

Summary of the Hecate Strait Synoptic Bottom Trawl Survey, May 24 – June 21, 2011

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by

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ABSTRACT

Nottingham, M. K., Williams, D. C., Wyeth, M. R. and Olsen, N., 2017. Summary of the Hecate Strait synoptic bottom trawl survey, May 24 – June 21, 2011. Can. Manusc. Rep. Fish. Aquat. Sci. 3141: viii + 63 p.

A bottom trawl survey of Hecate Strait was conducted on the Canadian Coast Guard Ship W. E. Ricker between May 24 and June 21, 2011. The Hecate Strait synoptic bottom trawl survey was first conducted in 2005, and has been repeated every second year since. This survey is one of a set of long-term and coordinated surveys that together cover the continental shelf and upper slope of most of the British Columbia coast. The objectives of these surveys are to provide fishery-independent abundance indices of all demersal fish species available to bottom trawling and to collect biological samples of selected species.

The survey follows a random depth-stratified design and the sampling units are 2 km by 2 km blocks. One hundred and eighty six (90.7 %) of the 205 blocks assessed in 2011 were successfully fished. The mean catch per tow was 453 kg with 7- 42 species per tow. The average number of species per tow was 21. The most abundant fish species encountered was Arrowtooth Flounder (*Reinhardtius stomias*), followed by Spotted Ratfish (*Hydrolagus colliciei*), North Pacific Spiny Dogfish (*Squalus suckleyi*), Dover Sole (*Microstomus pacificus*), and Rex Sole (*Glyptocephalus zachirus*). Biological data including individual length, weight, sex, maturity, and ageing structures were collected from selected species. Samples were collected from a total of 76 different species of fish. Oceanographic data, including water temperature, depth, salinity, and dissolved oxygen were also recorded for most tows.

RÉSUMÉ

Nottingham, M. K., Williams, D. C., Wyeth, M. R. et Olsen, N., 2017. Relevé synoptique au chalut de fond dans le détroit d'Hecate, du 24 mai 2011 - 21 Juin 2011. Rapp. manus. can. sci. halieut. aquat. 3141: viii + 63 p.

Un relevé au chalut de fond dans le détroit d'Hecate a été effectué par le navire de la Garde côtière canadienne *W. E. Ricker* entre le 24 mai et le 21 juin 2011. Le premier relevé synoptique au chalut de fond dans le détroit d'Hecate a été réalisé en 2005, et depuis l'opération est répétée tous les deux ans. Le relevé du détroit d'Hecate fait partie d'un ensemble de relevés à long terme et coordonnés couvrant le plateau continental et le haut du talus continental de la majorité de la côte de la Colombie-Britannique. Ces relevés servent à obtenir des indices d'abondance indépendants de la pêche pour toutes les espèces de poissons démersaux pouvant être pêchées au chalut de fond, ainsi qu'à prélever des échantillons biologiques sur des espèces précises.

Ce relevé est réalisé selon un plan d'échantillonnage aléatoire stratifié, et les unités d'échantillonnage sont des blocs de deux kilomètres carrés. Parmi les 205 blocs évalués en 2011, 186 (90.7 %) ont fait l'objet d'une pêche. La moyenne de prises par trait était de 453 kg, avec entre 7 et 42 espèces par trait. Le nombre moyen d'espèces par trait était de 21. Les espèces de poissons capturées le plus fréquemment étaient la plie à grande bouche (*Reinhardtius stomias*) suivi de la chimère tachetée (*Hydrolagus colliei*), de l'aiguillat commun du Pacifique Nord (*Squalus suckleyi*), de la sole de Douvres (*Microstomus pacificus*), et de la pile cynoglosse royale (*Glyptocephalus zachirus*). On a recueilli les données biologiques des espèces sélectionnées, notamment la longueur, le poids, le sexe, la maturité et la structure par âge. Les échantillons ont été prélevés sur un total de 76 espèces de poissons différentes. Les données océanographiques, notamment la température de l'eau, la profondeur, la salinité et la teneur en oxygène dissous, ont également été consignées pour la plupart des traits.

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INTRODUCTION

In 2003, a report by the Pacific Scientific Advice Review Committee recommended development of fishery-independent relative abundance indices using bottom trawl surveys in British Columbia waters (Sinclair et al. 2003). The report recommended that, as an initial step, a pilot survey be conducted in Queen Charlotte Sound (Figure 1). The survey design was synoptic in that it was intended to provide indices for as many species as possible rather than focusing on a limited number of target species.

The first Queen Charlotte Sound synoptic bottom trawl survey (QCS) was successfully completed in the summer of 2003 (Olsen et al. 2007). Following that, additional surveys were planned for the west coast of Vancouver Island (WCVI) beginning in 2004, Hecate Strait (HS) beginning in 2005, and the west coast of Haida Gwaii (WCHG, previously Queen Charlotte Islands) beginning in 2006. These surveys are conducted on a rotating biennial schedule with the Queen Charlotte Sound and Hecate Strait surveys conducted in odd-numbered years and the West Coast Vancouver Island and West Coast Haida Gwaii surveys conducted in even-numbered years. These four synoptic bottom trawl surveys provide comprehensive coverage of the continental shelf and upper slope of the British Columbia coast (Figure 1). Surveys are conducted on both chartered commercial fishing vessels as well as Canadian Coast Guard research trawlers.

The first HS synoptic bottom trawl survey was successfully completed in 2005 (Workman et al. 2008) and has been repeated every second year since. This document provides a brief summary of the results and methods from the fourth HS synoptic bottom trawl survey which occurred between May 24 and June 21, 2011. It is not intended as a comprehensive review of the survey, nor does it provide interpretive analysis of the survey results. Previous HS synoptic bottom trawl surveys are summarized in Workman et al. 2008, Olsen et al. 2009a and Olsen et al. 2009b.

METHODS

SURVEY DESIGN

The survey area is Hecate Strait, from approximately 52° 40' North latitude to 54° 40' North latitude and westward into Dixon Entrance to approximately 133° 00' West longitude. The southern region of this survey is nearly contiguous with the most northerly extent of the Queen Charlotte Sound survey (Figure 1).

Depth Strata

All of the synoptic bottom trawl surveys along the British Columbia coast have followed the same random depth-stratified design. Each survey area is divided into 2 km by 2 km blocks and each block is assigned one of four depth strata based on the average bottom depth in the block. The four depth strata vary between areas. The depth strata for the HS synoptic bottom trawl survey are 10-70 m, 70-130 m, 130-220 m, and 220-500 m (Table 1). For each survey in the HS series, blocks are randomly selected within each depth stratum.

Block Allocation

Following the methods in Sinclair et al. (2003), commercial fishery catch data were used to model the expected groundfish catches prior to the first survey in each area. The target number of tows in each stratum was based on providing the most precise catch rate indices for as many species as possible. However, in any given year, not all of the randomly selected blocks will be fishable. Further, after the inaugural survey, a block that has been fished in a previous year may be selected. The results of previous surveys in each area are used to estimate both the expected proportion of blocks in each stratum that would not result in a useable tow (predicted failure rate) as well as the expected probability of returning to a block that was successfully fished in a previous survey (predicted revisit rate). The predicted failure and revisit rates are combined into a single probability for each survey area and depth stratum. These probabilities are then used to calculate the anticipated number of blocks per stratum required to complete the target number of tows.

When a synoptic bottom trawl survey is conducted on a chartered commercial fishing vessel the contract is structured such that the survey will continue until the entire set of blocks that have been selected are assessed. Assuming that the predicted failure and revisit rates prove to be accurate, at the end of the survey the final distribution of tows in each strata should match the initial target allocation that was modeled based on the commercial fishing data.

Canadian Coast Guard research vessel time is allocated amongst various users so each year only a set number of days are available for the synoptic bottom trawl surveys. The operational model that is used for chartered vessels will not work in such a scenario. Instead, we try to fish as many blocks as possible while maintaining the target relative allocation of tows amongst strata. First, the total number of blocks that can be assessed in the number of available fishing days is estimated. Then, using the target relative allocation of tows and the predicted failure and revisit rates, various total “target”

numbers of tows are tested until the total allocated blocks matches the number of blocks that can be assessed in the time available.

As indicated above, the start and end dates for trips on Canadian Coast Guard ships are determined in advance. However, it may not be possible to fish on some days due to weather, mechanical breakdowns, or unforeseen events such as responding to search and rescue calls. Those days are lost, so if the entire set of selected blocks is started and it is not possible to fish on a number of days, part of the survey area could be missed. To avoid such a situation, the selected blocks are divided into a primary set and a secondary set. The primary set consists of two-thirds of the total blocks and is visited first. In early years of the survey, both the primary and secondary tows of blocks were created before the start of the survey. The primary set was visited first and then the secondary set would be visited once the primary set was almost completed. The secondary set could be adjusted by randomly either adding or removing blocks, depending on the remaining fishing days. This method invariably created some confusion on board the vessel when the secondary set was adjusted mid-trip. In 2011, the practice was slightly altered. Improvements to the at-sea software facilitated the generation of blocks so at the start of the survey only the primary set of blocks was created. The secondary set of blocks was then added once the primary set was nearly complete. The number of blocks in secondary set would be based on the number of remaining fishing days.

For the 2011 HS survey, 230 blocks were randomly selected based on 10 blocks a day and 23 days available for fishing (Table 1). The primary set consisted of 153 blocks while the secondary set was anticipated to be 77 blocks.

VESSEL

The survey was conducted aboard the Canadian Coast Guard Ship W.E. Ricker, a 58 m research stern trawler (Figure 2).

FISHING GEAR

The research trawl was an Atlantic Western IIA box trawl net connected to 1,100 kg U.S.A. Jet doors (Figure 3). The net was thoroughly cleaned between tows to prevent cross-contamination of catches. The net was also inspected for damage after every tow. If the net was damaged, it was repaired and restored to its original dimensions prior to resuming fishing. Two nets were rigged at the start of the survey so that if one net was damaged beyond what could be immediately repaired, the second one could be used.

The net includes a main body (wing and belly sections), two lengthening pieces, and a codend with liner (Figure 4 and Figure 5). The main body of the net has an 11 mm long-link steel chain frame and is constructed from a mix of double 4.5 mm strand 5 inch web, single 3.5 mm strand 5 inch web, and single 3.5 mm strand 4 ½ inch web (Figure 6). The intermediate sections are constructed from single 4.5 mm strand 4½ inch web (Figure 7). All web in the main body and lengthening pieces is constructed from a compacted strand braided polyethylene (Euroline Premium). The codend is constructed from double 5 mm strand 4 inch regular braided polyethylene web with a ½ inch 210/20 knotless nylon liner (Figure 7).

The Rockhopper footgear includes flying wing, mid wing, bunt wing, and bosom sections (Figure 8). The bosom section is built from 16 inch diameter (worn 18 inch) aircraft tires, while the bunt and mid wing sections have 16 inch Rockhopper disks. The flying wings have 5 inch rubber disks with swivel center 16 inch solid bunt bobbins at each end.

The specifications of net and footgear components are shown in Table 2 and dimensions for the assembled trawl pieces are shown in Figure 6 through Figure 8.

SCHEDULE

The survey was split into two sections or “legs” of 15 days in duration with six to seven science staff on each. Science crew change was on June 7 (Table 3).

FISHING PROTOCOL

Fishing operations were carried out based on the ship’s 12 hour crew rotation commencing at approximately 0700 hrs and ending at approximately 2000 hrs each day. By following this schedule, survey fishing was limited to daylight hours. Catch processing often continued after fishing operations were completed for the day.

Prior to fishing, the selected blocks were reviewed by the fishing master and chief scientist to determine a candidate set to visit each day. During this review process, one or more blocks might be determined not fishable by the fishing master based on his experience and knowledge of the area. In such cases the blocks were marked as “rejected based on prior knowledge”. After compiling a list of blocks to be visited, the most efficient route of travel between blocks would be planned.

The fishing master was asked to inspect each selected block and find a suitable tow location using the following criteria:

1. All tows should follow a depth contour.
2. If a block had been fished in a previous year, follow the same track so as to minimize the survey footprint.
3. If a block had not been fished in a previous year, make a tow entirely within the block and pass through the center of the block.
4. If it is not possible to make a tow through the center of the block, make a tow entirely within the block that passes as close to the center as possible.
5. If it is not possible to make a tow entirely within the block, make a tow such that at least 50 % of the tow is within the block.

The target tow length was 20 minutes long. The tow start was defined as the time at which the net mensuration data indicated stable bottom contact and the headline collapsed to 3-4 m above the bottom. After 19 minutes had elapsed, net haul back was initiated. The extra minute was intended to account for uptake of slack in the main warps. Although the target on-bottom time was 20 minutes, tows that were at least 14 minutes in length were accepted. This was a pragmatic decision that allowed for retention of many tows that would otherwise have been unusable due to hang-ups or early haul-backs.

Tows were conducted at a target speed of 2.8 to 3.0 nautical miles per hour (5.2 - 5.6 km/hr). When retrieving the net, the fishing master was asked to maintain a water velocity through the net that was consistent with the rest of the tow.

Tows were made in the target depth stratum of the block. If the only possible tow was in a different depth stratum than that assigned to the block, then the tow was conducted, and the block was reassigned to the appropriate depth stratum.

If it was not possible to find a suitable tow location then the block was marked as “rejected based on on-ground inspection.” The vessel would then move on to the next selected block.

The result of trawling was either a useable or unusable tow. The most common reasons for deeming a tow unusable were a hang-up of the fishing gear, tear-up of the trawl net, or not achieving the minimum bottom contact time. In the event of an unusable tow, additional attempts to fish the block could be made at either the same location or a different location within the block. Alternatively, the block could be deemed unfishable, in which case it was rejected.

If fishing was attempted in a block, the final status of the block would be either “successfully fished on first attempt”, “successfully fished after multiple attempts”, or “rejected after last attempt failed”. Rejected blocks were removed from the sampling frame for all future surveys. This will increase the efficiency of subsequent surveys, as less time will be spent inspecting blocks that cannot be fished. Some selected blocks may not have been successfully fished but may also not have been rejected. This could occur when a temporary obstacle (e.g. trap fishing gear, another vessel, or strong tidal currents) prevents fishing, or when there was insufficient time available to fish a block without spending another day in the area, or if fishing was attempted and although the tow was not successful, the block was not rejected. These blocks would be considered unassessed at the end of the survey and have a final status of “block not fished but remains in sampling frame” or “not rejected but last attempt failed”.

Fishing Data

The start and end positions, times, and bottom depths, as well as the direction, vessel speed, weather and environmental conditions, and warp length were recorded for every tow. In addition, global positioning system (GPS) data and bottom sounder data were logged continuously for the duration of the survey.

CATCH PROCESSING

At the end of each tow the net was retrieved and the catch dumped into a hopper which emptied into the wetlab below the trawl deck. Catch was sorted in the wetlab by species into separate baskets as it moved along a conveyor system. The catch from all tows, including both useable and unusable tows was recorded. Unusable tows, although not sampled for biological data, were recorded to track catch amounts. Whenever possible, the catch was completely sorted and weighed. However, for large catches in excess of 2000 kg or for catches with large numbers of small individuals, some method of total catch estimation and sub-sampling for species composition was conducted. The specific method of catch estimation and sub-sampling varied based on the total weight

and volume of the catch being subsampled as well as the composition of the catch. Large catches were typically visually estimated, although volumetric estimates were sometimes used. In all cases a representative sample of the catch was sorted to determine species composition and to provide individuals for biological sampling.

Baskets of species were weighed to the nearest 0.02 kg using a motion-compensating electronic balance. For small catches the number of individuals was often recorded in addition to the weight. Weights less than 0.02 kg were recorded as trace amounts. Catch was sorted to the lowest taxonomic group possible. For most fishes this was to the level of species although small and fragile species such as snailfish, lantern fish, or young-of-the-year rockfish may have only been identified to genus or family. In some cases a few representative individuals may have been frozen for later identification. Invertebrates may have only been identified to phylum or order.

BIOLOGICAL SAMPLING

While the primary purpose of the survey was to generate fishery-independent indices of relative abundance, the secondary goal was to collect biological information to characterize the size, sex, and age-composition of each species caught. Two types of biological samples were conducted: “Length” samples, consisting of individual fish length and sex, and “Age” samples, consisting of length, sex, weight, maturity, and age structure. In an effort to maintain a manageable workload, each species had a minimum catch level that had to be exceeded in the tow before biological samples would be collected. For rare species or species of special conservation concern the minimum number could be one fish, whereas for common and abundant species the number might be 25 or 50. The choice of the species to collect age samples from depended on the size of the catch of the species and the “desirability” of the species. The size of the catch was considered because the intent was to collect age structures from the largest catches of each species in each stratum over the survey. The “desirability” of the species was based on any conservation concerns and whether or not the species is commercially exploited. Biological samples were typically not collected from unusable tows.

Individual fish were measured to fork length, total length, standard length or other length depending on the species. All length measurements were collected to the nearest 1 cm for length samples, and 0.5 cm for age samples using an electronic fish measuring board. Fish were weighed using a motion-compensating electronic balance. Measurements were to the nearest 1, 2, or 5 grams depending on the size of the fish as well as the model and weight range of the scale in use.

There are a variety of hard parts of a fish that can be used to determine the age of the fish (Chilton and Beamish 1982). The specific structure that provides the most accurate and efficient estimate of age varies by species but all the structures have the common trait of a series of annular rings that can be counted. Sagittal otoliths (calcareous accretions of the inner ear) were collected from rockfish and flatfish species while fin rays were taken from Walleye Pollock (*Theragra chalcogramma*), Lingcod (*Ophiodon elongates*) and Pacific Cod (*Gadus macrocephalus*). Dorsal spines were collected from North Pacific Spiny Dogfish (*Squalus suckleyi*). All age samples collected on this survey were submitted to the Sclerochronology Lab located at the Pacific Biological Station in Nanaimo, BC for storage and future analysis. In addition to

the biological sampling described above, specific data, specimens or tissue samples are routinely collected following requests from other institutions or researchers. In 2011, whole Spotted Ratfish (*Hydrolagus colliei*) were collected, as well as tissue for DNA analysis from Longnose Skate (*Raja rhina*) and Blackspotted (*Sebastes melanostictus*) /Rougheye Rockfish (*Sebastes aleutianus*).

Until the mid-2000s, Rougheye Rockfish (*Sebastes aleutianus*) was considered to be a single, highly variable species with light and dark colour morphs. Genetic and morphological analysis has confirmed that there are two distinct species (Orr and Hawkins 2008): Rougheye Rockfish (*S. aleutianus*) and Blackspotted Rockfish (*S. melanostictus*). Historical biological and catch information for *S. aleutianus* must now be considered to be the aggregate of both species. During the 2008 WCHG survey an attempt was made to differentiate between the two species. That preliminary work showed that the two species cannot be reliably distinguished in the field because the morphological characteristics overlap. Further, there is evidence that the two species hybridize (Gharrett et al. 2005). Given that the historical data is recorded as *S. aleutianus* and that attempting to separate the species at the catch level is both time consuming and unreliable, starting in the fall of 2010, the catch for all surveys was simply recorded as *S. aleutianus*. Then, for every catch, biological samples were collected that included both a visual assessment of the species (*S. aleutianus* or *S. melanostictus*) as well as a tissue sample for genetic confirmation of the species. The survey catch data can then be partitioned into the two species using either the visual assessment or the results of genetic analyses. We do not attempt to partition the catch data for this report.

NET-MOUNTED SENSORS AND DATA RECORDERS

The W.E. Ricker is equipped with a Simrad ITI trawl mensuration system. Sensors attached to the net use acoustic signals to communicate with each other and the vessel and provide real-time net geometry including headline height and depth, as well as doorspread and wingspread which are used to calculate swept area. The ITI output was logged continuously during the survey and monitored in real-time during fishing operations.

A Mac Marine Industries Bottom Contact Sensor (BCS) was attached to the footrope to record contact with the sea floor. The BCS consists of a pressure housing with an Onset Hobo data recorder in a stainless steel sled that trails behind the footrope. The Hobo recorder measures acceleration in three axes which can then be converted into angles. The recorder is mounted in the sled such that the x-axis tilt indicates the angle of the steel sled. When the footgear contacts the bottom, the sled angle is approximately 80 degrees. When the footrope is off the bottom, the sled hangs down and the angle is approximately 40 degrees. These data are used to determine the exact times in each tow that the trawl net first and last contacted the sea floor, thus providing an accurate measure of total bottom contact time.

A Seabird SBE39 temperature and pressure recorder (TDR) was attached to the starboard wing of the trawl. A Seabird SBE19plus recorder (CTD) with a SBE43 dissolved oxygen sensor was attached to the center of the headline. The SBE19plus recorded conductivity, temperature and pressure data with derived values for salinity (Seabird, 1989) and depth (Seabird, 2002). The SBE43 recorded oxygen voltage output

data with calculated values for dissolved oxygen (ml/l) using temperature, pressure, and salinity data (Seabird, 2012). The SBE39 was activated prior to the first tow of the day and turned off after the last tow of the day, while the SBE19plus and SBE43 were turned on and off manually before and after each tow.

All data recorders were downloaded at the end of each day.

DATA RECORDING

All the fishing, catch, and biological data were recorded directly into a Microsoft SQL Server database. Details of the electronic data acquisition system used for this survey can be found in Olsen (2010).

All the data from the survey are archived in an Oracle database called “GFBIO”, maintained at the Pacific Biological Station in Nanaimo, BC.

RESULTS

FISHING

The 2011 HS synoptic bottom trawl survey was divided into two legs of two weeks each. From a total of 28 allotted survey days, one half day was lost to a Search and Rescue (SAR) call, three days were required for travel, one day was required for science crew change, one day for scheduled maintenance and two partial days were required for vessel crew changes and gear loading/unloading at the start and end of the survey (Table 3).

The initial plan was to assess 230 blocks based on 10 blocks per day and 23 fishing days. However, after completing the primary set of blocks it was clear that there was insufficient time remaining to complete the anticipated secondary set of 77 blocks. Therefore, the secondary set that was actually added consisted of 60 blocks (Table 4).

From the adjusted target of 213 blocks, eight were thought to have useable tows during the survey, but review of the BCS traces indicated that they did not have sufficient bottom contact time. The tows were re-coded as unusable and the blocks remain in the sampling frame as unassessed. Of the 205 blocks that were assessed, 186¹ were successfully fished, 15 were rejected based on on-ground inspections, and four were rejected after one or more failed fishing attempts (Table 4 and Figure 9).

A total of 203 tows, of which 186¹ were useable, were completed during the 23 days that fishing occurred. Table 5 shows tow results by stratum for this survey. Seventeen tows were not useable due to hang-ups, tear-ups, or insufficient bottom time. The scope (ratio of warp length to bottom depth) used for tows in 2011 is shown in Table 6 and Figure 10. Complete information for each tow including date, duration, location, average depth, average speed, warp, total catch weight and usability is presented in Appendix A.

¹ The 186 successful blocks and tows includes tow 56 in block 3388 which was successfully fished in 2011 but, when the block was visited again in 2015, the tow failed due to insufficient bottom time. The block was then rejected as unfishable and the 2011 fishing event data was updated to unusable.

CATCH

A total of 90,961 kg of fish and invertebrates was caught during the 2011 HS survey. The total catch weight for useable tows was typically less than 600 kg per tow and averaged 453 kg per tow (Figure 11). The majority of the catch (89,665 kg, 98.6 %) consisted of 115 different species of fish, including 26 rockfish and 17 flatfish species. The remainder (1,296 kg) consisted of 170 invertebrate groups. The average number of species identified in useable tows was 21 and ranged from seven to 42 per tow (Figure 12). The frequency of occurrence, maximum catch weight, mean catch weight per tow, and total survey catch weight of each species are shown in Table 7. Of the fish species caught, Arrowtooth Flounder (*Reinhardtius stomias*), was the most dominant by weight, followed by Spotted Ratfish (*Hydrolagus colliei*), North Pacific Spiny Dogfish (*Squalus suckleyi*), Dover Sole (*Microstomus pacificus*), and Rex Sole (*Glyptocephalus zachirus*). Catch weights by tow for the 50 most commonly encountered species in this survey are included in Appendix B.

BIOLOGICAL SAMPLES AND SPECIMENS

Biological samples were collected from a total of 34,823 individuals of 76 species of fish. The number of samples and recorded biological attributes per species is shown in Table 8. A summary of the biological data collected for each species is shown in Table 9.

