

Queen Charlotte Sound Groundfish Bottom Trawl Survey, July 5th to August 9th, 2005

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JULY 5TH TO AUGUST 9TH, 2005

by

N. Olsen, G.D. Workman, and R.D. Stanley

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ABSTRACT

Olsen, N, Workman, G.D., and Stanley, R.D. 2007. Queen Charlotte Sound groundfish bottom trawl survey July 5th to August 9th, 2005. Can. Manuscr. Rep. Fish. Aquat. Sci. 2784: vi + 58 p.

A bottom trawl survey of Queen Charlotte Sound and southern Hecate Strait was conducted on the fishing vessel F/V Viking Storm between July 5th and August 9th, 2005. The survey was jointly conducted and funded by the Canadian Groundfish Research and Conservation Society (CGRCS) and Fisheries and Oceans Canada (DFO), and was the first in what is intended to be a long-term and coordinated set of surveys that cover the continental and upper slope of the continental shelf of most of the British Columbia coast. The objective of these surveys is to provide fishery independent abundance indices of all demersal fish species available to bottom trawling, as well as to collect biological samples of selected species.

The survey conducted 228 successful tows from a total of 260. The mean catch per tow was 469 kg, averaging about 25 different species of fish and invertebrates each. The most abundant fish species encountered was Pacific ocean perch followed by arrowtooth flounder, spiny dogfish, and Pacific hake. Biological data, including individual length, weight, sex, maturity, and age were collected from 62 different species of fish. Oceanographic data and net geometry were also recorded for most tows, including water temperature, depth, headrope height, doorspread, and current velocity through the net.

RÉSUMÉ

Olsen, N, Workman, G. D., and Stanley, R. D. 2007. Queen Charlotte Sound groundfish bottom trawl survey July 5th to August 9th, 2005. Can. Manuscr. Rep. Fish. Aquat. Sci. 2784: vi + 58 p.

La Canadian Groundfish Research and Conservation Society (CGRCS) et Pêches et Océans Canada (MPO) ont financé et procédé conjointement à la réalisation d'un relevé au chalut de fond dans le bassin Reine-Charlotte et le sud du détroit d'Hécate du 5 juillet au 9 août 2005. Mené par le navire de pêche F/V *Viking Storm*, ce relevé est le premier d'une série prévue de relevés coordonnés à long terme du plateau continental et de la partie supérieure du talus de la majeure partie de la côte de la Colombie-Britannique. L'objectif de ces relevés est l'établissement d'indices d'abondance, indépendants de la pêche, de toutes les espèces de poissons démersaux capturables au chalut de fond et la collecte de données biologiques sur certaines espèces.

Des 260 traits de chalut, 228 ont été fructueux. Les prises moyennes par trait se chiffraient à 469 kg. Quelque 25 espèces différentes de poissons et d'invertébrés ont été prises en moyenne à chaque trait. Le sébaste à longue mâchoire était l'espèce la plus abondante; venaient ensuite la plie à grande bouche, l'aiguillat commun et le merlu du Pacifique. Des données biologiques (longueur, poids, sexe, stade de maturité et âge) ont été recueillies pour 62 espèces de poisson. Des données océanographiques (température de l'eau et profondeur) et des données sur la géométrie du chalut (hauteur de la ralingue supérieure, écartement des panneaux et vitesse du courant à travers le chalut) ont également été collectées pour la plupart des traits.

INTRODUCTION

In 2003 a report by the Pacific Scientific Advice Review Committee (PSARC) recommended development of fishery independent relative abundance indices using bottom trawl surveys in British Columbia waters (Sinclair et al., 2003). As an initial step, it recommended that a pilot survey be conducted in PMFC major areas 5A and 5B (Queen Charlotte Sound, Figure 1). This region was recommended in part because it is not covered by other bottom trawl surveys and it represents a significant portion of the commercial bottom trawl fishery.

In February 2003, the Canadian Groundfish Research and Conservation Society (CGRCS) committed to funding the principal portion of the required vessel and net costs, and a significant portion of the scientific staff needed to conduct the survey and analyze the results. The Science Branch of Fisheries and Oceans, Canada (DFO) committed to funding additional scientific and sampling staff, and to provide the scientific sampling equipment.

The first and second groundfish bottom trawl surveys of Queen Charlotte Sound were conducted in July and August of 2003 and 2004 (Olsen et al., 2007a and Olsen et al., 2007b). The third survey took place in 2005, from July 5th to August 9th. This document provides a brief synopsis of the third survey, including the methods used and data collected. It is not intended as a comprehensive review of the survey, nor does it provide interpretive analysis of the survey results. These topics will be covered in more detailed companion documents.

METHODS

VESSEL AND FISHING GEAR

The survey was conducted aboard the commercial stern trawler F/V Viking Storm (Figure 2). The trawl net used was an Atlantic Western IIA box trawl (Table 1) connected to 815 kg Thyboron 104 doors with 11 m door legs.

STAFF SUMMARY

A total of 19 personnel were involved in the survey, which was split into 4 sections or “legs”, each of about 9 days in duration with 10 staff in each. The Canadian Groundfish Conservation and Research Society (CGCRS) funded employees of Leader Fishing Ltd. and Archipelago Marine Research Ltd. (AMR). All other staff were funded by Fisheries and Oceans Canada (DFO) (Table 2).

SURVEY DESIGN

The study area consists of all of Queen Charlotte Sound and the southern part of Hecate Strait, excluding near-shore waters and inlets, areas closed to fishing, and protected sponge reef areas (Figure 3). The southern portion of Hecate Strait was included in order to provide coverage contiguous with the Hecate Strait groundfish bottom trawl survey. We split the study area into two spatial strata, creating northern and southern regions that split along Mitchell and Reed Troughs. In addition to these areal strata we divided the study area into four depth strata, creating a total of eight strata (Table 3).

We divided the survey area into a contiguous grid of 4 km² blocks and from these blocks we randomly selected 309 primary fishing locations (Figure 4) based on a target allocation of 240. We arrived at the figure of 309 by calculating our per-stratum failure rates from 2003 and 2004 and applying these factors to our 2005 allocation scheme to compensate for the predicted rate of failure. Thus, we hoped to avoid the pitfalls that arose from the methodologies used to select secondary sites in previous years. In particular, the inevitable long distances between fishing locations that occurred near the end of each survey.

Allocation of locations across strata was again modified from the scheme used in the previous year. In 2004 we shifted emphasis to the shallowest strata in order to provide better indices for shallow-living species. However, this led to an unacceptably high failure rate and risk of gear damage due to the higher incidence of rocky substrate in the shallows. Thus, in 2005 we moved some of shallow locations back to the deeper strata as a compromise.

OPERATIONS

Fishing

Fishing commenced at sunrise and ended at sunset each day. This yielded an average working day length of 15.5 hours, starting at approximately six o'clock in the morning and ending at about nine thirty in the evening.

On each day prior to fishing, the captain and chief scientist reviewed the list of fishing locations to determine a candidate set of locations to visit throughout the day. During this review process the captain would sometimes determine, based on his experience and knowledge of an area, that one or more locations were not fishable. In such cases we would mark the locations as “rejected based on prior knowledge”. After compiling a list of candidate locations to be visited, the captain would then plan the most efficient route of travel between locations.

We frequently began fishing immediately on arrival at a fishing location. However, if the captain was not familiar with an area we would “sound” the region (traverse the location and examine the depth sounder trace) to determine if it was suitable for trawling. If it was not, we marked the location and “rejected based on inspection”.

When trawling, the captain would attempt to tow through the center of the 4 km² fishing block, usually following a depth contour. However, where the bottom topography made this difficult or impossible, the captain would trawl wherever he felt he could obtain a successful result, with the stipulation that at least half of the total trawl track had to be within the 4 km² block (Figure 5). The scope used in 2005 is shown in Table 4 and Figure 6.

To determine the start of each 20 minute tow, we monitored the real-time net sensor data to establish when the net reached the sea floor and the headrope collapsed to a height of about three to four meters, at which point we considered the net to be actively fishing. Nineteen minutes after the start of the tow, we retrieved the net. Retrieval was done one minute early because slack in the warps creates a lag of about one minute before the net leaves the bottom. Although our target on-bottom time was 20 minutes, we accepted tows that were at least 15 minutes in length. This was a pragmatic decision that allowed us to retain many tows that would otherwise have been failures due to hang-ups or early haul-backs.

The result of trawling was either a successful tow, or a hang-up or tear-up of the trawl net. In the event of a hang-up or tear-up, we would either mark the location as “Rejected after one or more attempts to fish” or make additional attempts to fish. Thus, we kept records of the three scenarios that resulted in a location being removed from the sampling frame:

- Rejection based on prior knowledge
- Rejection based on on-ground inspection
- Rejection based on one or more failed fishing attempts

Rejected locations were removed from the sampling frame for the current survey but were not removed indefinitely from possible selection in future surveys. Instead, we opted for a “three strikes” rule, which stipulates that a location must be rejected on three separate surveys before we permanently remove it as a candidate fishing location. This was done in part to avoid a “captain effect” that might arise from variations in local knowledge and skill.

Gear and Oceanographic Sensors

The trawl net was equipped with a variety of real-time sensors including temperature, depth, doorspread, current velocity, and headrope height. These sensors transmitted data to a bridge computer once per second and allowed us to continually monitor the net during fishing. In addition to these real-time sensors, we also attached data-logging probes to collect water temperature and pressure/depth (Seabird 39) and contact of the trawl net with the sea floor (NMFS Bottom Contact Sensor). Data from these logging probes were downloaded twice per day, once at midday and once at the end of the day.

Catch Processing

Codend contents were dumped into a raised rectangular sorting bin approximately three meters long by two meters wide. Any catch that did not fit into the sorting bin was dumped into a spillway aft of the bin. We completely sorted and weighed the catch to species, except in rare instances when the catch was too large to be sorted in a reasonable amount of time. In these cases we obtained the captain's estimate of total weight, then sorted and weighed all but the dominant species, which was then obtained by subtraction.

Biological Sampling

While the primary purpose of this survey was to generate fishery independent indices of relative abundance, our second goal was to collect associated biological information on the size, sex, and age composition of selected species. In particular, our biological sampling priorities were to collect length and sex frequencies on all species in the catch of each tow (subject to a minimum number of specimens criteria), to collect representative samples of specimen length and weight, and to collect age samples for select species.

We selected age samples from the dominant (by weight) catch in each tow, as well as certain species deemed high priority due to concerns over stock status (for example, Bocaccio, lingcod, and Pacific cod). Otoliths (calcareous accretions of the inner ear) were collected from rockfish and flatfish species while fin clips were taken from lingcod and Pacific cod. Both of these structures grow in a series of annular rings that can be counted to determine age.

RESULTS

FISHING

We divided the survey into four sections or "legs" of eight to ten days. This duration was short enough that we were able to retain a significant amount of the catch, which was sold at the end of each leg, and also allowed us to rotate the science crews to minimize fatigue. The overall pattern of each leg covered a longitudinal segment of Queen Charlotte Sound, starting in the east and moving progressively west with each leg. We imposed this pattern in order to minimize yearly bias resulting from changes in area/times fished (for example, fishing the western side of the sound first in one year vs. the eastern side the next). Our choice of an east to west direction was to avoid

unintentionally tracking a fish stock, as some species are known to migrate from deeper to shallower water from July to August (Figure 7).

From a total of 38 survey days, three days were required for travel at the start and end of the survey, three days were required for offloading catch and changing crews, a day was lost due to equipment failure, and three days were lost to inclement weather. Thus, we ended with a total of 28 full fishing days (Table 4. Mean warp length and scope by depth interval.

Depth (m)	Mean Warp (m)	Mean Warp (fa)	Mean Scope	Mean Depth (fa)
50 - 100	323	177	4.4	40
100 - 150	384	210	3.0	70
150 - 200	491	268	2.9	94
200 - 250	599	327	2.7	123
250 - 300	737	403	2.7	148
300 - 350	877	479	2.7	176
350 - 400	943	516	2.5	204
400 - 450	-	-	-	-
450 - 500	978	535	2.2	242

Table 5), in which time we conducted 253 tows, of which 239 were successful and 14 were unsuccessful due to hang-ups or tear-ups, for an average of nine successful tows per fishing day, or about 6.3 successful tows per survey day.

The final status of the 2005 sampling frame includes 228 successfully fished locations, 11 locations rejected prior to fishing, based on the captain's knowledge, 45 locations rejected based on on-ground inspection, and 23 locations rejected after one or more failed fishing attempts (Figure 8).

CATCH

Catch weight per tow was typically less than 1000 kg and on average, we observed about 20 to 30 species per tow (Figure 9 and Figure 10). We caught a total of 110,946 kg of fish and invertebrates. Most of this (107,516 kg) consisted of 125 different taxonomic groups of fish, including 29 rockfish taxa and 12 flatfish taxa. The remainder (3,431 kg) consisted of 131 invertebrate groups (Table 6). Of the fish species, Pacific ocean perch was the most dominant by weight, followed by arrowtooth flounder, spiny dogfish, and Pacific hake (Table 7). Significant amounts of the commercially viable fish catch, especially Pacific ocean perch, were offloaded with the proceeds helping to offset the costs of the survey (Table 8).

SAMPLES AND SPECIMENS

We sampled 62 species of fish for attributes such as length, weight, sex, maturity, and age (Table 9, Table 10, and Table 11).

GEAR AND OCEANOGRAPHIC SENSORS

We collected Seabird 39 data (water temperature and pressure/depth) from all 260 tows (Table 12, Figure 11). Although we have not yet analyzed these data in detail, they may prove useful for explaining, or at least correlate to, short term anomalies in abundance trends. In addition, they provide a base reference for detecting future climate change.

We collected bottom contact data from the NMFS Bottom Contact Sensor for all 260 tows (Table 12). These data provide a record of the trawl net contact with the sea floor and thus are useful not only for determining the quality and quantity of the sea floor contact, but also indicate the relative rugosity of the sea floor. We used these data to determine the exact times that the trawl net first and last contacted the sea floor, thus providing an accurate measure of total bottom contact time (Figure 12).

Net sensor data, including doorspread, current velocity, and headrope height were collected from most tows but were unavailable from several tows due to equipment failure (Table 12, Figure 13).

REFERENCES

- Olsen, N., Workman, G. D., and Stanley, R. D. 2007a. Queen Charlotte Sound Groundfish Bottom Trawl Survey July 3rd to August 10th, 2003. Can. Manuscr. Rep. Fish. Aquat. Sci. 2782: 58 p.
- Olsen, N, Workman, G. D., and Stanley R. D. 2007b. Queen Charlotte Sound Groundfish Bottom Trawl Survey July 5th to August 19th, 2004. Can. Manuscr. Rep. Fish. Aquat. Sci. 2783: 60 p.
- Sinclair, A., Schnute, J., Haigh, R., Starr, P., Stanley, R. D., Fargo, J., and Workman, G. 2003. Feasibility of multispecies groundfish bottom trawl surveys on the BC coast. Can. Stock Assess. Sec. Res. Doc. 2003/049.

Table 1. Net specifications.

Part	Standard Length	Material	Metric Length	Units	Material
Rigging					
Sweep Line	90	7/8 cable	27.4	m	22 mm cable
Upper bridle	90	3/4 cable	27.4	m	19 mm cable
Lower bridle	90	7/8 cable	27.4	m	22 mm cable
Door Legs	36	7/8 cable	11	m	22 mm cable
Pickups	42	7/8 cable	12.8	m	22 mm cable
Hook ups	8.8 t	BMMDV80	8 mt	mt	BMMDV80
Net frame					
Headline	74.5	5/8 cable	22.7	m	16 mm cable
Headline floats	90	8" plastic Spheres			200 mm plastic spheres
Riblines		1" Polysteel rope			25 mm polysteel rope
Bolsch Line	68.33	9/8" poly steel rope	20.8	m	29 mm polysteel rope
Fishing Line	107.33	14 mm long link chain	32.7	m	14 mm long link chain
Foot Rope					
Foot Rope	107.33	5/8 Chain	32.7	m	16 mm chain
Foot rope bosom	14	16 in Tire gear with 2 in Spacing	4.3	m	400 mm tire gear with 50 mm spacing
Root rope wing1	18.33	18" rock hopper, 18 " disks spaced 18 " apart	5.6	m	450 mm rock hopper 450 mm spacing
Root rope wing2	8.83	18" rock hopper, 18 " disks spaced 18 " apart	2.7	m	450 mm rock hopper 450 mm spacing
Web					
Belly	5"	3.5 mm Euroline	127	mm	3.5 mm Euroline
Square	5"	3.5 mm Euroline	127	mm	3.5 mm Euroline
Side Panel	5"	3.5 mm Euroline	127	mm	3.5 mm Euroline
Taper	4.5"	3.5 mm Euroline	114	mm	3.5 mm Euroline
Intermediate	4.5"	3.5 mm Euroline	114	mm	3.5 mm Euroline
Codend	4.5"	3.5 mm Euroline	114	mm	3.5 mm Euroline
Guard Mesh	4.5 or 5 "	Double 4.5 mm Euroline	114 or 127	mm	Double 4.5 mm Euroline
Liner	3/4"	Notless Nylon	19	mm	Notless Nylon

Table 2. Survey personnel for each leg of the survey.

Leg	Dates	Person	Role	Affiliation
1	July 5th to July 13th	Chris Roberts	Captain	Leader Fishing
		Rick Stanley	Chief Scientist	DFO
		Kate Rutherford	Science	DFO
		Ed Choromanski	Science	DFO
		Nev Venables	Science	Nev's Groundfish Research
		Jody Riley	Science	AMR
		Patrick	Fishing	Leader Fishing
		Mark Lafluer	Engineer	Leader Fishing
		Flo Salm	Fishing	Leader Fishing
		Dave Hemmons	Fishing	Leader Fishing
2	July 14th to July 22nd	Chris Roberts	Captain	Leader Fishing
		Greg Workman	Chief Scientist	DFO
		Ed Choromanski	Science	DFO
		Nev Venables	Science	Nev's Groundfish Research
		Matthew McKay	Science	AMR
		Jody Riley	Science	AMR
		Patrick	Fishing	Leader Fishing
		Mark Lafluer	Engineer	Leader Fishing
		Flo Salm	Fishing	Leader Fishing
		Dave Hemmons	Fishing	Leader Fishing
3	July 23rd to August 1st	Chris Roberts	Captain	Leader Fishing
		Rick Stanley	Chief Scientist	DFO
		Brian Krishka	Science	DFO
		Anna Gerrard	Science	DFO
		Matthew McKay	Science	AMR
		Jody Riley	Science	AMR
		Patrick	Fishing	Leader Fishing
		Mark Lafluer	Engineer	Leader Fishing
		Flo Salm	Fishing	Leader Fishing
		Dave Hemmons	Fishing	Leader Fishing
4	August 2nd to August 9th	Chris Roberts	Captain	Leader Fishing
		Norm Olsen	Chief Scientist	DFO
		Kris Anderson	Science	DFO
		Ed Choromanski	Science	DFO
		Nev Venables	Science	Nev's Groundfish Research
		Matthew McKay	Science	AMR
		Jody Riley	Science	AMR
		Patrick	Fishing	Leader Fishing
		Mark Lafluer	Engineer	Leader Fishing
		Flo Salm	Fishing	Leader Fishing
		Dave Hemmons	Fishing	Leader Fishing

Notes: AMR = Archipelago Marine Research
DFO = Fisheries and Oceans Canada

Table 3. Definition of survey strata with the target tow allocation and the total area in each.

Areal Stratum	Depth Stratum		Target Tow Allocation	Usable Tows	Area (km ²)
	Meters	Fathoms			
South	50 - 125	27 - 68	32	31	5,334
	125 - 200	68 - 109	63	61	5,873
	200 - 330	109 - 164	27	29	3,134
	330 - 500	164 - 273	8	8	625
<i>South Total</i>			<i>130</i>	<i>129</i>	<i>14,966</i>
North	50 - 125	27 - 68	11	8	2,279
	125 - 200	68 - 109	49	45	4,926
	200 - 330	109 - 164	43	38	4,688
	330 - 500	164 - 273	7	8	1,343
<i>North Total</i>			<i>110</i>	<i>99</i>	<i>13,236</i>
Grand Total			240	228	28,202

Table 4. Mean warp length and scope by depth interval.

Depth (m)	Mean Warp (m)	Mean Warp (fa)	Mean Scope	Mean Depth (fa)
50 - 100	323	177	4.4	40
100 - 150	384	210	3.0	70
150 - 200	491	268	2.9	94
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300 - 350	877	479	2.7	176
350 - 400	943	516	2.5	204
400 - 450	-	-	-	-
450 - 500	978	535	2.2	242

Table 5. Summary of survey operations.

Start: Depart PBS	July 5
End: Offload PBS	August 9
Fishing days	24
Travel (begin and end)	3
Offload days	4
Weather days	2
Breakdown	0
Total days	33
Total tows	260
Keeper tows	228
Unusable tows	32
Inspected un-fished blocks	49
Tows per day overall	6.9
Usable tows per fishing day	9.5
Mean catch per keeper tow	469
Mean species per keeper tow	25

Table 6. Catch broken down by species groups.

Species Category	Number of Taxa	Weight (Kg)
<i>All Fish</i>	<i>125</i>	<i>107,516</i>
Rockfish	29	48,029
Flatfish	12	28,136
Roundfish	8	13,088
Cartilaginous fish	10	17,780
Other fish	66	484
Invertebrates	131	3,431

Table 7. All captured species showing number of tows in which the species occurred, total catch weight, maximum and mean per-tow catch weight, and relative abundance and relative error from bootstrapped area expanded estimates.

