18 | 18:02 | 1463     | 3D   | 49° 3.5'N | 127° 49.1'W | 49° 3.5'N | 127° 50.4'W | 649   | 750  | 678  | 25           | x      | x    |     |
| S2              | 30  | StRS | RD1   | Oct 18 | 19:35 | 1463     | 3D   | 49° 7.9'N | 127° 45.6'W | 49° 7.9'N | 127° 46.9'W | 235   | 467  | 337  | 25           | x      | x    |     |
| S2              | 31  | StRS | RD3   | Oct 20 | 15:05 | 1366     | 3D   | 50° 0.9'N | 128° 27'W   | 50° 0.9'N | 128° 28'W   | 937   | 1126 | 991  | 25           | x      |      |     |
| S2              | 32  | StRS | RD3   | Oct 20 | 16:13 | 1408     | 3D   | 50° 1.1'N | 128° 29.7'W | 50° 1.1'N | 128° 30.8'W | 1144  | 1024 | 1082 | 25           | x      |      |     |
| S2              | 33  | StRS | RD2   | Oct 20 | 18:43 | 1400     | 3D   | 50° 0.7'N | 128° 20.2'W | 50° 0.2'N | 128° 19.9'W | 527   | 748  | 628  | 25           | x      |      |     |
| S2              | 34  | StRS | RD1   | Oct 20 | 21:33 | 1389     | 5A   | 50° 0'N   | 128° 33'W   | 50° 9.7'N | 128° 33.8'W | 215   | 307  | 264  | 25           | x      | x    |     |
| S2              | 35  | StRS | RD3   | Oct 21 | 01:02 | 1395     | 5A   | 50° 8.8'N | 128° 55.7'W | 50° 8.7'N | 128° 56.8'W | 847   | 864  | 909  | 25           | x      | x    | x   |
| S2              | 36  | StRS | RD2   | Oct 21 | 02:23 | 1417     | 5A   | 50° 1.5'N | 129° 1.4'W  | 50° 1'N   | 129° 2.1'W  | 544   | 716  | 669  | 25           | x      | x    |     |
| S2              | 37  | StRS | RD1   | Oct 21 | 03:28 | 1474     | 5A   | 50° 1.5'N | 128° 58.1'W | 50° 1.5'N | 128° 59.3'W | 230   | 357  | 267  | 25           | x      | x    |     |
| S3              | 38  | StRS | RD1   | Oct 25 | 07:58 | 1333     | 5A   | 50° 1.1'N | 129° 32.1'W | 50° 1'N   | 129° 33.2'W | 226   | 244  | 228  | 25           | x      |      |     |
| S3              | 39  | StRS | RD2   | Oct 25 | 09:36 | 1348     | 5A   | 50° 3.1'N | 129° 39.1'W | 50° 2.5'N | 129° 38.7'W | 460   | 796  | 616  | 25           | x      |      |     |
| S3              | 40  | StRS | RD2   | Oct 25 | 12:14 | 1459     | 5A   | 51° 0.9'N | 129° 38.4'W | 51° 0.9'N | 129° 39.6'W | 360   | 400  | 350  | 25           | x      |      |     |
| S3              | 41  | StRS | RD2   | Oct 25 | 13:40 | 1475     | 5A   | 51° 0.9'N | 129° 46.9'W | 51° 0.9'N | 129° 47.9'W | 633   | 722  | 674  | 25           | x      | x    |     |
| S3              | 42  | StRS | RD3   | Oct 25 | 16:03 | 1475     | 5A   | 51° 0'N   | 130° 0.8'W  | 51° 0.8'N | 130° 1.8'W  | 990   | 1018 | 998  | 25           | x      | x    | x   |
| S3              | 43  | StRS | RD3   | Oct 25 | 18:27 | 1471     | 5A   | 51° 2.5'N | 129° 48.4'W | 51° 1.8'N | 129° 48.5'W | 855   | 828  | 876  | 25           | x      | x    |     |

continued.

| Spatial Stratum | Set | Type | Depth | Date    | Time  | Duration | Area | Latitude  | Longitude   | Latitude  | Longitude   | Start | End  | Mean | Traps Fished | SBE 39 | Hobo | CTD |
|-----------------|-----|------|-------|---------|-------|----------|------|-----------|-------------|-----------|-------------|-------|------|------|--------------|--------|------|-----|
|                 |     |      |       | Stratum |       |          |      |           |             |           |             |       |      |      |              |        |      |     |
| S3              | 44  | StRS | RD1   | Oct 25  | 19:59 | 1502     | 5A   | 51° 3.9'N | 129° 37.1'W | 51° 3.8'N | 129° 38.1'W | 274   | 280  | 276  | 25           | x      |      |     |
| S3              | 45  | StRS | RD1   | Oct 27  | 08:03 | 1324     | 5B   | 51° 4.4'N | 129° 48.2'W | 51° 4.4'N | 129° 49.2'W | 203   | 204  | 206  | 25           | x      |      |     |
| S3              | 46  | StRS | RD1   | Oct 27  | 09:22 | 1361     | 5B   | 51° 1.2'N | 129° 49.7'W | 51° 1.2'N | 129° 50.6'W | 237   | 236  | 236  | 25           | x      |      |     |
| S3              | 47  | StRS | RD2   | Oct 27  | 11:42 | 1380     | 5B   | 51° 8.6'N | 130° 6.2'W  | 51° 8.7'N | 130° 7.1'W  | 545   | 611  | 579  | 25           | x      |      |     |
| S3              | 48  | StRS | RD3   | Oct 27  | 13:42 | 1417     | 5B   | 51° 6.1'N | 130° 6.3'W  | 51° 5.9'N | 130° 7.3'W  | 993   | 1021 | 1011 | 25           | x      | x    |     |
| S3              | 49  | StRS | RD2   | Oct 27  | 15:03 | 1454     | 5B   | 51° 8.7'N | 130° 11.7'W | 51° 8.6'N | 130° 12.8'W | 546   | 585  | 560  | 25           | x      | x    |     |
| S3              | 50  | StRS | RD3   | Oct 27  | 16:59 | 1502     | 5B   | 51° 5.9'N | 130° 22.8'W | 51° 5.8'N | 130° 23.9'W | 1197  | 1320 | 1259 | 25           | x      | x    |     |
| S3              | 51  | StRS | RD2   | Oct 27  | 19:46 | 1531     | 5B   | 51° 9.3'N | 130° 24.7'W | 51° 9.2'N | 130° 26'W   | 471   | 470  | 508  | 25           | x      |      |     |
| S4              | 52  | StRS | RD3   | Oct 29  | 11:41 | 1338     | 5E   | 52° 3.5'N | 132° 24.7'W | 52° 3.5'N | 132° 26'W   | 1099  | 1215 | 1156 | 25           | x      |      |     |
| S4              | 53  | StRS | RD3   | Oct 29  | 13:05 | 1370     | 5E   | 52° 5.4'N | 132° 31.8'W | 52° 5.4'N | 132° 33'W   | 1333  | 1324 | 1328 | 25           | x      |      |     |
| S4              | 54  | StRS | RD1   | Oct 29  | 15:18 | 1377     | 5E   | 52° 5.6'N | 132° 24.6'W | 52° 5.5'N | 132° 25.9'W | 380   | 400  | 424  | 25           | x      | x    |     |
| S4              | 55  | StRS | RD1   | Oct 29  | 17:08 | 1387     | 5E   | 52° 1.2'N | 132° 18.7'W | 52° 0.6'N | 132° 18.6'W | 310   | 493  | 404  | 25           | x      | x    |     |
| S4              | 56  | StRS | RD1   | Oct 29  | 20:05 | 1327     | 5E   | 52° 3.7'N | 132° 21.9'W | 52° 3.8'N | 132° 23'W   | 418   | 440  | 402  | 25           | x      | x    |     |
| S4              | 57  | StRS | RD3   | Oct 31  | 08:05 | 1321     | 5E   | 52° 4'N   | 131° 33.8'W | 52° 3.9'N | 131° 34.8'W | 867   | 975  | 919  | 25           | x      |      |     |
| S4              | 58  | StRS | RD2   | Oct 31  | 09:24 | 1347     | 5E   | 52° 3.6'N | 131° 30.1'W | 52° 3.6'N | 131° 31.4'W | 686   | 787  | 746  | 25           | x      |      |     |
| S4              | 59  | StRS | RD2   | Oct 31  | 10:55 | 1373     | 5E   | 52° 0.3'N | 131° 30.8'W | 52° 0.8'N | 131° 31.6'W | 522   | 612  | 595  | 25           | x      | x    |     |
| S4              | 60  | StRS | RD2   | Oct 31  | 12:31 | 1404     | 5E   | 52° 0.4'N | 131° 32.2'W | 52° 0.4'N | 131° 33.2'W | 914   | 946  | 985  | 25           | x      | x    |     |
| S4              | 61  | StRS | RD2   | Oct 31  | 14:19 | 1399     | 5E   | 52° 0.2'N | 131° 23.6'W | 52° 0.4'N | 131° 24.8'W | 534   | 642  | 623  | 25           | x      | x    |     |
| S4              | 62  | StRS | RD1   | Oct 31  | 15:58 | 1415     | 5E   | 52° 0.3'N | 131° 20.3'W | 52° 0.1'N | 131° 21.4'W | 222   | 295  | 249  | 25           | x      | x    |     |
| S4              | 63  | StRS | RD2   | Oct 31  | 17:22 | 1434     | 5B   | 51° 9.2'N | 131° 16.3'W | 51° 9.2'N | 131° 17.3'W | 556   | 641  | 605  | 25           | x      | x    |     |
| S3              | 64  | StRS | RD3   | Nov 2   | 08:05 | 1324     | 5B   | 51° 3.3'N | 130° 34.6'W | 51° 3.1'N | 130° 35.6'W | 890   | 870  | 882  | 25           | x      |      |     |
| S3              | 65  | StRS | RD1   | Nov 2   | 10:03 | 1335     | 5B   | 51° 6.2'N | 130° 22.5'W | 51° 6.2'N | 130° 23.5'W | 267   | 414  | 350  | 25           | x      |      |     |
| S3              | 66  | StRS | RD1   | Nov 2   | 11:53 | 1359     | 5B   | 51° 2'N   | 130° 33.2'W | 51° 1.5'N | 130° 32.6'W | 272   | 258  | 262  | 25           | x      | x    |     |
| S3              | 67  | StRS | RD1   | Nov 2   | 12:54 | 1395     | 5B   | 51° 5.1'N | 130° 33.2'W | 51° 4.6'N | 130° 32.5'W | 411   | 412  | 399  | 25           | x      | x    |     |
| S3              | 68  | StRS | RD1   | Nov 2   | 14:59 | 1407     | 5B   | 51° 0.7'N | 130° 45.6'W | 51° 1.1'N | 130° 45.5'W | 269   | 272  | 266  | 25           | x      | x    |     |
| S4              | 69  | StRS | RD1   | Nov 2   | 18:14 | 1406     | 5B   | 51° 8.6'N | 131° 9'W    | 51° 7.9'N | 131° 9.5'W  | 196   | 418  | 318  | 25           | x      | x    |     |
| S4              | 70  | StRS | RD2   | Nov 2   | 19:05 | 1440     | 5B   | 51° 8.8'N | 131° 10.6'W | 51° 8.4'N | 131° 11.5'W | 597   | 694  | 663  | 25           | x      | x    |     |
| S4              | 71  | StRS | RD3   | Nov 4   | 08:24 | 1315     | 5E   | 52° 7'N   | 132° 47'W   | 52° 7'N   | 132° 48'W   | 1168  | 1137 | 1151 | 25           | x      |      |     |
| S4              | 72  | StRS | RD2   | Nov 4   | 10:14 | 1318     | 5E   | 53° 0.4'N | 132° 37.5'W | 53° 0.4'N | 132° 38.6'W | 528   | 681  | 611  | 25           | x      |      |     |
| S4              | 73  | StRS | RD1   | Nov 4   | 11:38 | 1350     | 5E   | 53° 0.9'N | 132° 39.7'W | 53° 0.2'N | 132° 39.6'W | 327   | 352  | 402  | 25           | x      | x    |     |
| S5              | 74  | StRS | RD1   | Nov 4   | 12:54 | 1379     | 5E   | 53° 0.4'N | 132° 41.5'W | 53° 0.7'N | 132° 42.5'W | 423   | 463  | 429  | 25           | x      | x    |     |
| S5              | 75  | StRS | RD2   | Nov 4   | 14:03 | 1456     | 5E   | 53° 2.5'N | 132° 45.7'W | 53° 2.5'N | 132° 46.9'W | 485   | 551  | 529  | 25           | x      | x    |     |
| S5              | 76  | StRS | RD2   | Nov 4   | 15:11 | 1506     | 5E   | 53° 3'N   | 132° 52.9'W | 53° 2.5'N | 132° 52.1'W | 602   | 729  | 686  | 25           | x      | x    |     |
| S5              | 77  | StRS | RD2   | Nov 4   | 16:17 | 1519     | 5E   | 53° 4.4'N | 132° 49.4'W | 53° 4.4'N | 132° 50.6'W | 566   | 649  | 608  | 25           | x      | x    |     |
| S5              | 78  | StRS | RD3   | Nov 9   | 08:05 | 1327     | 5E   | 53° 4.7'N | 133° 10.9'W | 53° 4.8'N | 133° 11.8'W | 835   | 874  | 856  | 25           | x      |      |     |
| S5              | 79  | StRS | RD2   | Nov 9   | 09:36 | 1352     | 5E   | 53° 7.6'N | 133° 16.6'W | 53° 7.5'N | 133° 17.7'W | 614   | 729  | 668  | 25           | x      |      |     |
| S5              | 80  | StRS | RD2   | Nov 9   | 12:02 | 1345     | 5E   | 53° 7.5'N | 133° 10.1'W | 53° 7.5'N | 133° 11.3'W | 540   | 704  | 601  | 25           | x      | x    |     |
| S5              | 81  | StRS | RD3   | Nov 9   | 13:25 | 1355     | 5E   | 53° 9.2'N | 133° 14.5'W | 53° 9.3'N | 133° 15.7'W | 794   | 1005 | 944  | 25           | x      | x    |     |
| S5              | 82  | StRS | RD3   | Nov 9   | 15:21 | 1370     | 5E   | 53° 5.7'N | 133° 20.1'W | 53° 5.7'N | 133° 21.3'W | 836   | 1181 | 1030 | 25           | x      | x    |     |
| S5              | 83  | StRS | RD3   | Nov 9   | 16:36 | 1394     | 5E   | 53° 6.9'N | 133° 21.1'W | 53° 6.9'N | 133° 22.2'W | 834   | 1090 | 1006 | 25           | x      | x    |     |
| S5              | 84  | StRS | RD2   | Nov 11  | 12:53 | 1328     | 5E   | 54° 0.3'N | 133° 46.3'W | 54° 0.2'N | 133° 47.5'W | 498   | 491  | 491  | 25           | x      |      |     |

continued.