NET-MOUNTED SENSORS AND DATA RECORDERS

Simrad ITI net mensuration data were collected from 173 tows although doorspread was only recorded from 163 of those (Table 10).

Seabird SBE39 data (water temperature and depth) were collected from 194 tows while Seabird SBE19plus and SBE43 data (conductivity, water temperature, depth and dissolved oxygen) were collected from 192 tows (Table 10 and Figure 13).

BCS data were collected from 194 tows (Table 10). An example of the type of data collected by the BCS is shown in Figure 14.

Global positioning system (GPS) data and bottom sounder data are available for all 203 tows.

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Table 1. The 2011 HS synoptic bottom trawl survey design showing block allocation per stratum based on the target allocation and the combined predicted failure and revisit rates (Predicted Adjustment).

Depth Stratum (m)	Target Allocation	Target Tows	Predicted Adjustment	Total Block Allocation	Primary Set	Secondary Set	Revised Secondary Set
10-70	0.38	70	0.26	95	63	32	25
70-130	0.28	51	0.11	57	38	19	15
130-220	0.24	45	0.24	59	39	20	15
220-500	0.10	17	0.11	19	13	6	5
Total	1.00	183		230	153	77	60

Table 2. Atlantic Western IIA box trawl net specifications for the 2011 HS synoptic bottom trawl survey.

Component	Dimension
Wings, square, and bottom belly netting	combination of 5 inch double strand 4.5mm Euroline Premium and 5 inch single strand 3.5 mm Euroline Premium
Belly netting	4 ½ inch single strand 3.5mm Euroline Premium
Lengthening piece netting	4 ½ inch single strand 4.5 mm Euroline Premium
Codend netting	4 inch double 5 mm orange braided polyethylene
Codend liner	½ inch 210/20 knotless nylon
Floats	8 inch diameter center hole rated to 2000 m
Net frame chain	11 mm long link (64 mm inner length) grade 80 steel chain
Net frame rope	1 inch 3-strand twisted Polysteel
Net frame rope to chain lashing	3/8 inch 3-strand twisted Esterpro
Riblines	1 ¼ inch 3-strand twisted Polysteel
Footgear bosom	16 inch diameter tires (worn 18 inch aircraft tires)
Rubber spacers	4 inch, 5 inch, and 6 inch diameter disks cut from tires
Footgear wing center chain	16 mm mid link (65 mm inner length) grade 80 steel chain
Footgear wing top chain	11 mm long link (64 mm inner length) grade 80 steel chain
Rockhopper disk	16 inch diameter
Solid rubber bunt bobbin with steel tube center	16 inch diameter by 10 inch
Steel toggles	5 inch diameter by 3 inch long with 13 inches of chain (from center of toggle)

Table 3. Summary of operations during the 2011 HS synoptic bottom trawl survey.

Date	Fishing			Blocks Assessed	Tows			Notes
	Start	End	Hours		Useable	Not Useable	Total	
05/24/2011	-	-	-	-	-	-	-	half day vessel crew change/ load
05/25/2011	-	-	-	-	-	-	-	travel
05/26/2011	7:08	18:52	11	6	5	2	7	
05/27/2011	7:09	18:57	11	10	9	1	10	
05/28/2011	7:07	19:12	12	15	9	0	9	
05/29/2011	7:11	19:11	12	10	10	0	10	
05/30/2011	7:13	19:13	12	11	10	0	10	
05/31/2011	7:07	18:56	11	11	10	1	11	
06/01/2011	7:09	18:19	11	8	7	1	8	
06/02/2011	7:35	19:09	12	10	10	0	10	
06/03/2011	7:37	18:43	11	12	8	1	9	
06/04/2011	7:13	19:16	12	11	11	0	11	
06/05/2011	14:33	18:17	4	2	2	2	4	SAR call
06/06/2011	7:27	13:58	6	6	6	0	6	half day travel
06/07/2011	-	-	-	-	-	-	-	science crew change
06/08/2011	7:30	18:58	11	10	10	1	11	
06/09/2011	7:37	17:51	10	7	6	0	6	pick up additional science crew
06/10/2011	7:14	18:43	11	10	8	1	9	
06/11/2011	7:11	19:30	12	10	8	2	10	
06/12/2011	7:05	19:28	12	13	10	2	12	
06/13/2011	7:08	19:42	12	11	9	3	12	
06/14/2011	7:09	19:16	12	10	10	0	10	
06/15/2011	7:11	17:01	10	9	8	1	9	
06/16/2011	7:10	18:55	11	8	7	0	7	
06/17/2011	9:23	19:09	10	9	8	0	8	
06/18/2011	7:20	14:12	7	4	4	0	4	half day travel
06/19/2011	-	-	-	-	-	-	-	travel
06/20/2011	-	-	-	-	-	-	-	scheduled maintenance
06/21/2011	-	-	-	-	-	-	-	half day vessel crew change/ unload
Total				213	185	18	203	
Average Per Day				9.3	8.0	0.8	8.8	

Table 4. Block results by stratum for the 2011 HS synoptic bottom trawl survey.

Depth Stratum (m)	Primary Set	Secondary Set	Successful	Rejected Prior	Rejected Inspected	Rejected Failed	Not Assessed	Total
10-70	63	25	71 ¹	0	14	3	0	88
70-130	38	15	51	0	0	0	2	53
130-220	39	15	50	0	0	0	4	54
220-500	13	5	14	0	1	1	2	18
Total	153	60	186	0	15	4	8	213

Table 5. Tow results by stratum for the 2011 HS synoptic bottom trawl survey.

Depth Stratum (m)	Useable	Not Useable
10-70	71 ¹	3
70-130	51	3
130-220	50	7
220-500	14	4
Total	186	17

Table 6. Mean warp length and scope by 50 meter depth interval for the 2011 HS synoptic bottom trawl survey.

Depth (m)	Mean Warp (m)	Mean Scope
0-50	122	3.64
50-100	206	2.76
100-150	322	2.57
150-200	415	2.35
200-250	494	2.20
250-300	560	2.13

Table 7. Frequency of occurrence, maximum catch weight, mean catch weight per tow, and total survey catch weight of each species captured during the 2011 HS synoptic bottom trawl survey. Trace amounts (<0.02 kg) are entered as -.

Common Name	Scientific Name	Number of Tows	Catch Weight (kg)		
			Max	Mean	Total
Rockfishes	Family Scorpaenidae				
Pacific Ocean Perch	<i>Sebastes alutus</i>	66	146.60	8.46	533.10
Silvergray Rockfish	<i>Sebastes brevispinis</i>	62	217.43	20.70	1283.49
Redbanded Rockfish	<i>Sebastes babcocki</i>	47	143.18	17.43	819.33
Quillback Rockfish	<i>Sebastes maliger</i>	44	81.99	11.45	503.92
Yellowtail Rockfish	<i>Sebastes flavidus</i>	41	764.67	52.41	2148.87
Shortspine Thornyhead	<i>Sebastolobus alascanus</i>	39	98.36	9.72	379.11
Rougeye Rockfish	<i>Sebastes aleutianus</i>	24	9.59	2.70	64.75
Canary Rockfish	<i>Sebastes pinniger</i>	24	206.36	18.53	444.73
Redstripe Rockfish	<i>Sebastes proriger</i>	17	572.98	61.13	1039.15
Copper Rockfish	<i>Sebastes caurinus</i>	17	20.30	5.78	98.27
Greenstriped Rockfish	<i>Sebastes elongatus</i>	15	10.06	2.44	36.55
Sharpchin Rockfish	<i>Sebastes zacentrus</i>	12	8.18	1.44	17.26
Pygmy Rockfish	<i>Sebastes wilsoni</i>	7	13.68	2.86	20.05
Widow Rockfish	<i>Sebastes entomelas</i>	7	148.10	27.72	194.03
Yelloweye Rockfish	<i>Sebastes ruberrimus</i>	6	7.06	4.93	29.61
Harlequin Rockfish	<i>Sebastes variegatus</i>	5	2.72	0.92	4.61
Bocaccio	<i>Sebastes paucispinis</i>	5	43.88	15.85	79.26
Yellowmouth Rockfish	<i>Sebastes reedi</i>	4	439.06	134.09	536.38
Darkblotched Rockfish	<i>Sebastes crameri</i>	4	0.82	0.54	2.14
China Rockfish	<i>Sebastes nebulosus</i>	3	1.87	1.24	3.71
Rosethorn Rockfish	<i>Sebastes helvomaculatus</i>	3	4.96	1.89	5.66
Dusky Rockfish	<i>Sebastes variabilis</i>	2	95.38	49.59	99.18
Shortraker Rockfish	<i>Sebastes borealis</i>	2	5.20	4.85	9.70
Splitnose Rockfish	<i>Sebastes diploproa</i>	1	0.03	0.03	0.03
Puget Sound Rockfish	<i>Sebastes emphaeus</i>	1	0.98	0.98	0.98
Shortbelly Rockfish	<i>Sebastes jordani</i>	1	0.20	0.20	0.20
Flatfishes	Order Pleuronectiformes				
Arrowtooth Flounder	<i>Reinhardtius stomias</i>	148	1643.43	166.68	24334.64
Rex Sole	<i>Glyptocephalus zachirus</i>	131	712.62	35.98	4713.14
Pacific Halibut	<i>Hippoglossus stenolepis</i>	125	1249.24	28.86	3578.06
Dover Sole	<i>Microstomus pacificus</i>	125	605.20	51.34	6417.10
English Sole	<i>Parophrys vetulus</i>	121	435.58	33.44	4046.27
Southern Rock Sole	<i>Lepidopsetta bilineata</i>	90	221.10	23.81	2142.61
Petrale Sole	<i>Eopsetta jordani</i>	83	81.40	7.63	633.44
Flathead Sole	<i>Hippoglossoides elassodon</i>	59	177.14	16.32	946.76
Sand Sole	<i>Psettichthys melanostictus</i>	58	61.18	8.50	492.96
Curlfin Sole	<i>Pleuronichthys decurrens</i>	43	15.32	2.67	114.70
Slender Sole	<i>Lyopsetta exilis</i>	43	9.29	1.55	64.95
Butter Sole	<i>Isopsetta isolepis</i>	35	55.90	5.36	187.58
Pacific Sanddab	<i>Citharichthys sordidus</i>	25	113.75	8.67	216.73
Starry Flounder	<i>Platichthys stellatus</i>	9	284.62	37.02	333.15
Speckled Sanddab	<i>Citharichthys stigmaeus</i>	7	0.12	0.07	0.49
C-O Sole	<i>Pleuronichthys coenosus</i>	2	0.30	0.22	0.44
Yellowfin Sole	<i>Limanda aspera</i>	1	1.08	1.08	1.08
Cod-Like Fishes	Order Gadiformes				
Pacific Cod	<i>Gadus macrocephalus</i>	134	419.62	19.11	2503.86
Walleye Pollock	<i>Theragra chalcogramma</i>	105	380.54	15.90	1669.87

Common Name	Scientific Name	Number of Tows	Catch Weight (kg)		
			Max	Mean	Total
Pacific Tomcod	<i>Microgadus proximus</i>	26	10.04	1.57	40.85
Pacific Hake	<i>Merluccius productus</i>	10	9.72	4.98	49.83
Cartilaginous Fish	Class Chondrichthyes				
Spotted Ratfish	<i>Hydrolagus colliei</i>	197	1991.46	93.06	18426.83
North Pacific Spiny Dogfish	<i>Squalus suckleyi</i>	152	2495.11	43.32	6584.01
Longnose Skate	<i>Raja rhina</i>	51	48.14	10.72	546.55
Big Skate	<i>Raja binoculata</i>	48	182.56	30.90	1483.14
Sandpaper Skate	<i>Bathyraja interrupta</i>	26	13.33	1.97	49.27
Aleutian Skate	<i>Bathyraja aleutica</i>	4	35.33	13.57	54.29
Greenlings	Family Hexagrammidae				
Lingcod	<i>Ophiodon elongatus</i>	55	94.12	9.41	517.82
Kelp Greenling	<i>Hexagrammos decagrammus</i>	20	19.02	4.07	81.37
Sculpins	Family Cottidae				
Roughback Sculpin	<i>Chitonotus pugetensis</i>	38	2.04	0.20	5.30
Darkfin Sculpin	<i>Malacocottus zonurus</i>	18	1.14	0.29	2.65
Slim Sculpin	<i>Radulinus asprellus</i>	15	-	-	-
Threadfin Sculpin	<i>Icelinus filamentosus</i>	11	1.30	0.34	3.07
Tadpole Sculpin	<i>Psychrolutes paradoxus</i>	10	0.08	0.05	0.10
Buffalo Sculpin	<i>Enophrys bison</i>	9	0.92	0.34	3.08
Bigmouth Sculpin	<i>Hemitripterus bolini</i>	8	16.36	5.95	47.61
Ribbed Sculpin	<i>Triglops pingelii</i>	7	0.02	0.02	0.08
Red Irish Lord	<i>Hemilepidotus hemilepidotus</i>	6	1.12	0.43	2.60
Roughspine Sculpin	<i>Triglops macellus</i>	6	0.12	0.06	0.18
Sailfin Sculpin	<i>Nautichthys oculofasciatus</i>	4	0.07	0.03	0.10
Cabezon	<i>Scorpaenichthys marmoratus</i>	3	3.00	2.31	6.93
Spotfin Sculpin	<i>Icelinus tenuis</i>	3	-	-	-
Great Sculpin	<i>Myoxocephalus polyacanthocephalus</i>	3	1.20	0.94	2.83
Blackfin Sculpin	<i>Malacocottus kincaidii</i>	1	-	-	-
Brown Irish Lord	<i>Hemilepidotus spinosus</i>	1	0.05	0.05	0.05
Dusky Sculpin	<i>Icelinus burchami</i>	1	-	-	-
Thornback Sculpin	<i>Paricelinus hopliticus</i>	1	-	-	-
Spinyhead Sculpin	<i>Dasycottus setiger</i>	1	0.50	0.50	0.50
Eelpouts	Family Zoarcidae				
Blackbelly Eelpout	<i>Lycodes pacificus</i>	27	21.86	1.81	36.26
Shortfin Eelpout	<i>Lycodes brevipes</i>	14	0.05	0.05	0.10
Black Eelpout	<i>Lycodes diapterus</i>	8	1.30	0.56	3.35
Wattled Eelpout	<i>Lycodes palearis</i>	8	1.52	0.69	5.49
Bigfin Eelpout	<i>Lycodes corteziensis</i>	1	-	-	-
Pallid Eelpout	<i>Lycodapus mandibularis</i>	1	-	-	-
Poachers	Family Agonidae				
Sturgeon Poacher	<i>Podothecus accipenserinus</i>	63	1.20	0.23	10.97
Bigeye Poacher	<i>BathYGONUS pentacanthus</i>	18	0.08	0.04	0.16
Northern Spearnose Poacher	<i>Agonopsis vulsa</i>	3	0.03	0.03	0.05
Warty Poacher	<i>Chesnonia verrucosa</i>	2	-	-	-
Pygmy Poacher	<i>Odontopyxis trispinosa</i>	1	-	-	-
Blackfin Poacher	<i>BathYGONUS nigripinnis</i>	1	-	-	-
Smootheye Poacher	<i>Xeneretmus leiops</i>	1	-	-	-
Poachers	Agonidae (Family)	1	0.03	0.03	0.03
Lanternfishes	Family Myctophidae				
Pinpoint Lampfish	<i>Nannobranchium regale</i>	1	-	-	-
Bigeye Flashlightfish	<i>Protomyctophum thompsoni</i>	1	-	-	-
Lanternfish	<i>Tarletonbeania</i> (Genus)	1	-	-	-
Northern Lampfish	<i>Stenobranchius leucopsarus</i>	1	-	-	-

Common Name	Scientific Name	Number of Tows	Catch Weight (kg)		
			Max	Mean	Total
Other Fish					
Sablefish	<i>Anoplopoma fimbria</i>	64	33.34	5.86	374.94
Pacific Herring	<i>Clupea pallasii</i>	52	40.21	5.84	297.88
Eulachon	<i>Thaleichthys pacificus</i>	51	34.62	4.01	196.25
Pacific Sand Lance	<i>Ammodytes hexapterus</i>	40	21.12	1.79	62.79
Snake Prickleback	<i>Lumpenus sagitta</i>	31	0.38	0.10	1.28
Shiner Perch	<i>Cymatogaster aggregata</i>	19	2.01	0.26	3.95
Northern Ronquil	<i>Ronquilus jordani</i>	12	0.04	0.03	0.13
Blue-eyed Searcher	<i>Bathymaster signatus</i>	5	0.08	0.04	0.16
Smooth Alligatorfish	<i>Anoplagonus inermis</i>	5	-	-	-
Pacific Sandfish	<i>Trichodon trichodon</i>	3	0.16	0.11	0.33
Prowfish	<i>Zaprora silenus</i>	2	0.64	0.50	1.00
Gray Starsnout	<i>BathYGONUS alascanus</i>	2	-	-	-
Smalldisk Snailfish	<i>Careproctus gilberti</i>	1	-	-	-
Pacific Spiny Lumpsucker	<i>Eumicrotremus orbis</i>	1	-	-	-
Humpback Or Hump-backed Whale	<i>Megaptera novaeangliae</i>	1	-	-	-
Whitebarred Prickleback	<i>Poroclinus rothrocki</i>	1	0.24	0.24	0.24
Wolf Eel	<i>Anarrhichthys ocellatus</i>	1	6.46	6.46	6.46
Pricklebacks	Stichaeidae (Family)	1	0.01	0.01	0.01
Northern Smoothtongue	<i>Leuroglossus schmidti</i>	1	0.38	0.38	0.38
Tube Snout	<i>Aulorhynchus flavidus</i>	1	-	-	-
Black Hagfish	<i>Eptatretus deani</i>	1	0.10	0.10	0.10
Pacific Hagfish	<i>Eptatretus stoutii</i>	1	0.73	0.73	0.73
Pink Salmon	<i>Oncorhynchus gorboscha</i>	1	1.41	1.41	1.41
Chinook Salmon	<i>Oncorhynchus tshawytscha</i>	1	2.10	2.10	2.10
Rainbow Trout (aka Steelhead)	<i>Oncorhynchus mykiss</i>	1	0.16	0.16	0.16
Crabs and Shrimp					
Class Malacostraca					
Pink Shrimp (smooth)	<i>Pandalus jordani</i>	72	11.78	1.40	92.20
Sidestripe Shrimp	<i>Pandalopsis dispar</i>	53	5.26	1.21	56.64
Northern Crangon	<i>Crangon alaskensis</i>	32	0.01	0.01	0.01
Graceful Decorator Crab	<i>Oregonia gracilis</i>	28	0.16	0.05	0.54
Prawn	<i>Pandalus platyceros</i>	21	0.90	0.32	5.12
Right-handed Hermits	Paguridae (Family)	15	-	-	-
Furrowed Rock Crab	<i>Cancer branneri</i>	14	0.06	0.06	0.06
Nelson's Argid	<i>Argis levior</i>	13	0.01	0.01	0.01
Spike Shrimp (horned Shrimp)	<i>Paracrangon echinata</i>	12	0.01	0.01	0.01
Dungeness Crab	<i>Metacarcinus magister</i>	10	13.62	3.88	38.82
Common Two-spined Crangon	<i>Neocrangon communis</i>	9	0.01	0.01	0.01
Yellowleg Shrimp	<i>Pandalus tridens</i>	7	0.34	0.25	0.74
Coonstripe Shrimp	<i>Pandalus danae</i>	7	-	-	-
Isopods	Isopoda (Order)	7	-	-	-
-	<i>Pagurus</i> (Genus)	5	0.42	0.25	0.76
Glass Shrimp	<i>Pasiphaea pacifica</i>	4	0.46	0.33	1.00
Stevens Hermit	<i>Pagurus stevensae</i>	4	1.98	1.37	4.10
Pygmy Rock Crab	<i>Cancer oregonensis</i>	4	-	-	-
Northern Argid	<i>Argis lar</i>	3	-	-	-
Red Rock Crab	<i>Cancer productus</i>	2	1.09	0.80	1.60
Brown Box Crab	<i>Lopholithodes foraminatus</i>	2	0.32	0.32	0.32
Flatspine Triangle Crab	<i>Phyllolithodes papillosus</i>	2	-	-	-
Porcelain Crabs	Porcellanidae (Family)	2	-	-	-
Euphausiids	Euphausiacea (Order)	2	-	-	-
Humpback Shrimp	<i>Pandalus hypsinotus</i>	2	-	-	-

Common Name	Scientific Name	Number of Tows	Catch Weight (kg)		
			Max	Mean	Total
Common Argid	<i>Argis alaskensis</i>	2	-	-	-
-	Crangonidae (Family)	1	-	-	-
-	<i>Pandalopsis</i> (Genus)	1	-	-	-
Pink Shrimp (flexed)	<i>Pandalus goniurus</i>	1	-	-	-
Squat Lobster	<i>Munida quadrispina</i>	1	-	-	-
Spider Crabs	Majidae (Family)	1	-	-	-
Decorator Crabs	<i>Oregonia</i> (Genus)	1	-	-	-
Graceful Kelp Crab	<i>Pugettia gracilis</i>	1	-	-	-
Sharp-nosed Crab	<i>Scyra acutifrons</i>	1	-	-	-
Redclaw Crab	<i>Chorilia longipes</i>	1	-	-	-
Alaskan Hermit	<i>Pagurus ochotensis</i>	1	-	-	-
Aleutian Hermit	<i>Pagurus aleuticus</i>	1	-	-	-
-	<i>Pagurus beringanus</i>	1	3.66	3.66	3.66
Spiny Side Shrimp (Spiny Lebbeid)	<i>Lebbeus groenlandicus</i>	1	-	-	-
-	<i>Eualus</i> (Genus)	1	-	-	-
Crangons	<i>Crangon</i> (Genus)	1	-	-	-
-	<i>Paracrangon</i> (Genus)	1	-	-	-
Sea Stars	Class Asteroidea				
Sunflower Starfish	<i>Pycnopodia helianthoides</i>	30	9.25	1.80	37.76
Pink Short-spined Star	<i>Pisaster brevispinus</i>	28	5.99	1.22	34.13
Mud Star	<i>Ctenodiscus crispatus</i>	26	21.42	2.15	42.93
-	<i>Henricia</i> (Genus)	21	1.00	0.37	1.10
Rose Starfish	<i>Crossaster papposus</i>	20	0.20	0.06	0.28
Cushion Star	<i>Pteraster tessellatus</i>	19	0.44	0.12	0.74
Long-armed Sea Star	<i>Orthasterias koehleri</i>	12	0.52	0.18	1.60
Fish-eating Star	<i>Stylasterias forreri</i>	10	0.31	0.17	0.84
-	<i>Cheiraster dawsoni</i>	9	1.16	0.51	3.56
Sand Star	<i>Luidia foliolata</i>	9	1.22	0.33	2.95
-	<i>Dipsacaster</i> (Genus)	4	0.18	0.11	0.33
Vermillion Starfish	<i>Mediaster aequalis</i>	4	0.06	0.06	0.06
Spiny Red Sea Star	<i>Hippasteria spinosa</i>	3	0.46	0.32	0.97
Cookie Star	<i>Ceramaster patagonicus</i>	3	0.12	0.12	0.24
-	<i>Pteraster</i> (Genus)	3	-	-	-
-	<i>Lophaster furcilliger</i>	3	-	-	-
-	<i>Solaster</i> (Genus)	3	0.08	0.08	0.08
Morning Sun Starfish	<i>Solaster dawsoni</i>	3	-	-	-
-	<i>Nearchaster</i> (Genus)	3	0.01	0.01	0.01
-	<i>Pseudarchaster</i> (Genus)	3	0.20	0.12	0.23
-	<i>Pseudarchaster alascensis</i>	3	-	-	-
-	<i>Lophaster furcilliger vexator</i>	2	0.02	0.02	0.02
-	<i>Gephyreaster swifti</i>	2	0.13	0.09	0.18
Leather Star	<i>Dermasterias imbricata</i>	2	0.84	0.54	1.08
-	<i>Henricia sanguinolenta</i>	2	-	-	-
-	<i>Leptasterias</i> (Genus)	1	-	-	-
-	<i>Evasterias</i> (Genus)	1	-	-	-
Mottled Star	<i>Evasterias troschelii</i>	1	0.13	0.13	0.13
-	<i>Poraniopsis</i> (Genus)	1	-	-	-
Blood Star	<i>Henricia leviuscula annectens</i>	1	0.13	0.13	0.13
-	<i>Hippasteria</i> (Genus)	1	0.10	0.10	0.10
Northern Sun Star	<i>Solaster borealis</i>	1	0.34	0.34	0.34
-	<i>Diplopteraster multipes</i>	1	0.56	0.56	0.56
Starfish	Asteroidea (Class)	1	-	-	-
Brittle Stars	Class Ophiuroidea				
-	<i>Ophiura sarsi</i>	9	-	-	-