Species	Number of Tows	Catch Weight (kg)			Relative	
		Total	Maximum	Mean	Abundance	RE
Pacific ocean perch	161	21,834.2	2,160.3	136.5	14.435	0.17
Arrowtooth flounder	216	17,420.1	2,128.4	80.6	13.181	0.17
Spiny dogfish	131	11,578.4	4,020.4	88.4	14.523	0.48
Pacific hake	170	7,792.8	564.1	45.8	5.589	0.14
Spotted ratfish	181	4,888.3	2,110.7	27.8	6.131	0.61
Silvergray rockfish	137	4,094.1	415.5	29.9	2.878	0.12
Splitnose rockfish	37	3,453.8	3,124.0	98.7	3.268	0.91
Yellowtail rockfish	71	3,227.7	791.3	45.5	2.079	0.28
Redstripe rockfish	85	3,007.5	494.7	36.2	1.714	0.26
Rex sole	213	2,883.5	146.1	13.9	1.926	0.08
Dover sole	185	2,704.4	109.6	14.7	1.781	0.10
Yellowmouth rockfish	55	2,679.4	508.9	48.7	1.558	0.40
Canary rockfish	63	2,251.5	1,105.7	35.7	1.504	0.59
Pacific cod	130	2,070.0	774.0	15.9	1.486	0.33
Redbanded rockfish	128	1,931.9	180.6	15.1	1.229	0.16
Sharpchin rockfish	100	1,678.7	470.8	18.7	0.987	0.44
Sablefish	132	1,614.9	129.6	12.2	1.067	0.15
Jellyfish	224	1,500.9	54.8	6.9	-	-
Shortspine thornyhead	97	1,316.1	52.5	13.6	0.883	0.09
Pacific halibut	82	1,253.7	254.3	15.3	1.051	0.20
Flathead sole	86	1,226.1	170.1	14.3	0.848	0.21
Walleye pollock	142	978.3	184.9	7.7	0.635	0.21
Rougheye rockfish	68	963.1	141.9	14.2	0.532	0.15
Glass sponges	78	951.4	671.9	14.0	-	-
English sole	84	914.6	107.4	11.0	0.806	0.19
Southern rock sole	39	912.0	186.7	23.4	0.965	0.31
Longnose skate	90	780.3	29.5	8.7	0.548	0.11
Lingcod	68	594.4	67.2	8.7	0.493	0.23
Big skate	12	462.8	181.5	38.6	0.520	0.52
Petrale sole	67	430.3	99.2	6.4	0.375	0.36
Yelloweye rockfish	46	427.7	49.1	9.3	0.273	0.22
Blackbelly eelpout	74	324.3	66.4	5.1	0.244	0.37
Pacific sanddab	31	280.1	76.8	9.3	0.313	0.38
Bocaccio	21	275.0	158.7	13.1	0.249	0.65
Primnoa	21	271.6	83.0	12.9	-	-
Widow rockfish	37	266.2	119.7	7.6	0.168	0.46
Greenstriped rockfish	72	206.9	38.7	2.9	0.130	0.23
Pink shrimp (smooth)	144	193.2	17.9	1.8	-	-
Quillback rockfish	17	180.7	48.4	10.6	0.168	0.47
Fragile urchin	142	130.2	7.1	1.1	-	-
Rosethorn rockfish	36	99.1	28.1	2.8	0.069	0.45
Slender sole	118	89.7	4.2	0.8	0.060	0.13
Bath sponges	49	65.0	16.7	2.0	-	-
Schoolmaster gonate squid	35	55.7	5.5	1.6	-	-
Darkblotched rockfish	21	55.2	29.5	2.6	0.045	0.62
Shortraker rockfish	2	47.9	37.1	24.0	0.027	0.77
Eulachon	51	36.5	6.1	1.0	0.025	0.29
Hydroid	8	31.2	17.2	7.8	-	-
Sidestripe shrimp	81	28.9	8.4	0.6	-	-
Humboldt squid	2	28.3	14.4	14.2	-	-
Prawn	78	27.6	2.1	0.4	-	-
Wolf eel	6	25.4	4.9	4.2	0.034	0.39
Bigmouth sculpin	5	25.2	11.2	5.0	0.020	0.57
Sandpaper skate	19	23.1	3.2	1.2	0.017	0.25
Aleutian skate	3	22.6	8.0	7.5	0.015	0.58
Threadfin sculpin	16	22.0	17.3	1.6	0.013	0.71
Curlfin sole	18	21.0	7.1	1.2	0.030	0.47
Pacific herring	47	20.4	1.6	0.5	0.022	0.19
Alaska skate	3	20.2	6.9	6.7	0.012	0.57
Anemone	27	15.8	6.2	1.2	-	-
Chum salmon	4	13.6	5.6	3.4	0.009	0.54
Whitespotted sea cucumber	27	13.3	3.8	0.6	-	-
Longspine thornyhead	6	12.6	4.8	3.2	0.004	0.69
Kelp greenling	7	11.5	3.0	1.6	0.014	0.45

Table 7. Continued

Species	Number of Tows	Catch Weight (kg)			Relative	
		Total	Maximum	Mean	Abundance	RE
Gorgonian corals	3	10.7	7.8	3.6	-	-
Black eelpout	32	8.9	1.2	0.4	0.006	0.23
Blackfin sculpin	40	8.3	1.0	0.3	0.006	0.26
Basket stars	41	8.1	0.9	0.3	-	-
Pygmy rockfish	28	7.9	1.6	0.4	0.005	0.34
Pacific sardine	13	7.5	4.5	0.7	0.007	0.72
Spiny scallop	4	7.5	3.4	1.9	-	-
Shrimp	3	7.1	7.1	7.1	-	-
Alaskan king crabs	4	7.1	2.5	1.8	-	-
Salps	68	6.9	1.8	0.4	-	-
Giant barnacle	2	6.2	6.0	3.1	-	-
Bigfin eelpout	14	5.5	1.3	0.4	0.003	0.27
Giant red sea cucumber	10	5.2	2.1	0.6	-	-
Sand star	20	3.8	0.7	0.3	-	-
Cushion star	22	3.6	1.4	0.5	-	-
Vermilion rockfish	2	3.0	1.6	1.5	0.004	0.69
Calcareous sponges	4	2.9	1.5	0.7	-	-
Pallid urchin	17	2.8	1.2	0.4	-	-
Metridium	8	2.8	0.7	0.5	-	-
Pink scallop	10	2.7	1.6	0.4	-	-
Harlequin rockfish	7	2.6	1.8	0.4	0.002	0.71
Octopus	11	2.5	1.9	0.4	-	-
Lithodinae	4	2.3	1.3	0.6	-	-
Sea pens	33	2.2	0.4	0.2	-	-
Sockeye salmon	1	2.2	2.2	2.2	0.002	0.99
Brown cat shark	2	2.0	1.5	1.0	0.001	0.94
Henricia	26	1.9	1.9	1.9	-	-
Pacific bobtail squid	55	1.9	0.5	0.1	-	-
Ophiuridae	70	1.9	1.3	0.4	-	-
China rockfish	1	1.8	1.8	1.8	0.003	0.95
Cabezon	1	1.8	1.8	1.8	0.001	1.06
Bigeye poacher	28	1.6	0.3	0.1	0.001	0.35
Fish-eating star	15	1.6	0.4	0.2	-	-
Soft sea cucumber	11	1.6	0.2	0.1	-	-
Dusky rockfish	1	1.5	1.5	1.5	0.001	0.98
Oregontriton	18	1.4	0.3	0.1	-	-
Bryozoa	3	1.4	1.4	1.4	-	-
Mud star	24	1.4	0.3	0.2	-	-
Spiny red sea star	7	1.3	0.6	0.3	-	-
Roughtail skate	1	1.2	1.2	1.2	0.001	0.93
Blackgill rockfish	1	1.1	1.1	1.1	0.001	1.01
Cookie star	10	1.1	0.4	0.2	-	-
Isopods	58	1.1	1.0	0.6	-	-
Wattled eelpout	9	1.1	0.2	0.1	0.001	0.35
Fish eggs	4	1.0	0.5	0.5	-	-
Cheiraster dawsoni	12	1.0	0.2	0.1	-	-
Solasteridae	9	1.0	0.4	0.3	-	-
Skates	1	1.0	1.0	1.0	-	-
Sunflower starfish	1	0.9	0.9	0.9	-	-
Shortbelly rockfish	4	0.9	0.4	0.2	0.000	0.58
Opalescent inshore squid	12	0.8	0.5	0.2	-	-
Sponges	6	0.8	0.7	0.4	-	-
Pterasteridae	7	0.8	0.4	0.3	-	-
Giant pacific octopus	4	0.8	0.8	0.8	-	-
Gorgonocephalus	2	0.7	0.5	0.4	-	-
Sea cucumber	14	0.7	0.2	0.1	-	-
Starfish	4	0.7	0.5	0.4	-	-
Cucumariidae	4	0.6	0.2	0.2	-	-
Leather star	2	0.6	0.4	0.3	-	-
Blacktip poacher	22	0.6	0.1	0.1	0.000	0.39
Yellowleg shrimp	28	0.6	0.3	0.2	-	-
Ascidians and tunicates	13	0.6	0.4	0.2	-	-
Puget sound rockfish	6	0.6	0.4	0.3	0.000	1.05

Table 7. Continued

Species	Number of Tows	Catch Weight (kg)			Relative	
		Total	Maximum	Mean	Abundance	RE
Roughback sculpin	7	0.5	0.2	0.2	0.001	0.60
Seaslugs	3	0.5	0.5	0.5	-	-
Pacific tomcod	1	0.5	0.5	0.5	0.001	0.94
Anthozoa	2	0.5	0.5	0.5	-	-
Northern ronquil	12	0.4	0.4	0.2	0.000	0.76
California headlightfish	18	0.4	0.2	0.1	0.000	0.68
Heart urchins	9	0.4	0.1	0.1	-	-
Hagfishes	3	0.4	0.2	0.1	-	-
Spotfin sculpin	6	0.4	0.4	0.4	0.001	0.90
Squat lobster	25	0.4	0.2	0.1	-	-
Northern lampfish	11	0.4	0.2	0.2	0.000	0.61
Glass shrimp	14	0.4	0.4	0.4	-	-
Bristly crab	3	0.4	0.2	0.1	-	-
Leptychaster	9	0.3	0.2	0.2	-	-
Segmented worms	1	0.3	0.3	0.3	-	-
Paguroidea	6	0.3	0.2	0.2	-	-
Goose barnacle	2	0.3	0.3	0.3	-	-
Henricia longispina	16	0.3	0.2	0.2	-	-
Dorididae	19	0.2	0.1	0.1	-	-
Pacific lamprey	3	0.2	0.1	0.1	0.000	0.70
Sea lilies and feather stars	23	0.2	0.2	0.2	-	-
Bluespotted poacher	10	0.2	0.1	0.1	0.000	0.70
Gephyreaster swifti	1	0.2	0.2	0.2	-	-
Diadora	2	0.2	0.1	0.1	-	-
Rose starfish	26	0.2	0.1	0.1	-	-
Pacific hagfish	2	0.2	0.1	0.1	0.000	0.67
Sea mouse	7	0.1	0.1	0.1	-	-
Furrowed rock crab	2	0.1	0.1	0.1	-	-
Pacific viperfish	8	0.1	0.1	0.1	0.000	1.00
Virgularia	2	0.1	0.1	0.1	-	-
Stomphia	2	0.1	0.1	0.1	-	-
Long-armed sea star	5	0.1	0.1	0.1	-	-
Henricia sanguinolenta	7	0.1	0.1	0.1	-	-
Pallid slipskin	3	0.1	0.1	0.1	0.000	0.98
Pacific sand lance	6	0.1	0.1	0.1	0.000	0.94
Longfin dragonfish	2	0.1	0.1	0.1	0.000	0.87
Redclaw crab	14	0.1	0.1	0.1	-	-
Lampreys	1	0.1	0.1	0.1	-	-
Prowfish	1	0.1	0.1	0.1	0.000	1.00
Arminidae	2	0.1	0.1	0.1	-	-
Blacktail snailfish	1	0.1	0.1	0.1	-	-
Pearly prickleback	5	0.1	0.1	0.1	0.000	0.98
Green urchin	1	0.1	0.1	0.1	-	-
Deepsea smelts	1	0.1	0.1	0.1	-	-
Barbed eulid	7	0.1	0.1	0.1	-	-
Asteriidae	1	-	-	-	-	-
Fatheads	1	-	-	-	-	-
Slipskin snailfish	2	-	-	-	-	-
Peanutworms	1	-	-	-	-	-
Pinpoint lampfish	1	-	-	-	-	-
Common two-spined crangon	1	-	-	-	-	-
Split-eye argid	2	-	-	-	-	-
Ophiopholis aculeata	1	-	-	-	-	-
Lanternfishes	1	-	-	-	-	-
Grunt sculpin	1	-	-	-	-	-
Thornback sculpin	4	-	-	-	-	-
Gray starsnout	2	-	-	-	-	-
Northern crangon	9	-	-	-	-	-
Henricia aspera	3	-	-	-	-	-
Shortfin eelpout	3	-	-	-	-	-
Psolidae	2	-	-	-	-	-
Broadfin lampfish	2	-	-	-	-	-
Spiny snailfish	1	-	-	-	-	-
Lophaster furcilliger vexator	1	-	-	-	-	-

Table 7. Continued

Species	Number of Tows	Catch Weight (kg)			Relative Abundance	RE
		Total	Maximum	Mean		
Lightfish/hatchetfish/dragonfish/etc	1	-	-	-	-	-
Ridged crangon	22	-	-	-	-	-
Ribbon barracudina	1	-	-	-	-	-
Polychaete worms	12	-	-	-	-	-
Slender snipe eel	1	-	-	-	-	-
Chitons	1	-	-	-	-	-
Common argid	14	-	-	-	-	-
Rockfishes	1	-	-	-	-	-
Crangons	54	-	-	-	-	-
Limpets	2	-	-	-	-	-
Tritoniidae	2	-	-	-	-	-
Oedignathus inermis	1	-	-	-	-	-
Bivalve molluscs	3	-	-	-	-	-
Poraniopsis inflata	3	-	-	-	-	-
Snailfishes	2	-	-	-	-	-
Rosy tritonia	1	-	-	-	-	-
Spike shrimp (horned shrimp)	7	-	-	-	-	-
Goniasteridae	1	-	-	-	-	-
Soft corals	1	-	-	-	-	-
Slim sculpin	7	-	-	-	-	-
Goniopectinidae	1	-	-	-	-	-
Northern spearnose poacher	4	-	-	-	-	-
Ophiopholis longispina	3	-	-	-	-	-
Ophiacanthidae	8	-	-	-	-	-
Galatheididae	1	-	-	-	-	-
Small disk snailfish	3	-	-	-	-	-
Medusafish	1	-	-	-	-	-
Whitebarred prickleback	12	-	-	-	-	-
Blackfin poacher	3	-	-	-	-	-
Antedonidae	2	-	-	-	-	-
Ophiura	1	-	-	-	-	-
Humpback shrimp	1	-	-	-	-	-
Blue lanternfish	4	-	-	-	-	-
Scallop	1	-	-	-	-	-
Tadpole snailfish	1	-	-	-	-	-
Platyhelminthes	4	-	-	-	-	-
Sweet potato sea cucumber	1	-	-	-	-	-
Poachers	3	-	-	-	-	-
Ribbed sculpin	2	-	-	-	-	-
Argis	2	-	-	-	-	-
Gastropods	9	-	-	-	-	-
Lampshells	2	-	-	-	-	-
Tube worms	4	-	-	-	-	-
Pricklebacks	4	-	-	-	-	-
Daubed shanny	4	-	-	-	-	-
Northern sculpin	1	-	-	-	-	-
Topshells	6	-	-	-	-	-
Prickly snailfish	1	-	-	-	-	-
Coonstripe shrimp	8	-	-	-	-	-
Thorny sculpin	1	-	-	-	-	-
Large eyed eualid	12	-	-	-	-	-
Euphausiids	1	-	-	-	-	-
Northern argid	1	-	-	-	-	-
Righteye flounders	1	-	-	-	-	-
Bigfin lanternfish	2	-	-	-	-	-
Porcelain crabs	1	-	-	-	-	-
Ophiura sarsi	1	-	-	-	-	-
Tadpole sculpin	1	-	-	-	-	-
Spinyhead sculpin	2	-	-	-	-	-
Eualus	1	-	-	-	-	-
Vermillion starfish	9	-	-	-	-	-
Oregoniinae	3	-	-	-	-	-
Spider crabs	3	-	-	-	-	-
Salmonids	1	-	-	-	-	-
Sea urchins	1	-	-	-	-	-

Table 8. Offloaded catch weight by species.

Species	Weight (kg)
Arrowtooth flounder	4,204.3
Big skate	176.4
Bocaccio	32.7
Canary rockfish	1,315.9
China rockfish	1.8
Curlfin sole	1.8
Darkblotched rockfish	41.7
Dover sole	1,106.8
English sole	29.9
Flathead sole	59.0
Greenstriped rockfish	54.0
Lingcod	231.3
Longnose skate	15.4
Pacific cod	987.0
Pacific ocean perch	14,831.1
Petrale sole	136.1
Quillback rockfish	126.6
Redbanded rockfish	1,271.9
Redstripe rockfish	1,284.1
Rex sole	336.1
Rock sole	305.3
Rosethorn rockfish	52.6
Rougheye rockfish	787.9
Sablefish	166.0
Sharpchin rockfish	1,191.6
Shortraker rockfish	6.4
Shortspine thornyhead	644.6
Silvergray rockfish	1,761.8
Splitnose rockfish	3,383.3
Vermilion rockfish	1.8
Walleye pollock	157.9
Widow rockfish	162.4
Yelloweye rockfish	192.3
Yellowmouth rockfish	2,473.4
Yellowtail rockfish	2,060.2
Total	39,591

Table 9. Number of samples and number of recorded biological attributes per species sampled.

Species	Samples	Lengths	Weights	Sexes	Maturities	Ages
Alaska skate	3	3	3	3	0	0
Aleutian skate	3	3	3	3	0	0
Arrowtooth flounder	86	3,606	1,062	3,606	612	612
Big skate	12	58	31	57	0	0
Bigmouth sculpin	1	1	1	0	0	0
Black eelpout	3	69	0	0	0	0
Blackbelly eelpout	22	1,513	0	0	0	0
Blackfin sculpin	4	38	0	0	0	0
Bocaccio	19	68	68	68	68	68
Brown cat shark	1	2	0	2	0	0
Canary rockfish	16	273	103	273	101	101
China rockfish	1	2	2	2	2	2
Chum salmon	3	3	3	2	0	0
Curlfin sole	16	67	52	67	45	45
Darkblotched rockfish	9	43	7	43	0	0
Dover sole	69	2,094	685	2,094	318	275
English sole	46	1,847	795	1,847	534	495
Eulachon	11	627	0	56	0	0
Flathead sole	57	2,361	290	2,361	149	149
Greenstriped rockfish	28	395	204	395	176	176
Harlequin rockfish	1	14	1	14	0	0
Kelp greenling	5	17	4	16	0	0
Lingcod	63	151	120	150	68	68
Longnose skate	89	152	78	151	0	0
Longspine thornyhead	2	65	21	65	0	0
Pacific cod	126	1,199	1,186	3	3	0
Pacific hake	115	4,671	1,211	4,671	434	434
Pacific halibut	80	207	61	1	0	0
Pacific herring	3	39	0	0	0	0
Pacific ocean perch	91	4,072	1,725	4,072	1,458	1,458
Pacific sand lance	1	9	0	0	0	0
Pacific sanddab	20	1,006	182	1,006	100	100
Pacific sardine	1	31	0	0	0	0
Petrale sole	24	354	242	354	241	226
Pygmy rockfish	3	116	0	116	0	0
Quillback rockfish	15	164	146	164	142	142
Redbanded rockfish	118	1,067	735	1,068	666	654
Redstripe rockfish	41	1,636	589	1,572	424	424
Rex sole	92	4,471	1,261	4,471	442	442
Rosethorn rockfish	9	253	54	253	54	54
Roughback sculpin	2	10	0	0	0	0
Rougheye rockfish	57	802	384	802	328	328
Roughtail skate	1	1	1	1	0	0
Sablefish	39	592	293	592	289	288
Sandpaper skate	19	25	15	25	0	0
Sharpchin rockfish	34	1,389	450	1,383	157	157
Shortbelly rockfish	1	2	0	2	0	0
Shortraker rockfish	2	14	14	14	14	14
Shortspine thornyhead	75	3,200	1,379	3,200	363	430
Silvergray rockfish	72	1,587	628	1,587	452	352
Slender sole	34	673	0	670	0	0
Southern rock sole	26	760	540	760	450	450
Spiny dogfish	126	1,000	117	997	0	0
Splitnose rockfish	12	360	253	360	177	177
Spotted ratfish	44	1,233	165	1,234	0	0
Threadfin sculpin	1	91	0	0	0	0
Vermilion rockfish	2	2	2	2	2	2
Walleye pollock	73	1,819	290	1,059	0	0
Widow rockfish	9	223	108	223	108	58
Yelloweye rockfish	40	112	58	112	25	25
Yellowmouth rockfish	22	739	526	739	418	409
Yellowtail rockfish	28	823	444	823	275	275
Total	2,028	48,224	16,592	43,611	9,095	8,890

Table 10. Numbers of samples and specimens by sample type and species.

Species	Total		Len/Sex		Len/Sex/Wt		Len/Sex/Wt/Age	
	N	n	N	n	N	n	N	n
Alaska skate	3	3	0	0	3	3	0	0
Aleutian skate	3	3	0	0	3	3	0	0
Arrowtooth flounder	86	3,606	60	2,503	10	491	16	612
Big skate	12	58	2	25	8	31	0	0
Bigmouth sculpin	1	1	0	0	0	0	0	0
Black eelpout	3	69	3	69	0	0	0	0
Blackbelly eelpout	22	1,513	22	1,513	0	0	0	0
Blackfin sculpin	4	38	4	38	0	0	0	0
Bocaccio	19	68	0	0	0	0	19	68
Brown cat shark	1	2	1	2	0	0	0	0
Canary rockfish	16	273	12	162	2	10	2	101
China rockfish	1	2	0	0	0	0	1	2
Chum salmon	3	3	0	0	2	2	0	0
Curlfin sole	16	67	3	13	7	9	6	45
Darkblotched rockfish	9	43	3	34	6	9	0	0
Dover sole	69	2,094	51	1,382	11	437	7	275
English sole	46	1,847	29	1,011	7	341	10	495
Eulachon	11	627	11	627	0	0	0	0
Flathead sole	57	2,361	51	2,063	3	149	3	149
Greenstriped rockfish	28	395	16	191	3	28	9	176
Harlequin rockfish	1	14	0	0	1	14	0	0
Kelp greenling	5	17	2	9	2	7	0	0
Lingcod	63	151	10	29	46	53	6	68
Longnose skate	89	152	18	65	70	86	0	0
Longspine thornyhead	2	65	1	44	1	21	0	0
Pacific cod	126	1,199	1	13	1	3	0	0
Pacific hake	115	4,671	91	3,460	14	777	10	434
Pacific halibut	80	207	26	146	1	1	0	0
Pacific herring	3	39	3	39	0	0	0	0
Pacific ocean perch	91	4,072	54	2,347	7	267	30	1,458
Pacific sand lance	1	9	1	9	0	0	0	0
Pacific sanddab	20	1,006	17	824	1	82	2	100
Pacific sardine	1	31	1	31	0	0	0	0
Petrale sole	24	354	12	110	3	18	9	226
Pygmy rockfish	3	116	3	116	0	0	0	0
Quillback rockfish	15	164	4	18	4	4	7	142
Redbanded rockfish	118	1,067	30	286	36	126	50	643
Redstripe rockfish	41	1,636	30	1,038	3	174	8	424
Rex sole	92	4,471	70	3,145	14	884	8	442
Rosethorn rockfish	9	253	6	199	0	0	3	54
Roughback sculpin	2	10	2	10	0	0	0	0
Rougheye rockfish	57	802	31	386	16	88	10	328
Roughtail skate	1	1	0	0	1	1	0	0
Sablefish	39	592	22	280	4	23	13	288
Sandpaper skate	19	25	4	8	15	17	0	0
Sharpchin rockfish	34	1,389	26	939	5	293	3	157
Shortbelly rockfish	1	2	1	2	0	0	0	0
Shortraker rockfish	2	14	0	0	0	0	2	14
Shortspine thornyhead	75	3,200	47	1,798	20	972	8	430
Silvergray rockfish	72	1,587	49	911	13	324	10	352
Slender sole	34	673	34	673	0	0	0	0
Southern rock sole	26	760	11	204	5	106	10	450
Spiny dogfish	126	1,000	70	829	55	170	0	0
Splitnose rockfish	12	360	5	103	3	80	4	177
Spotted ratfish	44	1,233	41	1,068	3	165	0	0
Threadfin sculpin	1	91	1	91	0	0	0	0
Vermilion rockfish	2	2	0	0	0	0	2	2
Walleye pollock	73	1,819	62	1,499	9	187	0	0
Widow rockfish	9	223	7	115	1	50	1	58
Yelloweye rockfish	40	112	9	42	26	44	4	25
Yellowmouth rockfish	22	739	10	213	3	117	9	409
Yellowtail rockfish	28	823	18	379	4	169	6	275
Total	2,028	48,224	1,098	31,111	452	6,836	288	8,879

Table 11. Statistics of individual length and weight, and sex proportion by species.