| Spatial Stratum | Set | Type  | Depth | Date   | Time  | Duration | Area | Latitude  | Longitude   | Latitude  | Longitude   | Start | End | Mean | Traps Fished | SBE 39 | Hobo | CTD |
|-----------------|-----|-------|-------|--------|-------|----------|------|-----------|-------------|-----------|-------------|-------|-----|------|--------------|--------|------|-----|
|                 |     |       |       |        |       |          |      |           |             |           |             |       |     |      |              |        |      |     |
| S5              | 85  | StRS  | RD2   | Nov 11 | 14:17 | 1360     | 5E   | 54° 4.7'N | 133° 50.3'W | 54° 4.7'N | 133° 51.7'W | 490   | 576 | 535  | 25           | x      |      |     |
| S5              | 86  | StRS  | RD1   | Nov 11 | 16:14 | 1354     | 5E   | 54° 3.9'N | 133° 42.7'W | 54° 3.9'N | 133° 44'W   | 257   | 249 | 253  | 24           |        | x    | x   |
| S5              | 87  | StRS  | RD1   | Nov 11 | 17:42 | 1363     | 5E   | 54° 6.4'N | 133° 41.2'W | 54° 6.4'N | 133° 42.4'W | 262   | 258 | 259  | 25           | x      | x    |     |
| S5              | 88  | StRS  | RD1   | Nov 11 | 19:18 | 1357     | 5E   | 54° 8.8'N | 133° 32.1'W | 54° 8.9'N | 133° 33.2'W | 268   | 266 | 267  | 25           | x      | x    |     |
| S5              | 89  | StRS  | RD1   | Nov 11 | 20:35 | 1362     | 5E   | 54° 5.8'N | 133° 31.8'W | 54° 5.7'N | 133° 32.8'W | 322   | 313 | 318  | 25           | x      | x    |     |
| Portland        | 90  | Inlet |       | Nov 13 | 11:19 | 1072     | 5D   | 54° 1.7'N | 130° 12.6'W | 54° 1.1'N | 130° 12'W   | 439   | 440 | 440  | 25           | x      |      |     |
| Portland        | 91  | Inlet |       | Nov 13 | 12:10 | 1122     | 5D   | 54° 7.8'N | 130° 15.6'W | 54° 7.2'N | 130° 16.6'W | 496   | 494 | 496  | 25           | x      |      |     |
| Portland        | 92  | Inlet |       | Nov 13 | 13:04 | 1192     | 5D   | 54° 5.8'N | 130° 22.1'W | 54° 5.1'N | 130° 22.5'W | 523   | 560 | 542  | 25           | x      | x    |     |
| Portland        | 93  | Inlet |       | Nov 13 | 14:23 | 1225     | 5D   | 54° 2.2'N | 130° 26.2'W | 54° 1.7'N | 130° 27.2'W | 583   | 616 | 604  | 25           | x      | x    |     |
| Portland        | 94  | Inlet |       | Nov 13 | 16:02 | 1253     | 5D   | 54° 9.3'N | 130° 32'W   | 54° 8.6'N | 130° 32.1'W | 640   | 636 | 639  | 25           | x      | x    |     |
| Gil Island      | 95  | Inlet |       | Nov 15 | 12:31 | 1052     | 5C   | 53° 9.3'N | 129° 18.5'W | 53° 8.7'N | 129° 18.3'W | 537   | 541 | 540  | 25           | x      |      |     |
| Gil Island      | 96  | Inlet |       | Nov 15 | 14:06 | 1084     | 5C   | 53° 2.4'N | 129° 22.9'W | 53° 1.9'N | 129° 23.6'W | 541   | 528 | 531  | 25           | x      |      |     |
| Gil Island      | 97  | Inlet |       | Nov 15 | 15:26 | 1145     | 5C   | 53° 0'N   | 129° 21.7'W | 53° 0.4'N | 129° 21.6'W | 657   | 667 | 664  | 25           | x      | x    |     |
| Gil Island      | 98  | Inlet |       | Nov 15 | 17:15 | 1178     | 5C   | 53° 0.3'N | 129° 7.5'W  | 53° 0'N   | 129° 7.3'W  | 567   | 555 | 564  | 25           | x      | x    |     |
| Gil Island      | 99  | Inlet |       | Nov 15 | 18:21 | 1223     | 5C   | 53° 0.7'N | 129° 7.9'W  | 53° 1.4'N | 129° 8'W    | 567   | 565 | 567  | 25           | x      | x    |     |
| Finlayson       | 100 | Inlet |       | Nov 17 | 13:03 | 1019     | 5C   | 52° 7.5'N | 128° 25.8'W | 52° 7'N   | 128° 26.4'W | 564   | 589 | 575  | 25           | x      |      |     |
| Finlayson       | 101 | Inlet |       | Nov 17 | 14:16 | 1043     | 5C   | 52° 3.8'N | 128° 27.9'W | 52° 3.1'N | 128° 27.7'W | 617   | 608 | 602  | 25           | x      |      |     |
| Finlayson       | 102 | Inlet |       | Nov 17 | 15:27 | 1068     | 5C   | 52° 9.8'N | 128° 28.5'W | 52° 9.2'N | 128° 28.7'W | 560   | 583 | 579  | 25           | x      | x    |     |
| Finlayson       | 103 | Inlet |       | Nov 17 | 16:45 | 1093     | 5C   | 52° 4.7'N | 128° 27.9'W | 52° 4'N   | 128° 27.8'W | 671   | 648 | 655  | 25           | x      | x    |     |
| Finlayson       | 104 | Inlet |       | Nov 17 | 17:35 | 1136     | 5C   | 52° 1.1'N | 128° 27.9'W | 52° 0.3'N | 128° 27.6'W | 769   | 821 | 806  | 25           | x      | x    |     |
| Dean/Burke      | 105 | Inlet |       | Nov 19 | 12:01 | 969      | 5B   | 52° 0.5'N | 127° 28.5'W | 52° 1.2'N | 127° 27.9'W | 519   | 504 | 515  | 24           | x      |      |     |
| Dean/Burke      | 106 | Inlet |       | Nov 19 | 14:01 | 985      | 5B   | 52° 6.8'N | 127° 16'W   | 52° 6.3'N | 127° 15.2'W | 531   | 515 | 533  | 25           | x      |      |     |
| Dean/Burke      | 107 | Inlet |       | Nov 19 | 15:41 | 1037     | 5B   | 52° 6.6'N | 127° 15'W   | 52° 6.3'N | 127° 16.1'W | 580   | 580 | 581  | 25           | x      | x    |     |
| Dean/Burke      | 108 | Inlet |       | Nov 19 | 16:47 | 1068     | 5B   | 52° 4.1'N | 127° 24.6'W | 52° 3.6'N | 127° 25.5'W | 595   | 593 | 594  | 25           | x      | x    |     |
| Dean/Burke      | 109 | Inlet |       | Nov 19 | 18:05 | 1124     | 5B   | 52° 0.9'N | 127° 36.2'W | 52° 0.5'N | 127° 37.3'W | 444   | 430 | 440  | 25           | x      | x    |     |

## **APPENDIX E SUMMARY OF BASKET USE BY TRAP 2018.**

Summary of the basket use by trap number for sets during the 2018 sablefish survey. Sets that did not retain sablefish are not listed. The set numbers highlighted in green indicate standardized sets at mainland inlet localities. All other sets are of the StRS type. 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, NA = No sablefish catch/Trap missing.

| Set | Trap.1 | Trap.2 | Trap.3 | Trap.4 | Trap.5 | Trap.6 | Trap.7 | Trap.8 | Trap.9 | Trap.10 | Trap.11 | Trap.12 | Trap.13 | Trap.14 | Trap.15 | Trap.16 | Trap.17 | Trap.18 | Trap.19 | Trap.20 | Trap.21 | Trap.22 | Trap.23 | Trap.24 | Trap.25 | Trap.26 |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1   | T      | D      | A      | T      | A      | T      | A      | A      | T      | A       | T       | D,SD    | A       | T       | T       | A       | T       | T       | A       | D       | T       | A       | A       | T       |         |         |
| 2   | D,SD   | A      | T      | D      | A      | T      | D      | D,SD   | T      | D       | A       | T       | D,SD    | A       | T       | D       | A       | T       | D,SD    | A       | T       | D,SD    | A       | T       | D,SD    |         |
| 3   | A      | T      | D,SD   | A      | T      | D,SD   | A      | T      | D      | D       | T       | T       | T       | T       | D       | A       | T       | D       | D,SD    | A       | T       | D,SD    | D       | D       | D       |         |
| 4   | T      | D      | A      | T      | D      | D,SD   | T      | D      | D      | T       | D,SD    | T,SD    | T       | D       | A       | T       | D       | D       | D,SD    | D,SD    | D       | D       | D       | D       | D       |         |
| 5   | D      | D,SD   | T      | D      | A      | T      | D      | A      | T      | D       | D       | T       | T,SD    | D       | T       | D,SD    | D,SD    | D,SD    | A       | D,SD    | D       | D,SD    | T,SD    | D       |         |         |
| 6   | D,SD   | T      | D      | A      | D      | D      | D      | T      | D,SD   | A       | T       | D       | D       | D       | T       | D       | D       | D       | D,SD    | D       | T       | D,SD    | D       | D       |         |         |
| 7   | T      | D,SD   | A      | T      | D,SD   | A      | T      | D,SD   | D,SD   | T       | D,SD    | D       | D       | T       | D       | T       | D,SD    | A       | T       | D       | D       | D       | T       | D,SD    | D       |         |
| 8   | D      | D,SD   | T      | D      | A      | T      | D      | D      | T      | D       | D       | T       | D       | D,SD    | D       | D,SD    | A       | T       | D       | D       | T       | D       | D,SD    | D       | D       |         |
| 9   | D,SD   | T      | D,SD   | A      | T      | D,F    | D,SD   | D      | D,SD   | D       | T       | D,F     | D,F     | D,SD    | D,SD    | A       | T       | D,SD    | D,SD    | T,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |
| 10  | D,F    | D,SD   | T      | D,SD   | D,SD   | D,SD   | T      | T,SD   | A      | D,SD    | D,SD    | D       | D,SD    | D,SD    | T,SD    | D,SD    | D,SD    | A       | D,SD    | T,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,F     |
| 11  |        |        |        |        |        |        |        |        |        |         |         |         | A       | A       | T       | A       | T       | T       | A       | T       | A       | T       | A       | A       | T       |         |
| 12  | D,SD   | T      | D,SD   | D,SD   | D,SD   | D,SD   | A      | T      | D,SD   | T,SD    | D,SD    | A       | D,SD    | D,SD    | D,SD    | D,SD    | T,SD    | D,SD    |         |
| 13  | T,SD   | D,SD   | D,SD   | T      | D,SD   | A      | D,SD   | D,SD   | T,SD   | T       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T       | D,SD    | A       | D,SD    |         |
| 14  | D,SD   | A      | T      | D,SD   | D,SD   | T      | D,SD   | D      | T      | D,SD    | D,SD    | T       | D,SD    | D,SD    | T       | D,SD    | D,SD    | T       | D,SD    | A       | D,SD    | D,SD    | D,SD    | T,SD    | D,SD    |         |
| 15  | D      | T      | D,SD   | D,SD   | D,SD   | D,SD   | A      | T      | D,SD   | A       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T       | D       | D,SD    | T       | D       | D,SD    | T,SD    | D,SD    | D,SD    | D       |         |
| 16  | T      | D,SD   | D,SD   | D,F    | D,SD   | A      | T      | D      | T      | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | A       | D,SD    | D,SD    | F,D     | D,SD    | D,SD    | T,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |
| 17  | D,SD   | A      | T      | D,SD   | T,SD   | T      | D,SD   | T,SD   | T      | D,SD    | D,SD    | T       | D,SD    | A       | T       | T,SD    | D,SD    | T       | D,SD    | T,SD    | T,SD    | D,SD    | A       | D,SD    | D,SD    |         |
| 18  | D,F    | T      | A      | T,F    | D,SD   | A      | T      | T,SD   | A      | T       | D,SD    | T       | T,SD    | F,D     | D       | A       | T       | D,F     | T,SD    | T       | D       | D       | T       | D       | D       |         |
| 19  | T      | D      | A      | T      | A      | D,SD   | T      | D,SD   | A      | T       | D,SD    | D,SD    | T       | D,SD    | T       | D,SD    | T       | D,SD    | F,D     | D,SD    | T       | D,SD    | D,SD    | D       | D,SD    |         |
| 20  | D,F    | D,SD   | T      | D,SD   | D,SD   | T      | D,SD   | A      | T      | D,SD    | T,SD    | T       | D,SD    | T       | D,SD    | T,SD    | D,SD    | D,SD    | D,SD    |         |
| 21  | D      | D,SD   | A      | T      | D,SD   | D      | T      | D,SD   | D,SD   | T       | D,SD    | D,SD    | T       | D,SD    | D,SD    | T       | D,SD    | A       | T       | D,SD    | D       | T       | D,SD    | D,SD    | T       |         |
| 22  | T      | A      | A      | T      | D      | A      | T      | D      | D      | T       | D       | A       | T       | D,SD    | D,SD    | T       | D       | A       | T       | D,SD    | A       | T       | D,SD    | A       | T       |         |
| 23  | D,SD   | D,SD   | T      | D,SD   | A      | T      | D,SD   | D,SD   | D,SD   | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T       | D,SD    | D,SD    | D,SD    | D,SD    | T,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |
| 24  | D,F    | T      | D,SD   | D,SD   | D,SD   | D,SD   | D,SD   | T      | D,SD   | A       | T       | D,SD    | D,SD    | T       | D,SD    | A       | D,SD    |         |
| 25  | T      | D,SD   | D,SD   | T,SD   | D,SD   | A      | T      | D,SD   | D,SD   | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T,SD    | T,SD    |         |         |
| 26  | D,SD   | D,SD   | T      | D,SD   | T      | T      | D,SD   | A      | T      | D,SD    | D,SD    | T       | D,SD    | T,SD    | T       | D,SD    | A       | T       | D       | A       | T       | D,SD    | D,SD    | T       | D,SD    |         |
| 27  | A      | T      | T,SD   | A      | T      | D      | D      | T      | D      | T       | D       | A       | T       | D       | D       | T       | D       | A       | T       | D       | D       | T       | D,SD    | D,SD    |         |         |
| 28  | 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    | A       | T,SD    | D,SD    | D,SD    | T,SD    | D,SD    | D,SD    | D,F     |         |         |
| 29  |        |        |        |        |        |        |        |        |        |         |         |         | A       | D       | T,F     | D,SD    | A       | T       | D       | D,SD    | T       | D,SD    | A       | T       | D,F     |         |
| 30  | T      |        | A      | T      | A      | A      | T      | A      | A      | T       | D       | A       | T       | D       | D       | A       | A       | A       | A       | A       | T       | D,SD    | D,SD    | T       |         |         |
| 31  |        | A      | T      | A      | A      | T      | D      | D,SD   | T      | D,SD    | T       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T       | D,SD    | A       | T       | D,SD    | A       | T       | D,SD    |         |         |
| 32  | A      | T      | D,SD   | A      | D,SD   | A      | T      | D,SD   | D,SD   | T       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T       | D,SD    | A       | T       | A       | T       | A       | T       | D,SD    |         |         |
| 33  | A      | A      | A      | T      | A      | D      | T      | D      | D,SD   | D,SD    | A       | T       | D       | A       | T       | D,SD    | A       | A       | A       | A       | A       | A       | A       | A       |         |         |
| 34  | T      | D,SD   | D,F    | T      | D,SD   | A      | D,SD   | D,SD   | D,SD   | T       | D,SD    | D,SD    | T       | D,SD    | D,SD    | T       | D,SD    | A       | T       | D,SD    | D,F     | T       | D,SD    | D,SD    |         |         |
| 35  | D      | D      | T      | D      | A      | T      | D,SD   | A      | T      | D       | A       | T       | D,SD    | A       | T       | D,SD    | A       | D       | T       | D       | T       | D       | D       | D       |         |         |
| 36  | D,SD   | T      | D,SD   | A      | T      | D,SD   | D,SD   | T      | T,SD   | D,SD    | T       | D,SD    | D,SD    | T       | D,SD    | D,SD    | T       | D,SD    | A       | T       | D,SD    | D,SD    | D,SD    | D,SD    |         |         |
| 37  | T      | D,SD   | T,SD   | T      | A      | T      | D,SD   | D,SD   | T      | D,SD    | T       | T       | D,SD    | D,SD    | T       | D,SD    | D       | D,SD    | D,SD    | A       | D,SD    | D,SD    | A       |         |         |         |
| 38  | D,SD   | A      | T      | D,SD   | T      | D,SD   | A      | T      | D,SD   | T,SD    | T       | D,SD    | A       | T       | T,SD    | A       | T       | D,SD    | A       | D,SD    | A       | T       | A       |         |         |         |
| 39  | A      | T,SD   | T,SD   | D      | T      | T      | T      | T,SD   | T      | D,SD    | T       | D       | T       | D       | T       | T       | T       | T       | T       | T       | T       | T       | T       | D,SD    |         |         |
| 40  | T      | A      | T      | D,SD   | T      | D,SD   | A      | T      | D      | A       | T       | D,SD    | A       | T       | D,SD    | A       | T       | T       | T,SD    | D,SD    | T       | T       | D,SD    | T       |         |         |
| 41  | D,SD   | A      | T      | T      | D,SD   | T      | D,SD   | D,SD   | T      | D,SD    | T       | D,SD    | D,SD    | T       | D,SD    | T       | D,SD    | D,SD    | T       | D,SD    | A       | T       | D,SD    |         |         |         |
| 42  | A      | T      |        |        | T      | D,SD   | D,SD   | T      | D,SD   | D,SD    | T       | D,SD    | A       | D,SD    |         |         |
| 43  |        | A      | T      | D,SD   | A      | T      | D,SD   | D,SD   | T      | D,SD    | T,SD    | T       | D,SD    | T,SD    | T       | D,SD    | T       | T       | D,SD    | T,SD    | T,SD    | D,SD    | T,SD    |         |         |         |
| 44  | 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    | T,SD    | D,SD    | D,SD    | T,SD    | D,SD    | D,SD    | T,SD    | D,SD    |         |         |
| 45  | T      | T      | D,SD   | D,SD   | T      | T,SD   | T,SD   | T      | D,SD   | T,SD    | D,SD    | A       | D,SD    | T,SD    | T,SD    |         |         |
| 46  | T      | D,SD   | T      | T      | D,SD   | D,SD   | T      | D,SD   | D,SD   | T       | D,SD    | D,SD    | T       | D,SD    | T,SD    | T,SD    | T,SD    | D,SD    |         |         |
| 47  | D,SD   | A      | T      | D,SD   | D,SD   | T      | D,SD   | D,SD   | T      | T,SD    | D,SD    | T       | D,SD    | D,SD    | T,SD    | T,SD    | D,SD    | D,SD    | T,SD    | A       | D,SD    | D,SD    | D,SD    | T,SD    |         |         |
| 48  | A      | T      | D,SD   | A      | T      | D,SD   | D,SD   | T      | A      | T       | D,SD    | D,SD    | T       | D,SD    |         |         |
| 49  | T      | D,SD   | A      | A      | T      | D,SD   | A      | T      | D,SD   | A       | T       | D,SD    | A       | T       | D,SD    | D,SD    | T       | D,SD    | T       | D,SD    | D,SD    | T       | T,SD    | D,SD    |         |         |
| 50  | D,SD   | T      | D,SD   | T      | A      | A      | T      | A      | A      | T       | D,SD    | D,SD    | T       | D,SD    | A       | T       | T,SD    | D,SD    | T       | D,SD    | T       | D,SD    | T       | T       |         |         |
| 51  | A      | T      | T,SD   | A      | T      | T,SD   | D,SD   | T      | D,SD   | D,SD    | T       | D,SD    | D,SD    | T       | D,SD    | A       | T       | D       | T,SD    | T       | D,SD    | A       | D,SD    | D,SD    |         |         |
| 52  | T      | T,SD   | A      | T      | D,SD   | A      | T      | D,SD   | D,SD   | T       | D,SD    | T       | D,SD    | T       | D,SD    | T       | D,SD    | D,SD    | T       | D,SD    | T       | D,SD    | D,SD    | D,SD    |         |         |
| 53  | D,SD   | A      | T      | D,SD   | D,SD   | T      | D,SD   | D,SD   | T      | D,SD    | D,SD    | T       | D,SD    | T       | D,SD    | T       | D,SD    | T       | D,SD    | A       | T       | D,SD    | T,SD    | D,SD    |         |         |
| 54  | A      | T      | D      | A      | T      | D      | A      | T      | A      | T       | D       | A       | T       | D       | A       | A       | A       | A       | T       | T       | D       | D       | D       | D       |         |         |
| 55  | T      | D      | T      | D      | T      | D      | A      | T      | A      | T       | D       | A       | T       | D       | A       | A       | A       | A       | A       | A       | T       | T       | A       | A       |         |         |

continued.

