# Central Coast Juvenile Herring Survey, August 2002

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Fisheries and Oceans Canada
Science Branch, Pacific Region
Pacific Biological Station
Nanaimo, British Columbia
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by

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The first juvenile herring survey in the Central Coast of British Columbia was conducted August 11-24, 2002. Thirty-eight stations were sampled within Statistical Management Areas 6, 7, 8 and 9, from Meyers Passage in the north, to Fish Egg Inlet in the south. The survey was designed to assess the possibility of forecasting recruitment to the Central Coast herring stock from estimates of juvenile abundance during their first year of life. The survey also addresses information gaps on the distribution, abundance, size and feeding habits of juvenile herring. Plankton samples and herring stomach contents also were collected at each site. Locations with a history of herring spawn were selected as the primary sampling sites. At each sampling location, sites that represented nearshore and open water habitats were selected for sampling.

Over 21 species of fish were recorded in the purse seine catches with herring being the most frequently captured species. A total of 7349 juvenile herring were measured and weighed. The length frequency distribution was distinctly bimodal, representing two herring age groups: 0+ and 1+. Age 0+ herring occurred in 97.4% of the sets, and 1+ herring occurred in 60.5% of the sets. Age 2+ herring occurred in only four sets, all in negligible amounts. About 500 herring stomachs were examined. The dominant food item of 0+ herring was copepods and 1+ herring principally preyed upon adult euphausiids.

## RÉSUMÉ

Henderson, S., Therriault, T.W., Haegele, C.W., Schweigert, J., and Thompson, M. 2004. Central coast juvenile herring survey, August 2002. Can. Manuscr. Rep. Fish. Aquat. Sci. 2687: 33 p.

Un premier recensement portant sur les stocks de harengs juvéniles de la partie centrale de la côte de la Colombie-Britannique a été effectué entre les 11 et 24 août 2002. Vingt-huit endroits ont été échantillonnés dans les zones de gestion statistique 6, 7, 8 et 9 comprises entre le passage Meyers au Nord et le bras de mer to Fish Egg Inlet au sud. Le recensement avait pour objet de déterminer s'il est possible de prévoir le recrutement des stocks de hareng dans la partie centrale de la côte à partir des chiffres d'abondance des cohortes d'un an. Le recensement visait également à mieux informer les données portant sur la distribution, l'abondance, la taille et les habitudes alimentaires des harengs juvéniles. Des échantillons de plancton et de contenu stomacal de spécimens de harengs ont également été recueillis dans les principaux sites d'échantillonnage. Pour chaque lieu d'échantillonnage, on a choisi des sites représentatifs d'habitats littoraux et d'habitats d'eaux libres.

Plus de 21 espèces de poissons ont été enregistrées dans les prises ramenées par les sennes, le hareng étant l'espèce la plus représentée. Au total, 7 349 harengs juvéniles ont été mesurés et pesés. La distribution statistique des tailles était nettement bimodale, distinguant deux types de cohortes : celle de moins d'un an (97,4 % des traits) et celle de plus d'un an (60,5 % des traits). Des sujets de plus de 2 ans ont été observés dans seulement quatre traits, et en très petit nombre. Les contenus stomacaux d'environ 500 sujets ont été examinés. L'aliment principal trouvé chez les moins d'un an était constitué par les copépodes alors que chez les plus d'un an on trouvait principalement des euphausiacés adultes.

## INTRODUCTION

Pacific herring (*Clupea pallasi*) is an important commercial and forage species in British Columbia. Herring spawn on marine vegetation in the subtidal and upper intertidal zone between February and June, with peak spawning during March and April (Humphreys and Hourston 1978). The eggs hatch in two to three weeks and the larvae disperse with surface currents, metamorphosing into juvenile herring at a length of ~25mm (Hay and McCarter 1997). Juvenile herring are generally found nearshore, along with juvenile salmon and other species of fish (Hay et al. 1989a). Herring are considered juvenile until they are three years of age and have joined the sexually mature spawning population (Hay and McCarter 1999).

Beginning in 1990, surveys of juvenile herring have been conducted in the Strait of Georgia and Johnstone Strait (Haegele 1997) to assess the relative abundance and distribution of juvenile herring as a predictor of recruitment to the adult population in future years. Additionally, data on plankton and herring feeding habits were collected. However, relatively little is known of juvenile herring biology and ecology in other parts of British Columbia. Therefore, a survey similar to those conducted in the Strait of Georgia was adapted for the Central Coast of British Columbia (Fig. 1), encompassing Statistical Management Areas 6-9. The survey was designed to assess the relative abundance of juvenile herring in this region and to collect basic biological data. Plankton samples were taken at each set location and retained for analysis; juvenile herring stomach contents also were examined from most set locations. This survey potentially will provide a better understanding of the role and relationships juvenile herring have in Central Coast waters, and may provide an empirical forecast of recruitment to the herring roe fishery based on relative juvenile abundance.

## METHODS

Herring sections in the Central Coast stock assessment area with a record of herring spawnings (Hay et al. 1989b,c) were selected as the primary sampling sites. Within each section, fishing locations representing nearshore and open water habitats were selected for sampling. All sampling was done after dusk and prior to dawn, and consisted of purse seine sets, either preceded or followed by plankton tows.

The 2002 Central Coast juvenile herring survey took place from August 11-24. Thirty-eight sets were made at 12 locations within Statistical Management Areas 6, 7, 8 and 9. The study area extended from Meyers Passage in the north, to Fish Egg Inlet in the south (Fig. 2).

### FISH SAMPLING

The 12m, aluminium-hulled Fisheries Research Vessel WALKER ROCK was used for all fishing. All sets were made with a 183m x 27m purse seine net of knotless web, resulting in a circular area fished of ~2665m$^2$ (net diameter was ~58m). The body of the

net had 46m of 22.2mm mesh at the tow end, followed by 91m of 19.0mm mesh. The bunt was 46m of 9.5mm mesh. The net, when pursed, fished to a depth of 10m, and was able to retain fish greater than 30mm in length. All fishing was done after dusk when herring are feeding near the surface. The locations of the sets were predetermined, and sets were made without prior information on fish presence or abundance (i.e. acoustic echosounding). Up to four sets were made per night, depending on location and weather conditions. Generally, all of the catch was landed, but when this was not practical, then one tote of about 40kg of mixed fish species was landed and the remainder estimated (number of totes released over the corkline). Landed catches were sorted to species (and herring further sorted to year-class based on visual estimation) and weighed. The 0+ and 1+ herring year-classes were usually easily recognized due to the distinct size differences at each age. Samples of 200 or more herring from each year-class (if present), were preserved in 3.7% seawater formalin for later analysis at the Pacific Biological Station. Time between landing and preservation was 5-15 minutes and most fish were alive or recently dead at the time of preservation. Fish were measured for length (standard length for herring and fork length for juvenile salmon) and weight 8-12 weeks after preservation. Impacts from preservation should have been constant for all samples.

## PLANKTON SAMPLING

A stepped oblique plankton tow was performed for each purse seine set (n = 38). The tows always were completed after dusk and immediately before or after a set. Paired 19cm diameter bongo nets with 350μm mesh were used for sampling, resulting in 'left' and 'right' bongo plankton samples. The bongos were lowered to 20m (10m in shallow areas) and raised by an electric winch at a rate of 1m every 15 seconds (or 1m every 30 seconds for shallow areas). A General Oceanics® 2030R model flowmeter was attached to the left bongo to determine the volume of seawater filtered through the bongos during sampling. Volume filtered was calculated using the following equation (McCarter and Hay 2002):

$$\mathbf{V = (A \cdot F \cdot K) / 999{,}999}$$

Where:

**V** = volume of water filtered through the plankton net ($m^3$)
**A** = area of net opening ($0.02835m^2$)
**F** = number of revolutions recorded by the flow meter (end reading – start reading)
**K** = standard speed rotor constant for 7cm rotor (26,873)

Once the tow was complete, the organisms in the bongo nets were washed out with a deck hose, and the samples preserved in 3.7% seawater formalin. In the laboratory, a volumetric splitter was used to reduce sample size to a point where organisms could be conveniently counted in a counting tray under 30X magnification. Plankters generally were not identified to species but classified into broad taxonomic categories, except for copepods, which were identified to species when possible. Densities are expressed as plankters$\cdot m^{-3}$.

## STOMACH CONTENTS

Approximately 500 juvenile herring stomachs from 34 sets were retained for gut content analysis. Up to ten fish from each age-class were retained from the preserved samples for stomach content analysis. Each stomach was rated for fullness (empty, trace, half full and full), state of digestion (fresh, partly, mostly and totally) and, when possible, its contents identified and counted. Stomach contents were categorized into 28 groups of organisms from 10 phyla, with copepods classified to species when possible.

# RESULTS

A total of 38 sets were made during the 2002 survey; four in section 091 (Fish Egg Inlet), four in section 085 (Kwakshua Channel), five in section 076 (Kildidt Sound), four in section 074 (Thompson Bay), six in section 067 (Laredo Inlet), four in section 077 (Milbanke Sound), six in section 072 (Powell Anchorage), four in section 073 (Bella Bella) and one in section 084 (Burke Channel) (Fig. 2). Section numbers and names correspond to the classification by Midgley (2003), and may not necessarily match the individual set location names (Table 1).

Over 21 species of fish were recorded in the 38 seine catches. Herring were encountered most frequently. Other species common (>15% occurrence) in seine sets included: walleye pollock, osmerids (mostly capelin), coho salmon, pink salmon, chinook salmon and shiner perch. Squid (possibly opal squid) also were encountered in many sets (Tables 2 and 3).

## HERRING

A total of 7349 herring were measured and the length frequency distribution was bimodal, making it possible to identify two distinct age classes based on length (Fig. 3). For the Central Coast in 2002, the age class-length designations were:

0+ = any herring less than or equal to 87mm in length
1+ = any herring between 88mm and 150mm in length
2+ or older = any herring greater than or equal to 151 mm in length.

Length frequency distributions for herring at each set location are shown in Figure 4. The histograms display the length frequency for sampled herring only, and do not represent the total herring catch in any one location. The number of juvenile herring caught in each set was determined by dividing the total catch weight by the age-specific mean weight of sub-sampled herring from each age class. The number of other species caught was determined in the same manner, with juvenile and adult salmon treated separately to minimize errors when calculating total catch (Table 2).

Age 0+ herring occurred in 97.4% of the sets (Table 3). The largest catches of 0+ herring by weight occurred in Spiller Channel (section 072), Kwakshua Channel (section 085) and Thompson Bay (section 074). Table 4 shows the mean and total weights for 0+ and

1+ herring for each set location. The mean length of all sampled 0+ herring was 53.6 mm, and the mean weight was 1.79g.

Age 1+ herring were encountered less frequently than 0+ herring, occurring in only 60.5% of the sets (Table 3). The largest catches of 1+ herring occurred in Kwakshua Channel (section 085), Fish Egg Inlet (section 091) and Hunter Channel (section 073) (Table 4). No 1+ herring were caught in Spider Anchorage, Meyers Passage, Kitasu Bay or Burke Channel. The mean length of all sampled 1+ herring was 120.0mm, and the mean weight was 22.92 g.

Age 2+ herring occurred in only four sets, all in negligible amounts.

The relationship between weight and length for all sampled herring was determined by fitting a logistic function to the length-weight data (Fig. 5):

| **Herring age-class** | **Relationship** | **Number of fish sampled** | **Coefficient of determination** |
|---|---|---|---|
| **0+** | $W = 9.81 \times 10^{-6} L^{3.041}$ | n = 6369 | $R^2 = 0.9595$ |
| **1+** | $W = 2.57 \times 10^{-6} L^{3.335}$ | n = 970 | $R^2 = 0.9390$ |
| **2+** | n/a | n/a | n/a |
| **All classes** | $W = 5.00 \times 10^{-6} L^{3.186}$ | n = 7349 | $R^2 = 0.9876$ |

## PLANKTON

There were 25 categories of organisms in 10 phyla identified in plankton samples and juvenile herring stomachs (Table 5). Copepods were identified to species, where possible (Table 6). We identified 19 calanoid and 2 cyclopoid species in the samples (Table 7) with unidentified calanoid, harpacticoid, monstrilloid and caligoid copepods also present.

An average of 17.0 $m^3$ (n = 38, SD = 1.65) of water was filtered per tow. Copepods occurred in all samples. Coelenterates, shrimp zoea, crab zoea and megalopea, and the calanoid copepods *Centropages abdominales*, *Acartia longiremis* and *Pseudocalanus* sp. occurred in >80% of samples. Ctenophores, polychaetes, cladocerans, barnacle larvae, amphipods, euphausiid larvae and adults, chaetognaths, larvaceans, eggs, and the calanoid copepods *Calanus* sp., *Calanus marshallae* and *Metridia pacifica* occurred in 50-80% of samples. Siphonophores, gastropods, isopods, ectoprocts, fish larvae, the caligoid copepods *Eucalanus bungii*, *Calanus pacificus*, *Epilabidocera longipedata* and *Tortanus discaudatus*, the cyclopoid copepod *Oithona* sp. and unidentified caligoid copepods occurred in 25-49% of samples. Pteropods, pelecypods, ostracods, squid juveniles and octopus larvae, insects, mites, echinoderms, the calanoid copepods *Eucalanus elongatus*, *Neocalanus cristatus*, *Candacia columbiae*, *Chiridius gracilis*, *Aetidius pacificus* and *Paracalanus parvus*, and unidentified harpacticoid and monstrilloid copepods occurred infrequently (Table 7).