Species	Length (cm)			Weight (kg)			Sex Proportion	
	Min.	Max.	Mean	Min.	Max.	Mean	Male	Female
Alaska skate	98.0	106.0	103.0				0.67	0.33
Aleutian skate	105.0	108.0	106.0	8.04	8.04	8.04	1.00	0.00
Arrowtooth flounder	10.0	84.5	37.0	0.02	6.62	0.88	0.41	0.59
Big skate	37.0	176.0	87.7	0.58	3.36	2.06	0.49	0.47
Bigmouth sculpin	57.0	57.0	57.0				0.00	0.00
Black eelpout	7.0	34.0	16.8				0.00	0.00
Blackbelly eelpout	6.0	27.0	17.3				0.00	0.00
Blackfin sculpin	6.0	21.0	15.3				0.00	0.00
Bocaccio	54.2	82.3	67.7	1.84	7.95	3.87	0.82	0.18
Brown cat shark	57.0	60.0	58.5				1.00	0.00
Canary rockfish	26.0	61.0	47.6	1.07	3.39	2.19	0.60	0.40
China rockfish	34.1	36.2	35.1	0.85	1.08	0.97	0.50	0.50
Chum salmon	64.0	75.0	69.7				0.33	0.33
Curlfin sole	16.2	40.0	25.9	0.00	0.60	0.24	0.65	0.35
Darkblotched rockfish	11.0	48.0	35.3	1.36	1.78	1.57	0.56	0.44
Dover sole	17.0	60.0	37.1	0.11	2.30	0.60	0.56	0.44
English sole	11.8	49.3	29.7	0.05	0.74	0.26	0.47	0.53
Eulachon	8.0	20.0	16.5				0.05	0.04
Flathead sole	11.0	42.0	28.8	0.07	0.50	0.23	0.46	0.54
Greenstriped rockfish	5.5	40.2	28.8	0.00	0.86	0.38	0.52	0.48
Harlequin rockfish	18.0	27.0	20.5				0.93	0.07
Kelp greenling	21.0	45.0	32.7	1.10	1.10	1.10	0.29	0.65
Lingcod	34.6	104.0	69.9	0.33	10.66	3.61	0.36	0.64
Longnose skate	37.0	135.0	87.1	0.64	16.12	5.90	0.53	0.47
Longspine thornyhead	13.2	29.0	20.7	0.03	0.26	0.13	0.51	0.49
Pacific cod	8.6	89.0	44.7	0.01	7.11	1.22	0.00	0.00
Pacific hake	16.4	77.0	47.9	0.04	2.59	0.70	0.37	0.63
Pacific halibut	51.0	146.0	76.1	2.42	28.14	7.71	0.00	0.00
Pacific herring	14.0	24.0	18.6				0.00	0.00
Pacific ocean perch	9.0	50.6	36.1	0.07	1.92	0.90	0.52	0.48
Pacific sand lance	13.0	17.0	15.3				0.00	0.00
Pacific sanddab	7.0	33.0	20.7	0.04	0.35	0.14	0.50	0.50
Pacific sardine	20.0	26.0	22.5				0.00	0.00
Petrale sole	21.0	65.6	41.0	0.20	3.39	0.92	0.59	0.41
Pygmy rockfish	9.0	24.0	13.7				0.53	0.47
Quillback rockfish	15.0	55.8	35.6	0.09	2.16	1.05	0.46	0.54
Redbanded rockfish	9.0	63.6	42.8	0.02	4.89	1.75	0.54	0.46
Redstripe rockfish	8.0	44.0	28.4	0.01	1.18	0.37	0.49	0.47
Rex sole	14.0	45.0	30.3	0.02	0.48	0.20	0.59	0.41
Rosethorn rockfish	11.0	35.0	25.1	0.06	0.45	0.24	0.51	0.49
Roughback sculpin	9.0	16.0	13.0				0.00	0.00
Rougheye rockfish	10.0	61.0	37.6	0.02	3.06	1.27	0.53	0.47
Roughtail skate	58.0	58.0	58.0				1.00	0.00
Sablefish	37.0	75.9	55.9	0.98	4.46	2.43	0.70	0.30
Sandpaper skate	16.0	62.0	50.9	1.02	1.30	1.19	0.76	0.24
Sharpchin rockfish	5.0	39.0	24.4	0.01	0.97	0.29	0.46	0.53
Shortbelly rockfish	19.0	19.0	19.0				1.00	0.00
Shortraker rockfish	37.7	73.1	58.3	0.85	6.89	3.38	0.57	0.43
Shortspine thornyhead	2.6	71.5	27.5	0.00	5.82	0.32	0.50	0.50
Silvergray rockfish	21.0	73.0	51.6	0.56	4.14	1.92	0.61	0.39
Slender sole	4.0	33.0	22.5				0.45	0.55
Southern rock sole	10.0	68.5	34.6	0.02	2.90	0.86	0.28	0.72
Spiny dogfish	32.0	105.0	69.3	0.66	3.94	1.43	0.66	0.33
Splitnose rockfish	9.0	38.0	27.7	0.04	0.97	0.45	0.46	0.54
Spotted ratfish	8.0	64.0	29.8	0.13	1.49	0.64	0.51	0.49
Threadfin sculpin	21.0	29.0	25.2				0.00	0.00
Vermilion rockfish	42.1	44.5	43.3	1.44	1.61	1.53	1.00	0.00
Walleye pollock	5.0	70.0	32.0	0.06	1.95	0.73	0.24	0.34
Widow rockfish	10.7	57.0	29.5	0.01	2.72	0.91	0.63	0.37
Yelloweye rockfish	21.0	70.9	54.3	1.36	7.38	3.56	0.49	0.50
Yellowmouth rockfish	8.0	60.3	38.1	0.02	2.63	1.03	0.51	0.49
Yellowtail rockfish	30.0	59.4	44.3	0.52	2.95	1.44	0.52	0.48

Table 12. Data collected from net sensors, showing the number of tows from which each data type was collected (total number of survey tows is 253).

Sensor	Attribute	Num. Tows	Num. Records
NMFS Bottom Contact Sensor	Bottom Contact Sensor Tilt Angle	260	110,772
Scanmar Scanbas Sru 06 / Sgm 15	Bottom Depth	259	583,361
Scanmar Scanbas Sru 06 / Sgm 15	Cross-Current Water Velocity At Net Depth	253	513,849
Scanmar Scanbas Sru 06 / Sgm 15	Density Of Fish In Net	251	428,961
Scanmar Scanbas Sru 06 / Sgm 15	Net Depth	251	515,908
Scanmar Scanbas Sru 06 / Sgm 15	Trawl Net Doorspread	259	457,996
Scanmar Scanbas Sru 06 / Sgm 15	Trawl Net Footrope To Headline Distance	260	443,869
Scanmar Scanbas Sru 06 / Sgm 15	Trawl Net Headrope To Bottom Distance	260	443,869
Scanmar Scanbas Sru 06 / Sgm 15	Vessel Direction - Compass Bearing True North	260	592,969
Scanmar Scanbas Sru 06 / Sgm 15	Vessel Position - Latitude	260	592,968
Scanmar Scanbas Sru 06 / Sgm 15	Vessel Position - Longitude	260	592,968
Scanmar Scanbas Sru 06 / Sgm 15	Vessel Speed Over Ground	260	592,969
Scanmar Scanbas Sru 06 / Sgm 15	Water Temperature At Net Depth	260	529,485
Scanmar Scanbas Sru 06 / Sgm 15	Water Velocity At Net Depth	253	513,849
Seabird Sbe39 Temperature And Pressure Sensor	Net Depth	236	184,269
Seabird Sbe39 Temperature And Pressure Sensor	Water Temperature At Net Depth	236	184,269

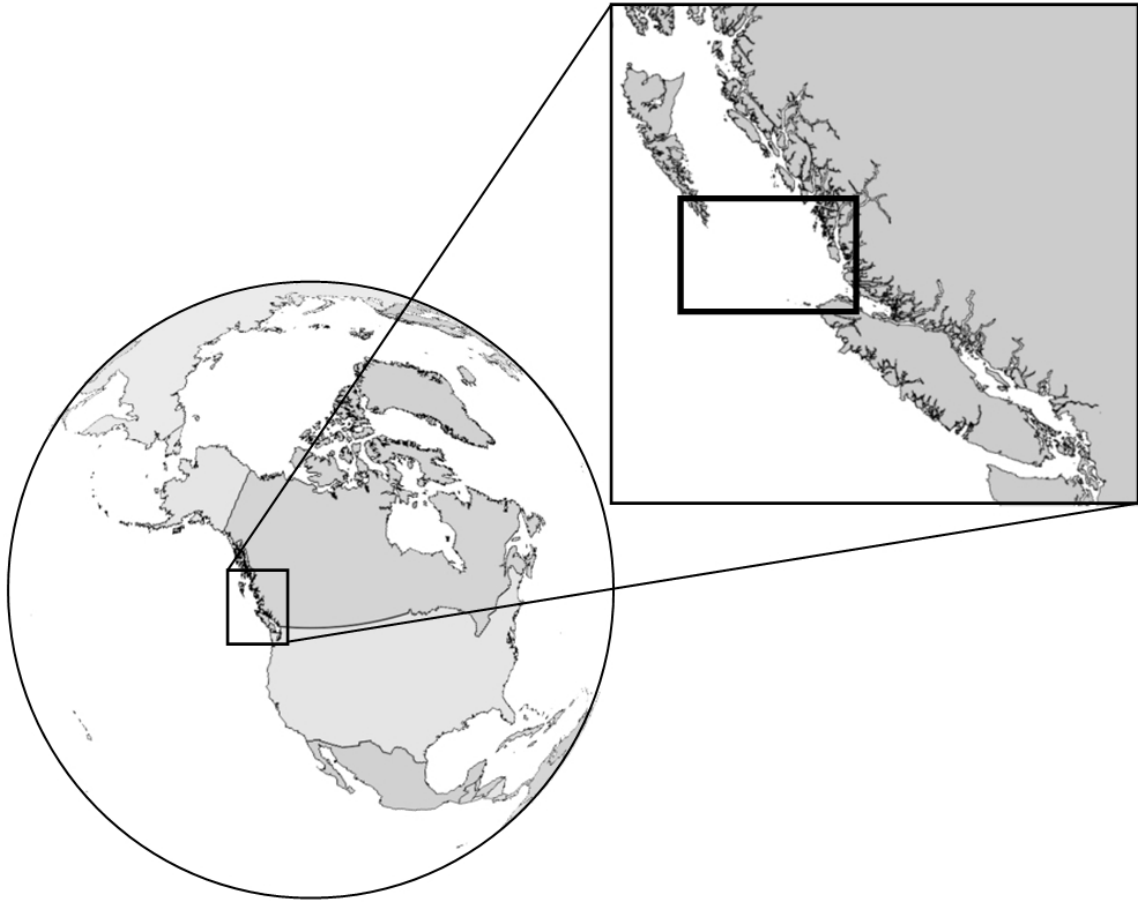


Figure 1. Location of Queen Charlotte Sound on the coast of British Columbia, Canada.



Figure 2. The commercial stern trawler F/V Viking Storm.

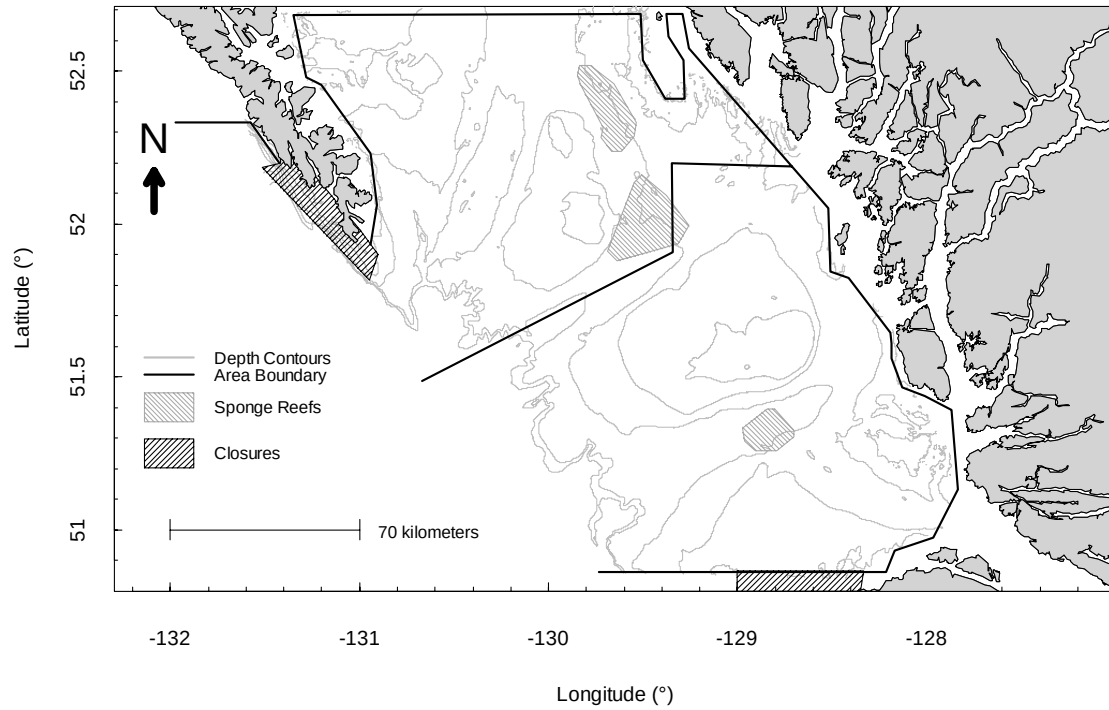


Figure 3. The Queen Charlotte Sound study area showing area boundary, fishing closures, sponge reef protected areas, and depth contours.

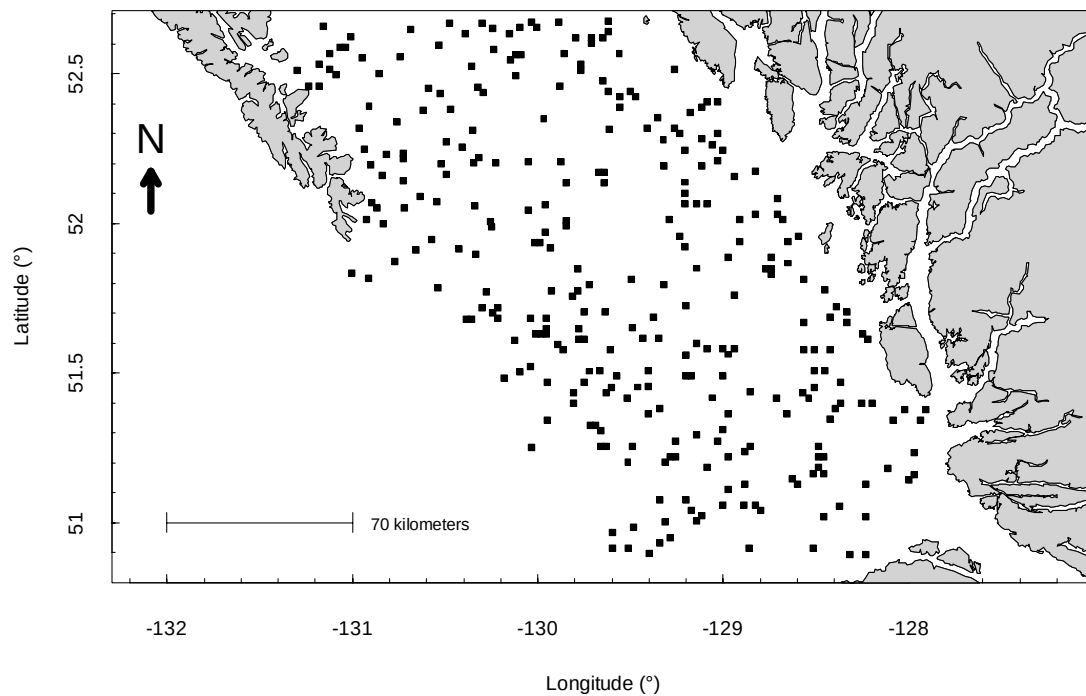


Figure 4. Initial status of the sampling frame showing the 309 primary fishing locations.

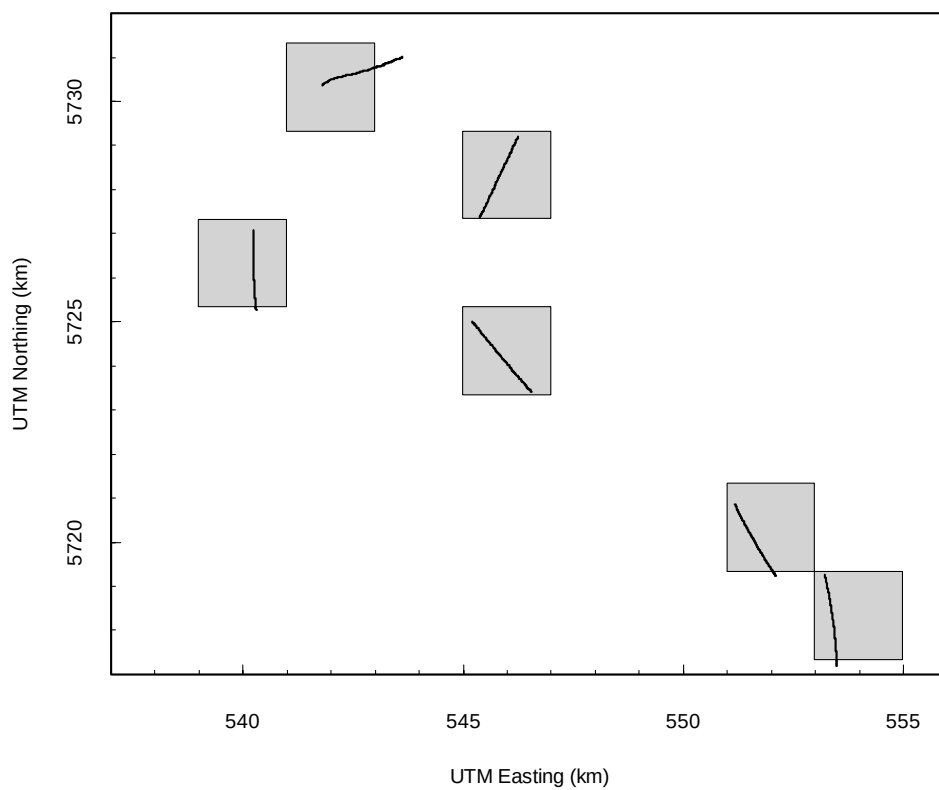


Figure 5. Example tow tracks from 2004.

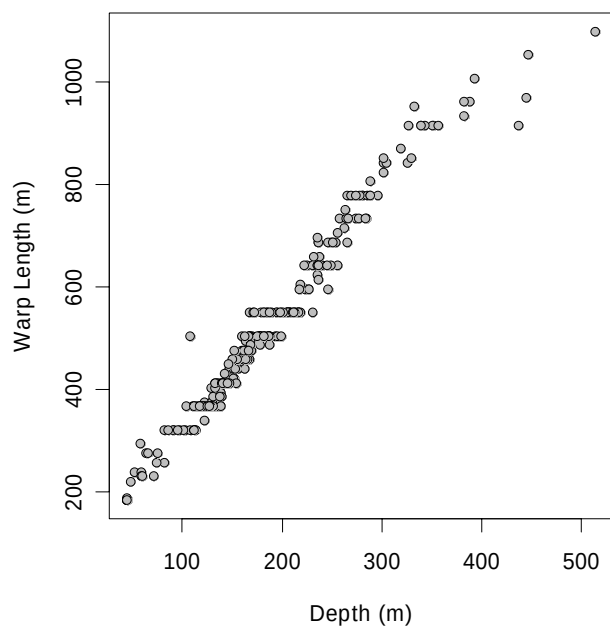


Figure 6. Warp length vs. starting depth.