| Set | Trap.1 | Trap.2 | Trap.3 | Trap.4 | Trap.5 | Trap.6 | Trap.7 | Trap.8 | Trap.9 | Trap.10 | Trap.11 | Trap.12 | Trap.13 | Trap.14 | Trap.15 | Trap.16 | Trap.17 | Trap.18 | Trap.19 | Trap.20 | Trap.21 | Trap.22 | Trap.23 | Trap.24 | Trap.25 | Trap.26 |  |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--|
| 56  | D,SD   | A      | T      | D      | T      | A      | D,SD   | A      | T      | D       | T       | D       | A       | T       | D,SD    | A       | T       | D       | A       | T       | A       | A       | T       | D       |         |         |  |
| 57  | A      | T      | D,SD   | D,F    | T      | D      | D,SD   | T      | D,SD   | D,SD    | T       | D,SD    | D,SD    | T       | D,F     | A       | T       | D,SD    | D       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |  |
| 58  | T      | D,SD   | A      | T      | D,SD   | A      | T      | D,SD   | D,SD   | T       | D,SD    | D,SD    | T       | D,SD    |         |  |
| 59  | D      | A      | T      | D      | T      | A      | T      | D      | A      | T       | A       | T       | A       | T       | A       | A       | A       | T       | A       | T       | A       | A       | T       | T       |         |         |  |
| 60  | 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    | D,SD    | D,SD    | D,SD    | D,SD    | T,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |  |
| 61  | T      | D,SD   | A      | T      | D,SD   | D,SD   | T      | D,SD   | D,SD   | T       | D,SD    | D,SD    | T       | D,SD    |         |  |
| 62  | D,SD   | A      | T      | D      | S,D    | A      | T      | D,SD   | T      | D,SD    | D,SD    | T       | T,SD    | T,SD    | D,SD    | D,SD    | A       | T,SD    | D,SD    |         |  |
| 63  | T      | T      | D,SD   | D,SD   | T      | D,SD   | T,SD   | T      | D,SD   | D,SD    | T       | D,SD    | A       | T       | D,SD    | D,SD    | D,SD    | T,SD    | D,SD    |         |  |
| 64  | T      | T,SD   | T      | T      | T,SD   | A      | T      | D,SD   | T,SD   | T       | D,SD    | D,SD    | D,SD    | D,SD    | T,SD    | T,SD    | D,SD    | D,SD    | T,SD    | D,SD    | T,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |  |
| 65  |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |  |
| 66  | A      | T      | D,SD   | A      | T      | D,SD   | D,SD   | A      | T      | D,SD    | D,SD    | T       | D,SD    | D       | T       | D,SD    | D       | T       | D,SD    | D       | D,SD    | D,SD    | D,SD    | D,SD    | D       |         |  |
| 67  | T      | T,SD   | A      | T      | D,SD   | D,SD   | T      | D,SD   | D,SD   | T       | D,SD    | D,SD    | T       | D,SD    | A       | T       | D,SD    | T       | D,SD    | A       | T       | D,SD    | A       | T       |         |         |  |
| 68  | D,SD   | A      | T      | D,SD   | A      | T      | D,SD   | D,SD   | T      | D,SD    | D,SD    | T       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T,SD    | D,SD    |         |  |
| 69  | T      | D,SD   | A      | T      | D,SD   | A      | T      | D,SD   | A      | T       | D,SD    | A       | T       | D,SD    | A       | T       | D,SD    | A       | T       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |  |
| 70  | T      | D,SD   | A      | T      | D,SD   | A      | T      | A      | A      | A       | T       | A       | A       | T       | A       | A       | T       | A       | A       | T       | A       | A       | T       | A       |         |         |  |
| 71  | A      | T      | T      | A      | A      | A      | T      | A      | A      | A       | T       | A       | A       | T       | A       | A       | A       | A       | A       | A       | A       | A       | T       | A       |         |         |  |
| 72  | T      | A      | A      | A      | A      | A      | T      | A      | A      | A       | T       | A       | A       | A       | A       | A       | A       | A       | A       | A       | A       | A       | T       | A       |         |         |  |
| 73  |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |  |
| 74  | A      | T      | D,SD   | T      | T,F    | T,SD   | D,F    | T,F    | D,SD   | D,F     | D,F     | D,SD    | T,SD    | D,SD    | D,SD    | T,SD    |         |         |  |
| 75  | A      | A      | A      | A      | T      | D,SD   | A      | T      | A      | T       | D       | A       | T       | D,SD    | A       | T       | A       | T       | D,SD    | A       | T       | T,SD    | A       | T       | A       |         |  |
| 76  | T      | D,SD   | A      | T      | D,SD   | A      | T      | D,SD   | T      | T       | T,SD    | A       | T       | D,SD    | D,SD    | T       | D,SD    | D,SD    | T,SD    | D,SD    | D,SD    | T,SD    | D,SD    | T,SD    |         |         |  |
| 77  | A      | T      | A      | A      | T      | D,SD   | D,SD   | T      | D,SD   | D,SD    | T       | D,SD    | T       | T,SD    | A       | T       | D,SD    | D,SD    | T       | D,SD    | D,SD    | T       | D,SD    | D,SD    | T       | D,SD    |  |
| 78  | A      | T      | D,SD   | A      | T      | D,SD   | T      | D,SD   | D,SD   | T       | D,SD    | D,SD    | D,SD    | T,SD    | D,SD    |         |  |
| 80  | D,SD   | A      | T      | D,SD   | A      | T      | D      | D      | T      | D       | D       | T       | D       | D,SD    |         |  |
| 81  | A      | T      | A      | T      | A      | T      | T      | A      | A      | T       | A       | A       | T       | D,SD    | A       | T       | D,SD    | A       | T       | D,SD    | T       | D,SD    | D,SD    | D,SD    | D,SD    |         |  |
| 82  | T      | D,SD   | A      | T      | D,SD   | A      | T      | D,SD   | A      | T       | D,SD    |         |  |
| 83  | D,SD   | A      | T      | D,SD   | T      | D,SD   | A      | T      | D,SD   | A       | T       | D,SD    | A       | T       | D,SD    | T       | D,SD    | D,F     |  |
| 84  |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |  |
| 85  | A      | A      | A      | T      | D,SD   | A      | A      | A      | A      | T       | D       | T       | T       | T       | A       | A       | A       | A       | T       | A       | A       | A       | A       | T       |         |         |  |
| 86  | A      | A      | A      | A      | D,SD   | A      | A      | A      | A      | A       | T       | D       | T       | T       | T       | A       | A       | A       | A       | A       | A       | A       | A       | A       | A       |         |  |
| 87  |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |  |
| 88  | T      | A      | A      | A      | A      | A      | T      | A      | T      | A       | A       | T       | A       | A       | T       | D       | D,SD    | D       | T       | D,SD    | D       | T       | D       | D       | T       |         |  |
| 89  | T,SD   | A      | T      | D,SD   | T,SD   | T      | D,SD   | T      | T,SD   | D,SD    | T       | D,SD    | A       | T       | D,SD    | D,SD    | T       | D,SD    | T       | D,SD    | A       | T       | D,SD    | D,SD    | T,SD    |         |  |
| 90  | A      | T      | D      | A      | T      | T,SD   | D,SD   | T      | D,SD   | T       | D,SD    | D,SD    | T       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T,SD    |         |  |
| 91  | T      | D,SD   | T      | A      | A      | T      | A      | T      | A      | T       | A       | A       | T       | A       | A       | A       | A       | A       | A       | A       | T       | A       | T       | A       |         |         |  |
| 92  | D,SD   | A      | T      | D,SD   | A      | T      | D,SD   | A      | T      | D,SD    | D,SD    | T       | T       | D,SD    | A       | T       | D,SD    | D,SD    | D,SD    | T       | D,SD    | T       | D,SD    | D,SD    | T       |         |  |
| 93  | A      | T      | D,SD   | A      | T      | A      | A      | T      | A      | T       | D       | A       | D,SD    | T       | A       | A       | A       | T       | T       | A       | A       | A       | A       | T       | A       |         |  |
| 94  | T      | D,SD   | A      | 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    |         |  |
| 95  |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |  |
| 96  | A      | T      | D,SD   | A      | T      | D,SD   | A      | T      | D      | D,SD    | T       | D,SD    | D       | T       | D       | D       | T       | D,SD    |         |  |
| 97  | T      | A      | T      | A      | A      | T      | D,SD   | A      | T      | D,SD    | A       | T       | D,SD    | A       | S,D     | T       | D,SD    | A       | T       | D,SD    | D,SD    | T       | D,SD    | A       | T       |         |  |
| 98  | D,SD   | T      | A      | A      | T      | A      | A      | T      | A      | T       | T       | D,SD    | A       | T       | A       | A       | T       | A       | A       | D,SD    | T       | D,SD    | D,SD    | D,SD    | D,SD    |         |  |
| 99  | A      | T      | D,SD   | D,SD   | T      | D,SD   | D,SD   | T      | T,SD   | D,SD    | T       | D,SD    | D,SD    | T       | D,SD    | T       | D,SD    | A       | D,SD    |         |  |
| 100 | T      |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |  |
| 101 | D      | A      | T      | D,SD   | D,SD   | T      | A      | T      | A      | T       | A       | D,SD    | T       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T,SD    |         |  |
| 102 | A      | T      | D,SD   | A      | T      | D,SD   | D,SD   | T      | 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    |         |  |
| 103 | T      | D,SD   | A      | T      | D,SD   | D,SD   | T      | D,SD   | A      | D,SD    |         |  |
| 104 | D,SD   | A      | T      | D,SD   | A      | T      |        |        |        |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |  |
| 105 | A      | T      | D,SD   | A      | T      | D,SD   | D,SD   | D,SD   | D,SD   | D,SD    | T,SD    | D,SD    |         |  |
| 106 | T      | D,SD   | A      | T      | D,SD   | A      | T      | D,SD   | A      | T       | D,SD    | A       | T       | D,SD    | D,SD    | T       | D,SD    |  |
| 107 | D,SD   | A      | T      | D,SD   | A      | T      | A      | A      | T      | D       | A       | T       | A       | A       | T       | A       | A       | A       | A       | A       | T       | A       | A       | T       |         |         |  |
| 108 | A      | T      | D,SD   | D,SD   | T      | 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    | D,SD    | D,SD    |         |  |
| 109 | T      | T,SD   | A      | T      | D,SD   | A      | 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    | D,SD    |         |  |
| 110 | A      | A      | T      | D      | A      | D      | D      | D      | A      | T       | A       | A       | A       | T       | A       | A       | T       | A       | A       | T       | D       | D       | T       | D       |         |         |  |
| 111 | A      | T      | D,SD   | A      | T      | D,SD   | D,SD   | T      | 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,F     |  |

## **APPENDIX F SUMMARY OF BASKET USE BY TRAP 2019.**

Summary of the basket use by trap number for sets during the 2019 sablefish survey. Sets that did not retain sablefish are not listed. The set numbers highlighted in green indicate standardized sets at mainland inlet localities. All other sets are of the StRS type. 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, NA = No sablefish catch/Trap missing.

| Set | Trap.1 | Trap.2 | Trap.3 | Trap.4 | Trap.5 | Trap.6 | Trap.7 | Trap.8 | Trap.9 | Trap.10 | Trap.11 | Trap.12 | Trap.13 | Trap.14 | Trap.15 | Trap.16 | Trap.17 | Trap.18 | Trap.19 | Trap.20 | Trap.21 | Trap.22 | Trap.23 | Trap.24 | Trap.25 | Trap.26 |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1   | T      | D      | D,SD   | T      | D,SD   | A      | T      | D,SD   | D      | T       | D,SD    | A       | T       | D,SD    | D,SD    | T       | D,SD    | T       | D,SD    | D,F     | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |
| 2   | D      | A      | T      | A      | A      | T      | D      | A      | A      | T       | A       | T       | A       | A       | T       | A       | T       | A       | A       | T       | A       | A       | T       | D       | A       |         |
| 3   | A      | T      | A      | A      | A      | T      | A      | A      | T      | T       | A       | A       | A       | T       | A       | A       | T       | A       | A       | T       | A       | D       | T       | D       | D       |         |
| 4   | T      | A      | A      | T      | D      | A      | T      | D      | T      | D       | A       | T       | D       | A       | T       | D       | A       | T       | D       | A       | T       | D       | D       | T       | T       |         |
| 5   | D,SD   | D,SD   | T      | D,SD   | A      | T      | D,SD   | D,SD   | D      | D,SD    | T       | D,SD    | A       | T       | D,SD    | D,SD    | T       | D,SD    |         |
| 6   | AF     | T      | A      | T      | D      | D      | D      | T      | D,SD   | D       | T       | D       | D,SD    | T       | D       | A       | T       | D       | T       | A       | A       | T       | A       | D,SD    | A       |         |
| 7   | T      | D,F    | D,F    | D,F    | D,F    | A      | T      | D,SD   | D,SD   | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T       | D,SD    | D,SD    | T       | D,SD    | A       |
| 8   | D      | A      | T      | D      | S,D    | A      | T      | D      | AF     | T       | D       | T       | D       | A       | T       | D,SD    | D       | T       | D,SD    | D       | T       | D,SD    | D       | D,SD    | D,SD    |         |
| 9   | A      | T      | D,SD   | D,SD   | T      | D,SD   | T      | T      | D,SD   | D,SD    | T       | D,SD    | D,SD    | T       | D,SD    | A       | T       | D,SD    | T       | D,SD    | D       | T       | D,SD    | D,SD    | D,SD    |         |
| 10  | T      | D,SD   | D,SD   | T      | D,SD   | A      | T      | D,SD   | A      | T       | D,SD    | D,SD    | T       | D,SD    | A       | D,SD    |         |
| 11  | D      | A      | T      | D      | A      | D      | A      | T      | D      | A       | T       | D       | A       | T       | D       | A       | T       | D       | A       | T       | D       | A       | T       | D,SD    | T       |         |
| 12  | A      | T      | D      | A      | T      | D      | T      | T      | A      | T       | A       | A       | A       | A       | A       | A       | A       | T       | A       | A       | T       | A       | T       | A       | A       |         |
| 13  | T      | D,SD   | D,SD   | D,SD   | D,SD   | A      | D,SD   | D,SD   | D,SD   | T,F     | D,SD    | D,SD    | D,SD    | T,SD    | T,SD    | D,SD    | D,SD    | D,SD    | A       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |
| 14  | D,SD   | D,SD   | T      | D,SD   | A      | T      | D,SD   | D,SD   | T      | D,SD    | D,SD    | T       | D,SD    | A       | T       | D,SD    | A       | T       | D,SD    | T       | D,SD    | A       | T       | D,SD    |         |         |
| 15  | D,SD   | T      | D,SD   | T      | T      | D,SD   | D,SD   | T      | D,SD   | D,SD    | T,SD    | D,SD    | D,SD    | T       | D,SD    | T,SD    | D,SD    | D,SD    | A       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |
| 16  | T      | T,SD   | D,SD   | T,SD   | D,SD   | A      | T      | D,SD   | D,SD   | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T,SD    | D,SD    | D,SD    | T,SD    | A       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |
| 17  | D,SD   | D,SD   | T      | D,SD   | D,F    | D,F    | D,SD   | D,SD   | A      | T       | T,SD    | D,SD    | D,SD    | A       | T       | D,SD    | D,SD    | D,SD    | F       | D       | D,SD    | D       | D,SD    | D,SD    |         |         |
| 18  | D,SD   | T      | 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    | AF      | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |
| 19  | T      | D,F    | D,F    | T      | D,SD   | AF     | D,F    | T,F    | D,F    | D,F     | D,F     | D,SD    | T,F     | D,F     | D,F     | D,SD    | D,SD    |         |         |
| 20  | D      | A      | T      | D      | D      | T      | D      | A      | D      | D,SD    | T       | D,SD    | D,SD    | T       | D,SD    | T       | D,SD    |         |         |
| 21  | D,F    | T      | D,F    | A      | T,F    | F,D    | D,SD   | D,SD   | D,SD   | D,SD    | T,F     | D,SD    | AF      | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |
| 22  | T      | D,SD   | A      | T      | D,SD   | D,SD   | T      | D,SD   | D,SD   | T       | D,SD    | D,SD    | T       | D,SD    | A       | D,SD    | D,SD    | T       | D,SD    | D,SD    | D,SD    | D,SD    | T,SD    | A       | D,SD    |         |
| 23  | D,SD   | A      | T      | D,SD   | T      | D,SD   | D,SD   | T      | D,SD   | D,SD    | T       | D,SD    | D,SD    | A       | D,SD    | D,SD    | A       | D,SD    | A       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |         |
| 24  | D,F    | T,F    | D,SD   | A      | T      | D      | D,SD   | T      | D      | D,SD    | T       | D       | D       | T       | D,SD    | A       | T       | D,SD    | A       | T       | D,SD    | D,SD    | T       | D,SD    | D,SD    |         |
| 25  | D,F    | T,F    | A      | D,SD   | T      | D,SD   | A      | T      | D      | D,SD    | T       | D       | D       | T       | D,SD    | A       | T       | D,SD    | A       | T       | D,SD    | D,SD    | T       | D,SD    | D,SD    |         |
| 26  | D,SD   | D,SD   | T      | D,SD   | A      | D,SD   | D,SD   | D,SD   | D,SD   | T       | D,SD    | A       | D,SD    | D,SD    | D,SD    | T,SD    | D,SD    |         |         |
| 27  | D,SD   | T      | D      | A      | T      | D,SD   | D,SD   | T      | D,SD   | A       | T       | D,SD    | D,SD    | T       | D,SD    | A       | T       | D,SD    | T       | D,SD    | A       | D,SD    | D,SD    | D,SD    |         |         |
| 28  | T      | D,SD   | A      | T,F    | D,SD   | T      | T      | T,SD   | D,SD   | T       | D,SD    | AF      | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |
| 29  | D      | A      | T,F    | A      | T      | AF     | D,S,D  | D,SD   | T      | D,F     | A       | T       | D,F     | D,F     | T,F     | D,F     | D,F     | T,F     | D,F     | D,SD    | T,F     | D,F     | T       | D       |         |         |
| 30  | D,F    | T,F    | AF     | T,F    | D,SD   | D,F    | T,F    | D,F    | T,F    | D,SD    | A       | D,SD    | A       | T,F     | D,F     | T,F     | AF      | AF      |         |         |
| 31  | T      | T      | A      | D,SD   | A      | T      | A      | A      | A      | T       | A       | A       | A       | T       | A       | T       | T       | A       | A       | D,SD    | A       | T       | D,SD    | D,SD    | T       |         |
| 32  | D      | A      | T      | D      | A      | A      | T      | D      | A      | A       | T       | T       | A       | A       | T       | T       | A       | T       | D       | D       | T       | D       | D       | T       | D       |         |
| 33  | D,SD   | T,SD   | D,F    | AF     | T,F    | D,F    | D,F    | D,SD   | T      | D,SD    | A       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |         |
| 34  | T      | D,SD   | D,SD   | D,SD   | D,SD   | AF     | T      | D,SD   | D,SD   | D,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    | D,SD    |         |         |
| 35  | T      | D,SD   | A      | T      | D,SD   | A      | T      | A      | T      | D,SD    | A       | T       | D,SD    | A       | T       | D,SD    | A       | T       | D,SD    | T       | D,SD    | A       | D,SD    | D,SD    |         |         |
| 36  | D,SD   | T      | D,SD   | A      | T      | D,SD   | D      | T      | D,F    | A       | T       | D,SD    | D,F     | T,F     | D,SD    | D,SD    | D,SD    | A       | D,SD    | D,F     | D,SD    | D,F     | D,SD    | D,SD    |         |         |
| 37  | T      | D,SD   | D,SD   | T      | D,SD   | A      | T      | D,SD   | D,SD   | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | A       | T       | T       | A       | A       | A       | A       | A       |         |
| 38  | D      | A      | T      | T      | A      | A      | A      | A      | A      | A       | A       | A       | A       | A       | A       | A       | A       | A       | A       | A       | A       | A       | A       | A       | A       |         |
| 39  | A      | T,F    | D,SD   | D,SD   | T      | D,SD   | D,SD   | T      | D,F    | T,SD    | T,F     | D,SD    | D,SD    | D,F     | D,F     | AF      | D,F     | D,F     | D,SD    |         |
| 40  | T      | D,SD   | A      | T      | D,SD   | D,SD   | T      | D,SD   | T      | D,SD    | T,SD    | A       | T       | D,SD    | T,SD    | D,SD    |         |
| 41  | D,SD   | D,F    | T,F    | D,S,D  | A      | D,SD   | D,SD   | D,SD   | T      | D,SD    | D,SD    | T       | D,SD    |         |         |
| 42  | A      | T      | T,SD   | A      | T      | D,SD   | D,SD   | T      | D,SD   | D,SD    | D,SD    | T       | D,SD    | D,SD    | T       | D,SD    | T       | D,SD    | T       | D,SD    | T       | D,SD    | D,SD    | D,SD    |         |         |
| 43  | T      | D,SD   | A      | T,F    | D,SD   | D,SD   | T      | D,SD   | D,SD   | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | AF      | T       | D,SD    |         |         |
| 44  | D,SD   | A      | T      | D,SD   | D,SD   | T      | D,SD   | T,SD   | T      | D,SD    | A       | T       | D,SD    | A       | T       | D,SD    | D,SD    | T       | D,SD    | D,SD    | D,SD    | T       | D,SD    | D,SD    |         |         |
| 45  | A      | T      | D      | D,SD   | T      | D      | A      | T      | D,SD   | A       | T,F     | D,SD    | A       | T       | A       | T       | D,SD    | D,SD    | T       | D       | D,SD    | T       | D       | D,SD    |         |         |
| 46  | T      | D      | A      | T      | D      | A      | T      | D      | S,D    | A       | T       | D       | A       | T,F     | D,SD    | A       | T       | D,SD    | A       | T       | D       | T,SD    | T       | T       | T,F     |         |
| 47  | D,SD   | A      | T      | D,SD   | T,SD   | D,SD   | D,SD   | T      | D,SD   | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | A       | T       | D,SD    |         |         |
| 48  | A      | T      | D,F    | D,SD   | T      | D,SD   | D,SD   | D,SD   | D,SD   | D,SD    | 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    |         |         |
| 49  | T,F    | D,SD   | AF     | D,F    | D,F    | D,F    | D,F    | D,F    | D,F    | T       | D,F     | D,F     | D,F     | D,F     | D,F     | AF      | D,F     |         |         |
| 50  | D      | A      | A      | T      | A      | A      | A      | T      | D      | D,SD    | T       | D       | D       | T       | D       | D       | A       | D,SD    | D       | D,SD    | T       | A       | T       | D,SD    |         |         |
| 51  | A      | T      | D,SD   | D,SD   | T      | D,SD   | D,SD   | T      | D,SD   | D,SD    | D,SD    | A       | T       | D,SD    |         |         |
| 52  | T      | D,SD   |        |        |        | A      | A      | A      | A      | A       | A       | A       | A       | A       | A       | A       | A       | T       | A       | T       | T       | A       | T       | D,SD    |         |         |
| 53  |        |        |        |        |        | A      | A      | A      | A      | A       | A       | A       | A       | A       | A       | A       | A       | T       | A       | T       | T       | A       | T       | D,SD    |         |         |
| 54  | A      | T      | D,SD   | A      | T      | D,SD   | A      | T      | D,SD   | D,SD    | D,SD    | T       | D,SD    | D,SD    | T       | D,SD    | A       | T       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T,SD    |         |         |
| 55  | T      | D,SD   | A      | T      | D,SD   | A      | T      | D,SD   | D,SD   | 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    |         |         |