## STOMACH SAMPLES

A total of 349 stomachs from 0+ herring were examined. Of these, 108 were empty and 58 had totally digested contents (Table 8). Identifiable food items were present in 183 herring stomachs (Table 9). Copepods and turbellarians occurred as food items for 0+ herring from all locations. The calanoid copepods *Acartia longiremis, Pseudocalanus* sp., *Tortanus discaudatus, Paracalanus parvus, Metridia pacifica* and *Calanus marshallae,* and the cyclopoid copepod *Oithona* sp. occurred most frequently. Other frequently encountered food items were eggs, barnacle larvae, euphausiids, and crab larvae.

A total of 147 stomachs from 1+ herring were examined. Of these 23 were empty and 21 had totally digested contents (Table 8). Identifiable food items were present in 103 stomachs. Adult euphausiids were the dominant food item in herring from all but one section (Table 10). Turbellarians occurred in all sections and may have been benthic due to the absence of flatworms in the plankton samples. Copepods were food items in all but two locations, but only the calanoid *Metridia pacifica* occurred frequently. Two of the stomachs from Powell Anchorage (Set 9) contained 0+ herring.

## SUMMARY

The 2002 Central Coast juvenile herring survey took place from August 11-24, and included 38 sets at 12 locations within Statistical Management Areas 6, 7, 8 and 9. The purpose of the survey was to assess the relative abundance of juvenile herring as an empirical predictor of future recruitment to the roe fishery. A secondary goal was to address information gaps about the general biology and ecology of herring, especially juveniles, in the Central Coast. In addition to juvenile herring, plankton samples from each set location were retained for analysis. Some herring stomachs also were removed for comprehensive content analysis. It was found that the dominant food item of 0+ herring was copepods and 1+ herring predominantly preyed upon adult euphausiids.

A Central Coast juvenile herring data base has been established, and with the addition of data from future surveys in the Central Coast, a more comprehensive understanding of juvenile herring in this previously under-studied northern area will be possible.

## ACKNOWLEDGMENTS

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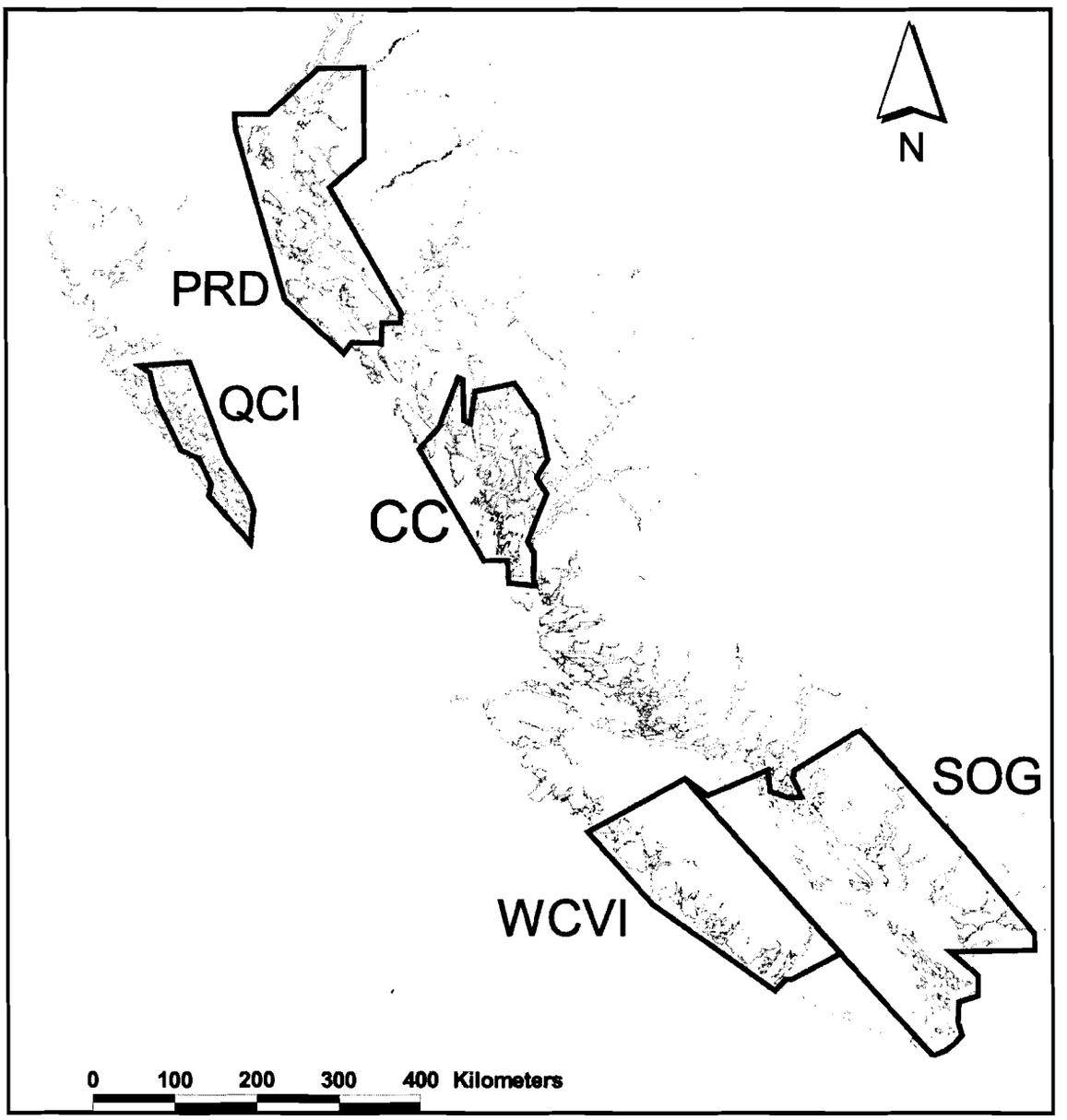



Figure 1. The five major British Columbian herring stock assessment regions: Prince Rupert District (PRD), Queen Charlotte Islands (QCI), Central Coast (CC), west coast Vancouver Island (WCVI) and the Strait of Georgia (SOG).

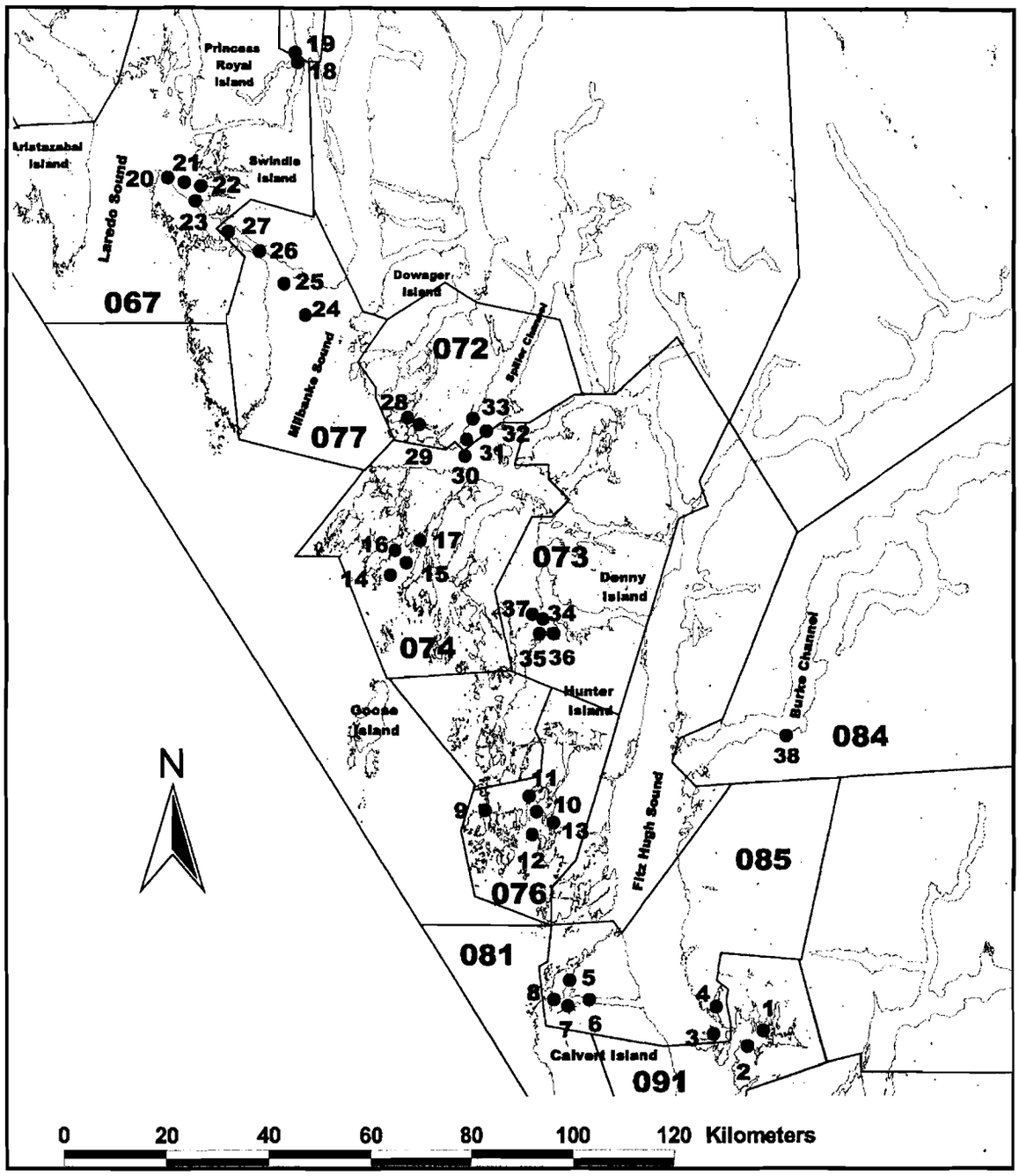



Figure 2. Central Coast set locations and corresponding herring sections (larger 3-digit numbers).

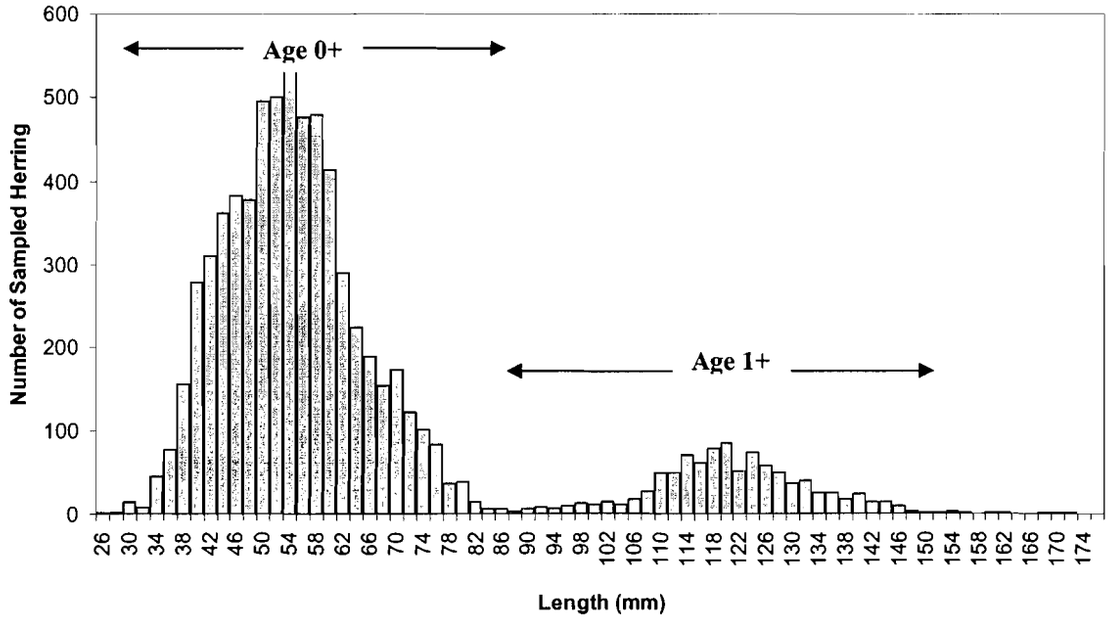



Figure 3. Two distinct age classes, corresponding to ages 0+ and 1+, in the length-frequency distribution of all sampled herring.