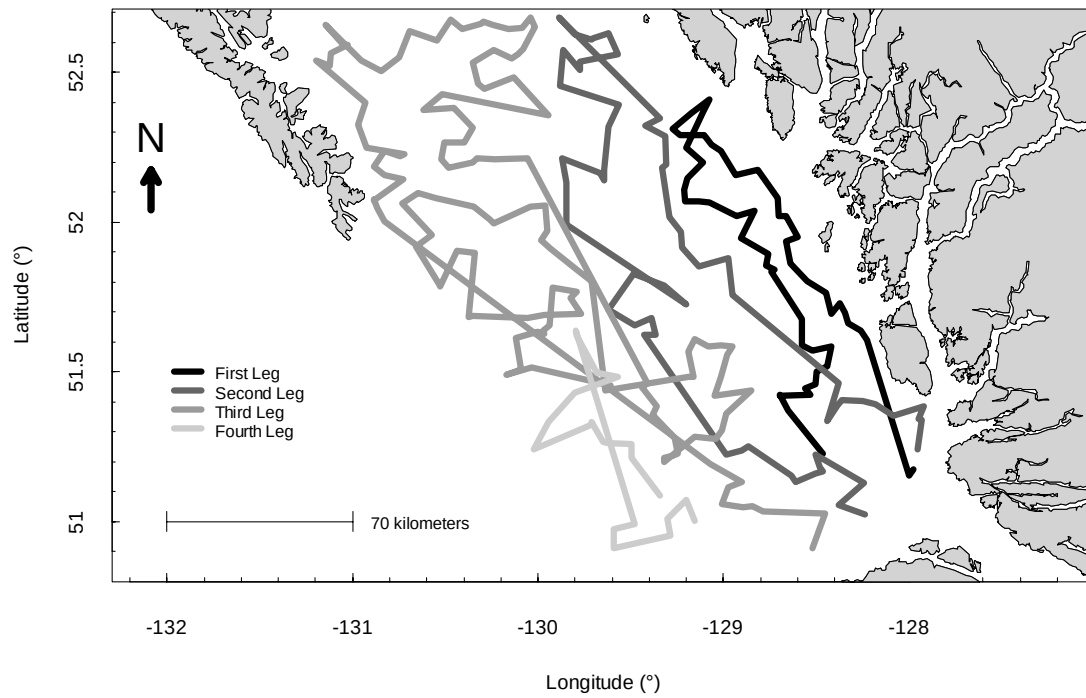


Figure 7. The paths followed on each leg of the survey.

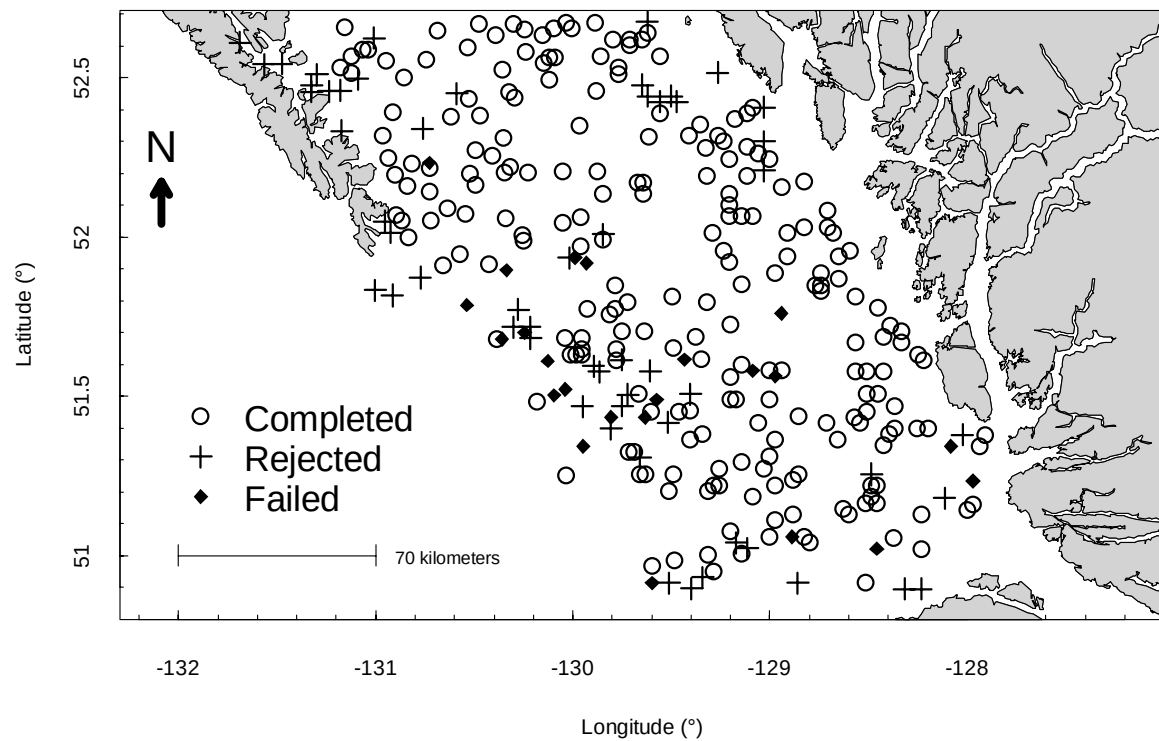


Figure 8. Final status of the sampling frame showing locations that were fished successfully (completed), rejected prior to fishing (rejected), or abandoned after one or more unsuccessful fishing attempts (failed).

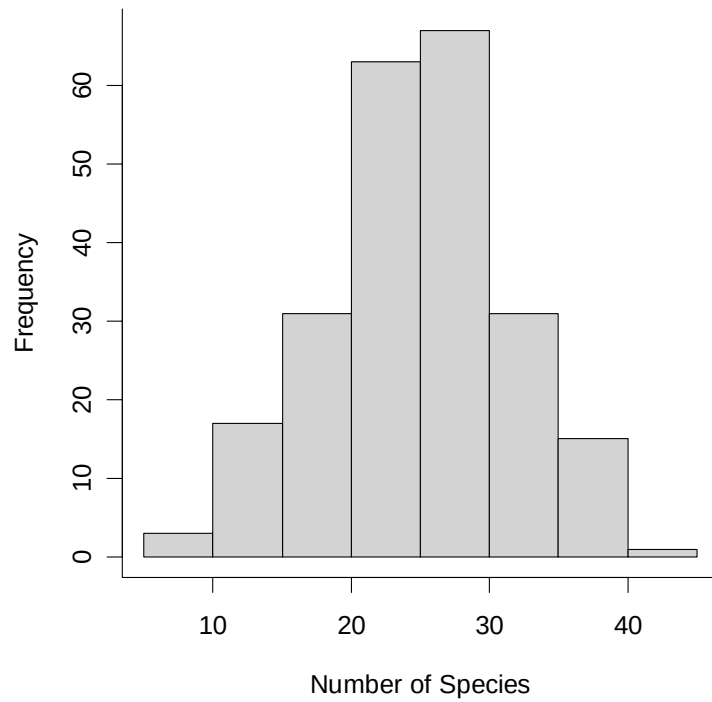


Figure 9. Histogram of number of species caught per tow.

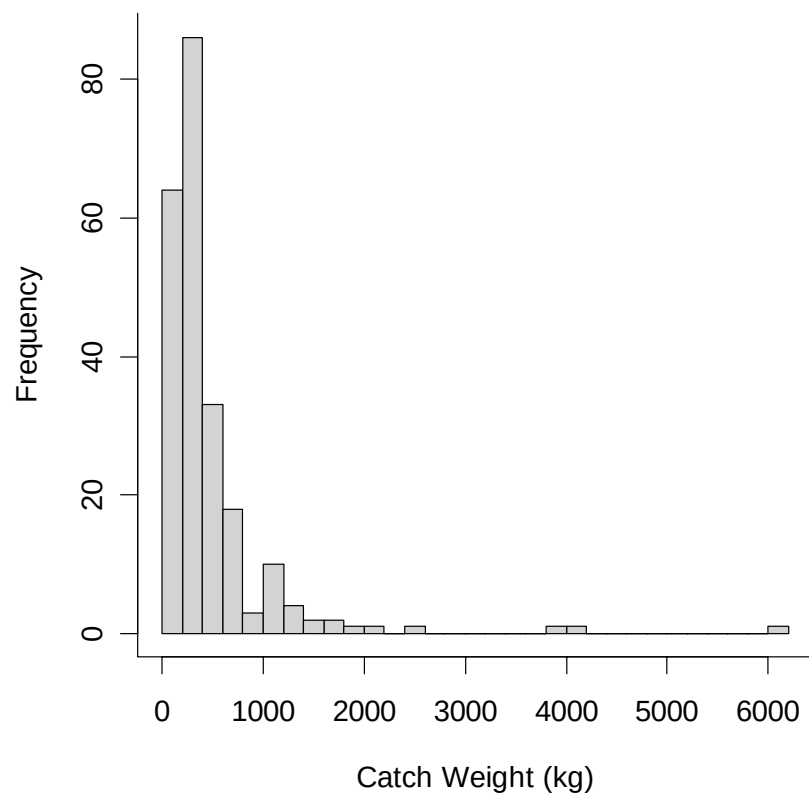


Figure 10. Histogram of catch weight per tow.

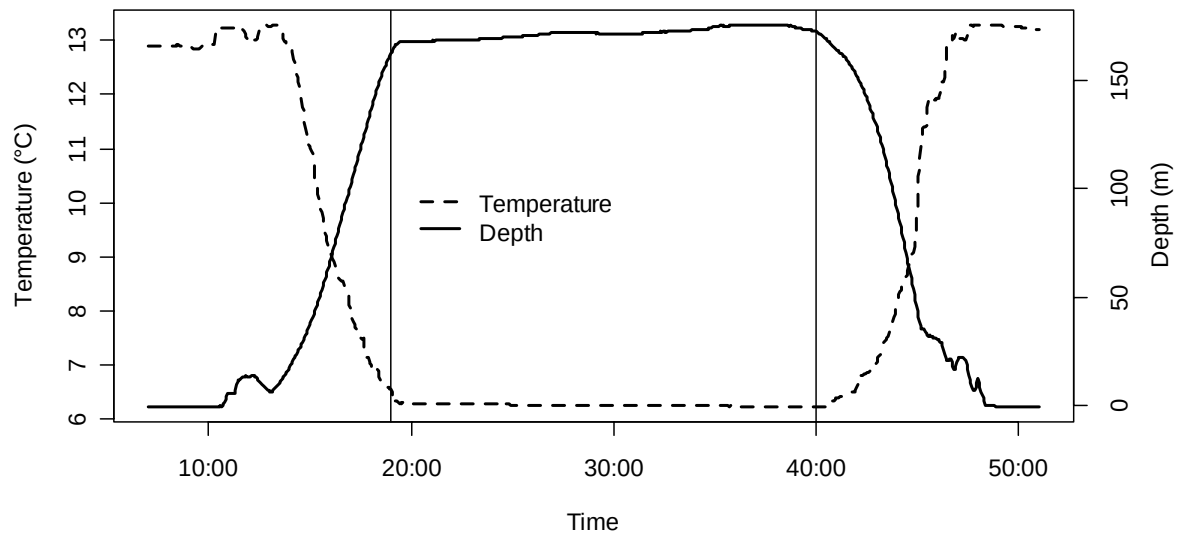


Figure 11. Seabird 39 temperature and depth profile from set number 15. The vertical lines indicate the start and end of net contact with the sea floor.

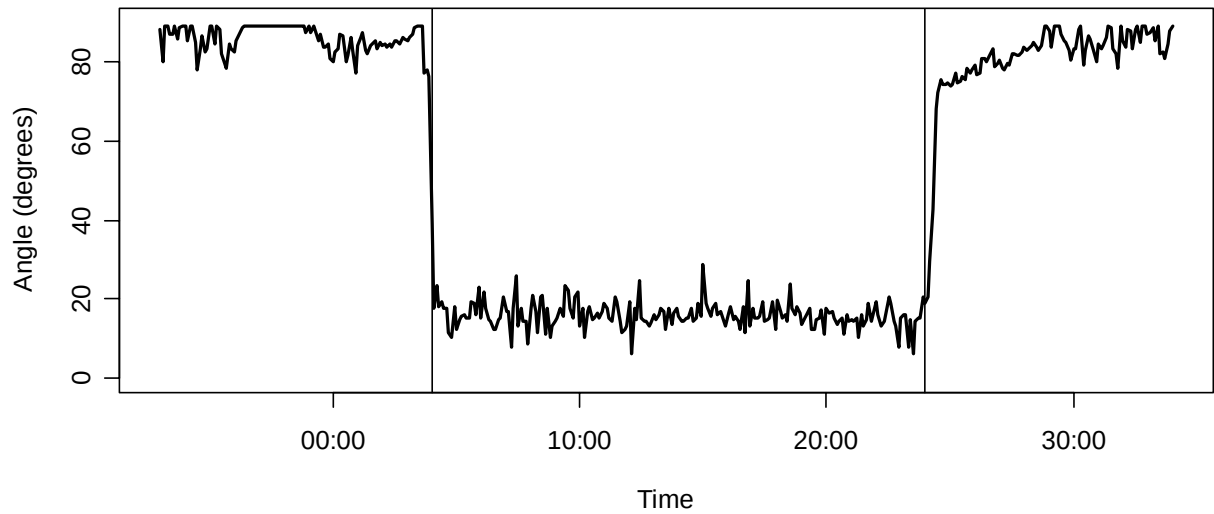


Figure 12. NMFS bottom contact sensor profile from set number 4. The vertical lines indicate the start and end of net contact with the sea floor.

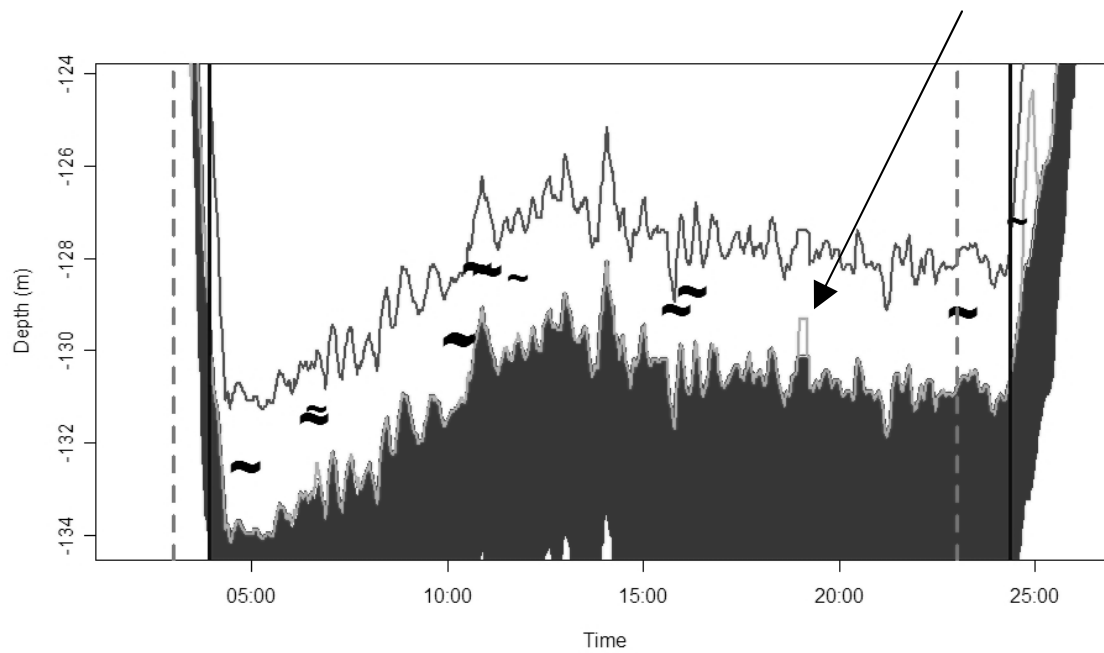


Figure 13. Example plot of net sensor data. The solid dark area at the bottom represents the sea floor. The light grey line directly above that represents the net footrope (note the region indicated by the arrow, showing where the net has risen off the sea floor for a brief period). The top line indicates the net headrope. The symbols between the headrope and the footrope indicate where fish have entered the net.

APPENDIX A: BRIDGE LOG

Tow	Date	Time	Latitude	Longitude	Depth (m)	Duration (min)	Speed (km/h)	Warp (m)	Catch (kg)	Usable?
1	Jul 06	20:23	51.1735	127.9740	122	20	6.0	373	1265.3	Yes
2	Jul 06	21:32	51.1550	127.9983	111	20	5.8	366	1018.4	Yes
3	Jul 07	06:11	51.6042	128.2278	111	21	6.0	366	168.0	Yes
4	Jul 07	07:04	51.6362	128.2603	130	20	5.7	366	201.8	Yes
5	Jul 07	08:11	51.6603	128.3278	135	20	6.2	411	239.5	Yes
6	Jul 07	08:59	51.6955	128.3433	134	20	6.1	411	270.5	Yes
7	Jul 07	10:01	51.7278	128.3703	140	20	5.8	411	208.7	Yes
8	Jul 07	10:58	51.6932	128.4180	140	20	5.4	411	184.0	Yes
9	Jul 07	12:21	51.7655	128.4480	148	21	6.0	448	373.9	Yes
10	Jul 07	14:21	51.8033	128.5482	139	20	5.5	384	239.0	Yes
11	Jul 07	15:39	51.8605	128.6405	140	19	5.9	384	368.6	Yes
12	Jul 07	16:54	51.9368	128.6622	152	20	6.0	439	354.1	Yes
13	Jul 07	18:03	51.9495	128.5968	156	20	6.1	457	432.4	Yes
14	Jul 07	19:49	52.0195	128.6647	163	21	5.8	494	170.0	Yes
15	Jul 07	20:38	52.0197	128.7030	171	21	6.0	494	415.4	Yes
16	Jul 10	06:05	52.0802	128.7060	189	21	5.8	549	181.4	Yes
17	Jul 10	07:41	52.1758	128.8128	218	21	5.8	594	167.5	Yes
18	Jul 10	08:53	52.1552	128.9345	168	19	5.6	549	256.3	Yes
19	Jul 10	10:46	52.2380	129.0158	175	21	6.0	503	120.6	Yes
20	Jul 10	11:55	52.2583	129.0635	166	21	6.3	503	74.2	Yes
21	Jul 10	13:03	52.2885	129.1035	169	20	5.9	485	93.9	Yes
22	Jul 10	15:22	52.2902	129.2355	166	20	6.0	475	372.3	Yes
23	Jul 10	16:35	52.3095	129.2755	142	20	5.3	411	414.3	Yes
24	Jul 10	17:54	52.3625	129.1740	154	21	5.7	411	214.9	Yes
25	Jul 10	19:33	52.4105	129.0778	112	20	5.9	320	492.9	Yes
26	Jul 10	20:34	52.3667	129.1113	150	22	5.7	457	196.3	Yes
27	Jul 11	05:55	52.2488	129.2002	167	20	5.8	475	311.6	Yes
28	Jul 11	07:23	52.1975	129.1113	167	19	5.7	475	138.0	Yes
29	Jul 11	08:21	52.1448	129.1945	162	21	5.7	475	357.8	Yes
30	Jul 11	09:16	52.1085	129.2110	162	22	5.9	475	481.5	Yes
31	Jul 11	10:15	52.0690	129.2045	152	20	5.9	475	309.5	Yes
32	Jul 11	11:25	52.0688	129.1310	145	20	5.8	411	1416.1	Yes
33	Jul 11	12:35	52.0670	129.0738	137	19	5.7	384	224.7	Yes
34	Jul 11	13:57	52.0212	128.9268	185	19	5.4	549	341.3	Yes
35	Jul 11	15:02	52.0375	128.8345	140	21	5.8	549	636.2	Yes
36	Jul 11	16:29	51.9453	128.9042	86	21	5.7	320	343.2	Yes
37	Jul 11	17:45	51.8918	128.7560	129	20	5.8	366	399.5	Yes
38	Jul 11	18:47	51.8543	128.7675	75	20	5.9	256	114.1	Yes
39	Jul 11	19:32	51.8402	128.7227	96	20	5.9	320	453.3	Yes
40	Jul 11	20:15	51.8357	128.7422	75	20	6.1	274	156.1	Yes
41	Jul 12	05:55	51.6760	128.5760	112	20	5.9	320	781.1	Yes
42	Jul 12	07:05	51.5868	128.5742	141	20	6.1	411	630.2	Yes
43	Jul 12	08:04	51.5693	128.5203	164	21	5.5	503	722.8	Yes
44	Jul 12	09:47	51.5833	128.4175	166	20	6.0	475	374.8	Yes
45	Jul 12	10:49	51.5173	128.4387	181	21	5.8	549	371.9	Yes
46	Jul 12	11:46	51.5020	128.4960	188	20	5.9	549	363.2	Yes
47	Jul 12	13:29	51.4595	128.5048	198	20	5.6	549	372.2	Yes