Common Name	Scientific Name	Number of Tows	Catch Weight (kg)		
			Max	Mean	Total
Basket Star	<i>Gorgonocephalus eucnemis</i>	5	0.19	0.14	0.58
-	<i>Amphiophiura ponderosa</i>	4	0.18	0.11	0.32
-	Ophiuroidea (Class)	3	-	-	-
-	<i>Ophiura</i> (Genus)	2	0.04	0.04	0.04
-	Ophiactidae (Family)	2	-	-	-
-	<i>Ophiopholis</i> (Genus)	2	0.05	0.05	0.05
-	<i>Ophiopholis aculeata</i>	2	-	-	-
-	<i>Ophiopholis longispina</i>	1	-	-	-
-	<i>Ophiacantha</i> (Genus)	1	-	-	-
Sea Cucumbers	Class Holothuroidea				
Giant Red Sea Cucumber	<i>Parastichopus californicus</i>	13	2.32	0.82	10.63
Whitespotted Sea Cucumber	<i>Parastichopus leukothele</i>	6	1.10	0.49	2.47
Soft Sea Cucumber	<i>Pseudostichopus mollis</i>	4	3.48	1.74	6.97
Sweet Potato Sea Cucumber	<i>Molpadia intermedia</i>	4	-	-	-
Sea Cucumbers	Holothuroidea (Class)	4	-	-	-
-	<i>Pentamera</i> (Genus)	2	-	-	-
-	<i>Synallactes</i> (Genus)	2	-	-	-
Peppered Sea Cucumber	<i>Cucumaria piperata</i>	1	-	-	-
Papillose Sea Cucumber	<i>Synallactes challengerii</i>	1	0.24	0.24	0.24
Octopuses and Squid	Class Cephalopoda				
Opalescent Inshore Squid	<i>Doryteuthis opalescens</i>	42	5.82	0.65	22.20
Pacific Bobtail Squid	<i>Rossia pacifica</i>	38	0.85	0.24	2.15
Schoolmaster Gonate Squid	<i>Beryteuthis magister</i>	13	22.38	4.58	59.49
Giant Pacific Octopus	<i>Enteroctopus dofleini</i>	2	13.59	10.35	20.69
Smoothskin Octopus	<i>Benthoctopus leioderma</i>	2	0.54	0.54	0.54
Octopus	<i>Octopus</i> (Genus)	1	19.61	19.61	19.61
Sea Urchins	Super Order Echinacea				
Fragile Urchin	<i>Allocentrotus fragilis</i>	61	8.22	1.20	72.22
Pallid Urchin	<i>Strongylocentrotus pallidus</i>	7	0.44	0.20	1.01
Green Urchin	<i>Strongylocentrotus droebachiensis</i>	3	0.06	0.06	0.06
Purple Sea Urchin	<i>Strongylocentrotus purpuratus</i>	2	1.34	1.05	2.10
Sea Urchins	Echinacea (Super Order)	1	1.02	1.02	1.02
Red Urchin	<i>Strongylocentrotus franciscanus</i>	1	3.08	3.08	3.08
Jellyfish	Phylum Cnidaria				
Lions Mane	<i>Cyanea capillata</i>	37	4.55	0.50	12.98
Jellyfish	Scyphozoa (Class)	8	0.22	0.18	1.10
-	<i>Periphylla periphylla</i>	1	0.03	0.03	0.03
Anemones and Corals	Class Anthozoa				
-	<i>Metridium</i> (Genus)	35	164.18	9.37	328.05
Anemone	Actiniaria (Order)	25	13.00	1.99	35.83
Sea Pen	<i>Ptilosarcus gurneyi</i>	16	0.50	0.17	1.91
Sea Pens	Pennatulacea (Order)	7	3.16	0.53	3.74
Sea Whip	<i>Balticina septentrionalis</i>	7	0.12	0.08	0.42
-	<i>Primnoa</i> (Genus)	3	153.45	83.92	167.85
-	<i>Primnoa pacifica</i>	1	5.94	5.94	5.94
-	<i>Urticina columbiana</i>	1	0.53	0.53	0.53
Snails and Slugs	Class Gastropoda				
Oregontriton	<i>Fusitriton oregonensis</i>	22	0.80	0.21	2.50
Seaslugs	Nudibranchia (Order)	17	0.10	0.06	0.33
Rosy Tritonia	<i>Tritonia diomedea</i>	16	0.16	0.07	0.46
California Armina	<i>Armina californica</i>	10	1.24	0.34	1.34
-	Dorididae (Family)	5	-	-	-
-	<i>Cidarina</i> (Genus)	3	-	-	-
Adams Spiny Margarite	<i>Cidarina cidaris</i>	2	-	-	-

Common Name	Scientific Name	Number of Tows	Catch Weight (kg)		
			Max	Mean	Total
Lewis Moonsnail	<i>Euspira lewisii</i>	1	0.12	0.12	0.12
-	<i>Neptunea</i> (Genus)	1	-	-	-
-	<i>Neptunea amianta</i>	1	-	-	-
Gastropods	Gastropoda (Class)	1	-	-	-
-	Tritoniidae (Family)	1	-	-	-
Whelks	Buccinidae (Family)	1	0.11	0.11	0.11
Sea-clown Triopha	<i>Triopha catalinae</i>	1	-	-	-
-	<i>Archidoris</i> (Genus)	1	-	-	-
Giant Orange Tochui	<i>Tochuina tetraquetra</i>	1	3.06	3.06	3.06
Other Invertebrate Species					
Sponges	Porifera (Phylum)	49	4.10	0.83	25.60
Pink Scallop, (aka Reddish Scallop)	<i>Chlamys rubida</i>	22	1.12	0.32	5.40
-	Tunicata (Sub Phylum)	21	0.73	0.14	1.14
Spiny Scallop	<i>Chlamys hastata</i>	16	5.78	1.22	15.85
Heart Urchins	Atelostomata (Super Order)	15	25.60	2.44	34.16
Sea Mouse	<i>Aphrodita</i> (Genus)	9	-	-	-
Glass Sponges	Hexactinellida (Class)	7	8.15	3.62	25.34
Sea Lilies and Feather Stars	Crinoidea (Class)	6	0.01	0.01	0.01
Giant Barnacle	<i>Balanus nubilis</i>	6	10.04	5.88	35.30
Salp	<i>Cyclosalpa affinis</i>	4	-	-	-
Proboscis Worm	Nemertea (Phylum)	4	-	-	-
Tube Worms	Sedentaria (Sub Class)	4	2.80	1.78	7.12
Peanutworms	Sipuncula (Phylum)	3	-	-	-
-	Bryozoa (Phylum)	3	0.66	0.36	0.72
Giant Rock-scallop (aka Purple Hinged Rock Scallop)	<i>Crassadoma gigantea</i>	3	0.33	0.32	0.63
Bivalve Molluscs	Bivalvia (Class)	3	-	-	-
Salps	Salpida (Order)	3	0.08	0.05	0.10
-	<i>Halocynthia</i> (Genus)	2	-	-	-
Mussels	Mytilidae (Family)	2	8.10	4.32	8.63
Lampshells	Brachiopoda (Phylum)	2	-	-	-
Scale Worms	<i>Polynoe</i> (Genus)	2	-	-	-
Fish Eggs		1	1.67	1.67	1.67
Polychaete Worms	Polychaeta (Class)	1	-	-	-
-	Platyhelminthes (Phylum)	1	-	-	-
Bath Sponges	Demospongiae (Class)	1	1.36	1.36	1.36
-	<i>Yoldia</i> (Genus)	1	-	-	-
Barnacles	Cirripedia (Infraclass)	1	-	-	-
-	<i>Balanus</i> (Genus)	1	4.64	4.64	4.64

Table 8. Species sampled during the 2011 HS synoptic bottom trawl survey. The number of samples and number of recorded biological attributes are shown for each species.

Common Name	Scientific Name	Number of Samples	Number of Recorded Biological Attributes					Stomachs
			Length	Weight	Sex	Maturity	Age	
Aleutian Skate	<i>Bathyraja aleutica</i>	4	7	0	7	0	0	0
Arrowtooth Flounder	<i>Reinhardtius stomias</i>	123	3254	2668	3254	2595	2600	105
Big Skate	<i>Raja binoculata</i>	46	155	18	155	0	0	0
Bigmouth Sculpin	<i>Hemitripterus bolini</i>	7	9	0	3	0	0	0
Blackbelly Eelpout	<i>Lycodes pacificus</i>	9	282	0	1	0	0	0
Bocaccio	<i>Sebastes paucispinis</i>	5	22	22	22	22	22	0
Buffalo Sculpin	<i>Enophrys bison</i>	4	11	0	0	0	0	0
Butter Sole	<i>Isopsetta isolepis</i>	34	330	212	330	212	212	0
C-o Sole	<i>Pleuronichthys coenosus</i>	2	2	0	1	0	0	0
Cabezon	<i>Scorpaenichthys marmoratus</i>	2	2	0	0	0	0	0
Canary Rockfish	<i>Sebastes pinniger</i>	20	182	150	182	148	149	0
China Rockfish	<i>Sebastes nebulosus</i>	2	4	3	4	3	3	0
Chinook Salmon	<i>Oncorhynchus tshawytscha</i>	1	1	0	1	0	0	0
Copper Rockfish	<i>Sebastes caurinus</i>	16	130	105	130	105	105	0
Curlfin Sole	<i>Pleuronichthys decurrens</i>	42	225	57	225	45	45	0
Darkblotched Rockfish	<i>Sebastes crameri</i>	4	4	0	4	0	0	0
Darkfin Sculpin	<i>Malacocottus zonurus</i>	5	19	0	0	0	0	0
Dover Sole	<i>Microstomus pacificus</i>	85	2024	1292	2024	1291	1287	0
Dusky Rockfish	<i>Sebastes variabilis</i>	1	33	33	33	33	33	0
English Sole	<i>Parophrys vetulus</i>	84	2177	1607	2177	1605	1594	0
Eulachon	<i>Thaleichthys pacificus</i>	32	1235	0	1	0	0	0
Flathead Sole	<i>Hippoglossoides elassodon</i>	34	922	297	921	251	251	0
Great Sculpin	<i>Myoxocephalus polyacanthocephalus</i>	1	1	0	0	0	0	0
Greenstriped Rockfish	<i>Sebastes elongatus</i>	14	101	42	101	27	27	0
Harlequin Rockfish	<i>Sebastes variegatus</i>	5	27	0	27	0	0	0
Kelp Greenling	<i>Hexagrammos decagrammus</i>	18	191	0	191	0	0	0
Lingcod	<i>Ophiodon elongatus</i>	51	149	69	149	67	67	0
Longnose Skate	<i>Raja rhina</i>	48	130	1	130	0	0	0
North Pacific Spiny Dogfish	<i>Squalus suckleyi</i>	146	1520	443	1519	379	414	0
Pacific Cod	<i>Gadus macrocephalus</i>	127	1395	1038	1395	1035	594	33
Pacific Hagfish	<i>Eptatretus stoutii</i>	1	1	0	0	0	0	0
Pacific Hake	<i>Merluccius productus</i>	3	19	0	19	0	0	0

Common Name	Scientific Name	Number of Samples	Number of Recorded Biological Attributes					
			Length	Weight	Sex	Maturity	Age	Stomachs
Pacific Halibut	<i>Hippoglossus stenolepis</i>	123	459	1	451	0	0	0
Pacific Herring	<i>Clupea pallasii</i>	27	936	0	30	0	0	0
Pacific Ocean Perch	<i>Sebastes alutus</i>	58	608	228	597	224	225	0
Pacific Sand Lance	<i>Ammodytes hexapterus</i>	20	752	0	0	0	0	0
Pacific Sanddab	<i>Citharichthys sordidus</i>	13	371	223	371	127	127	0
Pacific Tomcod	<i>Microgadus proximus</i>	9	223	79	223	0	0	0
Petrale Sole	<i>Eopsetta jordani</i>	82	601	497	600	497	497	15
Pink Salmon	<i>Oncorhynchus gorbuscha</i>	1	1	0	1	0	0	0
Prowfish	<i>Zaprora silenus</i>	1	1	0	0	0	0	0
Puget Sound Rockfish	<i>Sebastes emphaeus</i>	1	28	28	28	28	28	0
Pygmy Rockfish	<i>Sebastes wilsoni</i>	7	87	21	87	21	21	0
Quillback Rockfish	<i>Sebastes maliger</i>	42	491	420	491	419	420	0
Red Irish Lord	<i>Hemilepidotus hemilepidotus</i>	3	5	0	0	0	0	0
Redbanded Rockfish	<i>Sebastes babcocki</i>	44	405	380	404	380	380	0
Redstripe Rockfish	<i>Sebastes proriger</i>	14	206	135	206	135	135	0
Rex Sole	<i>Glyptocephalus zachirus</i>	101	2825	1417	2820	880	880	0
Rosethorn Rockfish	<i>Sebastes helvomaculatus</i>	2	2	0	2	0	0	0
Roughback Sculpin	<i>Chitonotus pugetensis</i>	5	140	0	0	0	0	0
Rougheye Rockfish	<i>Sebastes aleutianus</i>	23	105	107	108	105	109	0
Sablefish	<i>Anoplopoma fimbria</i>	62	351	61	348	60	61	0
Sand Sole	<i>Psettychthys melanostictus</i>	56	964	642	965	546	546	12
Sandpaper Skate	<i>Bathyraja interrupta</i>	24	43	0	43	0	0	0
Sharpchin Rockfish	<i>Sebastes zacentrus</i>	10	85	24	85	24	24	0
Shiner Perch	<i>Cymatogaster aggregata</i>	5	75	0	0	0	0	0
Shortbelly Rockfish	<i>Sebastes jordani</i>	1	1	0	1	0	0	0
Shortraker Rockfish	<i>Sebastes borealis</i>	2	2	2	2	2	2	0
Shortspine Thornyhead	<i>Sebastolobus alascanus</i>	35	562	213	560	118	117	0
Silvergray Rockfish	<i>Sebastes brevispinis</i>	58	427	181	425	181	181	32
Slender Sole	<i>Lyopsetta exilis</i>	19	320	30	320	30	30	0
Southern Rock Sole	<i>Lepidopsetta bilineata</i>	88	1827	1740	1827	1739	1736	0
Speckled Sanddab	<i>Citharichthys stigmaeus</i>	3	3	0	3	0	0	0
Splitnose Rockfish	<i>Sebastes diploproa</i>	1	1	0	1	0	0	0
Spotted Ratfish	<i>Hydrolagus coliei</i>	162	5397	2133	5376	0	0	0
Starry Flounder	<i>Platichthys stellatus</i>	9	40	24	40	24	24	0
Sturgeon Poacher	<i>Podothecus accipenserinus</i>	14	226	0	0	0	0	0

Common Name	Scientific Name	Number of Samples	Number of Recorded Biological Attributes					
			Length	Weight	Sex	Maturity	Age	Stomachs
Walleye Pollock	<i>Theragra chalcogramma</i>	59	1140	393	1077	269	271	29
Wattled Eelpout	<i>Lycodes palearis</i>	1	3	0	0	0	0	0
Whitebarred Prickleback	<i>Poroclinus rothrocki</i>	1	6	0	0	0	0	0
Widow Rockfish	<i>Sebastes entomelas</i>	7	72	66	72	66	66	0
Wolf Eel	<i>Anarrhichthys ocellatus</i>	1	2	0	0	0	0	0
Yelloweye Rockfish	<i>Sebastes ruberrimus</i>	4	5	3	5	3	3	0
Yellowfin Sole	<i>Limanda aspera</i>	1	13	0	13	0	0	0
Yellowmouth Rockfish	<i>Sebastes reedi</i>	4	86	84	84	83	84	0
Yellowtail Rockfish	<i>Sebastes flavidus</i>	35	362	189	362	189	189	0
Total		2214	34823	17378	31034	13968	13559	276

Table 9. Summary of biological data collected during the 2011 HS synoptic bottom trawl survey. For each species the number of samples and specimens, the minimum, maximum, and mean length, the minimum, maximum, and mean weight, and proportion of females is shown. Weights less than 0.1 kg are entered as <0.1 and no data collected is entered as -.

Common Name	Scientific Name	Number of		Length Type	Length (cm)			Weight (kg)			Female Proportion
		Samples	Specimens		Min.	Max.	Mean	Min.	Max.	Mean	
Aleutian Skate	<i>Bathyraja aleutica</i>	4	7	Total	95	130	114	-	-	-	0.57
Arrowtooth Flounder	<i>Reinhardtius stomias</i>	122	3254	Fork	11	76	41	0.0	4.3	0.8	0.65
Big Skate	<i>Raja binoculata</i>	46	155	Total	46	1670	151	3.7	24.6	10.1	0.39
Bigmouth Sculpin	<i>Hemitripterus bolini</i>	7	9	Total	30	66	58	-	-	-	1
Blackbelly Eelpout	<i>Lycodes pacificus</i>	9	282	Total	8	24	15	-	-	-	-
Bocaccio	<i>Sebastes paucispinis</i>	5	22	Fork	48	82	64	1.3	6.8	3.6	0.27
Buffalo Sculpin	<i>Enophrys bison</i>	4	11	Total	6	25	19	-	-	-	-
Butter Sole	<i>Isopsetta isolepis</i>	34	330	Total	16	39	27	0.1	0.7	0.2	0.56
C-O Sole	<i>Pleuronichthys coenosus</i>	2	2	Total	26	27	27	-	-	-	0
Cabezon	<i>Scorpaenichthys marmoratus</i>	2	2	Total	45	48	47	-	-	-	-
Canary Rockfish	<i>Sebastes pinniger</i>	20	182	Fork	10	59	36	0.0	3.5	1.0	0.53
China Rockfish	<i>Sebastes nebulosus</i>	2	4	Fork	27	33	30	0.4	0.7	0.6	0.5
Chinook Salmon	<i>Oncorhynchus tshawytscha</i>	1	1	Fork	56	56	56	-	-	-	0
Copper Rockfish	<i>Sebastes caurinus</i>	16	130	Fork	20	46	33	0.1	1.8	0.7	0.38
Curlfin Sole	<i>Pleuronichthys decurrens</i>	42	225	Total	17	44	30	0.1	1.4	0.5	0.48
Darkblotched Rockfish	<i>Sebastes crameri</i>	4	4	Fork	19	36	29	-	-	-	0.5
Darkfin Sculpin	<i>Malacocottus zonurus</i>	5	19	Total	7	24	18	-	-	-	-
Dover Sole	<i>Microstomus pacificus</i>	85	2024	Total	11	59	37	0.0	2.2	0.6	0.58
Dusky Rockfish	<i>Sebastes variabilis</i>	1	33	Fork	36	53	45	0.6	2.5	1.7	0.55
English Sole	<i>Parophrys vetulus</i>	84	2177	Total	12	49	29	0.0	1.0	0.3	0.57
Eulachon	<i>Thaleichthys pacificus</i>	32	1235	Standard	7	19	14	-	-	-	-
Flathead Sole	<i>Hippoglossoides elassodon</i>	34	922	Total	8	46	27	0.0	0.8	0.3	0.51
Great Sculpin	<i>Myoxocephalus polyacanthocephalus</i>	1	1	Total	33	33	33	-	-	-	-
Greenstriped Rockfish	<i>Sebastes elongatus</i>	14	101	Fork	11	39	28	0.1	1.0	0.4	0.55
Harlequin Rockfish	<i>Sebastes variegatus</i>	5	27	Fork	17	27	20	-	-	-	0.37
Kelp Greenling	<i>Hexagrammos decagrammus</i>	18	191	Fork	18	43	31	-	-	-	0.57
Lingcod	<i>Ophiodon elongatus</i>	51	149	Fork	34	105	64	0.8	8.5	2.4	0.74
Longnose Skate	<i>Raja rhina</i>	48	130	Total	42	138	82	1.3	1.3	1.3	0.46
North Pacific Spiny Dogfish	<i>Squalus suckleyi</i>	146	1520	Total	27	115	70	0.3	6.3	1.5	0.6
Pacific Cod	<i>Gadus macrocephalus</i>	127	1395	Fork	15	86	44	0	7.6	1.4	0.51
Pacific Hagfish	<i>Eptatretus stoutii</i>	1	1	Total	67	67	67	-	-	-	-

Common Name	Scientific Name	Number of		Length Type	Length (cm)			Weight (kg)			Female Proportion
		Samples	Specimens		Min.	Max.	Mean	Min.	Max.	Mean	
Pacific Hake	<i>Merluccius productus</i>	3	19	Fork	50	67	59	-	-	-	0.84
Pacific Halibut	<i>Hippoglossus stenolepis</i>	123	459	Fork	19	164	71	6.8	6.8	6.8	0.4
Pacific Herring	<i>Clupea pallasii</i>	27	936	Total	12	31	21	-	-	-	-
Pacific Ocean Perch	<i>Sebastes alutus</i>	58	608	Fork	8	52	28	0.0	1.9	0.6	0.42
Pacific Sand Lance	<i>Ammodytes hexapterus</i>	20	752	Total	8	21	15	-	-	-	-
Pacific Sanddab	<i>Citharichthys sordidus</i>	13	371	Total	13	37	27	0.0	0.6	0.2	0.49
Pacific Tomcod	<i>Microgadus proximus</i>	9	223	Fork	15	27	19	0.0	0.1	0.1	0.44
Petrale Sole	<i>Eopsetta jordani</i>	82	601	Total	23	63	40	0.1	3.5	0.8	0.59
Pink Salmon	<i>Oncorhynchus gorbuscha</i>	1	1	Fork	50	50	50	-	-	-	1
Prowfish	<i>Zaprora silenus</i>	1	1	Fork	31	31	31	-	-	-	-
Puget Sound Rockfish	<i>Sebastes emphaeus</i>	1	28	Fork	11	19	14	0.0	0.1	0.0	0.64
Pygmy Rockfish	<i>Sebastes wilsoni</i>	7	87	Fork	10	23	18	0.0	0.1	0.1	0.51
Quillback Rockfish	<i>Sebastes maliger</i>	42	491	Fork	12	45	32	0.0	1.9	0.7	0.47
Red Irish Lord	<i>Hemilepidotus hemilepidotus</i>	3	5	Total	22	32	26	-	-	-	-
Redbanded Rockfish	<i>Sebastes babcocki</i>	44	405	Fork	13	61	44	0.0	4.2	1.7	0.39
Redstripe Rockfish	<i>Sebastes proriger</i>	14	206	Fork	12	41	25	0.0	1.0	0.3	0.44
Rex Sole	<i>Glyptocephalus zachirus</i>	101	2825	Total	7	53	31	0.0	0.7	0.2	0.57
Rosethorn Rockfish	<i>Sebastes helvomaaculatus</i>	2	2	Fork	26	31	29	-	-	-	0
Roughback Sculpin	<i>Chitonotus pugetensis</i>	5	140	Total	7	16	10	-	-	-	-
Rougheye Rockfish	<i>Sebastes aleutianus</i>	23	107	Fork	12	48	31	0.0	1.7	0.6	0.49
Sablefish	<i>Anoplopoma fimbria</i>	62	351	Fork	29	100	45	0.2	3.4	0.8	0.46
Sand Sole	<i>Psettichthys melanostictus</i>	56	964	Total	14	47	27	0.0	1.2	0.3	0.67
Sandpaper Skate	<i>Bathyraja interrupta</i>	24	43	Total	15	69	57	-	-	-	0.53
Sharpchin Rockfish	<i>Sebastes zacentrus</i>	10	85	Fork	9	40	20	0.1	1.1	0.3	0.51
Shiner Perch	<i>Cymatogaster aggregata</i>	5	75	Fork	7	16	11	-	-	-	-
Shortbelly Rockfish	<i>Sebastes jordani</i>	1	1	Fork	27	27	27	-	-	-	0
Shortraker Rockfish	<i>Sebastes borealis</i>	2	2	Fork	65	66	65	4.4	5.1	4.7	0.5
Shortspine Thornyhead	<i>Sebastolobus alascanus</i>	35	562	Total	7	52	27	0.0	1.6	0.3	0.5
Silvergray Rockfish	<i>Sebastes brevispinis</i>	58	427	Fork	11	71	47	0.2	4.6	1.7	0.28
Slender Sole	<i>Lyopsetta exilis</i>	19	320	Total	10	37	26	0.0	0.2	0.1	0.6
Southern Rock Sole	<i>Lepidopsetta bilineata</i>	88	1827	Total	8	50	26	0.0	1.8	0.3	0.56
Speckled Sanddab	<i>Citharichthys stigmaeus</i>	3	3	Total	17	17	17	-	-	-	0.67
Splitnose Rockfish	<i>Sebastes diploproa</i>	1	1	Fork	12	12	12	-	-	-	0
Spotted Ratfish	<i>Hydrolagus colliciei</i>	162	5397	2nd Dorsal	8	53	31	0	1.5	0.4	0.45
Starry Flounder	<i>Platichthys stellatus</i>	9	40	Total	39	69	60	1.8	4.4	3.3	0.95

Common Name	Scientific Name	Number of		Length Type	Length (cm)			Weight (kg)			Female Proportion
		Samples	Specimens		Min.	Max.	Mean	Min.	Max.	Mean	
Sturgeon Poacher	<i>Podothecus accipenserinus</i>	14	226	Total	10	22	18	-	-	-	-
Walleye Pollock	<i>Theragra chalcogramma</i>	59	1140	Fork	3	70	35	0	2.4	0.6	0.56
Wattled Eelpout	<i>Lycodes palearis</i>	1	3	Total	33	44	39	-	-	-	-
Whitebarred Prickleback	<i>Poroclinus rothrocki</i>	1	6	Total	19	23	21	-	-	-	-
Widow Rockfish	<i>Sebastes entomelas</i>	7	72	Fork	23	53	27	0.2	0.3	0.2	0.43
Wolf Eel	<i>Anarrhichthys ocellatus</i>	1	2	Total	136	144	140	-	-	-	-
Yelloweye Rockfish	<i>Sebastes ruberrimus</i>	4	5	Fork	55	64	59	3.1	5.3	4.3	0.6
Yellowfin Sole	<i>Limanda aspera</i>	1	13	Total	18	22	19	-	-	-	0.46
Yellowmouth Rockfish	<i>Sebastes reedi</i>	4	86	Fork	18	31	27	0.1	0.5	0.3	0.41
Yellowtail Rockfish	<i>Sebastes flavidus</i>	35	362	Fork	19	56	39	0.1	2.7	1.1	0.38

Table 10. Summary of data from net-mounted recorders during the 2011 HS synoptic bottom trawl survey, showing the number of tows and total number of records. A total of 203 survey tows were conducted, of which 186 were useable.