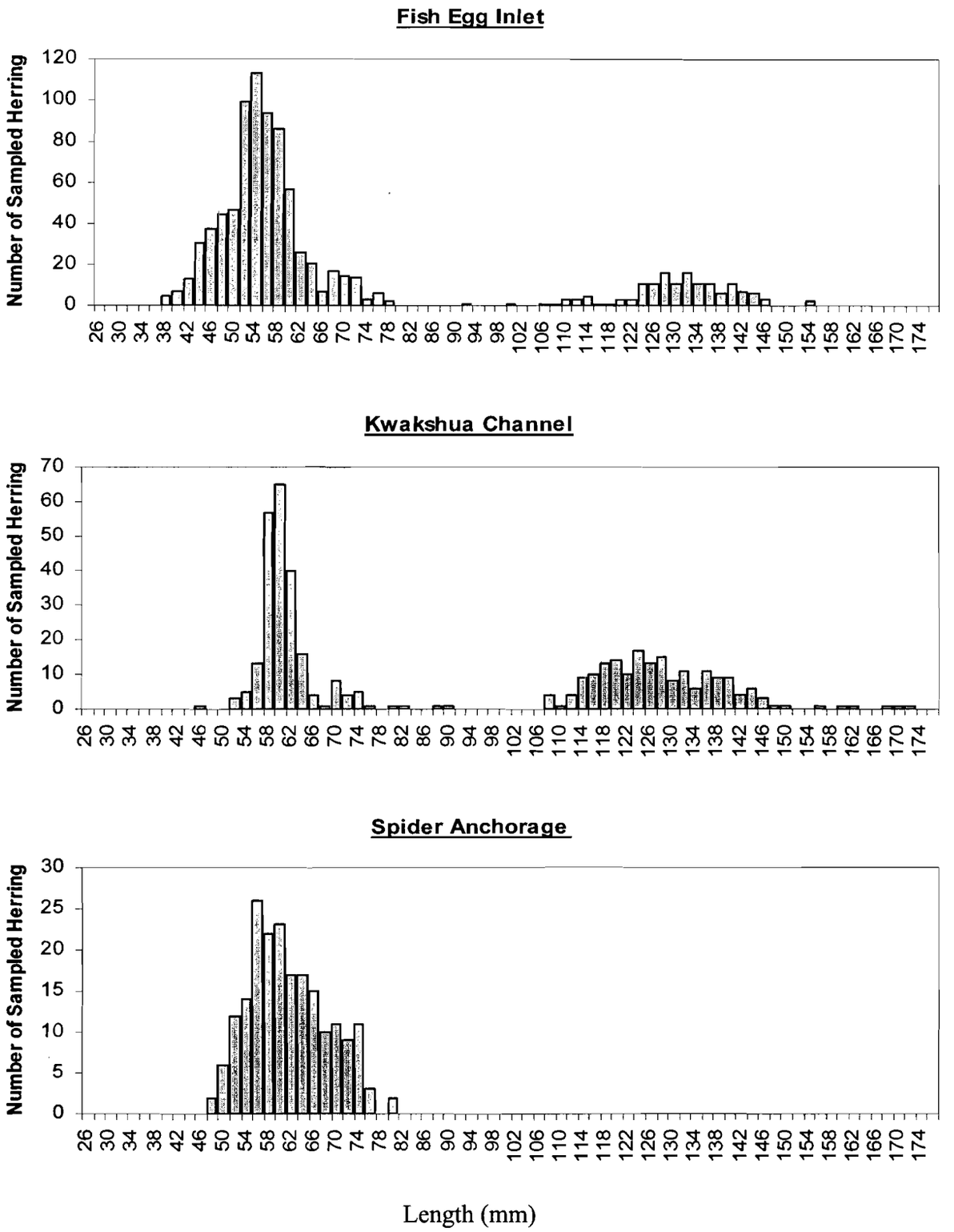



Figure 4. Length frequency distributions of sampled herring by location. The number of sets at each location and the herring section corresponding to set locations is provided in Table 1.

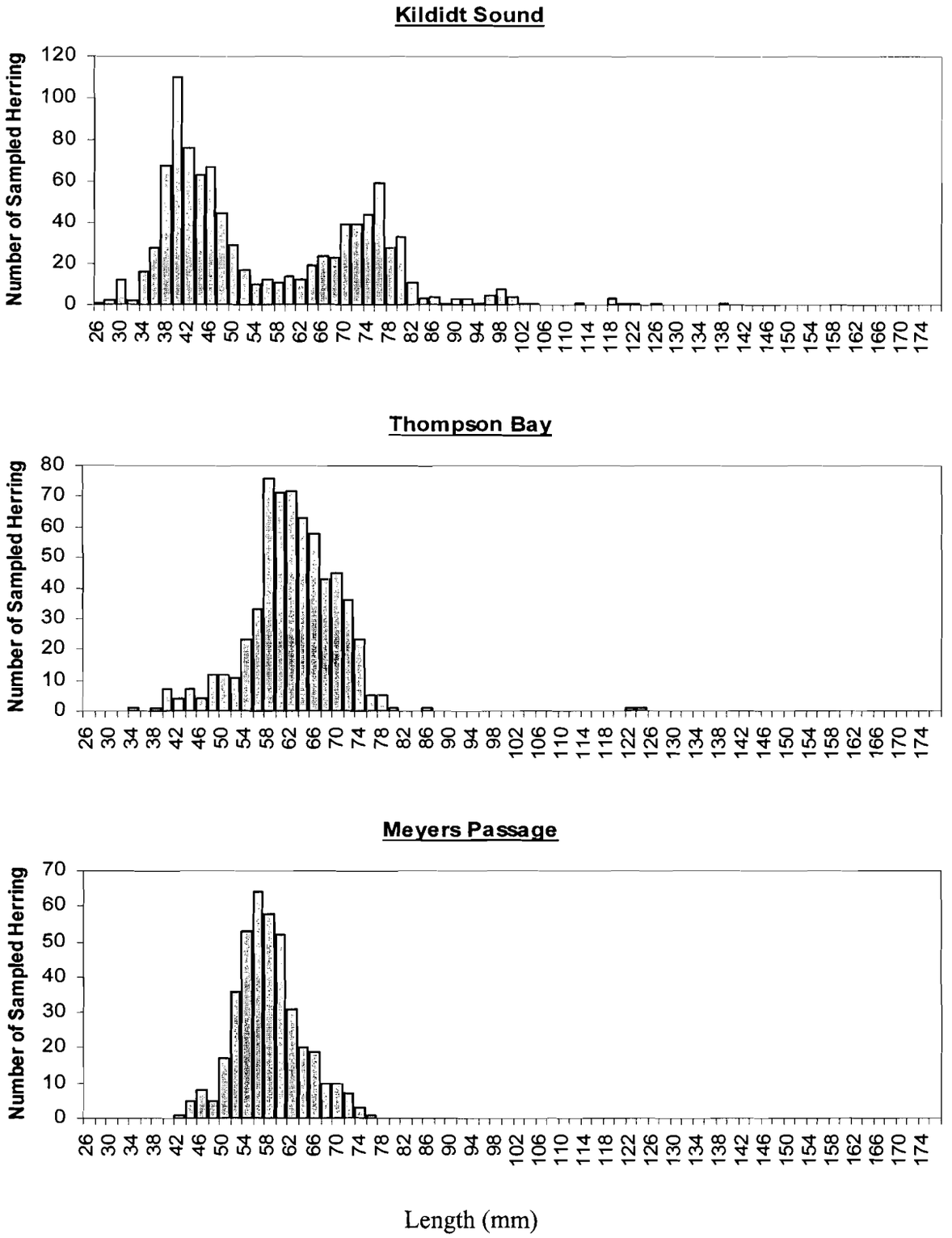



Figure 4 (cont'd)

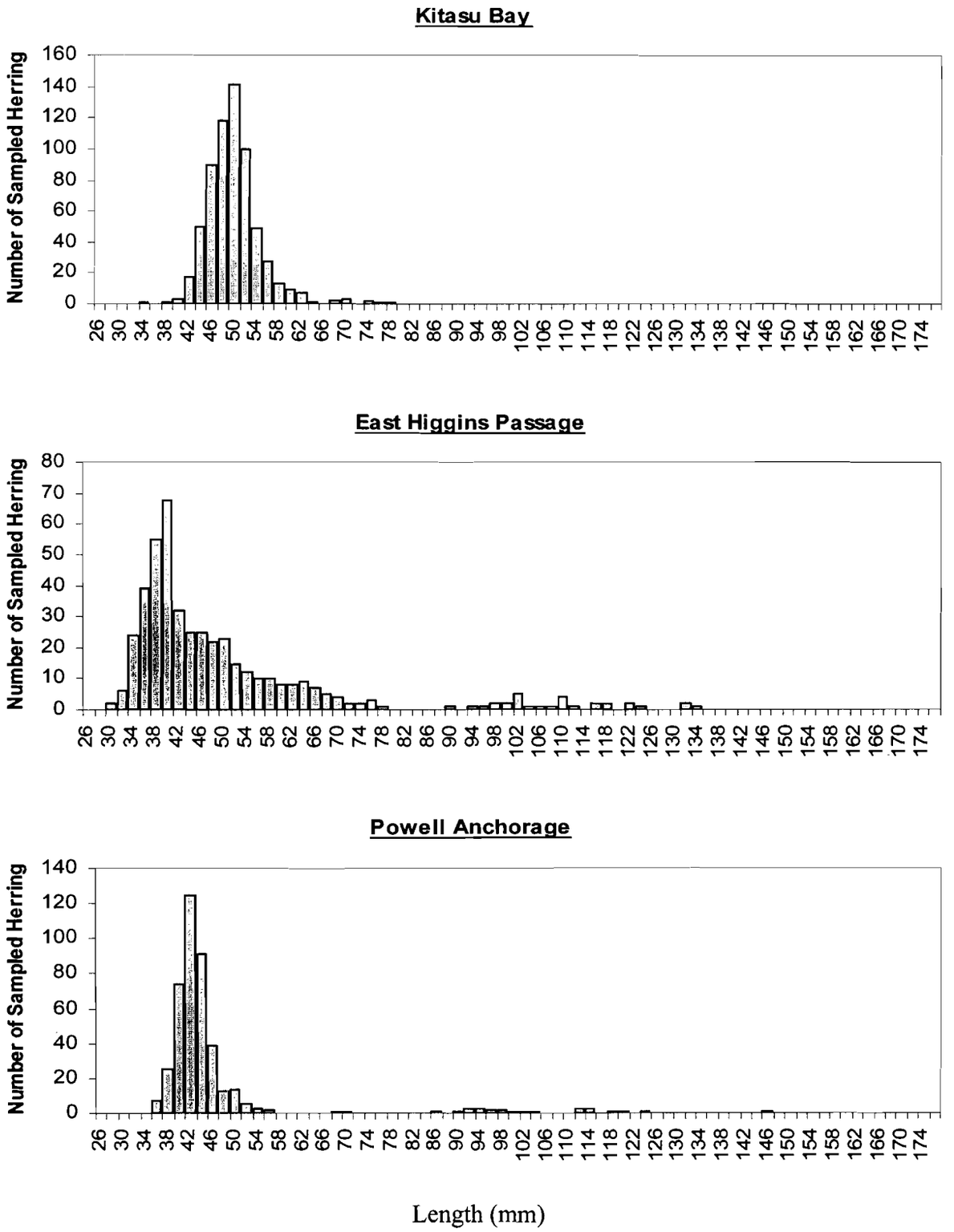
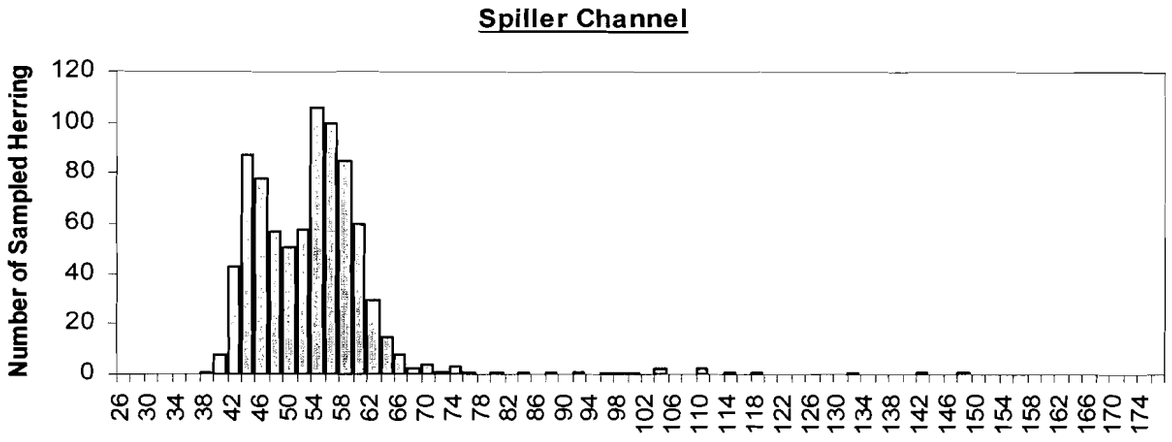
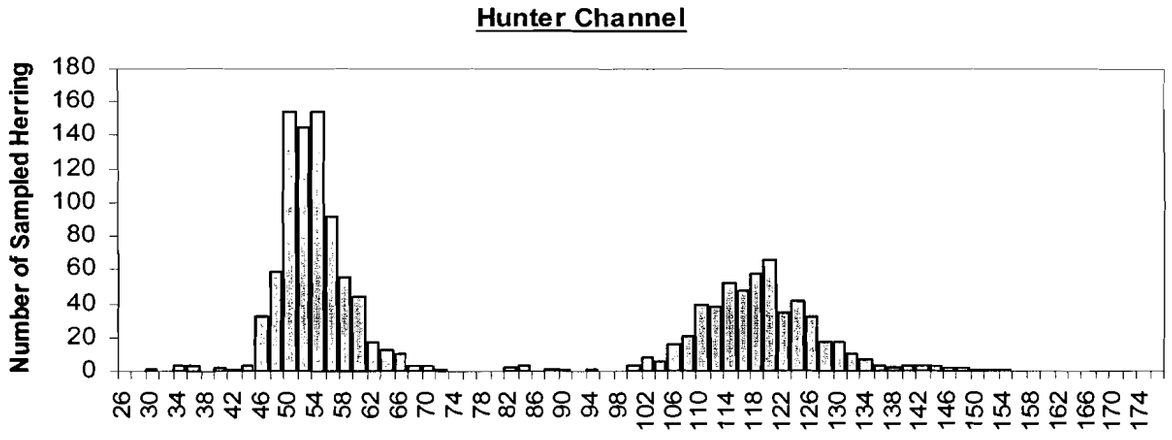
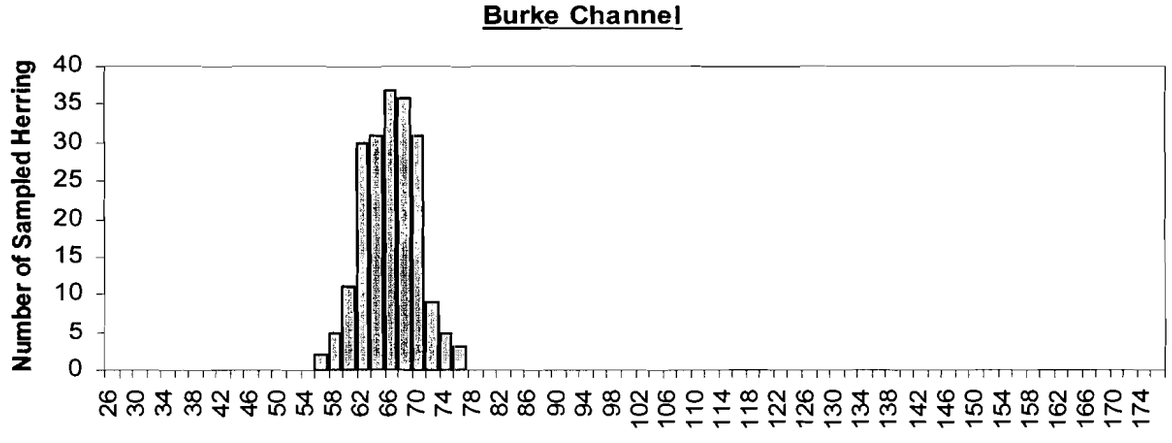