Tow	Date	Time	Latitude	Longitude	Depth (m)	Duration (min)	Speed (km/h)	Warp (m)	Catch (kg)	Usable?
48	Jul 12	14:42	51.4448	128.5618	206	20	5.7	549	446.0	Yes
49	Jul 12	15:53	51.4248	128.5307	201	21	5.4	549	587.1	Yes
50	Jul 12	17:02	51.4187	128.6953	213	1	5.6	549		No
51	Jul 12	18:09	51.4227	128.6970	211	19	5.9	549	317.8	Yes
52	Jul 12	19:19	51.3707	128.6493	212	20	6.1	549	724.8	Yes
53	Jul 12	21:16	51.2267	128.4647	188	19	6.0	503	348.6	Yes
54	Jul 14	05:48	51.2422	127.9558	64	8	5.6	366		No
55	Jul 14	07:44	51.3393	127.9332	77	8	6.5	366		No
56	Jul 14	08:43	51.3440	127.9463	78	19	5.9	411	525.9	Yes
57	Jul 14	10:19	51.3840	127.9167	73	20	5.9	366	338.2	Yes
58	Jul 14	12:04	51.3527	128.0838	80	10	5.9	411		No
59	Jul 14	13:11	51.3930	128.1818	70	20	5.9	366	295.7	Yes
60	Jul 14	14:09	51.4015	128.2505	73	21	5.9	366	562.5	Yes
61	Jul 14	15:39	51.4063	128.3625	70	20	5.9	366	343.4	Yes
62	Jul 14	16:42	51.3878	128.3868	69	21	5.9	366	257.9	Yes
63	Jul 14	18:00	51.3343	128.4427	80	20	6.1	411	576.1	Yes
64	Jul 14	19:42	51.4632	128.3762	96	21	6.1	549	456.5	Yes
65	Jul 15	05:57	51.7552	128.9522	61	14	6.1	293	1016.7	No
66	Jul 15	07:30	51.8810	128.9722	53	15	6.1	320	208.9	No
67	Jul 15	09:00	51.8500	129.1302	118	20	5.9	366	220.2	Yes
68	Jul 15	10:28	51.9142	129.2210	170	20	5.6	503	226.3	Yes
69	Jul 15	11:53	51.9667	129.2308	178	22	5.7	503	200.5	Yes
70	Jul 15	13:30	52.0178	129.2905	181	20	5.6	503	1066.7	Yes
71	Jul 15	16:04	52.1828	129.3327	168	14	5.6	503		No
72	Jul 15	17:02	52.1912	129.3087	180	20	5.7	485	306.3	Yes
73	Jul 15	18:48	52.2870	129.3118	148	21	5.9	439	542.4	Yes
74	Jul 15	20:06	52.3227	129.4202	162	20	5.7	457	492.7	Yes
75	Jul 15	21:19	52.3455	129.3433	111	20	6.1	503	523.2	Yes
76	Jul 16	06:20	52.6818	129.8872	257	21	5.6	732	117.0	Yes
77	Jul 16	07:53	52.6250	129.7995	160	19	5.9	439	1877.2	Yes
78	Jul 16	09:54	52.6085	129.7087	178	20	5.9	503	272.2	Yes
79	Jul 16	10:39	52.6127	129.7043	180	21	6.1	503	398.7	Yes
80	Jul 16	12:04	52.6282	129.6397	165	21	6.3	457	608.6	Yes
81	Jul 16	13:11	52.6288	129.6203	169	20	5.8	457	735.8	Yes
82	Jul 16	15:12	52.5612	129.5688	113	21	5.9	320	287.3	Yes
83	Jul 16	16:50	52.5367	129.7723	170	20	6.1	503	630.1	Yes
84	Jul 16	18:00	52.5075	129.7723	175	23	6.1	503	886.4	Yes
85	Jul 16	19:34	52.5752	129.8650	227	22	5.9	640	1754.8	Yes
86	Jul 16	21:35	52.4557	129.8838	225	19	5.9	594	310.2	Yes
87	Jul 17	09:47	52.3903	129.5617	170	20	5.6	494	265.4	Yes
88	Jul 17	10:56	52.3195	129.6177	205	19	5.9	549	1120.6	Yes
89	Jul 17	12:38	52.1753	129.6415	217	19	5.9	549	220.8	Yes
90	Jul 17	13:32	52.1393	129.6415	217	20	5.7	549	187.8	Yes
91	Jul 17	14:36	52.1645	129.6678	214	19	5.9	549	139.5	Yes
92	Jul 17	16:20	52.2118	129.8692	138	19	5.9	366	126.6	Yes
93	Jul 17	17:19	52.1332	129.8497	156	20	5.7	457	518.5	Yes
94	Jul 17	19:04	51.9930	129.8498	120	19	5.9	366	2173.9	Yes
95	Jul 18	06:32	51.7240	129.1995	90	21	6.1	320	58.8	Yes
96	Jul 18	08:23	51.7892	129.3203	125	20	6.1	366	200.7	Yes
97	Jul 18	10:26	51.8258	129.4818	234	20	5.9	640	175.2	Yes

Tow	Date	Time	Latitude	Longitude	Depth (m)	Duration (min)	Speed (km/h)	Warp (m)	Catch (kg)	Usable?
98	Jul 18	12:25	51.7087	129.6217	179	21	5.4	549	104.0	Yes
99	Jul 18	13:57	51.6550	129.4807	82	21	6.5	320	165.5	Yes
100	Jul 18	15:31	51.6812	129.3862	64	21	5.4	274	486.1	Yes
101	Jul 18	17:02	51.6237	129.3680	52	21	5.6	238	1297.0	Yes
102	Jul 18	18:07	51.6227	129.4280	65	7	5.6	238		No
103	Jul 19	06:00	51.2222	128.9848	161	20	5.6	475	1146.8	Yes
104	Jul 19	07:13	51.2375	128.9012	190	20	5.6	503	360.6	Yes
105	Jul 19	08:18	51.2520	128.8687	197	21	5.6	549	691.7	Yes
106	Jul 19	10:22	51.1547	128.6358	137	21	5.6	375	199.5	Yes
107	Jul 19	11:11	51.1322	128.6127	129	19	6.1	366	124.4	Yes
108	Jul 19	12:25	51.1600	128.5012	184	20	5.6	549	528.5	Yes
109	Jul 19	13:33	51.1665	128.4643	192	20	5.7	503	688.8	Yes
110	Jul 19	14:38	51.1800	128.4802	195	22	5.9	549	1229.9	Yes
111	Jul 19	16:12	51.2222	128.5007	192	21	5.8	549	424.2	Yes
112	Jul 19	18:08	51.1297	128.2413	157	20	6.1	439	761.5	Yes
113	Jul 19	19:45	51.0565	128.3810	130	21	6.3	366	1467.2	Yes
114	Jul 19	20:58	51.0240	128.2360	134	20	5.6	384	1072.4	Yes
115	Jul 21	07:58	50.9107	128.5222	69	20	6.0	274	122.6	Yes
116	Jul 21	09:31	51.0268	128.4525	99	15	6.2	320	64.6	No
117	Jul 21	12:11	51.0352	128.7885	60	20	6.2	229	163.8	Yes
118	Jul 21	13:15	51.0508	128.8423	61	21	6.3	229	153.4	Yes
119	Jul 21	13:58	51.0490	128.8962	73	3	6.4	229	13.7	No
120	Jul 21	15:08	51.0570	129.0060	103	19	5.5	320	62.2	Yes
121	Jul 21	16:19	51.1147	128.9717	114	20	5.8	366	29.8	Yes
122	Jul 21	17:15	51.1320	128.8993	104	20	5.5	366	48.6	Yes
123	Jul 21	19:10	51.1932	129.0723	147	20	6.1	439	301.7	Yes
124	Jul 22	10:39	52.0010	130.8273	240	20	6.0	622	430.0	Yes
125	Jul 22	12:30	52.0492	130.8662	241	21	7.3	640	114.1	Yes
126	Jul 22	13:04	52.0767	130.8857	200	5	5.1	503		No
127	Jul 22	14:00	52.0730	130.8848	211	18	5.2	549	178.4	Yes
128	Jul 22	15:39	52.1427	130.7287	219	17	5.5	549	236.4	Yes
129	Jul 22	17:06	52.1552	130.8258	226	19	6.2	594	576.9	Yes
130	Jul 22	18:07	52.1842	130.8855	224	20	5.6	594	470.8	Yes
131	Jul 22	19:18	52.2385	130.8270	185	20	6.2	503	246.3	Yes
132	Jul 22	20:12	52.2183	130.7417	187	19	6.1	503	205.3	Yes
133	Jul 22	21:04	52.2280	130.7227	180	17	5.7	503		No
134	Jul 23	06:23	52.2477	130.9270	183	19	6.5	503	267.5	Yes
135	Jul 23	08:12	52.3247	130.9677	140	20	6.7	411	242.0	Yes
136	Jul 23	10:28	52.3977	130.9282	118	21	5.9	366	234.7	Yes
137	Jul 23	14:08	52.5392	131.1987	168	20	4.8	457	138.1	Yes
138	Jul 23	15:23	52.5200	131.1242	181	20	5.2	503	515.6	Yes
139	Jul 23	17:08	52.5642	131.1163	133	19	6.6	366	611.6	Yes
140	Jul 23	18:30	52.5903	131.0245	108	19	5.9	320	117.1	Yes
141	Jul 23	19:18	52.5933	131.0507	113	19	5.5	320	162.7	Yes
142	Jul 23	21:01	52.6583	131.1457	81	20	5.7	256	116.9	Yes
143	Jul 24	06:21	52.5395	130.9547	135	20	5.2	366	345.1	Yes
144	Jul 24	07:32	52.5033	130.8465	129	21	6.0	366	159.3	Yes
145	Jul 24	08:59	52.5485	130.7467	122	20	5.1	338	88.5	Yes
146	Jul 24	10:16	52.6360	130.6948	128	20	5.6	366	251.1	Yes
147	Jul 24	11:44	52.6047	130.5477	151	21	5.9	457	334.2	Yes

Tow	Date	Time	Latitude	Longitude	Depth (m)	Duration (min)	Speed (km/h)	Warp (m)	Catch (kg)	Usable?
148	Jul 24	13:14	52.6752	130.4703	163	20	4.9	475	230.5	Yes
149	Jul 24	14:16	52.6430	130.4063	168	20	5.2	503	305.2	Yes
150	Jul 24	15:14	52.6630	130.3075	231	6	6.1	640	78.5	No
151	Jul 24	16:50	52.6687	130.2952	236	21	5.7	640	253.9	Yes
152	Jul 24	18:04	52.6595	130.2463	239	20	6.0	640	415.5	Yes
153	Jul 24	19:34	52.6457	130.1613	237	20	6.2	686	252.2	Yes
154	Jul 24	20:50	52.6470	130.0868	256	20	5.2	640	223.5	Yes
155	Jul 25	06:24	52.6818	130.0410	266	20	5.8	686	158.1	Yes
156	Jul 25	07:25	52.6518	130.0198	266	22	5.2	732	86.2	Yes
157	Jul 25	08:55	52.5768	130.0790	265	22	6.1	732	221.4	Yes
158	Jul 25	10:13	52.5590	130.1080	274	21	5.6	732	132.3	Yes
159	Jul 25	11:15	52.5457	130.1418	288	22	5.2	732	158.1	Yes
160	Jul 25	12:28	52.5725	130.2370	250	21	6.4	686	2519.5	Yes
161	Jul 25	13:59	52.5312	130.3517	208	20	5.4	549	188.9	Yes
162	Jul 25	15:10	52.4623	130.3227	281	22	5.1	732	128.9	Yes
163	Jul 25	16:20	52.4438	130.2880	327	21	5.4	841	227.4	Yes
164	Jul 25	18:00	52.4838	130.1290	290	21	5.9	805	63.9	Yes
165	Jul 25	20:57	52.3560	129.9458	163	21	5.4	439	244.3	Yes
166	Jul 26	06:54	52.4285	130.5177	148	20	5.5	411	228.1	Yes
167	Jul 26	08:22	52.3750	130.6200	145	20	5.2	430	152.2	Yes
168	Jul 26	09:52	52.3822	130.4562	171	21	6.3	494	1055.9	Yes
169	Jul 26	11:09	52.3160	130.3532	249	20	6.0	686	503.7	Yes
170	Jul 26	12:10	52.2643	130.3982	234	20	5.4	658	260.4	Yes
171	Jul 26	13:19	52.2657	130.5048	206	21	5.9	549	955.2	Yes
172	Jul 26	14:33	52.2090	130.5245	186	20	4.7	549	630.6	Yes
173	Jul 26	15:41	52.1795	130.4835	234	20	4.9	613	193.9	Yes
174	Jul 26	17:07	52.1987	130.3507	383	21	5.7	933	252.0	Yes
175	Jul 26	18:24	52.2143	130.3292	388	15	5.5	960	94.2	Yes
176	Jul 26	19:44	52.2105	130.2342	447	20	5.5	1052	254.5	Yes
177	Jul 26	21:23	52.2122	130.0578	164	20	6.3	457	1116.0	Yes
178	Jul 27	06:25	51.4608	129.4113	102	19	5.9	320	120.9	Yes
179	Jul 27	07:21	51.4467	129.4400	120	20	6.2	366	204.0	Yes
180	Jul 27	08:39	51.3837	129.3610	133	19	5.9	411	750.7	Yes
181	Jul 27	09:36	51.3580	129.3800	160	20	6.3	503	138.3	Yes
182	Jul 27	11:09	51.2805	129.2653	281	22	5.3	777	509.3	Yes
183	Jul 27	12:19	51.2268	129.2472	281	21	5.3	777	640.9	Yes
184	Jul 27	13:16	51.2195	129.2743	287	21	5.5	777	438.1	Yes
185	Jul 27	14:05	51.2125	129.3178	288	8	5.4	777	80.7	No
186	Jul 27	15:13	51.1995	129.3208	296	21	6.3	777	267.0	Yes
187	Jul 27	16:46	51.2825	129.1573	265	22	5.7	777	1027.0	Yes
188	Jul 27	18:10	51.2757	129.0418	238	21	6.0	686	921.9	Yes
189	Jul 27	19:10	51.3030	129.0057	246	20	5.4	686	551.5	Yes
190	Jul 27	20:17	51.3590	128.9855	231	21	6.0	658	365.6	Yes
191	Jul 29	06:15	51.4377	128.8475	170	20	5.7	494	275.3	Yes
192	Jul 29	07:46	51.4192	129.0450	167	20	5.7	494	346.1	Yes
193	Jul 29	09:00	51.4837	129.0118	45	20	5.7	183	176.1	Yes
194	Jul 29	09:53	51.5570	128.9795	46	0	5.7	183	1.1	No
195	Jul 29	11:27	51.5863	128.9513	45	19	5.7	187	271.1	Yes
196	Jul 29	12:28	51.5882	129.0108	45	19	5.7	183	4042.7	Yes
197	Jul 29	13:30	51.5865	129.0820	45	1	5.7	183	31.9	No

Tow	Date	Time	Latitude	Longitude	Depth (m)	Duration (min)	Speed (km/h)	Warp (m)	Catch (kg)	Usable?
198	Jul 29	14:29	51.6080	129.1568	45	20	5.7	183	3847.8	Yes
199	Jul 29	15:29	51.5687	129.1907	44	16	5.7	183	592.7	Yes
200	Jul 29	16:53	51.4843	129.1588	45	20	5.7	183	1070.9	Yes
201	Jul 29	17:41	51.4827	129.1883	49	20	5.7	219	1063.4	Yes
202	Jul 29	20:50	51.4385	129.6393	164	10	5.7	475	466.7	No
203	Jul 30	06:30	51.8030	129.7110	303	21	5.7	841	194.5	Yes
204	Jul 30	07:50	51.8407	129.7912	237	22	5.7	695	438.3	Yes
205	Jul 30	09:33	51.9115	129.9330	138	1	5.7	402		No
206	Jul 30	11:34	51.9390	129.9828	139	13	5.7	393	38.8	No
207	Jul 30	12:58	51.9703	129.9510	128	18	5.7	402	43.4	Yes
208	Jul 30	15:05	52.0553	129.9612	131	20	5.7	375	85.3	Yes
209	Jul 30	16:05	52.0500	130.0378	136	20	5.7	411	35.4	Yes
210	Jul 30	17:38	51.9948	130.2383	270	19	5.7	777	55.0	Yes
211	Jul 30	18:36	52.0100	130.2627	302	22	5.7	850	64.2	Yes
212	Jul 30	19:58	52.0527	130.3440	392	22	5.7	1006	168.7	Yes
213	Jul 31	06:30	52.0808	130.5497	263	22	5.7	750	131.7	Yes
214	Jul 31	08:04	52.0967	130.6475	224	21	5.7	640	261.6	Yes
215	Jul 31	09:49	52.0610	130.7335	305	20	5.7	841	136.2	Yes
216	Jul 31	11:44	51.9570	130.5720	383	20	5.7	960	258.5	Yes
217	Jul 31	13:01	51.9175	130.6563	333	16	5.7	951	254.8	Yes
218	Jul 31	15:30	51.7923	130.5358	281	2	7.5	732		No
219	Jul 31	16:49	51.7842	130.5302	263	1	5.7	713	22.3	No
220	Jul 31	18:23	51.9055	130.4397	319	20	5.7	869	137.6	Yes
221	Jul 31	19:36	51.8972	130.3430	218	15	5.7	604	265.0	No
222	Aug 01	08:51	51.7035	130.2537		7	3.5	640	139.2	No
223	Aug 01	11:04	51.6822	130.3725	267	20	5.7	732	6000.1	Yes
224	Aug 01	13:50	51.6853	130.3513	256	2	5.7	686	220.3	No
225	Aug 01	15:52	51.6805	130.0583	351	21	5.7	914	384.0	Yes
226	Aug 01	17:00	51.6892	129.9662	356	20	5.7	914	228.7	Yes
227	Aug 01	18:34	51.6920	129.7707	302	22	5.7	823	244.9	Yes
228	Aug 01	20:02	51.7462	129.8272	338	21	5.7	914	141.3	Yes
229	Aug 01	21:02	51.7680	129.7928	330	22	5.7	850	214.5	Yes
230	Aug 02	06:32	51.7803	129.9197	279	21	5.7	777	205.0	Yes
231	Aug 02	08:09	51.6565	129.9377	341	20	5.7	914	394.6	Yes
232	Aug 02	09:13	51.6365	129.9710	339	20	5.7	914	271.7	Yes
233	Aug 02	10:13	51.6273	129.9670	328	22	5.7	914	173.0	Yes
234	Aug 02	11:22	51.6338	130.0015	353	21	5.7	914	351.3	Yes
235	Aug 02	13:02	51.6143	130.1207	513	4	5.7	1097	30.0	No
236	Aug 02	14:29	51.5087	130.0932	260	2	5.7	704	87.7	No
237	Aug 02	15:43	51.4897	130.1732	445	16	5.7	969	370.4	Yes
238	Aug 02	18:13	51.5157	130.0322	249	5	5.7	640	159.1	No
239	Aug 02	21:02	51.4543	129.6072	152	17	5.7	421	212.1	Yes
240	Aug 04	08:21	51.0015	129.1560	133	16	5.7	402	65.2	Yes
241	Aug 04	10:55	51.0738	129.2032	151	20	5.7	457	739.0	Yes
242	Aug 04	12:35	51.0083	129.3028	169	20	5.7	475	163.7	Yes
243	Aug 04	13:44	50.9525	129.2855	151	21	5.7	439	364.0	Yes
244	Aug 04	16:47	50.9102	129.5933	231	7	5.7	549	359.7	No
245	Aug 04	18:10	50.9728	129.5897	246	15	5.7	594	218.4	Yes
246	Aug 04	19:54	50.9913	129.4797	227	18	5.7	594	227.9	Yes
247	Aug 05	06:25	51.6360	129.7955	199	20	5.7	503	634.4	Yes

Tow	Date	Time	Latitude	Longitude	Depth (m)	Duration (min)	Speed (km/h)	Warp (m)	Catch (kg)	Usable?
248	Aug 05	08:38	51.6187	129.7878	188	16	5.7	485	361.0	Yes
249	Aug 05	11:18	51.4973	129.6807	151	20	5.7	421	96.1	Yes
250	Aug 05	12:19	51.4815	129.5695	132	6	5.7	384	13.2	No
251	Aug 05	14:03	51.4313	129.7997	188	2	4.5	503	9.6	No
252	Aug 05	16:09	51.3325	129.9420	251	9	5.7	686	609.7	No
253	Aug 05	17:51	51.2402	130.0227	437	20	5.7	914	464.6	Yes
254	Aug 05	20:32	51.3258	129.7050	219	20	5.7	549	541.0	Yes
255	Aug 06	06:33	51.3322	129.7092	209	20	5.7	549	563.4	Yes
256	Aug 06	08:40	51.2648	129.6467	238	15	5.7	640	1666.4	Yes
257	Aug 06	09:59	51.2635	129.6192	250	19	5.7	640	1361.7	Yes
258	Aug 06	11:16	51.2583	129.4957	274	22	5.7	777	685.8	Yes
259	Aug 06	12:33	51.2125	129.4953	289	21	5.7	777	398.1	Yes
260	Aug 06	14:24	51.0850	129.3442	207	15	5.7	549		No

APPENDIX B: CATCH BY TOW

Species	1	2	3	4	5	6	7	8	9	10
Alaska skate										
Aleutian skate										
Arrowtooth flounder	914.30	663.00	19.30	13.60	18.80	32.00	40.50	67.30	85.50	12.90
Big skate										
Bigmouth sculpin										
Black eelpout										
Blackbelly eelpout	51.70	0.40	0.20		3.00	0.40	2.20	4.00	24.50	0.30
Bocaccio					2.20					
Canary rockfish				7.50	2.40					
Curlfin sole										
Darkblotched rockfish										
Dover sole	54.10	45.40	5.00	17.60	43.00	16.70	12.00	17.30	11.00	1.50
English sole		2.60	29.10	8.10	1.00	1.40	0.80		0.10	11.50
Eulachon			0.20						0.20	0.40
Flathead sole	28.10	52.50	1.60	7.20	10.00	10.90	8.70	16.30	51.70	9.80
Greenstriped rockfish			0.40	1.90	3.20					1.20
Kelp greenling										
Lingcod		1.30	2.60		2.60					2.10
Longnose skate	21.00			9.00	6.80		6.50		19.50	
Longspine thornyhead										
Pacific cod	6.40	27.80	5.90	26.50	10.80	0.70	0.20			3.70
Pacific hake	109.60	186.20	28.90	17.40	27.50	176.10	110.10	51.30	113.40	80.80
Pacific halibut		2.80	9.60				3.00			
Pacific ocean perch				5.60	15.00	5.20			4.90	2.20
Pacific sanddab										
Petrale sole				2.00						
Quillback rockfish			1.70							
Redbanded rockfish					13.30	4.90	2.00	2.80		3.40
Redstripe rockfish		4.80	19.10	9.00	15.60	0.60				34.60
Rex sole	3.70	6.80	10.70	7.10	12.80	8.30	2.60	3.10	3.80	7.10
Rosethorn rockfish										
Rougheye rockfish										
Sablefish				3.90	1.10	0.80	4.70	2.10	37.90	3.80
Sandpaper skate			0.20							
Sharpchin rockfish			0.10	0.30				0.20		
Shortraker rockfish										
Shortspine thornyhead										
Silvergray rockfish		4.80	0.10	7.30	17.30					2.50
Slender sole	0.50	0.80	0.30	0.70	1.40	1.00	0.30	0.60	1.60	1.20
Southern rock sole										
Spiny dogfish	8.30	3.50	6.20	4.40	2.70		1.40	5.10	2.10	11.70
Splitnose rockfish										
Spotted ratfish	32.30	6.80	7.10	3.70	6.70	2.50	5.90	5.10	8.00	9.20
Threadfin sculpin			0.30	0.40	0.20					0.90
Walleye pollock	28.70	7.30	0.50	0.90		2.20			2.80	12.80
Widow rockfish										
Wolf eel										
Yelloweye rockfish			6.80	31.70	6.90					19.20
Yellowmouth rockfish										
Yellowtail rockfish	4.40		2.30	4.80	13.20	1.90		3.90		
Other	2.20	1.60	15.00	11.20	2.00	4.90	7.80	4.90	6.90	6.20
Total	1265.30	1018.40	173.20	201.80	239.50	270.50	208.70	184.00	373.90	239.00