Data Recorder	Attribute	Number of	
		Tows	Records
Mac Marine Industries Bottom Contact Sensor	Bottom Contact Sensor Tilt Angle	194	67975
Simrad ITI Trawl System	Doorspread (m)	168	4803
	Headline height above bottom (m)	173	4821
Seabird SBE19plus Seacat Profiler	Conductivity of sea water (S/m)	192	232984
	Pressure (db)/ depth (m)	192	232984
	Salinity (PSU)	192	232984
	Water temperature (°C)	192	232984
Seabird SBE43	Oxygen Voltage (V)/ Dissolved oxygen (ml/L)	192	232984
Seabird SBE39 Temperature and Pressure Recorder	Water temperature (°C)	194	72406
	Pressure (db)/ depth (m)	194	72406

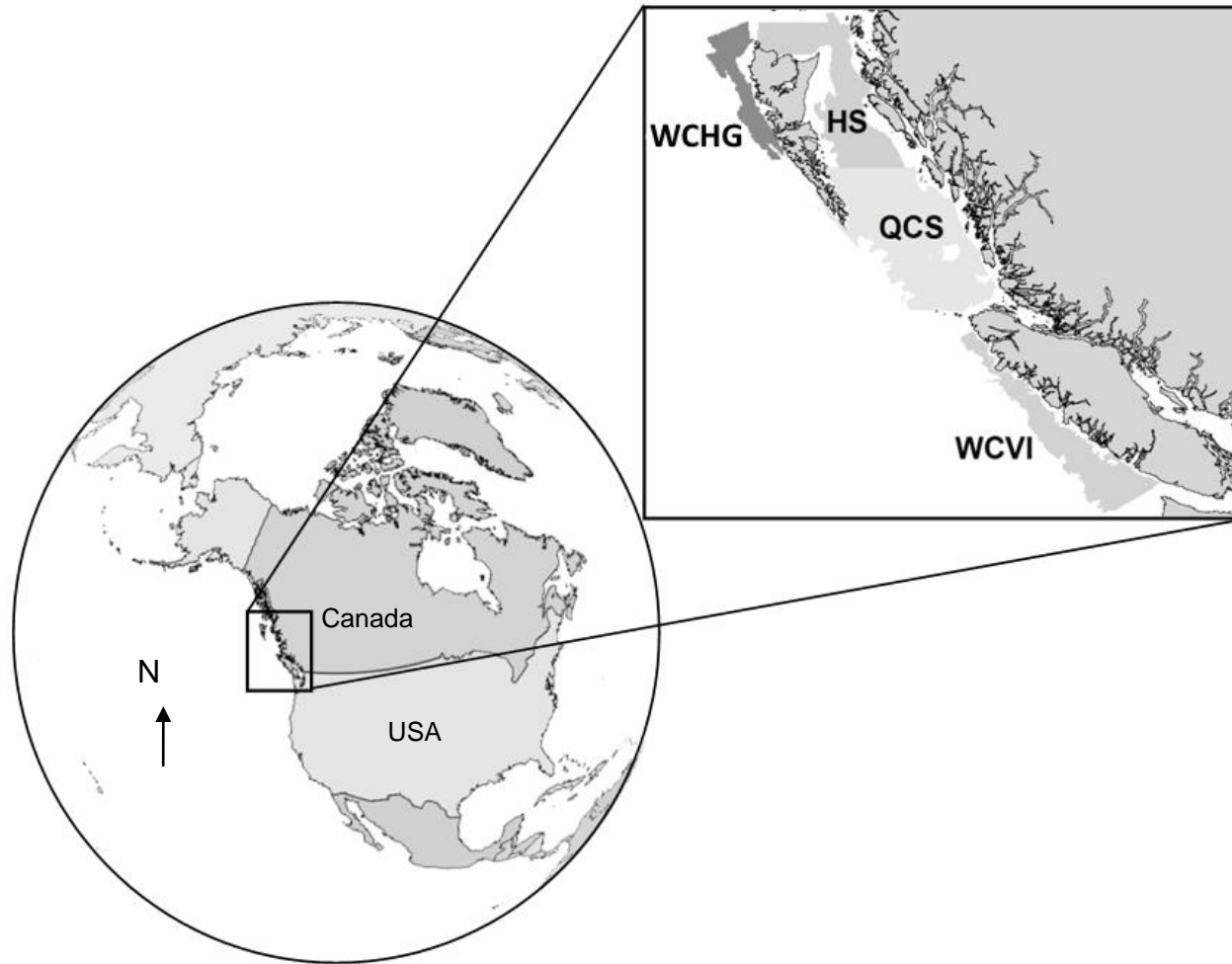


Figure 1. Locations of the current synoptic bottom trawl surveys on the coast of British Columbia, Canada. WCHG = West Coast Haida Gwaii; HS = Hecate Strait; QCS = Queen Charlotte Sound; WCVI = West Coast Vancouver Island.



Figure 2. The Canadian Coast Guard Ship W.E. Ricker used for the 2014 WCVI synoptic bottom trawl survey.

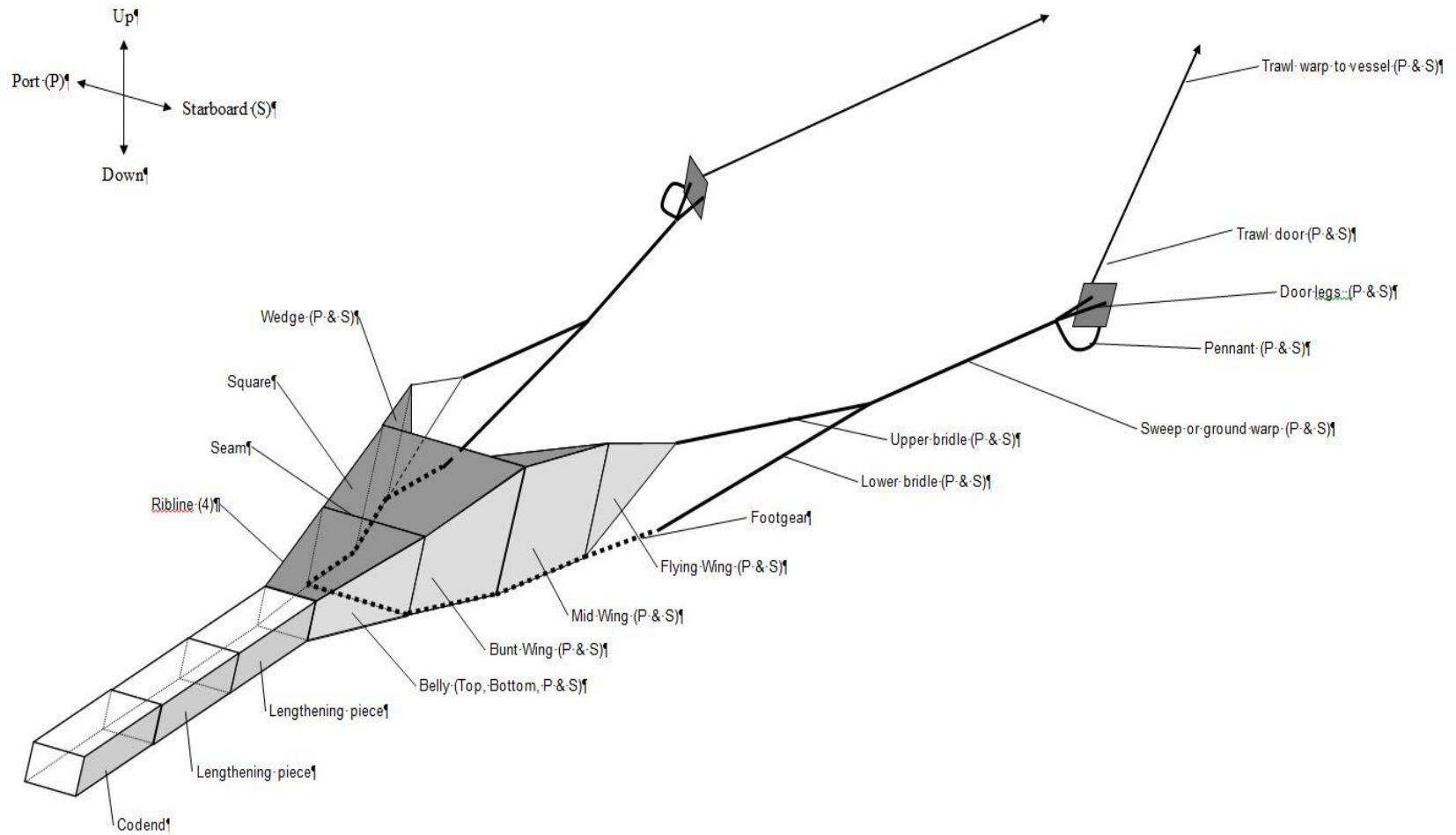


Figure 3. Overview diagram of the Atlantic Western IIA box trawl used on the 2011 HS synoptic bottom trawl survey.

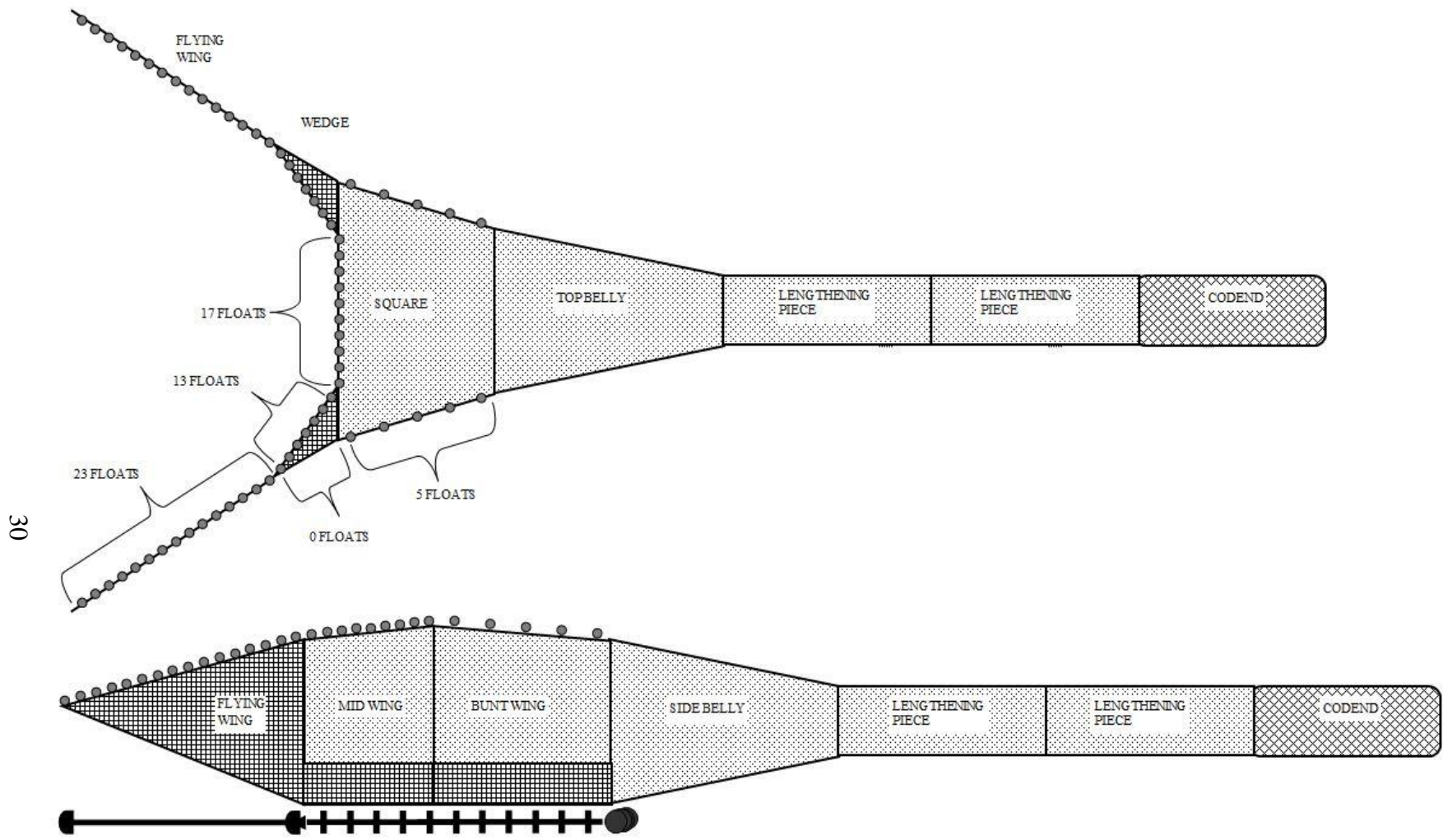


Figure 4. Top and side view of the Atlantic Western Iia box trawl used on the 2011 HS synoptic bottom trawl survey.

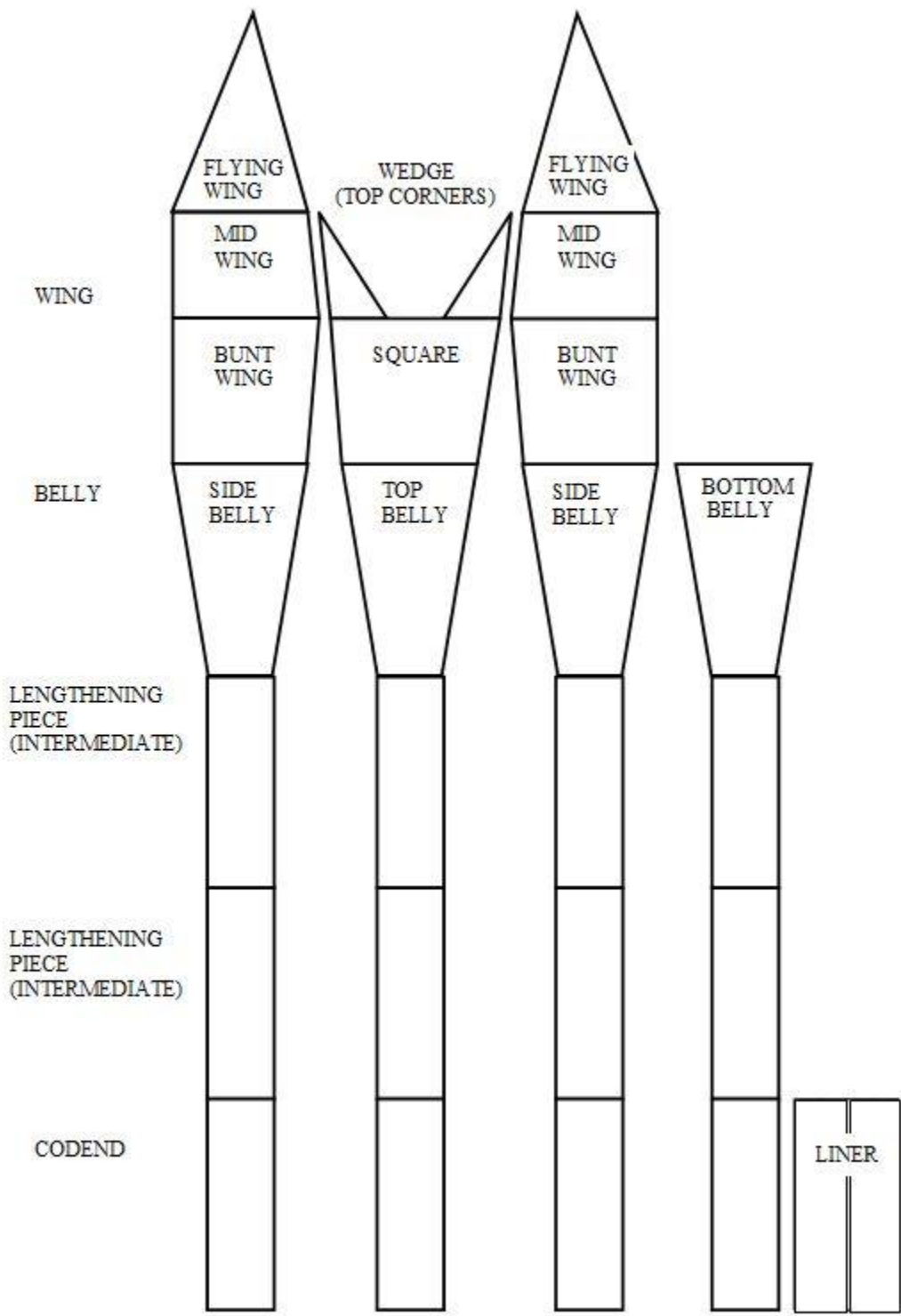


Figure 5. Diagram of the net panels with section names for the Atlantic Western Ila box trawl used on the 2011 HS synoptic bottom trawl survey.

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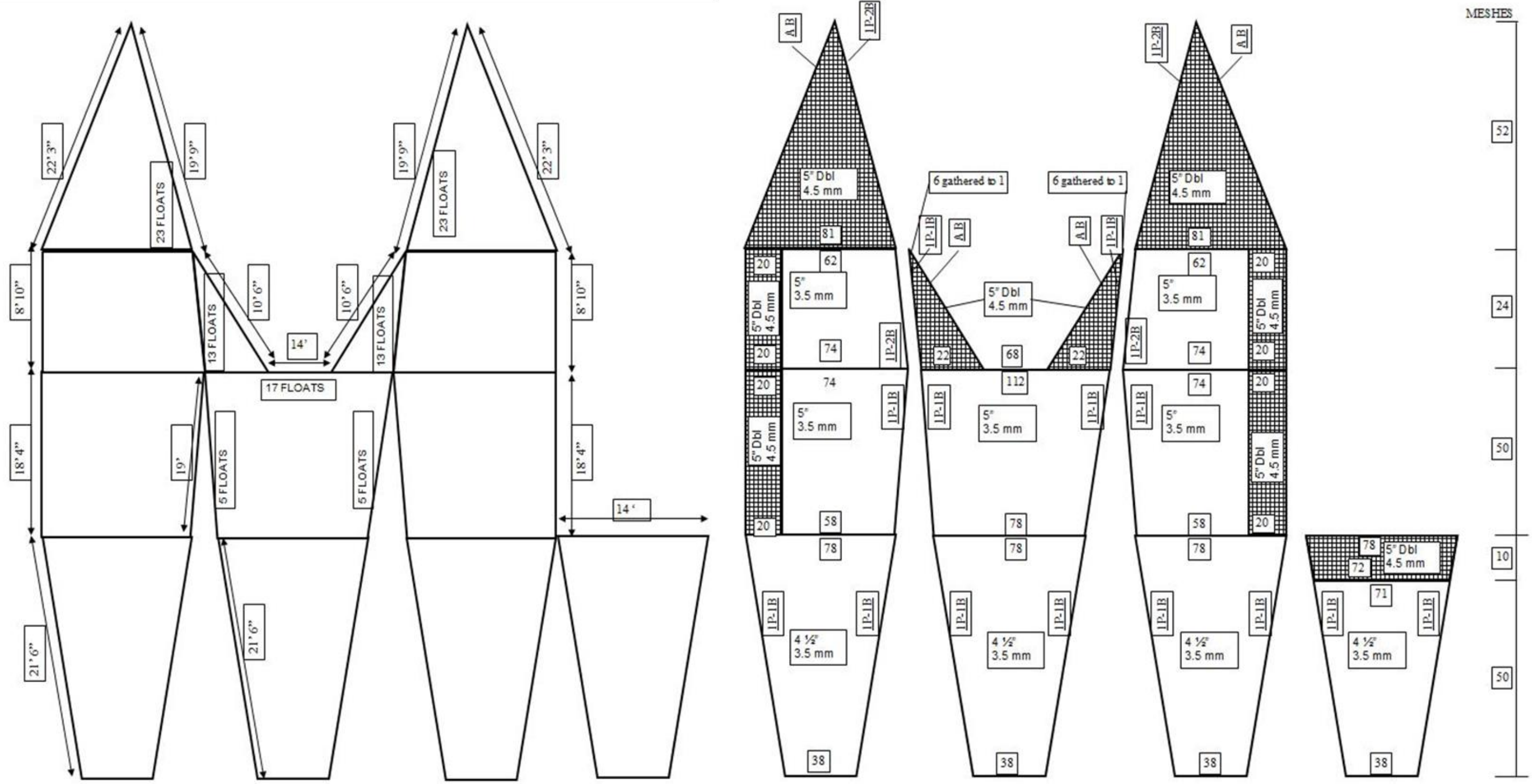


Figure 6. Details of the wing and belly sections of the Atlantic Western Iia box trawl used on the 2011 HS synoptic bottom trawl survey. Dimensions and the float arrangement are shown on the left while netting details, mesh counts, and mesh cuts are shown on the right side of the diagram.

