Ecosystem-Based Juvenile Pacific Salmon (*Oncorhynchus* spp.) Trawl Survey off North and West Coast Vancouver Island, British Columbia, October 1 - 16, 2024

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2026

Canadian Data Report of
Fisheries and Aquatic Sciences 1468

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Canadian Data Report of Fisheries and Aquatic Sciences

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ECOSYSTEM-BASED JUVENILE PACIFIC SALMON (*ONCORHYNCHUS* SPP.) TRAWL SURVEY OFF NORTH AND WEST COAST VANCOUVER ISLAND, BRITISH COLUMBIA, OCTOBER 1 - 16, 2024

by

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Cat. No. Fs97-13/1468E-PDF ISBN 978-0-660-97708-9 ISSN 1488-5395

Correct citation for this publication:

Tabata, A.M., Flynn, K.L., and King, J.R. 2026. Ecosystem-Based Juvenile Pacific Salmon (*Oncorhynchus* spp.) Trawl Survey off North and West Coast Vancouver Island, British Columbia, October 1 - 16, 2024. Can. Data Rep. Fish. Aquat. Sci. 1468: vi + 57 p.

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Tabata, A.M., Flynn, K.L., and King, J.R. 2026. Ecosystem-Based Juvenile Pacific Salmon (*Oncorhynchus* spp.) Trawl Survey off North and West Coast Vancouver Island, British Columbia, October 1 - 16, 2024. Can. Data Rep. Fish. Aquat. Sci. 1468: vi + 57 p.

Fisheries and Oceans Canada conducted an ecosystem-based trawl survey from October 01 to 16, 2024 on the CCGS *Sir John Franklin*. This study targeted juvenile Pacific Salmon (*Oncorhynchus* spp.) off the north and west coast of Vancouver Island. In 70 tows, there were 46 species sampled in 5,886 kg of catch, with 4% juvenile Pacific Salmon caught by weight (261.18 kg). Water Jellyfish (*Aequorea*), adult Chum Salmon (*Oncorhynchus keta*), and Jack Mackerel (*Trachurus symmetricus*) were the most abundant catch by weight. There were 3,276 individual lengths and 2,813 individual weights recorded, including all 5 Pacific Salmon (Oncorhynchus) species. Juvenile salmon species caught, in decreasing catch weight, were: Chinook Salmon, Coho Salmon, Pink Salmon, Chum Salmon and Sockeye Salmon, with catch distribution varied based on species. Common prey species for juvenile salmon included amphipods, unidentified fishes and crabs. Biological samples for genetic stock composition, otoliths, energy density, gills, and coded wire tags are at the Pacific Biological Station, Fisheries and Oceans Canada (Nanaimo, BC). Associated information on the physical oceanography (42 stations) and zooplankton composition (40 stations) was collected and will be analysed at the Institute of Ocean Sciences, Fisheries and Oceans Canada (Sidney, BC).

RÉSUMÉ

Tabata, A.M., Flynn, K.L., and King, J.R. 2026. Ecosystem-Based Juvenile Pacific Salmon (*Oncorhynchus* spp.) Trawl Survey off North and West Coast Vancouver Island, British Columbia, October 1 - 16, 2024. Can. Data Rep. Fish. Aquat. Sci. 1468: vi + 57 p.

Pêches et Océans Canada a mené une étude écosystémique au chalutage pélagique du octobre 01 au 16, 2024 sur le CCGS *Sir John Franklin*. Cette étude ciblait les saumons du Pacifique juvéniles (*Oncorhynchus* spp.) de la région du nord et ouest de l'isle de Vancouver. En 70 traits, il y avait 46 espèces échantillonnées dans 5,886 kg de prises, avec 4% de juvénile saumon du Pacifique capturé en poids (261.18 kg). Aequorea (*Aequorea*), les saumon kéta adultes (*Oncorhynchus keta*) et les carangue symétrique (*Trachurus symmetricus*) étaient les espèces les plus abondantes en poids. On a enregistré 3,276 longueurs individuelles et 2,813 poids individuels, dont les 5 espèces de saumon du Pacifique. Les espèces de saumon juvénile capturées par ordre décroissant d'abondance par comptage étaient les seuivantes: saumon kéta, saumon coho, saumon rose, saumon quinnat et saumon rouge, avec la répartition des prises variait selon les espèces. Les espèces de proies communes aux saumons juvéniles comprenaient amphipods, des poissons non identifiés, et des crabes. Les échantillons biologiques pour la composition des stocks génétique, les otolithes, la densité énergétique, les branchies et les micromarques magnétisées codées se trouvent à la Station biologique du Pacifique de Pêches et Océans Canada (Nanaimo, Colombie-Britannique). Des informations associées sur l'océanographie physique (42 stations) et la composition du zooplancton (40 stations) ont été collectées et seront analysées à l'Institut des sciences de la mer, Pêches et Océans Canada (Sidney, C.-B.).

1 INTRODUCTION

Fisheries and Oceans Canada conducted an ecosystem-based midwater trawl survey, targeting juvenile Pacific Salmon (*Oncorhynchus* spp.) from October 01 to 16, 2024 on the *CCGS* Sir John Franklin**. The main objectives of this survey were:

1. to determine the abundance, condition, distribution, and genetic stock composition of juvenile Pacific Salmon present off the north and west coast of Vancouver Island in the fall,
2. the associated physical oceanography, and
3. the distribution and biomass of prey species, including zooplankton.

This survey supports research into linkages between oceanographic conditions, fish abundance and community composition, Pacific Salmon ocean ecology and forecasting adult returns. This data report documents the biological, oceanographic, and zooplankton data and samples collected during the ecosystem-based juvenile Pacific Salmon survey from October 01 to 16, 2024.

2 METHODS

2.1 SURVEY LOCATIONS

Fishing, oceanographic, and zooplankton sampling occurred off the north and west coast of Vancouver Island, including Queen Charlotte Strait, Queen Charlotte Sound, and west coast Vancouver Island (Figure 1) aboard the CCGS *Sir John Franklin*.

2.2 FISHING OPERATIONS

The vessel deployed a coastal LFS 7742 trawl net (Appendix A, manufactured by LFS Trawl (LFS Net Systems, Bellingham, USA). This two-bridle midwater net has a codend liner (12.7 mm stretched) to retain smaller species. The LFS 7742 trawl net was designed to have a net opening of 30 m wide by 15 m high, or an area of 450 m^2 (Figure A.1). The net was towed at 4 to 5 knots (7.4 - 9.3 km/hr) for a target duration of 20 minutes. The start time and location of the tow was recorded when the doors were locked, and the end time and location when the retrieval of the doors was initiated. The target headrope depths were 0 m (surface) and 15 m (depth). Two A-6 floats 86.4 cm x 118.1 cm (34” x 46.5”) were attached to the headrope for surface tows.

The trawl net was fished with Thyborøn Type 15 VF, 4.5 m^2 midwater doors (approximately 798 kg each). Two chain clumps were attached to the footrope with approximately 204 kg (450 lbs) per chain clump. Vessel speed, direction, bottom depth and weather conditions were recorded for each tow (Appendix B). The vessel was equipped with a SCANMAR Trawl System and wireless SS4 Catch Sensor that provided real time door spread, headline depth and net

opening values (SCANMAR, Åsgårdstrand, Norway). RBR duet (RBR Ltd., Ottawa, ON, Canada) temperature and depth sensors were attached to the headrope and footrope to record depth and temperature every 30 seconds to allow for determination of the vertical net depth and opening and temperature at capture depth over time.

2.3 CATCH PROCESSING

At the end of each trawl tow, all retrieved specimens were sorted to the lowest taxonomic group possible. Large catches were randomly subsampled prior to sorting. The total catch (or the subsample) of each species or taxonomic group, was weighed using Marel Model M2200 dual range motion-compensating electronic scales and when practical, the number of individuals was recorded. For catches of a species or taxonomic group which totaled less than 0.01 kg, “trace” weight was recorded. Pacific Salmon were divided into juveniles and adults based on their fork lengths to account for different migratory behavior, with Coho Salmon considered juveniles < 400 mm and all other Pacific Salmon species considered juveniles < 350 mm. Jellyfish species catch weights include both whole and incomplete pieces, while counts are only inclusive of specimens with intact bells.

2.4 BIOLOGICAL SAMPLES

For each species, a pre-determined, target number of randomly selected specimens per tow were sampled for length and weight (Marel Model M2200 dual range motion-compensating electronic scales), with up to 10 of those randomly selected specimens also used for stomach content analyses. If the catch count was less than the target number, all specimens in that tow were sampled. Stomachs were analysed at sea following an established protocol (King, Boldt, and King 2018), and from these samples up to five whole bodies were collected for energy density. Pacific Salmon had additional sampling and collections, which included: fin clips for genetic stock identification (GSI), otoliths, adipose fin status (i.e. clipped vs. non-clipped), presence and retention of coded wire tags (CWTs) and gill tissues for for infectious agents and fitness.

2.5 OCEANOGRAPHY

A Sea-Bird SBE-911plus CTD (conductivity-temperature-depth) equipped with transmissometer, fluorometer, pH, salinity and dissolved oxygen sensors was used for oceanographic profiles (Sea-bird Electronics Bellevue Washington, USA). A Niskin bottle at 5 m from the surface was used to collect water for nutrient and chlorophyll (chl a) analysis. Seawater samples for nitrate, phosphate, and silicate were placed in acid-washed glass test tubes and frozen. Seawater for chl a estimation was filtered with a 25 mm GF/F glass fibre filter disks. Filter disks were then placed in polypropylene scintillation vials and frozen. Both the nutrient and chl a samples were frozen and maintained at -20℃. Nutrient and chl a samples were returned for analyses at the Institute of Ocean Sciences, Fisheries and Oceans Canada (Sidney, BC).

2.6 ZOOPLANKTON

Vertical tows to sample zooplankton were conducted to approximately 250 m or within 10 m of the bottom with two 60 cm diameter, 253 micrometer mesh nets mounted in a bongo-drum style frame, one of which was equipped with a flow meter. Zooplankton collected from the flow meter side net were preserved in 10% buffered formalin and sent to the zooplankton laboratory at the Institute of Ocean Sciences, Fisheries and Oceans Canada (Sidney, BC) for species classification and enumeration. Zooplankton collected from the net without the flowmeter were sorted into four size fractions by successively sieving through 8.0, 1.7, 1.0, and 0.25 mm screens. Each size fraction was individually frozen for future stable isotope, energy density, and proximate analyses.

3 RESULTS

3.1 FISHING OPERATIONS

This survey conducted 72 trawl net tows off the north and west coast of Vancouver Island with 70 trawls completed successfully (Figure 1 and Appendix C). There were 2 unusable tows, with 1 tow aborted due to inclement weather conditions resulting in problems with equipment deployment, and one tow aborted due to the presence of humpback whales in the area (identified by Usable = N in Appendix C).

The survey encountered a number of days of high winds and sea state in the survey area, however the vessel and science crew were able to adjust tow locations and timing as needed and were able to still obtain full coverage of the survey region.

Tow speed averaged 8.4 km/hr (4.5 knots), and varied between 6.8 to 10.6 km/hr (3.7 - 5.7 knots) speed over ground, depending on the wind, tide, and current. Warp length ranged from 200 m to 270 m (Appendix C).

Net mensuration data from the Scanmar trawl sensors and RBR data loggers was collected for mouth opening height, gear depth and doorspread. The doorspread was used to calculate the horizontal net opening width. The difference between the headrope and footrope depth from the RBR duet data loggers was used to calculate the average mouth opening of each tow. Tows with missing mensuration data used tow depth-specific averages when required (i.e., an average height and width of 15 m and 49 m for surface tows and 10 m and 55 m for 15 m target depth tows; Table C.1).

3.2 CATCH COMPOSITION

Total catch for the survey from usable tows was 5,885 kg, with 262.3 kg (4%) juvenile Pacific Salmon. Detailed catch composition for each tow is included in Appendix E. For each species captured during the survey, the number of tows in which the species was present, total catch weight and count, maximum tow catch weight, and mean tow catch weight in usable tows is

presented in Table 1. The three most abundant species caught by weight were Water Jellyfish (2,345 kg), in 86% of the tows, adult Chum Salmon (1,195.72 kg) in 56% of the tows, and Jack Mackerel (1,089.39 kg in 16% of the tows (Table 1). Juvenile Pacific Salmon species caught, in order of abundance by weight, were: Chinook Salmon, Coho Salmon, Pink Salmon, Chum Salmon and Sockeye Salmon. The survey targeted juvenile Pacific Salmon so the catches of adult Pacific Salmon should be interpreted with care.

The location and catch per unit effort (CPUE, tonnes/km^3) of juvenile salmon is shown in Figure 2. The majority of Juvenile Chinook Salmon were caught along the west coast of Vancouver Island, both on the shelf and in the inlets and sounds. Juvenile Coho Salmon and Pink Salmon were caught in Queen Charlotte Strait and Queen Charlotte Sound and on the shelf and sounds of the west coast of Vancouver Island. Juvenile Chum Salmon were also found in Queen Charlotte Strait and Queen Charlotte Sound, and along the shelf of the southern half of the west coast of Vancouver Island, however were limited to inside the sounds in the northern region of the Vancouver Island west coast. Juvenile Sockeye Salmon were the least abundant salmon species found only in stations in Queen Charlotte Strait and Queen Charlotte Sound. The location and catch per unit effort (CPUE, tonnes/km^3) of other, non-salmonid, frequently caught species is shown in Figure 3.

3.3 BIOLOGICAL SAMPLES

Samples were collected for DNA stock composition (1,026), otoliths (735), energy density (343), coded wire tags (38), and gill samples for infectious agents (163). These biological samples were returned to the Pacific Biological Station, Fisheries and Oceans Canada (Nanaimo, BC).

3.4 LENGTH AND WEIGHT

Lengths and weights of 30 species were recorded (Table 2). Within juvenile Pacific salmon, Coho Salmon had the largest mean length (281 mm) and weight (274 g), whereas Sockeye Salmon had the smallest mean length (144 mm) and weight (30 g). Length frequencies and length-weight relationships are presented for Pacific Salmon species in Figures 4 to 8. Double log transformed length-weight regression coefficients were similar in Chinook Salmon, Chum Salmon, Coho Salmon, and Pink Salmon while Sockeye Salmon had slightly smaller coefficients. A larger coefficient typically represents better condition, whereas a smaller coefficient typically represents worse condition. Length frequencies for other species with at least 50 individuals measured is shown in Figure 9.

3.5 STOMACH CONTENTS

Stomachs of 878 individual fish, from 21 species, were analysed at sea (Table 3). Juvenile Pacific Salmon species had between 2 and 17% empty stomachs, with juvenile Chinook Salmon having the highest percentage and juvenile Chum Salmon having the lowest percentage (Table 3). The frequency of observation and average volume of identified prey is shown in

Table 4. Amphipods and crabs were the most frequently observed prey for juvenile Chinook Salmon, while Pacific Herring had the highest average volume. For juvenile Chum Salmon, the most common stomach contents were unidentified remains, while crabs, shrimp and amphipods had the highest average volume when present. Since gelatinous prey are digested quickly, it is likely that the unidentified remains in the juvenile Chum Salmon may be ctenophores and jellyfish. Juvenile Coho Salmon stomach contained amphipods, euphasiids and crabs most frequently compared to other prey, although the most voluminous prey was pacific herring, squid and shrimp (Table 4). The most common prey for juvenile Pink Salmon was crabs and amphipods, with crabs and euphasiids being the most voluminous prey. Finally, for juvenile Sockeye Salmon unidentified remains were the most common and most voluminous prey item.