continued

| Set | Trap.1 | Trap.2 | Trap.3 | Trap.4 | Trap.5 | Trap.6 | Trap.7 | Trap.8 | Trap.9 | Trap.10 | Trap.11 | Trap.12 | Trap.13 | Trap.14 | Trap.15 | Trap.16 | Trap.17 | Trap.18 | Trap.19 | Trap.20 | Trap.21 | Trap.22 | Trap.23 | Trap.24 | Trap.25 | Trap.26 |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 56  | D,SD   | A      | T      | D,SD   | D,SD   | T      | D,SD   | T      | D,SD   | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T       | A       | T       | A       | T,SD    | T       | A       | T       | T,SD    | T       | T       |         |
| 57  | A      | D,SD   | A      | T      | D,SD   | D,SD   | T      | D,SD   | D,SD   | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | A       | T       | D,SD    | D,SD    | A       | T       | A       | A       | A       | T       | T       |         |
| 58  | T      | D,SD   | A      | T      | D,SD   | A      | T      | T,SD   | D,SD   | T       | D,SD    | D,SD    | D,SD    | T,SD    | D,SD    | A       | T       | D,F     | D,SD    | D,SD    | D,SD    | T,F     | D,SD    | D,SD    | D,SD    |         |
| 59  | D,SD   | A      | T      | T      | D,SD   | A      | T      | A      | T      | D,SD    | D,SD    | D,SD    | D,SD    | T,SD    | D,SD    | T       | D,SD    | A       | T       | D,SD    | A       | T       | T,SD    | D,SD    | D,SD    |         |
| 60  | A      | T      | T      | A      | T      | D,SD   | D,SD   | D,SD   | D,SD   | T       | D,SD    | D,SD    | D,SD    | A       | T       | D,SD    | A       | T       | D,SD    | D,SD    | T       | D       | A       | A       |         |         |
| 61  | T      | D,F    | A      | T,F    | D,SD   | D,F    | D,SD   | D,SD   | D,SD   | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | A       | F       | D,SD    | A       | D,F     | D,SD    | D,F     | D,SD    | D,SD    | D,SD    | D,SD    |         |
| 62  | D,SD   | T      | T      | T      | D      | T      | D      | T      | A      | A       | A       | A       | A       | A       | T       | A       | T       | D,F     | D,SD    | T,F     | D,SD    | D,SD    | D,SD    | D,SD    | A       |         |
| 63  | A      | T,F    | D,F    | D,F    | D,F    | D,SD   | D,F    | D,F    | D,F    | A       | D,F     | D,SD    | D,F     | T,F     | D,F     | D,F     | D,F     | D,SD    |         |
| 64  | T      | D,SD   | A      | T      | D,SD   | A      | T      | D,SD   | D,SD   | D,SD    | D,SD    | D,SD    | D,SD    | T       | D,SD    | D,SD    | T       | D,SD    | A       | D,SD    |
| 65  | D,SD   | A      | T      | D,SD   | D,SD   | T      | D,SD   | D,SD   | T      | D,SD    | A       | T       | D,SD    | T       | D       | A       | T       | D,SD    | A       | D       | A       | T       | D       | A       | T       |         |
| 66  | A      | T      | A      | A      | A      | D,SD   | A      | T      | D,SD   | D,SD    | T       | D       | D,SD    | T       | T       | A       | D       | T       | A       | A       | A       | T       | D,SD    | T       | T       |         |
| 67  | T      | D      | A      | T      | D,SD   | D,SD   | D,SD   | D,SD   | D,SD   | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T       | D,SD    | D,SD    | D,SD    | A       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |
| 68  | D,SD   | A      | T      | A      | A      | T      | D      | A      | D,SD   | A       | T       | A       | T       | A       | A       | AF      | A       | A       | A       | T       | A       | A       | T       | A       | T       |         |
| 69  | A      | T      | T      | D,F    | T      | D,SD   | T      | D,SD   | D,SD   | T       | D,SD    | D,SD    | T       | D,SD    | A       | T       | A       | A       | A       | T       | A       | T,F     | A       | A       | A       |         |
| 70  | D,SD   | D,SD   | A      | T      | D,SD   | D,SD   | D,SD   | T      | D,SD   | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | A       | T       | A       | A       | D,F     | D,SD    | D,F     | D,SD    | D,SD    | D,SD    |         |
| 71  | T      | T      | T      | A      | T      | A      | T      | A      | T      | A       | A       | A       | A       | A       | A       | A       | A       | A       | A       | A       | A       | A       | T       | T       | T       |         |
| 72  | D,SD   | T      | D,SD   | A      | 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    | T       | D,F     | A       | D,SD    | D,SD    | D,F     | T       | D,SD    |         |
| 73  | T      | A      | A      | T      | D,SD   | D      | T      | D,SD   | D,SD   | T       | D,SD    | D,SD    | D,SD    | T       | D,SD    | D,SD    | T       | D,SD    | A       | T       | D,SD    | A       | D,SD    | D,SD    | D,SD    |         |
| 74  | D,SD   | A      | T      | D,SD   | D,SD   | T      | D,SD   | T      | D,SD   | D,SD    | D,SD    | D,SD    | D,SD    | T       | D,SD    | A       | T       | D,SD    | D,SD    | A       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |
| 75  | D,SD   | D,SD   | D,SD   | D,SD   | T,SD   | D,SD   | D,SD   | A      | T      | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T,SD    | A       | D,SD    |         |
| 76  | T      | D,SD   | A      | T      | T,SD   | D,SD   | T      | D,SD   | T      | D,SD    | D,SD    | D,SD    | T       | D,SD    | D,SD    | T       | D,SD    | A       | T       | D,SD    | T       | D,SD    | A       | D,SD    | D,SD    |         |
| 77  | D,F    | D,SD   | D,F    | D,SD   | D,F    | D,SD   | D,F    | A      | D,F    | D,SD    | T,SD    | D,F     |         |
| 78  | A      | T      | D,SD   | D,SD   | D,SD   | T,SD   | T,SD   | D,SD   | D,SD   | D,SD    | T       | T,SD    | A       | T       | D,SD    | D,SD    | T       | D,SD    | A       | T       | D,SD    | A       | T,SD    | T,SD    | T,SD    |         |
| 79  | T      | D,SD   | A      | D,SD   | 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    | T,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |
| 80  | D,SD   | A      | T      | D,SD   | D,SD   | T      | D,SD   | A      | T      | D,SD    | A       | T       | D,SD    | D,SD    | T       | D       | D       | T       | D,SD    | T       | D       | T       | D       | D,SD    | D,SD    |         |
| 81  | T      | D,SD   | A      | T      | A      | D,SD   | T      | A      | A      | T       | D,SD    | A       | T       | A       | T       | A       | T       | A       | T       | T       | D,SD    | A       | T       | D,SD    | D,SD    |         |
| 82  | T      | D,SD   | A      | T      | D,SD   | A      | T      | D,SD   | T      | D,SD    | D,SD    | T       | D,SD    | T       | D,SD    | T       | T       | D,SD    | D,SD    | T       | T,SD    | D,SD    | T       | D,SD    | T       |         |
| 83  | D,SD   | A      | T      | D,SD   | A      | T      | D,SD   | D,SD   | T      | D,SD    | A       | T       | A       | T       | D,SD    | A       | T       | D,SD    | A       | T       | D,SD    | D,SD    | T       | T,SD    | T,SD    |         |
| 84  | A      | T      | D,SD   | A      | T      | T,SD   | D,SD   | T      | D,SD   | D,SD    | T       | D,SD    | A       | D       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |
| 85  | T      | D,SD   | A      | T      | D,SD   | A      | D,SD   | D,SD   | D,SD   | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T,SD    | D,SD    |         |
| 86  | A      | T      | D      | D      | T      | D      | A      | D,SD   | A      | T       | A       | T       | D,SD    | D,SD    | A       | T       | D       | A       | D       | A       | A       | A       | A       | A       | A       |         |
| 87  | T      | D,SD   | A      | T      | D,SD   | A      | A      | A      | A      | A       | A       | A       | A       | A       | A       | A       | A       | A       | A       | A       | T       | A       | D,SD    | T       | D       |         |
| 88  | T      | D,SD   | A      | A      | T      | A      | A      | A      | T      | A       | A       | T       | A       | A       | A       | T       | A       | A       | A       | A       | A       | A       | A       | A       | T       |         |
| 89  | D,SD   | A      | T      | D,SD   | A      | T      | D,SD   | A      | T      | D,SD    | D,SD    | T       | D,SD    | A       | T       | D,SD    | T       | D,SD    | D,SD    | T       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |
| 90  | A      | T      | D,SD   | A      | T      | A      | T      | D      | D,SD   | T       | D,SD    | D,SD    | T       | D,SD    | D,SD    | T       | D,SD    | T       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T       | D,SD    |         |
| 91  | T      | D,SD   | A      | D,SD   | T      | T      | D,SD   | T      | D,SD   | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | A       | D,SD    |         |
| 92  | D,SD   | A      | T      | D,SD   | D,SD   | T      | D,SD   | A      | T      | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T,SD    | D,SD    |         |
| 93  | A      | T      | D,SD   | D,SD   | T      | D,SD   | D,SD   | T      | D,SD   | A       | D,SD    |         |         |
| 94  | T      | D,SD   | A      | T      | D,SD   | D,SD   | D,SD   | D,SD   | D,SD   | T       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T       | D,SD    | A       | D,SD    | T,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |
| 95  | D,SD   | A      | T      | D,SD   | D,SD   | T      | 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    | D,SD    |         |
| 96  | A      | T      | D,SD   | A      | D,SD   | D,SD   | D,SD   | T      | D,SD   | T       | D,SD    | T       | D,SD    | T       | D,SD    | D,SD    | D,SD    | T,SD    | D,SD    | D,SD    | T,SD    | D,SD    | T,SD    | T,SD    | D,SD    |         |
| 97  | 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    | T       | D,SD    | A       | D,SD    |         |
| 98  | D,SD   | A      | T      | D,SD   | D,SD   | T      | D,SD   | D,SD   | T      | D,SD    | T       | D,SD    | D,SD    | D,SD    | D,SD    | A       | D,SD    | D,SD    | T,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |
| 99  | A      | T      | D,SD   | A      | T      | D,SD   | T,SD   | T,SD   | D,SD   | T,SD    | T       | D,SD    | T,SD    | D,SD    | T,SD    | D,SD    | D,SD    |         |
| 100 | T      | D,SD   | A      | T      | D,SD   | D,SD   | D,SD   | T,SD   | T,SD   | T       | D,SD    | D,SD    | T       | D,SD    | A       | D,SD    | A       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T,SD    | D,SD    |         |
| 101 | T,SD   | A      | T      | D,SD   | D,SD   | T      | D,SD   | T,SD   | D,SD   | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T       | T       | D,SD    | D,SD    | D,SD    | D,SD    | T       | D,SD    | T,SD    | D,SD    |         |
| 102 | T      | T      | D,SD   | D,SD   | T      | T,SD   | T      | D,SD   | D,SD   | D,SD    | T       | D,SD    | D,SD    | T       | T,SD    | T,SD    | T,SD    | D,SD    |         |
| 103 | T      | T      | A      | T      | D,SD   | A      | T      | D,SD   | D,SD   | T,SD    | T       | D,SD    | T       | D,SD    | T       | T,SD    | D,SD    | D,SD    | F       | T,SD    | D,SD    | D,SD    | T       | D,SD    | D,SD    |         |
| 104 | D,F    | A      | T,F    | D,SD   | D,SD   | D,SD   | A      | T,F    | T,SD   | D,SD    | T       | D,SD    | D,SD    | T       | D,SD    | D,SD    | T       | T,SD    | T       | D,SD    | D,SD    | D,SD    | T       | D,SD    | D,SD    |         |
| 105 | A      | A      | A      | T      | D      | D,SD   | T      | A      | T,SD   | T       | A       | T       | D,SD    | D,SD    | D,SD    | A       | D,SD    | A       | D,SD    | A       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |
| 106 | T      | D,SD   | A      | T,SD   | D,SD   | D,SD   | T      | D      | D,SD   | T       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T       | D,SD    |         |
| 107 | D      | A      | T      | D      | A      | T      | D      | T      | D,SD   | A       | T       | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |
| 108 | A      | T      | D,SD   | D,SD   | T      | D,SD   | D,SD   | T      | T,SD   | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    | T       | D,SD    | T       | T,SD    | D,SD    |         |
| 109 | T      | D,SD   | A      | D,SD   | D,SD   | A      | T      | D,SD   | T      | D,SD    | A       | D,SD    | T       | D,SD    | A       | D,SD    | A       | D,SD    | T,SD    | A,SD    | D,SD    | D,SD    | D,SD    | D,SD    | D,SD    |         |