Figure 4 (cont'd)


Spiller Channel
Number of Sampled Herring
0
20
40
60
80
100
120
26 30 34 38 42 46 50 54 58 62 66 70 74 78 82 86 90 94 98 102 106 110 114 118 122 126 130 134 138 142 146 150 154 158 162 166 170 174


Hunter Channel
Number of Sampled Herring
0
20
40
60
80
100
120
140
160
180
26 30 34 38 42 46 50 54 58 62 66 70 74 78 82 86 90 94 98 102 106 110 114 118 122 126 130 134 138 142 146 150 154 158 162 166 170 174


Burke Channel
Number of Sampled Herring
0
5
10
15
20
25
30
35
40
26 30 34 38 42 46 50 54 58 62 66 70 74 78 82 86 90 94 98 102 106 110 114 118 122 126 130 134 138 142 146 150 154 158 162 166 170 174

Length (mm)

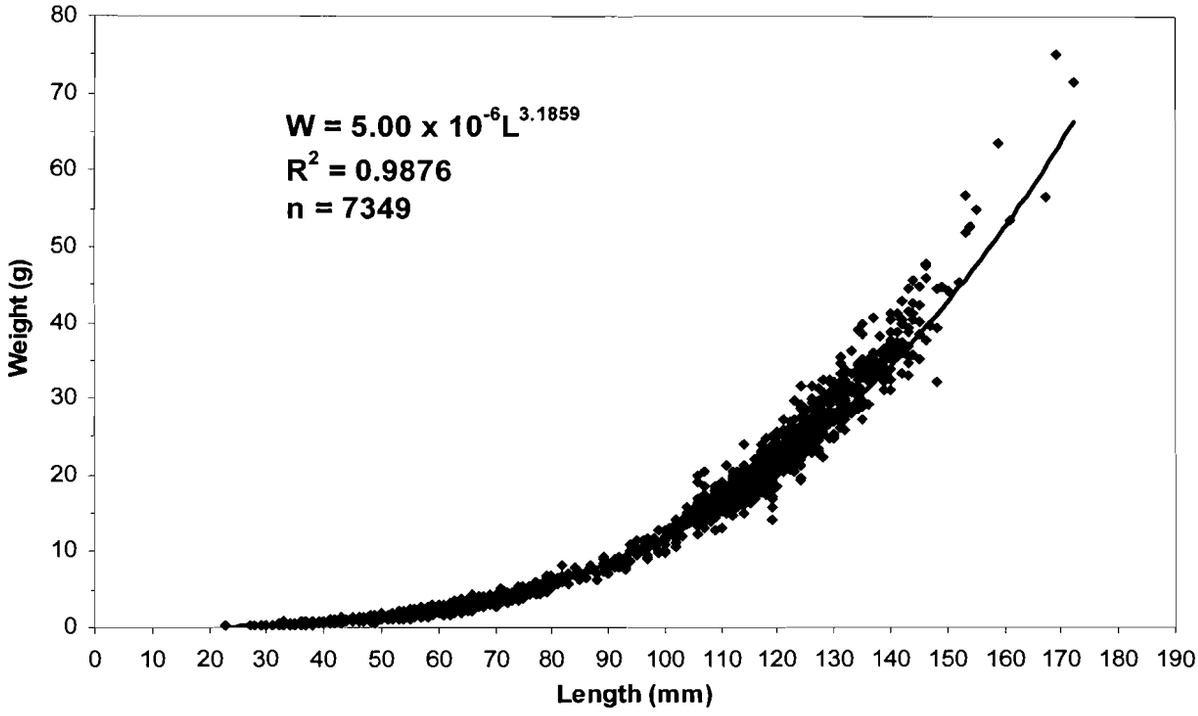



Figure 5. Length-weight relationship for all sampled herring.

Table 1. Set information for the 2002 Central Coast juvenile herring survey, including dates, set times and location details.*

| Set | Start Date | Loc. Code | Station | Section | Set Location Name | Decimal degree latitude (N) | Decimal degree longitude (W) | Set Time (PST) |
|---|---|---|---|---|---|---|---|---|
| 1 | Aug-11 | 1 | 1 | 091 | Fish Egg Inlet | 51.621 | 127.745 | 22:00 |
| 2 | Aug-11 | 1 | 2 | 091 | Fish Egg Inlet | 51.604 | 127.773 | 23:12 |
| 3 | Aug-11 | 1 | 3 | 091 | Fish Egg Inlet | 51.617 | 127.832 | 00:50 |
| 4 | Aug-11 | 1 | 4 | 091 | Fish Egg Inlet | 51.647 | 127.828 | 02:50 |
| 5 | Aug-12 | 2 | 1 | 085 | Kwakshua Ch. | 51.676 | 128.088 | 22:00 |
| 6 | Aug-12 | 2 | 2 | 085 | Kwakshua Ch. | 51.655 | 128.053 | 23:00 |
| 7 | Aug-12 | 2 | 3 | 085 | Kwakshua Ch. | 51.648 | 128.091 | 00:00 |
| 8 | Aug-12 | 2 | 4 | 085 | Kwakshua Ch. | 51.655 | 128.115 | 01:20 |
| 9 | Aug-13 | 3 | 1 | 076 | Spider Anch. | 51.863 | 128.238 | 22:12 |
| 10 | Aug-14 | 4 | 1 | 076 | Kildidt Sound | 51.862 | 128.146 | 21:30 |
| 11 | Aug-14 | 4 | 2 | 076 | Kildidt Sound | 51.879 | 128.159 | 23:20 |
| 12 | Aug-14 | 4 | 3 | 076 | Kildidt Sound | 51.837 | 128.154 | 00:50 |
| 13 | Aug-14 | 4 | 4 | 076 | Kildidt Sound | 51.850 | 128.116 | 01:40 |
| 14 | Aug-16 | 5 | 1 | 074 | Thompson Bay | 52.121 | 128.407 | 21:30 |
| 15 | Aug-16 | 5 | 2 | 074 | Thompson Bay | 52.134 | 128.378 | 22:45 |
| 16 | Aug-16 | 5 | 3 | 074 | Thompson Bay | 52.148 | 128.398 | 00:05 |
| 17 | Aug-16 | 5 | 4 | 074 | Thompson Bay | 52.159 | 128.354 | 01:05 |
| 18 | Aug-17 | 6 | 1 | 067 | Meyers Passage | 52.673 | 128.572 | 21:50 |
| 19 | Aug-17 | 6 | 2 | 067 | Meyers Passage | 52.684 | 128.577 | 00:45 |
| 20 | Aug-18 | 7 | 1 | 067 | Kitasu Bay | 52.550 | 128.800 | 22:00 |
| 21 | Aug-18 | 7 | 2 | 067 | Kitasu Bay | 52.545 | 128.771 | 23:10 |
| 22 | Aug-18 | 7 | 3 | 067 | Kitasu Bay | 52.541 | 128.742 | 00:20 |
| 23 | Aug-18 | 7 | 4 | 067 | Kitasu Bay | 52.525 | 128.751 | 01:15 |
| 24 | Aug-19 | 8 | 1 | 077 | E. Higgins Pass | 52.402 | 128.558 | 21:50 |
| 25 | Aug-19 | 8 | 2 | 077 | E. Higgins Pass | 52.436 | 128.595 | 22:55 |
| 26 | Aug-19 | 8 | 3 | 077 | E. Higgins Pass | 52.471 | 128.638 | 00:15 |
| 27 | Aug-19 | 8 | 4 | 077 | E. Higgins Pass | 52.492 | 128.693 | 01:15 |
| 28 | Aug-20 | 9 | 1 | 072 | Powell Anch. | 52.291 | 128.376 | 22:00 |
| 29 | Aug-20 | 9 | 2 | 072 | Powell Anch. | 52.284 | 128.355 | 22:45 |
| 30 | Aug-21 | 10 | 1 | 072 | Spiller Channel | 52.250 | 128.274 | 22:00 |
| 31 | Aug-21 | 10 | 2 | 072 | Spiller Channel | 52.268 | 128.271 | 22:35 |
| 32 | Aug-21 | 10 | 3 | 072 | Spiller Channel | 52.277 | 128.235 | 23:55 |
| 33 | Aug-21 | 10 | 4 | 072 | Spiller Channel | 52.290 | 128.259 | 00:30 |
| 34 | Aug-23 | 11 | 1 | 073 | Hunter Channel | 52.057 | 128.115 | 21:50 |
| 35 | Aug-23 | 11 | 2 | 073 | Hunter Channel | 52.057 | 128.141 | 22:35 |
| 36 | Aug-23 | 11 | 3 | 073 | Hunter Channel | 52.073 | 128.135 | 23:45 |
| 37 | Aug-23 | 11 | 4 | 073 | Hunter Channel | 52.078 | 128.153 | 00:40 |
| 38 | Aug-24 | 12 | 1 | 084 | Burke Channel | 51.945 | 127.704 | 21:40 |

| Section | Name | Section | Name |
|---|---|---|---|
| 067 | Laredo Inlet | 077 | Milbanke Sd. |
| 072 | Powell Anch. | 084 | Burke Ch. |
| 073 | Bella Bella | 085 | Kwakshua Ch. |
| 074 | Thompson Bay | 091 | Fish Egg Inlet |
| 076 | Kildidt Sd. | | |

*Location names do not always follow the official name of the herring management sections they are located in. Herring management section names are listed on the left.