3.6 OCEANOGRAPHY

CTD casts and water samples were completed at 42 sites (Figure 1) with cast depths ranging from 45 m to 1,312 m (Appendix D). 2 casts over 250 m were completed to allow complete calibration of the instrumentation and analyses. Samples were collected for nutrients and chlorophyll at approximately 5 m below the surface. Oceanographic data from the CTD casts and nutrient analysis of the water samples will be archived online within the Water Properties Data Inventory under cruise number 2024-028.

3.7 ZOOPLANKTON

Vertical bongo tows were conducted at 40 stations (Figure 1) to depths ranging from 45 m to 250 m (Appendix D). Formalin-preserved zooplankton samples will be enumerated at the Institute of Ocean Sciences, Fisheries and Oceans Canada (Sidney, BC). Data will be archived in the zooplankton database. Fractionated zooplankton samples are frozen at the Pacific Biological Station, Fisheries and Oceans Canada (Nanaimo, BC).

4 DISCUSSION

The data generated by this ecosystem-based juvenile Pacific Salmon trawl survey in 2024 covers physical and biological oceanographic conditions, fish abundance and composition of the pelagic community, along with comprehensive sampling and stomach content analyses of all caught species. This data provides valuable information on distribution, abundance, condition, and genetic stock composition for juvenile Pacific Salmon off the north and west coast of Vancouver Island and extends a long-term trawl survey time series from southern British Columbia of juvenile Pacific Salmon and other important pelagic fish species. The physical oceanographic water profiles and zooplankton samples associated with the survey catches provide valuable additions to the understanding of the pelagic ecosystem. As it becomes available, the data from laboratory analysis (i.e. GSI, energy density, isotopic analysis, zooplankton composition) will be integrated into the survey data. This data supplements historic juvenile Pacific Salmon surveys, and will be reported in Fisheries and Oceans Canada State of the Pacific Ocean, and is being incorporated into longer term and broader scope research projects.

5 ACKNOWLEDGEMENTS

We would like to acknowledge that we conducted scientific research in the following First Nations territories: Ahousaht, Cowichan, Dididaht, Dzawada'enuxw (Tsawataineuk), Ehattesaht, Gitxaala, Gwa'sala-Nakwaxda'xw, Gwawaenuk, Halalt, Heitsuk, Hesquiaht, Hupacasath, Huu-ay-aht, Kyuquot/Chesleseht, Kwakiutl, Kwikwasut'inuxw Haxwa'mis, Lyackson, Mamalilikulla, Mowachacht/Muchalaht, 'Namgis, Nuchatlaht, Pacheedaht, Penelakut, Quatsino, Tla-o-qui-aht, Tlatlasikwala, Tseshaht, T'Sou-ke, Ts'uubaa-asatx, Wuikinuxv. We would like to thank Captain Jeff Olsson, and crew of the CCGS *Sir John Franklin*. We appreciate the expertise of the following additional science staff who participated in the survey: Colin Bailey, Kelsey Dougan, Maryam Nakhostin, Sebastian Pardo and Chelsea Stanley.

6 REFERENCES

King, J., J. L. Boldt, and S. King. 2018. “Proceedings of the Pacific Region Workshop on Stomach Content Analyses, February 27-March 1 2018, Nanaimo, British Columbia.” *Can. Tech. Rep. Fish. Aquat. Sci.*, no. 3274: v + 55 p.

7 TABLES

Table 1. All captured species (or taxonomic group), ordered by total catch weight (in kilograms), showing number of tows in which the species occurred, total catch count, (Count), total catch weight (Weight), maximum catch weight (Max), and mean catch weight (Mean) per tow for usable tows during the ecosystem-based juvenile Pacific Salmon survey aboard the CCGS *Sir John Franklin*, October 01 to 16, 2024. Blank weights indicate specimens which could not be weighed accurately (either released alive or too small).

Common Name	Scientific Name	Tows	Count	Weight	Max	Mean
Water Jellyfish	*Aequorea*	60		2,345.00	489.00	39
Chum Salmon (Adults)	*Oncorhynchus keta*	39	350	1,195.72	173.00	31
Jack Mackerel	*Trachurus symmetricus*	11	1,454	1,089.39	943.82	99
Lions Mane	*Cyanea capillata*	53	36	316.20	18.17	6
Moon Jellyfish	*Aurelia labiata*	48	70	250.83	40.02	5
Pacific Herring	*Clupea pallasii*	7	5,329	163.97	163.00	23
Chinook Salmon (Juveniles)	*Oncorhynchus tshawytscha*	39	1,394	106.40	28.30	3
Opalescent Inshore Squid	*Doryteuthis opalescens*	24	5,775	93.19	73.36	5
Coho Salmon (Juveniles)	*Oncorhynchus kisutch*	40	245	66.50	8.81	2
Fried Egg Jellyfish	*Phacellophora camtschatica*	33	3	65.36	7.07	2
Pink Salmon (Juveniles)	*Oncorhynchus gorbuscha*	21	974	61.56	21.35	3
Chum Salmon (Juveniles)	*Oncorhynchus keta*	16	257	26.55	11.99	2
Mitrocoma	*Mitrocoma*	3		22.86	17.38	8
Coho Salmon (Adults)	*Oncorhynchus kisutch*	6	8	22.10	6.29	4
Chub Mackerel	*Scomber japonicus*	1	19	16.28	16.28	16
Chinook Salmon (Adults)	*Oncorhynchus tshawytscha*	4	5	12.73	6.51	3
Pacific Saury	*Cololabis saira*	1	86	7.49	7.49	7
Northern Sea Nettle	*Chrysaora melanaster*	4	4	3.66	2.02	1
Black Rockfish	*Sebastes melanops*	2	2	3.45	2.50	2
Lingcod	*Ophiodon elongatus*	1	1	3.43	3.43	3
Purple-striped Sea Nettle	*Chrysaora colorata*	1	1	2.98	2.98	3
Pacific Sea Nettle	*Chrysaora fuscescens*	6	5	2.78	1.12	0
North Pacific Spiny Dogfish	*Squalus suckleyi*	2	20	2.78	1.90	1
Sockeye Salmon (Juveniles)	*Oncorhynchus nerka*	3	43	1.29	1.02	0
Walleye Pollock	*Gadus chalcogrammus*	1	3	0.88	0.88	1
Wolf Eel	*Anarrhichthys ocellatus*	1	4	0.49	0.49	0
Ragfish	*Icosteus aenigmaticus*	7	8	0.39	0.10	0
Pile Perch	*Rhacochilus vacca*	1	1	0.29	0.29	0
Prowfish	*Zaprora silenus*	1	1	0.28	0.28	0
Salps	*Salpida*	3	16	0.16	0.14	0
Pyrosomes	*Pyrosoma atlanticum*	1	1	0.16	0.16	0
Northern Anchovy	*Engraulis mordax*	2	3	0.06	0.06	0
Pacific Hake	*Merluccius productus*	1	1	0.05	0.05	0
Crescent Gunnel	*Pholis laeta*	1	1	0.04	0.04	0
Kelp Greenling	*Hexagrammos decagrammus*	1	2	0.04	0.04	0
Shiner Perch	*Cymatogaster aggregata*	1	1	0.02	0.02	0
Smelts	*Osmeridae*	1	16	0.02	0.02	0
Speckled Sanddab	*Citharichthys stigmaeus*	1	1	0.02	0.02	0
Spotted Ratfish	*Hydrolagus colliei*	1	1	0.02	0.02	0
Cods/Hakes/Grenadiers	*Gadiformes*	3	4			
Flatfishes	*Pleuronectiformes*	2	6		0.00	0
Bay Pipefish	*Syngnathus leptorhynchus*	1	1			
Larval Fish	*Larval Fish*	1	1			
Salmon Shark	*Lamna ditropis*	1	1			

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Common Name	Scientific Name	Tows	Count	Weight	Max	Mean
Snailfishes	*Careproctus*	1	1			

Table 2. Lengths and weights for each species (arranged descending by the number of length measurements for each by species) sampled during the ecosystem-based juvenile Pacific Salmon survey aboard the CCGS *Sir John Franklin*, October 01 to 16, 2024. Tows = number of tows. Type = Type of length measurement (FL = Fork Length, TL = Total Length, SL = Standard Length, ML = Mantle Length, BD = Bell Diameter). Lengths = number of length measurements. Weights = number of weight measurements.

		Length (mm)					**Weight (g)**			
Common Name	Tows	Type	Lengths	Min	Max	Mean	Weights	Min	Max	Mean
Chinook Salmon (Juveniles)	39	FL	689	110	394	182	689	20	714	81
Pink Salmon (Juveniles)	21	FL	554	147	238	182	554	27	148	64
Opalescent Inshore Squid	12	ML	476	16	123	55	390	1	59	10
Chum Salmon (Adults)	39	FL	328	494	763	652	328	1505	6146	3410
Moon Jellyfish	37	BD	238	69	379	220				
Coho Salmon (Juveniles)	40	FL	219	207	389	281	219	82	712	274
Jack Mackerel	10	FL	156	331	530	409	156	390	1746	820
Pacific Herring	7	SL	137	71	180	131	137	4	74	31
Chum Salmon (Juveniles)	16	FL	133	167	286	213	133	46	280	107
Pacific Saury	1	FL	86	234	311	268	86	62	120	87
Lions Mane	35	BD	77	148	667	370				
Water Jellyfish	7	BD	48	66	276	212				
Sockeye Salmon (Juveniles)	3	FL	43	132	188	144	43	21	64	30
North Pacific Spiny Dogfish	2	TL	20	275	410	328	20	68	217	127
Chub Mackerel	1	FL	19	332	443	393	19	452	1130	856
Coho Salmon (Adults)	7	FL	9	337	675	574	9	504	3928	2511
Ragfish	7	TL	8	123	213	159	8	16	114	53
Chinook Salmon (Adults)	4	FL	5	389	680	559	5	740	4290	2666
Pacific Sea Nettle	5	BD	5	119	293	207				
Fried Egg Jellyfish	4	BD	4	299	431	375				

		Length (mm)					Weight (g)			
Common Name	Tows	Type	Lengths	Min	Max	Mean	Weights	Min	Max	Mean
Northern Sea Nettle	4	BD	4	193	322	244				
Northern Anchovy	2	SL	3	66	133	108	3	4	24	17
Walleye Pollock	1	FL	3	351	381	364	3	266	372	308
Black Rockfish	2	FL	2	390	527	458	2	962	2408	1685
Kelp Greenling	1	FL	2	135	138	136	2	26	28	27
Lingcod	1	FL	1	699	699	699	1	3484	3484	3484
Pile Perch	1	FL	1	241	241	241	1	306	306	306
Prowfish	1	TL	1	267	267	267	1	276	276	276
Salmon Shark	1	TL	1	1750	1750	1750				
Shiner Perch	1	TL	1	129	129	129	1	32	32	32
Speckled Sanddab	1	TL	1	130	130	130	1	18	18	18
Spotted Ratfish	1	TL	1	97	97	97	1	6	6	6
Wolf Eel	1	TL	1	637	637	637	1	142	142	142

Table 3. Number of tows with stomach samples (Tows), number of stomachs examined (Stomachs), number of empty stomachs (empty), and percentage of empty stomachs for each species (Percent Empty), arranged descending by number of stomachs, during the ecosystem-based juvenile Pacific Salmon survey aboard the CCGS *Sir John Franklin*, October 01 to 16, 2024.

Species	Tows	Stomachs	Empty	Percent Empty
Coho Salmon (Juveniles)	40	178	19	11
Chinook Salmon (Juveniles)	39	183	31	17
Chum Salmon (Adults)	32	146	10	7
Pink Salmon (Juveniles)	21	131	8	6
Chum Salmon (Juveniles)	16	80	2	2
Jack Mackerel	10	54	26	48
Pacific Herring	7	30	15	50
Coho Salmon (Adults)	7	9	5	56
Ragfish	7	8	2	25
Chinook Salmon (Adults)	4	5	0	0
Sockeye Salmon (Juveniles)	3	18	1	6
Black Rockfish	2	2	0	0
Spotted Ratfish	1	1	1	100
Northern Anchovy	1	2	0	0
Walleye Pollock	1	3	3	100
Pacific Saury	1	10	0	0
Shiner Perch	1	1	1	100
Pile Perch	1	1	1	100
Wolf Eel	1	1	1	100
Prowfish	1	1	0	0
Chub Mackerel	1	10	0	0
Kelp Greenling	1	2	0	0
Lingcod	1	1	1	100
Speckled Sanddab	1	1	1	100

Table 4. Prey items (Prey) identified in the stomach contents of predator species (Species) sampled (alphabetical by Species) during the ecosystem-based juvenile Pacific Salmon survey aboard the CCGS *Sir John Franklin*, October 01 to 16, 2024. Frequency of occurrence (FO) is the proportion of non-empty stomachs containing that prey item and volume is the mean volume in cm^3.

Species	Prey	FO	Volume
Black Rockfish	Unidentified Fishes	0.50	12.20
Black Rockfish	Jellyfish	0.50	7.10
Black Rockfish	Unidentified Remains	0.50	7.10
Chinook Salmon (Adults)	Unidentified Fishes	1.00	10.68
Chinook Salmon (Adults)	Euphausiids	0.40	8.10
Chinook Salmon (Adults)	Jellyfish	0.20	0.40
Chinook Salmon (Juveniles)	Amphipods	0.47	0.41
Chinook Salmon (Juveniles)	Crabs	0.42	0.42
Chinook Salmon (Juveniles)	Unidentified Fishes	0.25	1.47
Chinook Salmon (Juveniles)	Unidentified Remains	0.20	0.30
Chinook Salmon (Juveniles)	Euphausiids	0.07	0.27
Chinook Salmon (Juveniles)	Squid	0.05	0.83
Chinook Salmon (Juveniles)	Copepods	0.03	0.01
Chinook Salmon (Juveniles)	Pacific Herring	0.02	5.53
Chinook Salmon (Juveniles)	Flatfishes	0.02	0.30
Chinook Salmon (Juveniles)	Misc. Non-Marine	0.01	2.00
Chinook Salmon (Juveniles)	Opalescent Inshore Squid	0.01	1.10
Chinook Salmon (Juveniles)	Shrimp	0.01	0.60
Chinook Salmon (Juveniles)	Barnacles	0.01	0.30
Chinook Salmon (Juveniles)	Plants	0.01	0.21
Chinook Salmon (Juveniles)	Polychaete Worms	0.01	0.06
Chinook Salmon (Juveniles)	Rockfishes	0.01	0.01
Chinook Salmon (Juveniles)	Squat Lobster	0.01	0.01
Chub Mackerel	Unidentified Remains	1.00	4.77
Chum Salmon (Adults)	Unidentified Remains	0.98	5.81
Chum Salmon (Adults)	Comb Jellyfish	0.34	1.76
Chum Salmon (Adults)	Jellyfish	0.31	8.01
Chum Salmon (Adults)	Squid	0.02	2.53
Chum Salmon (Adults)	Water Jellyfish	0.01	20.55
Chum Salmon (Adults)	Pacific Herring	0.01	20.50
Chum Salmon (Adults)	Unidentified Algae	0.01	4.50
Chum Salmon (Adults)	Flatfishes	0.01	0.20
Chum Salmon (Adults)	Amphipods	0.01	0.01
Chum Salmon (Juveniles)	Unidentified Remains	0.77	0.36
Chum Salmon (Juveniles)	Amphipods	0.31	0.85
Chum Salmon (Juveniles)	Shrimp	0.06	1.10
Chum Salmon (Juveniles)	Jellyfish	0.05	0.18
Chum Salmon (Juveniles)	Comb Jellyfish	0.04	0.20
Chum Salmon (Juveniles)	Unidentified Fishes	0.03	0.16
Chum Salmon (Juveniles)	Euphausiids	0.03	0.06
Chum Salmon (Juveniles)	Crabs	0.01	2.10
Chum Salmon (Juveniles)	Copepods	0.01	1.00
Chum Salmon (Juveniles)	Flatfishes	0.01	0.01
Coho Salmon (Adults)	Unidentified Fishes	0.75	2.97
Coho Salmon (Adults)	Amphipods	0.50	0.01