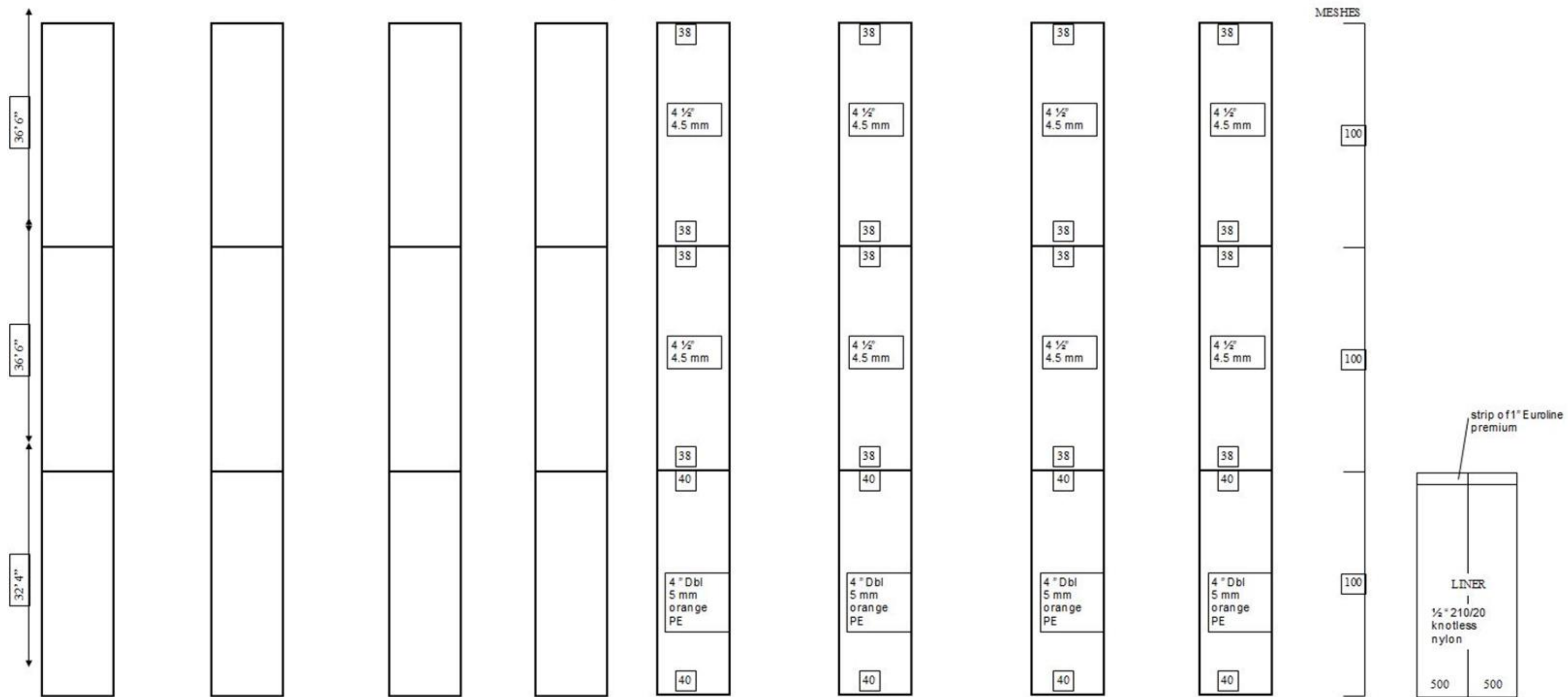
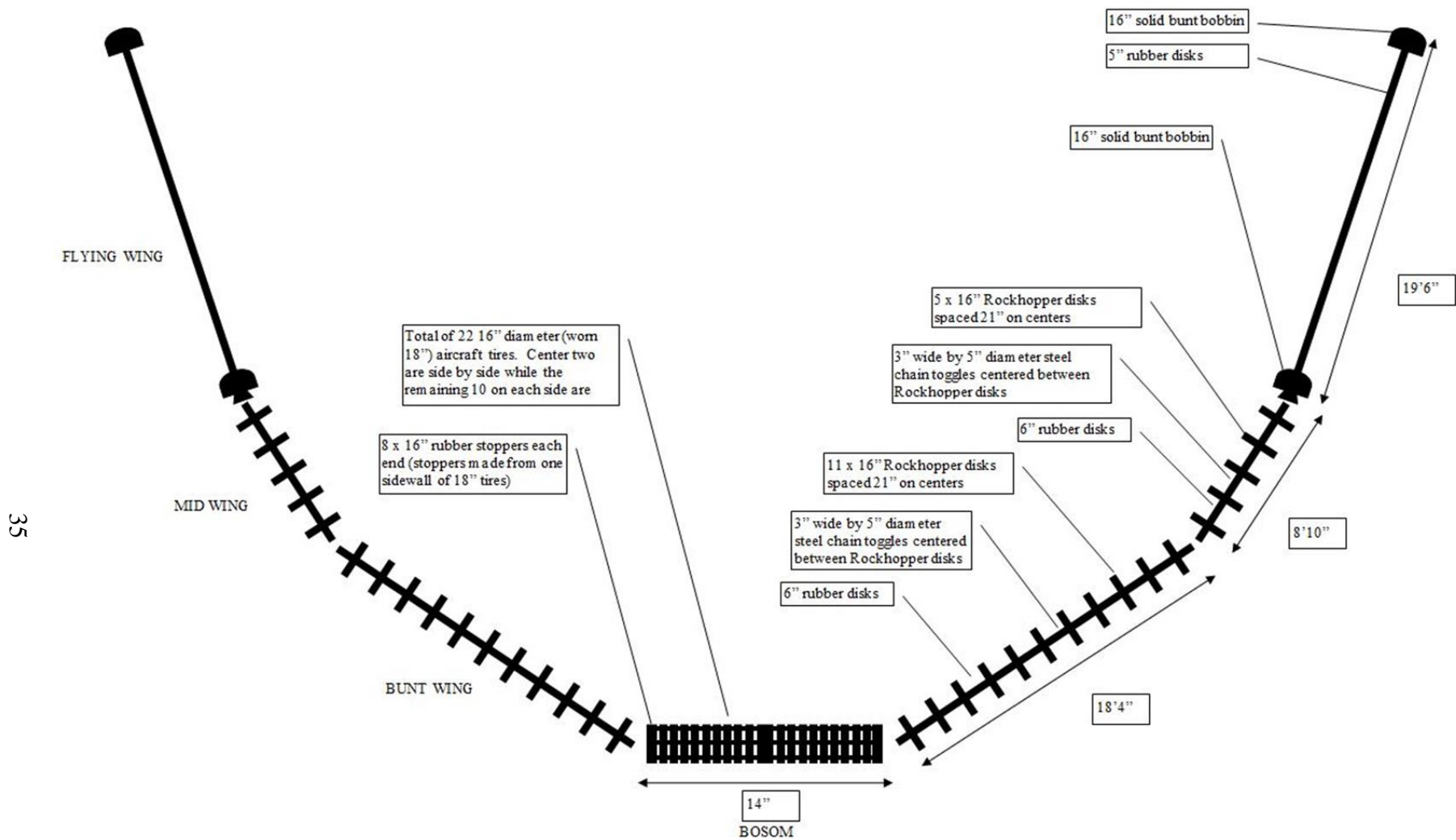


Figure 7. Details of the lengthening (intermediate) pieces and codend sections of the Atlantic Western IIA box trawl used on the 2011 HS synoptic bottom trawl survey. Dimensions are shown on the left while netting details, mesh counts, and mesh cuts including the codend liner are shown on the right side of the diagram.



35

Figure 8. Details of the Rockhopper foot gear for the Atlantic Western Ila box trawl used on the 2011 HS synoptic bottom trawl survey.

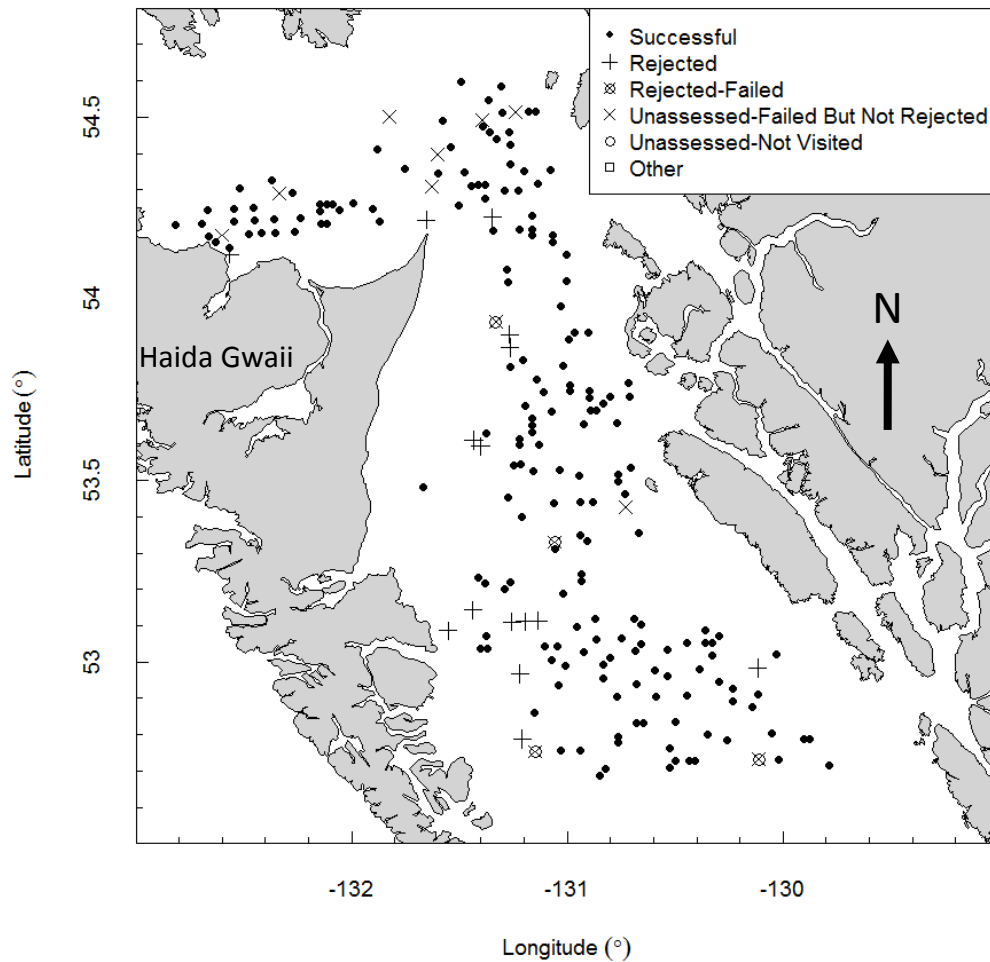


Figure 9. Final status of the 2011 HS synoptic bottom trawl survey showing 185 successfully fished blocks, 15 blocks rejected prior to fishing or after inspection, four blocks rejected after multiple failed fishing attempts, eight blocks that were not assessed and one block that was recorded as successfully fished, but later removed from the sample frame.

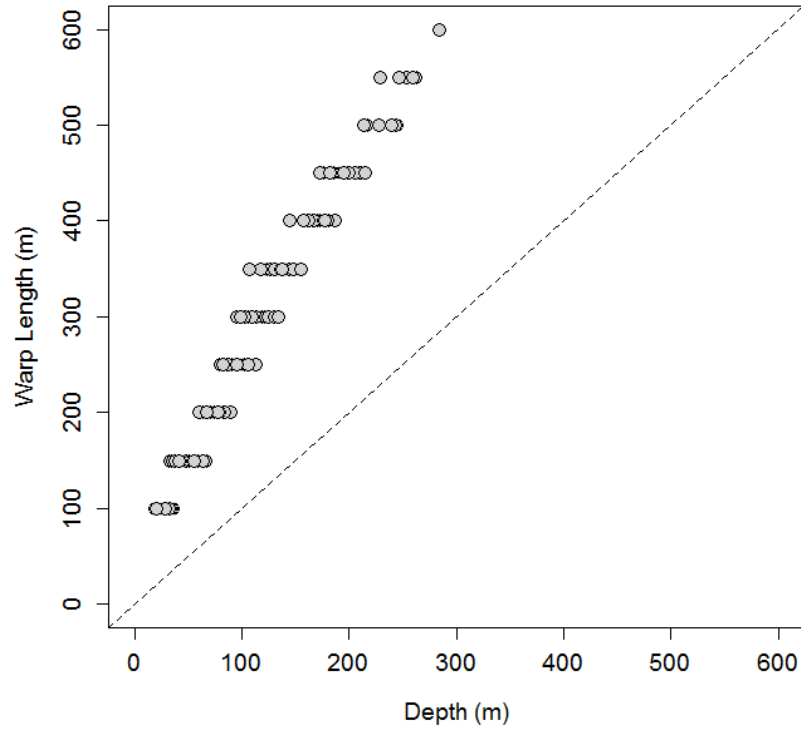


Figure 10. Warp length versus starting depth for each tow during the 2011 HS synoptic bottom trawl survey.

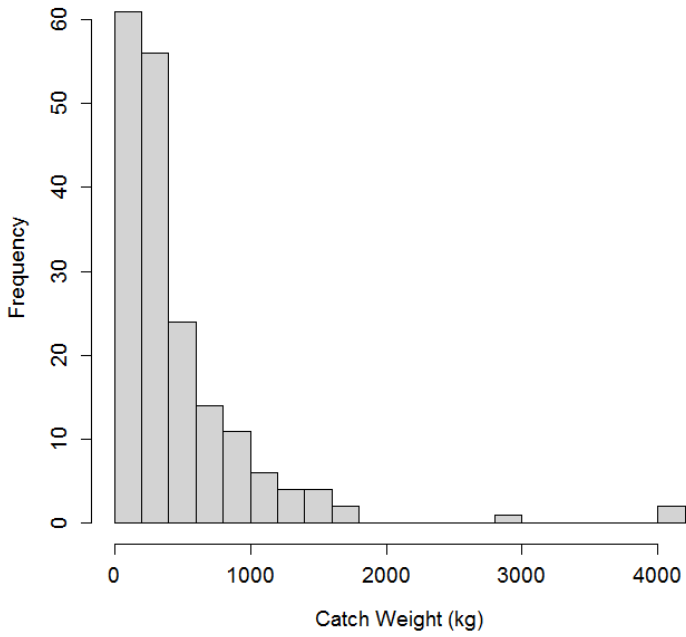


Figure 11. Histogram of catch weights in useable tows during the 2011 HS synoptic bottom trawl survey.

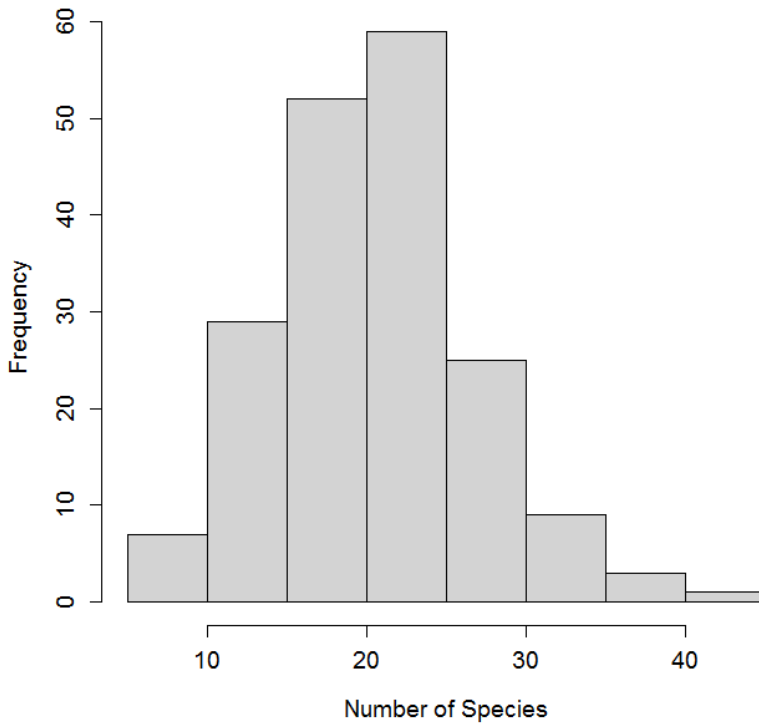


Figure 12. Histogram of number of species caught in useable tows during the 2011 HS synoptic bottom trawl survey.

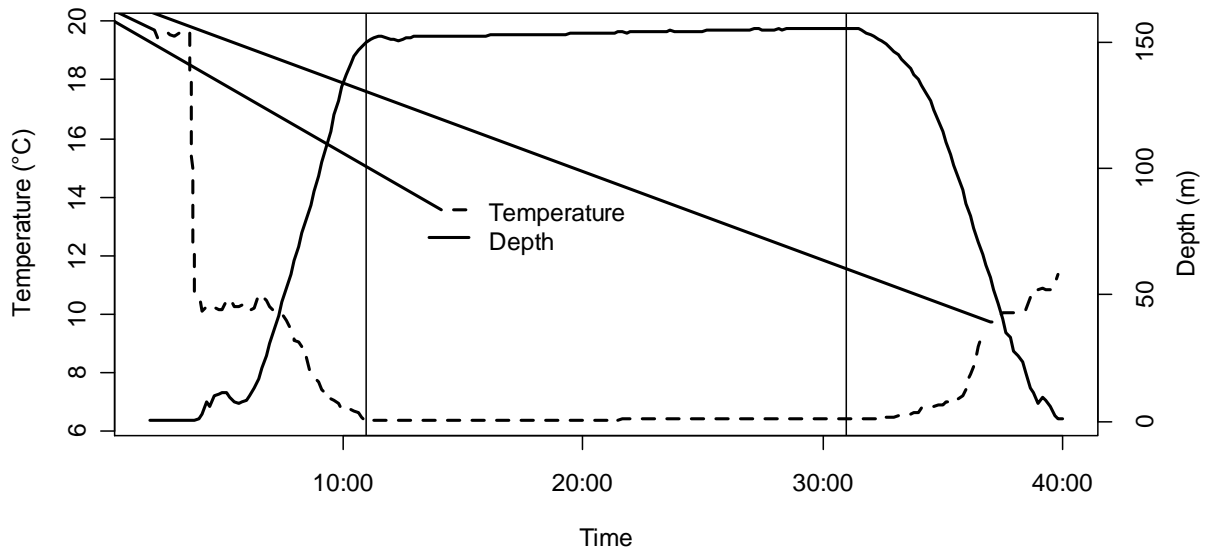


Figure 13. Example of a Seabird 39 temperature and pressure profile collected during a synoptic bottom trawl survey. The vertical lines indicate the start and end of net contact with the sea floor.

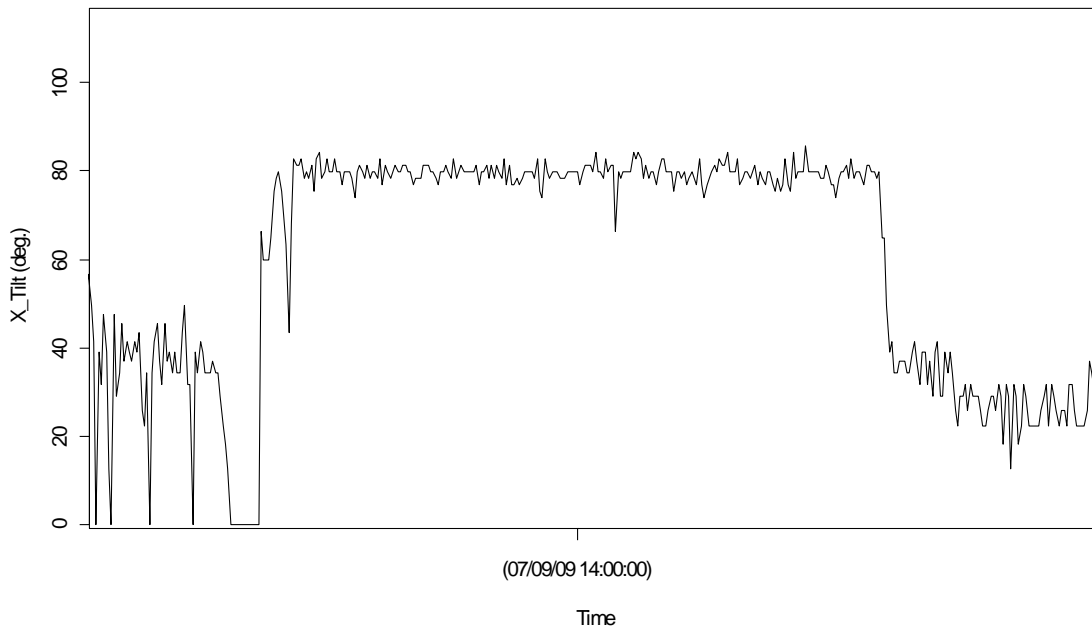


Figure 14. Example of a Mac Marine Industries bottom contact sensor profile collected during a synoptic bottom trawl survey. The raised segment in the middle of the profile at approximately 80° indicates where the net made contact with the sea floor.

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APPENDIX A: HS 2011 SURVEY BRIDGE LOG

Tow	Date	Start Time	Start Latitude	Start Longitude	Average Depth (m)	Bottom Duration (min)	Speed (km/h)	Warp (m)	Catch (kg)	Useable
1	May-26	7:03	52.7147	129.7787	215	18	5.5	450	163.0	Yes
2	May-26	8:36	52.7933	129.9078	259	18	5.3	550	127.5	Yes
3	May-26	9:56	52.8080	130.0465	259	19	5.5	550	136.9	Yes
4	May-26	11:01	52.7365	130.1080	236	19	5.4	500	203.4	No
5	May-26	15:28	52.8092	130.3480	195	20	5.5	450	174.0	Yes
6	May-26	16:40	52.7906	130.2551	232	20	4.8	500	154.5	No
7	May-26	18:28	52.7229	130.3958	143	18	5.5	350	67.4	Yes
8	May-27	7:05	52.7369	130.4262	148	19	5.3	350	69.5	Yes
9	May-27	7:55	52.7236	130.4851	154	18	5.6	350	103.7	Yes
10	May-27	8:55	52.7725	130.5276	137	19	5.5	350	142.5	Yes
11	May-27	9:59	52.7023	130.5231	142	19	5.5	350	45.0	Yes
12	May-27	12:00	52.7002	130.8123	97	19	5.6	250	44.1	Yes
13	May-27	13:03	52.6794	130.8426	95	18	5.3	250	69.8	Yes
14	May-27	14:19	52.7654	130.9503	48	20	5.5	150	97.8	Yes
15	May-27	15:39	52.7476	131.0176	42	20	5.6	150	79.0	Yes
16	May-27	16:59	52.7489	131.1418	42	4	6.2	150	14.5	No
17	May-27	18:35	52.8706	131.1489	24	21	5.5	100	66.0	Yes
18	May-28	7:05	53.0438	131.4163	26	20	5.5	100	67.7	Yes
19	May-28	7:50	53.0436	131.3586	33	19	5.5	100	112.3	Yes
20	May-28	8:48	53.0681	131.3619	25	19	5.5	100	101.1	Yes
21	May-28	12:56	53.0335	131.0980	32	19	5.5	100	138.1	Yes
22	May-28	13:54	52.9988	131.0647	32	20	5.6	100	84.5	Yes
23	May-28	15:16	52.9411	131.0260	31	19	5.5	100	116.2	Yes
24	May-28	16:45	53.0344	130.9296	29	19	5.4	100	78.9	Yes
25	May-28	17:56	52.9996	130.8377	68	19	5.5	200	55.2	Yes
26	May-28	18:50	52.9616	130.8316	48	19	5.5	150	281.6	Yes
27	May-29	7:09	52.9095	130.7779	44	22	5.6	150	77.4	Yes
28	May-29	8:15	52.8040	130.7747	79	20	5.5	200	79.4	Yes
29	May-29	9:04	52.7746	130.7690	87	21	4.8	250	69.8	Yes
30	May-29	10:38	52.8263	130.6583	99	19	5.3	250	356.8	Yes
31	May-29	11:51	52.8366	130.6830	89	20	5.6	200	39.9	Yes
32	May-29	12:59	52.9015	130.5942	102	19	5.4	250	160.1	Yes
33	May-29	14:26	52.8300	130.5073	122	17	5.4	300	918.5	Yes
34	May-29	15:41	52.9150	130.4330	128	20	5.5	300	732.7	Yes
35	May-29	17:34	52.9498	130.3036	210	19	5.5	450	250.6	Yes
36	May-29	18:46	52.8867	130.2396	228	18	5.4	500	288.1	Yes
37	May-30	7:10	53.0280	130.0407	141	19	5.6	350	520.6	Yes
38	May-30	9:15	52.9143	130.1186	247	20	5.5	550	238.0	Yes
39	May-30	10:29	52.8726	130.1396	247	22	5.7	550	216.9	Yes
40	May-30	11:56	52.9259	130.2384	229	20	5.4	550	151.5	Yes
41	May-30	13:21	53.0146	130.3235	203	19	5.5	450	467.1	Yes
42	May-30	14:26	53.0551	130.3330	203	20	5.4	450	674.1	Yes
43	May-30	15:24	53.0666	130.2895	206	20	5.5	450	315.4	Yes
44	May-30	16:28	53.0918	130.3645	199	20	5.4	450	597.2	Yes
45	May-30	17:51	53.0436	130.4418	173	22	5.4	450	493.3	Yes
46	May-30	18:50	53.0411	130.5319	113	20	5.5	300	423.1	Yes
47	May-31	7:04	52.9743	130.5910	114	20	5.7	300	739.5	Yes
48	May-31	8:04	53.0401	130.6444	99	22	5.7	300	472.8	Yes
49	May-31	9:09	53.0251	130.6775	119	22	5.5	350	470.7	Yes
50	May-31	10:14	53.0987	130.6502	142	20	5.6	350	1050.2	Yes
51	May-31	11:08	53.1158	130.6811	145	22	5.4	400	826.5	Yes