Table 2. Species * weights and quantity by set.

| Set | Location | Species | Total Species Weight (g) | Number of Fish |
|---|---|---|---|---|
| 1 | Fish Egg Inlet | **0+ herring** | 468 | 293 |
| | | **1+ herring** | 70 | 4 |
| | | Walleye pollock | 10 | 2 |
| | | Pacific sandlance | 6 | 6 |
| | | Poacher | 10 | 14 |
| | | Three-spine stickleback | 12 | 26 |
| | | Pacific sardine | 138600 | 630 |
| 2 | Fish Egg Inlet | **0+ herring** | 29600 | 17412 |
| | | **1+ herring** | 60 | 4 |
| | | Shrimp | 5 | 2 |
| | | Chinook salmon | 44 | 2 |
| | | Walleye pollock | 15 | 3 |
| | | Shiner perch | 215 | 26 |
| | | Three-spine stickleback | 82 | 82 |
| | | Smelt sp. | 2063 | 1474 |
| 3 | Fish Egg Inlet | **0+ herring** | 13300 | 6045 |
| | | **1+ herring** | 31200 | 1033 |
| | | **2+ herring** | 105 | 2 |
| | | Coho salmon | 72 | 1 |
| | | Pink salmon | 1400 | 1 |
| | | Walleye pollock | 15 | 3 |
| 4 | Fish Egg Inlet | **0+ herring** | 16000 | 13333 |
| | | **1+ herring** | 225 | 20 |
| 5 | Kwakshua Channel | **0+ herring** | 5 | 2 |
| 6 | Kwakshua Channel | **0+ herring** | 3 | 1 |
| | | Pacific sardine | 10500 | 474 |
| 7 | Kwakshua Channel | **0+ herring** | 113000 | 47083 |
| | | Squid | 150 | 10 |
| 8 | Kwakshua Channel | **0+ herring** | 52 | 23 |
| | | **1+ herring** | 33000 | 1260 |
| | | **2+ herring** | 983 | 6 |
| | | Starry Flounder | 1200 | 1 |
| | | Rockfish sp. | 210 | 2 |
| | | Squid | 3500 | 177 |
| 9 | Spider Anchorage | **0+ herring** | 7400 | 2741 |
| | | Capelin | 9 | 1 |
| | | Squid | 40 | 2 |
| 10 | Kildidt Sound | **0+ herring** | 955 | 258 |
| | | **1+ herring** | 105 | 7 |
| | | Coho salmon | 706 | 5 |

Table 2 (cont'd)

| Set | Location | Species | Total Species Weight (g) | Number of Fish |
|---|---|---|---|---|
| 10 | Kildidt Sound | Pink salmon | 8600 | 6 |
| | | Walleye pollock | 55 | 8 |
| | | Chum salmon | 135 | 1 |
| | | Squid | 3000 | 109 |
| | | Spiny Dogfish | 31600 | 210 |
| 11 | Kildidt Sound | **0+ herring** | 563 | 268 |
| | | **1+ herring** | 143 | 14 |
| | | Walleye pollock | 5 | 1 |
| | | Squid | 5 | 2 |
| 12 | Kildidt Sound | **0+ herring** | 906 | 951 |
| | | **1+ herring** | 89 | 5 |
| | | Pink salmon | 400 | 1 |
| | | Coho salmon | 600 | 1 |
| | | Chinook salmon | 800 | 1 |
| 13 | Kildidt Sound | **0+ herring** | 2740 | 2022 |
| | | **1+ herring** | 214 | 12 |
| | | Lingcod | 40 | 1 |
| | | Chinook salmon | 70 | 1 |
| | | Squid | 60 | 4 |
| | | Prickleback | 10 | 10 |
| | | Smelt sp. | 10 | 10 |
| | | Walleye pollock | 704 | 107 |
| 14 | Thompson Bay | **0+ herring** | 121000 | 43214 |
| 15 | Thompson Bay | **0+ herring** | 18100 | 5656 |
| | | **1+ herring** | 22 | 1 |
| | | Spiny dogfish | 8100 | 3 |
| 16 | Thompson Bay | **0+ herring** | 191400 | 73615 |
| | | Walleye pollock | 15 | 2 |
| 17 | Thompson Bay | **0+ herring** | 33 | 14 |
| | | **1+ herring** | 22 | 1 |
| | | Shiner perch | 15 | 1 |
| | | Walleye pollock | 25 | 6 |
| | | Squid | 2200 | 108 |
| 18 | Meyers Passage | **0+ herring** | 1200 | 667 |
| | | Three-spine stickleback | 10 | 2 |
| | | Capelin | 5 | 5 |
| 19 | Meyers Passage | **0+ herring** | 143000 | 71500 |

Table 2 (cont'd)

| Set | Location | Species | Total Species Weight (g) | Number of Fish |
|---|---|---|---|---|
| 20 | Kitasu Bay | **0+ herring** | 4500 | 3214 |
| | | Pacific Tomcod | 1100 | 0 |
| | | Sculpin | 10 | 1 |
| | | Squid | 30 | 1 |
| | | Pink salmon | 1900 | 1 |
| | | Coho salmon | 500 | 2 |
| 21 | Kitasu Bay | **0+ herring** | 3600 | 2571 |
| | | Squid | 60 | 4 |
| | | Chinook salmon | 763 | 5 |
| | | Coho salmon | 2400 | 13 |
| | | Walleye pollock | 440 | 176 |
| 22 | Kitasu Bay | **0+ herring** | 20970 | 16131 |
| 23 | Kitasu Bay | **0+ herring** | 38 | 38 |
| | | Squid | 60 | 2 |
| | | Shiner perch | 30 | 7 |
| 24 | East Higgins Passage | Pink salmon | 1400 | 1 |
| | | Mackeral | 4600 | 2 |
| | | Chum salmon | 13500 | 3 |
| 25 | East Higgins Passage | **0+ herring** | 47 | 18 |
| | | **1+ herring** | 82 | 5 |
| 26 | East Higgins Passage | **0+ herring** | 20574 | 15814 |
| | | **1+ herring** | 12426 | 633 |
| | | Capelin | 12 | 1 |
| 27 | East Higgins Passage | **0+ herring** | 3500 | 4795 |
| | | **1+ herring** | 243 | 16 |
| | | Sole sp. | 40 | 1 |
| | | Coho salmon | 123 | 1 |
| | | Walleye pollock | 107 | 38 |
| 28 | Powell Anchorage | **0+ herring** | 8700 | 11299 |
| | | **1+ herring** | 171 | 15 |
| | | Pacific sandlance | 2 | 1 |
| | | Capelin | 5 | 1 |
| | | Prickleback | 10 | 1 |
| | | Shiner perch | 6 | 2 |
| | | Squid | 800 | 40 |
| | | Walleye pollock | 1070 | 215 |
| 29 | Powell Anchorage | **0+ herring** | 11200 | 12043 |
| | | **1+ herring** | 167 | 9 |
| | | Walleye pollock | 800 | 52 |
| | | Shiner perch | 458 | 143 |

Table 2 (cont'd)

| Set | Location | Species | Total Species Weight (g) | Number of Fish |
|---|---|---|---|---|
| 30 | Spiller Channel | **0+ herring** | 5000 | 2825 |
| | | **1+ herring** | 180 | 14 |
| | | Chinook salmon | 159 | 1 |
| 31 | Spiller Channel | **0+ herring** | 241000 | 177206 |
| | | Walleye pollock | 630 | 72 |
| 32 | Spiller Channel | **0+ herring** | 9100 | 5141 |
| | | **1+ herring** | 137 | 7 |
| | | Coho salmon | 158 | 1 |
| | | Pink salmon | 1900 | 1 |
| | | Chinook salmon | 1217 | 6 |
| 33 | Spiller Channel | **0+ herring** | 26700 | 27245 |
| | | **1+ herring** | 57 | 3 |
| | | Shiner perch | 10 | 3 |
| | | Walleye pollock | 15 | 6 |
| 34 | Hunter Channel | **0+ herring** | 9400 | 6104 |
| | | **1+ herring** | 173 | 9 |
| | | **2+ herring** | 57 | 1 |
| | | Walleye pollock | 200 | 24 |
| | | Capelin | 1 | 2 |
| 35 | Hunter Channel | **0+ herring** | 5200 | 2694 |
| | | **1+ herring** | 4700 | 225 |
| | | **2+ herring** | 45 | 1 |
| | | Walleye pollock | 10 | 1 |
| | | Chinook salmon | 275 | 1 |
| | | Coho salmon | 423 | 2 |
| | | Pink salmon | 3300 | 2 |
| | | Smelt (unknown species) | 27 | 27 |
| 36 | Hunter Channel | **0+ herring** | 3700 | 2372 |
| | | **1+ herring** | 7000 | 324 |
| | | Coho salmon | 222 | 1 |
| | | Chum salmon | 4100 | 1 |
| | | Capelin | 1 | 2 |
| | | Walleye pollock | 15 | 3 |
| | | Chinook salmon | 1440 | 4 |
| | | Pink salmon | 14800 | 11 |
| | | Pacific sardine | 7000 | 27 |

Table 2 (cont'd)

| Set | Location | Species | Total Species Weight (g) | Number of Fish |
|---|---|---|---|---|
| 37 | Hunter Channel | **0+ herring** | 31300 | 23185 |
| | | **1+ herring** | 3200 | 137 |
| | | Shiner perch | 8 | 3 |
| | | Walleye pollock | 1509 | 184 |
| | | Capelin | 293 | 293 |
| 38 | Burke Channel | **0+ herring** | 6100 | 2243 |
| | | Capelin | 322 | 146 |

*Invertebrates such as euphausiids (Phylum Arthropoda), comb jellies (Phylum Ctenophora) and jellyfish (Phylum Cnidaria) were frequently encountered but not included in this table due to quantifying difficulties.

Table 3. Percent occurrence for each species* in all 2002 Central Coast sets.

| Common name | Scientific name | Set Number | Percent Occurrence (%) |
|---|---|---|---|
| **0+ herring** | *Clupea pallasi* in year of birth | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38 | 97.4 |
| **1+ herring** | *Clupea pallasi* in year after birth | 1, 2, 3, 4, 8, 10, 11, 12, 13, 15, 17, 25, 26, 27, 28, 29, 30, 32, 33, 34, 35, 36, 37 | 60.5 |
| **2+ herring** | *Clupea pallasi* in 2nd year or older | 3, 8, 34, 35 | 10.5 |
| **No herring caught** | | 24 | 2.6 |
| **Walleye pollock** | *Theragra chalcogramma* | 1, 2, 3, 10, 11, 13, 16, 17, 21, 27, 28, 29, 31, 33, 34, 35, 36, 37 | 47.4 |
| **Smelt sp** | Family Osmeridae | 2, 9, 13, 18, 26, 28, 34, 35, 36, 37, 38 | 28.9 |
| **Squid** | *Loligo opalescens, Gonatus sp. or Berrytheuthis magister* | 7, 8, 9, 10, 11, 13, 17, 20, 21, 23, 28 | 28.9 |
| **Coho salmon** | *Oncorhynchus kisutch* | 3, 10, 12, 20, 21, 27, 32, 35, 36 | 23.7 |
| **Chinook salmon** | *Oncorhynchus tshawytscha* | 2, 12, 13, 21, 30, 32, 35, 36 | 21.1 |
| **Pink salmon** | *Oncorhynchus gorbuscha* | 3, 10, 12, 20, 24, 32, 35, 36 | 21.1 |
| **Shiner perch** | *Cymatogaster aggregata* | 2, 17, 23, 28, 29, 33, 37 | 18.4 |
| **Three-spine stickleback** | *Gasterosteus aculeatus* | 1, 2, 18 | 7.9 |
| **Pacific sardine** | *Sardinops sagax* | 1, 6, 36 | 7.9 |
| **Chum salmon** | *Oncorhynchus keta* | 10, 24, 36 | 7.9 |
| **Pacific sandlance** | *Ammodytes hexapterus* | 1, 28 | 5.3 |
| **Spiny dogfish** | *Squalus acanthias* | 10, 15 | 5.3 |
| **Prickleback sp.** | Family Stichaeidae | 13, 28 | 5.3 |
| **Poacher sp.** | Family Agonidae | 1 | 2.6 |
| **Starry flounder** | *Platichthys stellatus* | 8 | 2.6 |
| **Rockfish sp.** | *Sebastes sp.* | 8 | 2.6 |
| **Lingcod** | *Ophiodon elongatus* | 13 | 2.6 |
| **Pacific tomcod** | *Microgadus proximus* | 20 | 2.6 |
| **Sculpin sp.** | Family Cottidae | 20 | 2.6 |
| **Chub mackeral** | *Scomber japonicus* | 24 | 2.6 |
| **Sole sp.** | Family Pleuronectidae | 27 | 2.6 |

*Invertebrates such as euphasiids (Phylum Arthropoda), comb jellies (Phylum Ctenophora) and jellyfish (Phylum Cnidaria) were not quantified.