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Species	Prey	FO	Volume
Coho Salmon (Adults)	Jellyfish	0.25	2.60
Coho Salmon (Juveniles)	Amphipods	0.47	0.62
Coho Salmon (Juveniles)	Crabs	0.27	0.49
Coho Salmon (Juveniles)	Euphausiids	0.26	0.75
Coho Salmon (Juveniles)	Unidentified Fishes	0.20	1.99
Coho Salmon (Juveniles)	Unidentified Remains	0.11	0.39
Coho Salmon (Juveniles)	Pacific Herring	0.04	7.02
Coho Salmon (Juveniles)	Flatfishes	0.03	0.70
Coho Salmon (Juveniles)	Squid	0.01	4.50
Coho Salmon (Juveniles)	Opalescent Inshore Squid	0.01	4.50
Coho Salmon (Juveniles)	Shrimp	0.01	4.05
Coho Salmon (Juveniles)	Northern Anchovy	0.01	3.60
Coho Salmon (Juveniles)	Barnacles	0.01	0.80
Coho Salmon (Juveniles)	Pteropods	0.01	0.26
Coho Salmon (Juveniles)	Jellyfish	0.01	0.11
Coho Salmon (Juveniles)	Comb Jellyfish	0.01	0.01
Coho Salmon (Juveniles)	Misc. Non-Marine	0.01	0.01
Jack Mackerel	Unidentified Remains	0.39	0.19
Jack Mackerel	Amphipods	0.36	0.62
Jack Mackerel	Unidentified Fishes	0.25	1.16
Jack Mackerel	Pacific Herring	0.21	8.65
Jack Mackerel	Jellyfish	0.07	0.30
Jack Mackerel	Comb Jellyfish	0.04	0.01
Jack Mackerel	Copepods	0.04	0.01
Jack Mackerel	Euphausiids	0.04	0.01
Kelp Greenling	Crustaceans	1.00	0.45
Northern Anchovy	Euphausiids	1.00	0.80
Pacific Herring	Copepods	0.27	0.28
Pacific Herring	Euphausiids	0.27	0.01
Pacific Herring	Amphipods	0.13	0.25
Pacific Herring	Unidentified Remains	0.13	0.03
Pacific Herring	Crabs	0.13	0.01
Pacific Herring	Shrimp	0.07	1.60
Pacific Herring	Flatfishes	0.07	0.10
Pacific Herring	Unidentified Fishes	0.07	0.01
Pacific Saury	Unidentified Remains	1.00	2.01
Pink Salmon (Juveniles)	Crabs	0.54	1.00
Pink Salmon (Juveniles)	Amphipods	0.52	0.49
Pink Salmon (Juveniles)	Euphausiids	0.22	0.98
Pink Salmon (Juveniles)	Copepods	0.12	0.03
Pink Salmon (Juveniles)	Unidentified Fishes	0.08	0.12
Pink Salmon (Juveniles)	Unidentified Remains	0.05	0.72
Pink Salmon (Juveniles)	Jellyfish	0.02	0.06
Pink Salmon (Juveniles)	Smelts	0.01	0.90
Pink Salmon (Juveniles)	Squid	0.01	0.20
Pink Salmon (Juveniles)	Flatfishes	0.01	0.10
Pink Salmon (Juveniles)	Fish Eggs	0.01	0.01
Pink Salmon (Juveniles)	Comb Jellyfish	0.01	0.01
Pink Salmon (Juveniles)	Misc. Non-Marine	0.01	0.01

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Species	Prey	FO	Volume
Prowfish	Unidentified Remains	1.00	0.10
Ragfish	Unidentified Remains	0.83	0.90
Ragfish	Comb Jellyfish	0.17	0.20
Sockeye Salmon (Juveniles)	Unidentified Remains	0.59	0.21
Sockeye Salmon (Juveniles)	Amphipods	0.47	0.14
Sockeye Salmon (Juveniles)	Crabs	0.35	0.12
Sockeye Salmon (Juveniles)	Euphausiids	0.12	0.20
Sockeye Salmon (Juveniles)	Copepods	0.06	0.20
Sockeye Salmon (Juveniles)	Fish Eggs	0.06	0.01

8 FIGURES

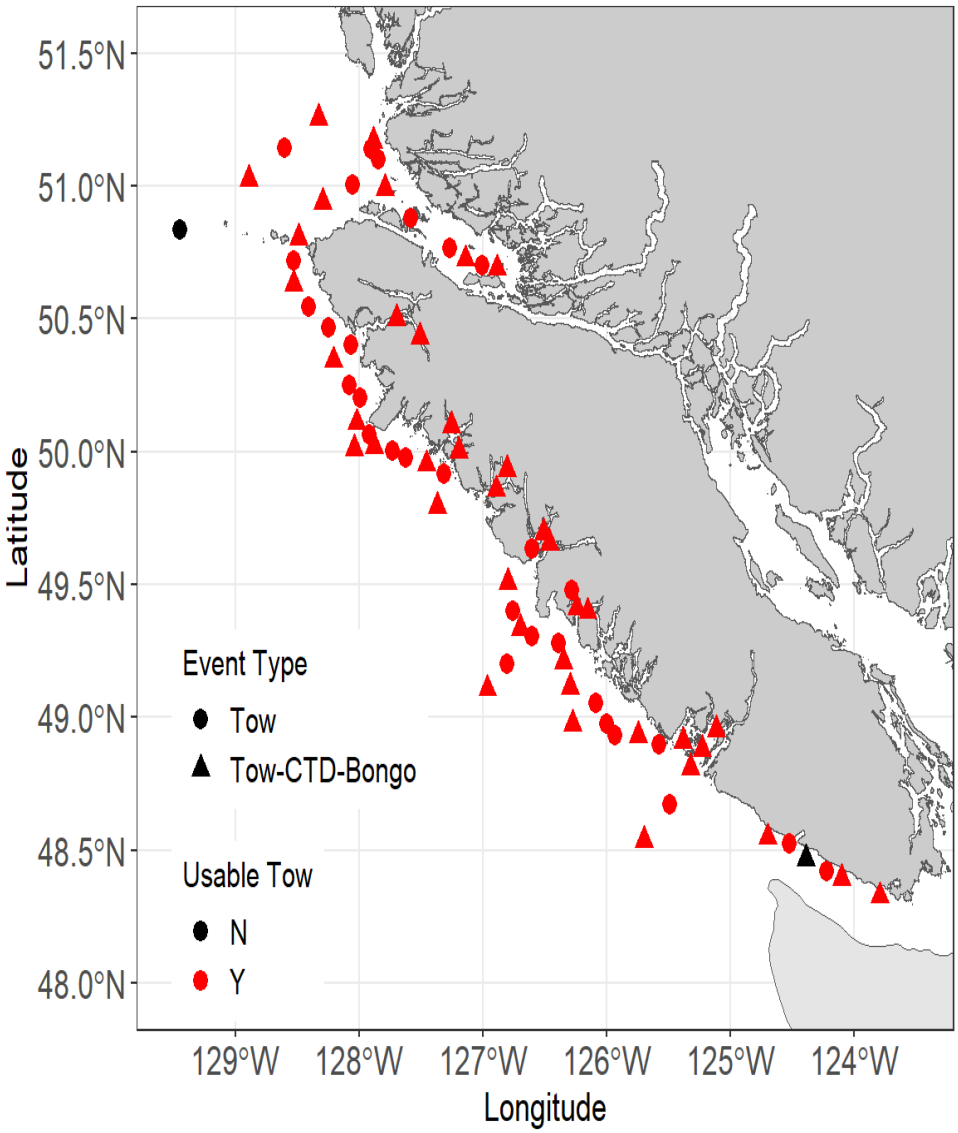

Figure 1. Location of survey events (fishing tows, CTD casts and zooplankton bongo casts) during the ecosystem-based juvenile Pacific Salmon survey from October 01 to 16, 2024 on the CCGS *Sir John Franklin*.

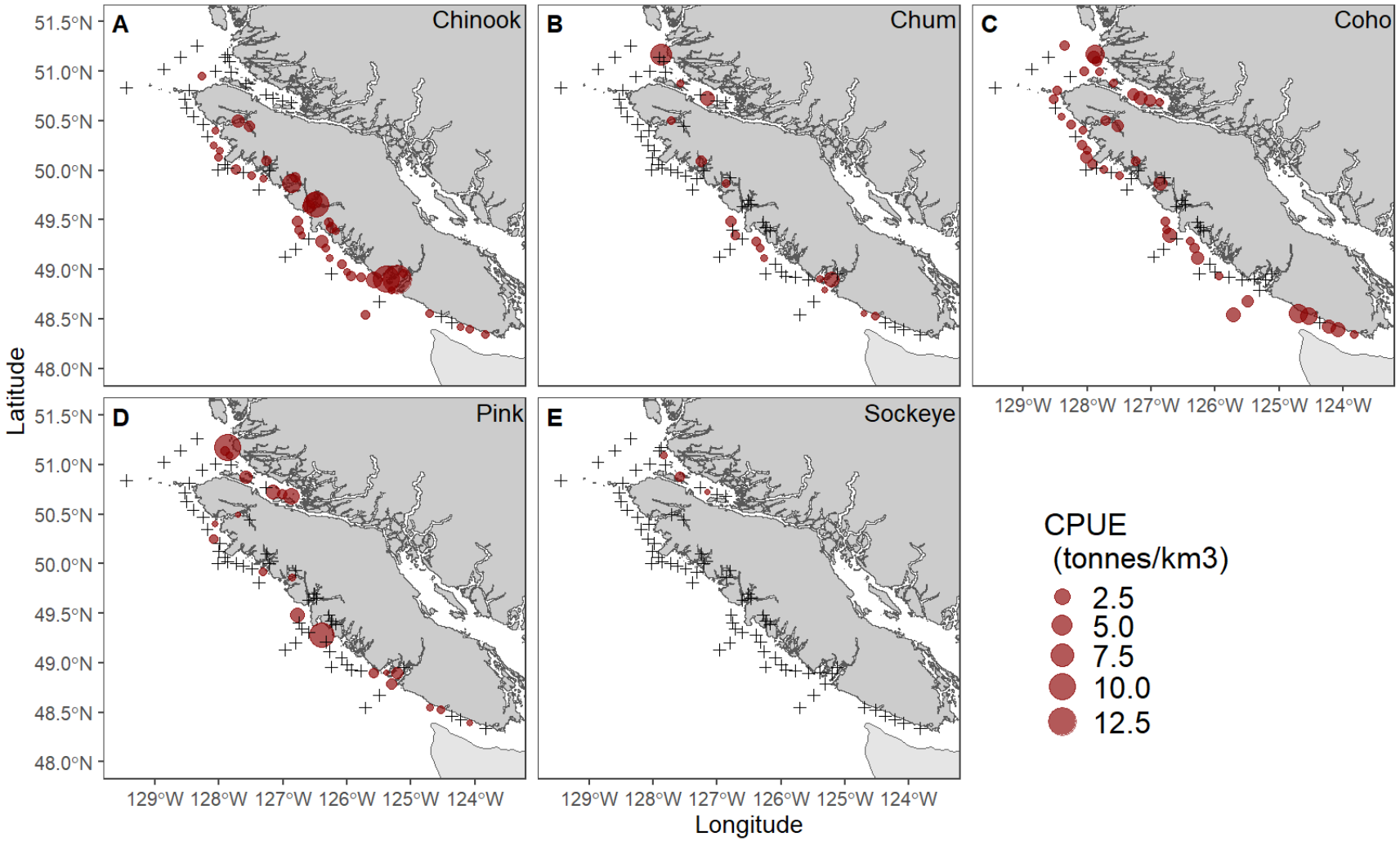

Figure 2. Juvenile Pacific Salmon (*Oncorhynchus spp.*) catch per unit effort (CPUE; tonnes/km^3) for each tow. (A) Chinook Salmon (*Oncorhynchus tshawytscha)*), (B) Chum Salmon (*Oncorhynchus keta*), (C) Coho Salmon (*Oncorhynchus kisutch*), (D) Pink Salmon (*Oncorhynchus gorbusha*) and (E) Sockeye Salmon (*Oncorhynchus nerka*). Circles are proportional to catch abundance, and zero catches are shown with a cross (+).

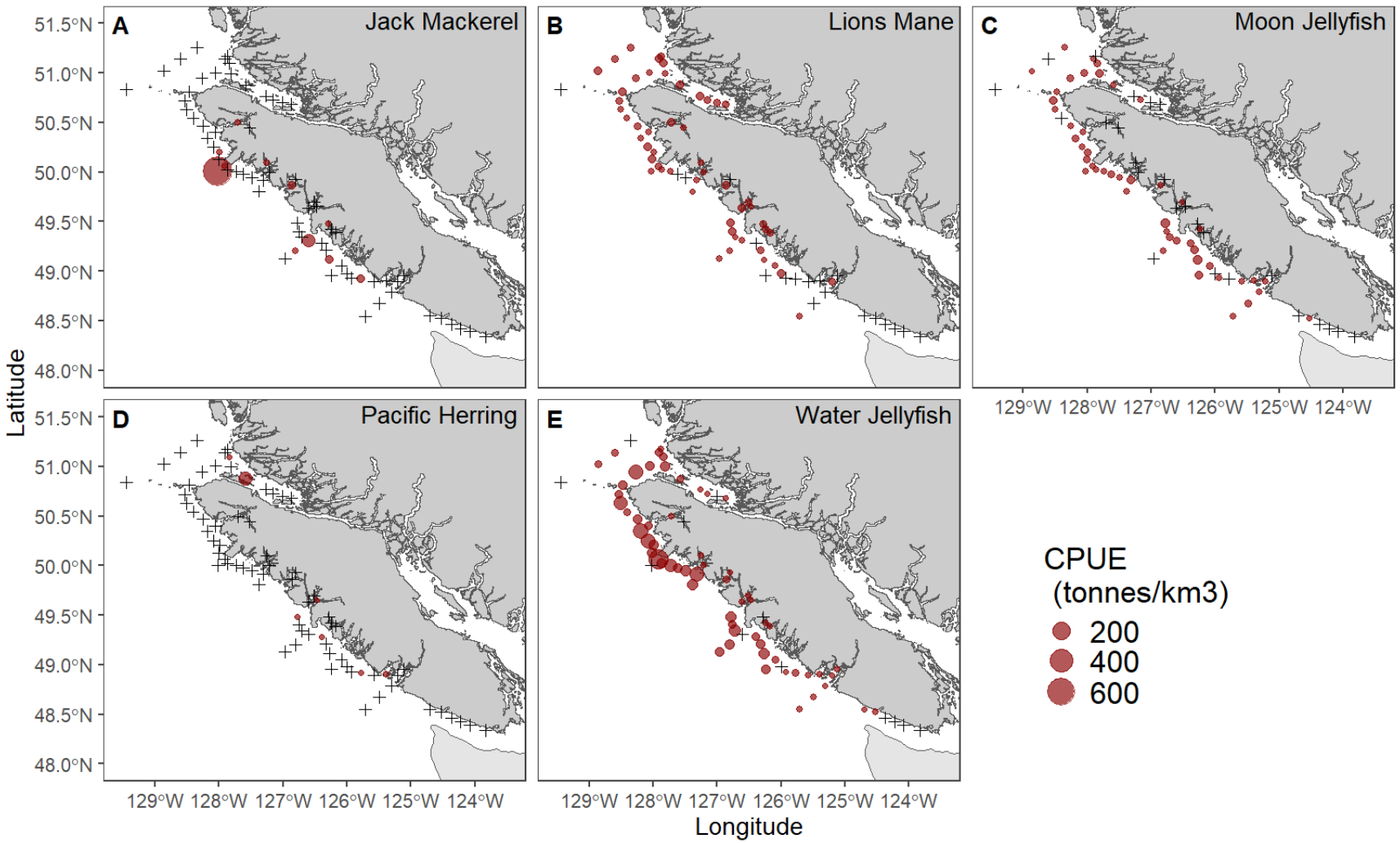

Figure 3. Catch per unit effort (CPUE; tonnes/km^3) for commonly caught species by tow. Circles are proportional to catch abundance, and zero catches are shown with a cross (+). (A) Jack Mackerel (Trachurus symmetricus), (B) Lions Mane (Cyanea capillata),(C) Moon Jellyfish (Aurelia labiata),(D) Pacific Herring (Clupea pallasii),(E) Water Jellyfish (Aequorea),