Species	11	12	13	14	15	16	17	18	19	20
Alaska skate										
Aleutian skate										
Arrowtooth flounder	65.60	92.10	348.00	87.00	194.90	57.60	15.10	46.40	57.60	38.40
Big skate										
Bigmouth sculpin										
Black eelpout										
Blackbelly eelpout	0.10	0.10	1.10	9.30	0.20		0.20		0.10	0.80
Bocaccio							4.20			
Canary rockfish					2.40				6.20	
Curlfin sole										
Darkblotched rockfish				0.70		0.60	0.30			
Dover sole	0.80	3.70	11.70	12.20	7.70	9.60	0.60	1.40	0.50	
English sole	22.70	14.80	3.80	4.10	1.60					0.20
Eulachon	1.30		0.10						0.10	0.20
Flathead sole	13.10	37.80	10.30	14.50	10.80	0.90	0.80			0.10
Greenstriped rockfish	0.50							1.30		
Kelp greenling										
Lingcod			3.00		11.70					1.20
Longnose skate	1.80	7.40	20.40						5.80	
Longspine thornyhead										
Pacific cod	13.40	0.60	1.20		1.90			6.20	3.40	
Pacific hake	182.50	159.30	13.80	8.20	12.70	24.60	34.90		2.50	1.20
Pacific halibut				5.00	22.90					
Pacific ocean perch	6.00	1.20		1.00		1.70	16.10	1.70		
Pacific sanddab										
Petrale sole	1.00									
Quillback rockfish										
Redbanded rockfish		2.50			84.50	37.20	18.30	10.20	2.70	
Redstripe rockfish	1.70			0.20				77.30	2.40	
Rex sole	9.10	5.20	1.10	7.40	4.50			7.00	0.70	
Rosethorn rockfish								0.70		
Rougheye rockfish						3.20	5.90			
Sablefish		1.00	5.50	2.80		4.70	7.70	1.40		
Sandpaper skate										
Sharpchin rockfish					0.20			10.70	0.30	
Shortraker rockfish										
Shortspine thornyhead										
Silvergray rockfish	2.00	3.70			44.60	7.00		31.60	9.00	
Slender sole	0.10	0.10		0.40	0.20		0.10	0.40	0.40	0.50
Southern rock sole										
Spiny dogfish	7.70	4.30	4.60	5.10	4.30	2.40	1.00	10.40	4.80	13.20
Splitnose rockfish							2.90			
Spotted ratfish	4.10	3.10	1.90	4.40	6.20	1.20	2.20	1.30		0.80
Threadfin sculpin	0.20									
Walleye pollock	12.60					14.60	0.90	6.00		
Widow rockfish										
Wolf eel										
Yelloweye rockfish	13.10							12.90	3.50	
Yellowmouth rockfish										
Yellowtail rockfish	3.90	11.80	1.90		1.50			4.00	5.50	2.00
Other	5.30	5.40	4.00	7.70	2.60	16.10	56.30	25.40	15.10	15.64
Total	368.60	354.10	432.40	170.00	415.40	181.40	167.50	256.30	120.60	74.24

Species	21	22	23	24	25	26	27	28	29	30
Alaska skate										
Aleutian skate										
Arrowtooth flounder	58.50	33.20	128.00	69.50	408.90	55.60	57.90	21.80	175.50	116.10
Big skate										
Bigmouth sculpin								2.60		
Black eelpout										
Blackbelly eelpout	2.10	0.10		0.30		1.00	0.10			0.10
Bocaccio										
Canary rockfish			5.10	7.70	6.20	1.70			2.90	
Curlfin sole										
Darkblotched rockfish	0.60									
Dover sole				4.00	4.40	9.40	0.60		3.00	5.50
English sole					1.80					
Eulachon	3.90	0.50		0.10			1.50			
Flathead sole	0.20			10.00	2.30	24.60	0.80		0.30	
Greenstriped rockfish		1.00	1.20				0.70	1.10	1.40	1.00
Kelp greenling										
Lingcod		11.50	5.50		3.40					
Longnose skate		22.70	15.90		5.20		2.00			24.60
Longspine thornyhead										
Pacific cod		10.50	58.50	8.80	14.90	6.20	2.20	16.50	14.60	3.30
Pacific hake	0.90	221.30	0.90	4.30		38.50	1.70	0.70	10.20	120.50
Pacific halibut										
Pacific ocean perch		3.70	0.20	0.40					2.00	57.80
Pacific sanddab										
Petrale sole	0.70				8.70				2.40	9.90
Quillback rockfish										
Redbanded rockfish		22.20		31.90	5.70		134.10	33.40	42.80	62.60
Redstripe rockfish			144.10	6.60			7.60		32.00	
Rex sole		1.30	1.00	24.70	11.40	21.90	0.60	10.30	9.10	12.00
Rosethorn rockfish										
Rougheye rockfish										
Sablefish					0.40	8.70	3.50	2.90	6.60	8.40
Sandpaper skate										
Sharpchin rockfish		3.00	5.80	0.50	0.50	0.20	2.00	12.60	3.20	
Shortraker rockfish										
Shortspine thornyhead										
Silvergray rockfish		6.00	6.70	32.70	1.80	0.20	55.80	16.10	2.00	3.70
Slender sole	0.20			1.70	0.30	1.00	0.10			0.20
Southern rock sole										
Spiny dogfish	2.50	9.70	9.00	5.00	5.40	3.10	6.50	6.20	29.40	31.90
Splitnose rockfish										
Spotted ratfish	5.80	0.20	0.80	1.10	5.40	2.10		1.60	3.60	
Threadfin sculpin					0.10					
Walleye pollock	0.10	14.40	0.90	0.10			0.70	6.00	2.40	2.10
Widow rockfish			0.80							
Wolf eel										
Yelloweye rockfish			14.10			5.10		2.50		
Yellowmouth rockfish			11.70							
Yellowtail rockfish						5.70	22.90			
Other	18.40	11.00	4.10	5.50	6.10	11.30	10.30	3.70	14.40	21.80
Total	93.90	372.30	414.30	214.90	492.90	196.30	311.60	138.00	357.80	481.50

Species	31	32	33	34	35	36	37	38	39	40
Alaska skate										
Aleutian skate										
Arrowtooth flounder	42.10	558.30	112.40	157.30	515.70		135.80	1.80	330.40	18.40
Big skate						181.50				
Bigmouth sculpin										
Black eelpout										
Blackbelly eelpout					1.00					
Bocaccio										
Canary rockfish	2.60		41.80	5.30						
Curlfin sole								1.20		2.90
Darkblotched rockfish										
Dover sole		0.90			7.70		3.60			
English sole				0.40	0.70		13.50		0.50	
Eulachon							1.10			
Flathead sole				0.20	12.20		7.00			
Greenstriped rockfish	7.50	1.60	2.40	3.30						
Kelp greenling										
Lingcod	3.50			3.90	5.10	66.60	5.90	6.50	5.90	2.70
Longnose skate		2.70			6.80		10.80	3.60		
Longspine thornyhead										
Pacific cod	59.30	774.00	2.80	3.40			17.60			
Pacific hake					31.00	0.90	123.10			
Pacific halibut	4.20		5.50			23.80		71.90	16.30	52.50
Pacific ocean perch	127.80	2.70		2.70	1.30					
Pacific sanddab							30.60	1.50	76.80	1.80
Petrale sole	1.30	3.90				5.60	1.50	7.70	2.90	
Quillback rockfish										
Redbanded rockfish	2.40			17.30	11.50					
Redstripe rockfish			1.10	7.10	0.10					
Rex sole	6.40	12.60	0.30	2.20	5.00		14.30	0.30		
Rosethorn rockfish			1.30							
Rougheye rockfish				0.20						
Sablefish	7.10									
Sandpaper skate										
Sharpchin rockfish	2.20		1.40	9.60	0.10					
Shortraker rockfish										
Shortspine thornyhead										
Silvergray rockfish	15.10	18.20	16.80	46.60	14.70		7.40			
Slender sole		0.10			0.30	0.40				
Southern rock sole						1.90		6.20	8.60	41.20
Spiny dogfish	20.80	24.90	9.00		4.80	56.60	9.50	8.90	9.10	16.70
Splitnose rockfish										
Spotted ratfish		5.20	3.20	2.80	6.50		2.00		0.10	0.30
Threadfin sculpin				0.20						
Walleye pollock	1.70				0.10		5.30			
Widow rockfish										
Wolf eel										
Yelloweye rockfish	1.80	5.60	12.20	12.00	3.60					
Yellowmouth rockfish	0.40		0.30							
Yellowtail rockfish				1.00	1.70		8.60			
Other	3.60	5.40	14.20	65.80	6.30	5.90	1.90	4.50	2.70	19.60
Total	309.80	1416.10	224.70	341.30	636.20	343.20	399.50	114.10	453.30	156.10

Species	41	42	43	44	45	46	47	48	49	50
Alaska skate			6.90	6.60		6.70				
Aleutian skate										
Arrowtooth flounder	471.00	48.50	128.80	129.50	105.60	91.20	59.90	46.70	99.30	
Big skate	3.00									
Bigmouth sculpin										
Black eelpout										
Blackbelly eelpout		2.40	6.20	6.50	0.50	1.70	0.90	0.30	0.90	
Bocaccio										
Canary rockfish							2.40			
Curlfin sole										
Darkblotched rockfish				0.30	0.30					
Dover sole	9.90	7.20	109.60	25.00	57.20	60.60	49.00	29.60	91.50	
English sole	7.00	27.40	0.40						0.70	
Eulachon										
Flathead sole	0.70	17.00	6.70	11.40	17.70	27.20	4.00	0.50	7.30	
Greenstriped rockfish		4.20	1.60							
Kelp greenling										
Lingcod	34.20	1.10	2.70							
Longnose skate	5.00	16.80	7.70	3.20	11.50		7.10	7.40	9.70	
Longspine thornyhead										
Pacific cod	3.50	2.70					1.70		6.70	
Pacific hake	6.60	80.40	15.30	16.70	20.40	12.40	28.60	13.90	3.00	
Pacific halibut	58.10	6.80	28.30			4.70				
Pacific ocean perch		301.80	197.60	54.20	73.20	57.10	141.00	242.00	276.30	
Pacific sanddab	11.20			2.00						
Petrale sole	98.20	1.50							0.50	
Quillback rockfish										
Redbanded rockfish		17.20	148.40	37.10	5.70	16.30	16.10	24.80	6.80	
Redstripe rockfish		10.70	0.30							
Rex sole	5.20	18.20	31.90	7.20	7.40	11.80	6.00	5.60	13.20	
Rosethorn rockfish			0.60							
Rougheye rockfish			0.40	3.30	11.10	4.10	19.60	49.60	23.60	
Sablefish			7.20	13.90	32.90	32.40	4.50	1.30	5.70	
Sandpaper skate								0.90	0.60	
Sharpchin rockfish		4.70	0.40							
Shortraker rockfish										
Shortspine thornyhead			3.80	22.40	21.40	22.90	20.70	12.10	11.60	
Silvergray rockfish	8.90	2.30		1.70					1.70	
Slender sole	0.20	1.40	1.30		0.90	1.40	0.50		0.60	
Southern rock sole										
Spiny dogfish	21.10	3.10	3.20	1.90		2.20	2.00	2.00	1.50	
Splitnose rockfish				0.30	1.60	0.40	0.50	0.20		
Spotted ratfish	28.70	4.50	2.10	3.30		0.70	3.90	1.60	5.10	
Threadfin sculpin										
Walleye pollock	0.20							1.30		
Widow rockfish										
Wolf eel										
Yelloweye rockfish		0.10								
Yellowmouth rockfish										
Yellowtail rockfish	3.20	47.00								
Other	5.20	3.20	11.40	28.30	4.50	9.40	3.80	6.20	20.80	
Total	781.10	630.20	722.80	374.80	371.90	363.20	372.20	446.00	587.10	

Species	51	52	53	54	55	56	57	58	59	60
Alaska skate										
Aleutian skate										
Arrowtooth flounder	40.40	53.20	120.50			107.40	47.00		74.50	48.30
Big skate										
Bigmouth sculpin										
Black eelpout										
Blackbelly eelpout			0.50			41.60	11.20		66.40	51.00
Bocaccio										158.70
Canary rockfish			1.80							1.10
Curlfin sole										
Darkblotched rockfish		0.40								
Dover sole	68.10	91.40	31.30			22.10	46.10		9.30	11.90
English sole	0.80					0.40	1.50		0.30	4.20
Eulachon			2.00			0.10	0.30		5.40	2.00
Flathead sole		68.50	1.90			170.10	49.40		58.50	106.80
Greenstriped rockfish							1.50			
Kelp greenling										
Lingcod	4.20									
Longnose skate	29.50	14.10				18.70	8.50			
Longspine thornyhead										
Pacific cod	1.60	1.10	1.80			6.20	32.90			11.40
Pacific hake	7.40	9.30	5.90			68.90	48.60		39.90	8.60
Pacific halibut	3.70	3.70				3.90			5.50	
Pacific ocean perch	82.60	426.20	30.10				0.90			
Pacific sanddab										
Petrable sole		0.80				0.80				
Quillback rockfish										
Redbanded rockfish	11.80	17.70	3.80							
Redstripe rockfish			93.60							5.00
Rex sole	18.00	15.30	20.40			2.10	15.50		5.40	8.80
Rosethorn rockfish										
Rougheye rockfish	6.80	5.40	2.60			3.40				
Sablefish	5.00	1.60					6.30		4.20	0.90
Sandpaper skate	1.20					0.60				
Sharpchin rockfish							0.20			0.20
Shortraker rockfish										
Shortspine thornyhead	19.20	3.80								
Silvergray rockfish										27.50
Slender sole	1.20	0.90	2.30			2.50	3.70		2.10	3.20
Southern rock sole										
Spiny dogfish	2.30					5.90	18.50		8.00	
Splitnose rockfish										
Spotted ratfish	2.20	3.70	3.70			55.50	9.00		2.00	1.60
Threadfin sculpin							0.70			
Walleye pollock	0.50		12.30			2.70	22.10		2.00	4.20
Widow rockfish										
Wolf eel										
Yelloweye rockfish										4.10
Yellowmouth rockfish		1.70								
Yellowtail rockfish			3.60						1.20	99.20
Other	11.30	6.00	10.50			13.00	14.30		11.00	3.80
Total	317.80	724.80	348.60			525.90	338.20		295.70	562.50

Species	61	62	63	64	65	66	67	68	69	70
Alaska skate										
Aleutian skate										
Arrowtooth flounder	20.40	49.10	86.10	111.10		0.50	55.60	126.70	67.70	14.90
Big skate						11.50				
Bigmouth sculpin										
Black eelpout										
Blackbelly eelpout				4.80						
Bocaccio	13.90			6.10						
Canary rockfish	2.30	32.00	5.30		19.70	5.80				
Curlfin sole					0.10	1.00				
Darkblotched rockfish										
Dover sole	9.50	0.90	31.40	78.70			0.30	3.70	21.50	4.10
English sole			0.20			0.30	54.10	27.40	1.60	1.00
Eulachon				0.10						
Flathead sole	13.60		21.60	50.90					3.00	
Greenstriped rockfish	0.60	1.40								11.60
Kelp greenling					1.20					
Lingcod		4.60			12.70	2.90	4.80	6.50		
Longnose skate				5.40			9.80	8.50		
Longspine thornyhead										
Pacific cod	1.90	19.30	4.00	0.20		0.20				5.80
Pacific hake	44.60	23.10	56.70	35.80					13.50	9.20
Pacific halibut			5.50				6.50		4.00	
Pacific ocean perch			291.70	101.30				6.10	31.80	690.10
Pacific sanddab						2.00	12.40			
Petrale sole	1.10							3.50	3.20	1.10
Quillback rockfish					18.10	24.30				
Redbanded rockfish			0.60	29.70	1.70				17.50	22.00
Redstripe rockfish	136.40	54.60	17.60		11.90	3.70				166.70
Rex sole	11.90	1.40	14.60	9.50			3.80	9.50	8.90	5.70
Rosethorn rockfish						1.10				3.90
Rougheye rockfish				2.70					2.80	
Sablefish			1.90	2.20						4.90
Sandpaper skate				1.80						
Sharpchin rockfish	0.20	0.50								13.70
Shortraker rockfish										
Shortspine thornyhead				0.90						0.60
Silvergray rockfish	20.10	12.40	10.10		0.10	0.70		4.30	3.00	2.60
Slender sole	1.30		0.30	0.70	0.20			0.30	0.10	0.10
Southern rock sole					2.10	61.10	2.20			
Spiny dogfish	1.60	1.70			66.80	28.90	51.50	12.90	7.80	5.10
Splitnose rockfish										
Spotted ratfish	1.20	1.80	0.20	3.70	870.10	13.90	14.20	4.50	7.10	0.20
Threadfin sculpin										
Walleye pollock	2.20	0.20		0.80			1.70			3.40
Widow rockfish	1.40		3.00		0.30					
Wolf eel										
Yelloweye rockfish	6.10	7.80			9.30	49.10		3.50		3.10
Yellowmouth rockfish										16.70
Yellowtail rockfish	50.50	43.90	22.50	1.30						4.10
Other	2.60	3.20	2.80	8.80	2.40	1.90	3.30	8.90	7.00	76.10
Total	343.40	257.90	576.10	456.50	1016.70	208.90	220.20	226.30	200.50	1066.70

Species	71	72	73	74	75	76	77	78	79	80
Alaska skate										
Aleutian skate										
Arrowtooth flounder		38.30	132.50	19.70	233.00	25.10	54.60	65.80	175.20	112.40
Big skate										
Bigmouth sculpin						4.70				
Black eelpout										
Blackbelly eelpout		0.04								
Bocaccio										
Canary rockfish		2.90	2.10				1105.70	1.80	22.30	
Curlfin sole										
Darkblotched rockfish										
Dover sole					0.40	14.90		0.60		2.40
English sole		1.60								
Eulachon		0.10				0.10			0.10	
Flathead sole						1.20				
Greenstriped rockfish		0.30		3.50			2.00			
Kelp greenling										
Lingcod					11.00					3.60
Longnose skate				7.70			1.20	2.30		9.40
Longspine thornyhead										
Pacific cod			24.90	16.30	19.90		26.30	8.80	28.30	43.80
Pacific hake		47.40	132.30	28.80	186.50	45.10		4.90	1.40	262.40
Pacific halibut			3.70	5.70	16.00					
Pacific ocean perch		6.10	1.30	230.30	10.90		1.50	9.10	19.40	2.30
Pacific sanddab										
Petrale sole		1.20					1.10	0.90		0.60
Quillback rockfish					3.90					
Redbanded rockfish		180.60	28.90	87.60	5.50			0.10		
Redstripe rockfish			33.50	2.00	5.80	0.50	174.30	0.80	12.40	
Rex sole		1.60	0.70	7.50	0.60	1.40	3.90	5.80	8.70	6.90
Rosethorn rockfish										
Rougheye rockfish						0.70				
Sablefish		8.90	4.60	1.00	0.80	1.60		5.60	13.00	1.90
Sandpaper skate						1.20				
Sharpchin rockfish		0.40	1.20	0.90			26.20	0.70		0.60
Shortraker rockfish										
Shortspine thornyhead							0.60			
Silvergray rockfish		1.80	155.40	51.60	2.90	0.80	235.90	73.90	74.60	107.30
Slender sole						0.20				
Southern rock sole					1.10					
Spiny dogfish		1.70		2.80	8.10	4.50	12.20	3.00		
Splitnose rockfish										
Spotted ratfish		1.10		0.10	1.60		0.30	0.40	0.70	3.00
Threadfin sculpin										
Walleye pollock		2.00	2.80	10.40			11.50	68.10	24.50	27.90
Widow rockfish		0.10								
Wolf eel										
Yelloweye rockfish			5.30	2.70	2.00		30.80			
Yellowmouth rockfish				0.20				0.60	0.60	
Yellowtail rockfish		4.20	10.00	3.30	15.50	0.60	184.60	8.50	9.90	
Other		6.00	3.20	10.60	0.80	14.40	4.50	10.50	7.60	24.10
Total		306.34	542.40	492.70	526.30	117.00	1877.20	272.20	398.70	608.60

Species	81	82	83	84	85	86	87	88	89	90
Alaska skate										
Aleutian skate								7.10		
Arrowtooth flounder	47.20	174.20	38.00	10.80	15.40	14.00	43.50	14.90	123.40	79.80
Big skate										
Bigmouth sculpin										
Black eelpout										
Blackbelly eelpout									0.10	0.20
Bocaccio										
Canary rockfish				22.20	2.30					
Curlfin sole										
Darkblotched rockfish										
Dover sole	1.10	0.70			1.30	0.50	9.20	0.50		0.50
English sole					0.40				0.10	
Eulachon						0.10	0.10		2.00	5.40
Flathead sole										
Greenstriped rockfish			7.30	6.80			0.70			
Kelp greenling										
Lingcod	4.00	2.50								
Longnose skate		8.10	8.40	12.50	5.00	3.10			11.10	9.30
Longspine thornyhead										
Pacific cod	7.30	1.30	20.50	53.20	4.50		12.60			
Pacific hake	564.10		0.80	18.90	138.00	40.80	16.30	23.30	19.30	31.40
Pacific halibut				7.00						
Pacific ocean perch	0.20		242.70	83.40	1187.60	177.80	96.00	263.70	19.50	24.60
Pacific sanddab										
Petrale sole	0.70									
Quillback rockfish										
Redbanded rockfish	6.00		1.20	3.70	49.80	5.00		23.80	22.90	7.90
Redstripe rockfish			228.50	494.70	6.30		0.70			
Rex sole	10.60	1.60	7.40	5.40	3.90	8.70	14.80	0.60		
Rosethorn rockfish								0.40		
Rougheye rockfish					0.20			2.70		0.90
Sablefish				2.90	5.80	2.00	3.70	3.70		
Sandpaper skate										
Sharpchin rockfish	1.00		1.40	5.50	50.80	3.80	0.70	59.10		0.10
Shortraker rockfish										
Shortspine thornyhead					24.70	0.30		0.70		0.70
Silvergray rockfish	56.70	30.90	42.40	77.40	48.30	12.30	18.40	20.70		
Slender sole	0.40						0.40			
Southern rock sole									0.40	
Spiny dogfish	4.00	30.10	4.40	4.80	1.30	3.70	1.50	4.20	5.80	3.60
Splitnose rockfish										
Spotted ratfish	0.80	20.00	1.70	1.20		1.20	0.10	1.40	0.90	1.10
Threadfin sculpin										
Walleye pollock	2.40		9.50	1.60	38.50	28.50	26.10	0.60		
Widow rockfish				5.40						
Wolf eel		4.10								
Yelloweye rockfish			8.10	22.40	0.10			11.70		
Yellowmouth rockfish					138.30		0.30		0.10	
Yellowtail rockfish	1.10		2.00	16.70	2.20				2.00	
Other	28.20	13.80	5.80	29.90	30.10	8.40	20.30	681.50	13.20	22.30
Total	735.80	287.30	630.10	886.40	1754.80	310.20	265.40	1120.60	220.80	187.80

