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BOTTOM TRAWL SURVEY OF YOUNG-OF-THE-YEAR LINGCOD *(Ophiodon elongatus)* IN THE STRAIT OF GEORGIA, JULY 26 – AUGUST 8, 2005

by

A.M. Surry, D.R. Haggarty, and J.R. King

Fisheries and Oceans Canada
Science Branch, Pacific Region
Pacific Biological Station
Nanaimo, British Columbia
V9T 6N7

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Results of the 2005 bottom trawl survey for young-of-the-year lingcod (*Ophiodon elongatus*) in the Strait of Georgia are presented. This survey measured young-of-the-year lingcod density from late July to early August at index sites throughout the Strait of Georgia in Statistical Areas 13, 14, 16, 17, 18, 19, and 29. We caught a total of 391 young-of-the-year lingcod. Of these, over 95% were captured in the northern region of the Strait of Georgia. Median density estimates in the northern region in the main depth strata sampled were 919 / km^2 in the shallow stratum (15 – 25 m) and 682 / km^2 in the deep stratum (26-35 m). In the southern region the median density was 0 in all depth strata. Young-of-the-year lingcod ranged in length from 111 – 228 mm and in weight from 9 – 72 g. Stomach contents of lingcod were predominantly fishes, with prey species including Pacific herring (*Clupea harengus*), Pacific sand lance (*Ammodytes hexapterus*), roughback sculpin (*Chitonotus pugetensis*), and lingcod.

RÉSUMÉ

Surry, A.M, Haggarty, D.R., and King, J.R. 2005. Bottom trawl survey of young-of-the-year lingcod *(Ophiodon elongatus)* in the Strait of Georgia, July 26 – August 8, 2005. Can. Data Rep. Fish. Aquat. Sci. 1170: vii + 45 p.

Ce document présente les résultats du relevé au chalut de fond des jeunes morues-lingues de l'année (*Ophiodon elongatus*) dans le détroit de Georgia. Ce relevé a consisté à mesurer la densité de ces poissons de la fin de juillet au début d'août à des sites de référence dans les zones statistiques 13, 14, 16, 17, 18, 19 et 29. Au total, nous avons capturé 391 jeunes morues-lingues de l'année, dont plus de 95 % dans la partie nord du détroit Georgia, où la densité médiane a été estimée à 919 / km^2 dans la strate peu profonde (15 – 25 m) et à 682 / km^2 dans la strate profonde (26-35 m). Dans la partie sud du détroit de Georgia, la densité médiane s'est chiffrée à 0 dans toutes les strates de profondeur. La longueur des jeunes morues-lingues de l'année a varié de 111 à 228 mm, et leur poids, de 9 à 72 g. Leurs contenus stomacaux étaient dominés par des poissons, notamment du hareng du Pacifique (*Clupea harengus*), du lançon gourdeau (*Ammodytes hexapterus*), du chabot à dos rugueux (*Chitonotus pugetensis*) et de la morue-lingue.

INTRODUCTION

In 2003, a bottom trawl survey of young-of-the-year lingcod was conducted as one component of a monitoring and assessment program for Strait of Georgia lingcod (King *et al.* 2003; Haggarty *et al.* 2004). The purpose of the 2003 survey was to establish an index of relative abundance of young-of-the-year lingcod in the Strait of Georgia. This survey produced density estimates (using number of fish caught per area swept) for index sites which could be compared to density estimates from the same sites from a similar survey which was conducted at approximately the same time of year in 1991 (Workman *et al.* 1992), and also established new sites that could be compared with future estimates. A subsequent survey in 2004 (Haggarty *et al.* 2005) continued to assess young-of-the-year density at the same index sites, and further expanded the study area. The present survey constitutes a third replicate of the 2003 survey, and continues to provide density estimates at the index sites and at new sites. This report describes the methodology and data collected during the 2005 survey.

By the middle to end of the summer, young-of-the-year lingcod in the Strait of Georgia are found in a wide range of flat bottom areas, and by age-2 begin to inhabit similar rocky substrates to older lingcod (Cass *et al.* 1990). Typically, larger lingcod inhabit deep banks and reefs, while smaller lingcod inhabit shallow waters and banks (Forrester and Smith 1974). For this reason, young-of-the-year surveys have taken place in late July to early August and have focussed on shallow areas with various combinations of flat mud, sand, and gravel substrates. Due to the highly variable catches over purely muddy bottoms in the 1991 survey (King *et al.* 2003; Workman *et al.* 1992), pure mud sites were excluded in subsequent surveys.

In 2003, we described the index sites as belonging to either the northern or southern region of the Strait of Georgia (Haggarty *et al.* 2004). We defined the border between the northern and southern regions as the division line between Statistical Areas 14 and 17. This is consistent with oceanographic patterns in the Strait and is the usual division between the northern and central regions (Thomson 1981). New sites along the eastern coast of the Strait of Georgia that were added in 2004 (Haggarty et al. 2005) and 2005 necessitated creating a new region which we called the eastern region. While not an oceanographically distinct region, the eastern and western coast lines of the Strait of Georgia are quite different, the east characterised by long, steep sided fjords and a complex of islands, sounds and passages, and the west with few inlets and a more regular coast line (Thomson 1981). Suitable habitat for young-of-the-year lingcod in the east is quite scarce (Haggarty et al. 2005). In the current survey we added sites south and west of the previous southern boundary of the survey area, extending into the mouth of Juan de Fuca Strait. We called the area west of Victoria the southwestern region.

METHODS

VESSEL AND NETS

The vessel used for the survey was the CCGS *Neocaligus*, an 18.8 m stern trawler with a net tonnage of 48.3 t. This is the same vessel as that used for the 2003 and 2004 surveys (Haggarty *et al.* 2005; Haggarty *et al.* 2004) , and replaced the R/V *Caligus*, which was used for the 1991 survey (Workman *et al.* 1992). As in the previous surveys, bottom trawl tows were

made with a Marinovich flat trawl with a 13 m (43 ft) foot rope, a 12.5 m (41 ft) headrope, and a 1 cm mesh codend liner (Appendix Figure 1). This net was constructed with polypropylene mesh and is the same net that was used in the 2004 survey, a replacement for the original nylon net used in 2003 and 1991. The 13 m footrope used in this survey has 6.4 cm (2.5") rubber disks with a 10 cm section of 10 cm (4") rubber disks at each end. This is the same footrope as was used during the 2003 and 2004 surveys (Haggarty *et al.* 2005; Haggarty *et al.* 2004), and was made to the same specifications as the one used for the 1991 survey (Workman *et al.* 1992). The net was rigged with seven 20 cm plastic floats on the headrope. Tevron steel doors (1.5 m x 1.5 m, 350 kg) provided an estimated 13 m horizontal opening. A Seabird Electronics SBE39 temperature and depth sensor was attached to the net mesh near the headrope and deployed with each tow.

Fishing methodology was the same as that used in previous surveys (Haggarty *et al.* 2005, Haggarty *et al.* 2004, Workman *et al.* 1992). All tows were 10 minutes in duration with a vessel speed of approximately 2 knots. Start and finish locations, times, and depths were recorded for each tow. Tide height, weather conditions, and substrate type were also recorded. Substrate type was determined from a combination of nautical charts and reflectance readings from the depth sounder. Substrate types are described in terms of sand (S), mud (M), and rock (R), or combinations thereof. Additional habitat characteristics of the site, such as plentiful kelp, sponge, or other invertebrates were also noted.

FISHING DEPTHS AND SITE LOCATIONS

This survey took place at index sites throughout the Strait of Georgia in Statistical Areas 13, 14, 16, 17, 18, 19, and 29 (Table 1; Figure 1). The majority of sites were established in previous surveys (Haggarty *et al.* 2005; Haggarty *et al.* 2004; Workman *et al.* 1992), but we also searched for new sites with appropriate habitat.

Where possible we revisited the sites sampled in 1991, 2003 and 2004 (Table 1). As in the 2003 and 2004 surveys, we rejected the pure mud sites established in 1991 because catches were highly variable (King *et al.* 2003; Workman *et al.* 1992). Other areas were not accessible to trawling due to the presence of abundant sport and commercial crab gear or because of high traffic in the area. As in 2004, we continued to expand the survey to include the eastern Strait of Georgia. In addition, we added a number of sites in Statistical Area 19 in order to expand the survey further southwest.

There is limited trawlable ground with suitable habitat for young-of-the-year lingcod in the southern and eastern parts of the Strait of Georgia. In these areas, tows were made wherever possible at each site. New sites were selected by examining nautical charts for areas with appropriate depth, slope, and substrate. Along the north-western shore, between Qualicum and Comox, there is ample suitable and trawlable habitat. In this area, we randomized the tow locations at each index site. For each index site between Qualicum and Campbell River, suitable habitat was identified by examining nautical charts for areas with appropriate depth, slope, and substrate. A polygon of suitable habitat for each site was hand drawn in ESRI ® Arcview™ 3.2, and we then selected random points from within each polygon using Random Point Generator 1.3 (Jenness 2005). Random points were used as the tow start location unless the location was

deemed by the vessel captain to be unsuitable for towing. In those cases, that point was omitted and the next random point was used.

Two main depth strata (DS) were trawled at most sites: DS1 = 15 – 25 m; DS2 = 26 – 35 m. We tried to fish two tows in each depth stratum at each site; however, this was not always possible due to limited habitat, trawlable bottom, or obstructions such as abundant crab gear. At some sites, suitable, trawlable habitat was only available at greater depths, and we fished in whatever depths were possible. At Qualicum Beach, where suitable, trawlable habitat was abundant, we fished additional depth strata, in order to more fully assess the depth distribution of young-of-the-year lingcod. Additional depth strata ranged from DS3 to DS8 in 10 m intervals from 36 – 95 m (Table 2).

SAMPLING OF TOWS

The codend was emptied into an approximately 2.0 x 2.0 x 0.3 m sorting table on deck. Because catches generally consisted of a small number of large individuals and a large number of small individuals, in order to obtain an accurate estimate of species composition we removed the large individuals prior to obtaining a random subsample of the catch. In addition it was important that all lingcod and rockfishes be accounted for, and these species were therefore also removed prior to collecting the subsample. The random subsample for species composition was collected from the remaining catch by filling one to four baskets, depending on the amount caught. We weighed and discarded any catch that remained after the subsample was collected. The subsample was sorted into species or lowest taxonomic group possible, and each species or taxonomic group was weighed and counted. The catch composition therefore consisted of a number of species for whom total catch weights and counts were obtained directly, and many species whose total catch weight and count was obtained proportionally from the random subsample. The total catch weight was determined by adding the total weight of the subsample to the total weight of the discarded catch. All weights were measured to the nearest 0.1 kg.

Species for whom all individuals were always removed prior to subsampling included spiny dogfish, ratfish, starry flounder, large sea stars, large crabs, big skate, and longnose skate. These species were weighed and counted quickly, and released alive if possible. All lingcod and rockfish were retained for biological sampling as outlined below. For each region in the Strait of Georgia a number of samples of important commercial species were retained in order to obtain length-frequency information; we attempted to cover as many regions and depth strata as possible.

CALCULATION OF YOUNG-OF-THE-YEAR DENSITY

The area swept by the trawl net was calculated by multiplying the distance towed by the estimated horizontal net opening (13 m). Young-of-the-year density was then calculated as number of fish per km^2 of swept area.

BIOLOGICAL SAMPLING

We measured fork length (mm) and weight (g) for all lingcod. We used length and weight data to calculate Condition Factor using the following formula (Caillet *et al.* 1986):

Weight (g) * Length (mm)$^{-3}$. For the age 1+ lingcod we also determined sex. We examined the stomachs from up to 25 lingcod from each depth stratum at each site; if more than 25 lingcod were captured in a depth stratum, we randomly selected 25 fish. Prey items were identified to the lowest taxonomic category possible, or assigned a general grouping (i.e. fish remains). The digestion stage and volume (cm^3) of each prey item was visually estimated. We collected sagittal otoliths from all lingcod for which we examined stomachs. In addition, we collected fin rays from the second dorsal fin of all lingcod that appeared to belong to the age 1+ year class, and from a small sample of young-of-the-year lingcod. Otoliths and fin rays from the young-of-the-year lingcod will be utilized for daily growth ring analysis. Fin rays from the suspected age 1+ lingcod will be aged in order to confirm that these fish do belong to the age 1+ year class.

We measured fork length (mm) and weight (g), and collected sagittal otoliths from copper rockfish (*Sebastes caurinus*), Puget Sound rockfish (*S. emphaeus*), quillback rockfish (*S. maliger*), and yelloweye rockfish (*S. ruberrimus*). We determined sex and maturity stage for all rockfish.

Where time permitted and sufficient quantities of fish were captured, length frequency data were collected for a number of commercially important or abundant species. We determined sex and measured length (cm) for spiny dogfish (*Squalus acanthias*) and Pacific sanddab (*Citharichthys sordidus*). We measured length (cm) for Pacific cod (*Gadus macrocephalus*), walleye pollock (*Theragra chalcogramma*), Pacific tomcod (*Microgadus proximus*), rock sole (*Lepidopsetta bilineata*), and English sole (*Paroprys vetulus*).

RESULTS

TOW INFORMATION

We made a total of 87 tows at 27 sites between July 26 and August 8, 2005. Seven sites were newly established for this survey. Four of the 87 tows were designated as unusable when the net had to be retrieved early due to snagging on rocky bottom. Nine sites were located in the northern region of the Strait of Georgia (the western side of Statistical Area 13 and all of Statistical Area 14). Ten sites were located in the southern region of the Strait of Georgia (Statistical Areas 17 and 18 and the northern portion of Statistical Area 19), of which two were new for 2005. Five sites were located on the eastern side of the Strait of Georgia (the eastern side of Statistical Area 13 and all of Statistical Areas 16 and 29), of which two were new for 2005. Three new sites were established in the southwestern region of the Strait of Georgia (the southwestern portion of Statistical Area 19). For statistical areas and site locations, refer to Table 1 and Figure 1. For dates, times, tow positions, depths, and other bridge log information, refer to Appendix Table 1.