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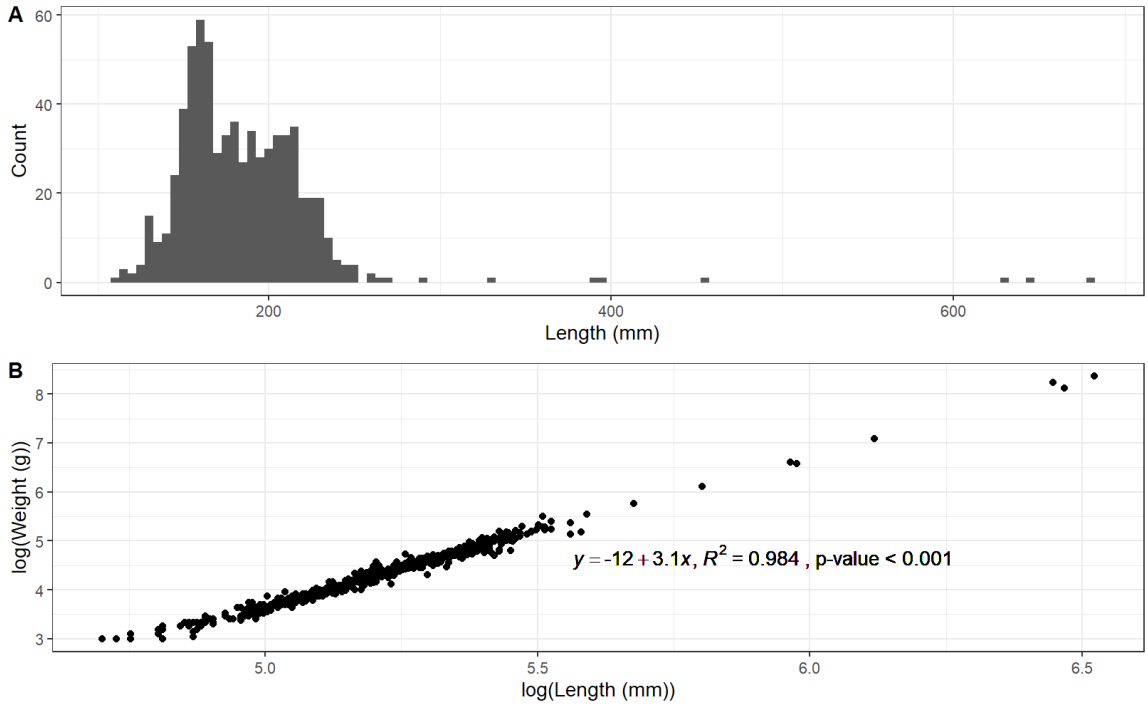

Figure 4. Chinook Salmon (*Oncorhynchus tshawytscha)*) length frequency plot as sampled during the ecosystem-based juvenile Pacific Salmon survey aboard the CCGS *Sir John Franklin*, October 01 to 16, 2024 (A). Double log-transformed length-weight regression with outliers removed, using a Bonferroni outlier test (B).

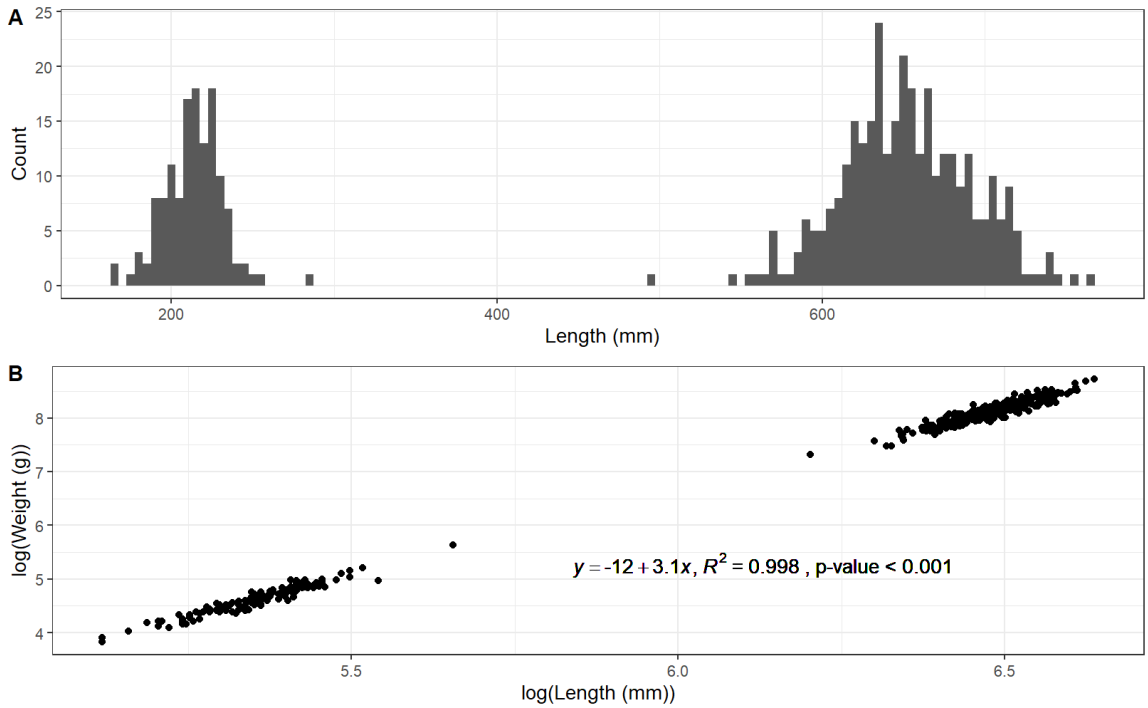

Figure 5. Chum Salmon (*Oncorhynchus keta*) length frequency plot as sampled during the ecosystem-based juvenile Pacific Salmon survey aboard the CCGS *Sir John Franklin*, October 01 to 16, 2024 (A). Double log-transformed length-weight regression with outliers removed, using a Bonferroni outlier test (B).

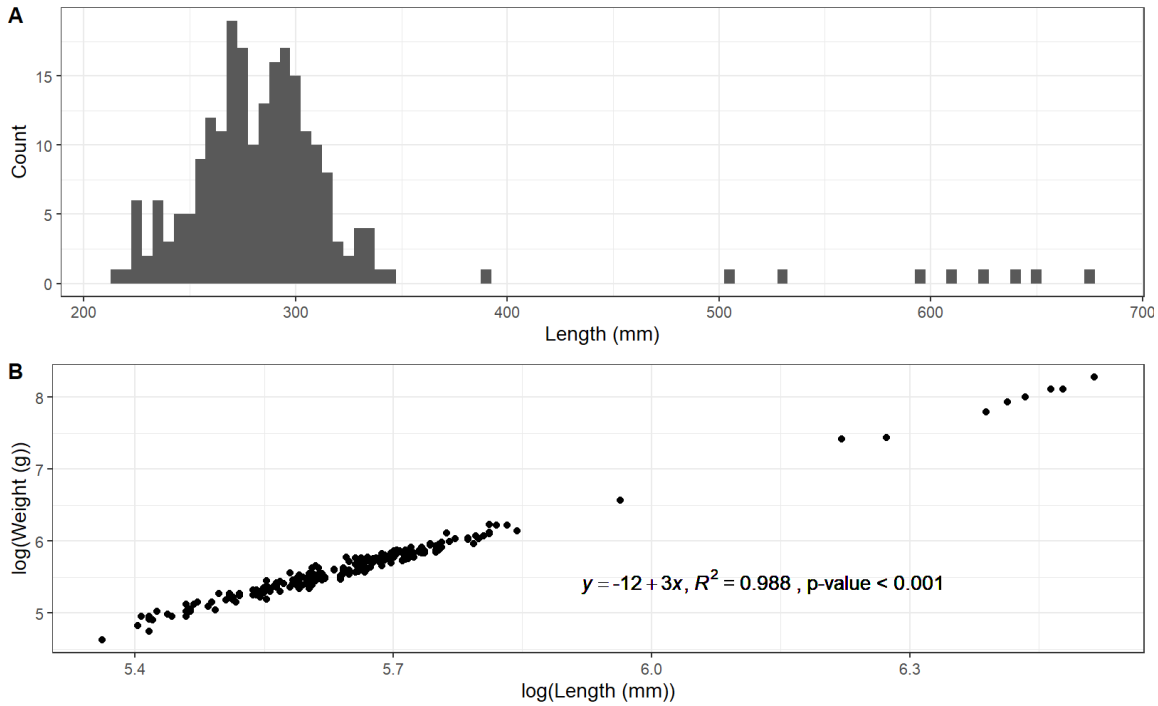

Figure 6. Coho Salmon (*Oncorhynchus kisutch*) length frequency plot as sampled during the ecosystem-based juvenile Pacific Salmon survey aboard the CCGS *Sir John Franklin*, October 01 to 16, 2024 (A). Double log-transformed length-weight regression with outliers removed, using a Bonferroni outlier test (B).

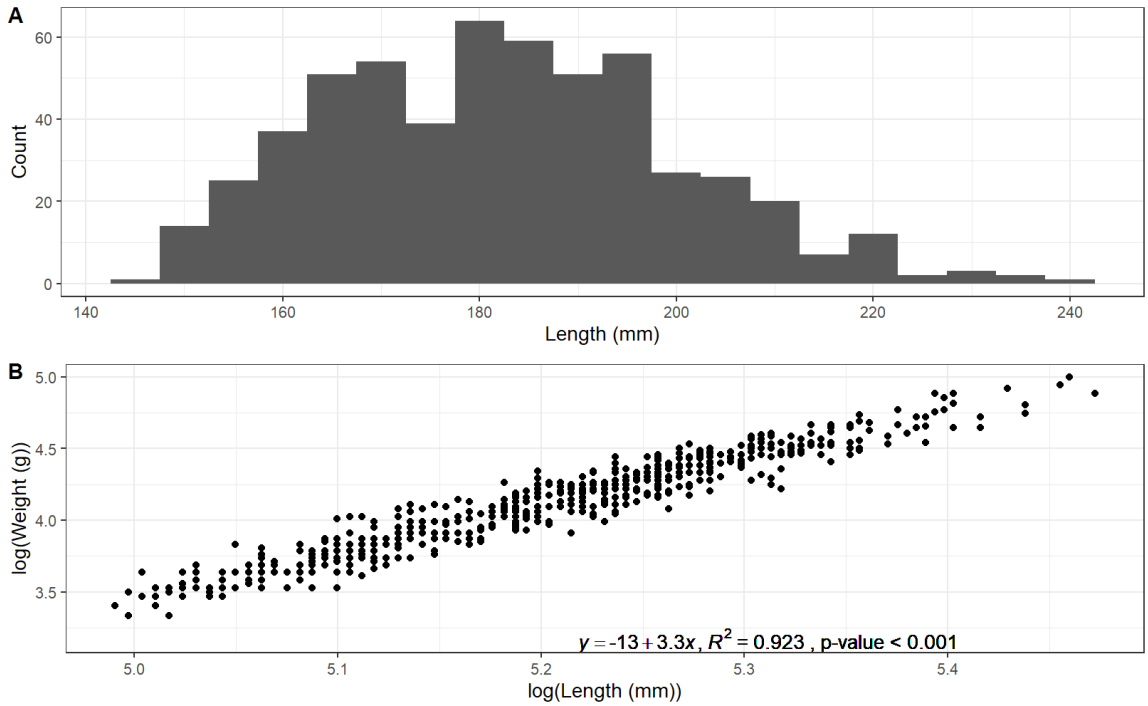

Figure 7. Pink Salmon (*Oncorhynchus gorbusha*) length frequency plot as sampled during the ecosystem-based juvenile Pacific Salmon survey aboard the CCGS *Sir John Franklin*, October 01 to 16, 2024 (A). Double log-transformed length-weight regression with outliers removed, using a Bonferroni outlier test (B).

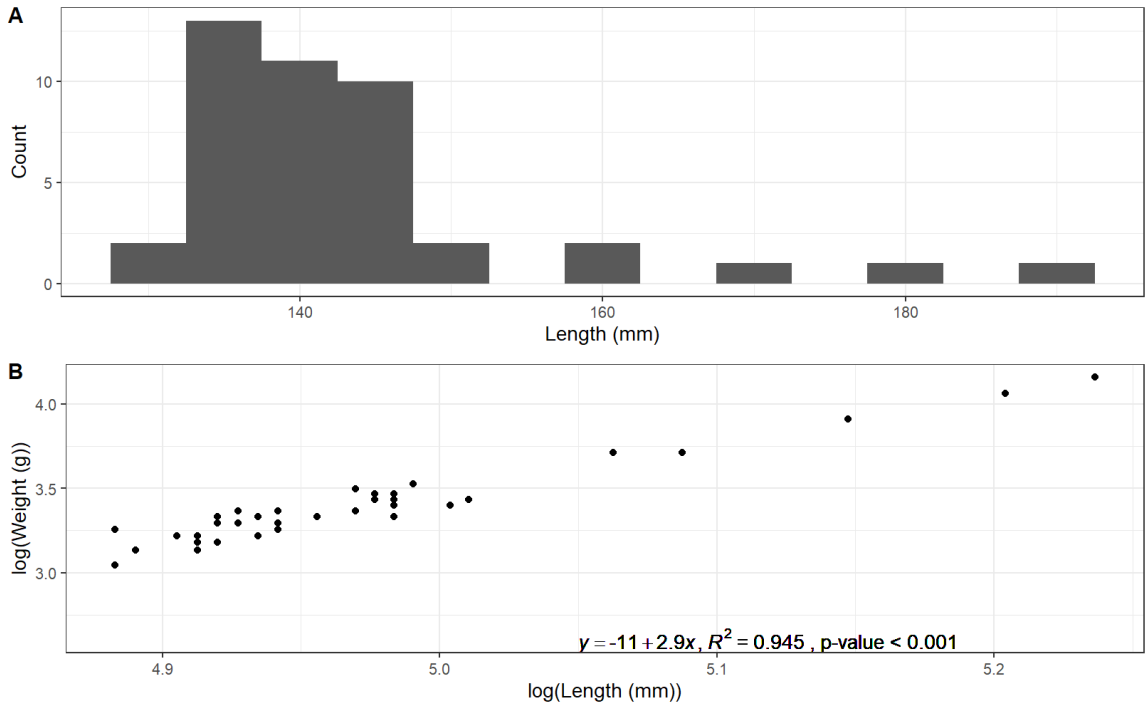

Figure 8. Sockeye Salmon (*Oncorhynchus nerka*) length frequency plot as sampled during the ecosystem-based juvenile Pacific Salmon survey aboard the CCGS *Sir John Franklin*, October 01 to 16, 2024 (A). Double log-transformed length-weight regression with outliers removed, using a Bonferroni outlier test (B).