**APPENDIX G SUMMARY OF SABLEFISH BIOLOGICAL DATA 2018 BY SET.**

| Set | Total Catch |       |                   | Tagged Fish Counts |          |       | Tagged Fork Lengths(mm) |             |     | Specimen Count |          |        |       |                  | Mean Fork Length(mm) |         |  |
|-----|-------------|-------|-------------------|--------------------|----------|-------|-------------------------|-------------|-----|----------------|----------|--------|-------|------------------|----------------------|---------|--|
|     | kg          | Count | Recover-Rerelease | Deceased           | Released | Count | Mean                    | Fork Length | Sex | Maturity       | Otoliths | Weight | Count | Proportion Males | Males                | Females |  |
| 1   | 286         | 90    | 1                 | 0                  | 27       | 28    | 629                     | 48          | 48  | 48             | 46       | 48     | 48    | 0.06             | 562                  | 642     |  |
| 2   | 477         | 222   | 0                 | 0                  | 70       | 70    | 568                     | 52          | 52  | 51             | 48       | 52     | 52    | 0.35             | 558                  | 582     |  |
| 3   | 581         | 243   | 2                 | 0                  | 103      | 105   | 589                     | 47          | 47  | 47             | 47       | 47     | 47    | 0.60             | 585                  | 629     |  |
| 4   | 1776        | 659   | 1                 | 0                  | 130      | 131   | 620                     | 63          | 63  | 63             | 63       | 63     | 63    | 0.71             | 585                  | 633     |  |
| 5   | 1371        | 575   | 2                 | 0                  | 129      | 131   | 573                     | 63          | 63  | 63             | 62       | 63     | 63    | 0.76             | 588                  | 597     |  |
| 6   | 2917        | 981   | 2                 | 0                  | 120      | 122   | 634                     | 45          | 45  | 45             | 45       | 45     | 45    | 0.44             | 594                  | 660     |  |
| 7   | 1135        | 439   | 0                 | 0                  | 140      | 138   | 601                     | 68          | 68  | 68             | 68       | 68     | 68    | 0.35             | 566                  | 636     |  |
| 8   | 1348        | 528   | 0                 | 1                  | 137      | 138   | 594                     | 54          | 54  | 54             | 54       | 54     | 54    | 0.70             | 603                  | 648     |  |
| 9   | 1734        | 791   | 3                 | 0                  | 144      | 147   | 588                     | 69          | 67  | 66             | 67       | 67     | 69    | 0.67             | 583                  | 604     |  |
| 10  | 2292        | 1201  | 3                 | 0                  | 117      | 120   | 563                     | 62          | 62  | 62             | 62       | 62     | 62    | 0.69             | 550                  | 538     |  |
| 11  | 75          | 18    | 0                 | 0                  | 10       | 10    | 693                     | 8           | 8   | 8              | 8        | 8      | 8     | 0.00             | 0                    | 691     |  |
| 12  | 1947        | 1151  | 3                 | 0                  | 137      | 140   | 524                     | 54          | 54  | 54             | 54       | 54     | 54    | 0.74             | 547                  | 607     |  |
| 13  | 2566        | 1514  | 1                 | 0                  | 183      | 184   | 544                     | 51          | 50  | 50             | 50       | 50     | 51    | 0.74             | 548                  | 578     |  |
| 14  | 1182        | 588   | 4                 | 0                  | 171      | 175   | 567                     | 62          | 62  | 62             | 62       | 62     | 62    | 0.55             | 553                  | 595     |  |
| 15  | 1648        | 725   | 1                 | 0                  | 136      | 137   | 582                     | 57          | 56  | 56             | 56       | 56     | 57    | 0.57             | 562                  | 589     |  |
| 16  | 2446        | 874   | 1                 | 0                  | 118      | 119   | 623                     | 47          | 47  | 47             | 47       | 47     | 47    | 0.15             | 589                  | 658     |  |
| 17  | 1483        | 674   | 6                 | 0                  | 125      | 131   | 566                     | 58          | 58  | 58             | 58       | 58     | 58    | 0.78             | 564                  | 610     |  |
| 18  | 839         | 318   | 4                 | 0                  | 88       | 92    | 610                     | 53          | 50  | 50             | 50       | 50     | 53    | 0.38             | 596                  | 627     |  |
| 19  | 1252        | 473   | 1                 | 0                  | 130      | 131   | 606                     | 50          | 50  | 50             | 49       | 50     | 50    | 0.20             | 560                  | 635     |  |
| 20  | 1842        | 848   | 3                 | 0                  | 136      | 139   | 570                     | 50          | 48  | 48             | 48       | 48     | 50    | 0.58             | 560                  | 640     |  |
| 21  | 893         | 445   | 0                 | 0                  | 125      | 125   | 562                     | 55          | 53  | 53             | 53       | 53     | 55    | 0.25             | 549                  | 599     |  |
| 22  | 715         | 249   | 1                 | 0                  | 87       | 88    | 622                     | 60          | 60  | 60             | 60       | 60     | 60    | 0.12             | 549                  | 638     |  |
| 23  | 1525        | 840   | 1                 | 1                  | 117      | 119   | 541                     | 80          | 72  | 71             | 71       | 71     | 81    | 0.57             | 517                  | 579     |  |
| 24  | 1852        | 1013  | 0                 | 0                  | 158      | 158   | 547                     | 61          | 57  | 57             | 57       | 57     | 61    | 0.65             | 538                  | 567     |  |
| 25  | 2650        | 1173  | 3                 | 0                  | 132      | 135   | 577                     | 55          | 55  | 55             | 52       | 55     | 56    | 0.69             | 577                  | 613     |  |
| 26  | 889         | 383   | 2                 | 0                  | 102      | 104   | 569                     | 61          | 61  | 61             | 61       | 61     | 61    | 0.46             | 542                  | 623     |  |
| 27  | 950         | 309   | 1                 | 0                  | 94       | 95    | 628                     | 57          | 57  | 57             | 57       | 57     | 57    | 0.09             | 563                  | 676     |  |
| 28  | 1731        | 556   | 2                 | 0                  | 114      | 116   | 608                     | 55          | 53  | 53             | 53       | 53     | 55    | 0.47             | 594                  | 690     |  |
| 29  | 788         | 236   | 1                 | 0                  | 82       | 83    | 652                     | 55          | 50  | 50             | 50       | 50     | 55    | 0.40             | 627                  | 703     |  |
| 30  | 523         | 145   | 0                 | 0                  | 55       | 55    | 661                     | 53          | 50  | 50             | 50       | 50     | 53    | 0.18             | 618                  | 686     |  |
| 31  | 704         | 245   | 0                 | 0                  | 102      | 102   | 625                     | 54          | 52  | 52             | 52       | 52     | 54    | 0.27             | 578                  | 649     |  |
| 32  | 425         | 181   | 1                 | 0                  | 41       | 42    | 581                     | 47          | 47  | 47             | 47       | 47     | 47    | 0.49             | 552                  | 592     |  |
| 33  | 293         | 111   | 1                 | 0                  | 27       | 28    | 561                     | 39          | 38  | 38             | 38       | 38     | 39    | 0.18             | 569                  | 598     |  |
| 34  | 1316        | 473   | 2                 | 0                  | 147      | 149   | 596                     | 47          | 46  | 46             | 45       | 46     | 47    | 0.22             | 501                  | 595     |  |
| 35  | 986         | 271   | 2                 | 0                  | 84       | 86    | 640                     | 58          | 58  | 58             | 58       | 58     | 58    | 0.26             | 637                  | 672     |  |
| 36  | 1349        | 484   | 1                 | 0                  | 125      | 126   | 622                     | 66          | 66  | 66             | 66       | 66     | 66    | 0.53             | 592                  | 645     |  |
| 37  | 1268        | 406   | 3                 | 0                  | 121      | 124   | 631                     | 47          | 45  | 45             | 45       | 45     | 47    | 0.24             | 615                  | 656     |  |
| 38  | 357         | 213   | 2                 | 0                  | 81       | 83    | 529                     | 45          | 45  | 45             | 45       | 45     | 45    | 0.27             | 472                  | 534     |  |
| 39  | 286         | 182   | 8                 | 0                  | 48       | 56    | 537                     | 56          | 56  | 56             | 56       | 56     | 56    | 0.32             | 484                  | 534     |  |
| 40  | 341         | 215   | 3                 | 0                  | 80       | 83    | 511                     | 57          | 57  | 57             | 57       | 57     | 57    | 0.33             | 464                  | 543     |  |
| 41  | 677         | 398   | 1                 | 0                  | 100      | 101   | 537                     | 54          | 54  | 54             | 53       | 54     | 54    | 0.31             | 504                  | 544     |  |

continued.

| Set | Total Catch |       | Tagged Fish Counts |          |          | Tagged Fork Lengths(mm) |      | Specimen Count |     |          |          |        | Mean Fork Length(mm) |                  |       |         |
|-----|-------------|-------|--------------------|----------|----------|-------------------------|------|----------------|-----|----------|----------|--------|----------------------|------------------|-------|---------|
|     | kg          | Count | Recover-Rerelease  | Deceased | Released | Count                   | Mean | Fork Length    | Sex | Maturity | Otoliths | Weight | Count                | Proportion Males | Males | Females |
| 42  | 824         | 576   | 0                  | 0        | 148      | 148                     | 507  | 53             | 53  | 53       | 53       | 53     | 53                   | 0.43             | 503   | 543     |
| 43  | 1118        | 530   | 8                  | 0        | 128      | 135                     | 581  | 52             | 52  | 52       | 52       | 52     | 52                   | 0.23             | 512   | 565     |
| 44  | 1412        | 835   | 8                  | 0        | 143      | 150                     | 530  | 60             | 60  | 60       | 16       | 60     | 60                   | 0.37             | 519   | 558     |
| 45  | 1220        | 679   | 21                 | 0        | 108      | 129                     | 558  | 51             | 51  | 51       | 41       | 51     | 51                   | 0.31             | 514   | 571     |
| 46  | 1314        | 818   | 11                 | 0        | 144      | 155                     | 547  | 57             | 56  | 57       | 57       | 57     | 57                   | 0.64             | 522   | 540     |
| 47  | 1364        | 903   | 7                  | 0        | 163      | 170                     | 502  | 53             | 53  | 53       | 53       | 53     | 53                   | 0.53             | 511   | 560     |
| 48  | 1270        | 681   | 0                  | 0        | 137      | 137                     | 553  | 56             | 56  | 56       | 56       | 56     | 56                   | 0.18             | 527   | 575     |
| 49  | 651         | 398   | 2                  | 0        | 127      | 129                     | 537  | 53             | 53  | 53       | 53       | 53     | 53                   | 0.15             | 512   | 561     |
| 50  | 974         | 453   | 1                  | 0        | 122      | 122                     | 582  | 55             | 55  | 55       | 55       | 55     | 55                   | 0.22             | 528   | 599     |
| 51  | 882         | 581   | 3                  | 0        | 128      | 131                     | 519  | 55             | 55  | 55       | 55       | 55     | 55                   | 0.44             | 501   | 548     |
| 52  | 770         | 529   | 1                  | 0        | 122      | 123                     | 513  | 50             | 50  | 50       | 50       | 50     | 50                   | 0.30             | 504   | 535     |
| 53  | 943         | 556   | 0                  | 0        | 97       | 96                      | 539  | 61             | 61  | 61       | 61       | 61     | 61                   | 0.23             | 520   | 541     |
| 54  | 797         | 240   | 1                  | 0        | 58       | 59                      | 654  | 59             | 59  | 59       | 59       | 59     | 59                   | 0.29             | 623   | 690     |
| 55  | 197         | 49    | 0                  | 0        | 29       | 29                      | 709  | 15             | 15  | 15       | 15       | 15     | 15                   | 0.00             | 0     | 737     |
| 56  | 736         | 163   | 1                  | 0        | 60       | 61                      | 694  | 52             | 51  | 51       | 51       | 51     | 52                   | 0.18             | 572   | 724     |
| 57  | 1514        | 569   | 0                  | 0        | 125      | 125                     | 604  | 55             | 51  | 51       | 51       | 51     | 55                   | 0.49             | 589   | 653     |
| 58  | 1527        | 654   | 0                  | 0        | 135      | 135                     | 598  | 52             | 52  | 52       | 52       | 52     | 52                   | 0.63             | 584   | 618     |
| 59  | 379         | 111   | 1                  | 0        | 38       | 32                      | 648  | 46             | 46  | 45       | 46       | 46     | 46                   | 0.02             | 570   | 676     |
| 60  | 2057        | 824   | 2                  | 0        | 126      | 126                     | 614  | 54             | 54  | 54       | 54       | 54     | 54                   | 0.61             | 585   | 637     |
| 61  | 2042        | 1014  | 1                  | 0        | 149      | 150                     | 562  | 55             | 55  | 55       | 55       | 55     | 55                   | 0.80             | 555   | 620     |
| 62  | 1729        | 1054  | 5                  | 0        | 153      | 158                     | 528  | 66             | 55  | 55       | 55       | 55     | 69                   | 0.85             | 521   | 556     |
| 63  | 1529        | 725   | 5                  | 0        | 116      | 121                     | 571  | 66             | 58  | 58       | 58       | 58     | 66                   | 0.53             | 553   | 574     |
| 64  | 1561        | 725   | 10                 | 0        | 142      | 151                     | 584  | 55             | 53  | 53       | 53       | 53     | 55                   | 0.43             | 550   | 612     |
| 65  | 8           | 6     | 0                  | 0        | 2        | 2                       | 423  | 2              | 2   | 2        | 2        | 2      | 2                    | 1.00             | 530   | 0       |
| 66  | 1327        | 421   | 1                  | 0        | 118      | 119                     | 638  | 53             | 53  | 53       | 53       | 53     | 53                   | 0.32             | 597   | 623     |
| 67  | 1093        | 394   | 2                  | 0        | 122      | 123                     | 619  | 55             | 55  | 55       | 55       | 55     | 55                   | 0.22             | 598   | 614     |
| 68  | 1717        | 754   | 1                  | 0        | 146      | 147                     | 577  | 57             | 56  | 55       | 56       | 56     | 57                   | 0.68             | 579   | 631     |
| 69  | 921         | 485   | 1                  | 0        | 130      | 131                     | 560  | 60             | 60  | 60       | 60       | 60     | 60                   | 0.17             | 501   | 566     |
| 70  | 324         | 79    | 0                  | 0        | 33       | 33                      | 680  | 34             | 34  | 34       | 34       | 34     | 34                   | 0.00             | 0     | 708     |
| 71  | 248         | 60    | 1                  | 0        | 22       | 23                      | 707  | 37             | 37  | 37       | 37       | 37     | 37                   | 0.08             | 505   | 669     |
| 72  | 352         | 82    | 0                  | 0        | 37       | 37                      | 712  | 45             | 45  | 45       | 43       | 45     | 45                   | 0.31             | 637   | 709     |
| 73  | 103         | 21    | 0                  | 0        | 7        | 7                       | 754  | 15             | 15  | 15       | 14       | 15     | 15                   | 0.33             | 612   | 752     |
| 74  | 1771        | 866   | 4                  | 0        | 119      | 123                     | 530  | 53             | 53  | 53       | 53       | 53     | 53                   | 0.43             | 519   | 550     |
| 75  | 294         | 115   | 1                  | 0        | 41       | 42                      | 618  | 46             | 45  | 45       | 44       | 45     | 46                   | 0.76             | 612   | 691     |
| 76  | 878         | 464   | 5                  | 0        | 129      | 133                     | 559  | 57             | 57  | 56       | 53       | 57     | 57                   | 0.75             | 557   | 545     |
| 77  | 681         | 338   | 1                  | 1        | 94       | 96                      | 579  | 55             | 54  | 54       | 54       | 54     | 55                   | 0.85             | 553   | 628     |
| 78  | 1183        | 681   | 2                  | 0        | 113      | 115                     | 554  | 64             | 57  | 57       | 56       | 57     | 64                   | 0.77             | 528   | 537     |
| 80  | 743         | 243   | 0                  | 0        | 67       | 67                      | 662  | 54             | 54  | 54       | 54       | 54     | 54                   | 0.20             | 626   | 638     |
| 81  | 447         | 166   | 0                  | 0        | 58       | 58                      | 639  | 56             | 56  | 56       | 56       | 56     | 56                   | 0.79             | 599   | 665     |
| 82  | 2410        | 1727  | 0                  | 1        | 121      | 122                     | 520  | 61             | 46  | 46       | 46       | 46     | 61                   | 0.57             | 564   | 530     |

continued.