Species	91	92	93	94	95	96	97	98	99	100
Alaska skate										
Aleutian skate										
Arrowtooth flounder	91.40	0.30	135.40		6.40	121.80	30.20	4.00		
Big skate					2.90					158.00
Bigmouth sculpin										
Black eelpout										
Blackbelly eelpout	0.30									
Bocaccio										
Canary rockfish		41.40	3.20	2.30				2.40		
Curlfin sole					2.40					0.70
Darkblotched rockfish										
Dover sole			1.20			1.10	14.40	0.30		
English sole					0.50	11.60	0.20	0.90		
Eulachon	1.20									
Flathead sole										
Greenstriped rockfish				0.60						
Kelp greenling										
Lingcod		6.30		23.00		11.00				
Longnose skate	4.00					5.00		4.10	12.70	
Longspine thornyhead										
Pacific cod			6.60							
Pacific hake	21.30						3.00	20.10		
Pacific halibut		2.60			10.40	16.00	6.60		44.50	6.40
Pacific ocean perch	4.30						84.10	39.80	1.40	
Pacific sanddab		0.60			7.90	0.50				2.10
Petrable sole		0.80	14.00		0.60	17.10			1.30	
Quillback rockfish										
Redbanded rockfish	1.80						7.20			
Redstripe rockfish				8.70				0.60	0.20	
Rex sole		0.40	9.10		0.10	1.10	2.00	2.10	0.60	
Rosethorn rockfish										
Rougheye rockfish							3.00	1.90		
Sablefish							1.50	2.40		
Sandpaper skate										
Sharpchin rockfish	0.20			0.20				0.10		
Shortraker rockfish										
Shortspine thornyhead							2.40	0.70		
Silvergray rockfish		70.20	87.80	16.10						
Slender sole			0.20							
Southern rock sole		2.80			12.40	2.30	1.50		85.80	37.80
Spiny dogfish	1.90				7.40	1.10	3.20		4.70	271.70
Splitnose rockfish	0.20									
Spotted ratfish	0.50	0.50	2.20	2110.70		0.90	0.20	0.20	1.40	
Threadfin sculpin										
Walleye pollock							0.70	6.40		
Widow rockfish										
Wolf eel										
Yelloweye rockfish				7.80					3.90	
Yellowmouth rockfish				1.80				12.20	0.10	
Yellowtail rockfish			248.90							
Other	12.40	0.70	9.90	2.70	7.80	11.20	15.00	5.80	8.90	9.40
Total	139.50	126.60	518.50	2173.90	58.80	200.70	175.20	104.00	165.50	486.10

Species	101	102	103	104	105	106	107	108	109	110
Alaska skate										
Aleutian skate										
Arrowtooth flounder			26.00	59.50	76.10	133.80	59.80	139.10	109.50	109.80
Big skate	28.50									
Bigmouth sculpin										
Black eelpout										
Blackbelly eelpout								2.60	3.30	0.60
Bocaccio				2.00						
Canary rockfish						3.00				1.30
Curlfin sole										
Darkblotched rockfish										
Dover sole			3.50	9.20	34.50	4.30	4.10	6.80	10.20	26.30
English sole			1.50	3.40		13.60	18.40			
Eulachon										
Flathead sole			0.50	0.80	13.40	0.40	0.10	4.70	2.40	1.60
Greenstriped rockfish			0.50	0.30	0.40					
Kelp greenling	1.50									
Lingcod					2.60		5.40			
Longnose skate										
Longspine thornyhead										
Pacific cod			12.70	6.40	9.70	1.10		15.00	2.80	0.20
Pacific hake			3.50	1.30	21.60	3.50		3.40	11.80	5.20
Pacific halibut	6.80					2.10				
Pacific ocean perch			40.60	1.60	404.30	6.00		208.70	486.80	1036.10
Pacific sanddab										
Petrable sole			9.60	10.00	5.50					
Quillback rockfish	48.40									
Redbanded rockfish					11.10					3.60
Redstripe rockfish			1.00		0.60			11.20	0.40	0.80
Rex sole			4.10	22.80	61.00	20.40	20.60	74.20	32.30	29.50
Rosethorn rockfish										
Rougheye rockfish										
Sablefish			1.60		4.80			2.20		0.90
Sandpaper skate										
Sharpchin rockfish										0.60
Shortraker rockfish										
Shortspine thornyhead					0.40					
Silvergray rockfish			28.20	8.60	13.30	2.30		3.20	2.30	2.40
Slender sole			0.30	0.20	1.20	0.80		0.10	1.80	0.80
Southern rock sole										
Spiny dogfish	422.50			6.40	2.00			1.70		
Splitnose rockfish										
Spotted ratfish	747.30		3.00	3.10	4.70	3.00	6.20	1.70	2.50	0.60
Threadfin sculpin				0.30						
Walleye pollock			2.90	2.60	4.00				5.30	0.90
Widow rockfish	0.30		119.70	4.40	6.30					
Wolf eel	4.90									
Yelloweye rockfish	33.90									
Yellowmouth rockfish			94.70		1.70			30.20	3.30	5.50
Yellowtail rockfish			791.30	214.50	5.50			17.20		1.50
Other	2.90		1.60	3.20	7.00	5.20	9.80	6.50	14.10	1.70
Total	1297.00		1146.80	360.60	691.70	199.50	124.40	528.50	688.80	1229.90

Species	111	112	113	114	115	116	117	118	119	120
Alaska skate										
Aleutian skate										
Arrowtooth flounder	76.70	142.30	1112.70	736.90		17.30				13.80
Big skate								0.60		
Bigmouth sculpin										
Black eelpout										
Blackbelly eelpout	0.10	7.60		2.80						
Bocaccio				3.80						
Canary rockfish			3.60	2.30		0.70		0.60		
Curlfin sole					0.60		0.30			
Darkblotched rockfish	0.60									
Dover sole	28.10	70.90	7.40	49.90	0.10					0.90
English sole		0.30	35.30	24.80	21.00	2.70				22.30
Eulachon	0.20	0.10								
Flathead sole	1.50	10.70	8.30	38.30						
Greenstriped rockfish		1.90	1.50							0.50
Kelp greenling								1.10		
Lingcod						6.70	3.60	2.90		
Longnose skate	8.90	7.60								
Longspine thornyhead										
Pacific cod	4.60	8.60	6.90	9.40	2.20					0.40
Pacific hake	3.30	10.20	15.50	10.80						
Pacific halibut			22.60	6.10	5.80			5.20		
Pacific ocean perch	220.80	95.50								
Pacific sanddab					75.30	1.10	0.80	0.60	0.30	2.90
Petrale sole			2.90			0.10				2.80
Quillback rockfish						14.80		0.50		
Redbanded rockfish	25.80									
Redstripe rockfish	6.20	44.20	5.80	2.20		2.70		24.50		
Rex sole	9.70	146.10	112.40	76.20	0.70	0.60				8.80
Rosethorn rockfish										
Rougheye rockfish										
Sablefish	4.40	14.50	3.80	28.30						
Sandpaper skate										
Sharpchin rockfish										
Shortraker rockfish										
Shortspine thornyhead	0.80									
Silvergray rockfish	4.80	4.10	3.70							
Slender sole	0.80	1.60	2.40	2.10						
Southern rock sole					6.70	1.60	65.70	3.60	2.20	1.00
Spiny dogfish	3.00	1.40	2.10	5.10						
Splitnose rockfish										
Spotted ratfish	2.00	0.40	18.90		6.60	2.70	90.20	104.60	10.70	3.20
Threadfin sculpin			0.40							
Walleye pollock		184.90	8.40	69.70	0.90					1.00
Widow rockfish								4.30		
Wolf eel										4.40
Yelloweye rockfish								1.40		
Yellowmouth rockfish										
Yellowtail rockfish	9.50	2.80	89.90	2.20						
Other	12.40	5.80	2.70	1.50	2.70	13.60	3.20	3.50	0.50	0.20
Total	424.20	761.50	1467.20	1072.40	122.60	64.60	163.80	153.40	13.70	62.20

Species	121	122	123	124	125	126	127	128	129	130
Alaska skate										
Aleutian skate					8.00					
Arrowtooth flounder	14.00	8.40	105.90	5.10	4.40		0.60	9.00	8.80	3.70
Big skate										
Bigmouth sculpin							11.20			
Black eelpout										
Blackbelly eelpout										
Bocaccio										
Canary rockfish										
Curlfin sole		0.40								
Darkblotched rockfish										
Dover sole				0.60	6.00		4.00	1.40	13.10	45.60
English sole	1.00	8.90		0.30						
Eulachon										
Flathead sole										
Greenstriped rockfish	1.70	1.00	38.70				0.20			
Kelp greenling										
Lingcod	1.10		67.20						4.60	
Longnose skate									0.80	7.40
Longspine thornyhead										
Pacific cod	2.40	0.30	18.70	15.30	0.60		0.70		1.60	4.40
Pacific hake			8.60	28.60	12.90		63.50	24.20	185.14	88.80
Pacific halibut			5.50							3.20
Pacific ocean perch				309.90	13.00		1.90	125.20	227.10	230.20
Pacific sanddab		18.80	0.70							
Petrale sole			7.10							
Quillback rockfish	1.20									
Redbanded rockfish				2.90	3.70		3.30	3.30	4.10	0.40
Redstripe rockfish	0.70				0.60		0.10			
Rex sole	0.90	0.20	1.60	9.30	4.80		5.70	4.80	8.40	10.50
Rosethorn rockfish	1.20									
Rougheye rockfish										
Sablefish			7.40		3.00			8.40	3.40	3.30
Sandpaper skate										
Sharpchin rockfish				0.30			3.90			
Shortraker rockfish										
Shortspine thornyhead				0.30	4.50		3.50			1.80
Silvergray rockfish				52.00	29.90		60.50	40.70	95.50	48.10
Slender sole										
Southern rock sole	1.30	2.80								
Spiny dogfish					3.90		0.90			
Splitnose rockfish					0.30					
Spotted ratfish	4.30	1.30	1.90	0.20				0.60		
Threadfin sculpin		0.50	17.30							
Walleye pollock		0.30		4.30	12.10		1.40	9.00	11.20	0.60
Widow rockfish		0.10	1.30							
Wolf eel										
Yelloweye rockfish										
Yellowmouth rockfish										
Yellowtail rockfish			1.80							
Other		5.60	15.80	0.90	6.40		17.00	9.80	13.20	22.80
Total	29.80	48.60	299.50	430.00	114.10		178.40	236.40	576.94	470.80

Species	131	132	133	134	135	136	137	138	139	140
Alaska skate										
Aleutian skate										
Arrowtooth flounder	6.30	17.00		24.90	32.00	36.90	39.90	309.00	227.00	2.70
Big skate										2.20
Bigmouth sculpin				4.60						
Black eelpout										
Blackbelly eelpout						0.10	1.80			
Bocaccio					8.50		4.50	8.60		
Canary rockfish	2.80	3.60			4.50	1.40				
Curlfin sole										1.00
Darkblotched rockfish										
Dover sole	0.80	0.40		70.90	9.60	7.50	10.30	24.20	4.20	
English sole	4.10			0.50	36.60	34.00	12.30	15.70	31.00	29.20
Eulachon										
Flathead sole						0.10	6.80	1.10		
Greenstriped rockfish		1.00								
Kelp greenling										
Lingcod								12.70	3.40	1.30
Longnose skate				4.00						
Longspine thornyhead										
Pacific cod		4.40		0.50	0.10	2.90	4.40	5.50	127.70	6.10
Pacific hake	25.70	1.50		20.00	9.10	36.80	2.22	8.90	2.20	
Pacific halibut	14.10	17.10		28.10	14.30			44.10	2.40	6.50
Pacific ocean perch	105.20	43.80		11.70			0.60			
Pacific sanddab										7.40
Petrale sole	2.20	1.30			8.30	16.20			99.20	3.20
Quillback rockfish										
Redbanded rockfish		3.10								
Redstripe rockfish		17.90								
Rex sole	1.90	6.00		56.30	46.80	20.40	9.90	32.10	19.70	9.70
Rosethorn rockfish										
Rougheye rockfish								1.20		
Sablefish							0.60		1.20	
Sandpaper skate				1.40						
Sharpchin rockfish		0.60								
Shortraker rockfish										
Shortspine thornyhead										
Silvergray rockfish	48.70	35.40		13.00	17.90	55.90	6.70	8.40	48.60	19.90
Slender sole		0.10			0.30	0.20	0.70		0.20	
Southern rock sole						4.20				3.70
Spiny dogfish	2.90			3.90	1.20			5.00	12.40	7.60
Splitnose rockfish										
Spotted ratfish		0.60		2.10	1.80	0.10	1.60	0.50	2.20	1.90
Threadfin sculpin								0.30		
Walleye pollock	4.10	2.50		2.60			4.30	1.70	1.40	0.30
Widow rockfish		1.80			0.80			0.60		
Wolf eel										
Yelloweye rockfish		3.90								
Yellowmouth rockfish										
Yellowtail rockfish	2.50	5.60			20.00		1.00			
Other	25.00	37.70		23.00	30.20	18.00	30.50	36.03	28.80	14.40
Total	246.30	205.30		267.50	242.00	234.70	138.12	515.63	611.60	117.10

Species	141	142	143	144	145	146	147	148	149	150
Alaska skate										
Aleutian skate										
Arrowtooth flounder	7.40	0.60	48.90	9.10	4.72	18.70	33.90	9.00	2.60	5.10
Big skate										
Bigmouth sculpin										
Black eelpout										
Blackbelly eelpout	0.04		0.90	0.10		0.30		0.20		
Bocaccio	3.70		8.90							
Canary rockfish		1.30	1.60						4.30	
Curlfin sole	0.30	7.10								
Darkblotched rockfish										
Dover sole			12.40	1.30		2.10	3.20	14.00	6.20	4.50
English sole	21.30	2.00	107.40	52.20	10.30	32.90				
Eulachon			0.20	0.10	0.04	6.10	0.10	0.60	0.30	
Flathead sole				1.60		10.40	3.90	40.30	3.70	1.20
Greenstriped rockfish							1.60		1.20	
Kelp greenling										
Lingcod			0.50		2.50					
Longnose skate						14.30	14.80			
Longspine thornyhead										
Pacific cod	49.30	7.90	11.50	3.40	0.70	0.90			6.20	0.10
Pacific hake			0.90	27.70		2.10	146.80	38.20	119.50	4.30
Pacific halibut	4.20	6.30	14.00		5.50			6.10	13.10	
Pacific ocean perch							11.70	5.00	35.80	17.00
Pacific sanddab	0.50	12.90		2.30						
Petrale sole	0.60		7.60		0.20	0.80	0.70	0.60		
Quillback rockfish	0.20	1.40			0.20					
Redbanded rockfish								5.20		10.50
Redstripe rockfish		0.40								
Rex sole	11.30		24.30	40.60	27.80	41.30	48.40	49.50	44.00	4.90
Rosethorn rockfish										
Rougheye rockfish										0.30
Sablefish										1.40
Sandpaper skate										
Sharpchin rockfish		0.10	0.10		0.10	1.30				
Shortraker rockfish										
Shortspine thornyhead										1.60
Silvergray rockfish	7.20		59.90	6.40	21.60	92.50	24.40	22.70	31.40	11.30
Slender sole				0.60	0.04	0.70		1.50	0.40	0.10
Southern rock sole	10.70	20.60	0.70							
Spiny dogfish	4.80	14.40	4.80		2.00	4.10	3.90		5.40	
Splitnose rockfish										5.00
Spotted ratfish	1.30	26.90	1.80	0.10	3.80	2.90		0.20	0.40	0.90
Threadfin sculpin										
Walleye pollock			1.30	8.00	1.10	0.10	4.80	1.30	13.80	
Widow rockfish		0.50								
Wolf eel										
Yelloweye rockfish									4.70	
Yellowmouth rockfish	0.40		0.04							
Yellowtail rockfish		0.80	0.90				4.00	6.40	2.70	
Other	39.46	13.70	36.50	5.80	7.88	19.60	32.00	29.70	9.50	10.30
Total	162.70	116.90	345.14	159.30	88.48	251.10	334.20	230.50	305.20	78.50

Species	151	152	153	154	155	156	157	158	159	160
Alaska skate										
Aleutian skate										
Arrowtooth flounder	59.40	8.70	6.10	10.70	29.70	24.80	7.70	2.70	12.30	2128.40
Big skate										
Bigmouth sculpin									2.10	
Black eelpout					0.10				0.10	
Blackbelly eelpout										
Bocaccio										
Canary rockfish										
Curlfin sole										
Darkblotched rockfish										
Dover sole	41.90	21.30		15.00	33.50	16.90	3.20	1.50	23.30	0.50
English sole										
Eulachon										
Flathead sole	5.50	0.30			2.30	0.40				
Greenstriped rockfish										
Kelp greenling										
Lingcod										10.70
Longnose skate		8.70			27.10	1.30		3.20		
Longspine thornyhead										
Pacific cod		11.70	6.70				7.30			
Pacific hake	7.70	48.90	10.90	55.70	25.50	3.30	5.90	6.10	5.40	0.50
Pacific halibut									3.40	254.30
Pacific ocean perch	29.90	185.70	95.40	51.90	5.00	4.30	32.00	40.30	23.60	39.10
Pacific sanddab										
Petrale sole										
Quillback rockfish										
Redbanded rockfish	9.40	10.90	4.30	12.00	2.70	4.10	6.00	7.80	4.40	39.60
Redstripe rockfish										
Rex sole	13.50	5.00	5.40	11.10	18.50	8.70	9.20	12.40	8.80	5.10
Rosethorn rockfish										
Rougheye rockfish	1.70	3.70	6.40	7.60		1.10	16.80	4.80	15.90	6.90
Sablefish	2.90		5.50	15.30	1.40	7.60	2.20		4.80	13.30
Sandpaper skate			1.30							
Sharpchin rockfish		17.40								
Shortraker rockfish										
Shortspine thornyhead	7.30	5.00	28.80	16.00	7.00	2.30	23.40	24.10	16.60	11.10
Silvergray rockfish	15.80	56.70	47.90	7.40						2.00
Slender sole	2.30	0.90	0.20	0.20	0.50				0.20	
Southern rock sole										
Spiny dogfish										
Splitnose rockfish	0.10							0.40		
Spotted ratfish			1.30	1.20			2.00			
Threadfin sculpin										
Walleye pollock		7.20	3.90	4.30	0.40		3.10		0.60	
Widow rockfish										
Wolf eel										
Yelloweye rockfish										
Yellowmouth rockfish										
Yellowtail rockfish										
Other	56.50	23.40	28.10	15.10	4.40	11.40	102.60	29.00	36.60	8.00
Total	253.90	415.50	252.20	223.50	158.10	86.20	221.40	132.30	158.10	2519.50

Species	161	162	163	164	165	166	167	168	169	170
Alaska skate										
Aleutian skate										
Arrowtooth flounder	4.30	0.50	5.00	7.10	22.50	14.10	12.00	31.20	7.60	7.20
Big skate										
Bigmouth sculpin										
Black eelpout			0.10							0.10
Blackbelly eelpout										
Bocaccio						3.90				
Canary rockfish						11.30	2.40	37.20		
Curlfin sole						0.20				
Darkblotched rockfish										
Dover sole	1.00	5.80	13.70	0.90		3.00	0.20	5.70		1.10
English sole							10.30			
Eulachon										
Flathead sole						0.30	0.20			
Greenstriped rockfish	0.50					0.50				
Kelp greenling										
Lingcod										
Longnose skate			3.70		10.70	15.10				
Longspine thornyhead										
Pacific cod	1.20				55.20	6.10	16.20	4.30	2.10	0.80
Pacific hake	69.30	35.80	79.90	4.20				69.90	49.40	55.60
Pacific halibut					4.10	5.40				
Pacific ocean perch	62.30	4.20	57.50	6.40				7.60	275.20	92.40
Pacific sanddab										
Petrale sole					2.00	15.60	1.20	0.60		
Quillback rockfish										
Redbanded rockfish	8.00	7.00	6.80	3.60					22.60	8.70
Redstripe rockfish										
Rex sole	6.70	6.70	3.90	5.50		37.90	5.00	11.30	3.10	5.40
Rosethorn rockfish	1.00	1.70							0.70	6.60
Rougheye rockfish		6.20	11.90							0.50
Sablefish	2.30	9.40	11.00	5.90				7.90		2.10
Sandpaper skate										
Sharpchin rockfish	3.70				0.20				30.60	18.20
Shortraker rockfish										
Shortspine thornyhead	0.30	34.80	28.80	11.70					21.50	38.70
Silvergray rockfish	22.20				34.40	107.70	97.60	415.50	82.00	10.60
Slender sole	0.10					0.10				
Southern rock sole							0.30			
Spiny dogfish							2.90			
Splitnose rockfish									0.20	2.30
Spotted ratfish		0.80	0.80		10.00	2.00	1.70	0.70		
Threadfin sculpin										
Walleye pollock	0.50			0.80	0.70	1.30	0.90	23.70		1.40
Widow rockfish								16.20	2.20	
Wolf eel										
Yelloweye rockfish										
Yellowmouth rockfish					1.20					
Yellowtail rockfish	0.50				95.00			421.60		
Other	5.00	16.00	4.30	17.80	8.30	3.67	1.30	2.50	6.50	8.70
Total	188.90	128.90	227.40	63.90	244.30	228.17	152.20	1055.90	503.70	260.40