Table 4. Mean lengths, mean weights and total catch weights of 0+ and 1+ herring by set location (corresponding herring management sections in brackets).

| Set Location | Mean 0+ length (mm) | Mean 0+ weight (g) | Total catch weight of 0+ herring (g) | Mean 1+ length (mm) | Mean 1+ weight (g) | Total catch weight of 1+ herring (g) |
|---|---|---|---|---|---|---|
| **Fish Egg Inlet (091)** | 54.5 | 1.66 | 59.4 | 129.4 | 28.95 | 31.6 |
| **Kwakshua Channel (085)** | 60.3 | 2.42 | 113.1 | 126.1 | 26.21 | 33. |
| **Spider Anchorage (076)** | 61.2 | 2.70 | 7.4 | - | - | - |
| **Kildidt Sound (076)** | 53.8 | 2.15 | 5.2 | 101.9 | 14.13 | .6 |
| **Thompson Bay (074)** | 61.6 | 2.83 | 330.5 | 122.5 | 22.10 | .04 |
| **Meyers Passage (067)** | 57.4 | 1.88 | 144.2 | - | - | - |
| **Kitasu Bay (067)** | 49.5 | 1.32 | 29.1 | - | - | - |
| **East Higgins Passage (077)** | 44.8 | 1.07 | 24.1 | 109.2 | 16.33 | 12.8 |
| **Powell Anchorage (072)** | 42.6 | 0.85 | 19.9 | 104.9 | 14.05 | .3 |
| **Spiller Channel (072)** | 52.0 | 1.47 | 281.8 | 110.6 | 17.42 | .4 |
| **Hunter Channel (073)** | 53.1 | 1.59 | 49.6 | 118.2 | 21.69 | 15.1 |
| **Burke Channel (084)** | 65.5 | 2.72 | 6.1 | - | - | - |
| **All locations** | **53.6** | **1.79** | **1070.4** | **120.0** | **22.92** | **93.8** |

Table 5. Categories of organisms, by phylum, identified in plankton and stomach samples. The code (capital letters) is used to identify organisms in Tables 7, 9 and 10.

| | |
|---|---|
| **Coelenterata** | |
| **COEL** | Medusae |
| **SIPH** | Siphonophores |
| **Ctenophora** | |
| **CTEN** | Ctenophores |
| **Turbellaria** | |
| **TURB** | Turbellarians – flatworms (parasitic flatworms included) |
| **Annelida** | |
| **POLY** | Polychaetes – segmented worms |
| **Mollusca** | |
| **GAST** | Prosobranch gastropods |
| **PTER** | Pteropods (Ophistobranch gastropods), mostly *Clione* sp. |
| **PELE** | Pelecypods |
| **Arthropoda** | |
| **CLAD** | Cladocerans; *Podon sp.* and *Evadne sp.* |
| **OSTR** | Ostracods |
| **COPE** | Copepods (See Table 6 for a list of species) |
| **SHRI** | Shrimp (natant decapod) zoea |
| **CRAZ** | Crab (reptant decapod) zoea, including porcillinadea |
| **CRAM** | Crab (reptant decapod) megalopea, including porcillinadea |
| **BARN** | Barnacle (cirriped) larvae, nauplius and cypris |
| **SQUI** | Squid juvenile and octopus larva |
| **ISOP** | Isopods, cumaceans and mysids (mostly) |
| **AMPH** | Amphipods, mostly gammarid and hyperiid, some caprellid |
| **EUPL** | Euphausiid larvae (nauplii, protozoea and zoea) |
| **EUPA** | Euphausiid adults |
| **INSE** | Insects (larvae and adults), including chironomids |
| **MITE** | Mites (larvae and adults) |
| **Ectoprocta** | |
| **ECTO** | Ectoprocts, mostly *Membranipora sp.* larvae (cyphonautes) |
| **Echinodermata** | |
| **ECHI** | Echinoderm larvae |
| **Chaetognatha** | |
| **CHAE** | Chaetognaths, mostly *Sagitta sp.* |
| **Chordata** | |
| **LARV** | Appendicularia = larvaceans, mostly *Oikopleura sp.*, and tunicate larvae |
| **TELA** | Teleost larvae |
| **Miscellaneous** | |
| **EGGS** | Unidentified pelagic eggs, polychaete or teleost |

Table 6. Copepods identified in plankton and stomach samples. The code (capital letters) is used to identify organisms in Tables 7, 9 and 10.

| | |
|---|---|
| **CNAU** | Unidentified copepod nauplii |

**Calanoid copepods**

| | |
|---|---|
| **ALON** | *Acartia longiremis* |
| **APAC** | *Aetidius pacificus* |
| **CABD** | *Centropages abdominales* |
| **CALA** | *Calanus* sp. |
| **CCOL** | *Cadacia columbiae* |
| **CGRA** | *Chiridius gracilis* |
| **CMAR** | *Calanus marshallae* |
| **CPAC** | *Calanus pacificus* |
| **EBUN** | *Eucalanus bungii* |
| **EELO** | *Eucalanus elongatus* |
| **ELON** | *Epilabidocera longipedata* |
| **HTAN** | *Heterorabdus tanneri* |
| **MPAC** | *Metridia pacifica* |
| **NCRI** | *Neocalanus cristatus* |
| **NPLU** | *Neocalanus plumcrus* |
| **PMIN** | *Pseudocalanus* sp. |
| **PPAR** | *Paracalanus parvus* |
| **SMIN** | *Scolethisthricella minor* |
| **TDIS** | *Tortanus discaudatus* |
| **UCAL** | Unidentified calanoids |

**Cyclopoid copepods**

| | |
|---|---|
| **CANG** | *Corcaeeus anglicus* |
| **OITH** | *Oithona* sp. |
| **UCYC** | Unidentified cyclopoids |

**Harpacticoid copepods**

| | |
|---|---|
| **UHAR** | Unidentified harpacticoids |

**Monstrilloid copepods**

| | |
|---|---|
| **UMON** | Unidentified montrilloids |

**Caligoid copepods**

| | |
|---|---|
| **UPAR** | Unidentified parasitic copepods |

Table 7. Plankton tow results in number of organisms per $m^3$. Species codes can be found in Tables 5 and 6.

| Set | Location | Water volume ($m^3$) | COEL | SIPH | CTEN | POLY | GAST | PTER | PELE | CLAD | OSTR | SHRI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Fish Egg Inlet | 16.5 | 4.9 | - | 0.1 | 1.9 | - | - | - | 5.8 | - | 1.0 |
| 2 | Fish Egg Inlet | 16.3 | 23.7 | - | 0.1 | 15.7 | - | - | - | - | - | 0.4 |
| 3 | Fish Egg Inlet | 17.3 | 0.1 | - | 0.1 | - | - | 7.6 | - | 14.8 | - | 0.4 |
| 4 | Fish Egg Inlet | 18.0 | 6.8 | 0.1 | 0.1 | 1.8 | 1.8 | - | - | 19.5 | - | 0.7 |
| 5 | Kwakshua Ch. | 18.8 | 7.0 | - | 0.3 | 1.9 | - | - | 0.1 | 1.7 | - | 5.6 |
| 6 | Kwakshua Ch. | 16.3 | 4.0 | - | 0.1 | - | - | - | - | - | - | 0.2 |
| 7 | Kwakshua Ch. | 12.8 | 5.3 | - | 0.2 | 15.0 | 10.0 | - | - | 5.0 | - | 0.4 |
| 8 | Kwakshua Ch. | 19.0 | 18.0 | - | 0.5 | 6.7 | 6.7 | - | - | 50.6 | - | 4.7 |
| 9 | Spider Anch. | 16.6 | 15.9 | - | 0.4 | 4.0 | 7.7 | - | - | 7.7 | - | 29.1 |
| 10 | Kildidt Sound | 17.0 | - | - | - | 3.8 | 4.3 | - | - | 3.8 | - | 0.9 |
| 11 | Kildidt Sound | 14.7 | 19.2 | 2.5 | 0.2 | 11.0 | 8.7 | - | - | - | - | 11.7 |
| 12 | Kildidt Sound | 15.9 | 0.3 | - | - | - | 8.8 | - | - | - | - | 10.1 |
| 13 | Kildidt Sound | 15.1 | 25.3 | 13.9 | - | 0.3 | - | - | - | 4.2 | - | 10.4 |
| 14 | Thompson Bay | 16.4 | 7.9 | - | - | 0.1 | - | - | - | 3.9 | - | 8.2 |
| 15 | Thompson Bay | 15.4 | 0.4 | - | - | - | 8.3 | - | - | - | - | 10.0 |
| 16 | Thompson Bay | 17.4 | 3.2 | 1.8 | - | 0.1 | - | - | - | - | - | 2.4 |
| 17 | Thompson Bay | 11.2 | 29.7 | 4.0 | - | 5.7 | - | - | - | - | - | 22.3 |
| 18 | Meyers Pass | 16.6 | 0.3 | - | - | - | - | - | - | - | - | 1.0 |
| 19 | Meyers Pass | 17.6 | 2.4 | - | - | - | 0.3 | - | - | - | - | 0.3 |
| 20 | Kitasu Bay | 18.1 | 0.4 | - | - | - | - | - | - | - | - | 0.2 |
| 21 | Kitasu Bay | 17.1 | 0.2 | - | - | - | - | - | - | - | - | 3.9 |
| 22 | Kitasu Bay | 17.3 | 0.6 | - | - | - | - | - | - | - | - | 0.8 |
| 23 | Kitasu Bay | 19.4 | 2.4 | - | 0.3 | - | - | - | - | - | - | 5.7 |
| 24 | East Higgins | 16.2 | 0.1 | - | - | 1.2 | - | - | - | - | - | 0.2 |
| 25 | East Higgins | 16.2 | - | - | - | 0.2 | - | - | - | - | - | 0.7 |
| 26 | East Higgins | 16.8 | 0.3 | - | - | - | - | - | - | - | - | 0.1 |
| 27 | East Higgins | 17.3 | 6.9 | 0.1 | 0.2 | - | - | - | - | - | - | 8.5 |
| 28 | Powell Anch. | 19.0 | 7.1 | 12.1 | 0.4 | 2.1 | 2.5 | - | - | 4.6 | 1.1 | 26.9 |
| 29 | Powell Anch. | 17.8 | 21.1 | 9.6 | 0.5 | 2.5 | 1.6 | - | - | 2.0 | - | 9.5 |
| 30 | Spiller Ch. | 17.3 | 4.3 | 0.1 | 0.2 | 0.1 | - | - | - | 3.7 | - | 6.5 |
| 31 | Spiller Ch. | 17.7 | 0.9 | 1.6 | 0.3 | - | - | - | - | 5.0 | - | 0.3 |
| 32 | Spiller Ch. | 18.0 | 0.2 | 0.6 | 7.3 | 1.9 | 7.3 | 0.2 | - | 14.2 | - | 2.6 |
| 33 | Spiller Ch. | 18.4 | 0.1 | 2.9 | 0.1 | 0.1 | - | - | - | 0.4 | - | 1.6 |
| 34 | Hunter Ch. | 17.5 | 0.2 | - | 0.1 | 0.1 | 7.3 | - | - | 11.0 | - | 28.1 |
| 35 | Hunter Ch. | 17.3 | 0.1 | - | - | 7.4 | 8.3 | 0.3 | - | 7.4 | - | 0.7 |
| 36 | Hunter Ch. | 17.0 | 0.2 | - | 0.2 | - | 0.9 | 0.2 | - | 7.5 | - | 0.8 |
| 37 | Hunter Ch. | 19.4 | - | - | 0.1 | 0.1 | 3.3 | - | - | 3.3 | - | 0.6 |
| 38 | Burke Ch. | 18.4 | 0.7 | 0.1 | - | 1.1 | 1.1 | - | - | 20.3 | - | - |
| % occurrence | | | 92.1 | 34.2 | 55.3 | 63.2 | 44.7 | 10.5 | 2.6 | 55.3 | 2.6 | 97.4 |