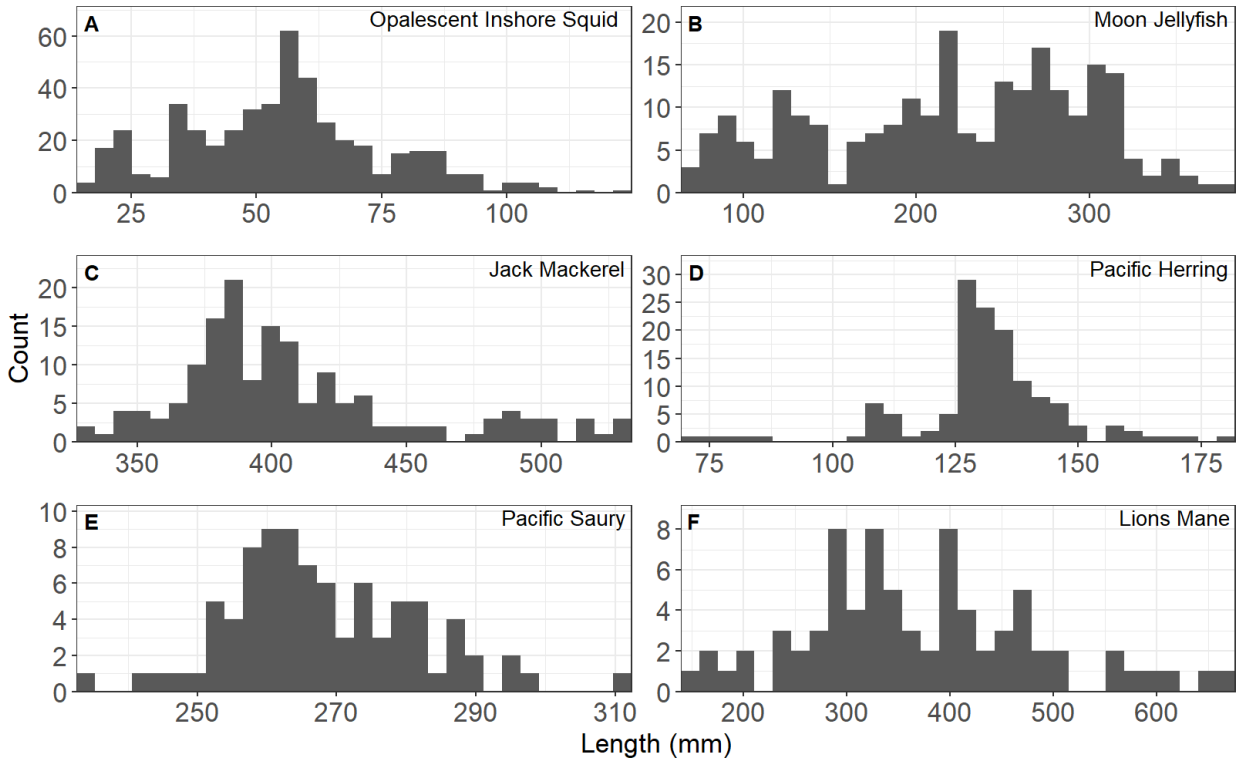

Figure 9. Length (mm) frequency plots for common species sampled (n>50 samples) during the ecosystem-based juvenile Pacific Salmon survey aboard the CCGS *Sir John Franklin*, October 01 to 16, 2024. (A) Opalescent Inshore Squid (*Doryteuthis opalescens*), length = Mantle Length, (B) Moon Jellyfish (*Aurelia labiata*), length = Bell Diameter, (C) Jack Mackerel (*Trachurus symmetricus*), length = Fork Length, (D) Pacific Herring (*Clupea pallasii*), length = Standard Length, (E) Pacific Saury (*Cololabis saira*), length = Fork Length, (F) Lions Mane (*Cyanea capillata*), length = Bell Diameter.

APPENDIX A NET SPECIFICATIONS

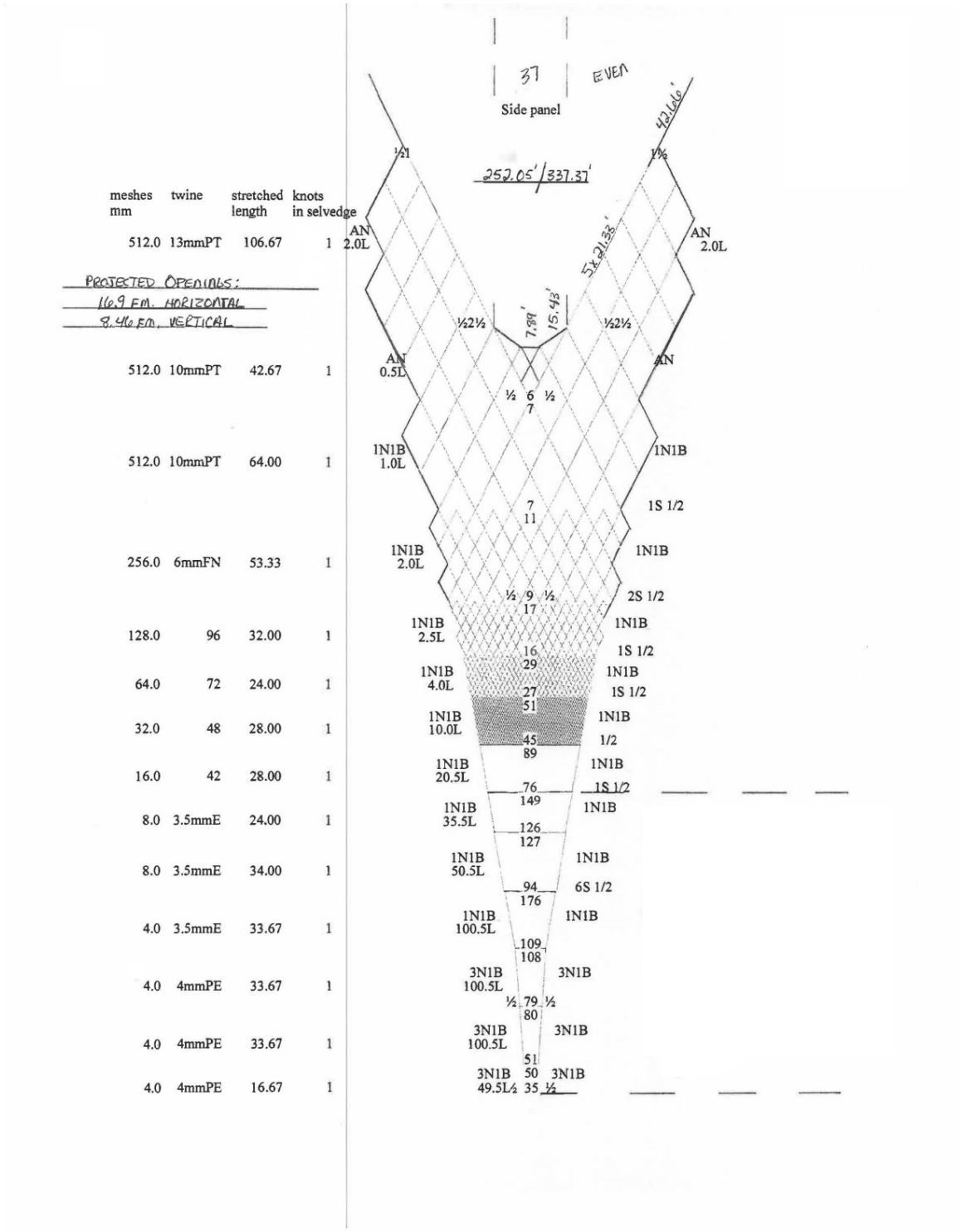

Figure A.1. Net specifications (side view) for the LFS 7742 trawl net used during the ecosystem-based juvenile Pacific Salmon survey from October 01 to 16, 2024 on the CCGS *Sir John Franklin*.

APPENDIX B THE BEAUFORT SCALE

Table B.1. The Beaufort Scale used to describe weather conditions.

Force	Description	Wind Speed (knots)	Sea State
0	Calm	<1	Sea like mirror
1	Light Air	1-3	Ripples; no foam crests
2	Light Breeze	4-6	Small wavelets
3	Gentle Breeze	7-10	Crests breaking
4	Moderate Breeze	11-16	Whitecaps
5	Fresh Breeze	17-21	Moderate waves - spray
6	Strong Breeze	22-27	Large waves
7	Moderate Gale	28-33	Sea heaps up
8	Fresh Gale	34-40	Moderately high waves
9	Strong Gale	41-47	High waves; spray
10	Whole Gale	48-55	Overhanging crests; sea white
11	Storm	56-63	Exceptionally high waves
12	Hurricane	64-118	Sea white

APPENDIX C TRAWL BRIDGE LOG DATA

Table C.1. Bridge log information for trawl tows during the ecosystem-based juvenile Pacific Salmon survey aboard the CCGS *Sir John Franklin*, October 01 to 16, 2024.

Station Name	QCST01	QCST02	QCST03	QCST04	QCST05	TI01
Tow	1	2	3	4	5	6
Event Number	2	5	8	9	10	13
Date (Pacific)	2024-10-02	2024-10-02	2024-10-02	2024-10-02	2024-10-02	2024-10-03
Start Time (Pacific)	07:36	10:45	14:03	15:35	17:37	07:42
Net	LFS 7742	LFS 7742	LFS 7742	LFS 7742	LFS 7742	LFS 7742
Duration (min)	20	20	21	20	20	20
Start Latitude	50° 40’ 54" N	50° 42’ 02" N	50° 43’ 47" N	50° 46’ 05" N	50° 52’ 48" N	51° 15’ 36" N
Start Longitude	126° 52’ 03" W	127° 00’ 35" W	127° 09’ 43" W	127° 16’ 14" W	127° 35’ 04" W	128° 21’ 03" W
End Latitude	50° 41’ 40" N	50° 42’ 16" N	50° 44’ 14" N	50° 46’ 39" N	50° 53’ 49" N	51° 16’ 06" N
End Longitude	126° 54’ 07" W	127° 02’ 38" W	127° 12’ 01" W	127° 18’ 32" W	127° 37’ 03" W	128° 23’ 16" W
Direction of Tow (deg)	299	278	285	290	308	289
Vessel Speed (km/h)	8.4	7.2	8.4	8.6	8.9	8.1
Distance Towed (km)	2.83	2.45	2.83	2.91	2.99	2.74
Net Opening Width (m)	49	59	50	57	49	57
Net Opening Height (m)	16	10	17	10	16	10
Warp Length (m)	200	270	200	260	200	260
Target Headrope Depth (m)	0	15	0	15	0	15
Median Headrope Depth (m)	5	21	5	20	4	20
Start Bottom Depth (m)	194	169	204	204	19	88
End Bottom Depth (m)	200	178	193	192	297	102
Usable	Y	Y	Y	Y	Y	Y

Station Name	TI02	TI03	TI04	CS01	CS02	CS03
Tow	7	8	9	10	11	12
Event Number	14	17	18	21	22	25
Date (Pacific)	2024-10-03	2024-10-03	2024-10-03	2024-10-04	2024-10-04	2024-10-04
Start Time (Pacific)	09:56	12:51	17:01	10:26	12:06	14:28
Net	LFS 7742	LFS 7742	LFS 7742	LFS 7742	LFS 7742	LFS 7742
Duration (min)	20	20	0	21	21	20
Start Latitude	51° 08’ 37" N	51° 01’ 23" N	50° 50’ 13" N	49° 12’ 41" N	49° 16’ 46" N	49° 25’ 28" N
Start Longitude	128° 36’ 22" W	128° 52’ 00" W	129° 26’ 46" W	126° 19’ 33" W	126° 23’ 27" W	126° 14’ 30" W
End Latitude	51° 08’ 09" N	51° 01’ 19" N	50° 50’ 13" N	49° 12’ 54" N	49° 16’ 56" N	49° 23’ 58" N
End Longitude	128° 33’ 43" W	128° 49’ 19" W	129° 26’ 47" W	126° 17’ 08" W	126° 21’ 04" W	126° 14’ 41" W
Direction of Tow (deg)	105	092	280	080	082	182
Vessel Speed (km/h)	9.4	9.3	8.9	8.6	8.6	8.3
Distance Towed (km)	3.20	3.14	0.01	2.96	2.91	2.81
Net Opening Width (m)	50	56	49	52	46	55
Net Opening Height (m)	14	10	15	10	15	10
Warp Length (m)	200	260	200	250	200	240
Target Headrope Depth (m)	0	15	0	15	0	15
Median Headrope Depth (m)	4	20	5	20	4	21
Start Bottom Depth (m)	143	68	234	64	58	73
End Bottom Depth (m)	151	64	234	57	54	72
Usable	Y	Y	N	Y	Y	Y

Station Name	CS04	CS05	VI01	VI02	VI03	VI04
Tow	13	14	15	16	17	18
Event Number	26	27	32	33	34	37
Date (Pacific)	2024-10-04	2024-10-04	2024-10-05	2024-10-05	2024-10-05	2024-10-05
Start Time (Pacific)	16:23	18:04	08:21	10:13	11:59	14:36
Net	LFS 7742	LFS 7742	LFS 7742	LFS 7742	LFS 7742	LFS 7742
Duration (min)	20	20	20	21	20	20
Start Latitude	49° 28’ 45" N	49° 23’ 25" N	49° 06’ 49" N	49° 03’ 08" N	48° 57’ 32" N	48° 58’ 38" N
Start Longitude	126° 16’ 49" W	126° 10’ 43" W	126° 16’ 29" W	126° 05’ 20" W	126° 14’ 56" W	126° 00’ 00" W
End Latitude	49° 27’ 12" N	49° 23’ 52" N	49° 06’ 55" N	49° 03’ 41" N	48° 58’ 09" N	48° 59’ 52" N
End Longitude	126° 16’ 10" W	126° 08’ 39" W	126° 14’ 05" W	126° 07’ 27" W	126° 17’ 08" W	126° 01’ 26" W
Direction of Tow (deg)	163	069	084	290	291	320
Vessel Speed (km/h)	8.7	7.9	8.7	8.2	8.7	8.5
Distance Towed (km)	2.97	2.64	2.93	2.77	2.92	2.88
Net Opening Width (m)	56	56	48	54	47	55
Net Opening Height (m)	15	10	15	9	14	10
Warp Length (m)	200	260	200	270	210	260
Target Headrope Depth (m)	0	15	0	15	0	15
Median Headrope Depth (m)	4	19	8	19	9	19
Start Bottom Depth (m)	134	85	79	60	123	59
End Bottom Depth (m)	130	130	72	66	130	59
Usable	Y	Y	Y	Y	Y	Y

Station Name	VI05	VI06	VI07	VI08	VI09	VI10
Tow	19	20	21	22	23	24
Event Number	38	39	44	45	46	49
Date (Pacific)	2024-10-05	2024-10-05	2024-10-06	2024-10-06	2024-10-06	2024-10-06
Start Time (Pacific)	16:17	17:33	08:20	10:11	12:11	13:39
Net	LFS 7742	LFS 7742	LFS 7742	LFS 7742	LFS 7742	LFS 7742
Duration (min)	20	20	20	20	21	20
Start Latitude	48° 55’ 53" N	48° 55’ 23" N	49° 07’ 45" N	49° 12’ 11" N	49° 18’ 25" N	49° 20’ 40" N
Start Longitude	125° 55’ 54" W	125° 47’ 00" W	126° 58’ 01" W	126° 48’ 28" W	126° 36’ 17" W	126° 42’ 53" W
End Latitude	48° 54’ 54" N	48° 55’ 48" N	49° 09’ 06" N	49° 12’ 51" N	49° 19’ 34" N	49° 21’ 36" N
End Longitude	125° 53’ 54" W	125° 44’ 53" W	126° 58’ 46" W	126° 50’ 08" W	126° 38’ 03" W	126° 44’ 51" W
Direction of Tow (deg)	124	071	339	300	313	305
Vessel Speed (km/h)	9.1	8.0	7.9	7.1	9.0	8.8
Distance Towed (km)	3.05	2.69	2.67	2.38	3.02	2.96
Net Opening Width (m)	46	52	56	49	54	47
Net Opening Height (m)	13	10	10	15	10	17
Warp Length (m)	200	260	260	200	260	200
Target Headrope Depth (m)	0	15	15	0	15	0
Median Headrope Depth (m)	8	20	18	4	20	5
Start Bottom Depth (m)	57	96	420	139	95	100
End Bottom Depth (m)	54	100	365	148	88	99
Usable	Y	Y	Y	Y	Y	Y