Tow	Date	Start Time	Start Latitude	Start Longitude	Average Depth (m)	Bottom Duration (min)	Speed (km/h)	Warp (m)	Catch (kg)	Useable
52	May-31	12:36	53.1250	130.8779	101	21	5.4	300	269.1	Yes
53	May-31	13:56	53.2174	130.9330	95	22	5.5	300	488.8	Yes
54	May-31	14:48	53.2334	130.9366	95	22	5.5	300	558.4	Yes
55	May-31	16:00	53.1785	131.0045	53	20	5.5	150	957.1	Yes
56	May-31	17:36	53.1923	131.2816	29	21	5.5	100	148.1	Yes ²
57	May-31	18:37	53.2089	131.2733	30	20	5.5		152.8	Yes
58	Jun-01	7:07	53.2247	131.4077	33	20	5.7	100	277.6	Yes
59	Jun-01	9:29	53.3372	131.0653	50	4	5.3	150	29.8	No
60	Jun-01	11:32	53.3620	130.9519	109	20	5.7	300	1213.7	Yes
61	Jun-01	12:23	53.3423	130.9225	119	22	5.8	350	775.2	Yes
62	Jun-01	14:08	53.3630	130.6684	127	21	19.3	350	277.6	Yes
63	Jun-01	15:31	53.4561	130.7251	131	20	5.3	350	481.8	Yes
64	Jun-01	16:37	53.5390	130.7154	182	24	5.3	450	796.1	Yes
65	Jun-01	17:56	53.5215	130.7733	147	20	5.4	350	945.5	Yes
66	Jun-02	7:33	53.4486	131.2606	25	21	5.5	100	236.3	Yes
67	Jun-02	8:40	53.3899	131.2198	29	20	5.6	100	240.0	Yes
68	Jun-02	10:01	53.4450	131.0744	49	20	5.6	150	226.4	Yes
69	Jun-02	11:04	53.4343	130.9515	102	21	5.6	300	381.8	Yes
70	Jun-02	12:24	53.4327	130.8948	117	21	5.5	350	563.0	Yes
71	Jun-02	14:07	53.5224	131.0500	44	22	5.5	150	134.4	Yes
72	Jun-02	15:15	53.5226	131.1530	54	19	5.3	150	70.1	Yes
73	Jun-02	16:17	53.5367	131.2254	32	21	5.6	100	365.1	Yes
74	Jun-02	17:36	53.5875	131.1196	66	19	5.4	150	282.0	Yes
75	Jun-02	18:48	53.6588	131.1727	44	20	5.6	150	749.2	Yes
76	Jun-03	7:35	53.6223	131.3788	19	24	5.5	100	60.4	Yes
77	Jun-03	8:46	53.6104	131.2267	27	21	5.5	100	362.8	Yes
78	Jun-03	9:32	53.6308	131.1662	45	22	5.6	150	1185.9	Yes
79	Jun-03	10:32	53.6645	131.1763	44	20	5.4	150	325.2	Yes
80	Jun-03	11:52	53.7045	131.1926	36	21	5.4	150	1203.0	Yes
81	Jun-03	12:51	53.7337	131.1039	53	20	5.5	150	1527.0	Yes
82	Jun-03	14:12	53.8383	131.1916	41	21	5.3	150	236.9	Yes
83	Jun-03	16:37	53.9452	131.3088	28	3	5.5	100	56.3	No
84	Jun-03	18:22	54.0772	131.2897	32	20	5.4	100	339.0	Yes
85	Jun-04	7:11	53.6947	131.0651	42	21	5.4	150	325.2	Yes
86	Jun-04	8:48	53.6603	130.9325	51	19	5.4	150	158.1	Yes
87	Jun-04	9:54	53.6984	130.8841	46	21	5.4	150	378.2	Yes
88	Jun-04	10:42	53.6866	130.8563	47	19	5.4	150	196.4	Yes
89	Jun-04	11:53	53.7056	130.8240	48	21	5.5	150	86.2	Yes
90	Jun-04	13:04	53.7271	130.7135	145	19	5.5	350	899.9	Yes
91	Jun-04	13:58	53.7626	130.7018	130	21	5.5	350	571.1	Yes
92	Jun-04	15:13	53.7415	130.8857	58	19	5.5	150	94.8	Yes
93	Jun-04	16:15	53.7707	130.9936	55	20	5.3	150	286.0	Yes
94	Jun-04	17:47	53.8938	131.0014	79	19	5.4	200	791.5	Yes
95	Jun-04	18:54	53.9707	131.0368	80	20	5.4	250	1636.4	Yes
96	Jun-05	14:29	54.2362	132.6832	160	15	5.3	400	716.5	No
97	Jun-05	15:40	54.2504	132.6608	184	20	5.4	450	278.9	Yes
98	Jun-05	16:38	54.2116	132.7116	166	15	5.5	400	287.5	No
99	Jun-05	17:57	54.2106	132.7077	157	17	5.5	400	293.1	Yes
100	Jun-06	7:22	54.6029	131.4856	180	20	5.5	400	344.1	Yes

²Tow 56 was useable during the 2011 survey but when the block was visited again in 2015, the tow failed. The block was then rejected as unfishable and the 2011 fishing event data was updated to be unusable.

Tow	Date	Start Time	Start Latitude	Start Longitude	Average Depth (m)	Bottom Duration (min)	Speed (km/h)	Warp (m)	Catch (kg)	Useable
101	Jun-06	8:43	54.5545	131.3782	106	22	5.5	300	783.3	Yes
102	Jun-06	10:04	54.5151	131.1644	146	21	5.4	350	1373.9	Yes
103	Jun-06	11:40	54.3611	131.1915	64	20	5.6	150	514.4	Yes
104	Jun-06	12:27	54.3240	131.1471	59	20	5.5	150	1447.6	Yes
105	Jun-06	13:35	54.3622	131.0831	90	21	5.8	250	1135.5	Yes
106	Jun-08	7:27	54.1749	132.6740	54	15	5.2	150	211.4	Yes
107	Jun-08	8:22	54.1605	132.6290	54	18	5.6	150	325.3	Yes
108	Jun-08	9:10	54.1772	132.6207	89	12	5.5	200	105.7	No
109	Jun-08	9:59	54.1434	132.5722	67	18	5.3	200	2953.3	Yes
110	Jun-08	11:56	54.1748	132.4073	99	19	5.4	300	144.1	Yes
111	Jun-08	12:45	54.1831	132.4660	82	19	5.7	250	155.2	Yes
112	Jun-08	14:10	54.2521	132.4676	151	20	5.7	350	217.3	Yes
113	Jun-08	15:11	54.3188	132.3762	214	20	5.6	500	180.8	Yes
114	Jun-08	16:19	54.2862	132.2603	216	18	5.4	500	278.8	Yes
115	Jun-08	17:40	54.2661	132.1398	172	18	5.4	400	753.2	Yes
116	Jun-08	18:35	54.2608	132.0977	176	18	5.5	400	217.7	Yes
117	Jun-09	7:33	54.2055	132.0985	107	18	5.2	350	189.5	Yes
118	Jun-09	8:34	54.2022	132.1302	95	19	5.6	250	115.4	Yes
119	Jun-09	9:39	54.2237	132.2503	136	18	5.7	350	298.1	Yes
120	Jun-09	10:41	54.1856	132.2800	106	16	5.6	250	187.4	Yes
121	Jun-09	14:21	54.1844	132.3684	104	18	5.6	250	309.4	Yes
122	Jun-09	17:28	54.2042	132.8056	148	18	5.6	350	910.7	Yes
123	Jun-10	7:11	54.2172	132.5322	124	18	5.6	300	455.8	Yes
124	Jun-10	8:27	54.2430	132.5599	135	18	5.6	350	421.5	Yes
125	Jun-10	9:35	54.3095	132.5111	242	16	5.7	500	398.8	Yes
126	Jun-10	10:51	54.2847	132.3504	170	19	5.6	400	0.0	No
127	Jun-10	12:27	54.2231	132.4387	131	18	5.6	300	325.5	Yes
128	Jun-10	13:36	54.2229	132.3472	134	18	5.7	300	706.6	Yes
129	Jun-10	15:51	54.2492	132.1375	137	18	5.6	350	515.2	Yes
130	Jun-10	17:28	54.2636	132.1275	169	19	3.0	400	445.8	Yes
131	Jun-10	18:20	54.2519	132.0637	155	19	5.7	350	330.83	Yes
132	Jun-11	7:08	54.2099	131.8521	122	19	5.4	300	1164.3	Yes
133	Jun-11	7:58	54.2446	131.8822	177	17	5.5	400	187.94	Yes
134	Jun-11	9:04	54.2685	132.012	193	18	5.4	450	243.6	Yes
135	Jun-11	10:55	54.4174	131.8662	244	16	5.5	500	230.4	Yes
136	Jun-11	12:26	54.5086	131.8157	353	13	5.7	700	190	No
137	Jun-11	14:26	54.4851	131.5737	284	16	5.5	600	465.74	Yes
138	Jun-11	15:51	54.4157	131.5305	253	15	5.4	550	207.54	Yes
139	Jun-11	16:44	54.4018	131.5945	246	13	5.5	500	158.94	No
140	Jun-11	18:06	54.356	131.7666	210	17	5.6	450	451.31	Yes
141	Jun-11	19:06	54.3439	131.6125	187	18	5.7	400	328.48	Yes
142	Jun-12	7:01	54.3054	131.6096	159	9	5.4	350	85.54	No
143	Jun-12	8:07	54.3469	131.4963	197	18	5.6	450	546.94	Yes
144	Jun-12	9:06	54.3073	131.4287	125	19	5.4	300	1704.7	Yes
145	Jun-12	10:03	54.3028	131.3074	75	19	5.5	200	1575.3	Yes
146	Jun-12	10:53	54.3019	131.2451	69	19	5.6	200	382.38	Yes
147	Jun-12	12:11	54.2862	131.3749	34	19	5.8	100	113.16	Yes
148	Jun-12	13:21	54.2521	131.4927	56	20	5.6	150	1440	Yes
149	Jun-12	14:20	54.3072	131.4583	136	15	5.5	350	680.43	Yes
150	Jun-12	15:14	54.3186	131.3922	134	8	6.2	350	18.29	No
151	Jun-12	15:53	54.314	131.3666	120	20	5.5	300	187.39	Yes
152	Jun-12	18:02	54.1951	131.3369	23	20	5.7	100	208.3	Yes
153	Jun-12	19:07	54.1983	131.2105	21	23	5.8	100	556.75	Yes

Tow	Date	Start Time	Start Latitude	Start Longitude	Average Depth (m)	Bottom Duration (min)	Speed (km/h)	Warp (m)	Catch (kg)	Useable
154	Jun-13	7:05	54.3593	131.2602	98	18	5.7	250	1234.2	Yes
155	Jun-13	8:17	54.4295	131.274	167	18	5.7	400	1187.4	Yes
156	Jun-13	9:18	54.4487	131.2502	137	19	5.7		1106.3	Yes
157	Jun-13	10:08	54.4337	131.3119	176	15	5.6	400	883.88	Yes
158	Jun-13	11:02	54.4658	131.352	196	17	5.5	450	999.64	Yes
159	Jun-13	13:06	54.4736	131.3773	243	14	5.7	500	299.14	Yes
160	Jun-13	14:11	54.4997	131.3851	163	6	5.4	400	240.32	No
161	Jun-13	14:56	54.5005	131.381	168	20	5.8	400	499.62	No
162	Jun-13	15:59	54.5196	131.3184	124	20	5.6	300	958.06	Yes
163	Jun-13	16:52	54.5105	131.2374	124	19	5.6	300	18.46	No
164	Jun-13	18:03	54.588	131.3198	124	19	5.5	350	884.22	Yes
165	Jun-13	19:17	54.5113	131.1912	148	18	5.5	350	697.89	Yes
166	Jun-14	7:06	54.235	131.1567	20	19	5.5	100	364.82	Yes
167	Jun-14	8:05	54.1934	131.1715	29	18	5.9	100	669.34	Yes
168	Jun-14	9:10	54.1678	131.1474	30	20	5.6		184.82	Yes
169	Jun-14	10:12	54.1817	131.0605	103	18	5.6	250	4088.4	Yes
170	Jun-14	11:47	54.162	131.0595	113	17	5.5	250	4152.3	Yes
171	Jun-14	13:20	54.059	131.2893	28	19	5.6		166.15	Yes
172	Jun-14	15:12	54.1311	131.0186	96	19	5.5	250	143.87	Yes
173	Jun-14	16:18	54.0433	131.0099	78	17	5.6	200	261.4	Yes
174	Jun-14	17:47	53.9178	130.9127	64	17	5.7	150	119.84	Yes
175	Jun-14	18:55	53.9136	130.9524	78	18	5.7	200	298.6	Yes
176	Jun-15	7:09	53.8189	131.265	38	19	5.7	150	627.77	Yes
177	Jun-15	8:31	53.7843	131.1521	39	20	5.8	150	84.5	Yes
178	Jun-15	9:40	53.8068	131.0319	52	19	5.5	150	93.11	Yes
179	Jun-15	10:50	53.7395	130.9769	43	18	5.6	150	250.55	Yes
180	Jun-15	12:06	53.7346	130.909	48	19	5.5	150	164.9	Yes
181	Jun-15	13:13	53.723	130.8072	84	19	5.6	200	978.62	Yes
182	Jun-15	14:15	53.6684	130.7745	80	18	5.7	200	421.58	Yes
183	Jun-15	15:34	53.5024	130.7663	162	18	5.6	400	567.8	Yes
184	Jun-15	16:39	53.4196	130.7361	114	19	5.5	300		No
185	Jun-16	7:08	53.4738	131.6736	19	23	5.6	100	128.46	Yes
186	Jun-16	9:32	53.5871	131.231	22	23	5.7	100	406.65	Yes
187	Jun-16	10:25	53.5517	131.2442	24	23	5.5	100	200.62	Yes
188	Jun-16	12:05	53.5056	130.9591	70	19	5.6	200	69.97	Yes
189	Jun-16	14:10	53.3056	131.0659	60	20	5.6	200	322.84	Yes
190	Jun-16	16:33	53.2078	131.3685	34	19	5.4	100	349.18	Yes
191	Jun-16	18:34	53.0464	131.0557	33	21	5.8	150	170.18	Yes
192	Jun-17	9:21	52.9825	131.0202	36	20	5.6	100	58.86	Yes
193	Jun-17	10:40	53.0914	130.9647	62	20	5.7	200	251	Yes
194	Jun-17	12:02	53.0605	130.8728	68	19	5.5	200	109.48	Yes
195	Jun-17	13:20	53.065	130.7375	123	19	5.6	300	379.48	Yes
196	Jun-17	14:48	53.017	130.8122	87	19	5.4	250	323.5	Yes
197	Jun-17	16:01	52.9494	130.6724	61	21	5.6	200	258.92	Yes
198	Jun-17	17:27	52.9642	130.5483	99	21	5.5		214.36	Yes
199	Jun-17	18:46	52.9717	130.3816	175	21	5.4	450	218.24	Yes
200	Jun-18	7:15	53.0589	130.3693	194	18	5.6	450	199.07	Yes
201	Jun-18	9:26	52.7893	130.2564	229	20	5.5	550	99.45	Yes
202	Jun-18	11:44	52.7255	130.0211	262	19	5.4	550	162.85	Yes
203	Jun-18	13:48	52.7833	129.8733	239	18	5.6	500	172.38	Yes

APPENDIX B: CATCH BY TOW (KG). <0.1 KG ENTERED AS –

Common Name	Scientific Name	Total					
		Weight (Kg)	1	2	3	4	5
Aleutian Skate	<i>Bathyraja aleutica</i>	54.3					
Arrowtooth Flounder	<i>Reinhardtius stomias</i>	24334.6	65.5	47.0	67.7	20.6	42.4
Big Skate	<i>Raja binoculata</i>	1483.1					
Bigmouth Sculpin	<i>Hemitripterus bolini</i>	47.6					
Blackbelly Eelpout	<i>Lycodes pacificus</i>	36.3	0.2				0.6
Bocaccio	<i>Sebastes paucispinis</i>	79.3					
Butter Sole	<i>Isopsetta isolepis</i>	187.6					
Canary Rockfish	<i>Sebastes pinniger</i>	444.7					
Copper Rockfish	<i>Sebastes caurinus</i>	98.3					
Curlfin Sole	<i>Pleuronichthys decurrens</i>	114.7					
Dover Sole	<i>Microstomus pacificus</i>	6417.1	5.2	20.8	17.4	4.7	14.0
Dusky Rockfish	<i>Sebastes variabilis</i>	99.2					
English Sole	<i>Parophrys vetulus</i>	4046.3					
Eulachon	<i>Thaleichthys pacificus</i>	196.3		2.1	1.2	0.4	3.2
Flathead Sole	<i>Hippoglossoides elassodon</i>	946.8					9.3
Greenstriped Rockfish	<i>Sebastes elongatus</i>	36.6					
Kelp Greenling	<i>Hexagrammos decagrammus</i>	81.4					
Lingcod	<i>Ophiodon elongatus</i>	517.8				4.0	1.7
Longnose Skate	<i>Raja rhina</i>	546.6	4.1			4.3	
North Pacific Spiny Dogfish	<i>Squalus suckleyi</i>	6584.0	12.9	16.9	3.3	5.3	6.9
Pacific Cod	<i>Gadus macrocephalus</i>	2503.9				11.0	
Pacific Hake	<i>Merluccius productus</i>	49.8			2.8		
Pacific Halibut	<i>Hippoglossus stenolepis</i>	3578.1					
Pacific Ocean Perch	<i>Sebastes alutus</i>	533.1		0.6	1.0	42.8	1.2
Pacific Sand Lance	<i>Ammodytes hexapterus</i>	62.8					
Pacific Sanddab	<i>Citharichthys sordidus</i>	216.7					
Pacific Tomcod	<i>Microgadus proximus</i>	40.9					
Petrale Sole	<i>Eopsetta jordani</i>	633.4	0.4	1.7	0.9		1.6
Pygmy Rockfish	<i>Sebastes wilsoni</i>	20.1					
Quillback Rockfish	<i>Sebastes maliger</i>	503.9					
Redbanded Rockfish	<i>Sebastes babcocki</i>	819.3	5.3	14.9	14.4	25.7	2.4
Redstripe Rockfish	<i>Sebastes proriger</i>	1039.2					
Rex Sole	<i>Glyptocephalus zachirus</i>	4713.1	0.3	1.9	1.3	3.4	21.5
Rougheye Rockfish	<i>Sebastes aleutianus</i>	64.8		0.7	3.1	4.8	
Sablefish	<i>Anoplopoma fimbria</i>	374.9		1.2	2.1		2.0
Sand Sole	<i>Psettichthys melanostictus</i>	493.0					
Sandpaper Skate	<i>Bathyraja interrupta</i>	49.3				0.6	0.4
Sharpchin Rockfish	<i>Sebastes zacentrus</i>	17.3	0.2				
Shortspine Thornyhead	<i>Sebastolobus alascanus</i>	379.1	0.3	3.1	3.6	24.3	
Silvergray Rockfish	<i>Sebastes brevispinis</i>	1283.5	2.3			13.0	5.7
Slender Sole	<i>Lyopsetta exilis</i>	65.0	0.3	0.4	2.3	0.0	2.5
Southern Rock Sole	<i>Lepidopsetta bilineata</i>	2142.6					
Spotted Ratfish	<i>Hydrolagus colliei</i>	18426.8	5.6	0.9	5.0	8.7	0.3
Starry Flounder	<i>Platichthys stellatus</i>	333.2					
Sturgeon Poacher	<i>Podothecus accipenserinus</i>	11.0					
Walleye Pollock	<i>Theragra chalcogramma</i>	1669.9				10.5	
Widow Rockfish	<i>Sebastes entomelas</i>	194.0					
Yelloweye Rockfish	<i>Sebastes ruberrimus</i>	29.6					
Yellowmouth Rockfish	<i>Sebastes reedi</i>	536.4	0.9				
Yellowtail Rockfish	<i>Sebastes flavidus</i>	2148.9	42.7	5.4			52.9
Other		1677.4	16.8	10.1	10.9	19.2	5.6
Total		90963.0	163.0	127.5	136.9	203.4	174.0

Common Name	6	7	8	9	10	11	12	13	14	15	16
Aleutian Skate											
Arrowtooth Flounder	91.4	39.6	9.7	16.0	31.6	2.7	0.9	2.6			
Big Skate								28.1			
Bigmouth Sculpin											
Blackbelly Eelpout	-		0.2	1.1	0.6						
Bocaccio											
Butter Sole							0.5				
Canary Rockfish			5.2		8.9	2.8				6.5	0.7
Copper Rockfish										8.4	0.9
Curlfin Sole					0.1		0.9	0.5			
Dover Sole	10.8	0.2	1.0	10.4	9.3	0.2					
Dusky Rockfish											
English Sole		0.2	0.6	1.5	10.7	0.2	5.0	1.4			
Eulachon	2.5			0.0							
Flathead Sole	1.0	1.0	1.1	5.4	3.7						
Greenstriped Rockfish						5.2	1.1				
Kelp Greenling										5.3	
Lingcod					1.0	5.6				1.0	0.3
Longnose Skate	1.1										
North Pacific Spiny Dogfish	1.3	5.5	16.0	12.4	12.2	2.0	2.8	3.0	3.7		
Pacific Cod		4.8	3.3	9.5		0.4		0.1			
Pacific Hake											
Pacific Halibut					6.9		1.4	3.0	17.0	0.9	
Pacific Ocean Perch	2.6	-		-	-	0.2		-			
Pacific Sand Lance									1.5	0.7	-
Pacific Sanddab							3.3	3.5			
Pacific Tomcod											
Petrale Sole	0.6	1.1		1.5	2.5		18.6	17.0	6.5		
Pygmy Rockfish											
Quillback Rockfish										6.4	2.2
Redbanded Rockfish	13.9										
Redstripe Rockfish											
Rex Sole	1.2	7.2	11.3	39.6	41.9	2.7	1.7	0.6			
Rougheye Rockfish	0.1										
Sablefish	3.2			0.3	0.4						
Sand Sole											
Sandpaper Skate											
Sharpchin Rockfish						0.0					
Shortspine Thornyhead	0.5										
Silvergray Rockfish	0.9	1.4	6.1			4.9					
Slender Sole			0.2	0.7	1.3						
Southern Rock Sole								1.1	10.0	7.6	0.7
Spotted Ratfish	5.4	0.7	3.9	1.7	6.6	12.2	5.6	8.2	57.9	32.0	4.8
Starry Flounder											
Sturgeon Poacher							0.6		-		
Walleye Pollock		1.9	2.9	0.4	0.1	2.4		0.3			
Widow Rockfish											
Yelloweye Rockfish											
Yellowmouth Rockfish											
Yellowtail Rockfish	5.4	2.1			2.2					1.8	
Other	12.6	1.6	8.0	3.1	2.4	3.5	1.7	0.6	1.2	8.6	4.9
Total	154.5	67.4	69.5	103.7	142.5	45.0	44.1	69.8	97.8	79.0	14.5