A Seabird Electronics SBE39 temperature and pressure probe was deployed with all tows except for those on August 6, 2005, when we removed it as a precautionary measure while fishing in rocky grounds in the eastern region of the Strait of Georgia. On July 28, July 31, and August 2 the probe collected no data due to a malfunction. We successfully collected temperature and pressure data from 57 tows on the remaining days of the survey. All data was collected with a 10 second sampling interval. Pressure data was used to verify and supplement the depth information recorded on the Bridge Log. Average temperature at depth during each

tow is presented with the bridge log data in Appendix Table 1. Temperatures at depth ranged from 13.5°C for the shallowest tow (modal depth = 13 m) to 9-10°C for the deepest tows (> 40 m).

CATCH COMPOSITION

The mean catch weight per tow was 109 kg, with catches ranging from 20 – 467 kg for each usable tow. The total catch for the survey was 8411 kg. We identified 113 species or taxonomic groups of fishes and invertebrates, of which 69 species were fishes and 54 were invertebrates. Total catch weight and numbers of individuals for each species and taxonomic group are presented in Table 3, along with the relative proportions of the total catch for the survey. Fishes accounted for 93% of the total catch of the survey by weight, with spiny dogfish (*Squalus acanthias*), rock sole (*Lepidopsetta bilineata*), and English sole (*Parophrys vetulus*) the most abundant species by weight, with catches of 2545 kg, 1805 kg, and 1665 kg, respectively. Lingcod accounted for 15 kg or 0.2% of the total catch. Of the invertebrates, Dungeness crab (*Cancer magister*) and sunflower starfish (*Pycnopodia helianthoides*) were the most abundant species by weight, with catches of 113 kg and 90 kg, respectively. Total catch weight by species is presented in Table 3 and catch composition for each tow is presented in Appendix Table 2.

Lingcod

We caught 391 young-of-the-year lingcod and 20 lingcod thought to be from the age 1+ year class (Table 4). Fifty-two tows contained lingcod, among which the median catch was 4.5 lingcod per tow, with a maximum of 54 per tow (Appendix Table 1). As in previous surveys, most lingcod were captured in the northern region in depth strata 1 and 2 (15 – 25 m and 25-35 m, respectively). The maximum capture depth for young-of-the-year lingcod was 75 m (depth stratum 6).

In the north, we captured 326 young-of-the year and 17 age 1+ lingcod in depth strata 1 and 2 (Table 4). Young-of-the-year densities ranged from 0 – 6272/km^2 in depth stratum 1, with a median of 919/km^2, and from 0 – 3033/km^2, with a median of 682/km^2 in depth stratum 2 (Table 4). In the south, we captured 12 young-of-the-year and no age 1+ lingcod in depth strata 1 and 2. Young-of-the year densities ranged from 0 – 528/km^2 in depth stratum 1, with a median of 0, and from 0 – 466/km^2 in depth stratum 2, with a median of 0. Tow-by-tow catch data for age 1+ lingcod, and catch and density data for young-of-the-year lingcod, is presented with the bridge log data in Appendix Table 1.

We measured the lengths and weights and determined condition factor for 409 lingcod (Appendix Table 3; Appendix Table 4). Lingcod were separated into young-of-the-year and age 1+ year classes based on a subjective examination of their relative lengths and weights. Subsequent examination of aging structures may result in some individuals being assigned to a different year class, especially those fish in the intermediate size range, as the possibility of local variation in growth rates or hatching dates makes it impossible to absolutely determine age based on size. Length and weight frequency histograms are presented in Figure 2, and illustrate that lingcod assigned to the young-of-the year age class ranged in length from 111 – 228 mm, overlapping with the 192 – 351 mm length range for lingcod assigned to the age 1+ year class. However, weights did not overlap, with young-of-the-year weights ranging from 9 – 72 g and

age 1+ weights ranging from 88 – 319 g. Summary statistics for young-of-the-year lingcod length, weight, and condition factor are presented in Table 5. Median and mean lengths for young-of-the-year lingcod for all sites and depth strata combined were 159.0 mm and 159.4 mm (SD=14.6), respectively. Median and mean weights were 26.0 g and 26.8 g (SD=8.2), respectively. Median and mean condition factor was 0.6 x 10^{-5} g/mm^3 and 0.7 x 10^{-5} g/mm^3 (SD=0.1), respectively.

We examined stomachs from 286 young-of-the-year lingcod and 19 age 1+ lingcod (Table 6). Of these, 165 young-of-the-year (58%) and 12 (63%) age 1+ lingcod had prey items identifiable to a general category or to species (Table 7). Most stomachs contained only one type of prey, but a small number contained up to five types. Young-of-the-year and age 1+ lingcod consumed an average prey volume of 1.7 cm^3 and 3.2 cm^3, respectively. For young-of-the-year lingcod, fish species accounted for 72% of the prey consumed, with the most frequently encountered fish prey types being the general category "fish remains," accounting for 40%, and Pacific herring (*Clupea harengus*), accounting for 15%. The most common invertebrate prey type was shrimp, accounting for 8 % of the total prey consumed. For age 1+ lingcod, fish species accounted for 85% of the prey consumed, with the most frequently encountered fish prey types being the general category "fish remains," accounting for 31%, and quillfish (*Ptilichthys goodei*), accounting for 23%. Invertebrate prey types accounted for 15% of the total prey consumed. It must be noted that the sample size for age 1+ lingcod is very small, and the stomach contents may therefore not be representative. We encountered two occurrences of young-of-the-year lingcod as prey in the stomach contents (Table 7). A 175 mm young-of-the-year lingcod consumed a lingcod with a standard length of approximately 93 mm. A 293 mm age 1+ lingcod consumed a lingcod with a fork length of approximately 155 mm and a weight of 20 g.

Rockfish

Rockfish (*Sebastes sp.*) were present in 15 tows, with a maximum capture depth of 95 m. We caught 12 copper rockfish (*S. caurinus*), five greenstriped rockfish (*S. elongatus*), one Puget Sound rockfish (*S. emphaeus*), 36 quillback rockfish (*S. maliger*), and three yelloweye rockfish (*S. ruberrimus*) (Table 3). We collected sagittal otoliths and length, weight, sex, and maturity data for copper, Puget Sound, quillback, and yelloweye rockfish (Appendix Table 5). Copper rockfish lengths and weights ranged from 97 – 318 mm and 15 – 541 g, respectively. Puget Sound rockfish length was 138 mm and weight was 35 g. Quillback rockfish lengths and weights ranged from 93 – 416 mm and 13 – 134 g, respectively. Yelloweye rockfish lengths and weights ranged from 180 – 658 mm and 74 – 476 g, respectively.

Spiny dogfish

Spiny dogfish (*Squalus acanthias*) were present in 79 tows, with a maximum capture depth of 95 m. We determined sex and measured total length (cm) for 84 spiny dogfish (Appendix Table 6). In the north (DS=1), lengths ranged from 63 – 89 cm with a mode at 76 – 78 cm for males, and from 63 – 91 cm with a mode at 72 – 76 cm for females. In the south (DS=2), lengths ranged from 54 – 79 cm with a mode of 70 cm for males, and from 44 – 84 cm with no distinct mode for females.

Gadoid fishes

Pacific cod (*Gadus macrocephalus*), walleye pollock (*Theragra chalcogramma*), or Pacific tomcod (*Microgadus proximus*) were present in 60 tows, with a maximum capture depth of 95 m. Total catches were 13 kg, 51 kg, and 53 kg, respectively (Table 3). We measured fork length (cm) for 147 Pacific cod, 151 walleye pollock, and 203 Pacific tomcod (Appendix Table 7). Pacific cod lengths in the north (DS=2) ranged from 10 – 16 cm with a mode at 12 cm. Walleye pollock lengths in the south (DS=4) ranged from 6 – 11 cm with a mode at 8 cm. Pacific tomcod lengths were bimodal, ranging from 9 – 25 cm with modes at 10 – 12 cm and 19 cm in the north (DS=2), and ranging from 6 – 24 cm with modes at 8 cm and 19 cm in the south (DS=2).

Flatfish

Pacific sanddab (*Citharichthys sordidus*), rock sole (*Lepidopsetta bilineata*), or English sole (*Parophrys vetulus*) were present in 82 out of 83 useable tows, with a maximum capture depth of 95 m. Total catches were 325 kg, 1805 kg, and 1665 kg, respectively (Table 3). We determined sex and measured total length (cm) for 56 Pacific sanddab, and measured total length for 126 Pacific sanddab, 499 rock sole, and 439 English sole (Appendix Table 8). Pacific sanddab lengths ranged from 8 – 31 cm with a mode at 21 cm in the southwest (DS=2), from 22 – 28 cm with a mode at 26 cm for males in the east (DS=2), and from 25 – 36 cm with a mode at 28 cm for females in the east (DS=2). Rock sole lengths were bimodal or trimodal, ranging from 9 – 34 cm with modes at 14 cm, 18 – 20 cm, and 28 cm in the north (DS=1), from 11 – 43 cm with modes at 13 cm and 33 cm in the south (DS=1), from 9 – 37 cm with modes at 17 cm, 23 cm, and 30 cm in the north (DS=2), and from 7 – 35 cm with modes at 10 cm and 15 cm in the south (DS=2). English sole lengths ranged from 13 – 33 cm with a mode at 16 cm in the north (DS=1), from 10 – 22 cm with a mode at 17 cm in the south (DS=1), from 16 – 37 cm with a mode at 20 cm in the north (DS=2), and from 13 – 43 cm with a mode at 18 cm in the south (DS=2).

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Table 1. Names, locations, habitat type, and years sampled for index sites in the Strait of Georgia, 2005 bottom trawl survey of young-of-the-year lingcod, CCGS *Neocaligus*, July 26 – August 8, 2005.

Statistical Area	Site Code	Site Name	Approximate Location			Habitat Type[1]	Years Sampled
Eastern Region							
13	MI	Marina Island	49° 15.48' N	X	124° 9.18' W	S, SR	2005
16	TH	Thormanby Island	49° 48.98' N	X	125° 0.52' W	S, SR	2004 – 2005
29	FR	Fraser River	49° 25.8' N	X	123° 41.42' W	S	2005
29	SB	Spanish Banks	49° 38.13' N	X	124° 53.82' W	SM	2004 – 2005
29	WC	Wilson Creek	49° 24.17' N	X	124° 34.78' W	S, SR	2004 – 2005
Northern Region							
13	OB	Oyster Bay	48° 54.27' N	X	123° 29.68' W	SR	2003 – 2005
14	BC	Black Creek	48° 31.57' N	X	123° 19.99' W	S	2003 – 2005
14	BW	Bowser	49° 3.04' N	X	123° 16.93' W	S	1991 – 2005
14	CL	Cape Lazo	48° 42.32' N	X	123° 19.12' W	S, SR	1991 – 2005
14	CX	Comox	49° 13.28' N	X	123° 56.39' W	SM	1991 – 2005
14	FC	French Creek	49° 17.6' N	X	123° 14.89' W	S, SR	2003 – 2005
14	KC	Kitty Coleman	50° 3.22' N	X	125° 3.25' W	S, SR	2003 – 2005
14	MP	Madrona Point	49° 7.42' N	X	123° 44.58' W	S, SR	2004 – 2005
14	QU	Qualicum	48° 21.62' N	X	123° 30.85' W	S, SR, SM	1991 – 2005
Southern Region							
17	KU	Kuper Island	49° 19.02' N	X	124° 14.27' W	SM	2003 – 2005
17	LZ	Lantzville	49° 51.43' N	X	125° 4.95' W	SR	1991, 2004 – 2005
17	NN	Nanaimo	49° 30.03' N	X	124° 2.02' W	SR	1991, 2004 – 2005
17	NS	Nanoose	48° 59.18' N	X	123° 38.53' W	M	1991 – 2005
17	PY	Pylades Channel	48° 35.9' N	X	123° 20.72' W	S, SR	1991 – 2005
17	WH	Walker Hook	49° 54.62' N	X	125° 8.82' W	SM	1991 – 2005
18	FH	Fulford Harbour	48° 23.96' N	X	123° 19.43' W	S	1991 – 2005
18	MB	Moresby Island	49° 26.58' N	X	124° 39.22' W	S	2005
19	CB	Cordova Bay	49° 15.22' N	X	124° 0.36' W	S	2005
19	SD	Sidney	49° 20.17' N	X	124° 18.63' W	S, SR	1991 – 2005
Southwestern Region							
19	AH	Albert Head	48° 24.27' N	X	123° 27.7' W	S	2005
19	PB	Parry Bay	48° 44.88' N	X	123° 25.97' W	S	2005
19	TI	Trial Islands	49° 40.78' N	X	124° 50.93' W	SR	2005

[1]Habitat types: S = Sand; R = Rock; M = Mud.

Table 2. Depth strata utilized during the 2005 bottom trawl survey of young-of-the-year lingcod in the Strait of Georgia, CCGS *Neocaligus*, July 26 – August 8, 2005.

Depth Stratum (DS)	Depth Range (m)
1	15 – 25
2	26 – 35
3	36 – 45
4	46 – 55
5	56 – 65
6	66 – 75
7	76 – 85
8	86 – 95

Table 3. Common and scientific names of fishes and invertebrates caught during the 2005 bottom trawl survey of young-of-the-year lingcod in the Strait of Georgia, CCGS *Neocaligus*, July 26 – August 8, 2005. The total catch weight and total number of pieces for each species is presented, along with the proportion of each to the total catch of the survey. Totals for each species group are in bold text.