Station Name	VI11	VI12	NS01	NS02	NS03	EI01
Tow	25	26	27	28	29	30
Event Number	50	51	56	57	60	63
Date (Pacific)	2024-10-06	2024-10-06	2024-10-07	2024-10-07	2024-10-07	2024-10-07
Start Time (Pacific)	15:08	16:17	08:02	09:03	11:49	15:55
Net	LFS 7742	LFS 7742	LFS 7742	LFS 7742	LFS 7742	LFS 7742
Duration (min)	21	21	21	20	21	20
Start Latitude	49° 24’ 03" N	49° 29’ 11" N	49° 39’ 04" N	49° 38’ 07" N	49° 41’ 40" N	49° 55’ 45" N
Start Longitude	126° 45’ 20" W	126° 46’ 52" W	126° 28’ 34" W	126° 36’ 16" W	126° 31’ 05" W	126° 48’ 09" W
End Latitude	49° 25’ 03" N	49° 30’ 33" N	49° 37’ 52" N	49° 39’ 40" N	49° 41’ 20" N	49° 54’ 15" N
End Longitude	126° 47’ 07" W	126° 48’ 20" W	126° 30’ 01" W	126° 35’ 58" W	126° 33’ 25" W	126° 47’ 33" W
Direction of Tow (deg)	309	323	217	005	256	164
Vessel Speed (km/h)	8.4	8.9	8.4	8.6	8.4	8.5
Distance Towed (km)	2.84	3.08	2.82	2.89	2.89	2.85
Net Opening Width (m)	53	47	50	54	52	58
Net Opening Height (m)	10	17	15	10	15	10
Warp Length (m)	250	200	200	250	200	250
Target Headrope Depth (m)	15	0	0	15	0	15
Median Headrope Depth (m)	17	5	5	20	4	18
Start Bottom Depth (m)	80	59	235	164	248	224
End Bottom Depth (m)	84	62	190	163	210	225
Usable	Y	Y	Y	Y	Y	Y

Station Name	EI02	QCSD01	QCSD02	QCSD03	QCST06	QCSD04
Tow	31	32	33	34	35	36
Event Number	64	69	70	71	74	75
Date (Pacific)	2024-10-07	2024-10-08	2024-10-08	2024-10-08	2024-10-08	2024-10-08
Start Time (Pacific)	16:59	07:41	08:40	09:47	12:27	14:09
Net	LFS 7742	LFS 7742	LFS 7742	LFS 7742	LFS 7742	LFS 7742
Duration (min)	20	20	20	21	20	20
Start Latitude	49° 51’ 47" N	51° 10’ 15" N	51° 08’ 21" N	51° 05’ 51" N	50° 59’ 43" N	51° 00’ 18" N
Start Longitude	126° 51’ 23" W	127° 52’ 29" W	127° 54’ 29" W	127° 50’ 33" W	127° 48’ 47" W	128° 03’ 12" W
End Latitude	49° 51’ 25" N	51° 11’ 16" N	51° 06’ 52" N	51° 05’ 06" N	51° 00’ 06" N	51° 00’ 03" N
End Longitude	126° 53’ 36" W	127° 50’ 33" W	127° 54’ 19" W	127° 48’ 24" W	127° 50’ 49" W	128° 05’ 23" W
Direction of Tow (deg)	254	049	175	118	286	259
Vessel Speed (km/h)	8.1	8.8	8.1	8.6	7.4	7.7
Distance Towed (km)	2.75	2.95	2.74	2.88	2.48	2.59
Net Opening Width (m)	50	50	56	49	56	47
Net Opening Height (m)	15	14	10	17	10	14
Warp Length (m)	200	210	260	200	260	200
Target Headrope Depth (m)	0	0	15	0	15	0
Median Headrope Depth (m)	4	7	20	5	19	5
Start Bottom Depth (m)	211	107	121	111	160	129
End Bottom Depth (m)	201	97	124	104	142	121
Usable	Y	Y	Y	Y	Y	Y

Station Name	QCSD05	VI13	VI14	VI15	VI16	VI17
Tow	37	38	39	40	41	42
Event Number	76	81	82	85	86	87
Date (Pacific)	2024-10-08	2024-10-09	2024-10-09	2024-10-09	2024-10-09	2024-10-09
Start Time (Pacific)	14:41	08:10	09:52	12:13	13:41	14:37
Net	LFS 7742	LFS 7742	LFS 7742	LFS 7742	LFS 7742	LFS 7742
Duration (min)	20	21	20	20	20	20
Start Latitude	50° 56’ 42" N	50° 48’ 43" N	50° 43’ 08" N	50° 37’ 47" N	50° 32’ 42" N	50° 27’ 57" N
Start Longitude	128° 16’ 13" W	128° 28’ 28" W	128° 31’ 55" W	128° 30’ 28" W	128° 24’ 24" W	128° 14’ 58" W
End Latitude	50° 56’ 15" N	50° 50’ 04" N	50° 43’ 32" N	50° 37’ 55" N	50° 32’ 55" N	50° 27’ 57" N
End Longitude	128° 18’ 13" W	128° 27’ 52" W	128° 29’ 27" W	128° 28’ 12" W	128° 22’ 08" W	128° 12’ 42" W
Direction of Tow (deg)	250	015	075	084	081	089
Vessel Speed (km/h)	7.3	7.7	9.0	7.9	8.0	8.0
Distance Towed (km)	2.48	2.59	3.01	2.67	2.71	2.69
Net Opening Width (m)	55	55	49	56	49	55
Net Opening Height (m)	10	10	16	10	10	10
Warp Length (m)	250	260	200	260	210	260
Target Headrope Depth (m)	15	15	0	15	0	15
Median Headrope Depth (m)	20	19	5	21	6	19
Start Bottom Depth (m)	78	66	97	140	160	114
End Bottom Depth (m)	90	57	90	114	131	88
Usable	Y	Y	Y	Y	Y	Y

Station Name	VI18	QS01	QS02	QS03	BB01	BB02
Tow	43	44	45	46	47	48
Event Number	90	93	96	97	98	99
Date (Pacific)	2024-10-09	2024-10-10	2024-10-10	2024-10-10	2024-10-10	2024-10-10
Start Time (Pacific)	17:33	07:33	09:31	11:51	13:45	14:38
Net	LFS 7742	LFS 7742	LFS 7742	LFS 7742	LFS 7742	LFS 7742
Duration (min)	21	20	20	20	20	20
Start Latitude	50° 20’ 43" N	50° 26’ 41" N	50° 29’ 58" N	50° 24’ 03" N	50° 15’ 06" N	50° 12’ 15" N
Start Longitude	128° 11’ 19" W	127° 31’ 18" W	127° 42’ 38" W	128° 03’ 54" W	128° 04’ 53" W	127° 59’ 27" W
End Latitude	50° 21’ 06" N	50° 27’ 57" N	50° 29’ 44" N	50° 24’ 14" N	50° 15’ 15" N	50° 10’ 51" N
End Longitude	128° 08’ 38" W	127° 32’ 37" W	127° 45’ 11" W	128° 01’ 37" W	128° 02’ 33" W	127° 59’ 43" W
Direction of Tow (deg)	077	326	261	082	084	186
Vessel Speed (km/h)	9.7	8.4	9.0	8.1	8.3	7.8
Distance Towed (km)	3.26	2.81	3.04	2.73	2.80	2.61
Net Opening Width (m)	49	55	51	55	47	54
Net Opening Height (m)	16	10	15	10	15	10
Warp Length (m)	200	250	200	240	200	250
Target Headrope Depth (m)	0	15	0	15	0	15
Median Headrope Depth (m)	4	19	4	18	5	19
Start Bottom Depth (m)	157	195	122	78	114	75
End Bottom Depth (m)	127	186	114	147	80	88
Usable	Y	Y	Y	Y	Y	Y

Station Name	BB03	BP01	BP02	BP03	VI19	VI20
Tow	49	50	51	52	53	54
Event Number	100	105	106	109	110	111
Date (Pacific)	2024-10-10	2024-10-11	2024-10-11	2024-10-11	2024-10-11	2024-10-11
Start Time (Pacific)	15:59	08:37	10:20	12:17	13:07	14:34
Net	LFS 7742	LFS 7742	LFS 7742	LFS 7742	LFS 7742	LFS 7742
Duration (min)	20	20	20	20	21	20
Start Latitude	50° 07’ 32" N	50° 00’ 23" N	50° 03’ 46" N	50° 01’ 14" N	50° 00’ 10" N	49° 58’ 43" N
Start Longitude	128° 00’ 38" W	128° 01’ 25" W	127° 54’ 59" W	127° 51’ 52" W	127° 43’ 53" W	127° 37’ 33" W
End Latitude	50° 06’ 18" N	49° 59’ 44" N	50° 03’ 18" N	50° 01’ 04" N	50° 00’ 11" N	49° 58’ 07" N
End Longitude	128° 00’ 21" W	127° 59’ 36" W	127° 52’ 51" W	127° 49’ 55" W	127° 41’ 43" W	127° 35’ 43" W
Direction of Tow (deg)	171	118	108	096	088	116
Vessel Speed (km/h)	6.8	7.4	8.0	7.0	7.7	7.2
Distance Towed (km)	2.29	2.47	2.69	2.35	2.60	2.45
Net Opening Width (m)	45	56	48	54	47	54
Net Opening Height (m)	16	10	15	10	15	10
Warp Length (m)	200	270	200	250	200	260
Target Headrope Depth (m)	0	15	0	15	0	15
Median Headrope Depth (m)	6	18	4	19	6	19
Start Bottom Depth (m)	121	1296	129	322	112	85
End Bottom Depth (m)	153	1261	97	427	99	80
Usable	Y	Y	Y	Y	Y	Y

Station Name	VI21	KS01	KS02	KS03	VI22	BS01
Tow	55	56	57	58	59	60
Event Number	112	117	120	121	124	127
Date (Pacific)	2024-10-11	2024-10-12	2024-10-12	2024-10-12	2024-10-12	2024-10-13
Start Time (Pacific)	15:56	07:54	09:54	11:23	14:36	07:31
Net	LFS 7742	LFS 7742	LFS 7742	LFS 7742	LFS 7742	LFS 7742
Duration (min)	20	20	20	20	20	21
Start Latitude	49° 56’ 51" N	50° 05’ 54" N	49° 59’ 56" N	49° 55’ 01" N	49° 48’ 28" N	48° 54’ 19" N
Start Longitude	127° 29’ 28" W	127° 14’ 59" W	127° 12’ 35" W	127° 18’ 54" W	127° 23’ 00" W	125° 23’ 35" W
End Latitude	49° 56’ 56" N	50° 04’ 21" N	49° 59’ 02" N	49° 56’ 01" N	49° 49’ 52" N	48° 53’ 10" N
End Longitude	127° 27’ 10" W	127° 15’ 10" W	127° 14’ 31" W	127° 20’ 38" W	127° 24’ 38" W	125° 24’ 59" W
Direction of Tow (deg)	085	183	233	310	322	216
Vessel Speed (km/h)	8.2	8.6	8.5	8.3	9.7	8.1
Distance Towed (km)	2.75	2.90	2.86	2.79	3.26	2.73
Net Opening Width (m)	48	51	54	45	55	49
Net Opening Height (m)	15	15	10	15	10	15
Warp Length (m)	200	200	240	210	270	200
Target Headrope Depth (m)	0	0	15	0	15	0
Median Headrope Depth (m)	4	5	19	5	20	4
Start Bottom Depth (m)	61	127	229	62	81	57
End Bottom Depth (m)	60	215	144	66	80	67
Usable	Y	Y	Y	Y	Y	Y

Station Name	VI23	VI24	VI25	BS02	BS03	BS04
Tow	61	62	63	64	65	66
Event Number	128	131	132	133	138	141
Date (Pacific)	2024-10-13	2024-10-13	2024-10-13	2024-10-13	2024-10-14	2024-10-14
Start Time (Pacific)	08:21	12:54	13:39	16:56	08:17	10:04
Net	LFS 7742	LFS 7742	LFS 7742	LFS 7742	LFS 7742	LFS 7742
Duration (min)	21	20	20	21	21	20
Start Latitude	48° 53’ 49" N	48° 32’ 43" N	48° 40’ 30" N	48° 47’ 11" N	48° 53’ 42" N	48° 57’ 28" N
Start Longitude	125° 34’ 43" W	125° 42’ 53" W	125° 29’ 36" W	125° 18’ 31" W	125° 12’ 32" W	125° 07’ 06" W
End Latitude	48° 55’ 15" N	48° 33’ 48" N	48° 41’ 56" N	48° 48’ 43" N	48° 55’ 00" N	48° 56’ 32" N
End Longitude	125° 35’ 26" W	125° 44’ 21" W	125° 30’ 10" W	125° 19’ 14" W	125° 11’ 01" W	125° 08’ 57" W
Direction of Tow (deg)	339	316	342	340	035	230
Vessel Speed (km/h)	8.3	8.0	8.2	8.9	9.1	8.4
Distance Towed (km)	2.79	2.69	2.76	3.00	3.06	2.83
Net Opening Width (m)	55	48	57	49	47	55
Net Opening Height (m)	10	15	10	15	15	10
Warp Length (m)	260	200	250	200	200	260
Target Headrope Depth (m)	15	0	15	0	0	15
Median Headrope Depth (m)	18	5	20	4	5	19
Start Bottom Depth (m)	98	83	171	89	74	106
End Bottom Depth (m)	95	79	148	73	94	70
Usable	Y	Y	Y	Y	Y	Y

Station Name	JdF01	JdF02	JdF03	JdF04	JdF05	JdF06
Tow	67	68	69	70	71	72
Event Number	144	145	148	149	152	153
Date (Pacific)	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-15	2024-10-15
Start Time (Pacific)	08:31	09:16	11:50	12:42	14:08	15:42
Net	LFS 7742	LFS 7742	LFS 7742	LFS 7742	LFS 7742	LFS 7742
Duration (min)	20	20	0	20	21	20
Start Latitude	48° 32’ 57" N	48° 31’ 24" N	48° 27’ 55" N	48° 25’ 24" N	48° 23’ 34" N	48° 20’ 13" N
Start Longitude	124° 42’ 12" W	124° 31’ 40" W	124° 22’ 10" W	124° 13’ 20" W	124° 05’ 01" W	123° 49’ 45" W
End Latitude	48° 32’ 24" N	48° 31’ 09" N	48° 27’ 55" N	48° 24’ 49" N	48° 23’ 08" N	48° 19’ 43" N
End Longitude	124° 40’ 26" W	124° 29’ 09" W	124° 22’ 10" W	124° 10’ 42" W	124° 02’ 11" W	123° 47’ 25" W
Direction of Tow (deg)	112	095	087	105	100	104
Vessel Speed (km/h)	7.1	9.4	6.4	10.2	10.6	8.9
Distance Towed (km)	2.40	3.14	0.00	3.42	3.58	3.02
Net Opening Width (m)	58	49	49	56	52	54
Net Opening Height (m)	15	10	15	10	15	10
Warp Length (m)	260	200	200	260	200	260
Target Headrope Depth (m)	0	15	0	15	0	15
Median Headrope Depth (m)	20	5	4	19	4	20
Start Bottom Depth (m)	121	110	132	113	97	146
End Bottom Depth (m)	139	93	131	110	83	148
Usable	Y	Y	N	Y	Y	Y

APPENDIX D CTD CASTS AND ZOOPLANKTON TOWS

Table D.1. CTD casts and vertical bongo tow times and depths during the ecosystem-based juvenile Pacific Salmon survey from October 01 to 16, 2024 on the CCGS *Sir John Franklin*.