Species	171	172	173	174	175	176	177	178	179	180
Alaska skate										
Aleutian skate										
Arrowtooth flounder	34.20	19.00	2.50		6.70		119.30	1.50	19.60	309.50
Big skate								3.40		
Bigmouth sculpin										
Black eelpout			0.20	1.20	0.40	0.40				
Blackbelly eelpout										
Bocaccio										
Canary rockfish	9.50						702.10		6.80	37.20
Curlfin sole								0.40		
Darkblotched rockfish										
Dover sole	14.00	0.20	2.00	9.20	13.00	6.60	1.70		3.00	6.00
English sole	0.70							30.50	23.30	26.70
Eulachon						0.10				
Flathead sole	1.10									
Greenstriped rockfish		3.50					12.20		13.60	0.70
Kelp greenling										
Lingcod							3.40	3.00	59.80	2.70
Longnose skate				13.70	2.50	21.60	1.70			7.20
Longspine thornyhead										
Pacific cod		6.20					6.70			17.30
Pacific hake	440.10	438.80	64.00	52.70	15.90	25.60	0.60			
Pacific halibut						18.70	5.90	5.50	22.30	13.90
Pacific ocean perch	172.60	76.40	71.60	21.50	4.70		7.20			
Pacific sanddab								0.30	0.10	
Petrale sole							1.60	0.10	4.90	8.70
Quillback rockfish										
Redbanded rockfish	0.20		3.10	1.00	1.30					
Redstripe rockfish	11.10	5.50							0.40	5.30
Rex sole	11.80	0.70	0.90	0.40	0.30	0.30	26.20	10.50	12.10	2.10
Rosethorn rockfish	0.50									
Rougheye rockfish				5.00	1.80	8.30				
Sablefish	6.00	1.90	4.00	107.40	28.50	129.60	1.40			1.50
Sandpaper skate					1.30	3.20				
Sharpchin rockfish		0.30	0.70	0.10			1.10			
Shortraker rockfish										
Shortspine thornyhead			10.10	14.30	10.50	27.50				
Silvergray rockfish	203.70	71.20	9.70				52.00		4.30	25.20
Slender sole							1.00			
Southern rock sole								12.70	10.00	61.50
Spiny dogfish								36.20	7.50	12.10
Splitnose rockfish			3.20							
Spotted ratfish		0.60		0.60		2.00	1.30		0.40	1.40
Threadfin sculpin										
Walleye pollock	36.60	0.30	3.20				0.20		5.30	
Widow rockfish			0.70				37.90			
Wolf eel										
Yelloweye rockfish							4.80			
Yellowmouth rockfish	6.40									
Yellowtail rockfish							125.90			210.80
Other	6.70	6.00	18.00	24.90	7.30	10.60	1.80	16.80	10.60	0.90
Total	955.20	630.60	193.90	252.00	94.20	254.50	1116.00	120.90	204.00	750.70

Species	181	182	183	184	185	186	187	188	189	190
Alaska skate										
Aleutian skate										
Arrowtooth flounder	61.00	23.30	16.60	22.50	1.50	28.90	12.40	91.40	34.10	35.90
Big skate										
Bigmouth sculpin										
Black eelpout										
Blackbelly eelpout										
Bocaccio								8.80		
Canary rockfish										
Curlfin sole										
Darkblotched rockfish						1.80	1.40			
Dover sole	9.00	28.40	33.70	24.00	6.00	22.00	18.80	14.00	15.60	10.30
English sole	5.40							0.70		
Eulachon										
Flathead sole	0.70							4.50	11.60	11.80
Greenstriped rockfish	3.50									
Kelp greenling										
Lingcod										
Longnose skate		20.10	10.90				7.60	5.10	1.50	
Longspine thornyhead										
Pacific cod	0.70					0.80		4.20	7.80	4.10
Pacific hake		12.60	57.60	138.80	9.30	18.20	10.60	22.50	37.40	21.60
Pacific halibut		11.00		7.40				8.70		5.10
Pacific ocean perch	7.10	339.10	402.40	164.10	51.80	123.20	835.50	629.70	376.50	143.80
Pacific sanddab										
Petrale sole										
Quillback rockfish										
Redbanded rockfish		14.80	7.90	5.80	1.70	2.70	22.60	6.90	4.80	16.30
Redstripe rockfish	5.40									
Rex sole	22.40	19.00	9.20	12.53		5.40	56.30	77.50	34.70	79.50
Rosethorn rockfish						0.90				
Rougheye rockfish		7.10	0.80	4.60	0.20	0.30	2.30	15.30	3.20	17.10
Sablefish	1.80	8.20	64.80	26.20		13.90	26.10	3.10	3.10	1.50
Sandpaper skate		1.10		1.00						
Sharpchin rockfish						0.30				
Shortraker rockfish										
Shortspine thornyhead		19.10	31.20	22.30	7.10	33.20	23.60	20.00	16.60	9.50
Silvergray rockfish	4.50									
Slender sole	0.90			0.20			0.10	1.80	1.00	3.00
Southern rock sole										
Spiny dogfish		2.50					1.10			
Splitnose rockfish							0.90			0.10
Spotted ratfish	0.30	0.10			1.60	0.70	4.10	1.00		
Threadfin sculpin										
Walleye pollock	6.20						2.30	4.10	1.20	2.60
Widow rockfish										
Wolf eel										
Yelloweye rockfish										
Yellowmouth rockfish			1.60			4.10		1.60		
Yellowtail rockfish										
Other	9.40	2.90	4.20	8.70	1.50	10.60	2.40	1.00	2.40	3.40
Total	138.30	509.30	640.90	438.13	80.70	267.00	1028.10	921.90	551.50	365.60

Species	191	192	193	194	195	196	197	198	199	200
Alaska skate										
Aleutian skate										
Arrowtooth flounder	9.90	16.90								
Big skate			59.00							11.50
Bigmouth sculpin										
Black eelpout										
Blackbelly eelpout	0.60	1.30								
Bocaccio	4.80									
Canary rockfish					1.90					3.20
Curlfin sole						0.80		0.90		
Darkblotched rockfish	0.50	2.50								
Dover sole	13.40	56.00								
English sole		3.30								
Eulachon										
Flathead sole	5.70	39.00								
Greenstriped rockfish	0.90	0.20								
Kelp greenling					2.10			2.00	3.00	0.60
Lingcod		1.00	3.00					3.00		
Longnose skate	1.20	1.20								
Longspine thornyhead										
Pacific cod	11.80	12.20								
Pacific hake	43.80	40.50								
Pacific halibut		2.50	47.10					21.30		3.40
Pacific ocean perch	81.40	87.10								
Pacific sanddab			2.00		0.10					4.40
Petrale sole		0.80								
Quillback rockfish					14.90	1.30		11.90	31.50	0.50
Redbanded rockfish	46.60	3.30								
Redstripe rockfish										
Rex sole	28.00	37.90								
Rosethorn rockfish										
Rougheye rockfish										
Sablefish		10.80								
Sandpaper skate		0.30								
Sharpchin rockfish		0.10								
Shortraker rockfish										
Shortspine thornyhead	9.00	11.40								
Silvergray rockfish		3.80								
Slender sole	4.00	4.20								
Southern rock sole			61.30		1.00	19.20		5.30	1.90	159.90
Spiny dogfish	0.80				227.80	4020.40	31.90	3602.10	381.00	846.80
Splitnose rockfish										
Spotted ratfish		1.20		0.80	5.30			189.30	146.00	39.00
Threadfin sculpin										
Walleye pollock	1.70	0.60								
Widow rockfish									1.70	
Wolf eel			3.70		3.90					
Yelloweye rockfish					3.40				5.30	
Yellowmouth rockfish		3.20								
Yellowtail rockfish										
Other	11.20	4.80		0.30	10.70	1.00		12.00	22.30	1.60
Total	275.30	346.10	176.10	1.10	271.10	4042.70	31.90	3847.80	592.70	1070.90

Species	201	202	203	204	205	206	207	208	209	210
Alaska skate										
Aleutian skate									7.50	
Arrowtooth flounder		13.30	1.70	7.10			0.70	6.00	1.20	7.50
Big skate	0.70									
Bigmouth sculpin										
Black eelpout			0.20							
Blackbelly eelpout										0.20
Bocaccio										
Canary rockfish										
Curlfin sole	0.70									
Darkblotched rockfish										
Dover sole		0.40	18.70	1.30						2.50
English sole										
Eulachon										
Flathead sole										
Greenstriped rockfish		4.10				1.20	1.70			
Kelp greenling										
Lingcod	20.10					10.60	2.10		17.90	4.10
Longnose skate				2.00						
Longspine thornyhead										
Pacific cod		2.60					0.20	0.40	0.10	
Pacific hake			3.80	44.80						
Pacific halibut	7.60			11.00		4.70		16.50		
Pacific ocean perch			119.70	183.10						2.10
Pacific sanddab	0.20									
Petrale sole								4.10		
Quillback rockfish	5.90									
Redbanded rockfish		6.00	1.10	23.50						1.10
Redstripe rockfish		388.60		0.60						
Rex sole			1.60	4.80						2.20
Rosethorn rockfish		0.90				0.70	0.50			
Rougheye rockfish			4.10							
Sablefish		7.50	18.20	2.80						4.70
Sandpaper skate				0.90						
Sharpchin rockfish		19.00		0.30		2.10	0.30			
Shortraker rockfish										
Shortspine thornyhead			12.90	13.30						4.40
Silvergray rockfish		11.30				1.30	2.20	24.50		
Slender sole		0.60		0.10						0.30
Southern rock sole	186.70									
Spiny dogfish	827.60						4.90		2.90	
Splitnose rockfish			0.80	12.20						13.40
Spotted ratfish	8.10	0.20				0.20	3.90	24.60	0.90	
Threadfin sculpin										
Walleye pollock		0.10		4.70				0.20	0.70	
Widow rockfish										
Wolf eel	4.40									
Yelloweye rockfish		9.20				9.20	5.80			
Yellowmouth rockfish		1.80		101.20		0.10	14.50	0.60		
Yellowtail rockfish						1.00				
Other	1.40	1.10	11.70	24.60		7.70	6.60	8.40	4.20	12.50
Total	1063.40	466.70	194.50	438.30		38.80	43.40	85.30	35.40	55.00

Species	211	212	213	214	215	216	217	218	219	220
Alaska skate										
Aleutian skate										
Arrowtooth flounder	4.70	3.40		0.90	27.90	4.00	3.90			6.00
Big skate										
Bigmouth sculpin										
Black eelpout			0.10							
Blackbelly eelpout										
Bocaccio										
Canary rockfish										
Curlfin sole										
Darkblotched rockfish			0.70				1.00			
Dover sole	3.90	32.00	6.10	0.80	10.90	17.80	2.90			23.60
English sole										
Eulachon										
Flathead sole										
Greenstriped rockfish				1.30						
Kelp greenling										
Lingcod										
Longnose skate	11.90	2.50	8.90							
Longspine thornyhead										
Pacific cod				1.50						
Pacific hake		39.20	1.10		55.70	155.50	7.90			5.20
Pacific halibut										4.90
Pacific ocean perch	11.70	9.90	60.70	199.10	4.70	15.60	197.40		13.30	23.60
Pacific sanddab										
Petrable sole				1.00						
Quillback rockfish										
Redbanded rockfish			5.00	5.30	5.90	1.20				0.80
Redstripe rockfish				0.20						
Rex sole	3.50	25.70	6.80	1.30	3.20	14.40	3.20			15.70
Rosethorn rockfish				0.60					1.30	
Rougheye rockfish		11.80	2.10	3.00		8.30	8.70			
Sablefish	2.00	25.90	7.20			4.20				20.30
Sandpaper skate		2.00								
Sharpchin rockfish				7.70	0.30				0.90	
Shortraker rockfish										
Shortspine thornyhead	15.30	10.00	17.60	2.80	17.60	30.90	27.30		1.00	19.60
Silvergray rockfish			4.00	18.90	2.30					
Slender sole	0.20			0.10						
Southern rock sole										
Spiny dogfish										
Splitnose rockfish	5.10		0.50	0.20						0.50
Spotted ratfish	0.90			0.50	1.20					
Threadfin sculpin										
Walleye pollock		1.60		4.70	0.40					
Widow rockfish					0.40					
Wolf eel										
Yelloweye rockfish										
Yellowmouth rockfish									1.30	
Yellowtail rockfish										
Other	5.00	4.70	10.90	11.70	5.70	6.60	2.50		4.50	17.40
Total	64.20	168.70	131.70	261.60	136.20	258.50	254.80		22.30	137.60

Species	221	222	223	224	225	226	227	228	229	230
Alaska skate										
Aleutian skate										
Arrowtooth flounder	3.70		1.80		8.70	1.10	9.70	5.30	8.70	13.80
Big skate										
Bigmouth sculpin										
Black eelpout					0.50	0.40	0.20	0.90	0.20	0.50
Blackbelly eelpout										
Bocaccio	4.00									
Canary rockfish	2.40									
Curlfin sole										
Darkblotched rockfish			29.50			6.00			1.40	
Dover sole	0.20		0.30		11.10	6.60	23.40	9.90	5.80	3.60
English sole										
Eulachon										
Flathead sole										
Greenstriped rockfish	1.10									
Kelp greenling										
Lingcod										
Longnose skate									3.20	
Longspine thornyhead										
Pacific cod	3.60		3.80							
Pacific hake					81.90	27.20	27.00	4.70	3.00	45.90
Pacific halibut									4.40	3.20
Pacific ocean perch	199.90	58.00	2160.30	22.80	90.20	92.50	84.60	44.30	30.90	73.80
Pacific sanddab										
Petrale sole										
Quillback rockfish										
Redbanded rockfish	1.00		3.10		13.30	3.50	4.20			2.00
Redstripe rockfish	1.40	4.80	0.80	4.40	0.40					
Rex sole	1.30	0.60	2.80	0.50	14.50	1.10	0.10			0.30
Rosethorn rockfish	1.70	0.50	28.10	0.40						
Rougheye rockfish					127.10	22.30	10.60	1.20	6.70	6.00
Sablefish	3.80				9.30	31.90	14.30	44.40	105.20	18.20
Sandpaper skate							1.00			
Sharpchin rockfish	20.50	19.10	86.70	113.00	2.10					
Shortraker rockfish										
Shortspine thornyhead	6.20	0.30	30.50	0.40	10.60	17.30	10.60	12.50	16.90	13.20
Silvergray rockfish	2.60		2.20							
Slender sole			0.10							
Southern rock sole										
Spiny dogfish	4.70									1.60
Splitnose rockfish			3124.00	3.30		0.60				
Spotted ratfish										
Threadfin sculpin										
Walleye pollock	2.20	0.30	0.60		0.60					
Widow rockfish		2.90								2.20
Wolf eel										
Yelloweye rockfish										
Yellowmouth rockfish		48.90	508.90	71.60	2.70		1.50			1.40
Yellowtail rockfish										
Other	4.70	3.80	16.60	3.90	11.00	18.20	57.70	18.10	28.10	19.30
Total	265.00	139.20	6000.10	220.30	384.00	228.70	244.90	141.30	214.50	205.00

Species	231	232	233	234	235	236	237	238	239	240
Alaska skate										
Aleutian skate										
Arrowtooth flounder	16.80	7.60	3.00	18.70	1.80				9.30	21.30
Big skate										
Bigmouth sculpin										
Black eelpout	1.00	0.90	0.20	0.50						
Blackbelly eelpout										0.20
Bocaccio										
Canary rockfish									1.50	
Curlfin sole										
Darkblotched rockfish										
Dover sole	7.30	14.70	17.70	29.20		0.20	23.00		0.40	1.00
English sole										0.40
Eulachon										0.10
Flathead sole										0.50
Greenstriped rockfish									0.70	1.20
Kelp greenling										
Lingcod										
Longnose skate		1.50		2.50			4.10			
Longspine thornyhead					4.10	1.30	4.80			
Pacific cod									4.60	4.30
Pacific hake	15.90	17.80	10.30	43.70	0.70		77.20	1.20		1.50
Pacific halibut										
Pacific ocean perch	176.60	73.20	56.90	116.50	0.80	49.90	15.70	95.30	15.10	
Pacific sanddab										
Petrale sole										
Quillback rockfish										
Redbanded rockfish	2.00	8.60	9.70	7.60					5.20	
Redstripe rockfish									105.60	2.50
Rex sole	3.00	8.10	11.80	14.30	1.60		8.10	0.30	13.70	28.90
Rosethorn rockfish								0.10	0.60	
Rougheye rockfish	101.80	45.20	16.70	30.70	3.10		100.10			
Sablefish	49.70	66.70	19.60	54.70	4.60		34.10			
Sandpaper skate							3.00			
Sharpchin rockfish						12.90		6.90	2.60	
Shortraker rockfish							37.10			
Shortspine thornyhead	7.20	11.00	13.80	19.90	8.50	1.20	52.50	1.20		
Silvergray rockfish									5.20	1.70
Slender sole	0.10		0.20						0.60	1.10
Southern rock sole										
Spiny dogfish			1.30							
Splitnose rockfish						0.30		1.70		
Spotted ratfish	1.20	0.80		1.00					0.50	0.10
Threadfin sculpin										
Walleye pollock			1.20						0.10	
Widow rockfish										
Wolf eel										
Yelloweye rockfish									7.30	
Yellowmouth rockfish						12.50	2.50	49.80	1.20	
Yellowtail rockfish									34.20	
Other	12.00	15.60	10.60	12.00	4.80	9.40	8.20	2.60	3.70	0.40
Total	394.60	271.70	173.00	351.30	30.00	87.70	370.40	159.10	212.10	65.20

Species	241	242	243	244	245	246	247	248	249	250
Alaska skate										
Aleutian skate										
Arrowtooth flounder	110.00	32.40	20.70		3.30	14.40	5.20	8.20	7.80	
Big skate										
Bigmouth sculpin										
Black eelpout										
Blackbelly eelpout	0.50	1.50	0.40		0.10	0.20				
Bocaccio		4.10		3.80	6.70		7.90			
Canary rockfish	8.70	2.30	1.60			1.80	11.40	1.70		
Curlfin sole										
Darkblotched rockfish										
Dover sole	21.30	22.10	0.50		2.00	11.20	2.70	3.70	0.40	
English sole		0.70	5.70	0.50			0.40	0.60	1.10	
Eulachon										
Flathead sole	4.70	4.30	0.40						0.30	
Greenstriped rockfish	4.10	2.40	6.80	1.80	0.80	11.60	2.60	1.20	2.40	0.20
Kelp greenling										
Lingcod	18.80	2.20	2.20	15.70		5.70	6.70	4.20	2.90	
Longnose skate		4.00				0.40	15.90			
Longspine thornyhead										
Pacific cod	6.80	5.10	1.90			6.50		2.40	10.60	
Pacific hake							5.00	2.90		
Pacific halibut	9.70						7.90	5.40	4.70	
Pacific ocean perch				1.80	48.40	51.00	81.10	82.10		
Pacific sanddab										
Petrale sole	0.90	0.70	1.10			8.40	1.40		1.70	
Quillback rockfish										
Redbanded rockfish				1.70	11.70	4.00	1.10	1.20		
Redstripe rockfish	260.20	0.50	66.50					159.40	1.30	1.90
Rex sole	46.20	25.60	23.90	2.00	1.80	21.00	5.80	5.80	24.70	
Rosethorn rockfish	0.40			1.70	4.20	0.60			0.30	
Rougheye rockfish										
Sablefish		4.60	2.00		4.70	10.80	2.30	2.00		
Sandpaper skate							0.10			
Sharpchin rockfish	111.10		1.20	60.70	69.70	20.90	11.40			0.30
Shortraker rockfish										
Shortspine thornyhead					10.50	5.50	0.60			
Silvergray rockfish	33.50	4.10	73.90	9.60	2.70	4.50	4.10	2.90	5.70	8.40
Slender sole	2.10	0.10	0.50			0.40	0.40		0.70	
Southern rock sole										
Spiny dogfish					9.50	1.10	1.60	0.90	13.60	1.30
Splitnose rockfish										
Spotted ratfish		0.10	0.10	0.20	0.30		0.60		0.20	
Threadfin sculpin	0.20									
Walleye pollock			3.00			3.80	1.60	4.30	5.00	
Widow rockfish	2.00		8.20	1.20	2.10	1.20	9.40	3.30		
Wolf eel										
Yelloweye rockfish	4.10			5.80						
Yellowmouth rockfish				250.40	16.30	36.90	439.10	64.60		
Yellowtail rockfish	89.20	42.40	140.00							
Other	4.50	4.50	3.40	2.80	23.60	6.00	8.10	4.20	12.70	1.10
Total	739.00	163.70	364.00	359.70	218.40	227.90	634.40	361.00	96.10	13.20

Species	251	252	253	254	255	256	257	258	259	260
Alaska skate										
Aleutian skate										
Arrowtooth flounder			2.90	5.80	7.20	6.50	2.70	12.70	4.80	
Big skate										
Bigmouth sculpin										
Black eelpout			0.70							
Blackbelly eelpout										
Bocaccio							5.90			
Canary rockfish				4.70	2.00					
Curlfin sole										
Darkblotched rockfish					0.80		2.20	0.90	2.70	
Dover sole		0.50	58.20	19.60	15.50	2.10	4.20	24.30	17.00	
English sole										
Eulachon										
Flathead sole										
Greenstriped rockfish				1.10	1.10	0.60	1.00			
Kelp greenling										
Lingcod										
Longnose skate			3.10	9.10	8.30		9.40	12.30		
Longspine thornyhead			2.40							
Pacific cod										
Pacific hake			88.40		0.50		6.10	12.20	4.20	
Pacific halibut								33.50		
Pacific ocean perch		41.40	20.20	282.70	332.20	819.90	995.50	443.80	319.70	
Pacific sanddab										
Petrale sole										
Quillback rockfish										
Redbanded rockfish		1.40	2.30	11.80	35.00	12.10	7.40	0.90	2.40	
Redstripe rockfish		7.90		3.20	7.00	8.40	1.50			
Rex sole		0.80	36.30	17.40	33.40	2.10	10.60	37.50	6.60	
Rosethorn rockfish		8.10		1.50		7.90	17.70	0.30	0.40	
Rougheye rockfish			141.90					6.60		
Sablefish			45.00	17.40	11.00	12.60	6.40	26.90		
Sandpaper skate										
Sharpchin rockfish	0.80	185.70	0.70	74.10	1.20	470.80	70.30			
Shortraker rockfish			10.80							
Shortspine thornyhead		8.90	45.70	3.80	2.30	26.00	33.90	35.40	11.80	
Silvergray rockfish	4.20				1.90	2.20				
Slender sole				0.90	2.20			0.10		
Southern rock sole										
Spiny dogfish				2.40	2.00			2.60		
Splitnose rockfish		109.80		0.60	0.40	2.70	117.90	25.70	15.50	
Spotted ratfish		0.50	3.10	0.10	0.10			1.70	2.30	
Threadfin sculpin										
Walleye pollock				14.30	10.80					
Widow rockfish		3.90				9.30	10.30			
Wolf eel										
Yelloweye rockfish										
Yellowmouth rockfish	2.10	234.70		61.60	84.90	270.90	55.40		3.10	
Yellowtail rockfish										
Other	2.50	6.10	2.90	8.90	3.60	12.30	3.30	8.40	7.60	
Total	9.60	609.70	464.60	541.00	563.40	1666.40	1361.70	685.80	398.10	