Common name	Scientific name	Total Weight (kg)	%	Total Count Pieces	%
FISH SPECIES		**7855.89**	**93.4**	**80478**	**98.0**
Cartilaginous Fishes	**Chondrichthyes**	**2655.84**	**31.6**	**2002**	**2.4**
Spiny dogfish	*Squalus acanthias*	2426.10	28.8	1568	1.9
Big skate	*Raja binoculata*	36.30	0.4	7	0.0
Big skate egg case	*Raja binoculata*	2.64	0.0	10	0.0
Longnose skate	*Raja rhina*	6.90	0.1	8	0.0
Longnose skate egg case	*Raja rhina*	Trace	--	2	0.0
Ratfish	*Hydrolagus colliei*	183.90	2.2	406	0.5
Pacific herring	***Clupea harengus pallasi***	**29.97**	**0.4**	**1401**	**1.7**
Plainfin midshipman	***Porichthys notatus***	**63.06**	**0.7**	**1379**	**1.7**
Gadoid Fishes	**Gadidae**	**115.81**	**1.4**	**8538**	**10.4**
Pacific cod	*Gadus macrocephalus*	12.76	0.2	276	0.3
Pacific hake	*Merluccius productus*	Trace	--	--	--
Pacific tomcod	*Microgadus proximus*	52.58	0.6	2124	2.6
Walleye pollock	*Theragra chalcogramma*	50.46	0.6	6138	7.5
Blackbelly eelpout	***Lycodopsis pacifica***	**117.37**	**1.4**	**7231**	**8.8**
Surfperches	**Ebiotocidae**	**57.33**	**0.7**	**2808**	**3.4**
Shiner perch	*Cymatogaster aggregata*	57.33	0.7	2800	3.4
Pile perch	*Rhacochilus vacca*	Trace	--	8	0.0
Pricklebacks	**Stichaeidae**	**37.99**	**0.5**	**1690**	**2.1**
Daubed shanny	*Lumpenus maculatus*	0.30	0.0	32	0.0
Snake prickleback	*Lumpenus sagitta*	33.69	0.4	1433	1.7
Snake prickleback & Daubed shanny	*L. maculatus & L. sagitta*	4.00	0.0	220	0.3
Whitebarred prickleback	*Poroclinus rothrocki*	Trace	--	5	0.0
Rockfish	***Sebastes sp.***	**17.80**	**0.2**	**57**	**0.1**
Copper rockfish	*Sebastes caurinus*	5.90	0.1	12	0.0
Greenstriped rockfish	*Sebastes elongatus*	0.60	0.0	5	0.0
Puget Sound rockfish	*Sebastes emphaeus*	0.20	0.0	1	0.0
Quillback rockfish	*Sebastes maliger*	2.60	0.0	36	0.0
Yelloweye rockfish	*Sebastes ruberrimus*	8.50	0.1	3	0.0
Lingcod & greenlings	**Hexagrammidae**	**27.57**	**0.3**	**534**	**0.7**
Kelp greenling	*Hexagrammos decagrammus*	0.30	0.0	3	0.0
Whitespotted greenling	*Hexagrammos stelleri*	7.25	0.1	58	0.1
Lingcod	*Ophiodon elongatus*	14.70	0.2	411	0.5
Longspine combfish	*Zaniolepis latipinnis*	5.32	0.1	60	0.1
Sculpins	**Cottidae**	**67.53**	**0.8**	**1715**	**2.1**
Padded sculpin	*Artedius fenestralis*	Trace	--	5	0.0
Roughback sculpin	*Chitonotus pugetensis*	25.43	0.3	1321	1.6
Spinyhead sculpin	*Dasycottus setiger*	0.50	0.0	5	0.0
Buffalo sculpin	*Enophrys bison*	0.10	0.0	4	0.0
Threadfin sculpin	*Icelinus filamentosus*	2.30	0.0	43	0.1
Spotfin sculpin	*Icelinus tenius*	Trace	--	1	0.0
Pacific staghorn sculpin	*Leptocottus armatus*	9.05	0.1	58	0.1
Great sculpin	*Myoxocephalus polyacanthocephalus*	4.05	0.0	16	0.0
Sailfin sculpin	*Nautichthys oculofasciatus*	0.10	0.0	3	0.0
Slim sculpin	*Radulinus asprellus*	0.10	0.0	44	0.1
Grunt sculpin	*Rhamphocottus richardsoni*	Trace	--	1	0.0
Cabezon	*Scorpaenichthys marmoratus*	22.30	0.3	5	0.0
Roughspine sculpin	*Triglops macellus*	1.10	0.0	49	0.1
Ribbed sculpin	*Triglops pingeli*	2.40	0.0	157	0.2
Unidentified sculpin	Cottidae	0.10	0.0	2	0.0

Table 3. (Cont.)

Common name	Scientific name	Total Weight (kg)	%	Total Count Pieces	%
Flatfish	**Pleuronectiformes**	**4659.84**	**55.4**	**52797**	**64.3**
Pacific sanddab	*Citharichthys sordidus*	324.63	3.9	2316	2.8
Speckled sanddab	*Citharichthys stigmaeus*	42.25	0.5	2068	2.5
Rex sole	*Errex zachirus (Glyptocephalus)*	10.31	0.1	160	0.2
Flathead sole	*Hippoglossoides elassodon*	67.85	0.8	1121	1.4
Butter sole	*Isopsetta isolepis*	5.45	0.1	37	0.0
Rock sole	*Lepidopsetta bilineata*	1804.98	21.5	16481	20.1
Slender sole	*Lyopsetta exilis*	145.58	1.7	3725	4.5
Dover sole	*Microstomus pacificus*	8.87	0.1	209	0.3
English sole	*Parophrys vetulus*	1664.71	19.8	25378	30.9
Starry flounder	*Platichthys stellatus*	555.51	6.6	1173	1.4
C-O sole	*Pleuronichthys coenosus*	14.14	0.2	62	0.1
Curlfin sole	*Pleuronichthys decurrens*	0.55	0.0	3	0.0
Sand sole	*Psettichthys melanostictus*	15.03	0.2	64	0.1
Other fishes		**5.78**	**0.1**	**327**	**0.4**
Northern anchovy	*Engraulis mordax mordax*	Trace	--	15	0.0
Chinook salmon	*Oncorhynchus tshawytscha*	Trace	--	--	--
Night smelt	*Spirinchus starksi*	Trace	--	17	0.0
Longfin smelt	*Spirinchus thaleichthys*	Trace	--	2	0.0
Eulachon	*Thaleichthys pacificus*	Trace	--	2	0.0
Threespine stickleback	*Gasterosteus aculeatus*	Trace	--	22	0.0
Pacific sandfish	*Trichodon trichodon*	Trace	--	4	0.0
Northern ronquil	*Ronquilus jordani*	Trace	--	8	0.0
Saddelback gunnel	*Pholis ornata*	Trace	--	1	0.0
Dwarf wrymouth	*Lyconectes aleutensis*	0.20	0.0	5	0.0
Pacific sand lance	*Ammodytes hexapterus*	Trace	--	8	0.0
Northern spearnose poacher	*Agonopsis emmelane*	Trace	--	7	0.0
Sturgeon poacher	*Agonus acipenserinus*	5.58	0.1	217	0.3
Blacktip poacher	*Xeneretmus latifrons*	Trace	--	19	0.0
Snailfish	*Liparis sp.*	Trace	--	1	0.0
INVERTEBRATE SPECIES		**554.91**	**6.6**	**1645**	**2.0**
Giant plumose anemone	***Metridium farcimen***	**164.65**	**2.0**	**352**	**0.4**
Crabs		**149.62**	**1.8**	**553**	**0.7**
Slender cancer crab	*Cancer gracilis*	1.65	0.0	22	0.0
Dungeness crab	*Cancer magister*	112.51	1.3	255	0.3
Red rock crab	*Cancer productus*	35.06	0.4	224	0.3
Graceful decorator crab (spider crab)	*Oregonia gracilis*	0.10	0.0	18	0.0
Hermit crab	*Pagurus sp.*	Trace	--	2	0.0
Decorator crab	*Pteraster tesselatus*	Trace	--	--	--
Kelp crab	*Pugettia sp.*	0.10	0.0	10	0.0
Sharp-nosed crab	*Scyra acutifrons*	0.20	0.0	22	0.0
Helmet crab	*Telmessus chelragonus*	Trace	--	--	--
Shrimp		**46.34**	**0.6**	**75**	**0.1**
Leopard shrimp	*Crangon sp.*	Trace	--	--	--
Green shrimp	*Heptacarpus sp.*	Trace	--	--	--
Sidestripe shrimp	*Pandalopsis dispar*	13.50	0.2	4	0.0
Pink shrimp	*Pandalus borealis*	24.28	0.3	1	0.0
Coonstripe shrimp	*Pandalus danae*	8.37	0.1	54	0.1
Spot prawn	*Pandalus platyceros*	0.19	0.0	6	0.0
Horned shrimp / Spike shrimp	*Paracrangon echinata*	Trace	--	11	0.0
Unidentified shrimp	Nantantia	Trace	--	--	--

Table 3 (Cont.)

Common name	Scientific name	Total Weight (kg)	%	Total Count Pieces	%
Echinoderms		**167.38**	**2.0**	**256**	**0.3**
Rose star	*Crossaster papposus*	0.60	0.0	7	0.0
Mud star	*Ctenodiscus crispatus*	3.31	0.0	20	0.0
Leather star	*Dermasterias imbricata*	6.02	0.1	6	0.0
Mottled star	*Evasterias trochelii*	3.90	0.0	6	0.0
Vermillion star	*Mediaster aequalis*	0.20	0.0	6	0.0
Long-armed sea star	*Orthasterias koehleri*	0.80	0.0	2	0.0
Pink short-spined star	*Pisaster brevispinus*	42.10	0.5	24	0.0
Cushion star	*Pteraster tesselatus*	0.50	0.0	3	0.0
Sunflower starfish	*Pycnopodia helianthoides*	90.15	1.1	156	0.2
Morning sun starfish	*Solaster dawsoni*	Trace	--	2	0.0
Striped sunstar	*Solaster stimpsoni*	0.40	0.0	1	0.0
Green urchin	*Strongylocentrotus droebachiensis*	0.10	0.0	2	0.0
Red urchin	*Strongylocentrotus franciscanus*	11.60	0.1	14	0.0
California sea cucumber	*Parastichopus californicus*	7.70	0.1	7	0.0
Daisy brittle star	*Ophiopholis aculeata*	Trace	--	--	--
Cephalopods		**11.34**	**0.1**	**147**	**0.2**
Giant Pacific octopus	*Enteroctopus dofleini*	6.90	0.1	1	0.0
Unidentified octopus	*Enteroctopus sp. or Octopus sp.*	0.64	0.0	5	0.0
Opalescent squid	*Loligo opalescens*	1.98	0.0	139	0.2
Opalescent squid eggs	*Loligo opalescens*	1.82	0.0	--	--
Stubby squid	*Rossia pacifica*	Trace	--	1	0.0
Molluscs		**5.37**	**0.1**	**216**	**0.3**
Spiny pink scallop	*Chlamys hastata*	Trace	--	8	0.0
Smooth pink scallop	*Chlamys rubida*	0.50	0.0	29	0.0
Pink scallop	*C. hastata & C. rubida*	4.57	0.1	167	0.2
Leafy hornmouth (Gastropod)	*Ceratostoma foliatum*	Trace	--	1	0.0
Oregon triton (Gastropod)	*Fusitriton oregonensis*	0.10	0.0	1	0.0
Lewis' moon snail	*Polinices lewisii*	0.10	0.0	1	0.0
Unidentified mussel	*Mytilis sp.*	0.10	0.0	3	0.0
Tabled whelk	*Neptunea tabulata*	Trace	--	1	0.0
Butter clam	*Saxidomus gigantea*	Trace	--	5	0.0
Other invertebrates		**10.21**	**0.1**	**46**	**0.1**
Annelid worm	Annelida	Trace	--	2	0.0
Unidentified worm		Trace	--	1	0.0
Ascidian	Ascidiacea	0.17	0.0	2	0.0
Boot sponge	*Rhabdocalyptus dawsoni*	7.30	0.1	22	0.0
Giant white dorid (Nudibranch)	*Archidoris odhneri*	Trace	--	1	0.0
Pink tritonia (Nudibranch)	*Tritonia diomedea*	1.93	0.0	8	0.0
Striped nudibranch	*Armenia californica*	Trace	--	1	0.0
Sea whip	*Osteocella septentrionalis*	Trace	--	--	--
Sea pen	*Ptilosarcus gurneyi*	0.81	0.0	8	0.0
TOTAL ALL SPECIES		**8410.80**	**100.0**	**82122**	**100.0**

Table 4. Catch and density summary statistics (number of usable tows, number of fish, median, range, mean, standard deviation = SD) for young-of-the-year (YOY) and age 1+ lingcod by region and depth stratum, 2005 bottom trawl survey of young-of-the-year lingcod in the Strait of Georgia, CCGS *Neocaligus*, July 26 – August 8, 2005. For definitions of depth strata, see Table 2.

Depth Stratum	Number of Tows	Number of YOY	Number of Age 1+	Density (number YOY / km ^{2})			
				Median	Range	Mean	SD
Eastern Region							
2	2	0	0	0.0	--	--	--
3	3	0	0	0.0	--	--	--
4	1	0	0	0.0	--	--	--
5	1	1	0	264.8	--	--	--
All depths	7	1	0	0.0	0 – 264.8	37.8	100.1
Northern Region							
1	16	206	10	919.3	0.0 – 6271.9	1543.1	1796.0
2	17	120	7	681.6	0.0 – 3033.2	869.9	810.4
3	2	9	0	507.9	315.0 – 700.8	507.9	272.8
3 – 4	1	4	0	465.9	465.9 – 465.9	465.9	
4	3	13	0	524.7	345.5 – 738.1	536.1	196.5
5	2	16	0	947.9	486.3 – 1409.5	947.9	652.8
6	2	9	0	506.3	458.2 – 554.4	506.3	68.0
7	1	0	0	0.0	--	--	--
8	1	0	0	0.0	--	--	--
All depths	45	377	17	587.7	0.0 – 6271.9	1010.6	1247.6
Southern Region							
1	9	7	0	0.0	0.0 – 528.0	103.0	206.8
2	10	5	0	0.0	0.0 – 465.9	58.2	147.8
3	4	1	0	0.0	0.0 – 198.0	49.5	99.0
4	1	0	0	0.0	--	--	--
All depths	24	13	0	0.0	0.0 – 528.0	71.1	159.6
Southwestern Region							
1	3	0	1	0.0	--	--	--
2	4	0	2	0.0	--	--	--
All depths	7	0	3	0.0	--	--	--
All Regions							
All depths	83	391	20	126.8	0.0 – 6271.9	571.7	1035.9

Table 5. Summary statistics (number of fish sampled = N; median; mean; standard deviation = SD; coefficient of variation = CV) for length, weight, and condition factor of young-of-the-year lingcod by index site and depth stratum, 2005 bottom trawl survey of young-of-the-year lingcod in the Strait of Georgia, CCGS *Neocaligus*, July 26 – August 8, 2005. For site names and locations, see Table 1. For definitions of depth strata, see Table 2.