Common Name	17	18	19	20	21	22	23	24	25	26	27
Aleutian Skate											
Arrowtooth Flounder									0.3	0.1	
Big Skate						0.9				9.8	
Bigmouth Sculpin											
Blackbelly Eelpout											
Bocaccio											
Butter Sole									0.1	0.2	
Canary Rockfish	0.59										0.1
Copper Rockfish	20.3			5.5			2.7				1.5
Curlfin Sole				0.3	7.8	2.6	4.1		4.0	2.2	1.1
Dover Sole									0.1	0.9	
Dusky Rockfish											
English Sole					0.6			0.4	6.8	59.9	
Eulachon											
Flathead Sole											
Greenstriped Rockfish											
Kelp Greenling											1.6
Lingcod											
Longnose Skate											7.2
North Pacific Spiny Dogfish			4.7				3.9			8.5	5.6
Pacific Cod	0					-	0.5		0.2	0.1	
Pacific Hake											
Pacific Halibut			0.1	19.9		18.2	12.4	31.1	6.1	18.3	19.6
Pacific Ocean Perch											
Pacific Sand Lance	0.44	0.3	2.0	0.1	-	8.7	0.5	0.5	0.2	0.0	
Pacific Sanddab									12.5	113.8	
Pacific Tomcod									5.7	10.0	
Petrale Sole									6.8	1.7	
Pygmy Rockfish											
Quillback Rockfish	2.7										0.9
Redbanded Rockfish											
Redstripe Rockfish											
Rex Sole									1.7	0.2	
Rougheye Rockfish											
Sablefish											
Sand Sole		13.8	43.3	0.4	13.9	4.8	3.5	1.4		19.2	
Sandpaper Skate											
Sharpchin Rockfish											
Shortspine Thornyhead											
Silvergray Rockfish											
Slender Sole											
Southern Rock Sole	5.85	14.5	36.6	2.4	110.2	31.7	20.4	34.6	0.9	29.3	7.0
Spotted Ratfish	23.9	38.7	25.6	62.5	4.3	17.2	67.1	9.5	8.5	4.6	31.2
Starry Flounder											
Sturgeon Poacher					0.6	-		0.6	0.3	0.6	
Walleye Pollock											
Widow Rockfish											
Yelloweye Rockfish											
Yellowmouth Rockfish											
Yellowtail Rockfish											
Other	12.17	0.4	0.0	9.9	0.6	0.4	0.9	0.8	1.1	2.1	1.5
Total	65.95	67.7	112.3	101.1	138.1	84.5	116.2	78.9	55.2	281.6	77.4

Common Name	28	29	30	31	32	33	34	35	36	37	38
Aleutian Skate											
Arrowtooth Flounder	1.0	2.02		0.9	11.5	0.5	6.3	149.9	75.1	23.5	26.4
Big Skate											
Bigmouth Sculpin										16.4	
Blackbelly Eelpout								0.1			
Bocaccio						43.9					
Butter Sole											
Canary Rockfish			1.2		8.7	44.6	90.7		1.6		
Copper Rockfish											
Curlfin Sole	1.4	1.74									
Dover Sole	0.2				2.0	0.1	0.1	7.4	14.4		16.6
Dusky Rockfish											
English Sole	5.5	7.04	5.6	13.1	58.1	4.7	1.6				0.2
Eulachon								1.8	16.9		2.7
Flathead Sole				0.2				4.4	1.5	0.0	15.3
Greenstriped Rockfish			0.4				0.2				1.7
Kelp Greenling											
Lingcod			5.1		4.4	3.0	3.0			1.1	1.7
Longnose Skate							18.2		0.9		
North Pacific Spiny Dogfish	6.3	14.54	15.8	5.6	9.7	18.0	52.8	42.8	127.6	4.9	86.1
Pacific Cod	0.3	0.17	1.5			0.7	28.2			3.4	1.6
Pacific Hake											9.7
Pacific Halibut	7.8				4.5	48.0	14.5				
Pacific Ocean Perch									2.7	0.4	3.5
Pacific Sand Lance											
Pacific Sanddab	8.6	8.13									
Pacific Tomcod	0.1				0.4						
Petrals Sole	1.7	10.79	3.0	1.7	11.0	1.6	2.6				
Pygmy Rockfish			2.3	0.1		13.7	3.8				
Quillback Rockfish			29.3	2.2	12.0	5.4	18.4				
Redbanded Rockfish								15.9	26.4		32.1
Redstripe Rockfish			54.2	0.4		573.0	347.9			3.6	
Rex Sole	3.8	2.35	4.3	3.2	16.9	2.9	10.6	4.8	0.1	7.7	4.0
Rougheye Rockfish								1.3	6.8		2.1
Sablefish								2.9	1.0		1.1
Sand Sole											
Sandpaper Skate								0.9	0.9		
Sharpchin Rockfish			0.1			1.4	1.2	0.1		1.7	
Shortspine Thornyhead									1.3		10.4
Silvergray Rockfish			15.3	1.2		82.8	66.4	3.5	1.8	8.5	1.2
Slender Sole								0.7	0.4		6.1
Southern Rock Sole	7.5	4.34	0.7	1.6	0.2						
Spotted Ratfish	22.4	17.32	3.7	4.2	19.4	1.8	15.7	7.6	3.3	0.7	5.0
Starry Flounder											
Sturgeon Poacher	-	-	-	-	-	-	-				
Walleye Pollock	0.1	0.19				0.1	1.0			6.4	
Widow Rockfish						0.3	0.4			0.7	
Yelloweye Rockfish							4.7				
Yellowmouth Rockfish						54.2	42.2			439.1	
Yellowtail Rockfish			211.0	4.8		12.0		1.9			1.2
Other	12.8	1.2	3.3	1.0	1.4	5.9	2.0	4.7	5.5	1.0	11.1
Total	79.4	69.83	356.8	39.9	160.1	918.5	732.7	250.6	288.1	520.6	238.0

Common Name	39	40	41	42	43	44	45	46	47	48	49
Aleutian Skate											
Arrowtooth Flounder	22.6	40.9	295.6	463.0	169.0	418.3	164.7	31.9	420.1	7.1	49.5
Big Skate								138.0	21.0	8.1	
Bigmouth Sculpin											
Blackbelly Eelpout							-		0.1		4.2
Bocaccio											
Butter Sole											
Canary Rockfish									1.4		
Copper Rockfish											
Curlfin Sole											
Dover Sole	24.6	20.8	42.84	56.1	19.5	47.2	95.5	0.8	5.0		10.0
Dusky Rockfish											
English Sole								30.1	26.3	42.3	12.4
Eulachon	4.5	7.4	1.3	1.6	2.4	3.5	7.1				
Flathead Sole	3.0	0.9	25.1	15.1	19.1	13.4	91.6		18.1	0.0	3.3
Greenstriped Rockfish											
Kelp Greenling											
Lingcod	10.0							94.1			
Longnose Skate	6.7	5.2	10.2	20.2	7.1	1.8					
North Pacific Spiny Dogfish	77.2	35.0	22.04	12.7	5.2	34.4	59.0	27.2	111.5	305.4	212.1
Pacific Cod		2.0						0.4	20.1	0.9	4.9
Pacific Hake	2.3	2.2	4.84								
Pacific Halibut		4.9				3.4		9.3	4.7	12.9	57.8
Pacific Ocean Perch	3.2	4.1	1.16	4.4	5.1	0.8	1.1	0.1		0.2	
Pacific Sand Lance											
Pacific Sanddab											
Pacific Tomcod											
Petrale Sole				1.9			1.3	52.0	14.2	49.2	8.9
Pygmy Rockfish											
Quillback Rockfish											
Redbanded Rockfish	10.8	13.2	19.18	48.6	49.2	23.6	10.6				
Redstripe Rockfish											
Rex Sole	2.7	1.0	10	10.1	9.0	14.8	35.7	14.9	71.8	10.2	89.2
Rougheye Rockfish	9.6	1.4	1.58	4.4	2.6	2.1					
Sablefish		1.3	15.26	20.7	9.1	15.8	5.7	7.0	0.9		4.5
Sand Sole											
Sandpaper Skate		1.3	1.42			0.6	1.0				
Sharpchin Rockfish											
Shortspine Thornyhead	5.1	1.6			0.3						
Silvergray Rockfish			3.32	3.7	1.7	2.4			11.8		
Slender Sole	9.3	0.6	0.64	0.4	1.0	0.2	2.1		2.1		1.8
Southern Rock Sole										0.1	0.6
Spotted Ratfish	1.2	1.9	3.9	4.6	4.8	3.7	7.8	10.5	9.8	35.6	3.0
Starry Flounder											
Sturgeon Poacher									-	-	-
Walleye Pollock								6.9	0.5	0.5	
Widow Rockfish						1.1					
Yelloweye Rockfish											
Yellowmouth Rockfish											
Yellowtail Rockfish			1.7	2.1	6.4	4.3	5.3				
Other	24.3	5.8	7	4.7	3.9	5.6	4.7	0.0	0.0	0.1	8.4
Total	216.9	151.5	467.1	674.1	315.4	597.2	493.3	423.1	739.5	472.8	470.7

Common Name	50	51	52	53	54	55	56	57	58	59	60
Aleutian Skate											
Arrowtooth Flounder	198.9	177.4	31.5	183	73.4						983.9
Big Skate						52.2	10.4	7.7			
Bigmouth Sculpin											
Blackbelly Eelpout	4.4	21.9									
Bocaccio											
Butter Sole						0.1					
Canary Rockfish					0.8	24.1				0.8	
Copper Rockfish						8.6	0.4	2.9	1.7		
Curlfin Sole						2.0	0.4				
Dover Sole	25.1	31.4	0.2	1.58	0.5						10.0
Dusky Rockfish											
English Sole	6.1		14.8	112.8	105.8	16.2	0.2		0.6		39.4
Eulachon											
Flathead Sole	6.6	134.2	-								8.0
Greenstriped Rockfish											
Kelp Greenling						8.2		0.3		1.2	
Lingcod	6.2		6.8		1.1						11.7
Longnose Skate	8.5	7.5									
North Pacific Spiny Dogfish	45.0	64.7	118.7	51.58	124.7	13.9	7.1	9.8	4.7		47.1
Pacific Cod	3.0		2.6	42.3	106.6	20.4	0.7	1.0			33.3
Pacific Hake											
Pacific Halibut			1.9	6.26		23.1	29.9	22.6	27.0		
Pacific Ocean Perch	0.2		-								
Pacific Sand Lance	0.0						0.7	1.0	0.2		
Pacific Sanddab				0.34		0.1					
Pacific Tomcod				0.18	0.1	0.8					
Petrale Sole	13.1	10.4	28.5	53.24	81.4						6.3
Pygmy Rockfish											
Quillback Rockfish			13.1			19.1	2.2	5.3	7.8	5.2	1.7
Redbanded Rockfish											
Redstripe Rockfish											
Rex Sole	712.6	345.2	27.6	15.62	33.5						50.7
Rougheye Rockfish											
Sablefish	2.0	0.5		1.98	1.0						
Sand Sole				2.12	2.8	0.5	10.1	18.0	9.0		
Sandpaper Skate											
Sharpchin Rockfish											
Shortspine Thornyhead											
Silvergray Rockfish											
Slender Sole	1.6	2.5									
Southern Rock Sole					1.0	39.4	29.2	38.2	210.7		
Spotted Ratfish	12.4	13.5	21.3	16.5	24.2	52.2	45.6	29.6	13.3	7.0	18.5
Starry Flounder											
Sturgeon Poacher	-			-	-	-	-	-	-		
Walleye Pollock		0.6	0.3	0.3	0.3						2.5
Widow Rockfish						39.1					
Yelloweye Rockfish											
Yellowmouth Rockfish											
Yellowtail Rockfish						620.2				4.6	
Other	4.5	16.8	1.6	1.04	1.3	17.0	11.1	16.4	2.7	10.9	0.6
Total	1050.2	826.5	269.1	488.8	558.4	957.1	148.1	152.8	277.6	29.8	1213.7

Common Name	61	62	63	64	65	66	67	68	69	70	71
Aleutian Skate											
Arrowtooth Flounder	362.5	119.1	125.4	562.1	565.8				141.4	323.1	
Big Skate						43.3	12.4				
Bigmouth Sculpin		5.5									
Blackbelly Eelpout		-			0.06						0.8
Bocaccio											
Butter Sole							0.1				
Canary Rockfish	206.4	11.7									1.4
Copper Rockfish											17.5
Curlfin Sole							1.9	0.5			
Dover Sole	2.8	3.4	0.5	12.1	48.06				2.0	4.6	
Dusky Rockfish											
English Sole	15.7	54.0	15.5	56.1	63.9		1.3		77.4	22.2	
Eulachon				0.4							
Flathead Sole	1.2	3.3	1.0	1.0	10.32				18.8	99.6	
Greenstriped Rockfish	2.7										
Kelp Greenling								0.4			6.8
Lingcod	3.0		2.0								4.5
Longnose Skate											
North Pacific Spiny Dogfish	24.1			1.6	1.76	2.3	5.9		23.3	5.6	4.0
Pacific Cod	13.2	30.8	15.0	2.2			0.7		6.8	6.6	
Pacific Hake											
Pacific Halibut	6.0		2.7			23.8	20.3	34.9			13.8
Pacific Ocean Perch	1.7	0.9									
Pacific Sand Lance						8.7	2.3				
Pacific Sanddab											
Pacific Tomcod											
Petrale Sole	3.4	1.5		0.4	1.56				7.3	0.4	
Pygmy Rockfish	0.1										
Quillback Rockfish	21.7	2.0									7.3
Redbanded Rockfish											
Redstripe Rockfish											
Rex Sole	56.9	13.4	14.2	107.3	229				70.4	81.9	
Rougheye Rockfish											
Sablefish	1.1	2.1		3.6	0.96				6.1	0.4	
Sand Sole						10.0	2.0				
Sandpaper Skate											
Sharpchin Rockfish											
Shortspine Thornyhead											
Silvergray Rockfish	8.7	3.3									
Slender Sole	0.6			0.6	2.34				0.4	3.2	
Southern Rock Sole			0.7	0.7		38.5	44.8	1.7			1.4
Spotted Ratfish	17.7	14.4	3.5	22.3	18.94	96.2	144.4	162.4	24.7	14.3	68.4
Starry Flounder						12.3					
Sturgeon Poacher						0.1	0.1	-	0.1		
Walleye Pollock	4.8	7.6	299.9	20.5	0.52			3.8	2.9	0.3	
Widow Rockfish											
Yelloweye Rockfish											
Yellowmouth Rockfish											
Yellowtail Rockfish	19.7										
Other	1.3	4.6	1.3	5.3	2.34	1.2	3.8	22.6	0.3	0.0	9.3
Total	775.2	277.6	481.8	796.1	945.5	236.3	240.0	226.4	381.8	563.0	134.4

Common Name	72	73	74	75	76	77	78	79	80	81	82
Aleutian Skate											
Arrowtooth Flounder			0.6							1.4	
Big Skate		2.8	41.0			91.62	45.8		5.9		
Bigmouth Sculpin											
Blackbelly Eelpout											
Bocaccio											
Butter Sole		1.1	1.7	0.3		0.42				0.2	0.3
Canary Rockfish											
Copper Rockfish				13.1					1.9	0.4	
Curlfin Sole	1.8	0.1	4.4	1.0		0.42	6.2	8.1	2.5	8.0	3.2
Dover Sole											
Dusky Rockfish											
English Sole	1.9	4.4	14.1	3.6		92.48	6.5	2.0	5.4	1.8	2.2
Eulachon											
Flathead Sole											
Greenstriped Rockfish											
Kelp Greenling				5.4					4.6	8.8	
Lingcod				0.8					4.5	3.6	
Longnose Skate		7.2							2.7	4.4	
North Pacific Spiny Dogfish	1.0			22.7	6.5	29.92	20.7	8.7	15.5	5.3	5.7
Pacific Cod	7.2	3.6	1.9	3.3	-	0.36	18.9	21.3	0.6	25.2	
Pacific Hake											
Pacific Halibut	16.7	60.9	21.2	15.2		35.76	58.5	25.8	24.3	61.5	14.3
Pacific Ocean Perch											
Pacific Sand Lance	-	0.1			2.3	1.37					
Pacific Sanddab			6.4							0.1	
Pacific Tomcod							0.1			0.2	0.1
Petrale Sole											
Pygmy Rockfish											
Quillback Rockfish	1.5			7.6					1.2	16.1	
Redbanded Rockfish											
Redstripe Rockfish											
Rex Sole			0.4								0.7
Rougheye Rockfish											
Sablefish											
Sand Sole	7.6	6.2	16.6	0.4	6.5	13.96	2.6	2.8	2.7	1.6	38.4
Sandpaper Skate											
Sharpchin Rockfish											
Shortspine Thornyhead											
Silvergray Rockfish											
Slender Sole											
Southern Rock Sole	9.5	63.2	33.5	22.7	19.3	57.45	27.1	12.1	10.7	52.8	37.7
Spotted Ratfish	10.6	157.4	122.0	611.0			993.1	221.1	1104.8	370.9	107.6
Starry Flounder		4.2			17.3						
Sturgeon Poacher	0.4	0.5	0.4	0.1	-	0.64	-		0.1	-	0.3
Walleye Pollock	0.1		0.1							-	
Widow Rockfish										148.1	
Yelloweye Rockfish											
Yellowmouth Rockfish											
Yellowtail Rockfish		0.2								764.7	
Other	12.0	53.4	17.9	41.9	8.6	38.44	6.5	23.3	15.7	51.9	26.7
Total	70.1	365.1	282.0	749.2	60.4	362.8	1185.9	325.2	1203.0	1527.0	236.9

Common Name	83	84	85	86	87	88	89	90	91	92	93
Aleutian Skate											
Arrowtooth Flounder					6.3			476.1	117.4	1.8	16.8
Big Skate		5.2		9.6	13.0	46.5	6.06			9.5	41.1
Bigmouth Sculpin											
Blackbelly Eelpout								0.2			
Bocaccio											
Butter Sole		19.8					1.34			4.2	0.6
Canary Rockfish											
Copper Rockfish											
Curlfin Sole			6.9	2.6	15.3	0.3	0.67			2.1	7.8
Dover Sole		0.2						185.1	156.3		
Dusky Rockfish											
English Sole		136.4		1.4	0.3	0.4		1.4	0.7	0.4	57.4
Eulachon								1.5	0.2		
Flathead Sole								20.5	29.8		
Greenstriped Rockfish									1.2		
Kelp Greenling	1.6			5.5							
Lingcod											
Longnose Skate									1.0		
North Pacific Spiny Dogfish	3.4	5.5	0.9		0.6	3.0		8.8	45.5		0.6
Pacific Cod	3.3	0.2	0.2	15.5	97.9	1.5		20.5	26.0	0.6	2.0
Pacific Hake											
Pacific Halibut		76.9	19.8	8.7	20.8	25.3	24.39	2.0		28.7	40.4
Pacific Ocean Perch								4.5	1.4		
Pacific Sand Lance			0.1		1.8	1.4	0.02				0.2
Pacific Sanddab		-		0.1							
Pacific Tomcod		1.4		0.1							4.0
Petrale Sole					0.9	2.8		1.3		0.8	3.7
Pygmy Rockfish											
Quillback Rockfish				1.0					9.3		
Redbanded Rockfish								3.1			
Redstripe Rockfish											
Rex Sole								127.3	114.5		
Rougheye Rockfish											
Sablefish								6.3	2.6		0.7
Sand Sole	1.5	27.2	1.8	0.5	0.5	0.6	4.18			10.8	10.3
Sandpaper Skate											
Sharpchin Rockfish											
Shortspine Thornyhead											
Silvergray Rockfish									1.7	0.5	
Slender Sole								4.6	7.0		
Southern Rock Sole	2.8	12.0	2.6	11.8	101.5	44.5	7.62			4.7	61.7
Spotted Ratfish	29.7	23.1	280.7	89.8	104.3	70.1	41.39	21.1	19.5	30.4	34.3
Starry Flounder											0.6
Sturgeon Poacher		0.4	0.2	0.1		-	0.1	-		0.1	0.5
Walleye Pollock								2.5	2.7		
Widow Rockfish											
Yelloweye Rockfish									5.4		
Yellowmouth Rockfish											
Yellowtail Rockfish								8.8	27.2		
Other	14.1	30.7	12.1	11.4	15.0	0.0	0.46	4.3	1.7		3.5
Total	56.3	339.0	325.2	158.1	378.2	196.4	86.23	899.9	571.1	94.8	286.0

Common Name	94	95	96	97	98	99	100	101	102	103	104
Aleutian Skate											
Arrowtooth Flounder	592.3	1177.8	35.0	85.7	47.2	36.7	45.8	78.78	381.6	133.8	217.1
Big Skate									29.8	48.8	94.0
Bigmouth Sculpin											
Blackbelly Eelpout								0.56			
Bocaccio											
Butter Sole	1.6	30.0								1.5	4.9
Canary Rockfish			2.7		12.8	2.6					
Copper Rockfish											
Curlfin Sole											
Dover Sole	2.8	1.7	0.3	14.3	1.9	0.5	42.3	384.2	605.2	1.4	13.4
Dusky Rockfish			95.4		3.8						
English Sole	46.0	109.2		3.1				47.36	0.7	176.6	369.0
Eulachon	-		-	0.2				0.34	34.6		
Flathead Sole	21.7	177.1					0.7	45.14	4.2		6.1
Greenstriped Rockfish					0.8						
Kelp Greenling											
Lingcod			28.0		6.7	2.0					
Longnose Skate								19.52	29.4		
North Pacific Spiny Dogfish	5.1	0.9				15.4	4.3	11.28	7.1		9.0
Pacific Cod	42.0	52.6		16.4	4.4	5.2	15.2	14.22	35.2	7.7	23.1
Pacific Hake											
Pacific Halibut		1.8	53.0			12.0	57.7		7.6	3.3	16.1
Pacific Ocean Perch			0.7	38.4	4.9	0.1	1.2				
Pacific Sand Lance											
Pacific Sanddab	0.6										
Pacific Tomcod	0.4		3.4								0.4
Petrale Sole	8.6					0.5		2.96		0.6	8.7
Pygmy Rockfish											
Quillback Rockfish	1.0	1.1									
Redbanded Rockfish				1.2			0.0				
Redstripe Rockfish			46.0								
Rex Sole	22.5	9.8	4.1	25.6	2.3	3.7	47.5	18.12	70.2	37.3	175.7
Rougheye Rockfish							2.0				
Sablefish	0.9	1.2							2.8		
Sand Sole	0.6	0.3									
Sandpaper Skate									2.4		
Sharpchin Rockfish			3.7			0.1					
Shortspine Thornyhead				0.5			14.8	0.5			
Silvergray Rockfish			217.4	2.5	130.4	99.5	1.9		1.0	1.2	
Slender Sole								0.3			
Southern Rock Sole	1.6	4.3									
Spotted Ratfish	7.8	28.4	24.1	15.0	23.2	76.1	101.8	155.1	134.1	97.0	213.4
Starry Flounder										2.8	284.6
Sturgeon Poacher	0.0										
Walleye Pollock	34.8	40.2		74.1	8.7	6.2	0.7	1.32	17.4	1.8	
Widow Rockfish						4.4					
Yelloweye Rockfish			3.6		5.5		3.3				
Yellowmouth Rockfish											
Yellowtail Rockfish			44.9	1.8	33.8	26.6					
Other	1.0		154.2	0.3	1.3	1.5	4.8	3.54	10.7	0.5	12.1
Total	791.5	1636.4	716.5	278.9	287.5	293.1	344.1	783.3	1373.9	514.4	1447.6