Table 7 (cont'd)

| Set | CRAZ | CRAM | BARN | SQUI | ISOP | AMPH | EUPL | EUPA | INSE | MITE | ECTO | CHAE | ECHI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | 0.4 | - | 25.2 | - | - | 1.0 | 1.0 | - | - | - | 14.5 | 0.1 | - |
| **2** | - | 0.2 | 298.7 | - | - | - | - | 0.2 | - | - | 31.4 | - | - |
| **3** | 0.6 | 0.1 | 44.4 | - | 0.1 | 4.2 | 0.3 | 0.5 | - | - | 22.2 | 0.2 | 7.4 |
| **4** | 11.9 | 0.6 | 60.4 | - | 1.9 | 0.1 | 5.3 | - | - | - | 16.0 | 0.1 | - |
| **5** | 8.3 | 0.2 | 59.7 | - | - | 1.8 | 1.7 | - | - | - | 10.2 | 1.8 | - |
| **6** | 0.1 | | 7.8 | - | - | 4.0 | 0.3 | 2.0 | - | - | - | 0.4 | - |
| **7** | 15.3 | 1.6 | 74.8 | - | 6.5 | - | 5.0 | 0.1 | - | - | 24.9 | - | - |
| **8** | 28.2 | 2.3 | 141.8 | 0.1 | 0.9 | - | 10.1 | - | - | - | 23.6 | - | - |
| **9** | 31.7 | 1.4 | 11.5 | - | - | 0.1 | 15.4 | 0.3 | - | - | 11.5 | 0.1 | - |
| **10** | 31.6 | 2.2 | - | - | - | 1.9 | 11.3 | 3.4 | - | - | 18.8 | - | - |
| **11** | 65.9 | 0.5 | 45.8 | - | 2.3 | 10.9 | 2.2 | - | - | - | 37.1 | - | - |
| **12** | 21.9 | 1.8 | 8.1 | - | - | 4.0 | 8.1 | 11.6 | - | - | - | 0.3 | - |
| **13** | 100.0 | 3.8 | 23.3 | - | 0.6 | 2.1 | 14.9 | - | - | - | 69.8 | - | - |
| **14** | 46.8 | 9.8 | 11.7 | - | 3.9 | 1.2 | 20.0 | 3.2 | - | - | - | 0.1 | - |
| **15** | 1.5 | 2.9 | - | - | - | 2.3 | 9.5 | 8.1 | - | - | - | 0.8 | - |
| **16** | 37.4 | 10.5 | - | - | 1.8 | 2.1 | - | 5.6 | - | - | - | - | - |
| **17** | 62.2 | 12.1 | - | - | 2.0 | 0.3 | - | 0.4 | - | 0.1 | - | - | - |
| **18** | 0.3 | 0.2 | 3.9 | - | - | - | 1.9 | - | - | - | 1.0 | - | - |
| **19** | 2.1 | 0.1 | 0.1 | - | - | 0.2 | 1.8 | 0.3 | - | - | - | - | - |
| **20** | 9.1 | 0.3 | - | - | - | - | - | - | - | - | - | 0.1 | - |
| **21** | 19.8 | 10.5 | - | - | - | 0.1 | - | 0.4 | - | - | - | 0.1 | - |
| **22** | 10.3 | 11.3 | - | 0.1 | - | - | - | 1.3 | - | - | - | - | - |
| **23** | 16.0 | 1.7 | 1.7 | - | 0.1 | - | 0.4 | - | - | - | 0.4 | - | - |
| **24** | - | - | - | - | - | 8.1 | - | 1.2 | - | - | - | 0.7 | - |
| **25** | 0.2 | - | - | - | - | 0.0 | - | 17.8 | - | - | - | - | - |
| **26** | 0.5 | 0.8 | - | - | - | 3.8 | - | 1.4 | - | - | - | - | - |
| **27** | 27.5 | 1.6 | 18.5 | - | - | 1.9 | - | - | - | - | - | - | - |
| **28** | 22.5 | 0.3 | 17.9 | - | 0.2 | 0.7 | 0.6 | - | 0.2 | - | 0.2 | 0.1 | - |
| **29** | 13.5 | 0.1 | 12.6 | - | 0.2 | 0.7 | 0.4 | - | 0.6 | - | 0.2 | - | - |
| **30** | 12.7 | 0.1 | 81.4 | - | - | 0.1 | 7.5 | 1.6 | - | - | - | 0.2 | - |
| **31** | 1.8 | 0.4 | 31.7 | - | - | - | 1.4 | - | - | - | 0.9 | 0.5 | - |
| **32** | 9.2 | 0.5 | 56.8 | - | - | 11.8 | 39.1 | 2.4 | - | - | - | 0.4 | 0.2 |
| **33** | 2.0 | 0.1 | 5.9 | - | 0.1 | 1.0 | 3.9 | 0.7 | - | - | - | - | - |
| **34** | 27.0 | 1.1 | 80.5 | - | 5.5 | 11.3 | 3.7 | - | - | - | - | - | - |
| **35** | 8.3 | 0.3 | 89.0 | - | - | 1.7 | - | 1.2 | - | - | - | 0.4 | - |
| **36** | 2.5 | 0.6 | 161.7 | - | - | 12.3 | 11.3 | 1.2 | - | - | - | 0.8 | - |
| **37** | 3.5 | 0.6 | 16.5 | - | - | 0.1 | 3.3 | 0.6 | - | - | - | 0.1 | - |
| **38** | 0.4 | 0.1 | 5.4 | - | - | - | 0.3 | - | - | - | - | - | - |
| **% occurrence** | 97.4 | 89.5 | 73.7 | 5.3 | 36.8 | 73.7 | 71.1 | 60.5 | 5.3 | 2.6 | 42.1 | 50.0 | 5.3 |

Table 7 (cont'd)

| Set | LARV | TELA | EGGS | CNAU | UCAL | EBUN | EELO | CALA | CMAR | CPAC | NCRI | CCOL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 27.1 | 0.1 | 15.6 | - | - | - | - | - | - | - | - | - |
| 2 | 86.5 | - | - | - | 15.7 | 0.2 | - | 8.2 | 0.1 | - | - | - |
| 3 | 66.7 | - | 11.1 | - | 48.0 | 0.6 | - | 2.1 | 11.0 | - | - | 0.2 |
| 4 | 23.1 | - | 0.1 | - | 0.6 | - | - | - | - | - | - | - |
| 5 | 11.9 | 0.1 | 15.3 | - | 6.9 | 0.1 | - | 5.1 | - | - | - | - |
| 6 | 3.9 | - | 23.5 | - | 36.5 | 0.5 | - | 109.6 | 23.5 | - | - | - |
| 7 | 34.9 | - | 10.0 | - | 25.1 | - | - | - | - | - | - | - |
| 8 | 30.4 | 0.1 | 6.7 | - | 27.0 | - | - | - | 0.1 | - | - | - |
| 9 | 7.7 | - | 27.0 | - | 26.9 | - | - | 1.6 | 1.2 | 0.1 | - | - |
| 10 | - | 0.1 | 812.4 | - | 41.4 | - | - | 0.4 | - | 0.2 | - | - |
| 11 | 10.9 | - | 8.7 | - | 41.4 | - | - | - | - | - | - | - |
| 12 | - | - | 48.4 | - | 130.4 | 0.3 | - | 49.2 | 1.3 | - | - | - |
| 13 | 6.3 | - | 10.6 | - | 12.7 | - | - | 6.5 | - | - | - | - |
| 14 | - | 0.1 | 50.7 | - | 132.4 | - | - | 24.4 | 0.3 | - | - | - |
| 15 | - | 0.1 | - | - | 150.2 | - | - | 119.5 | 1.2 | 0.1 | - | - |
| 16 | - | 0.1 | 1.9 | - | 44.2 | - | - | 4.9 | 0.1 | - | - | - |
| 17 | - | 0.1 | 0.2 | - | 45.8 | - | - | 0.1 | - | 0.5 | - | - |
| 18 | 1.0 | - | - | - | 6.8 | - | - | 1.0 | - | - | - | - |
| 19 | - | 0.1 | - | - | 7.3 | - | - | 0.3 | 0.1 | 0.1 | - | 0.2 |
| 20 | - | - | - | - | 49.5 | - | - | 28.3 | - | - | - | - |
| 21 | - | - | - | - | 59.9 | - | - | 53.5 | 2.2 | - | - | - |
| 22 | - | 0.1 | - | - | 59.2 | 0.1 | - | 0.5 | - | - | - | - |
| 23 | - | 0.4 | - | - | 2.5 | - | - | 0.4 | 0.1 | - | - | - |
| 24 | - | 0.1 | 51.4 | - | 52.0 | - | 0.1 | 19.3 | 1.7 | - | 0.1 | - |
| 25 | - | - | 23.7 | - | 7.7 | - | - | 4.4 | 1.7 | 0.5 | - | - |
| 26 | - | - | - | - | 1.9 | - | - | 0.1 | - | 0.1 | 0.1 | - |
| 27 | 1.9 | - | - | - | 1.9 | - | - | 0.2 | - | - | - | - |
| 28 | 0.6 | - | - | - | 0.8 | - | - | 0.5 | - | - | - | - |
| 29 | 1.3 | - | 0.4 | - | 1.1 | - | - | - | - | 0.3 | - | - |
| 30 | 11.1 | - | 329.7 | - | 26.0 | 0.3 | - | 3.6 | 0.3 | 0.8 | 0.1 | 74.0 |
| 31 | 20.5 | - | 116.4 | - | 1.4 | - | - | 0.1 | - | - | - | - |
| 32 | 39.1 | - | 419.0 | - | 25.5 | 0.2 | - | 7.1 | 0.2 | 4.0 | - | - |
| 33 | 9.8 | 0.2 | 20.4 | - | 3.8 | 0.2 | - | 1.7 | 0.1 | - | 0.1 | - |
| 34 | 11.0 | 0.2 | 7.3 | - | 18.4 | 0.7 | - | - | - | 0.1 | - | - |
| 35 | 22.2 | - | 88.9 | - | 141.2 | - | - | 9.0 | 4.9 | 0.2 | 0.2 | 1.9 |
| 36 | 56.4 | - | 162.9 | - | 113.3 | - | - | 2.8 | 0.2 | - | - | 0.7 |
| 37 | 19.9 | - | 95.6 | - | 36.3 | 0.2 | - | - | 1.8 | 1.8 | - | 0.1 |
| 38 | 11.6 | - | 1.1 | 0.2 | 3.3 | 0.2 | - | 0.7 | - | - | - | - |
| % occurrence | 63.2 | 36.8 | 71.1 | 2.6 | 97.4 | 31.6 | 2.6 | 78.9 | 52.6 | 34.2 | 13.2 | 15.8 |

Table 7 (cont'd)

| Set | ELON | MPAC | CGRA | APAC | CABD | TDIS | ALON | PPAR | PMIN | UCYC | OITH | UHAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | - | - | - | - | - | - | 146.3 | - | 1.9 | - | 5.8 | - |
| 2 | 0.1 | - | - | 0.4 | - | - | 699.8 | - | 172.9 | - | 23.6 | - |
| 3 | - | 109.8 | - | - | 48.0 | - | 627.9 | - | 199.4 | - | 7.4 | - |
| 4 | 0.1 | - | - | - | 8.9 | - | - | - | - | - | - | - |
| 5 | 0.1 | 0.1 | - | - | 30.8 | - | 133.0 | - | 8.5 | - | 6.8 | - |
| 6 | - | 252.1 | - | - | 58.9 | - | 325.7 | - | 113.8 | - | 3.9 | - |
| 7 | - | 0.3 | - | - | 34.9 | - | 538.3 | - | 5.0 | - | - | - |
| 8 | - | - | - | - | 20.2 | - | 138.3 | - | 3.4 | - | 3.4 | - |
| 9 | 0.4 | 0.1 | - | - | 84.8 | - | 169.7 | - | 26.9 | - | 3.8 | - |
| 10 | 0.1 | - | - | - | 22.6 | - | 432.6 | - | 60.2 | - | - | - |
| 11 | 0.1 | - | - | - | 19.7 | 30.5 | 117.8 | - | 28.3 | - | - | - |
| 12 | - | 9.6 | - | - | 72.6 | - | 452.2 | - | 484.7 | - | - | - |
| 13 | - | - | - | - | 21.2 | 6.3 | 152.4 | - | 16.9 | - | - | - |
| 14 | 0.1 | 0.2 | - | - | 58.5 | - | 152.1 | - | 97.9 | - | - | - |
| 15 | - | 40.5 | - | - | 89.6 | - | 400.2 | - | 310.6 | - | - | - |
| 16 | - | - | - | - | 9.2 | 1.8 | 193.4 | - | 108.6 | - | - | - |
| 17 | - | - | - | - | 137.7 | 35.0 | 440.9 | - | 40.1 | - | - | - |
| 18 | - | - | - | - | 1.9 | 1.0 | 214.3 | - | 4.8 | - | 1.0 | - |
| 19 | - | 0.1 | 0.1 | - | 3.6 | - | 63.5 | - | 148.7 | - | - | - |
| 20 | - | 0.1 | - | - | 7.1 | - | 1068.4 | - | 28.3 | - | - | - |
| 21 | 15.1 | 0.4 | - | - | 15.0 | - | 1978.3 | - | 404.6 | - | - | - |
| 22 | 0.2 | - | - | - | 14.8 | - | 1289.2 | - | 162.7 | - | - | - |
| 23 | - | - | - | - | 1.2 | 0.1 | 45.4 | - | 1.7 | - | - | - |
| 24 | 0.2 | 6.8 | - | - | - | - | 98.8 | 51.4 | 201.6 | - | - | - |
| 25 | - | 7.9 | - | - | 3.9 | - | 75.8 | - | 399.6 | - | - | - |
| 26 | - | 3.9 | - | - | 3.8 | - | 249.3 | - | 146.5 | - | - | - |
| 27 | - | 0.1 | - | - | 14.9 | 9.3 | 157.4 | - | 5.6 | - | - | - |
| 28 | - | - | - | - | 0.8 | 1.7 | 7.8 | 0.2 | 0.4 | - | - | 0.4 |
| 29 | - | - | - | - | 0.2 | 0.7 | 4.3 | - | 1.1 | - | - | 0.9 |
| 30 | 0.1 | - | - | - | 14.8 | 3.7 | 166.6 | - | - | - | - | - |
| 31 | - | - | - | - | 1.4 | - | 10.4 | 1.4 | 4.5 | - | 1.4 | 1.4 |
| 32 | - | 100.5 | - | - | 10.7 | - | 46.2 | - | 42.6 | - | - | - |
| 33 | 0.1 | 0.8 | - | - | 0.7 | 0.4 | 18.0 | - | 12.1 | - | 2.0 | 0.2 |
| 34 | 0.1 | 3.9 | - | - | 7.3 | - | 409.7 | - | 54.8 | - | - | - |
| 35 | 5.3 | 373.3 | - | - | - | 7.4 | 81.5 | - | 66.7 | - | - | - |
| 36 | 2.4 | 296.9 | - | - | 7.5 | - | 120.6 | - | 48.9 | - | 3.8 | - |
| 37 | - | 23.3 | - | - | 16.5 | - | 108.8 | 5.5 | 22.0 | - | - | - |
| 38 | - | - | - | - | 1.5 | - | 20.5 | 2.7 | 9.4 | 0.2 | 1.1 | - |
| % occurrence | 39.5 | 55.3 | 2.6 | 2.6 | 89.5 | 31.6 | 97.4 | 13.2 | 94.7 | 2.6 | 31.6 | 10.5 |