| Set   | Total Catch |       | Tagged Fish Counts |          |          | Tagged Fork Lengths(mm) |      | Specimen Count |      |          |          |        | Mean Fork Length(mm) |                  |       |         |
|-------|-------------|-------|--------------------|----------|----------|-------------------------|------|----------------|------|----------|----------|--------|----------------------|------------------|-------|---------|
|       | kg          | Count | Recover-Rerelease  | Deceased | Released | Count                   | Mean | Fork Length    | Sex  | Maturity | Otoliths | Weight | Count                | Proportion Males | Males | Females |
| 83    | 1669        | 888   | 0                  | 0        | 130      | 130                     | 566  | 56             | 56   | 56       | 56       | 56     | 56                   | 0.18             | 549   | 584     |
| 84    | 21          | 6     | 0                  | 0        | 1        | 1                       | 645  | 5              | 5    | 5        | 5        | 5      | 5                    | 0.00             | 0     | 717     |
| 85    | 301         | 105   | 1                  | 0        | 49       | 50                      | 658  | 31             | 31   | 31       | 31       | 31     | 31                   | 0.58             | 633   | 656     |
| 86    | 60          | 18    | 0                  | 0        | 1        | 1                       | 690  | 17             | 17   | 17       | 17       | 17     | 17                   | 0.24             | 688   | 677     |
| 87    | 108         | 30    | 0                  | 0        | 9        | 9                       | 682  | 20             | 21   | 21       | 21       | 21     | 21                   | 0.05             | 640   | 659     |
| 88    | 562         | 187   | 0                  | 0        | 59       | 59                      | 607  | 50             | 49   | 49       | 49       | 49     | 50                   | 0.14             | 570   | 587     |
| 89    | 874         | 445   | 4                  | 0        | 122      | 126                     | 556  | 53             | 53   | 53       | 53       | 53     | 53                   | 0.74             | 555   | 603     |
| 90    | 1057        | 578   | 6                  | 0        | 120      | 126                     | 540  | 50             | 50   | 50       | 50       | 50     | 50                   | 0.76             | 546   | 579     |
| 91    | 208         | 77    | 0                  | 0        | 23       | 23                      | 637  | 36             | 36   | 36       | 36       | 36     | 36                   | 0.64             | 589   | 624     |
| 92    | 750         | 399   | 1                  | 0        | 132      | 128                     | 555  | 57             | 57   | 57       | 57       | 57     | 57                   | 0.77             | 559   | 569     |
| 93    | 379         | 130   | 0                  | 0        | 46       | 46                      | 599  | 52             | 52   | 52       | 52       | 52     | 52                   | 0.19             | 584   | 625     |
| 94    | 2189        | 1859  | 0                  | 0        | 44       | 44                      | 504  | 222            | 50   | 50       | 50       | 50     | 222                  | 0.30             | 467   | 475     |
| 95    | 29          | 8     | 0                  | 0        | 3        | 3                       | 670  | 5              | 5    | 5        | 5        | 5      | 5                    | 0.00             | 0     | 656     |
| 96    | 1209        | 438   | 0                  | 0        | 134      | 134                     | 605  | 49             | 49   | 49       | 49       | 49     | 49                   | 0.31             | 598   | 603     |
| 97    | 478         | 214   | 1                  | 0        | 70       | 71                      | 591  | 36             | 36   | 36       | 36       | 36     | 36                   | 0.69             | 597   | 608     |
| 98    | 304         | 110   | 1                  | 0        | 26       | 27                      | 658  | 51             | 51   | 51       | 51       | 51     | 51                   | 0.57             | 614   | 656     |
| 99    | 1629        | 607   | 3                  | 0        | 137      | 140                     | 607  | 55             | 55   | 55       | 55       | 55     | 55                   | 0.15             | 560   | 624     |
| 100   | 1578        | 1019  | 3                  | 0        | 148      | 151                     | 527  | 56             | 56   | 56       | 56       | 56     | 56                   | 0.36             | 528   | 536     |
| 101   | 454         | 329   | 0                  | 0        | 87       | 87                      | 500  | 53             | 53   | 53       | 53       | 53     | 53                   | 0.38             | 516   | 545     |
| 102   | 982         | 569   | 0                  | 0        | 139      | 139                     | 545  | 52             | 52   | 52       | 52       | 52     | 52                   | 0.33             | 526   | 549     |
| 103   | 1806        | 1092  | 0                  | 0        | 135      | 135                     | 536  | 55             | 55   | 55       | 55       | 55     | 55                   | 0.25             | 530   | 563     |
| 104   | 520         | 125   | 0                  | 0        | 31       | 31                      | 684  | 51             | 51   | 51       | 51       | 51     | 51                   | 0.35             | 642   | 697     |
| 105   | 1859        | 943   | 1                  | 0        | 141      | 142                     | 509  | 53             | 53   | 53       | 53       | 53     | 53                   | 0.38             | 575   | 569     |
| 106   | 894         | 449   | 0                  | 0        | 115      | 115                     | 567  | 59             | 59   | 59       | 59       | 59     | 59                   | 0.69             | 555   | 592     |
| 107   | 401         | 124   | 1                  | 0        | 43       | 44                      | 659  | 38             | 38   | 38       | 38       | 38     | 38                   | 0.50             | 643   | 674     |
| 108   | 2798        | 2103  | 2                  | 1        | 117      | 120                     | 539  | 58             | 58   | 57       | 57       | 58     | 59                   | 0.67             | 584   | 555     |
| 109   | 3470        | 2810  | 3                  | 0        | 127      | 130                     | 548  | 52             | 52   | 52       | 52       | 52     | 52                   | 0.56             | 528   | 531     |
| 110   | 276         | 81    | 1                  | 0        | 16       | 17                      | 638  | 50             | 50   | 45       | 50       | 50     | 50                   | 0.06             | 605   | 666     |
| 111   | 1268        | 663   | 0                  | 0        | 122      | 122                     | 540  | 54             | 54   | 54       | 54       | 54     | 54                   | 0.50             | 539   | 549     |
| Total | 119158      | 58415 | 208                | 5        | 10757    | 10947                   |      | 5734           | 5471 | 5465     | 5371     | 5471   | 5741                 |                  |       |         |

**APPENDIX H SUMMARY OF SABLEFISH BIOLOGICAL DATA 2019 BY SET.**

| Set | Total Catch |       | Tagged Fish Counts |          |          | Tagged Fork Lengths(mm) |      |             | Specimen Count |          |          |        |       |                  | Mean Fork Length(mm) |         |  |
|-----|-------------|-------|--------------------|----------|----------|-------------------------|------|-------------|----------------|----------|----------|--------|-------|------------------|----------------------|---------|--|
|     | kg          | Count | Recover-Rerelease  | Deceased | Released | Count                   | Mean | Fork Length | Sex            | Maturity | Otoliths | Weight | Count | Proportion Males | Males                | Females |  |
| 1   | 675         | 418   | 0                  | 0        | 123      | 123                     | 531  | 55          | 55             | 55       | 55       | 55     | 55    | 0.55             | 504                  | 568     |  |
| 2   | 327         | 75    | 0                  | 0        | 26       | 26                      | 722  | 42          | 42             | 42       | 42       | 42     | 42    | 0.02             | 695                  | 732     |  |
| 3   | 470         | 139   | 0                  | 0        | 56       | 56                      | 675  | 51          | 51             | 51       | 51       | 51     | 51    | 0.06             | 658                  | 662     |  |
| 4   | 495         | 150   | 0                  | 0        | 56       | 56                      | 652  | 50          | 50             | 50       | 50       | 50     | 50    | 0.10             | 622                  | 686     |  |
| 5   | 1322        | 650   | 1                  | 0        | 120      | 121                     | 583  | 56          | 56             | 56       | 56       | 56     | 56    | 0.70             | 557                  | 658     |  |
| 6   | 724         | 281   | 0                  | 0        | 127      | 127                     | 596  | 46          | 45             | 45       | 43       | 45     | 47    | 0.13             | 529                  | 626     |  |
| 7   | 2502        | 1409  | 0                  | 0        | 153      | 150                     | 577  | 149         | 56             | 56       | 56       | 56     | 149   | 0.27             | 529                  | 582     |  |
| 8   | 1092        | 395   | 0                  | 0        | 135      | 135                     | 625  | 45          | 45             | 45       | 45       | 45     | 45    | 0.07             | 585                  | 626     |  |
| 9   | 680         | 353   | 1                  | 0        | 115      | 115                     | 553  | 50          | 48             | 48       | 49       | 49     | 50    | 0.58             | 544                  | 594     |  |
| 10  | 682         | 365   | 0                  | 0        | 126      | 126                     | 549  | 56          | 56             | 56       | 56       | 56     | 56    | 0.77             | 543                  | 594     |  |
| 11  | 613         | 199   | 2                  | 0        | 62       | 64                      | 643  | 54          | 54             | 54       | 54       | 54     | 54    | 0.07             | 609                  | 666     |  |
| 12  | 300         | 80    | 1                  | 0        | 29       | 30                      | 684  | 44          | 44             | 44       | 44       | 44     | 44    | 0.05             | 598                  | 688     |  |
| 13  | 1828        | 1258  | 2                  | 0        | 144      | 146                     | 510  | 56          | 53             | 53       | 53       | 53     | 56    | 0.77             | 520                  | 548     |  |
| 14  | 723         | 396   | 1                  | 0        | 108      | 109                     | 536  | 57          | 57             | 57       | 57       | 57     | 57    | 0.75             | 558                  | 569     |  |
| 15  | 1864        | 976   | 5                  | 0        | 137      | 142                     | 552  | 51          | 50             | 51       | 51       | 51     | 51    | 0.52             | 558                  | 573     |  |
| 16  | 2524        | 1386  | 4                  | 0        | 156      | 160                     | 547  | 57          | 57             | 57       | 57       | 57     | 57    | 0.61             | 536                  | 547     |  |
| 17  | 1893        | 754   | 1                  | 0        | 167      | 168                     | 618  | 54          | 52             | 52       | 53       | 53     | 54    | 0.23             | 558                  | 643     |  |
| 18  | 1162        | 780   | 3                  | 0        | 121      | 124                     | 515  | 53          | 53             | 53       | 53       | 53     | 53    | 0.85             | 503                  | 617     |  |
| 19  | 2730        | 1439  | 3                  | 0        | 152      | 155                     | 562  | 61          | 55             | 55       | 55       | 55     | 61    | 0.55             | 558                  | 574     |  |
| 20  | 422         | 131   | 0                  | 0        | 24       | 24                      | 659  | 47          | 45             | 45       | 45       | 45     | 47    | 0.09             | 614                  | 656     |  |
| 21  | 2475        | 1467  | 1                  | 0        | 118      | 119                     | 548  | 69          | 53             | 53       | 53       | 53     | 69    | 0.58             | 570                  | 627     |  |
| 22  | 1333        | 558   | 2                  | 0        | 120      | 122                     | 615  | 54          | 54             | 54       | 54       | 54     | 54    | 0.41             | 557                  | 630     |  |
| 23  | 1798        | 1288  | 0                  | 0        | 141      | 141                     | 529  | 67          | 52             | 52       | 52       | 52     | 67    | 0.15             | 541                  | 560     |  |
| 24  | 1272        | 486   | 1                  | 0        | 126      | 126                     | 615  | 51          | 51             | 51       | 51       | 51     | 51    | 0.31             | 590                  | 626     |  |
| 25  | 281         | 132   | 0                  | 0        | 32       | 32                      | 620  | 29          | 23             | 23       | 23       | 23     | 29    | 0.26             | 628                  | 623     |  |
| 26  | 2508        | 1418  | 1                  | 0        | 119      | 120                     | 542  | 53          | 53             | 53       | 53       | 53     | 53    | 0.70             | 526                  | 569     |  |
| 27  | 991         | 0     | 1                  | 0        | 136      | 137                     | 605  | 49          | 49             | 49       | 49       | 49     | 50    | 0.37             | 544                  | 635     |  |
| 28  | 2012        | 1163  | 3                  | 0        | 121      | 124                     | 567  | 53          | 53             | 53       | 53       | 53     | 53    | 0.60             | 547                  | 578     |  |
| 29  | 723         | 488   | 0                  | 0        | 138      | 137                     | 559  | 47          | 47             | 46       | 47       | 47     | 47    | 0.49             | 563                  | 628     |  |
| 30  | 841         | 465   | 0                  | 0        | 109      | 109                     | 572  | 51          | 41             | 41       | 40       | 41     | 51    | 0.37             | 563                  | 589     |  |
| 31  | 333         | 133   | 3                  | 0        | 36       | 39                      | 591  | 50          | 50             | 50       | 50       | 50     | 50    | 0.48             | 555                  | 624     |  |
| 32  | 332         | 100   | 1                  | 0        | 14       | 15                      | 659  | 49          | 49             | 49       | 49       | 49     | 49    | 0.22             | 579                  | 674     |  |
| 33  | 2191        | 1328  | 0                  | 0        | 114      | 114                     | 536  | 73          | 52             | 52       | 52       | 52     | 73    | 0.27             | 545                  | 538     |  |
| 34  | 2328        | 1182  | 0                  | 0        | 120      | 120                     | 560  | 50          | 50             | 50       | 50       | 50     | 50    | 0.26             | 553                  | 586     |  |
| 35  | 781         | 370   | 0                  | 0        | 124      | 124                     | 587  | 52          | 52             | 52       | 52       | 52     | 52    | 0.52             | 570                  | 600     |  |
| 36  | 2133        | 1319  | 0                  | 0        | 141      | 141                     | 572  | 61          | 48             | 47       | 48       | 48     | 61    | 0.48             | 523                  | 528     |  |
| 37  | 520         | 200   | 0                  | 0        | 50       | 50                      | 605  | 26          | 26             | 26       | 26       | 26     | 26    | 0.19             | 597                  | 605     |  |
| 38  | 124         | 21    | 0                  | 0        | 7        | 7                       | 721  | 13          | 13             | 13       | 13       | 13     | 13    | 0.15             | 738                  | 800     |  |
| 39  | 2277        | 1178  | 1                  | 0        | 143      | 143                     | 598  | 58          | 56             | 56       | 56       | 56     | 58    | 0.36             | 552                  | 561     |  |
| 40  | 1334        | 919   | 3                  | 0        | 132      | 134                     | 527  | 49          | 49             | 49       | 49       | 49     | 49    | 0.71             | 519                  | 570     |  |
| 41  | 2025        | 1439  | 1                  | 0        | 133      | 134                     | 525  | 51          | 51             | 51       | 51       | 51     | 51    | 0.59             | 541                  | 538     |  |

continued.

| Set | Total Catch |       | Tagged Fish Counts |          |          | Tagged Fork Lengths(mm) |      | Specimen Count |     |          |          |        |       | Mean Fork Length(mm) |       |         |
|-----|-------------|-------|--------------------|----------|----------|-------------------------|------|----------------|-----|----------|----------|--------|-------|----------------------|-------|---------|
|     | kg          | Count | Recover-Rerelease  | Deceased | Released | Count                   | Mean | Fork Length    | Sex | Maturity | Otoliths | Weight | Count | Proportion Males     | Males | Females |
| 42  | 1118        | 514   | 7                  | 0        | 121      | 128                     | 578  | 56             | 56  | 56       | 56       | 56     | 56    | 0.55                 | 563   | 619     |
| 43  | 942         | 617   | 0                  | 0        | 118      | 118                     | 528  | 58             | 58  | 57       | 58       | 58     | 58    | 0.66                 | 508   | 535     |
| 44  | 1201        | 424   | 2                  | 0        | 135      | 137                     | 621  | 54             | 54  | 54       | 54       | 54     | 54    | 0.30                 | 553   | 593     |
| 45  | 647         | 185   | 0                  | 0        | 58       | 58                      | 675  | 51             | 51  | 51       | 51       | 51     | 51    | 0.14                 | 604   | 665     |
| 46  | 665         | 178   | 2                  | 0        | 52       | 54                      | 649  | 45             | 45  | 45       | 45       | 45     | 45    | 0.00                 | 0     | 704     |
| 47  | 1823        | 1092  | 1                  | 0        | 129      | 130                     | 523  | 49             | 48  | 49       | 49       | 49     | 49    | 0.60                 | 517   | 531     |
| 48  | 1376        | 664   | 1                  | 0        | 139      | 140                     | 569  | 62             | 62  | 62       | 62       | 62     | 62    | 0.35                 | 559   | 581     |
| 49  | 2902        | 2334  | 0                  | 0        | 148      | 147                     | 511  | 59             | 58  | 58       | 58       | 58     | 59    | 0.47                 | 522   | 535     |
| 50  | 499         | 187   | 1                  | 0        | 18       | 19                      | 647  | 51             | 51  | 51       | 51       | 51     | 51    | 0.16                 | 574   | 639     |
| 51  | 1287        | 740   | 0                  | 0        | 121      | 121                     | 548  | 45             | 45  | 45       | 45       | 45     | 45    | 0.47                 | 559   | 553     |
| 52  | 242         | 88    | 1                  | 0        | 25       | 26                      | 615  | 53             | 53  | 53       | 53       | 53     | 53    | 0.51                 | 609   | 681     |
| 53  | 21          | 6     | 0                  | 0        | 4        | 4                       | 703  | 2              | 2   | 2        | 2        | 2      | 2     | 0.00                 | 0     | 715     |
| 54  | 1649        | 654   | 3                  | 0        | 130      | 133                     | 588  | 45             | 45  | 45       | 44       | 45     | 45    | 0.16                 | 641   | 597     |
| 55  | 752         | 229   | 0                  | 0        | 92       | 92                      | 640  | 42             | 42  | 42       | 42       | 42     | 42    | 0.38                 | 643   | 670     |
| 56  | 991         | 389   | 1                  | 0        | 97       | 98                      | 608  | 47             | 47  | 47       | 47       | 47     | 47    | 0.30                 | 584   | 601     |
| 57  | 698         | 279   | 0                  | 0        | 96       | 96                      | 616  | 40             | 40  | 40       | 40       | 40     | 40    | 0.70                 | 618   | 658     |
| 58  | 2401        | 1651  | 2                  | 0        | 129      | 131                     | 523  | 56             | 49  | 49       | 49       | 49     | 56    | 0.49                 | 528   | 514     |
| 59  | 976         | 461   | 8                  | 0        | 121      | 129                     | 558  | 51             | 51  | 51       | 51       | 51     | 51    | 0.55                 | 547   | 601     |
| 60  | 683         | 226   | 2                  | 0        | 77       | 79                      | 648  | 52             | 52  | 52       | 52       | 52     | 52    | 0.50                 | 633   | 659     |
| 61  | 2773        | 1874  | 1                  | 0        | 149      | 150                     | 530  | 57             | 54  | 54       | 54       | 54     | 57    | 0.31                 | 529   | 517     |
| 62  | 142         | 62    | 0                  | 0        | 11       | 11                      | 554  | 22             | 19  | 19       | 19       | 19     | 22    | 0.21                 | 651   | 595     |
| 63  | 3030        | 2071  | 0                  | 0        | 108      | 108                     | 538  | 56             | 48  | 48       | 48       | 48     | 56    | 0.40                 | 514   | 530     |
| 64  | 1569        | 610   | 2                  | 0        | 127      | 129                     | 608  | 56             | 56  | 56       | 56       | 56     | 56    | 0.63                 | 589   | 649     |
| 65  | 738         | 240   | 0                  | 0        | 62       | 62                      | 646  | 51             | 51  | 51       | 51       | 51     | 51    | 0.29                 | 605   | 668     |
| 66  | 426         | 168   | 0                  | 0        | 49       | 49                      | 576  | 54             | 54  | 54       | 54       | 54     | 54    | 0.17                 | 521   | 602     |
| 67  | 1671        | 863   | 0                  | 0        | 146      | 146                     | 548  | 50             | 50  | 50       | 50       | 50     | 50    | 0.36                 | 543   | 606     |
| 68  | 326         | 124   | 0                  | 0        | 35       | 35                      | 644  | 52             | 48  | 48       | 48       | 48     | 52    | 0.19                 | 468   | 629     |
| 69  | 659         | 281   | 0                  | 0        | 74       | 74                      | 575  | 43             | 42  | 42       | 42       | 42     | 43    | 0.12                 | 588   | 611     |
| 70  | 2465        | 1607  | 1                  | 0        | 148      | 149                     | 530  | 60             | 54  | 54       | 54       | 54     | 60    | 0.44                 | 554   | 576     |
| 71  | 74          | 27    | 1                  | 0        | 8        | 9                       | 629  | 18             | 18  | 18       | 18       | 18     | 18    | 0.33                 | 613   | 651     |
| 72  | 2958        | 2071  | 0                  | 0        | 153      | 153                     | 515  | 58             | 57  | 57       | 57       | 57     | 58    | 0.47                 | 538   | 553     |
| 73  | 1212        | 430   | 0                  | 0        | 130      | 130                     | 637  | 46             | 46  | 46       | 46       | 46     | 46    | 0.22                 | 567   | 606     |
| 74  | 2208        | 933   | 1                  | 2        | 137      | 140                     | 586  | 60             | 60  | 60       | 58       | 60     | 60    | 0.27                 | 606   | 619     |
| 75  | 2945        | 1818  | 1                  | 0        | 104      | 105                     | 545  | 57             | 56  | 56       | 56       | 56     | 57    | 0.21                 | 525   | 561     |
| 76  | 839         | 508   | 2                  | 0        | 129      | 131                     | 537  | 53             | 53  | 53       | 53       | 53     | 53    | 0.55                 | 524   | 553     |
| 77  | 3428        | 2904  | 1                  | 0        | 147      | 146                     | 516  | 53             | 51  | 51       | 51       | 51     | 53    | 0.37                 | 526   | 555     |
| 78  | 1066        | 617   | 9                  | 0        | 143      | 152                     | 557  | 56             | 56  | 56       | 56       | 56     | 56    | 0.66                 | 557   | 576     |
| 79  | 1417        | 1120  | 1                  | 0        | 169      | 170                     | 486  | 50             | 50  | 50       | 50       | 50     | 50    | 0.58                 | 494   | 532     |
| 80  | 594         | 284   | 0                  | 0        | 116      | 116                     | 558  | 51             | 51  | 51       | 51       | 51     | 51    | 0.47                 | 537   | 555     |
| 81  | 435         | 178   | 0                  | 0        | 68       | 68                      | 604  | 51             | 51  | 51       | 51       | 51     | 51    | 0.49                 | 596   | 648     |

continued.