Common Name	105	106	107	108	109	110	111	112	113	114	115
Aleutian Skate											
Arrowtooth Flounder	574.4	0.5		10.2	1.4	21.0	1.4	38.0	28.1	60.9	87.6
Big Skate											33.6
Bigmouth Sculpin										3.3	
Blackbelly Eelpout											
Bocaccio											
Butter Sole											
Canary Rockfish											2.5
Copper Rockfish											
Curlfin Sole					0.5						
Dover Sole	101.1	0.2						0.8	1.9	2.9	7.7
Dusky Rockfish											
English Sole	27.5	0.3									
Eulachon									0.1	0.9	
Flathead Sole	0.4										
Greenstriped Rockfish						0.1		1.2			
Kelp Greenling		0.3	1.2								
Lingcod			11.4			5.3	8.5		4.7		5.7
Longnose Skate								3.8		1.4	10.2
North Pacific Spiny Dogfish					2495.1	38.8	8.8	33.5	7.3	53.2	438.0
Pacific Cod	48.0		-	7.7	1.6	1.9	0.2	13.6	13.6	0.8	17.2
Pacific Hake											
Pacific Halibut	2.1				1.1		4.1	12.2	18.6		29.0
Pacific Ocean Perch	0.8							1.6	1.3	16.5	32.8
Pacific Sand Lance											
Pacific Sanddab											
Pacific Tomcod											
Petrale Sole	1.5							5.6			
Pygmy Rockfish							0.1				
Quillback Rockfish	3.8	8.5	38.3	5.1	5.6		82.0	2.3			
Redbanded Rockfish									9.0	12.9	2.9
Redstripe Rockfish		0.1	0.2		0.1		2.6	0.2			
Rex Sole	4.7							8.8	8.4	13.1	6.5
Rougheye Rockfish									3.8		0.1
Sablefish	1.7										
Sand Sole											
Sandpaper Skate											
Sharpchin Rockfish											
Shortspine Thornyhead									42.2	10.9	0.4
Silvergray Rockfish							7.3	25.1	7.0	9.6	1.5
Slender Sole											
Southern Rock Sole	0.1		-								
Spotted Ratfish	315.1	198.5	261.3	82.3	447.8	76.7	19.4	65.5	33.0	73.6	74.9
Starry Flounder											
Sturgeon Poacher											
Walleye Pollock	47.3			0.1		0.1	0.8	2.4		14.7	1.6
Widow Rockfish											
Yelloweye Rockfish											
Yellowmouth Rockfish											
Yellowtail Rockfish	1.7										
Other	5.4	3.1	12.7	0.3	0.2	0.2	20.1	2.6	2.1	4.1	1.0
Total	1135.5	211.4	325.3	105.7	2953.3	144.1	155.2	217.3	180.8	278.8	753.2

Common Name	116	117	118	119	120	121	122	123	124	125	126
Aleutian Skate											
Arrowtooth Flounder	58.3	43.7	39.7	174.6	114.8	209.0	804.5	11.6	25.9	132.3	
Big Skate			17.4								
Bigmouth Sculpin	6.2								5.9		
Blackbelly Eelpout										-	
Bocaccio		5.4									
Butter Sole											
Canary Rockfish											
Copper Rockfish											
Curlfin Sole											
Dover Sole	18.8	0.3	1.0	8.3	1.8	1.9	7.1		1.5	110.2	
Dusky Rockfish											
English Sole	8.4	1.6		35.6	27.9	48.1	11.8				
Eulachon											0.8
Flathead Sole											
Greenstriped Rockfish								6.4	3.2		
Kelp Greenling											
Lingcod		17.2	19.1		4.9		7.0	5.2	7.6	1.16	
Longnose Skate						12.5	2.0			15.58	
North Pacific Spiny Dogfish	25.1	3.9		0.3	1.9			343.6	8.7	2.2	
Pacific Cod	5.9	12.4	4.3		1.2		5.1	6.1	34.2		
Pacific Hake											6.88
Pacific Halibut		8.8	15.7	8.1	2.4	4.3	5.2	9.4	6.6	1.7	
Pacific Ocean Perch	5.4	0.4						0.3	3.2	9.14	
Pacific Sand Lance											
Pacific Sanddab					12.1	1.9	0.4				
Pacific Tomcod			0.1								
Petrale Sole	1.7			8.9		0.2	3.2	1.8	6.7		
Pygmy Rockfish											
Quillback Rockfish								1.5	0.9		
Redbanded Rockfish	0.8	1.8									22.4
Redstripe Rockfish									0.5	0.42	
Rex Sole	23.7	0.6		23.5	1.9	4.1	25.1	1.7	1.2	41.88	
Rougheye Rockfish											0.92
Sablefish					0.3	1.4					1.76
Sand Sole			0.6								
Sandpaper Skate											
Sharpchin Rockfish									0.2		
Shortspine Thornyhead	0.6										9.92
Silvergray Rockfish		21.2		12.9	4.2	1.0	6.0	3.6	133.8	3.64	
Slender Sole	0.4										
Southern Rock Sole			0.2								
Spotted Ratfish	57.0	71.4	16.5	24.4	13.2	18.5	3.9	53.9	177.7	29.24	
Starry Flounder											
Sturgeon Poacher											
Walleye Pollock	2.2	0.4	0.3	1.4	-	6.5	5.0	6.7	3.3	1.92	
Widow Rockfish											
Yelloweye Rockfish											
Yellowmouth Rockfish											
Yellowtail Rockfish							24.3	3.4			
Other	3.2	0.3	0.5		0.6		0.1	0.5	0.5	6.78	
Total	217.7	189.5	115.4	298.1	187.4	309.4	910.7	455.8	421.5	398.8	

Common Name	127	128	129	130	131	132	133	134	135	136	137
Aleutian Skate	7.0										
Arrowtooth Flounder	136.5	309.5	164.6	99.9	92.5	629.9	55.1	57.3	19.6	9.6	60.5
Big Skate				31.5							
Bigmouth Sculpin											
Blackbelly Eelpout						0.3					
Bocaccio		8.3				20.4					
Butter Sole											
Canary Rockfish			6.2								
Copper Rockfish											
Curlfin Sole											
Dover Sole	4.0	13.1	3.6	13.4	9.0	17.2	8.9	24.8	8.5	20.1	245.6
Dusky Rockfish											
English Sole	0.5	19.9			58.4	2.0		4.2			
Eulachon							0.5			5.0	1.18
Flathead Sole											
Greenstriped Rockfish			10.1								
Kelp Greenling											
Lingcod			7.9								
Longnose Skate			12.2	8.2							13.08
North Pacific Spiny Dogfish		1.7	74.0	10.1	33.5	6.1	4.3	5.8	1.4		7.62
Pacific Cod	57.6	13.1	24.8	39.1	21.4	2.7	9.6	3.9	2.1		
Pacific Hake											5.3
Pacific Halibut		17.7	6.9	8.9		25.0				10.6	8.86
Pacific Ocean Perch			1.1	23.0	15.8	0.4	3.1	1.8	46.6	3.3	
Pacific Sand Lance											
Pacific Sanddab											
Pacific Tomcod											
Petrale Sole	0.9	2.9	1.8	7.5	5.9	4.7					1.96
Pygmy Rockfish											
Quillback Rockfish											
Redbanded Rockfish				7.0			21.4	9.5	6.5		
Redstripe Rockfish								0.3			
Rex Sole	9.9	28.7	0.5	2.3	15.4	25.9	54.3	96.3	3.5	26.4	16.14
Rougheye Rockfish									5.6		1.52
Sablefish							0.7		19.1	31.9	30.08
Sand Sole											
Sandpaper Skate				1.1							2.02
Sharpchin Rockfish											
Shortspine Thornyhead							1.0	0.6	98.4	27.2	18.86
Silvergray Rockfish	42.8	92.0	94.1	42.1	3.1	3.5	14.5	4.4			
Slender Sole								0.6			
Southern Rock Sole											
Spotted Ratfish	58.9	22.4	100.3	143.3	71.5	33.8	6.1	19.9	7.4	25.4	31.42
Starry Flounder											
Sturgeon Poacher											
Walleye Pollock	7.5	37.1	2.8	4.7	1.0	380.5	5.7	12.2	3.8		6.76
Widow Rockfish											
Yelloweye Rockfish											
Yellowmouth Rockfish											
Yellowtail Rockfish		139.5	4.0	1.7		11.6					
Other		0.7	0.3	2.0	3.3	0.2	2.9	2.0	8.2	25.1	20.14
Total	325.5	706.6	515.2	445.8	330.8	1164.3	187.9	243.6	230.4	190.0	465.7

Common Name	138	139	140	141	142	143	144	145	146	147	148
Aleutian Skate											
Arrowtooth Flounder	38.2	43.6	142.6	88.5	64.8	328.9	632.7	485.3	80.3	2.7	16.3
Big Skate								182.6	85.0	6.8	
Bigmouth Sculpin				4.3		5.7					
Blackbelly Eelpout	0.1		-								
Bocaccio							1.2				
Butter Sole								16.3	2.4	55.9	1.4
Canary Rockfish											
Copper Rockfish											
Curlfin Sole											
Dover Sole	70.6	39.0	22.5	8.9	2.4	36.4	83.8				0.8
Dusky Rockfish											
English Sole							102.0	435.6	25.3		
Eulachon	3.6	17.9	0.1			2.3					
Flathead Sole							2.1				
Greenstriped Rockfish											
Kelp Greenling											
Lingcod				18.7				4.4	8.3		55.3
Longnose Skate	3.1	7.0	10.0	2.2			7.9				
North Pacific Spiny Dogfish	4.0	1.0	1.1	0.9	2.0	8.1	16.4		5.5		4.8
Pacific Cod			7.2	1.3			24.6	419.6	148.1	16.3	
Pacific Hake											
Pacific Halibut				6.1			3.5	15.4	24.1	3.4	1249.2
Pacific Ocean Perch			146.6	64.0		6.3	0.8				
Pacific Sand Lance										-	
Pacific Sanddab											
Pacific Tomcod											
Petrals Sole	3.0	0.9					5.2	0.9			6.3
Pygmy Rockfish											
Quillback Rockfish											
Redbanded Rockfish	2.3	2.3		10.8		15.0			2.3		
Redstripe Rockfish							0.1				
Rex Sole	2.5	4.8	29.3	11.2	1.0	9.5	200.9				
Rougheye Rockfish	1.3	1.3					1.4				
Sablefish	2.7	2.7	2.7			7.5					
Sand Sole								0.2			
Sandpaper Skate	1.9					1.5	0.6				
Sharpchin Rockfish				0.5							
Shortspine Thornyhead	5.3	7.0	4.9	12.6		25.7	2.0	0.3			
Silvergray Rockfish			2.6	6.9	1.1			1.0			
Slender Sole				0.2							
Southern Rock Sole									0.3	27.8	
Spotted Ratfish	32.8	16.7	70.9	82.0	5.5	91.6	546.5	13.8	0.8	0.4	100.7
Starry Flounder											
Sturgeon Poacher											
Walleye Pollock	27.9	5.6	1.7	4.0	8.0	4.7	73.6				
Widow Rockfish											
Yelloweye Rockfish											
Yellowmouth Rockfish											
Yellowtail Rockfish											
Other	8.3	9.0	9.0	5.2	0.6	2.3	0.8				5.2
Total	207.5	158.9	451.3	328.5	85.5	546.9	1704.7	1575.3	382.4	113.2	1440.0

Common Name	149	150	151	152	153	154	155	156	157	158	159
Aleutian Skate											4.6
Arrowtooth Flounder	162.08	1.5	57.8			916.9	341.1	308.6	400.5	470.1	85.3
Big Skate				15.5	2.0	14.7	77.7		43.6		
Bigmouth Sculpin											0.4
Blackbelly Eelpout								-			
Bocaccio											
Butter Sole				22.1	0.8						
Canary Rockfish											
Copper Rockfish											
Curlfin Sole											
Dover Sole	132.58		38.3	1.0		23.5	556.5	496.1	122.7	209.2	31.4
Dusky Rockfish											
English Sole	2.36		6.5	6.7	0.6	146.4	4.7	142.7	1.0		
Eulachon							7.8	2.4	1.4	0.7	
Flathead Sole	0.74					2.6	0.7	3.5	0.7		
Greenstriped Rockfish											
Kelp Greenling											
Lingcod	3.36										5.0
Longnose Skate			4.9				48.1	12.7	24.7	32.3	18.4
North Pacific Spiny Dogfish	17.12	0.6		4.4	4.3	2.2	6.3	6.4	8.1	3.9	3.4
Pacific Cod	4.62		5.4	0.7		23.4	5.8	5.9			10.5
Pacific Hake											
Pacific Halibut	17.72			46.0	134.5	9.5	30.1	16.9		10.3	
Pacific Ocean Perch									4.9	1.6	0.5
Pacific Sand Lance											
Pacific Sanddab											
Pacific Tomcod				0.3							
Petrale Sole						2.3					
Pygmy Rockfish											
Quillback Rockfish											
Redbanded Rockfish									65.8	143.2	18.2
Redstripe Rockfish											
Rex Sole	51.36		48.9			57.0	36.9	53.1	13.9	15.1	3.7
Rougheye Rockfish											
Sablefish							4.6		1.2	7.2	33.3
Sand Sole				6.2	0.3						
Sandpaper Skate	1.26		13.3	5.4				1.3	0.0		
Sharpchin Rockfish											
Shortspine Thornyhead							2.1		5.4	0.5	19.4
Silvergray Rockfish											
Slender Sole											
Southern Rock Sole				42.2	37.3						
Spotted Ratfish	260.24	2.9	4.8	38.5	356.8	15.9	47.6	49.8	183.2	83.0	58.9
Starry Flounder					5.3						
Sturgeon Poacher				0.1							
Walleye Pollock	26.46	12.8	3.7			18.9	14.8	1.4	4.7	18.5	3.6
Widow Rockfish											
Yelloweye Rockfish											
Yellowmouth Rockfish											
Yellowtail Rockfish											
Other	0.53	0.5	3.9	19.5	15.0	0.9	2.4	5.7	2.1	4.1	2.5
Total	680.43	18.3	187.4	208.3	556.8	1234.2	1187.4	1106.3	883.9	999.6	299.1

Common Name	160	161	162	163	164	165	166	167	168	169	170
Aleutian Skate			7.3		35.3						
Arrowtooth Flounder	41.8	243.5	182.4	4.8	160.1	192.4	14.3			1308.2	1643.4
Big Skate			14.9				11.9	2.7			14.8
Bigmouth Sculpin											
Blackbelly Eelpout			0.2								
Bocaccio											
Butter Sole									0.4		
Canary Rockfish											
Copper Rockfish											
Curlfin Sole											
Dover Sole	22.2	113.2	493.8	2.9	405.2	264.0	1.3			302.3	142.6
Dusky Rockfish											
English Sole			2.1		0.5	1.8	1.1	4.1	3.1	14.2	6.3
Eulachon	-	0.04	0.5	0.1	28.7	5.9					0.3
Flathead Sole			13.5		19.3	3.0					
Greenstriped Rockfish											
Kelp Greenling											
Lingcod											29.9
Longnose Skate	30.4		3.8		17.9	27.2	1.2	5.2		13.8	10.9
North Pacific Spiny Dogfish	3.5		1.4		3.1	5.7	1.5			71.0	15.4
Pacific Cod	2.3		30.8		8.6	8.0	32.0	70.9	4.5	326.0	93.2
Pacific Hake											
Pacific Halibut		7.73	17.0		6.1	14.9	22.5	30.4	34.6	-	38.8
Pacific Ocean Perch											
Pacific Sand Lance							0.5				
Pacific Sanddab											
Pacific Tomcod								0.2	0.2		
Petrale Sole			5.6								
Pygmy Rockfish											
Quillback Rockfish											
Redbanded Rockfish	14.4	9.49			2.6		1.0				
Redstripe Rockfish											
Rex Sole	11.3	14.52	17.8	0.7	32.3	48.5	1.1			98.8	124.4
Rougheye Rockfish											
Sablefish	11.5										
Sand Sole							10.7	4.6	4.7		
Sandpaper Skate		1.51	2.9			3.6	1.4			0.0	1.2
Sharpchin Rockfish											
Shortspine Thornyhead	4.9	2.46									
Silvergray Rockfish											
Slender Sole					2.6	0.8	0.3				
Southern Rock Sole							14.5	22.8	23.5		3.4
Spotted Ratfish	64.0	74.58	148.1	5.9	140.9	73.4	240.4	511.4	103.6	1877.2	1991.5
Starry Flounder							2.5				
Sturgeon Poacher								0.0	0.2		
Walleye Pollock	0.4	23.66	11.7	3.9	15.2	41.7				64.6	26.0
Widow Rockfish											
Yelloweye Rockfish											
Yellowmouth Rockfish											
Yellowtail Rockfish	32.2	7.57	2.3								
Other	1.4	1.32	1.8	0.2	6.1	7.0	6.6	17.0	10.1	12.3	10.3
Total	240.3	499.6	958.1	18.5	884.2	697.9	364.8	669.3	184.8	4088.4	4152.3

Common Name	171	172	173	174	175	176	177	178	179	180	181
Aleutian Skate											
Arrowtooth Flounder		21.3	79.57	9.3	130.3	1.3		0.2		2.9	565.5
Big Skate	33.1					2.7					
Bigmouth Sculpin											
Blackbelly Eelpout											-
Bocaccio											
Butter Sole					1.5			0.1			
Canary Rockfish											
Copper Rockfish											
Curlfin Sole				1.0			2.4	0.7		0.8	
Dover Sole		2.6	2.78		3.7	0.4					21.1
Dusky Rockfish											
English Sole	0.2	1.0	3.2	2.2	28.6	82.4	1.0	0.2		0.1	75.1
Eulachon		0.2									
Flathead Sole		1.0			4.1						27.3
Greenstriped Rockfish		0.6	1.72								
Kelp Greenling		0.5	1.1	4.7	1.5				3.3		
Lingcod								8.3	1.7		5.9
Longnose Skate											
North Pacific Spiny Dogfish		0.9				5.3	4.3			0.4	4.5
Pacific Cod		1.7	1.45	3.0	10.5	1.0		1.1		0.2	19.6
Pacific Hake											
Pacific Halibut	30.5		15.54	13.4	24.9	25.6	5.6	12.5	31.7	5.4	
Pacific Ocean Perch		0.2									
Pacific Sand Lance		-						0.0			
Pacific Sanddab				3.8	0.4	8.5	0.3	0.2			0.6
Pacific Tomcod						0.4		0.4			0.1
Petrale Sole				3.8	0.5					1.7	22.2
Pygmy Rockfish											
Quillback Rockfish		7.9	60.48	5.5	3.4	1.3			2.9		
Redbanded Rockfish											
Redstripe Rockfish			1.78		7.8						
Rex Sole		16.6	1	0.3	18.0						127.1
Rougheye Rockfish											
Sablefish		2.0		2.6	20.3	0.5					4.4
Sand Sole	5.4					61.2	1.6	4.5	0.7	9.7	
Sandpaper Skate											
Sharpchin Rockfish											
Shortspine Thornyhead											
Silvergray Rockfish		0.7	4.24		2.6						
Slender Sole											0.7
Southern Rock Sole	12.3	0.3	3.89	15.6	0.9	71.2	9.9	13.6	9.4	30.1	0.6
Spotted Ratfish	81.4	80.5	44.28	51.5	19.3	347.3	57.3	39.3	187.0	109.9	30.7
Starry Flounder											
Sturgeon Poacher	0.4					-	0.1	0.1		0.1	0.2
Walleye Pollock		1.5	32.36	0.1	16.1						72.0
Widow Rockfish											
Yelloweye Rockfish			7.06								
Yellowmouth Rockfish											
Yellowtail Rockfish					3.2				-		
Other	2.9	4.5	0.95	3.2	1.1	18.6	1.9	11.9	13.9	3.7	1.0
Total	166.2	143.9	261.4	119.8	298.6	627.8	84.5	93.1	250.6	164.9	978.6

Common Name	182	183	184	185	186	187	188	189	190	191	192
Aleutian Skate											
Arrowtooth Flounder	150.9	321.3					-	0.16			
Big Skate				10.2	1.8				0.81	0.9	
Bigmouth Sculpin											
Blackbelly Eelpout											
Bocaccio											
Butter Sole	11.1	0.4		5.8	0.2		0.1				
Canary Rockfish											
Copper Rockfish								0.12	10.53	1.76	
Curlfin Sole								1.58			0.7
Dover Sole	0.4	21.5									
Dusky Rockfish											
English Sole	190.8	9.1		0.4	0.2	0.1	0.3	0.46		51.56	0.4
Eulachon											
Flathead Sole		1.6									
Greenstriped Rockfish											
Kelp Greenling								19.02			
Lingcod								9.02			
Longnose Skate											
North Pacific Spiny Dogfish	1.2			58.7	134.6	6.2		6.6	103.7	10.96	
Pacific Cod	8.3	9.8				0.1	0.4			0.38	
Pacific Hake											
Pacific Halibut				14.3	14.6		16.1		6.38	39.2	7.3
Pacific Ocean Perch		0.4									
Pacific Sand Lance						0.0			21.12	0.1	0.0
Pacific Sanddab	14.7										
Pacific Tomcod	2.2										
Petrale Sole	12.0						0.7				
Pygmy Rockfish											
Quillback Rockfish								70.36	0.61		
Redbanded Rockfish		0.4									
Redstripe Rockfish											
Rex Sole	10.0	180.3					0.2				
Rougheye Rockfish											
Sablefish	13.8	8.8									
Sand Sole				17.2	2.1	0.3		0.18	46.52	2.6	1.2
Sandpaper Skate											
Sharpchin Rockfish											
Shortspine Thornyhead											
Silvergray Rockfish											
Slender Sole											
Southern Rock Sole	0.8			5.5	12.5	18.2	2.1	2.76	146.4	20.56	34.1
Spotted Ratfish	4.8	10.5		0.7	205.1	167.4	49.8	45.12	9.37	38	10.9
Starry Flounder				3.4							
Sturgeon Poacher	0.2	-		0.2	0.5	0.5	0.1		0.1		1.2
Walleye Pollock	0.3	1.7		0.1		0.1					
Widow Rockfish											
Yelloweye Rockfish											
Yellowmouth Rockfish											
Yellowtail Rockfish								1.78			
Other		2.0		12.1	35.1	7.6	0.4	165.7	3.6	4.16	3.0
Total	421.6	567.8		128.5	406.7	200.6	70.0	322.8	349.2	170.2	58.9

Common Name	193	194	195	196	197	198	199	200	201	202	203
Aleutian Skate											
Arrowtooth Flounder		-	138.7	2.48		6.09	55.76	81.06	48.61	28.56	41.82
Big Skate						56.59					
Bigmouth Sculpin											
Blackbelly Eelpout			0.38				0.38		-		
Bocaccio											
Butter Sole	0.32	0.06									
Canary Rockfish											
Copper Rockfish											
Curlfin Sole	0.86	2.96	0.34								
Dover Sole	0.16		6.64	0.66		2.61	50.74	16.18	7.2	11.36	1.6
Dusky Rockfish											
English Sole	153.9	10.68	93.86	195.2		11.16	0.08				
Eulachon							0.64	3.32	1.32	4.22	10.62
Flathead Sole			1.96				32.92	9.22	0.48		0.16
Greenstriped Rockfish											
Kelp Greenling											
Lingcod	20.38				9.46	13.81					1.78
Longnose Skate							3.64			12.34	2.76
North Pacific Spiny Dogfish	12.94	18.44	40.78	86.44		47.87	5.45	16.04		3.62	1.9
Pacific Cod	0.82	0.42		1.08	0.14	0.9					
Pacific Hake								4.16	4.2		7.44
Pacific Halibut	51.54	18.28		4.74	16.16	4.5	6.06				
Pacific Ocean Perch						0.12	0.38	1.56	1.56	2.3	6.58
Pacific Sand Lance	0.28				5.76	0.03					
Pacific Sanddab	3.68			12.64							
Pacific Tomcod	0.3			9.36							
Petrale Sole	2.66		17	0.3	2.6	26.95	2.22			2.14	
Pygmy Rockfish						0.02					
Quillback Rockfish											
Redbanded Rockfish							0.24	29.6	9.4	30.28	37.58
Redstripe Rockfish											
Rex Sole		0.18	62.8	5.54		15.55	44.78	8.64	1.62	1.38	1.76
Rougheye Rockfish										0.76	5.4
Sablefish			2.04				2.26	17.1	7.06	2.68	2.4
Sand Sole											
Sandpaper Skate										0.62	
Sharpchin Rockfish											8.18
Shortspine Thornyhead									1.64	2.72	5.6
Silvergray Rockfish								2.34		2.24	20.22
Slender Sole			0.22			0.2	1.62	0.4	0.42	0.54	
Southern Rock Sole	1.12	2.18	0.16		221.1						
Spotted Ratfish	1.68	54.04	12.32	4.12		25.56	1.75	4.2	1.02	3.1	
Starry Flounder											
Sturgeon Poacher	0.12										
Walleye Pollock			0.1			1.29					1.02
Widow Rockfish											
Yelloweye Rockfish											
Yellowmouth Rockfish											
Yellowtail Rockfish											
Other	0.26	2.24	2.14	0.98	3.7	1.11	9.32	5.25	14.92	52.21	17.34
Total	251	109.5	379.5	323.5	258.9	214.36	218.2	199.1	99.45	162.9	172.4