Table 7 (cont'd)

| Set | UMON | UPAR | Total COPE | Total (no eggs) | Total (ALL) |
|---|---|---|---|---|---|
| 1 | - | - | 154.1 | 237.3 | 252.8 |
| 2 | - | - | 920.9 | 1377.9 | 1377.9 |
| 3 | - | - | 1054.4 | 1223.9 | 1235.0 |
| 4 | - | - | 9.5 | 159.4 | 159.5 |
| 5 | - | - | 191.4 | 303.6 | 318.9 |
| 6 | - | - | 924.5 | 947.4 | 971.0 |
| 7 | - | - | 603.5 | 802.3 | 812.3 |
| 8 | - | - | 192.3 | 517.0 | 523.8 |
| 9 | - | - | 315.6 | 460.2 | 487.2 |
| 10 | - | - | 557.4 | 639.4 | 1451.8 |
| 11 | - | 0.1 | 238.0 | 466.8 | 475.5 |
| 12 | - | - | 1200.2 | 1275.1 | 1323.5 |
| 13 | - | 2.2 | 218.1 | 493.1 | 503.7 |
| 14 | - | 0.1 | 466.1 | 582.9 | 633.5 |
| 15 | - | - | 1111.8 | 1155.7 | 1155.7 |
| 16 | - | 0.3 | 362.5 | 427.4 | 429.3 |
| 17 | - | 0.3 | 700.3 | 839.1 | 839.3 |
| 18 | - | - | 230.7 | 240.3 | 240.3 |
| 19 | 1.8 | 0.1 | 225.8 | 233.5 | 233.5 |
| 20 | - | - | 1181.7 | 1191.7 | 1191.7 |
| 21 | - | 0.2 | 2529.3 | 2564.1 | 2564.1 |
| 22 | - | 0.1 | 1526.9 | 1551.4 | 1551.4 |
| 23 | - | 0.1 | 51.4 | 80.3 | 80.3 |
| 24 | - | - | 432.1 | 443.8 | 495.2 |
| 25 | - | - | 501.5 | 520.5 | 544.2 |
| 26 | - | - | 405.7 | 412.7 | 412.7 |
| 27 | - | 1.9 | 191.1 | 258.2 | 258.2 |
| 28 | - | 0.7 | 13.4 | 113.5 | 113.5 |
| 29 | 0.2 | 0.2 | 9.1 | 85.5 | 85.9 |
| 30 | - | - | 290.4 | 419.8 | 749.5 |
| 31 | - | 0.2 | 22.0 | 87.2 | 203.7 |
| 32 | - | - | 237.0 | 430.7 | 849.7 |
| 33 | - | - | 40.2 | 68.8 | 89.2 |
| 34 | - | - | 494.9 | 682.0 | 689.3 |
| 35 | - | - | 691.5 | 838.9 | 927.8 |
| 36 | - | - | 597.1 | 853.8 | 1016.7 |
| 37 | 0.1 | 0.1 | 216.4 | 268.2 | 363.8 |
| 38 | - | - | 39.9 | 80.9 | 82.0 |
| % occurrence | 7.9 | 36.8 | 100.0 | | |

Table 8. Summary of herring stomach fullness (empty, trace, half full or full) and state of digestion (fresh, partly digested, mostly digested or totally digested).

| | State of digestion | | | | |
|---|---|---|---|---|---|
| **Fullness** | **1 - fresh** | **2 - partly** | **3 - mostly** | **4 - totally** | **Total** |
| **0+ herring** | | | | | |
| 0 - empty | - | - | - | 108 | **108** |
| 1 - trace | 1 | 17 | 40 | 46 | **104** |
| 2 - half | 1 | 26 | 47 | 8 | **82** |
| 3 - full | 3 | 27 | 21 | 4 | **55** |
| **Total** | **5** | **70** | **108** | **166** | **349** |
| **1+ herring** | | | | | |
| 0 - empty | - | - | - | 23 | **23** |
| 1 - trace | 0 | 6 | 20 | 20 | **46** |
| 2 - half | 2 | 30 | 7 | 1 | **40** |
| 3 - full | 0 | 34 | 4 | 0 | **38** |
| **Total** | **2** | **70** | **31** | **44** | **147** |

Table 9. Occurrence of food items, as percent of total 0+ herring stomachs with identifiable food items, by set location. Codes described in Tables 5 and 6.

| | Fish Egg Inlet | Kwakshua Ch. | Spider Anch. | Kildidt Sound | Thompson Bay | Meyers Pass. | Kitasu Bay | East Higgins Pass | Powell Anch. | Spiller Ch. | Hunter Ch. | Burke Ch. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **n** | **13** | **9** | **7** | **23** | **27** | **13** | **20** | **18** | **13** | **23** | **8** | **9** |
| **TURB** | 38.5 | 33.3 | 71.4 | 52.2 | 33.3 | 46.2 | 40.0 | 50.0 | 15.4 | 13.0 | 25.0 | 11.1 |
| **GAST** | - | - | 28.6 | 4.3 | 3.7 | 7.7 | - | - | - | - | - | - |
| **PELE** | - | - | - | - | - | 15.4 | 5.0 | - | - | 30.4 | - | - |
| **CLAD** | - | - | 14.3 | - | - | - | - | - | - | 39.1 | 12.5 | 22.2 |
| **OSTR** | 7.7 | 22.2 | - | 4.3 | - | - | - | - | - | - | - | 44.4 |
| **SHRI** | - | - | - | 4.3 | 7.4 | - | - | - | 7.7 | 13.0 | 25.0 | - |
| **CRAZ** | - | 11.1 | 57.1 | 26.1 | 22.2 | - | 5.0 | - | 7.7 | 8.7 | 25.0 | - |
| **CRAM** | - | - | - | 39.1 | - | - | 5.0 | - | - | 8.7 | 12.5 | - |
| **BARN** | 15.4 | 11.1 | 14.3 | 4.3 | - | 30.8 | 5.0 | - | 30.8 | 65.2 | 37.5 | 22.2 |
| **ISOP** | - | - | - | - | - | - | - | - | - | - | 12.5 | - |
| **AMPH** | - | - | - | 30.4 | 14.8 | - | 5.0 | 5.6 | - | 21.7 | 25.0 | - |
| **EUPL** | - | - | - | - | 14.8 | - | - | - | - | - | - | - |
| **EUPA** | - | - | - | 26.1 | 11.1 | 38.5 | 5.0 | 61.1 | - | 8.7 | - | - |
| **LARV** | 30.8 | 11.1 | - | - | - | - | - | - | - | 4.3 | - | 55.6 |
| **TELA** | - | - | - | 4.3 | - | - | - | - | - | - | - | - |
| **EGGS** | 53.8 | 33.3 | 71.4 | 34.8 | 7.4 | 7.7 | 15.0 | 11.1 | - | 69.6 | 50.0 | 11.1 |
| **CNAU** | - | - | - | - | - | - | 5.0 | - | - | - | - | - |
| **UCAL** | 53.8 | 55.6 | 85.7 | 8.7 | 81.5 | 15.4 | 75.0 | 44.4 | 7.7 | 52.2 | 12.5 | 88.9 |
| **NPLU** | - | - | - | - | - | - | - | - | - | - | - | 11.1 |
| **CALA** | 7.7 | - | - | - | 3.7 | 7.7 | - | - | - | - | - | - |
| **CMAR** | - | - | - | 4.3 | 3.7 | - | 5.0 | 5.6 | - | - | - | 22.2 |
| **CPAC** | - | - | - | - | - | - | - | 5.6 | - | - | - | - |
| **CCOL** | - | - | - | - | - | 7.7 | - | - | - | - | - | - |
| **HTAN** | - | - | - | - | - | - | - | - | - | - | - | 11.1 |
| **MPAC** | 15.4 | - | - | - | 14.8 | - | 5.0 | 11.1 | - | - | 12.5 | 33.3 |
| **CGRA** | - | - | - | - | - | - | - | 5.6 | - | - | - | - |
| **SMIN** | - | - | - | - | - | - | - | - | - | - | - | 11.1 |
| **CABD** | - | - | 28.6 | - | 11.1 | - | - | - | - | 8.7 | 12.5 | - |
| **TDIS** | 15.4 | - | - | 17.4 | 14.8 | - | 20.0 | 11.1 | - | - | - | - |
| **ALON** | 30.8 | - | 71.4 | 4.3 | 74.1 | 7.7 | 45.0 | - | - | 8.7 | 25.0 | 11.1 |

Table 9 (cont'd)

| | Fish Egg Inlet | Kwakshua Ch. | Spider Anch. | Kildidt Sound | Thompson Bay | Meyers Pass. | Kitasu Bay | East Higgins Pass | Powell Anch. | Spiller Ch. | Hunter Ch. | Burke Ch. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PPAR** | - | - | - | - | 14.8 | - | - | 5.6 | - | 13.0 | - | 33.3 |
| **PMIN** | 23.1 | - | 42.9 | 4.3 | 33.3 | 7.7 | 20.0 | 11.1 | - | 8.7 | - | 66.7 |
| **UCYC** | - | 11.1 | - | - | - | 7.7 | 5.0 | - | - | - | - | - |
| **OITH** | 7.7 | - | - | - | 14.8 | - | 25.0 | - | - | - | - | 11.1 |
| **CANG** | 7.7 | - | - | - | 3.7 | 7.7 | - | - | - | - | - | - |
| **UHAR** | - | - | 14.3 | 4.3 | 11.1 | 15.4 | - | 22.2 | 84.6 | 17.4 | 12.5 | - |
| **UPAR** | - | - | - | 4.3 | - | - | - | - | - | - | - | - |

Table 10. Occurrence of food organisms, as percent of total 1+ herring stomachs with identifiable food items, by herring sections. Codes described in Tables 5 and 6.

| | Fish Egg Inlet | Kwakshua Ch. | Kildidt Sound | Thompson Bay | East Higgins Pass | Powell Anch. | Spiller Ch. | Hunter Ch. |
|---|---|---|---|---|---|---|---|---|
| **n** | **17** | **5** | **12** | **2** | **17** | **13** | **10** | **27** |
| **TURB** | 29.4 | 40.0 | 25.0 | 50.0 | 47.1 | 46.2 | 30.0 | 37.0 |
| **SHRI** | - | - | - | - | - | 7.7 | 10.0 | 3.7 |
| **CRAZ** | - | 20.0 | 8.3 | - | - | 23.1 | 20.0 | 14.8 |
| **CRAM** | - | 20.0 | - | - | - | 7.7 | 10.0 | 7.4 |
| **BARN** | - | 20.0 | - | - | - | 7.7 | - | 7.4 |
| **ISOP** | - | - | - | - | - | - | - | 3.7 |
| **AMPH** | - | - | - | - | - | - | - | 7.4 |
| **EUPA** | 58.8 | - | 100.0 | 100.0 | 88.2 | 15.4 | 90.0 | 74.1 |
| **TELA** | - | - | - | - | - | 15.4 | - | - |
| **EGGS** | - | - | - | - | - | - | - | 11.1 |
| **UCAL** | 23.5 | 80.0 | - | - | 29.4 | 15.4 | 40.0 | 7.4 |
| **CALA** | 11.8 | 20.0 | - | - | - | - | - | - |
| **CMAR** | 17.6 | - | - | - | 5.9 | - | 10.0 | - |
| **CPAC** | - | - | - | - | - | - | 10.0 | - |
| **NCRI** | - | - | - | - | 5.9 | - | - | - |
| **HTAN** | - | - | - | - | 5.9 | - | - | - |
| **MPAC** | 41.2 | 80.0 | - | - | 29.4 | - | 10.0 | 14.8 |
| **TDIS** | - | - | - | - | - | 7.7 | - | - |
| **ALON** | 5.9 | - | - | - | 5.9 | - | - | - |
| **UHAR** | - | - | - | - | - | 46.2 | - | - |
| **UPAR** | - | - | - | - | 5.9 | - | - | - |