		Length (mm)				Weight (g)				Condition Factor x 10^{-5} (g/mm^3)			
	N	Median	Mean	SD	CV	Median	Mean	SD	CV	Median	Mean	SD	CV
Site													
MI	1	179.0	179.0	--	--	41.0	41.0	--	--	0.7	0.7	--	--
BC	10	180.5	177.6	10.1	5.7	36.0	36.7	6.2	16.9	0.6	0.7	0.0	0.0
BW	58	155.0	154.7	11.8	7.6	26.0	25.9	6.1	23.6	0.7	0.7	0.1	14.3
CL	41	163.0	163.6	12.5	7.6	27.0	27.7	7.5	27.1	0.6	0.6	0.1	16.7
CX	36	162.5	163.1	12.7	7.8	27.0	27.8	7.4	26.6	0.6	0.6	0.1	16.7
FC	128	156.5	157.1	11.7	7.4	24.0	25.7	6.4	24.9	0.7	0.7	0.1	14.3
KC	11	184.0	192.8	18.9	9.8	38.0	45.7	14.8	32.4	0.6	0.6	0.0	0.0
MP	12	151.0	153.2	14.5	9.5	24.5	25.3	7.0	27.7	0.7	0.7	0.1	14.3
OB	3	174.0	176.3	6.8	3.9	30.0	33.3	5.8	17.4	0.6	0.6	0.0	0.0
QU	78	158.0	156.5	13.6	8.7	24.5	24.8	7.6	30.6	0.6	0.6	0.1	16.7
NN	1	171.0	171.0	--	--	35.0	35.0	--	--	0.7	0.7	--	--
NS	6	139.5	143.0	16.0	11.2	14.5	18.2	9.7	53.3	0.5	0.6	0.1	16.7
PY	4	168.5	165.0	8.8	5.3	30.0	28.3	4.3	15.2	0.6	0.6	0.0	0.0
Depth Stratum													
1	211	158.0	158.18	13.12	8.3	25.0	26.13	7.41	28.4	0.6	0.64	0.06	9.4
2	125	160.0	161.04	17.20	10.7	26.0	28.22	9.29	32.9	0.7	0.66	0.13	19.7
3	10	163.5	163.60	5.64	3.4	28.5	27.60	4.88	17.7	0.7	0.63	0.07	11.1
3 – 4	4	164.5	163.25	9.32	5.7	27.5	28.25	4.35	15.4	0.7	0.65	0.06	9.2
4	13	156.0	156.69	11.79	7.5	26.0	25.46	6.54	25.7	0.7	0.65	0.08	12.3
5	17	165.0	162.65	17.49	10.8	26.0	27.71	11.39	41.1	0.6	0.61	0.07	11.5
6	9	162.0	155.56	14.05	9.0	23.0	22.22	6.59	29.7	0.6	0.57	0.04	7.0
Total	389	159.0	159.4	14.6	9.2	26.0	26.8	8.2	30.6	0.6	0.7	0.1	14.3

Table 6. Summary of diet information for young-of-the-year (YOY) and age 1+ lingcod, 2005 bottom trawl survey of young-of-the-year lingcod in the Strait of Georgia, CCGS *Neocaligus*, July 26 – August 8, 2005. The mean and standard deviation (SD) of individual stomach volumes are also presented.

	YOY	1+
Number of stomachs examined	286	19
Number of stomachs with prey items	188	13
Number of stomachs with identifiable prey items	165	12
Number with 1 prey item	144	11
Number with 2 prey items	19	1
Number with 3 prey items	1	--
Number with 5 prey items	1	--
Mean (SD) volume (cm^3) in stomachs examined	1.68(1.30)	3.17(2.79)

Table 7. Prey items identified in the stomach contents of young-of-the-year (YOY) and age 1+ lingcod, 2005 bottom trawl survey of young-of-the-year lingcod in the Strait of Georgia, CCGS *Neocaligus*, July 26 – August 8, 2005. N is the number of occurrences of each prey type, % of Volume is the proportion of total prey volume accounted for by each prey type, and % of Contents is the average proportion of individual volume of stomach contents accounted for by each prey type.

Prey Item	N	Frequency Occurrence (%)	Mean Volume (cm^3)	SD of Volume	% of Contents
YOY LINGCOD					
Fish prey					
Fish remains	77	40.10	1.15	0.92	96.76
Pacific herring	29	15.10	2.95	1.26	99.03
Pacific sand lance	6	3.13	2.75	0.88	100.00
Roughback sculpin	5	2.60	2.40	0.89	93.33
English sole	4	2.08	1.50	0.58	50.00
Poachers	4	2.08	1.38	1.11	83.33
Eelpouts	2	1.04	1.50	0.71	100.00
Flatfishes	2	1.04	1.00	0.00	100.00
Northern spearnose poacher	2	1.04	4.00	0.00	83.33
Unidentified sculpin	2	1.04	1.75	1.77	75.00
Black prickleback	1	0.52	2.50	--	96.15
Gadoid fishes	1	0.52	3.00	--	100.00
Lingcod	1	0.52	4.00	--	100.00
Lumpfish or snailfish	1	0.52	3.00	--	100.00
Quillfish	1	0.52	2.00	--	33.33
Shiner perch	1	0.52	4.00	--	100.00
Invertebrate prey					
Shrimp	16	8.33	1.34	0.57	92.41
Crustaceans	9	4.69	0.45	0.33	46.20
Invertebrate remains	8	4.17	0.36	0.44	74.03
Euphausiids	4	2.08	0.20	0.20	9.08
Decapods (Shrimps & crabs)	2	1.04	0.10	0.00	100.00
Tube worms	2	1.04	0.50	0.71	50.00
Pink shrimp	1	0.52	2.00	--	100.00
Roundworm	1	0.52	0.10	--	8.33
Squid	1	0.52	3.00	--	100.00
Other items					
Algae / Kelp	6	3.13	0.50	0.71	50.00
Inanimate objects	3	1.56	0.00	0.00	0.00
AGE 1+ LINGCOD					
Fish prey					
Fish remains	4	30.77	2.75	2.06	100.00
Quillfish	3	23.08	1.67	0.58	83.33
Lingcod	1	7.69	10.00	--	100.00
Pacific herring	1	7.69	2.00	--	50.00
Pacific sand lance	1	7.69	4.00	--	100.00
Right-sided flatfish	1	7.69	5.00	--	100.00
Invertebrate prey					
Shrimp	1	7.69	1.00	--	100.00
Invertebrate remains	1	7.69	Trace	--	--

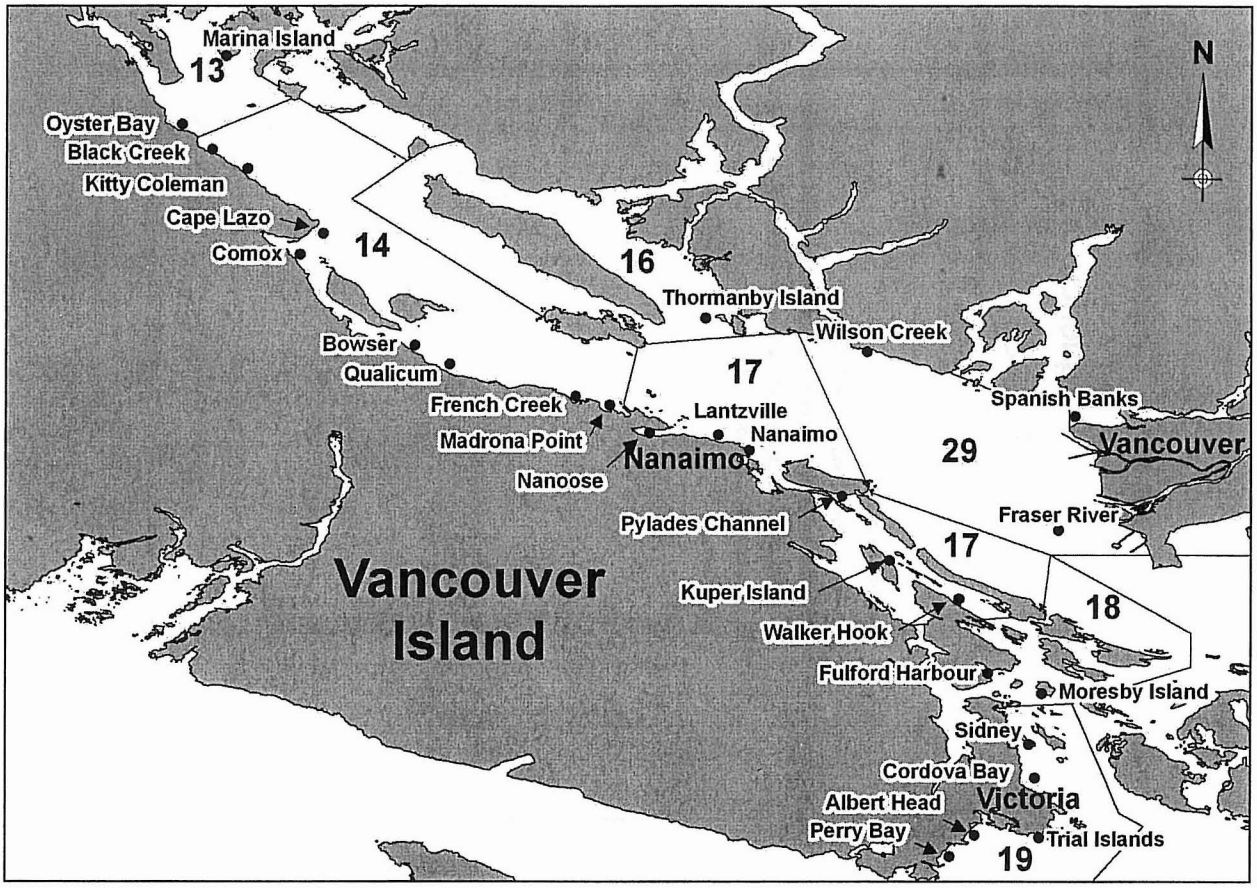


Figure 1. Statistical Areas and locations of index sites, 2005 bottom trawl survey of young-of-the-year lingcod in the Strait of Georgia, CCGS *Neocaligus*, July 26 – August 8, 2005. The northern region is defined as the western side of Statistical Area 13 (Oyster Bay), and all of Statistical Area 14; the eastern region is defined as the eastern side of Statistical Area 13 (Marina Island), and Statistical Areas 16 and 29; the southern region is defined as Statistical Areas 17 and 18, and all sites north of Victoria in Statistical Area 19; and the southwestern region is defined as all points west of Victoria in Statistical Area 19.

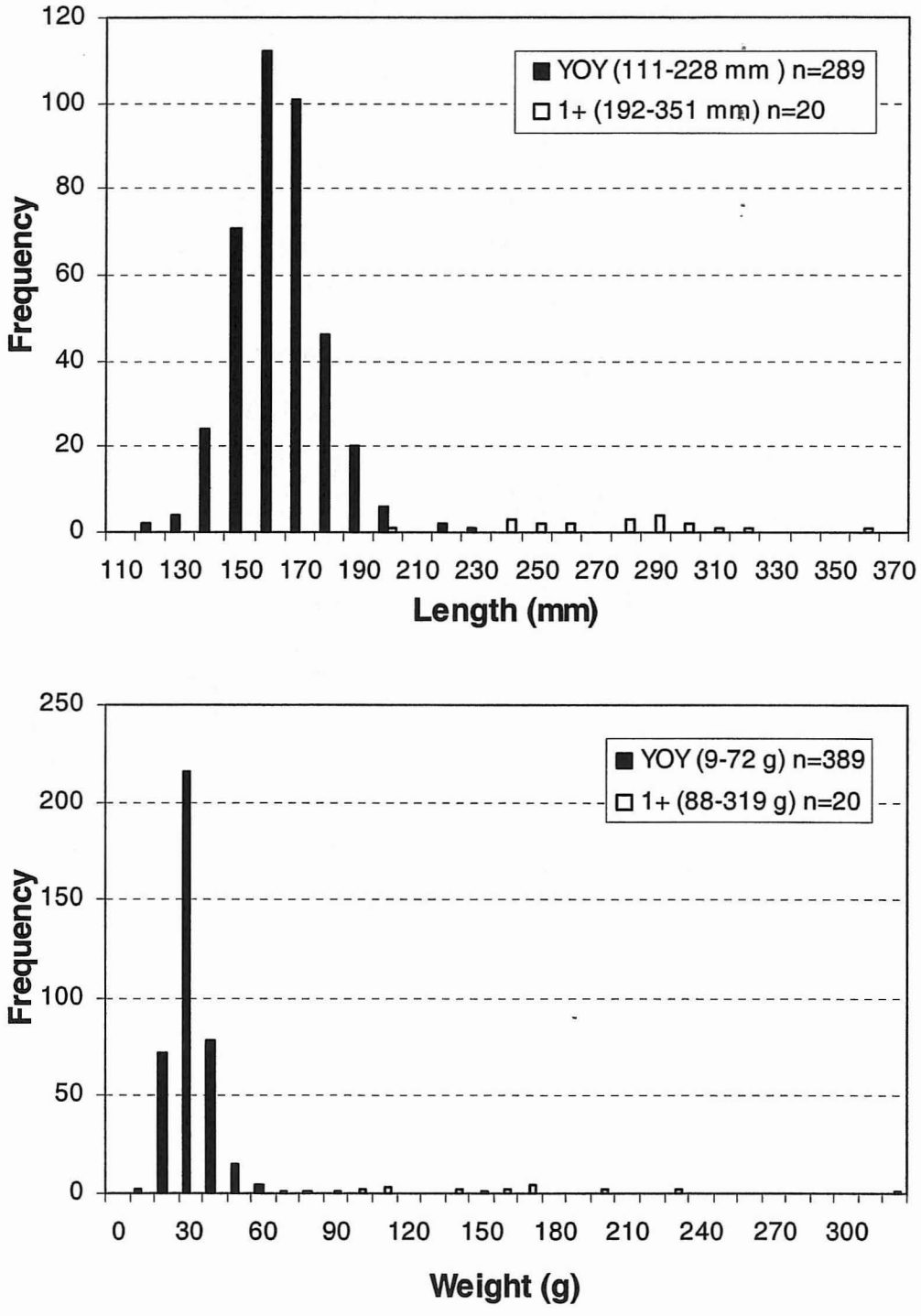


Figure 2. Length (mm) and weight (g) histograms for lingcod, 2005 bottom trawl survey of young-of-the-year lingcod in the Strait of Georgia, CCGS *Neocaligus*, July 26 – August 8, 2005. Lingcod were assigned to either the young-of-the-year (YOY) or age 1+ year class.