				CTD			BONGO		
Date	Station	Latitude	Longitude	Start Time (PDT)	Bottom Depth (m)	Gear Depth (m)	Start Time (PDT)	Bottom Depth (m)	Gear Depth (m)
2024-10-02	QCST01	50° 42' 04" N	126° 55' 06" W	09:45	203	197	10:08	199	189
2024-10-02	QCST03	50° 43' 21" N	127° 07' 52" W	12:15	222	212	12:38	222	212
2024-10-03	TI01	51° 15' 06" N	128° 19' 07" W	07:14	79	69	07:31	79	69
2024-10-03	TI03	51° 01' 28" N	128° 54' 08" W	12:32	75	69	12:46	73	64
2024-10-04	CS01	49° 12' 39" N	126° 21' 33" W	10:06	65	54	10:19	64	54
2024-10-04	CS03	49° 24' 20" N	126° 14' 35" W	14:08	70	60	14:21	70	
2024-10-04	CS05	49° 24' 07" N	126° 08' 20" W	19:05	141	130	19:24	140	130
2024-10-05	VI01	49° 06' 49" N	126° 18' 12" W	08:01	87	77	08:12	87	77
2024-10-05	VI03	48° 59' 03" N	126° 17' 18" W	13:04	128	117	13:21	126	117
2024-10-05	VI06	48° 56' 08" N	125° 43' 52" W	18:49	98	87	19:04	97	87
2024-10-06	VI07	49° 05' 52" N	126° 57' 44" W	07:22	486	471	08:09	477	250
2024-10-06	VI10	49° 19' 55" N	126° 41' 07" W	13:16	101	90	13:31	101	90
2024-10-06	VI12	49° 31' 15" N	126° 48' 49" W	17:10	63	53	17:22	64	53
2024-10-07	NS01	49° 39' 28" N	126° 27' 42" W	07:35	195	185	07:53	194	184
2024-10-07	NS03	49° 41' 54" N	126° 30' 20" W	11:03	248	237	11:26	251	238
2024-10-07	EI01	49° 56' 13" N	126° 48' 23" W	15:25	217	206	15:46	217	206
2024-10-07	EI02	49° 51' 23" N	126° 54' 26" W	18:09	190	180	18:28	190	180
2024-10-08	QCSD01	51° 09' 58" N	127° 53' 30" W	07:18	127	116	07:32	128	116
2024-10-08	QCST06	50° 59' 25" N	127° 46' 58" W	11:55	160	150	12:15	158	150
2024-10-08	QCSD05	50° 56' 10" N	128° 18' 38" W	16:35	85	75	16:48	88	75
2024-10-09	VI13	50° 47' 58" N	128° 29' 36" W	07:51	83	74	08:01	78	70
2024-10-09	VI15	50° 37' 50" N	128° 32' 18" W	11:42	156	147	12:00	154	145
2024-10-09	VI18	50° 20' 31" N	128° 13' 04" W	17:05	173	162	17:25	168	160
2024-10-10	QS01	50° 25' 32" N	127° 30' 29" W	07:09	167	157	07:26	168	157
2024-10-10	QS02	50° 30' 12" N	127° 41' 27" W	09:12	120	110	09:25	125	110

				CTD			BONGO		
Date	Station	Latitude	Longitude	Start Time (PDT)	Bottom Depth (m)	Gear Depth (m)	Start Time (PDT)	Bottom Depth (m)	Gear Depth (m)
2024-10-10	BB03	50° 06' 03" N	128° 01' 17" W	17:30	423	400	17:55	239	225
2024-10-11	BP01	50° 00' 52" N	128° 02' 47" W	07:07	1,322	1,312	08:29	1,326	250
2024-10-11	BP03	50° 01' 24" N	127° 53' 27" W	11:48	536	520	11:37	555	250
2024-10-11	VI21	49° 57' 22" N	127° 26' 26" W	17:14	63	63	17:24	63	53
2024-10-12	KS01	50° 05' 50" N	127° 15' 18" W	07:27	135	125	07:43	140	125
2024-10-12	KS02	50° 00' 18" N	127° 11' 13" W	09:26	154	144	09:41	152	145
2024-10-12	VI22	49° 47' 03" N	127° 21' 51" W	14:13	85	75	14:28	82	75
2024-10-13	BS01	48° 54' 44" N	125° 22' 55" W	07:13	56	45	07:25	56	45
2024-10-13	VI24	48° 32' 01" N	125° 41' 40" W	12:36	84	74			
2024-10-13	BS02	48° 49' 26" N	125° 19' 36" W	17:49	91	80	18:01	91	80
2024-10-14	BS03	48° 52' 26" N	125° 14' 19" W	07:55	96	85	08:08	96	85
2024-10-14	BS04	48° 57' 17" N	125° 07' 04" W	09:46	98	88	09:58	97	88
2024-10-15	JdF01	48° 32' 56" N	124° 41' 54" W	08:07	120	110	08:23	113	110
2024-10-15	JdF03	48° 28' 13" N	124° 24' 00" W	11:15	154	144	11:30	153	144
2024-10-15	JdF05	48° 23' 56" N	124° 07' 12" W	13:45	109	99	13:57	111	99
2024-10-15	JdF06	48° 19' 29" N	123° 46' 41" W	16:37	143	133	16:53	143	133

APPENDIX E CATCH DATA

Table E.1. Weight (kg) and counts of species (or taxa) per station during the ecosystem-based juvenile Pacific Salmon survey from October 01 to 16, 2024 on the CCGS *Sir John Franklin*. Jellyfish weights include all identified pieces but only counted if bells were intact. Euphausiacea were not counted. Counts with blank weights indicate catches too big or small to be weighed accurately.

Station Name	QCST01		QCST02		QCST03		QCST04		QCST05	
Common Name	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count
Chinook Salmon (Adults)										
Chinook Salmon (Juveniles)										
Chum Salmon (Adults)	3.27	1							20.81	7
Chum Salmon (Juveniles)					4.18	39			0.22	2
Coho Salmon (Adults)										
Coho Salmon (Juveniles)	0.27	2	1.26	6	3.20	15	1.32	4	0.41	2
Pink Salmon (Juveniles)	5.34	115	0.53	11	4.15	62			2.91	50
Sockeye Salmon (Juveniles)					0.03	1			1.02	35
Bay Pipefish										
Black Rockfish										
Chub Mackerel										
Cods/Hakes/Grenadiers										1
Crescent Gunnel	0.04	1								
Flatfishes										
Fried Egg Jellyfish										
Jack Mackerel										
Kelp Greenling										
Larval Fish										
Lingcod										
Lions Mane	5.56		5.97	1	6.59	1	10.27	4	16.14	
Mitrocoma										
Moon Jellyfish		1			1.20				3.05	
North Pacific Spiny Dogfish										
Northern Anchovy		1								
Northern Sea Nettle										
Opalescent Inshore Squid										
Pacific Hake										
Pacific Herring									163.00	5,292
Pacific Saury										
Pacific Sea Nettle										
Pile Perch										
Prowfish										
Purple-striped Sea Nettle										
Pyrosomes										
Ragfish										
Salmon Shark										
Salps										
Shiner Perch										
Smelts										
Snailfishes				1						
Speckled Sanddab										
Spotted Ratfish										
Walleye Pollock										
Water Jellyfish	0.25				0.33		0.24		7.33	
Wolf Eel										
TOTAL	**14.73**	**121**	**7.76**	**19**	**19.68**	**118**	**11.83**	**8**	**214.89**	**5,389**

Station Name	TI01		TI02		TI03		CS01		CS02	
Common Name	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count
Chinook Salmon (Adults)									4.34	1
Chinook Salmon (Juveniles)							0.18	1	2.24	18
Chum Salmon (Adults)	2.70	1					2.92	1		
Chum Salmon (Juveniles)							0.29	2	0.53	7
Coho Salmon (Adults)										
Coho Salmon (Juveniles)	0.64	2					0.80	3	0.36	1
Pink Salmon (Juveniles)									16.88	227
Sockeye Salmon (Juveniles)										
Bay Pipefish										
Black Rockfish										
Chub Mackerel										
Cods/Hakes/Grenadiers										
Crescent Gunnel										
Flatfishes										
Fried Egg Jellyfish					0.81		2.44		0.04	
Jack Mackerel										
Kelp Greenling										
Larval Fish										
Lingcod										
Lions Mane	3.46	3	5.49		18.17		4.07			
Mitrocoma										
Moon Jellyfish	1.60	2			0.29	1	9.43		3.99	
North Pacific Spiny Dogfish										
Northern Anchovy										
Northern Sea Nettle										
Opalescent Inshore Squid					0.01	4	0.13	33	0.21	56
Pacific Hake										
Pacific Herring									0.04	1
Pacific Saury										
Pacific Sea Nettle										
Pile Perch										
Prowfish	0.28	1								
Purple-striped Sea Nettle							2.98	1		
Pyrosomes										
Ragfish					0.04	1				
Salmon Shark		1								
Salps										
Shiner Perch										
Smelts										
Snailfishes										
Speckled Sanddab										
Spotted Ratfish										
Walleye Pollock										
Water Jellyfish			11.91		8.45		19.16		15.94	
Wolf Eel										
TOTAL	**8.68**	**10**	**17.40**	**0**	**27.77**	**6**	**42.40**	**41**	**44.57**	**311**

Station Name	CS03		CS04		CS05		VI01		VI02	
Common Name	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count
Chinook Salmon (Adults)									1.16	1
Chinook Salmon (Juveniles)	1.16	13	0.60	7	0.11	1	0.17	1	0.48	3
Chum Salmon (Adults)	6.43	2			3.68	1	5.90	1	8.63	3
Chum Salmon (Juveniles)							0.14	1		
Coho Salmon (Adults)	2.43	1								
Coho Salmon (Juveniles)							2.65	9		
Pink Salmon (Juveniles)										
Sockeye Salmon (Juveniles)										
Bay Pipefish										
Black Rockfish										
Chub Mackerel										
Cods/Hakes/Grenadiers				1						
Crescent Gunnel										
Flatfishes										
Fried Egg Jellyfish	0.37		3.14		2.76					
Jack Mackerel			2.81	2			14.41	13		
Kelp Greenling										
Larval Fish										
Lingcod									3.43	1
Lions Mane	8.20		6.41		5.62		0.27		2.35	2
Mitrocoma										
Moon Jellyfish	1.25	2					27.23		5.84	7
North Pacific Spiny Dogfish										
Northern Anchovy										
Northern Sea Nettle									0.47	1
Opalescent Inshore Squid					0.02	6	2.30	350		
Pacific Hake			0.05	1						
Pacific Herring										
Pacific Saury										
Pacific Sea Nettle										
Pile Perch										
Prowfish										
Purple-striped Sea Nettle										
Pyrosomes										
Ragfish			0.10	1						
Salmon Shark										
Salps										
Shiner Perch										
Smelts										
Snailfishes										
Speckled Sanddab										
Spotted Ratfish										
Walleye Pollock										
Water Jellyfish	2.51				0.33		70.76		4.95	
Wolf Eel										
TOTAL	**22.35**	**18**	**13.11**	**12**	**12.52**	**8**	**123.83**	**375**	**27.31**	**18**

Station Name	VI03		VI04		VI05		VI06		VI07	
Common Name	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count
Chinook Salmon (Adults)										
Chinook Salmon (Juveniles)			0.14	1	0.86	5	0.46	2		
Chum Salmon (Adults)			128.53	35	17.86	6	3.34	1		
Chum Salmon (Juveniles)										
Coho Salmon (Adults)										
Coho Salmon (Juveniles)					0.24	1				
Pink Salmon (Juveniles)										
Sockeye Salmon (Juveniles)										
Bay Pipefish										
Black Rockfish										
Chub Mackerel										
Cods/Hakes/Grenadiers										
Crescent Gunnel										
Flatfishes										
Fried Egg Jellyfish	4.99		1.08				0.64		1.88	
Jack Mackerel							8.70	6		
Kelp Greenling										
Larval Fish										
Lingcod										
Lions Mane			9.26	1					1.04	1
Mitrocoma										
Moon Jellyfish	20.49				0.50	1				
North Pacific Spiny Dogfish										
Northern Anchovy										
Northern Sea Nettle										
Opalescent Inshore Squid					11.52	1,508	1.08	162		
Pacific Hake										
Pacific Herring							0.02	3		
Pacific Saury										
Pacific Sea Nettle			0.26	1			0.60	1		
Pile Perch										
Prowfish										
Purple-striped Sea Nettle										
Pyrosomes										
Ragfish										
Salmon Shark										
Salps										
Shiner Perch										
Smelts										
Snailfishes										
Speckled Sanddab										
Spotted Ratfish			0.02	1						
Walleye Pollock										
Water Jellyfish	25.83				0.04		3.32		19.19	
Wolf Eel										
TOTAL	**51.31**	**0**	**139.29**	**39**	**31.02**	**1,521**	**18.16**	**175**	**22.11**	**1**

Station Name	VI08		VI09		VI10		VI11		VI12	
Common Name	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count
Chinook Salmon (Adults)										
Chinook Salmon (Juveniles)					0.20	1	0.39	3	1.52	12
Chum Salmon (Adults)	59.11	16			108.44	28	54.26	15	9.52	3
Chum Salmon (Juveniles)					0.56	3			1.50	11
Coho Salmon (Adults)										
Coho Salmon (Juveniles)					4.46	14	0.22	1	0.78	4
Pink Salmon (Juveniles)									4.28	45
Sockeye Salmon (Juveniles)										
Bay Pipefish										
Black Rockfish										
Chub Mackerel			16.28	19						
Cods/Hakes/Grenadiers										
Crescent Gunnel										
Flatfishes										
Fried Egg Jellyfish	2.92	1	0.28				2.50		0.02	
Jack Mackerel	0.44	1	99.00	151						
Kelp Greenling										
Larval Fish										
Lingcod										
Lions Mane	0.77		1.24	1	0.38		10.20		14.16	
Mitrocoma										
Moon Jellyfish	3.28	7	4.51		7.34		0.34		40.02	
North Pacific Spiny Dogfish										
Northern Anchovy										
Northern Sea Nettle										
Opalescent Inshore Squid	0.10	19							0.46	20
Pacific Hake										
Pacific Herring									0.07	1
Pacific Saury										
Pacific Sea Nettle							0.48			
Pile Perch										
Prowfish										
Purple-striped Sea Nettle										
Pyrosomes										
Ragfish							0.08	1	0.09	1
Salmon Shark										
Salps										
Shiner Perch										
Smelts										
Snailfishes										
Speckled Sanddab										
Spotted Ratfish										
Walleye Pollock										
Water Jellyfish	45.26				101.00		13.06		80.64	
Wolf Eel										
TOTAL	**111.88**	**44**	**121.31**	**171**	**222.38**	**46**	**81.53**	**20**	**153.06**	**97**