| Set   | Total Catch |       | Tagged Fish Counts |          |          | Tagged Fork Lengths(mm) |      | Specimen Count |      |          |          |        | Mean Fork Length(mm) |                  |       |         |
|-------|-------------|-------|--------------------|----------|----------|-------------------------|------|----------------|------|----------|----------|--------|----------------------|------------------|-------|---------|
|       | kg          | Count | Recover-Rerelease  | Deceased | Released | Count                   | Mean | Fork Length    | Sex  | Maturity | Otoliths | Weight | Count                | Proportion Males | Males | Females |
| 82    | 703         | 344   | 2                  | 0        | 111      | 113                     | 560  | 57             | 57   | 57       | 57       | 57     | 57                   | 0.46             | 533   | 630     |
| 83    | 623         | 314   | 1                  | 0        | 88       | 89                      | 565  | 53             | 53   | 53       | 53       | 53     | 53                   | 0.66             | 548   | 661     |
| 84    | 1553        | 582   | 1                  | 0        | 136      | 137                     | 603  | 53             | 53   | 53       | 53       | 53     | 53                   | 0.45             | 593   | 609     |
| 85    | 3100        | 1994  | 1                  | 0        | 193      | 194                     | 520  | 80             | 56   | 56       | 56       | 56     | 80                   | 0.18             | 525   | 546     |
| 86    | 367         | 87    | 0                  | 0        | 17       | 17                      | 704  | 46             | 46   | 46       | 46       | 46     | 46                   | 0.13             | 604   | 688     |
| 87    | 297         | 103   | 0                  | 0        | 25       | 25                      | 586  | 52             | 52   | 52       | 52       | 52     | 52                   | 0.08             | 668   | 639     |
| 88    | 169         | 59    | 0                  | 0        | 18       | 18                      | 590  | 30             | 28   | 28       | 28       | 28     | 30                   | 0.18             | 490   | 622     |
| 89    | 999         | 486   | 0                  | 0        | 123      | 123                     | 537  | 57             | 57   | 57       | 57       | 57     | 57                   | 0.42             | 564   | 545     |
| 90    | 1153        | 779   | 0                  | 0        | 183      | 183                     | 537  | 51             | 51   | 51       | 51       | 51     | 51                   | 0.33             | 509   | 546     |
| 91    | 1475        | 1020  | 0                  | 0        | 165      | 165                     | 513  | 52             | 52   | 52       | 52       | 52     | 52                   | 0.31             | 500   | 520     |
| 92    | 2471        | 1434  | 1                  | 0        | 127      | 128                     | 535  | 51             | 51   | 51       | 51       | 51     | 51                   | 0.37             | 537   | 550     |
| 93    | 2376        | 1289  | 0                  | 0        | 141      | 141                     | 551  | 55             | 55   | 55       | 55       | 55     | 55                   | 0.31             | 535   | 565     |
| 94    | 1897        | 923   | 1                  | 0        | 152      | 153                     | 558  | 52             | 52   | 52       | 52       | 52     | 52                   | 0.23             | 523   | 561     |
| 95    | 1420        | 819   | 0                  | 0        | 137      | 137                     | 549  | 49             | 49   | 49       | 48       | 49     | 49                   | 0.31             | 517   | 569     |
| 96    | 2204        | 1379  | 8                  | 0        | 155      | 163                     | 537  | 55             | 55   | 55       | 55       | 55     | 55                   | 0.16             | 512   | 551     |
| 97    | 1531        | 832   | 0                  | 0        | 149      | 149                     | 540  | 56             | 56   | 56       | 56       | 56     | 56                   | 0.27             | 537   | 558     |
| 98    | 1843        | 1096  | 3                  | 0        | 135      | 138                     | 530  | 58             | 58   | 58       | 58       | 58     | 58                   | 0.31             | 526   | 553     |
| 99    | 2276        | 1427  | 6                  | 0        | 164      | 169                     | 529  | 54             | 54   | 54       | 54       | 54     | 54                   | 0.39             | 511   | 564     |
| 100   | 1015        | 598   | 4                  | 0        | 140      | 144                     | 529  | 56             | 55   | 55       | 55       | 55     | 57                   | 0.27             | 507   | 549     |
| 101   | 1499        | 923   | 5                  | 0        | 154      | 159                     | 519  | 50             | 50   | 50       | 50       | 50     | 50                   | 0.34             | 503   | 533     |
| 102   | 1520        | 956   | 7                  | 0        | 118      | 125                     | 534  | 48             | 48   | 48       | 48       | 48     | 48                   | 0.38             | 494   | 547     |
| 103   | 988         | 565   | 7                  | 0        | 128      | 135                     | 542  | 52             | 52   | 52       | 52       | 52     | 52                   | 0.44             | 501   | 555     |
| 104   | 1342        | 669   | 5                  | 0        | 135      | 140                     | 541  | 54             | 52   | 52       | 52       | 52     | 54                   | 0.19             | 533   | 583     |
| 105   | 771         | 474   | 2                  | 0        | 132      | 134                     | 534  | 58             | 58   | 58       | 58       | 58     | 58                   | 0.28             | 525   | 550     |
| 106   | 1185        | 691   | 2                  | 0        | 132      | 134                     | 535  | 55             | 54   | 54       | 51       | 54     | 55                   | 0.24             | 503   | 566     |
| 107   | 889         | 530   | 0                  | 0        | 119      | 118                     | 542  | 59             | 59   | 59       | 59       | 59     | 59                   | 0.47             | 515   | 544     |
| 108   | 1456        | 814   | 4                  | 0        | 151      | 155                     | 548  | 52             | 52   | 52       | 52       | 52     | 52                   | 0.29             | 517   | 567     |
| 109   | 960         | 653   | 1                  | 0        | 126      | 127                     | 509  | 50             | 50   | 50       | 50       | 50     | 50                   | 0.32             | 502   | 537     |
| Total | 141570      | 78836 | 154                | 2        | 11888    | 12031                   | 5656 | 5395           | 5394 | 5389     | 5399     | 5399   | 5659                 |                  |       |         |

**APPENDIX I SUMMARY OF BIOLOGICAL DATA 2018 BY SET FOR OTHER FISH.**

| Species Name                           | Set | Specimen Count |        |     |          |         |     |             | Mean Fork Length(mm) |       |         |        | Sampler Visual id Count |              |        |
|--|-----|----------------|--------|-----|----------|---------|-----|-------------|----------------------|-------|---------|--------|-------------------------|--------------|--------|
|  |     | Fork Length    | Weight | Sex | Maturity | Otolith | DNA | Total Count | Proportion Males     | Males | Females | No sex | Rougheye                | Blackspotted | Hybrid |
| ROUGHEYE/BLACKSPOTTED ROCKFISH COMPLEX | 4   | 1              | 1      | 1   | 1        | 1       | 1   | 1           | 0.00                 | 0     | 515     | 0      | 1                       | 0            | 0      |
|  | 13  | 3              | 3      | 3   | 3        | 3       | 3   | 3           | 0.33                 | 490   | 498     | 0      | 1                       | 1            | 1      |
|  | 15  | 12             | 12     | 12  | 12       | 12      | 12  | 12          | 0.42                 | 472   | 489     | 0      | 11                      | 1            | 0      |
|  | 29  | 1              | 1      | 1   | 1        | 1       | 1   | 1           | 0.00                 | 0     | 615     | 0      | 0                       | 1            | 0      |
|  | 35  | 3              | 3      | 3   | 3        | 3       | 3   | 3           | 0.67                 | 450   | 375     | 0      | 1                       | 2            | 0      |
|  | 37  | 11             | 11     | 11  | 11       | 11      | 11  | 11          | 0.64                 | 465   | 493     | 0      | 6                       | 5            | 0      |
|  | 68  | 16             | 16     | 16  | 16       | 16      | 16  | 16          | 0.63                 | 433   | 459     | 0      | 2                       | 13           | 1      |
|  | 72  | 4              | 4      | 4   | 4        | 4       | 4   | 4           | 0.50                 | 503   | 440     | 0      | 1                       | 3            | 0      |
|  | 74  | 5              | 5      | 5   | 5        | 5       | 5   | 5           | 1.00                 | 449   | 0       | 0      | 0                       | 5            | 0      |
|  | 79  | 1              | 1      | 1   | 1        | 1       | 1   | 1           | 1.00                 | 630   | 0       | 0      | 0                       | 0            | 0      |
|  | 80  | 14             | 14     | 14  | 14       | 14      | 14  | 14          | 0.71                 | 469   | 516     | 0      | 0                       | 14           | 0      |
|  | 88  | 15             | 15     | 15  | 15       | 15      | 15  | 15          | 0.40                 | 520   | 551     | 0      | 2                       | 13           | 0      |
|  | 93  | 5              | 5      | 5   | 5        | 5       | 5   | 5           | 0.40                 | 448   | 487     | 0      | 0                       | 5            | 0      |
|  | 96  | 23             | 23     | 23  | 22       | 23      | 23  | 23          | 0.61                 | 484   | 506     | 0      | 4                       | 18           | 0      |
|  | 102 | 3              | 3      | 3   | 3        | 3       | 3   | 3           | 0.33                 | 545   | 418     | 0      | 0                       | 3            | 0      |
|  | 104 | 26             | 26     | 26  | 26       | 26      | 26  | 26          | 0.23                 | 503   | 498     | 0      | 5                       | 20           | 1      |
|  | 108 | 2              | 2      | 2   | 2        | 2       | 2   | 2           | 0.00                 | 0     | 480     | 0      | 0                       | 2            | 0      |
|  | 109 | 1              | 1      | 1   | 1        | 1       | 1   | 1           | 0.00                 | 0     | 510     | 0      | 1                       | 0            | 0      |
|  | 111 | 1              | 1      | 1   | 1        | 1       | 1   | 1           | 0.00                 | 0     | 530     | 0      | 1                       | 0            | 0      |
| SHORTRAKER ROCKFISH                    | 8   | 1              | 1      | 1   | 1        | 1       | 0   | 1           | 1.00                 | 615   | 0       | 0      | 0                       | 0            | 0      |
|  | 29  | 7              | 7      | 7   | 7        | 7       | 0   | 7           | 0.43                 | 628   | 506     | 0      | 0                       | 0            | 0      |
|  | 35  | 3              | 3      | 3   | 3        | 3       | 0   | 3           | 0.67                 | 748   | 645     | 0      | 0                       | 0            | 0      |
|  | 36  | 4              | 4      | 4   | 4        | 4       | 0   | 4           | 0.25                 | 460   | 557     | 0      | 0                       | 0            | 0      |
|  | 46  | 1              | 1      | 1   | 1        | 1       | 0   | 1           | 1.00                 | 760   | 0       | 0      | 0                       | 0            | 0      |
|  | 57  | 3              | 3      | 3   | 0        | 3       | 0   | 3           | 1.00                 | 570   | 0       | 555    | 0                       | 0            | 0      |
|  | 58  | 1              | 1      | 1   | 1        | 1       | 0   | 1           | 1.00                 | 420   | 0       | 0      | 0                       | 0            | 0      |
|  | 60  | 1              | 1      | 1   | 1        | 1       | 0   | 1           | 0.00                 | 0     | 535     | 0      | 0                       | 0            | 0      |
|  | 68  | 1              | 1      | 1   | 1        | 1       | 0   | 1           | 1.00                 | 595   | 0       | 0      | 0                       | 0            | 0      |
|  | 74  | 1              | 1      | 1   | 1        | 1       | 0   | 1           | 0.00                 | 0     | 535     | 0      | 0                       | 0            | 0      |
|  | 83  | 1              | 1      | 1   | 1        | 1       | 0   | 1           | 0.00                 | 0     | 530     | 0      | 0                       | 0            | 0      |
|  | 93  | 1              | 1      | 1   | 1        | 1       | 0   | 1           | 0.00                 | 0     | 660     | 0      | 0                       | 0            | 0      |
| YELLOWEYE ROCKFISH                     | 6   | 3              | 3      | 3   | 3        | 3       | 0   | 3           | 0.67                 | 430   | 560     | 0      | 0                       | 0            | 0      |
|  | 34  | 3              | 3      | 3   | 3        | 3       | 0   | 3           | 0.33                 | 390   | 523     | 0      | 0                       | 0            | 0      |
|  | 35  | 9              | 9      | 9   | 9        | 9       | 0   | 9           | 0.67                 | 565   | 548     | 0      | 0                       | 0            | 0      |
|  | 65  | 18             | 18     | 18  | 18       | 18      | 0   | 18          | 0.50                 | 522   | 487     | 0      | 0                       | 0            | 0      |
|  | 70  | 24             | 24     | 24  | 24       | 24      | 0   | 24          | 0.25                 | 613   | 579     | 0      | 0                       | 0            | 0      |
|  | 71  | 29             | 29     | 29  | 29       | 29      | 0   | 29          | 0.55                 | 591   | 568     | 0      | 0                       | 0            | 0      |
|  | 72  | 2              | 2      | 2   | 2        | 2       | 0   | 2           | 0.50                 | 595   | 555     | 0      | 0                       | 0            | 0      |
|  | 73  | 27             | 27     | 26  | 26       | 27      | 0   | 27          | 0.46                 | 609   | 551     | 675    | 0                       | 0            | 0      |
|  | 79  | 30             | 30     | 30  | 30       | 30      | 0   | 30          | 0.23                 | 604   | 567     | 0      | 0                       | 0            | 0      |

continued.