Appendix Table 1. Bridge log information and lingcod catch and density for bottom trawl tows from the 2005 bottom trawl survey of young-of-the-year lingcod in the Strait of Georgia, CCGS *Neocaligus*, July 26 – August 8, 2005. For site names and habitat types, refer to Table 1. For definitions of depth strata, refer to Table 2. For the Beaufort Scale, refer to Appendix Table 9. Tows were designated "Unusable" when circumstances required that the net be retrieved early, i.e. rocky bottom snagging the net.

Tow number	1	2	3	4	5	6	7	8	9
Date	July 26	July 26	July 27	July 27	July 27	July 27	July 27	July 27	July 27
Site	KU	KU	WH	WH	WH	WH	FH	FH	FH
Region	S	S	S	S	S	S	S	S	S
Statistical Area	17	17	17	17	17	17	18	18	18
Depth stratum	2	2	1	1	2	3	2	2	1
Start time (PST)	15:35	16:36	08:35	09:51	10:50	12:14	13:58	15:03	15:57
Duration (min)	10	10	10	10	10	10	10	10	10
Start position									
North Latitude	49° 1.29'	49° 0.65'	48° 54.40'	48° 53.98'	48° 54.27'	48° 54.47'	48° 44.40'	48° 45.37'	48° 45.04'
West Longitude	123° 39.64'	123° 39.21'	123° 30.48'	123° 30.10'	123° 29.68'	123° 28.88'	123° 25.53'	123° 26.42'	123° 26.04'
Finish position									
North Latitude	49° 1.14'	49° 0.40'	48° 54.74'	48° 54.30'	48° 54.52'	48° 54.74'	48° 44.71'	48° 45.11'	48° 44.73'
West Longitude	123° 39.17'	123° 38.89'	123° 30.71'	123° 30.36'	123° 30.10'	123° 29.33'	123° 25.75'	123° 26.11'	123° 25.82'
Distance towed (n.mi)	0.34	0.33	0.37	0.28	0.38	0.40	0.35	0.33	0.34
Distance towed (m)	636.4	605.0	688.2	512.5	693.8	743.7	638.3	603.1	629.0
Vessel speed (knots)	2.0	2.0	2.0	2.0	2.1	2.0	1.9	2.0	2.0
Direction (°True)	129	134	333	327	297	317	332	145	152
Modal bottom depth (m)	35	27	24	21	30	43	32	26	24
Bottom temperature (°C)	11.4	11.9	13.3	13.1	11.9	11.1	11.7	--	--
Habitat type	S/M	S/M	S/M	S/M	S/M	S/M	S	S	S
Tide	Low	Low	Flood	Flood	High	High	High	Ebb	Low
Tide height (feet)	4.7	5.8	7.6	9.0	9.3	9.0	9.0	7.0	6.3
Beaufort scale	1	1	1	1	1	1	1	1	1
Wind direction	NW	--	--	--	--	--	--	--	--
% cloud cover	0	0	0	0	0	0	0	0	0
Total catch (kg)	56.5	75.3	96.3	94.4	106.3	81.1	132.4	92.2	57.9
Number age 1+ lingcod	0	0	0	0	0	0	0	0	0
Number YOY lingcod	0	0	0	0	0	0	0	0	0
Swept area (m^2)	8273	7864	8947	6662	9019	9668	8297	7840	8177
YOY density (number/km^2)	0	0	0	0	0	0	0	0	0
Usable tow	Y	Y	Y	Y	Y	Y	Y	Y	Y

Appendix Table 1 (Cont.)

Tow number	10	11	12	13	14	15	16	17	18
Date	July 28	July 28	July 28	July 28	July 28	July 28	July 29	July 29	July 29
Site	MB	SD	SD	SD	SD	CB	AH	PB	PB
Region	S	S	S	S	S	S	SW	SW	SW
Statistical Area	18	19	19	19	19	19	19	19	19
Depth stratum	4	2	1	1	3	1	2	1	1
Start time (PST)	08:57	09:59	10:49	12:08	13:15	14:28	07:17	08:35	09:33
Duration (min)	8	10	10	9	10	10	10	10	10
Start position									
North Latitude	48° 42.32'	48° 38.39'	48° 36.98'	48° 32.91'	48° 35.29'	48° 31.58'	48° 23.98'	48° 22.07'	48° 21.01'
West Longitude	123° 19.12'	123° 21.27'	123° 23.61'	123° 18.91'	123° 19.12'	123° 19.99'	123° 28.54'	123° 30.76'	123° 31.63'
Finish position									
North Latitude	48° 42.48'	48° 38.75'	48° 37.35'	48° 33.07'	48° 34.95'	48° 31.29'	48° 24.32'	48° 22.28'	48° 21.38'
West Longitude	123° 19.45'	123° 21.22'	123° 23.69'	123° 18.74'	123° 18.87'	123° 19.73'	123° 28.36'	123° 30.37'	123° 31.52'
Distance towed (n.mi)	0.27	0.37	0.37	0.33	0.38	0.34	0.36	0.33	0.38
Distance towed (m)	505.1	682.7	684.5	601.3	704.9	636.4	666.0	616.1	697.5
Vessel speed (knots)	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0
Direction (°True)	314	14	355	299	135	135	2	58	14
Modal bottom depth (m)	47	34	20	18	42	22	30	22	16
Bottom temperature (°C)	--	--	--	--	--	--	10.5	10.9	11.2
Habitat type	S	S	S	S	S/R	S	S	S	S
Tide	Flood	Flood	Flood	Flood	High	High	Low	Flood	Flood
Tide height (feet)	4.7	5.5	6.3	6.9	7.1	6.0	3.2	4.5	5.0
Beaufort scale	0	0	0	0	0	1	1	1	1
Wind direction	--	--	--	--	--	--	--	--	--
% cloud cover	0	0	0	0	0	0	0	0	0
Total catch (kg)	64.6	247.7	178.1	48.9	128.1	52.2	164.8	50.0	44.3
Number age 1+ lingcod	0	0	0	0	0	0	1	1	0
Number YOY lingcod	0	0	0	0	0	0	0	0	0
Swept area (m^2)	6566	8874	8899	7816	9163	8273	8658	8009	9067
YOY density (number/km^2)	0	0	0	0	0	0	0	0	0
Usable tow	Y	Y	Y	Y	Y	Y	Y	Y	Y

Appendix Table 1 (Cont.)

Tow number	19	20	21	22	23	24	25	26	27
Date	July 29	July 29	July 29	July 29	July 30	July 30	July 30	July 30	July 30
Site	PB	PB	AH	TI	KU	KU	PY	PY	PY
Region	SW	SW	SW	SW	S	S	S	S	S
Statistical Area	19	19	19	19	17	17	17	17	17
Depth stratum	2	2	1	2	2	1	2	2	1
Start time (PST)	10:25	11:18	12:25	13:18	07:46	08:59	10:38	12:11	12:56
Duration (min)	10	10	9	10	10	10	10	5	6
Start position									
North Latitude	48° 20.96'	48° 22.26'	48° 24.57'	48° 23.96'	48° 57.08'	48° 58.07'	49° 7.42'	49° 7.30'	49° 7.57'
West Longitude	123° 31.49'	123° 30.21'	123° 26.85'	123° 19.43'	123° 37.42'	123° 37.60'	123° 44.59'	123° 45.23'	123° 43.55'
Finish position									
North Latitude	48° 21.32'	48° 22.01'	48° 24.77'	48° 23.95'	48° 56.74'	48° 57.60'	49° 7.45'	49° 7.16'	49° 7.54'
West Longitude	123° 31.33'	123° 30.57'	123° 26.44'	123° 19.95'	123° 37.41'	123° 37.57'	123° 45.13'	123° 45.22'	123° 43.82'
Distance towed (n.mi)	0.37	0.35	0.20	0.34	0.34	0.33	0.36	0.14	--
Distance towed (m)	688.2	645.7	362.6	634.6	627.2	614.2	660.5	260.9	--
Vessel speed (knots)	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.0
Direction (°True)	25	215	77	255	175	176	287	169	250
Modal bottom depth (m)	32	33	22	30	27	18	26	29	13
Bottom temperature (°C)	10.9	11.2	11.0	9.7	11.7	12.8	12.0	11.5	13.5
Habitat type	S	S	S	S/R	S/M	S/M	S/R	S	S/R
Tide	Flood	Flood	Flood	Flood	Low	Low	Flood	Flood	Flood
Tide height (feet)	5.4	5.7	5.9	6.8	2.7	3.2	4.9	7.0	8.3
Beaufort scale	1	1	3	3	1	1	1	2	2
Wind direction	--	--	S	S	--	--	--	--	--
% cloud cover	0	0	0	0	0	0	50	50	50
Total catch (kg)	125.3	70.0	63.9	20.0	168.2	130.1	57.5	32.7	--
Number age 1+ lingcod	0	1	0	0	0	0	0	0	0
Number YOY lingcod	0	0	0	0	0	0	4	0	--
Swept area (m^2)	8947	8393	4714	8249	8153	7985	8586	3391	--
YOY density (number/km^2)	0	0	0	0	0	0	466	0	--
Usable tow	Y	Y	Y	Y	Y	Y	Y	Y	N

Appendix Table 1 (Cont.)

Tow number	28	29	30	31	32	33	34	35	36
Date	July 31	July 31	July 31	July 31	July 31	July 31	July 31	August 01	August 01
Site	LZ	NS	NS	NS	MP	MP	FC	QU	QU
Region	S	S	S	S	N	N	N	N	N
Statistical Area	17	17	17	17	14	14	14	14	14
Depth stratum	3	1	1	2	2	4	2	1	2
Start time (PST)	09:08	10:15	11:21	12:27	14:32	15:25	16:40	08:01	09:15
Duration (min)	5	9	10	10	10	10	10	10	2
Start position									
North Latitude	49° 15.22'	49° 15.38'	49° 15.59'	49° 15.73'	49° 18.67'	49° 19.36'	49° 20.17'	49° 23.54'	49° 23.63'
West Longitude	124° 0.36'	124° 8.18'	124° 10.18'	124° 9.94'	124° 13.90'	124° 14.63'	124° 18.63'	124° 34.89'	124° 34.50'
Finish position									
North Latitude	49° 15.14'	49° 15.51'	49° 15.48'	49° 15.74'	49° 18.96'	49° 19.07'	49° 20.45'	49° 23.45'	49° 23.60'
West Longitude	124° 0.12'	124° 8.61'	124° 9.71'	124° 9.39'	124° 14.24'	124° 14.35'	124° 18.91'	124° 34.43'	124° 34.40'
Distance towed (n.mi)	0.18	0.32	0.31	0.36	0.37	0.34	0.33	0.32	--
Distance towed (m)	329.3	582.8	579.1	662.3	677.1	625.3	608.7	590.2	--
Vessel speed (knots)	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	--
Direction (°True)	101	305	103	96	312	147	304	110	--
Modal bottom depth (m)	43	25	22	28	34	55	26	23	32
Bottom temperature (°C)	--	--	--	--	--	--	--	10.7	10.2
Habitat type	S/R	M	M	M	S	S/R	S	S	--
Tide	Low	Flood	Flood	Flood	Flood	Flood	High	Ebb	Low
Tide height (feet)	3.3	4.0	6.1	8.0	12.2	13.7	14.6	5.3	3.5
Beaufort scale	4	1	2	1	1	1	1	2	2
Wind direction	E	E	E	E	--	--	--	NW	NW
% cloud cover	50	80	80	50	50	50	50	75	50
Total catch (kg)	38.9	69.6	112.3	324.4	76.6	133.1	49.5	68.8	--
Number age 1+ lingcod	0	0	0	0	0	0	0	0	0
Number YOY lingcod	0	4	3	1	6	6	24	15	--
Swept area (m^2)	4281	7576	7528	8610	8802	8129	7912	7672	--
YOY density (number/km^2)	0	528	399	116	682	738	3033	1955	--
Usable tow	Y	Y	Y	Y	Y	Y	Y	Y	N

Appendix Table 1 (Cont.)

Tow number	37	38	39	40	41	42	43	44	45
Date	August 01	August 01	August 01	August 01	August 01	August 01	August 01	August 02	August 02
Site	QU	QU	QU	QU	QU	QU	QU	BW	BW
Region	N	N	N	N	N	N	N	N	N
Statistical Area	14	14	14	14	14	14	14	14	14
Depth stratum	3	3	2	4	5	6	1	1	2
Start time (PST)	09:33	10:20	11:07	12:29	13:19	14:18	15:07	07:32	08:30
Duration (min)	10	10	10	10	10	10	10	10	10
Start position									
North Latitude	49° 23.68'	49° 23.65'	49° 23.27'	49° 23.92'	49° 24.17'	49° 24.28'	49° 24.90'	49° 26.96'	49° 26.96'
West Longitude	124° 34.26'	124° 34.00'	124° 33.13'	124° 34.08'	124° 34.06'	124° 33.85'	124° 36.69'	124° 39.93'	124° 39.45'
Finish position									
North Latitude	49° 23.94'	49° 23.90'	49° 23.36'	49° 23.70'	49° 23.94'	49° 24.02'	49° 24.73'	49° 27.23'	49° 27.16'
West Longitude	124° 34.73'	124° 34.38'	124° 33.73'	124° 33.64'	124° 33.67'	124° 33.44'	124° 36.20'	124° 40.29'	124° 39.91'
Distance towed (n.mi)	0.40	0.36	0.38	0.36	0.34	0.38	0.36	0.36	0.36
Distance towed (m)	732.6	658.6	708.6	667.9	632.7	693.8	664.2	664.2	662.3
Vessel speed (knots)	2.3	2.2	2.3	2.3	2.2	2.2	2.1	2.0	2.0
Direction (°True)	313	304	274	118	121	133	112	300	301
Modal bottom depth (m)	39	42	32	51	61	72	18	23	32
Bottom temperature (°C)	10.2	10.1	10.3	10.1	10.0	9.7	10.5	--	--
Habitat type	S	S	S	S	S	S	S	S	S
Tide	Low	Low	Low	Flood	Flood	Flood	Flood	Ebb	Ebb
Tide height (feet)	2.9	2.6	2.8	5.1	7.5	10.2	12.6	8.3	6.3
Beaufort scale	2	2	1	2	3	2	2	1	1
Wind direction	NE	NE	NE	NE	NE	NE	NE	--	NE
% cloud cover	25	10	10	10	10	10	10	0	0
Total catch (kg)	132.5	118.1	90.0	175.1	103.5	71.3	137.7	194.3	186.8
Number age 1+ lingcod	0	0	0	0	0	0	0	0	0
Number YOY lingcod	3	6	7	3	4	5	3	23	19
Swept area (m^2)	9524	8562	9211	8682	8225	9019	8634	8634	8610
YOY density (number/km^2)	315	701	760	346	486	554	347	2664	2207
Usable tow	Y	Y	Y	Y	Y	Y	Y	Y	Y

Appendix Table 1 (Cont.)