Station Name	NS01		NS02		NS03		EI01		EI02	
Common Name	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count
Chinook Salmon (Adults)									0.72	1
Chinook Salmon (Juveniles)	19.69	354	1.54	29	5.56	128	0.86	12	9.20	89
Chum Salmon (Adults)	29.80	10	6.24	2	2.74	1			173.00	52
Chum Salmon (Juveniles)									0.34	4
Coho Salmon (Adults)	6.29	2								
Coho Salmon (Juveniles)									3.03	11
Pink Salmon (Juveniles)									0.17	3
Sockeye Salmon (Juveniles)										
Bay Pipefish										
Black Rockfish										
Chub Mackerel										
Cods/Hakes/Grenadiers						2				
Crescent Gunnel										
Flatfishes										
Fried Egg Jellyfish			4.46		4.88		1.16		0.47	
Jack Mackerel									14.37	11
Kelp Greenling										
Larval Fish										
Lingcod										
Lions Mane	0.08		11.80		9.90				13.12	
Mitrocoma										
Moon Jellyfish					0.26				0.66	
North Pacific Spiny Dogfish										
Northern Anchovy	0.06	2								
Northern Sea Nettle										
Opalescent Inshore Squid	73.36	3,315								
Pacific Hake										
Pacific Herring	0.06	2								
Pacific Saury										
Pacific Sea Nettle										
Pile Perch										
Prowfish										
Purple-striped Sea Nettle										
Pyrosomes										
Ragfish										
Salmon Shark										
Salps										
Shiner Perch	0.02	1								
Smelts										
Snailfishes										
Speckled Sanddab										
Spotted Ratfish										
Walleye Pollock										
Water Jellyfish	0.38		0.46		1.16		0.14		9.42	
Wolf Eel										
TOTAL	**129.74**	**3,686**	**24.50**	**31**	**24.50**	**131**	**2.16**	**12**	**224.50**	**171**

Station Name	QCSD01		QCSD02		QCSD03		QCST06		QCSD04	
Common Name	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count
Chinook Salmon (Adults)										
Chinook Salmon (Juveniles)										
Chum Salmon (Adults)										
Chum Salmon (Juveniles)	11.99	113								
Coho Salmon (Adults)										
Coho Salmon (Juveniles)	7.89	34	1.50	5	1.09	4	0.21	1	0.52	2
Pink Salmon (Juveniles)	21.35	350	0.41	7	0.20	3				
Sockeye Salmon (Juveniles)					0.24	7				
Bay Pipefish										
Black Rockfish										
Chub Mackerel										
Cods/Hakes/Grenadiers										
Crescent Gunnel										
Flatfishes										
Fried Egg Jellyfish	7.07									
Jack Mackerel										
Kelp Greenling										
Larval Fish										
Lingcod										
Lions Mane	4.77	4	10.99		17.58		0.74		2.15	
Mitrocoma										
Moon Jellyfish			1.15	1	8.35		14.46		9.87	
North Pacific Spiny Dogfish										
Northern Anchovy										
Northern Sea Nettle										
Opalescent Inshore Squid						1				
Pacific Hake										
Pacific Herring					0.07	3				
Pacific Saury									7.49	86
Pacific Sea Nettle										
Pile Perch										
Prowfish										
Purple-striped Sea Nettle										
Pyrosomes										
Ragfish										
Salmon Shark										
Salps										
Shiner Perch										
Smelts										
Snailfishes										
Speckled Sanddab										
Spotted Ratfish										
Walleye Pollock										
Water Jellyfish	1.20		12.94		21.69		25.84		24.97	
Wolf Eel	0.49	4								
TOTAL	**54.76**	**505**	**26.99**	**13**	**49.22**	**18**	**41.25**	**1**	**45.00**	**88**

Station Name	QCSD05		VI13		VI14		VI15		VI16	
Common Name	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count
Chinook Salmon (Adults)										
Chinook Salmon (Juveniles)	0.19	1								
Chum Salmon (Adults)			1.75	1					40.90	10
Chum Salmon (Juveniles)										
Coho Salmon (Adults)										
Coho Salmon (Juveniles)			0.33	1	0.61	2			0.12	1
Pink Salmon (Juveniles)										
Sockeye Salmon (Juveniles)										
Bay Pipefish										
Black Rockfish										
Chub Mackerel										
Cods/Hakes/Grenadiers										
Crescent Gunnel										
Flatfishes										
Fried Egg Jellyfish										
Jack Mackerel										
Kelp Greenling										
Larval Fish										
Lingcod										
Lions Mane	3.97		10.00	2	9.28		2.28	2	0.36	1
Mitrocoma										
Moon Jellyfish	4.42	6	2.48	3	13.32		2.58	3		
North Pacific Spiny Dogfish										
Northern Anchovy										
Northern Sea Nettle	0.41	1								
Opalescent Inshore Squid		1				2				
Pacific Hake										
Pacific Herring										
Pacific Saury										
Pacific Sea Nettle										
Pile Perch										
Prowfish										
Purple-striped Sea Nettle										
Pyrosomes										
Ragfish										
Salmon Shark										
Salps										
Shiner Perch										
Smelts										
Snailfishes										
Speckled Sanddab										
Spotted Ratfish										
Walleye Pollock										
Water Jellyfish	135.63		20.32		14.62		111.46		6.98	
Wolf Eel										
TOTAL	**144.62**	**9**	**34.88**	**7**	**37.83**	**4**	**116.32**	**5**	**48.36**	**12**

Station Name	VI17		VI18		QS01		QS02		QS03	
Common Name	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count
Chinook Salmon (Adults)										
Chinook Salmon (Juveniles)					0.83	6	2.56	48	0.17	2
Chum Salmon (Adults)	12.20	3	13.08	4	5.98	2	24.60	9		
Chum Salmon (Juveniles)							0.32	5		
Coho Salmon (Adults)										
Coho Salmon (Juveniles)	0.46	2			1.49	7	1.09	6	0.23	1
Pink Salmon (Juveniles)							0.03	1	0.04	1
Sockeye Salmon (Juveniles)										
Bay Pipefish										
Black Rockfish										
Chub Mackerel										
Cods/Hakes/Grenadiers										
Crescent Gunnel										
Flatfishes										
Fried Egg Jellyfish			1.20		2.66		0.82		0.51	
Jack Mackerel							1.76	1		
Kelp Greenling										
Larval Fish										
Lingcod										
Lions Mane	6.74		0.44	1	0.76	1	17.62		0.56	1
Mitrocoma										
Moon Jellyfish	0.74	1	12.06						0.86	1
North Pacific Spiny Dogfish					1.90	12	0.88	8		
Northern Anchovy										
Northern Sea Nettle									2.02	1
Opalescent Inshore Squid										
Pacific Hake										
Pacific Herring										
Pacific Saury										
Pacific Sea Nettle										
Pile Perch										
Prowfish										
Purple-striped Sea Nettle										
Pyrosomes										
Ragfish							0.04	2		
Salmon Shark										
Salps										
Shiner Perch										
Smelts										
Snailfishes										
Speckled Sanddab										
Spotted Ratfish										
Walleye Pollock					0.88	3				
Water Jellyfish	26.90		273.74				0.45		13.35	
Wolf Eel										
TOTAL	**47.04**	**6**	**300.52**	**5**	**14.50**	**31**	**50.17**	**80**	**17.74**	**7**

Station Name	BB01		BB02		BB03		BP01		BP02	
Common Name	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count
Chinook Salmon (Adults)										
Chinook Salmon (Juveniles)	0.13	1	0.14	1	0.20	1				
Chum Salmon (Adults)	25.81	8	7.12	2	15.24	4				
Chum Salmon (Juveniles)										
Coho Salmon (Adults)										
Coho Salmon (Juveniles)	0.83	4	0.28	1	1.52	6			0.82	3
Pink Salmon (Juveniles)	0.60	8								
Sockeye Salmon (Juveniles)										
Bay Pipefish										
Black Rockfish										
Chub Mackerel										
Cods/Hakes/Grenadiers										
Crescent Gunnel										
Flatfishes										
Fried Egg Jellyfish			1.02	1			3.04			
Jack Mackerel			0.68	1			943.82	1,264	0.82	1
Kelp Greenling										
Larval Fish										
Lingcod										
Lions Mane	16.22		1.70		12.74	5	1.98		8.54	
Mitrocoma										
Moon Jellyfish	0.88		7.44		8.98	8	0.86		1.52	3
North Pacific Spiny Dogfish										
Northern Anchovy										
Northern Sea Nettle										
Opalescent Inshore Squid	0.31	125								
Pacific Hake										
Pacific Herring										
Pacific Saury										
Pacific Sea Nettle			0.26	1						
Pile Perch										
Prowfish										
Purple-striped Sea Nettle										
Pyrosomes										
Ragfish									0.02	1
Salmon Shark										
Salps										
Shiner Perch										
Smelts										
Snailfishes										
Speckled Sanddab	0.02	1								
Spotted Ratfish										
Walleye Pollock										
Water Jellyfish	178.56		34.14		35.46				489.00	
Wolf Eel										
TOTAL	**223.36**	**147**	**52.78**	**7**	**74.14**	**24**	**949.70**	**1,264**	**500.72**	**8**

Station Name	BP03		VI19		VI20		VI21		KS01	
Common Name	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count
Chinook Salmon (Adults)										
Chinook Salmon (Juveniles)			0.74	1			0.28	2	0.84	9
Chum Salmon (Adults)							116.15	34	3.24	1
Chum Salmon (Juveniles)									1.31	11
Coho Salmon (Adults)										
Coho Salmon (Juveniles)			0.38	1			0.30	1	0.77	3
Pink Salmon (Juveniles)										
Sockeye Salmon (Juveniles)										
Bay Pipefish										
Black Rockfish			2.50	1						
Chub Mackerel										
Cods/Hakes/Grenadiers										
Crescent Gunnel										
Flatfishes										
Fried Egg Jellyfish									2.11	
Jack Mackerel									2.58	3
Kelp Greenling										
Larval Fish										
Lingcod										
Lions Mane	2.32	1	0.44						1.59	
Mitrocoma										
Moon Jellyfish	0.58	1	2.22		2.94	3	0.98	2		
North Pacific Spiny Dogfish										
Northern Anchovy										
Northern Sea Nettle					0.76	1				
Opalescent Inshore Squid							0.20	45	0.02	6
Pacific Hake										
Pacific Herring										
Pacific Saury										
Pacific Sea Nettle										
Pile Perch										
Prowfish										
Purple-striped Sea Nettle										
Pyrosomes					0.16	1				
Ragfish	0.02	1								
Salmon Shark										
Salps			0.14	15		1				
Shiner Perch										
Smelts										
Snailfishes										
Speckled Sanddab										
Spotted Ratfish										
Walleye Pollock										
Water Jellyfish	29.76		105.26		21.72		58.08		1.27	
Wolf Eel										
TOTAL	**32.68**	**3**	**111.68**	**18**	**25.58**	**6**	**175.99**	**84**	**13.73**	**33**

Station Name	KS02		KS03		VI22		BS01		VI23	
Common Name	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count
Chinook Salmon (Adults)										
Chinook Salmon (Juveniles)			0.14	1			20.68	227	3.86	39
Chum Salmon (Adults)	9.44	3	2.82	1	12.16	4	48.06	14	150.41	46
Chum Salmon (Juveniles)							0.22	2		
Coho Salmon (Adults)			3.94	1					4.47	2
Coho Salmon (Juveniles)										
Pink Salmon (Juveniles)			0.24	3			0.03	1	0.63	14
Sockeye Salmon (Juveniles)										
Bay Pipefish										1
Black Rockfish							0.95	1		
Chub Mackerel										
Cods/Hakes/Grenadiers										
Crescent Gunnel										
Flatfishes										
Fried Egg Jellyfish	3.93						1.75			
Jack Mackerel										
Kelp Greenling							0.04	2		
Larval Fish										
Lingcod										
Lions Mane	2.22		2.14	2	0.18	1				
Mitrocoma										
Moon Jellyfish			11.36	8	0.60		1.88		2.39	
North Pacific Spiny Dogfish										
Northern Anchovy										
Northern Sea Nettle										
Opalescent Inshore Squid				1	0.04	6	0.59		0.01	10
Pacific Hake										
Pacific Herring							0.71	27		
Pacific Saury										
Pacific Sea Nettle			1.12	1						
Pile Perch							0.29	1		
Prowfish										
Purple-striped Sea Nettle										
Pyrosomes										
Ragfish										
Salmon Shark										
Salps			0.02							
Shiner Perch										
Smelts										
Snailfishes										
Speckled Sanddab										
Spotted Ratfish										
Walleye Pollock										
Water Jellyfish	0.55		180.88		70.96		1.36		2.58	
Wolf Eel										
TOTAL	**16.14**	**3**	**202.66**	**18**	**83.94**	**11**	**76.56**	**275**	**164.35**	**112**

Station Name	VI24		VI25		BS02		BS03		BS04	
Common Name	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count
Chinook Salmon (Adults)	6.51	2								
Chinook Salmon (Juveniles)	0.49	1			0.11	1	28.30	362	0.20	2
Chum Salmon (Adults)	33.93	10			4.45	1	18.08	6		
Chum Salmon (Juveniles)					0.08	1	4.48	53		
Coho Salmon (Adults)										
Coho Salmon (Juveniles)	3.27	9	1.34	4						
Pink Salmon (Juveniles)					1.56	28	1.79	41		
Sockeye Salmon (Juveniles)										
Bay Pipefish										
Black Rockfish										
Chub Mackerel										
Cods/Hakes/Grenadiers										
Crescent Gunnel										
Flatfishes						2		4		
Fried Egg Jellyfish	2.16				0.05					
Jack Mackerel										
Kelp Greenling										
Larval Fish		1								
Lingcod										
Lions Mane	1.37						6.00	1		
Mitrocoma										
Moon Jellyfish	1.00	1	4.46	6	0.58	1	0.43	1		
North Pacific Spiny Dogfish										
Northern Anchovy										
Northern Sea Nettle										
Opalescent Inshore Squid	2.67						0.08	53		
Pacific Hake										
Pacific Herring										
Pacific Saury										
Pacific Sea Nettle					0.06	1				
Pile Perch										
Prowfish										
Purple-striped Sea Nettle										
Pyrosomes										
Ragfish										
Salmon Shark										
Salps										
Shiner Perch										
Smelts					0.02	16				
Snailfishes										
Speckled Sanddab										
Spotted Ratfish										
Walleye Pollock										
Water Jellyfish	0.91		1.18		0.18		0.05		0.46	
Wolf Eel										
TOTAL	**52.31**	**24**	**6.98**	**10**	**7.09**	**51**	**59.21**	**521**	**0.66**	**2**

Station Name	JdF01		JdF02		JdF04		JdF05		JdF06	
Common Name	Weight	Count	Weight	Count	Weight	Count	Weight	Count	Weight	Count
Chinook Salmon (Adults)										
Chinook Salmon (Juveniles)	0.33	1			0.16	2	0.47	5	0.22	1
Chum Salmon (Adults)			3.12	1						
Chum Salmon (Juveniles)	0.09	1	0.30	2						
Coho Salmon (Adults)			3.31	1	1.66	1				
Coho Salmon (Juveniles)	8.81	25	4.55	16	2.72	9	5.44	21	0.29	1
Pink Salmon (Juveniles)	0.12	1	0.20	2			0.10	1		
Sockeye Salmon (Juveniles)										
Bay Pipefish										
Black Rockfish										
Chub Mackerel										
Cods/Hakes/Grenadiers										
Crescent Gunnel										
Flatfishes										
Fried Egg Jellyfish					1.85		0.52		1.83	1
Jack Mackerel										
Kelp Greenling										
Larval Fish										
Lingcod										
Lions Mane										
Mitrocoma					17.38		2.50		2.98	
Moon Jellyfish			0.16							
North Pacific Spiny Dogfish										
Northern Anchovy										
Northern Sea Nettle										
Opalescent Inshore Squid					0.06	48			0.02	4
Pacific Hake										
Pacific Herring										
Pacific Saury										
Pacific Sea Nettle										
Pile Perch										
Prowfish										
Purple-striped Sea Nettle										
Pyrosomes										
Ragfish										
Salmon Shark										
Salps										
Shiner Perch										
Smelts										
Snailfishes										
Speckled Sanddab										
Spotted Ratfish										
Walleye Pollock										
Water Jellyfish	0.11		0.38							
Wolf Eel										
TOTAL	**9.46**	**28**	**12.02**	**22**	**23.83**	**60**	**9.03**	**27**	**5.34**	**7**