| Species Name    | Set | Specimen Count |        |     |          |         |     | Mean Fork Length(mm) |                  |       | Sampler Visual id Count |        |          |              |        |
|-----------------|-----|----------------|--------|-----|----------|---------|-----|----------------------|------------------|-------|-------------------------|--------|----------|--------------|--------|
|                 |     | Fork Length    | Weight | Sex | Maturity | Otolith | DNA | Total Count          | Proportion Males | Males | Females                 | No sex | Rougheye | Blackspotted | Hybrid |
| PACIFIC HALIBUT | 80  | 1              | 1      | 1   | 1        | 1       | 0   | 1                    | 1.00             | 405   | 0                       | 0      |          |              |        |
|                 | 87  | 2              | 2      | 2   | 2        | 2       | 0   | 2                    | 0.00             | 0     | 463                     | 0      |          |              |        |
|                 | 95  | 2              | 2      | 2   | 2        | 2       | 0   | 2                    | 1.00             | 605   | 0                       | 0      |          |              |        |
|                 | 4   | 4              | 0      | 0   | 0        | 0       | 0   | 4                    | 0.00             | 0     | 0                       | 830    |          |              |        |
|                 | 5   | 1              | 1      | 0   | 0        | 0       | 0   | 1                    | 0.00             | 0     | 0                       | 770    |          |              |        |
|                 | 6   | 3              | 0      | 0   | 0        | 0       | 0   | 3                    | 0.00             | 0     | 0                       | 863    |          |              |        |
|                 | 13  | 1              | 1      | 0   | 0        | 0       | 0   | 1                    | 0.00             | 0     | 0                       | 890    |          |              |        |
|                 | 15  | 5              | 0      | 0   | 0        | 0       | 0   | 5                    | 0.00             | 0     | 0                       | 836    |          |              |        |
|                 | 16  | 5              | 0      | 0   | 0        | 0       | 0   | 5                    | 0.00             | 0     | 0                       | 912    |          |              |        |
|                 | 19  | 4              | 0      | 0   | 0        | 0       | 0   | 4                    | 0.00             | 0     | 0                       | 820    |          |              |        |
|                 | 29  | 9              | 1      | 0   | 0        | 0       | 0   | 9                    | 0.00             | 0     | 0                       | 819    |          |              |        |
|                 | 33  | 44             | 45     | 0   | 0        | 0       | 0   | 45                   | 0.00             | 0     | 0                       | 879    |          |              |        |
|                 | 34  | 5              | 5      | 0   | 0        | 0       | 0   | 5                    | 0.00             | 0     | 0                       | 870    |          |              |        |
|                 | 35  | 6              | 6      | 0   | 0        | 0       | 0   | 6                    | 0.00             | 0     | 0                       | 820    |          |              |        |
|                 | 37  | 15             | 14     | 0   | 0        | 0       | 0   | 15                   | 0.00             | 0     | 0                       | 822    |          |              |        |
|                 | 38  | 1              | 1      | 0   | 0        | 0       | 0   | 1                    | 0.00             | 0     | 0                       | 1280   |          |              |        |
|                 | 40  | 2              | 2      | 0   | 0        | 0       | 0   | 2                    | 0.00             | 0     | 0                       | 1185   |          |              |        |
|                 | 41  | 2              | 2      | 0   | 0        | 0       | 0   | 2                    | 0.00             | 0     | 0                       | 1000   |          |              |        |
|                 | 43  | 2              | 2      | 0   | 0        | 0       | 0   | 2                    | 0.00             | 0     | 0                       | 785    |          |              |        |
|                 | 48  | 1              | 1      | 0   | 0        | 0       | 0   | 1                    | 0.00             | 0     | 0                       | 730    |          |              |        |
|                 | 49  | 4              | 4      | 0   | 0        | 0       | 0   | 4                    | 0.00             | 0     | 0                       | 863    |          |              |        |
|                 | 50  | 1              | 1      | 0   | 0        | 0       | 0   | 1                    | 0.00             | 0     | 0                       | 1010   |          |              |        |
|                 | 51  | 2              | 2      | 0   | 0        | 0       | 0   | 2                    | 0.00             | 0     | 0                       | 940    |          |              |        |
|                 | 52  | 4              | 4      | 0   | 0        | 0       | 0   | 4                    | 0.00             | 0     | 0                       | 903    |          |              |        |
|                 | 53  | 12             | 12     | 0   | 0        | 0       | 0   | 12                   | 0.00             | 0     | 0                       | 863    |          |              |        |
|                 | 56  | 6              | 6      | 0   | 0        | 0       | 0   | 6                    | 0.00             | 0     | 0                       | 890    |          |              |        |
|                 | 65  | 4              | 4      | 0   | 0        | 0       | 0   | 4                    | 0.00             | 0     | 0                       | 855    |          |              |        |
|                 | 66  | 3              | 3      | 0   | 0        | 0       | 0   | 3                    | 0.00             | 0     | 0                       | 910    |          |              |        |
|                 | 67  | 3              | 3      | 0   | 0        | 0       | 0   | 3                    | 0.00             | 0     | 0                       | 853    |          |              |        |
|                 | 68  | 3              | 3      | 0   | 0        | 0       | 0   | 3                    | 0.00             | 0     | 0                       | 997    |          |              |        |
|                 | 69  | 10             | 10     | 0   | 0        | 0       | 0   | 10                   | 0.00             | 0     | 0                       | 920    |          |              |        |
|                 | 70  | 1              | 1      | 0   | 0        | 0       | 0   | 1                    | 0.00             | 0     | 0                       | 880    |          |              |        |
|                 | 71  | 2              | 2      | 0   | 0        | 0       | 0   | 2                    | 0.00             | 0     | 0                       | 810    |          |              |        |
|                 | 72  | 5              | 5      | 0   | 0        | 0       | 0   | 5                    | 0.00             | 0     | 0                       | 844    |          |              |        |
|                 | 73  | 7              | 7      | 0   | 0        | 0       | 0   | 7                    | 0.00             | 0     | 0                       | 964    |          |              |        |
|                 | 80  | 5              | 5      | 0   | 0        | 0       | 0   | 5                    | 0.00             | 0     | 0                       | 912    |          |              |        |
|                 | 87  | 2              | 2      | 0   | 0        | 0       | 0   | 2                    | 0.00             | 0     | 0                       | 855    |          |              |        |
|                 | 88  | 17             | 17     | 0   | 0        | 0       | 0   | 17                   | 0.00             | 0     | 0                       | 894    |          |              |        |
|                 | 93  | 28             | 28     | 0   | 0        | 0       | 0   | 28                   | 0.00             | 0     | 0                       | 873    |          |              |        |
|                 | 95  | 2              | 2      | 0   | 0        | 0       | 0   | 2                    | 0.00             | 0     | 0                       | 1085   |          |              |        |

continued.

| Species Name | Set | Specimen Count |        |     |          |         |     | Mean Fork Length(mm) |                  |       | Sampler Visual id Count |        |          |              |        |
|--------------|-----|----------------|--------|-----|----------|---------|-----|----------------------|------------------|-------|-------------------------|--------|----------|--------------|--------|
|              |     | Fork Length    | Weight | Sex | Maturity | Otolith | DNA | Total Count          | Proportion Males | Males | Females                 | No sex | Rougheye | Blackspotted | Hybrid |
|              | 96  | 18             | 18     | 0   | 0        | 0       | 0   | 18                   | 0.00             | 0     | 0                       | 844    |          |              |        |
|              | 99  | 2              | 2      | 0   | 0        | 0       | 0   | 2                    | 0.00             | 0     | 0                       | 750    |          |              |        |
|              | 100 | 20             | 20     | 0   | 0        | 0       | 0   | 20                   | 0.00             | 0     | 0                       | 834    |          |              |        |
|              | 101 | 15             | 15     | 0   | 0        | 0       | 0   | 15                   | 0.00             | 0     | 0                       | 771    |          |              |        |
|              | 102 | 5              | 5      | 0   | 0        | 0       | 0   | 5                    | 0.00             | 0     | 0                       | 818    |          |              |        |
|              | 103 | 2              | 2      | 0   | 0        | 0       | 0   | 2                    | 0.00             | 0     | 0                       | 880    |          |              |        |
|              | 104 | 8              | 8      | 0   | 0        | 0       | 0   | 8                    | 0.00             | 0     | 0                       | 875    |          |              |        |
|              | 110 | 11             | 11     | 0   | 0        | 0       | 0   | 11                   | 0.00             | 0     | 0                       | 869    |          |              |        |
|              | 111 | 12             | 12     | 0   | 0        | 0       | 0   | 12                   | 0.00             | 0     | 0                       | 814    |          |              |        |

**APPENDIX J SUMMARY OF BIOLOGICAL DATA 2019 BY SET FOR OTHER FISH.**

| Species Name                           | Set | Specimen Count |        |     |          |         |     |             | Mean Fork Length(mm) |       |         |        | Sampler Visual id Count |              |        |
|--|-----|----------------|--------|-----|----------|---------|-----|-------------|----------------------|-------|---------|--------|-------------------------|--------------|--------|
|  |     | Fork Length    | Weight | Sex | Maturity | Otolith | DNA | Total Count | Proportion Males     | Males | Females | No sex | Rougheye                | Blackspotted | Hybrid |
| PACIFIC SLEEPER SHARK                  | 100 | 1              | 0      | 0   | 0        | 0       | 0   | 1           | 0.00                 | 0     | 0       | 1690   |                         |              |        |
| ROUGHEYE/BLACKSPOTTED ROCKFISH COMPLEX | 7   | 5              | 5      | 5   | 4        | 5       | 5   | 5           | 0.80                 | 483   | 510     | 0      | 4                       | 1            | 0      |
|  | 15  | 12             | 12     | 11  | 12       | 12      | 12  | 12          | 0.18                 | 485   | 478     | 430    | 12                      | 0            | 0      |
|  | 16  | 2              | 2      | 2   | 2        | 2       | 2   | 2           | 0.50                 | 455   | 460     | 0      | 2                       | 0            | 0      |
|  | 24  | 4              | 4      | 4   | 4        | 4       | 4   | 4           | 0.50                 | 478   | 453     | 0      | 4                       | 0            | 0      |
|  | 30  | 1              | 1      | 1   | 1        | 1       | 1   | 1           | 0.00                 | 0     | 520     | 0      | 1                       | 0            | 0      |
|  | 37  | 5              | 5      | 5   | 5        | 5       | 5   | 5           | 0.20                 | 510   | 519     | 0      | 2                       | 3            | 0      |
|  | 54  | 19             | 19     | 19  | 19       | 19      | 19  | 19          | 0.58                 | 477   | 467     | 0      | 1                       | 16           | 2      |
|  | 55  | 29             | 29     | 29  | 28       | 29      | 29  | 29          | 0.45                 | 487   | 473     | 0      | 7                       | 22           | 0      |
|  | 56  | 18             | 18     | 18  | 18       | 18      | 17  | 18          | 0.78                 | 482   | 486     | 0      | 0                       | 18           | 0      |
|  | 62  | 1              | 1      | 1   | 1        | 1       | 1   | 1           | 1.00                 | 545   | 0       | 0      | 0                       | 1            | 0      |
|  | 65  | 9              | 9      | 9   | 9        | 9       | 9   | 9           | 0.56                 | 453   | 371     | 0      | 2                       | 7            | 0      |
|  | 69  | 10             | 10     | 10  | 10       | 10      | 10  | 10          | 0.60                 | 477   | 428     | 0      | 1                       | 9            | 0      |
|  | 73  | 25             | 25     | 25  | 25       | 25      | 25  | 25          | 0.56                 | 490   | 493     | 0      | 1                       | 24           | 0      |
|  | 74  | 26             | 26     | 26  | 26       | 26      | 25  | 26          | 0.46                 | 462   | 455     | 0      | 2                       | 23           | 1      |
|  | 84  | 29             | 29     | 29  | 29       | 29      | 29  | 29          | 0.24                 | 449   | 482     | 0      | 9                       | 20           | 0      |
| SHORTRAKER ROCKFISH                    | 54  | 1              | 1      | 1   | 1        | 1       | 0   | 1           | 0.00                 | 0     | 600     | 0      |                         |              |        |
|  | 55  | 1              | 1      | 1   | 1        | 1       | 0   | 1           | 0.00                 | 0     | 590     | 0      |                         |              |        |
|  | 56  | 2              | 2      | 2   | 2        | 2       | 0   | 2           | 1.00                 | 650   | 0       | 0      |                         |              |        |
|  | 59  | 2              | 2      | 2   | 2        | 2       | 0   | 2           | 0.50                 | 625   | 600     | 0      |                         |              |        |
|  | 69  | 3              | 3      | 3   | 3        | 3       | 0   | 3           | 0.33                 | 620   | 620     | 0      |                         |              |        |
|  | 73  | 1              | 1      | 1   | 1        | 1       | 0   | 1           | 0.00                 | 0     | 565     | 0      |                         |              |        |
|  | 84  | 1              | 1      | 1   | 1        | 1       | 0   | 1           | 0.00                 | 0     | 695     | 0      |                         |              |        |
| YELLOWEYE ROCKFISH                     | 20  | 2              | 2      | 2   | 2        | 2       | 0   | 2           | 0.00                 | 0     | 433     | 0      |                         |              |        |
|  | 37  | 1              | 1      | 1   | 1        | 1       | 0   | 1           | 0.00                 | 0     | 455     | 0      |                         |              |        |
|  | 38  | 7              | 7      | 7   | 7        | 7       | 0   | 7           | 0.57                 | 579   | 498     | 0      |                         |              |        |
|  | 45  | 18             | 18     | 18  | 18       | 18      | 0   | 18          | 0.50                 | 583   | 592     | 0      |                         |              |        |
|  | 46  | 1              | 1      | 1   | 1        | 1       | 0   | 1           | 1.00                 | 415   | 0       | 0      |                         |              |        |
|  | 62  | 19             | 19     | 19  | 19       | 19      | 0   | 19          | 0.47                 | 587   | 510     | 0      |                         |              |        |
|  | 66  | 1              | 1      | 1   | 1        | 1       | 0   | 1           | 1.00                 | 410   | 0       | 0      |                         |              |        |
| PACIFIC HALIBUT                        | 6   | 2              | 2      | 0   | 0        | 0       | 0   | 2           | 0.00                 | 0     | 0       | 880    |                         |              |        |
|  | 7   | 2              | 2      | 0   | 0        | 0       | 0   | 2           | 0.00                 | 0     | 0       | 845    |                         |              |        |
|  | 8   | 10             | 10     | 0   | 0        | 0       | 0   | 10          | 0.00                 | 0     | 0       | 883    |                         |              |        |
|  | 15  | 5              | 5      | 0   | 0        | 0       | 0   | 5           | 0.00                 | 0     | 0       | 954    |                         |              |        |
|  | 16  | 9              | 9      | 0   | 0        | 0       | 0   | 9           | 0.00                 | 0     | 0       | 839    |                         |              |        |
|  | 20  | 12             | 12     | 0   | 0        | 0       | 0   | 12          | 0.00                 | 0     | 0       | 853    |                         |              |        |
|  | 24  | 9              | 9      | 0   | 0        | 0       | 0   | 9           | 0.00                 | 0     | 0       | 826    |                         |              |        |
|  | 34  | 1              | 1      | 0   | 0        | 0       | 0   | 1           | 0.00                 | 0     | 0       | 910    |                         |              |        |
|  | 37  | 1              | 1      | 0   | 0        | 0       | 0   | 1           | 0.00                 | 0     | 0       | 720    |                         |              |        |
|  | 38  | 7              | 7      | 0   | 0        | 0       | 0   | 7           | 0.00                 | 0     | 0       | 893    |                         |              |        |

continued.

| Species Name | Set | Specimen Count |        |     |          |         |     | Mean Fork Length(mm) |                  |       | Sampler Visual id Count |        |          |              |        |
|--------------|-----|----------------|--------|-----|----------|---------|-----|----------------------|------------------|-------|-------------------------|--------|----------|--------------|--------|
|              |     | Fork Length    | Weight | Sex | Maturity | Otolith | DNA | Total Count          | Proportion Males | Males | Females                 | No sex | Rougheye | Blackspotted | Hybrid |
|              | 44  | 9              | 9      | 0   | 0        | 0       | 0   | 9                    | 0.00             | 0     | 0                       | 881    |          |              |        |
|              | 45  | 5              | 5      | 0   | 0        | 0       | 0   | 5                    | 0.00             | 0     | 0                       | 852    |          |              |        |
|              | 46  | 11             | 11     | 0   | 0        | 0       | 0   | 11                   | 0.00             | 0     | 0                       | 918    |          |              |        |
|              | 54  | 3              | 3      | 0   | 0        | 0       | 0   | 3                    | 0.00             | 0     | 0                       | 857    |          |              |        |
|              | 55  | 10             | 10     | 0   | 0        | 0       | 0   | 10                   | 0.00             | 0     | 0                       | 862    |          |              |        |
|              | 56  | 9              | 9      | 0   | 0        | 0       | 0   | 9                    | 0.00             | 0     | 0                       | 847    |          |              |        |
|              | 62  | 4              | 4      | 0   | 0        | 0       | 0   | 4                    | 0.00             | 0     | 0                       | 883    |          |              |        |
|              | 65  | 7              | 7      | 0   | 0        | 0       | 0   | 7                    | 0.00             | 0     | 0                       | 886    |          |              |        |
|              | 66  | 28             | 28     | 0   | 0        | 0       | 0   | 28                   | 0.00             | 0     | 0                       | 844    |          |              |        |
|              | 67  | 14             | 14     | 0   | 0        | 0       | 0   | 14                   | 0.00             | 0     | 0                       | 946    |          |              |        |
|              | 68  | 10             | 10     | 0   | 0        | 0       | 0   | 10                   | 0.00             | 0     | 0                       | 835    |          |              |        |
|              | 69  | 6              | 6      | 0   | 0        | 0       | 0   | 6                    | 0.00             | 0     | 0                       | 833    |          |              |        |
|              | 73  | 4              | 4      | 0   | 0        | 0       | 0   | 4                    | 0.00             | 0     | 0                       | 903    |          |              |        |
|              | 84  | 1              | 1      | 0   | 0        | 0       | 0   | 1                    | 0.00             | 0     | 0                       | 820    |          |              |        |
|              | 86  | 14             | 14     | 0   | 0        | 0       | 0   | 14                   | 0.00             | 0     | 0                       | 852    |          |              |        |
|              | 87  | 18             | 18     | 0   | 0        | 0       | 0   | 18                   | 0.00             | 0     | 0                       | 875    |          |              |        |
|              | 88  | 3              | 3      | 0   | 0        | 0       | 0   | 3                    | 0.00             | 0     | 0                       | 817    |          |              |        |
|              | 89  | 2              | 2      | 0   | 0        | 0       | 0   | 2                    | 0.00             | 0     | 0                       | 1010   |          |              |        |
|              | 90  | 10             | 10     | 0   | 0        | 0       | 0   | 10                   | 0.00             | 0     | 0                       | 751    |          |              |        |
|              | 91  | 10             | 10     | 0   | 0        | 0       | 0   | 10                   | 0.00             | 0     | 0                       | 790    |          |              |        |
|              | 92  | 1              | 1      | 0   | 0        | 0       | 0   | 1                    | 0.00             | 0     | 0                       | 690    |          |              |        |
|              | 93  | 1              | 1      | 0   | 0        | 0       | 0   | 1                    | 0.00             | 0     | 0                       | 840    |          |              |        |
|              | 94  | 1              | 1      | 0   | 0        | 0       | 0   | 1                    | 0.00             | 0     | 0                       | 890    |          |              |        |
|              | 95  | 3              | 3      | 0   | 0        | 0       | 0   | 3                    | 0.00             | 0     | 0                       | 963    |          |              |        |
|              | 96  | 1              | 1      | 0   | 0        | 0       | 0   | 1                    | 0.00             | 0     | 0                       | 1030   |          |              |        |
|              | 100 | 2              | 2      | 0   | 0        | 0       | 0   | 2                    | 0.00             | 0     | 0                       | 945    |          |              |        |
|              | 103 | 2              | 2      | 0   | 0        | 0       | 0   | 2                    | 0.00             | 0     | 0                       | 1055   |          |              |        |

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