Tow number	46	47	48	49	50	51	52	53	54
Date	August 02	August 02	August 02	August 02	August 02	August 02	August 02	August 02	August 03
Site	BW	BW	QU	QU	QU	QU	QU	QU	CL
Region	N	N	N	N	N	N	N	N	N
Statistical Area	14	14	14	14	14	14	14	14	14
Depth stratum	1	2	2	4	5	6	7	8	2
Start time (PST)	09:20	10:13	12:14	13:12	14:02	15:03	15:40	16:12	07:48
Duration (min)	10	10	10	8	10	10	10	10	10
Start position									
North Latitude	49° 26.38'	49° 26.21'	49° 24.67'	49° 24.85'	49° 24.73'	49° 24.78'	49° 24.90'	49° 24.97'	49° 40.49'
West Longitude	124° 39.33'	124° 38.51'	124° 35.76'	124° 35.19'	124° 34.67'	124° 34.54'	124° 34.53'	124° 34.39'	124° 52.04'
Finish position									
North Latitude	49° 26.67'	49° 26.47'	49° 24.86'	49° 25.08'	49° 24.96'	49° 25.00'	49° 25.12'	49° 25.17'	49° 40.19'
West Longitude	124° 39.61'	124° 38.86'	124° 36.29'	124° 35.52'	124° 35.09'	124° 35.00'	124° 34.97'	124° 34.80'	124° 52.09'
Distance towed (n.mi)	0.34	0.34	0.39	0.32	0.35	0.36	0.36	0.33	0.31
Distance towed (m)	630.9	634.6	725.2	586.5	654.9	671.6	666.0	616.1	568.0
Vessel speed (knots)	2.0	2.0	2.1	2.0	2.0	2.0	2.1	2.1	2.0
Direction (°True)	322	318	292	312	312	304	311	294	200
Modal bottom depth (m)	21	33	34	55	65	75	85	95	32
Bottom temperature (°C)	--	--	--	--	--	--	--	--	11.4
Habitat type	S	S	S	S/R	S/R	S	S	S	S
Tide	Ebb	Low	Flood	Flood	Flood	Flood	Flood	Flood	Ebb
Tide height (feet)	4.6	4.0	4.9	5.8	8.1	10.7	11.9	13.0	8.9
Beaufort scale	1	1	1	1	1	1	1	1	1
Wind direction	NE	NE	NE	NE	NE	NE	NE	NE	NE
% cloud cover	0	0	0	0	0	0	0	0	0
Total catch (kg)	181.0	140.3	153.3	139.9	132.4	203.3	143.3	292.9	176.7
Number age 1+ lingcod	0	0	0	0	0	0	0	0	0
Number YOY lingcod	14	2	12	4	12	4	0	0	5
Swept area (m^2)	8201	8249	9428	7624	8514	8730	8658	8009	7383
YOY density (number/km^2)	1707	242	1273	525	1409	458	0	0	677
Usable tow	Y	Y	Y	Y	Y	Y	Y	Y	Y

Appendix Table 1 (Cont.)

Tow number	55	56	57	58	59	60	61	62	63
Date	August 03	August 03	August 03	August 03	August 03	August 03	August 04	August 04	August 04
Site	CL	CL	CL	KC	KC	KC	CX	CX	CX
Region	N	N	N	N	N	N	N	N	N
Statistical Area	14	14	14	14	14	14	14	14	14
Depth stratum	1	2	1	2	1	1	2	1	1
Start time (PST)	08:47	10:11	11:07	13:29	14:15	15:12	06:36	07:30	08:23
Duration (min)	10	10	10	10	10	10	8	10	10
Start position									
North Latitude	49° 41.00'	49° 40.96'	49° 40.64'	49° 48.40'	49° 48.43'	49° 49.57'	49° 39.26'	49° 37.70'	49° 37.00'
West Longitude	124° 51.70'	124° 50.55'	124° 49.46'	124° 59.59'	125° 0.43'	125° 1.45'	124° 54.06'	124° 54.29'	124° 53.58'
Finish position									
North Latitude	49° 40.73'	49° 40.97'	49° 40.81'	49° 48.65'	49° 48.14'	49° 49.33'	49° 39.09'	49° 38.29'	49° 37.33'
West Longitude	124° 51.95'	124° 51.10'	124° 49.97'	124° 59.56'	125° 0.14'	125° 1.12'	124° 54.42'	124° 54.57'	124° 53.82'
Distance towed (n.mi)	0.32	0.36	0.36	0.26	0.35	0.32	0.28	0.37	0.37
Distance towed (m)	582.8	658.6	658.6	471.8	649.4	592.0	523.6	682.7	688.2
Vessel speed (knots)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Direction (°True)	232	270	296	162	136	147	233	316	332
Modal bottom depth (m)	16	31	20	34	22	24	35	22	22
Bottom temperature (°C)	13.0	11.2	11.3	10.9	11.5	11.1	11.0	11.4	11.2
Habitat type	S/R	S	S/R	S	S	S/R	S/M	S/M	S/M
Tide	Ebb	Ebb	Low	Flood	Flood	Flood	High	Ebb	Ebb
Tide height (feet)	6.8	4.9	3.7	5.5	7.7	9.0	12.8	11.3	9.4
Beaufort scale	1	1	1	0	0	0	1	0	0
Wind direction	NE	NE	NE	--	--	--	--	--	--
% cloud cover	0	0	0	0	0	10	20	20	10
Total catch (kg)	122.1	108.6	104.3	81.0	88.0	64.2	127.5	67.7	55.2
Number age 1+ lingcod	0	0	2	1	5	1	1	0	0
Number YOY lingcod	13	13	10	6	2	2	4	25	6
Swept area (m^2)	7576	8562	8562	6133	8442	7696	6806	8874	8947
YOY density (number/km^2)	1716	1518	1168	978	237	260	588	2817	671
Usable tow	Y	Y	Y	Y	Y	Y	Y	Y	Y

Appendix Table 1 (Cont.)

Tow number	64	65	66	67	68	69	70	71	72
Date	August 04	August 04	August 04	August 04	August 05	August 05	August 05	August 05	August 05
Site	CX	KC	BC	BC	BC	BC	OB	OB	OB
Region	N	N	N	N	N	N	N	N	N
Statistical Area	14	14	14	14	14	14	14	14	14
Depth stratum	2	2	2	1	1	2	2	1	1
Start time (PST)	08:57	11:09	12:19	13:01	08:36	09:26	10:17	11:09	12:19
Duration (min)	10	6	10	10	10	10	10	10	10
Start position									
North Latitude	49° 38.37'	49° 49.41'	49° 51.02'	49° 51.61'	49° 51.84'	49° 51.67'	49° 54.52'	49° 54.59'	49° 54.27'
West Longitude	124° 53.59'	125° 0.93'	125° 4.14'	125° 5.36'	125° 5.76'	125° 5.15'	125° 8.25'	125° 9.33'	125° 8.68'
Finish position									
North Latitude	49° 38.04'	49° 49.26'	49° 51.25'	49° 51.36'	49° 52.15'	49° 51.98'	49° 54.18'	49° 54.38'	49° 54.06'
West Longitude	124° 53.39'	125° 0.73'	125° 4.52'	125° 5.00'	125° 6.08'	125° 5.46'	125° 8.07'	125° 8.95'	125° 8.29'
Distance towed (n.mi)	0.36	0.19	0.33	0.34	0.36	0.37	0.35	0.33	0.33
Distance towed (m)	658.6	357.1	614.2	623.5	660.5	677.1	651.2	605.0	606.8
Vessel speed (knots)	2.0	2.0	2.0	1.0	2.0	2.0	2.0	2.1	2.0
Direction (°True)	179	137	308	134	328	323	150	130	118
Modal bottom depth (m)	32	28	31	19	20	34	33	17	21
Bottom temperature (°C)	11.0	11.4	10.6	11.1	11.9	11.1	11.0	11.3	11.1
Habitat type	S/M	S	S	S	S	S	S/R	S/R	S/R
Tide	Ebb	Ebb	Low	Low	Ebb	Ebb	Ebb	Ebb	Low
Tide height (feet)	8.3	3.8	3.1	3.4	10.9	8.8	6.5	5.5	3.6
Beaufort scale	1	1	0	0	1	1	1	0	0
Wind direction	--	NW	--	--	--	--	--	--	--
% cloud cover	10	0	0	0	0	0	0	0	0
Total catch (kg)	108.1	42.9	61.0	92.5	81.8	52.5	87.0	56.3	28.6
Number age 1+ lingcod	0	0	1	0	0	0	3	2	0
Number YOY lingcod	1	1	7	1	1	1	2	0	1
Swept area (m^2)	8562	4642	7985	8105	8586	8802	8466	7864	7888
YOY density (number/km^2)	117	215	877	123	116	114	236	0	127
Usable tow	Y	Y	Y	Y	Y	Y	Y	Y	Y

Appendix Table 1 (Cont.)

Tow number	73	74	75	76	77	78	79	80	81
Date	August 05	August 05	August 05	August 06	August 06	August 06	August 06	August 06	August 07
Site	OB	MI	MI	TH	TH	TH	WC	WC	SB
Region	N	E	E	E	E	E	E	E	E
Statistical Area	14	13	13	16	16	16	29	29	28
Depth stratum	2	2	5	2	2	3	3	2	3
Start time (PST)	13:04	14:44	15:51	13:05	13:21	14:33	16:35	17:35	09:02
Duration (min)	10	1	5	3	10	10	10	8	10
Start position									
North Latitude	49° 55.07'	50° 3.90'	50° 2.55'	49° 29.89'	49° 30.32'	49° 30.06'	49° 25.75'	49° 25.85'	49° 17.60'
West Longitude	125° 9.01'	125° 4.76'	125° 1.76'	124° 2.17'	124° 2.00'	124° 1.74'	123° 41.53'	123° 41.31'	123° 14.89'
Finish position									
North Latitude	49° 54.78'	50° 3.86'	50° 2.40'	49° 29.98'	49° 29.90'	49° 29.76'	49° 25.92'	49° 25.96'	49° 17.57'
West Longitude	125° 8.76'	125° 4.73'	125° 1.82'	124° 2.13'	124° 2.12'	124° 2.05'	123° 42.02'	123° 41.71'	123° 15.55'
Distance towed (n.mi)	0.33	--	0.16	--	0.44	0.36	0.36	0.28	0.37
Distance towed (m)	605.0	--	290.5	--	806.6	667.9	660.5	521.7	680.8
Vessel speed (knots)	2.0	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.1
Direction (°True)	154	161	197	7	191	208	292	296	268
Modal bottom depth (m)	27	26	63	34	34	45	42	27	39
Bottom temperature (°C)	11.2	10.3	9.5	--	--	--	--	--	11.4
Habitat type	S/R	S/R	S	S/R	S	S/R	S	S/R	S/M
Tide	Low	Flood	Flood	Low	Low	Flood	Flood	Flood	Ebb
Tide height (feet)	3.6	6.3	8.8	2.3	2.3	3.3	8.4	10.8	11.0
Beaufort scale	0	0	1	1	1	1	1	1	3
Wind direction	--	--	NW	N	N	N	N	N	W
% cloud cover	0	0	0	10	10	5	0	0	0
Total catch (kg)	109.7	--	45.1	--	126.3	467.0	119.4	83.9	128.3
Number age 1+ lingcod	1	--	0	--	0	0	0	0	0
Number YOY lingcod	0	--	1	--	0	0	0	0	0
Swept area (m^2)	7864	--	3776	--	10486	8682	8586	6782	8850
YOY density (number/km^2)	0	--	265	--	0	0	0	0	0
Usable tow	Y	N	Y	N	Y	Y	Y	Y	Y

Appendix Table 1 (Cont.)

Tow number	82	83	84	85	86	87
Date	August 07	August 07	August 08	August 08	August 08	August 08
Site	FR	NN	FC	FC	FC	FC
Region	E	S	N	N	N	N
Statistical Area	29	17	14	14	14	14
Depth stratum	4	3	1	2	3 – 4	1
Start time (PST)	11:40	16:25	09:39	11:47	12:28	13:06
Duration (min)	10	6	10	10	10	10
Start position						
North Latitude	49° 3.04'	49° 13.28'	49° 20.16'	49° 20.17'	49° 20.57'	49° 20.15'
West Longitude	123° 16.93'	123° 56.39'	124° 18.66'	124° 18.23'	124° 18.88'	124° 18.65'
Finish position						
North Latitude	49° 3.33'	49° 13.13'	49° 20.42'	49° 20.39'	49° 20.44'	49° 20.35'
West Longitude	123° 17.36'	123° 56.17'	123° 19.01'	124° 18.60'	124° 18.37'	124° 19.06'
Distance towed (n.mi)	0.40	0.21	0.36	0.33	0.36	0.33
Distance towed (m)	747.4	388.5	662.3	605.0	660.5	614.2
Vessel speed (knots)	2.5	2.0	2.0	2.0	2.2	2.0
Direction (°True)	326	134	309	290	106	313
Modal bottom depth (m)	48	37	22	32	49	18
Bottom temperature (°C)	10.4	10.4	11.9	10.7	10.4	13.6
Habitat type	S	S/R	S	S	S/R	S/R
Tide	Ebb	Flood	Ebb	Ebb	Ebb	Low
Tide height (feet)	6.2	7.2	10.7	6.8	6.1	5.5
Beaufort scale	3	2	3	3	2	2
Wind direction	W	NW	NW	NW	NW	NW
% cloud cover	0	0	0	0	0	0
Total catch (kg)	107.9	70.8	60.5	64.2	90.1	62.7
Number age 1+ lingcod	0	0	0	0	0	0
Number YOY lingcod	0	1	54	10	4	36
Swept area (m^2)	9716	5051	8610	7864	8586	7985
YOY density (number/km^2)	0	198	6272	1272	466	4509
Usable tow	Y	Y	Y	Y	Y	Y

Appendix Table 2. Catch composition (kg) for major species captured during the 2005 bottom trawl survey of young-of-the-year lingcod in the Strait of Georgia, CCGS *Neocaligus*, July 26 – August 8, 2005. For a complete list of all species captured, refer to Table 3.

	Catch (kg)											
Tow number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Fish Species												
Spiny dogfish	5.2	8.5	12.9	14.7	45.4	21.3	19.9	10.5	7.5	31.4	230.4	134.3
Big skate	--	--	--	--	--	--	--	0.4	0.8	--	--	--
Longnose skate	--	--	--	--	--	--	--	--	--	--	--	--
Ratfish	--	--	--	--	--	--	--	--	--	--	--	--
Pacific herring	3.2	0.7	0.4	0.2	1.7	3.5	0.2	1.2	0.2	0.8	--	--
Chinook salmon	--	--	--	--	--	--	--	--	--	--	--	--
Smelts	--	--	--	--	--	--	--	--	--	--	--	--
Plainfin midshipman	1.6	--	1.2	1.3	1.5	2.0	0.5	0.2	--	0.2	--	--
Pacific cod	--	--	0.2	--	--	1.8	--	--	--	--	--	0.1
Pacific tomcod	--	--	--	--	7.8	3.5	1.2	1.6	0.3	--	--	1.1
Walleye pollock	1.6	5.6	0.2	0.4	--	--	--	--	--	0.6	0.6	1.1
Blackbelly eelpout	0.5	2.6	--	--	--	0.4	--	--	--	0.1	--	--
Shiner perch	1.1	1.4	0.8	1.3	0.7	1.8	0.5	1.0	0.5	--	--	0.5
Pricklebacks	0.5	--	0.6	0.9	4.0	7.9	1.6	--	1.1	0.6	--	4.0
Copper rockfish	--	--	--	--	--	--	--	--	--	--	--	--
Quillback rockfish	--	--	--	--	--	--	--	--	--	--	--	--
Yelloweye rockfish	--	--	--	--	--	--	--	--	--	--	--	--
Whitespotted greenling	0.3	--	0.4	0.1	0.9	1.0	--	0.2	--	0.3	0.1	--
Lingcod	--	--	--	--	--	--	--	--	--	--	--	--
Sculpins	--	0.7	3.5	0.2	0.2	0.4	--	1.2	0.3	1.4	2.8	0.2
Cabezon	--	--	--	--	--	--	--	--	--	--	--	--
Poachers	--	--	0.2	0.7	0.3	0.2	0.2	--	0.2	--	--	0.3
Pacific sanddab	3.8	0.5	2.0	5.6	3.3	2.8	19.8	3.7	5.4	8.7	--	--
Speckled sanddab	--	1.4	0.6	--	--	--	--	--	--	--	--	--
Flathead sole	2.2	0.5	--	2.6	4.6	2.8	5.5	1.2	1.1	1.0	--	--
Rock sole	20.5	15.6	39.5	26.6	8.8	7.9	25.1	7.1	19.7	7.6	3.4	10.8
Slender sole	1.1	0.5	--	--	--	0.2	0.9	0.2	0.3	--	--	--
English sole	7.6	17.4	18.9	28.5	11.6	8.1	38.7	50.7	16.3	7.1	--	2.3
Starry flounder	--	--	4.1	4.1	--	1.3	--	0.6	--	--	--	19.6
Other flatfish	--	3.5	1.6	2.3	1.2	--	2.8	2.0	--	0.6	--	--
Other fishes	--	0.8	0.3	--	--	--	0.1	--	--	--	--	--
Total fishes	49.2	59.4	87.5	89.4	91.9	66.6	117.0	81.9	53.6	60.4	237.3	174.3
Invertebrate Species												
Giant plumose anemone	2.2	5.6	6.7	3.2	10.3	2.6	--	2.6	1.1	--	--	--
Pink short-spined star	5.1	4.9	--	--	4.0	5.6	--	--	--	--	--	--
Sunflower starfish	--	5.4	1.4	1.7	--	3.0	1.3	--	0.3	2.8	--	--
Other sea stars	--	--	0.6	--	0.2	--	0.5	0.6	--	0.3	--	--
Urchins	--	--	--	--	--	--	--	--	--	--	--	--
Dungeness crab	--	--	--	--	--	3.1	13.6	6.3	2.8	--	--	2.0
Red rock crab	--	--	--	--	--	--	--	--	0.2	--	0.3	--
Shrimp	--	--	--	--	--	--	--	--	--	--	10.1	1.7
Octopus	--	--	--	--	--	--	--	--	--	--	--	--
Molluscs	--	--	--	--	--	--	--	--	--	--	--	--
Other invertebrates	--	--	--	--	--	0.2	--	0.8	--	1.1	--	0.1
Total invertebrates	7.3	15.9	8.8	5.0	14.4	14.5	15.4	10.3	4.3	4.2	10.4	3.8
Total catch	56.5	75.3	96.3	94.4	106.3	81.1	132.4	92.2	57.9	64.6	247.7	178.1

Appendix Table 2. (Cont.)

Tow number	Catch (kg) 13	14	15	16	17	18	19	20	21	22	23	24
Fish Species												
Spiny dogfish	39.1	96.1	22.9	6.5	22.0	7.1	9.7	34.5	--	--	15.8	25.2
Big skate	0.4	--	--	--	--	--	25.8	--	9.4	--	--	--
Longnose skate	--	--	--	--	--	--	--	--	--	--	--	--
Ratfish	--	--	--	87.6	6.6	1.0	47.0	10.2	1.4	--	--	--
Pacific herring	--	--	0.2	0.2	--	0.2	--	--	3.6	0.3	0.6	0.7
Chinook salmon	--	--	--	--	--	--	--	--	--	--	--	--
Smelts	--	--	--	--	--	--	--	--	--	--	--	--
Plainfin midshipman	--	--	--	--	--	--	--	--	--	--	2.5	--
Pacific cod	0.1	--	--	--	--	--	--	--	--	--	--	0.2
Pacific tomcod	0.1	0.5	0.2	--	--	--	--	--	--	--	4.1	3.0
Walleye pollock	0.3	1.2	0.2	0.2	--	--	--	--	--	--	0.6	--
Blackbelly eelpout	--	--	--	0.2	--	--	--	--	--	--	8.2	0.2
Shiner perch	0.9	--	0.2	0.2	--	--	0.1	--	0.3	--	2.2	1.2
Pricklebacks	--	0.3	0.9	0.3	--	0.2	--	--	0.1	--	0.8	--
Copper rockfish	--	0.6	--	--	--	--	--	--	--	--	--	--
Quillback rockfish	--	--	--	--	--	--	--	--	--	--	--	--
Yelloweye rockfish	--	--	--	--	--	--	--	--	--	--	--	--
Whitespotted greenling	--	--	--	0.1	0.1	0.3	--	0.2	--	1.0	0.5	--
Lingcod	--	--	--	0.2	0.1	--	--	0.4	--	--	--	--
Sculpins	--	--	--	0.6	1.2	--	0.1	0.5	0.4	0.4	1.0	1.2
Cabezon	--	--	--	--	--	--	5.4	--	--	--	--	--
Poachers	--	1.2	--	0.3	0.1	0.2	0.3	--	0.1	--	--	--
Pacific sanddab	--	1.9	3.9	15.1	6.3	19.5	23.2	11.2	14.3	0.3	2.7	--
Speckled sanddab	--	--	0.9	1.7	0.4	1.0	0.1	--	1.6	--	--	1.6
Flathead sole	--	--	--	--	--	--	--	--	--	--	21.0	0.2
Rock sole	0.7	2.3	2.1	23.6	5.8	7.3	3.9	5.0	12.8	4.1	6.5	18.2
Slender sole	--	--	--	--	--	--	--	--	--	--	1.4	--
English sole	--	1.7	7.9	8.7	1.1	5.3	5.5	1.7	4.5	0.2	17.5	26.6
Starry flounder	3.3	--	--	--	--	--	--	--	--	--	62.0	30.3
Other flatfish	--	--	--	1.4	--	--	0.4	--	0.6	--	5.3	2.5
Other fishes	--	--	--	0.1	--	--	--	--	--	--	1.0	--
Total fishes	44.9	105.8	39.4	146.8	43.7	42.0	121.6	63.7	49.1	6.3	153.7	111.1
Invertebrate Species												
Giant plumose anemone	--	--	--	--	--	--	1.4	--	7.9	--	2.7	7.2
Pink short-spined star	--	--	2.9	--	--	--	--	--	--	--	0.9	--
Sunflower starfish	0.1	--	1.9	--	--	0.8	--	2.6	--	--	1.0	0.3
Other sea stars	--	--	--	--	1.6	1.0	1.6	0.6	--	--	--	0.1
Urchins	--	--	--	--	--	--	--	--	--	11.3	--	--
Dungeness crab	2.9	4.0	0.9	18.0	2.2	0.4	0.7	2.3	6.9	--	9.5	10.3
Red rock crab	1.0	0.8	--	--	--	--	--	--	--	--	--	--
Shrimp	--	17.5	7.1	--	--	--	--	--	--	1.7	--	--
Octopus	--	--	--	--	0.2	--	--	--	--	--	--	--
Molluscs	--	--	--	--	--	--	--	--	--	0.7	--	--
Other invertebrates	--	--	--	--	2.3	0.2	--	0.8	--	--	0.5	1.2
Total invertebrates	4.0	22.3	12.9	18.0	6.3	2.4	3.7	6.3	14.8	13.7	14.6	19.0
Total catch	48.9	128.1	52.2	164.8	50.0	44.3	125.3	70.0	63.9	20.0	168.2	130.1

Appendix Table 2. (Cont.)

	Catch (kg)											
Tow number	**25**	**26**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**37**	**38**
Fish Species												
Spiny dogfish	11.4	24.6	6.0	4.7	14.1	35.0	3.2	39.1	10.4	11.0	19.9	13.0
Big skate	--	--	--	--	--	--	--	--	--	--	--	--
Longnose skate	--	--	--	--	--	--	--	--	0.7	1.5	--	--
Ratfish	--	--	--	--	--	--	--	--	--	--	--	--
Pacific herring	--	--	--	--	1.1	0.3	0.1	--	--	--	0.6	0.4
Chinook salmon	--	--	--	--	--	--	--	--	--	--	--	--
Smelts	--	--	--	--	--	--	--	--	--	--	--	--
Plainfin midshipman	--	--	--	0.3	0.2	--	0.4	3.8	0.6	0.3	1.7	2.1
Pacific cod	0.2	--	--	--	--	--	--	--	--	--	0.2	--
Pacific tomcod	--	--	--	1.3	--	0.9	--	2.4	--	--	1.1	--
Walleye pollock	--	--	--	--	0.5	1.8	--	2.4	--	--	--	0.8
Blackbelly eelpout	--	--	--	0.3	--	--	--	0.3	--	--	0.4	0.4
Shiner perch	0.3	0.5	--	--	--	0.3	--	--	--	--	--	0.2
Pricklebacks	0.1	--	--	--	--	--	--	--	--	--	--	0.2
Copper rockfish	0.2	--	--	0.3	--	--	--	--	--	--	--	--
Quillback rockfish	--	--	0.5	--	--	--	--	--	--	--	--	--
Yelloweye rockfish	--	--	--	--	--	--	--	--	--	--	--	--
Whitespotted greenling	0.3	--	--	--	--	--	--	--	0.1	--	--	--
Lingcod	0.1	--	--	--	--	--	0.1	0.2	0.6	0.5	0.1	0.2
Sculpins	1.0	0.8	0.3	0.3	--	--	0.8	0.3	0.9	0.4	--	--
Cabezon	--	--	--	--	--	--	--	--	--	--	--	--
Poachers	0.1	--	--	--	--	--	--	--	--	--	--	--
Pacific sanddab	--	--	--	--	--	--	1.3	2.6	0.3	--	1.3	1.1
Speckled sanddab	0.9	0.2	--	0.3	--	--	1.4	--	1.0	1.1	--	--
Flathead sole	--	0.2	--	2.2	0.2	1.5	0.1	--	--	--	--	1.3
Rock sole	7.1	1.7	23.1	30.2	11.5	87.2	29.6	42.2	9.0	19.4	27.0	26.9
Slender sole	--	--	--	--	--	--	0.6	2.3	--	--	1.1	0.4
English sole	6.3	0.7	--	8.6	1.6	6.2	29.2	28.6	13.3	32.3	50.9	29.9
Starry flounder	2.2	--	--	15.9	76.3	153.0	9.4	3.6	11.2	--	26.7	41.1
Other flatfish	--	--	0.4	0.3	0.7	1.5	--	3.0	0.7	--	--	--
Other fishes	2.1	--	--	--	--	--	--	--	--	--	0.2	0.1
Total fishes	32.3	28.7	30.3	64.8	106.1	287.6	76.3	130.6	48.8	66.5	131.1	118.1
Invertebrate Species												
Giant plumose anemone	--	--	--	4.8	6.2	35.6	--	--	--	0.7	--	--
Pink short-spined star	--	--	--	--	--	--	--	--	--	0.8	--	--
Sunflower starfish	8.9	2.7	--	--	--	--	0.3	--	--	--	1.4	--
Other sea stars	0.9	--	--	--	--	--	--	--	--	--	--	--
Urchins	--	--	0.4	--	--	--	--	--	--	--	--	--
Dungeness crab	1.9	--	--	--	--	--	--	1.4	0.6	--	--	--
Red rock crab	5.7	--	--	--	--	0.9	--	--	--	0.4	--	--
Shrimp	6.9	1.0	--	--	--	--	--	--	--	--	--	--
Octopus	--	--	--	--	--	--	--	--	0.1	--	--	--
Molluscs	--	--	--	--	--	--	--	--	--	--	--	--
Other invertebrates	0.9	0.3	8.2	--	--	0.3	--	1.1	--	0.4	--	--
Total invertebrates	25.2	4.0	8.6	4.8	6.2	36.8	0.3	2.5	0.7	2.3	1.4	0.0
Total catch	57.5	32.7	38.9	69.6	112.3	324.4	76.6	133.1	49.5	68.8	132.5	118.1

Appendix Table 2. (Cont.)

	Catch (kg)											
Tow number	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
Fish Species												
Spiny dogfish	11.3	39.7	19.7	24.8	36.8	89.2	93.0	88.4	44.7	8.5	67.0	36.9
Big skate	--	--	--	--	0.2	--	0.6	--	--	--	--	--
Longnose skate	--	--	2.2	--	--	--	--	--	--	--	0.3	--
Ratfish	--	--	--	--	--	--	--	--	--	--	--	--
Pacific herring	--	--	0.6	--	--	--	--	--	--	--	--	0.3
Chinook salmon	--	--	--	--	--	--	--	--	--	--	--	--
Smelts	--	--	--	--	--	--	--	--	--	--	--	--
Plainfin midshipman	0.4	1.3	4.2	6.8	0.4	--	0.6	--	0.2	1.1	2.8	3.2
Pacific cod	--	0.4	0.4	1.3	0.1	0.3	--	--	--	0.4	--	--
Pacific tomcod	--	1.3	1.3	--	--	--	--	--	--	--	1.8	0.3
Walleye pollock	--	--	--	0.1	--	--	--	--	--	--	--	--
Blackbelly eelpout	--	1.1	1.8	9.0	--	--	--	--	--	--	1.4	1.7
Shiner perch	0.2	--	--	0.3	--	0.5	0.2	--	0.5	--	0.5	0.3
Pricklebacks	--	--	--	--	--	--	0.4	0.2	--	0.2	--	--
Copper rockfish	--	--	4.7	--	--	--	--	--	--	--	--	--
Quillback rockfish	--	--	0.3	--	--	--	--	--	--	--	0.3	1.4
Yelloweye rockfish	--	--	8.4	--	--	--	--	--	--	--	--	--
Whitespotted greenling	--	--	--	--	--	--	--	0.1	--	--	--	--
Lingcod	0.2	0.2	0.1	0.1	0.1	0.8	0.5	0.4	--	0.3	0.1	0.4
Sculpins	0.2	--	--	--	1.8	0.4	0.2	0.3	--	0.9	--	0.1
Cabezon	--	--	--	--	--	--	--	--	--	--	--	--
Poachers	--	--	--	--	--	0.1	0.2	--	--	--	--	--
Pacific sanddab	--	2.1	--	--	--	--	1.3	--	3.6	--	--	--
Speckled sanddab	0.2	--	--	--	1.6	1.8	1.3	1.3	0.5	0.2	--	--
Flathead sole	--	0.2	--	2.7	--	--	--	--	--	--	0.9	0.3
Rock sole	13.4	46.9	14.3	1.7	74.4	77.1	36.4	43.9	28.5	21.8	14.5	13.3
Slender sole	0.6	1.1	1.1	1.4	--	--	1.1	--	1.2	0.2	4.6	37.2
English sole	62.3	43.3	42.0	18.5	2.6	22.9	51.1	44.2	59.1	118.0	41.9	33.0
Starry flounder	0.8	31.8	--	--	--	--	--	--	1.4	1.7	3.2	3.4
Other flatfish	--	0.2	0.9	0.6	1.0	0.4	--	1.7	--	--	0.5	0.5
Other fishes	--	--	0.1	0.1	--	--	--	--	--	--	0.1	0.1
Total fishes	89.5	169.5	102.0	67.3	118.9	193.4	186.8	180.5	139.6	153.3	139.9	132.2
Invertebrate Species												
Giant plumose anemone	--	4.6	1.5	2.5	--	--	--	--	--	--	--	--
Pink short-spined star	--	0.3	--	--	--	--	--	--	--	--	--	--
Sunflower starfish	0.5	--	--	1.4	10.5	--	--	--	0.7	--	--	--
Other sea stars	--	--	--	--	--	--	--	0.2	--	--	--	0.3
Urchins	--	--	--	--	--	--	--	--	--	--	--	--
Dungeness crab	--	--	--	--	--	--	--	--	--	--	--	--
Red rock crab	--	0.4	--	--	8.3	0.9	--	0.3	--	--	--	--
Shrimp	--	--	--	--	--	--	--	--	--	--	--	--
Octopus	--	--	--	--	--	--	--	--	--	--	--	--
Molluscs	--	--	--	--	--	--	--	--	--	--	--	--
Other invertebrates	--	0.3	--	--	--	--	--	--	--	--	--	--
Total invertebrates	0.5	5.6	1.5	4.0	18.8	0.9	0.0	0.5	0.7	0.0	0.0	0.3
Total catch	90.0	175.1	103.5	71.3	137.7	194.3	186.8	181.0	140.3	153.3	139.9	132.4

Appendix Table 2. (Cont.)

Tow number	Catch (kg) 51[1]	52[1]	53[1]	54	55	56	57	58	59	60	61	62
Fish Species												
Spiny dogfish	--	--	--	34.9	21.0	32.9	34.9	37.7	5.5	23.1	45.7	26.5
Big skate	--	--	--	0.9	--	--	0.3	--	--	--	--	--
Longnose skate	--	--	--	--	--	--	--	--	--	--	--	--
Ratfish	--	--	--	10.9	--	--	--	2.5	--	--	--	--
Pacific herring	--	--	--	--	--	--	--	--	--	--	0.4	--
Chinook salmon	--	--	--	--	--	--	--	--	--	--	--	--
Smelts	--	--	--	--	--	--	--	--	--	--	--	--
Plainfin midshipman	--	--	--	0.4	0.5	0.2	0.6	0.1	--	0.1	0.6	0.5
Pacific cod	--	--	--	0.6	0.1	2.2	--	--	--	--	--	--
Pacific tomcod	--	--	--	0.2	--	--	--	--	--	--	11.9	2.3
Walleye pollock	--	--	--	--	--	--	--	--	--	--	--	--
Blackbelly eelpout	--	--	--	--	--	--	--	--	--	--	31.9	4.1
Shiner perch	--	--	--	0.4	0.8	--	0.4	--	--	--	5.6	12.3
Pricklebacks	--	--	--	0.2	--	0.2	--	--	--	--	3.3	1.5
Copper rockfish	--	--	--	--	--	--	--	--	--	0.1	--	--
Quillback rockfish	--	--	--	--	--	--	--	--	--	--	--	--
Yelloweye rockfish	0.1	--	--	--	--	--	--	--	--	--	--	--
Whitespotted greenling	--	--	--	--	--	--	--	--	0.1	0.1	--	--
Lingcod	--	--	--	0.2	0.3	0.4	0.8	0.5	0.8	0.3	0.3	0.9
Sculpins	--	--	--	0.4	1.3	0.6	0.4	0.5	--	0.3	0.2	0.2
Cabezon	--	--	--	--	--	--	--	--	--	--	--	--
Poachers	--	--	--	--	--	--	--	0.1	0.2	--	--	--
Pacific sanddab	--	--	--	--	--	1.2	1.7	0.5	--	--	--	--
Speckled sanddab	--	--	--	--	0.6	0.6	2.1	0.3	0.8	0.7	--	1.8
Flathead sole	--	--	--	--	--	--	--	--	--	--	--	1.1
Rock sole	--	--	--	50.7	48.3	33.0	39.4	14.6	41.9	19.5	3.5	1.0
Slender sole	--	--	--	0.6	--	1.5	--	0.2	--	--	--	--
English sole	--	--	--	53.5	7.4	29.5	12.1	20.6	32.6	16.8	14.2	12.0
Starry flounder	--	--	--	--	--	1.8	--	--	--	--	1.4	--
Other flatfish	--	--	--	0.8	--	--	2.1	0.9	0.4	0.2	--	--
Other fishes	0.1	--	0.5	--	--	--	--	0.1	--	--	0.2	--
Total fishes	0.2	0.0	0.5	154.7	80.1	104.0	94.8	78.6	82.2	61.2	119.3	64.0
Invertebrate Species												
Giant plumose anemone	--	--	--	9.2	--	3.1	7.3	--	--	--	7.8	0.7
Pink short-spined star	--	--	--	0.9	--	--	1.5	2.0	3.4	--	--	--
Sunflower starfish	--	--	--	9.8	15.9	--	0.5	--	0.6	0.3	--	2.9
Other sea stars	--	--	--	--	--	--	--	--	1.4	2.7	--	--
Urchins	--	--	--	--	--	--	--	--	--	--	--	--
Dungeness crab	--	--	--	--	4.8	1.2	--	--	--	--	0.4	--
Red rock crab	--	--	--	0.4	14.3	0.3	--	--	0.4	--	--	--
Shrimp	--	--	--	--	--	--	0.2	--	--	--	--	0.2
Octopus	--	--	--	--	6.9	--	--	--	--	--	--	--
Molluscs	--	--	--	--	--	--	--	0.4	--	--	--	--
Other invertebrates	--	--	--	1.7	0.2	--	--	--	--	--	--	--
Total invertebrates	0.0	0.0	0.0	22.0	42.0	4.6	9.5	2.4	5.8	3.0	8.2	3.7
Total catch	203.3	143.3	292.9	176.7	122.1	108.6	104.3	81.0	88.0	64.2	127.5	67.7

[1]Note: For tows 51-53 catch composition was not determined. All lingcod and rockfish were selected from the total catch, and the remainder of the catch was weighed and discarded.

Appendix Table 2. (Cont.)

	Catch (kg)											
Tow number	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**	**71**	**72**	**73**	**75**
Fish Species												
Spiny dogfish	39.1	43.8	17.5	15.6	17.7	4.3	4.2	33.1	8.8	3.7	82.5	1.3
Big skate	--	--	--	--	--	--	--	--	--	--	--	--
Longnose skate	--	--	--	--	--	--	--	0.9	--	--	--	--
Ratfish	--	--	7.1	--	--	0.5	--	--	--	--	--	9.1
Pacific herring	0.5	3.3	--	--	--	--	--	--	--	--	--	--
Chinook salmon	--	--	--	--	--	--	--	--	--	--	--	--
Smelts	--	--	--	--	--	--	--	--	--	--	--	--
Plainfin midshipman	0.3	0.3	--	0.2	0.3	0.9	0.2	0.2	--	--	--	3.5
Pacific cod	--	--	--	--	--	0.3	0.1	0.2	--	--	--	--
Pacific tomcod	0.3	1.8	--	--	--	--	--	--	--	--	--	--
Walleye pollock	--	--	--	--	--	--	--	--	--	--	--	3.8
Blackbelly eelpout	0.4	15.0	--	--	--	--	--	--	--	--	--	0.1
Shiner perch	1.0	9.1	--	--	--	--	--	--	--	--	--	0.2
Pricklebacks	0.3	1.8	--	--	--	--	--	--	--	--	--	0.1
Copper rockfish	--	--	--	--	--	--	--	--	--	--	--	--
Quillback rockfish	--	--	0.1	--	--	--	--	--	--	--	--	--
Yelloweye rockfish	--	--	--	--	--	--	--	--	--	--	--	--
Whitespotted greenling	--	--	--	--	--	--	--	--	0.2	0.2	--	--
Lingcod	0.2	--	--	0.5	--	--	--	0.4	0.4	--	0.1	0.1
Sculpins	--	--	0.6	0.7	0.2	0.4	0.2	0.3	--	--	0.1	0.4
Cabezon	--	--	--	--	--	--	--	--	3.9	3.4	--	--
Poachers	--	--	--	0.4	--	--	0.2	--	--	--	--	--
Pacific sanddab	--	--	--	--	--	--	--	0.5	--	--	0.2	--
Speckled sanddab	0.3	--	0.2	1.5	1.4	2.8	1.1	--	0.9	0.3	0.4	--
Flathead sole	0.5	4.1	--	--	--	--	--	--	--	--	--	--
Rock sole	--	0.8	12.6	23.1	41.0	33.1	13.7	27.1	29.1	13.1	22.4	13.4
Slender sole	--	--	0.2	0.2	--	--	--	--	--	--	--	2.2
English sole	2.4	15.7	2.0	17.0	29.6	36.4	31.6	13.5	12.8	7.0	3.7	9.7
Starry flounder	1.7	2.0	--	--	--	--	--	--	--	--	--	--
Other flatfish	--	--	--	1.0	2.0	1.1	0.4	0.3	--	--	--	--
Other fishes	--	--	0.1	--	--	--	--	--	--	--	--	--
Total fishes	47.0	97.6	40.4	60.1	92.2	79.8	51.6	76.3	56.1	27.7	109.4	43.9
Invertebrate Species												
Giant plumose anemone	4.9	8.2	0.1	--	--	--	--	0.6	--	--	--	--
Pink short-spined star	2.2	--	0.9	--	--	--	--	6.7	--	--	--	--
Sunflower starfish	0.8	0.3	1.0	0.2	--	2.0	0.6	1.0	--	0.2	--	--
Other sea stars	--	--	--	--	--	--	0.1	0.2	0.1	0.2	0.3	--
Urchins	--	--	--	--	--	--	--	--	--	--	--	--
Dungeness crab	--	--	--	--	--	--	--	--	--	--	--	--
Red rock crab	--	0.3	--	--	--	--	--	--	--	--	--	--
Shrimp	--	--	--	--	--	--	--	--	--	--	--	--
Octopus	--	--	--	--	--	--	--	--	--	0.3	--	--
Molluscs	--	--	0.5	0.7	0.3	--	0.2	2.2	0.1	0.2	--	--
Other invertebrates	0.3	1.8	--	--	--	--	--	--	--	--	--	1.2
Total invertebrates	8.2	10.5	2.5	0.9	0.3	2.0	0.9	10.7	0.2	0.9	0.3	1.2
Total catch	55.2	108.1	42.9	61.0	92.5	81.8	52.5	87.0	56.3	28.6	109.7	45.1

Appendix Table 2. (Cont.)

Tow number	Catch (kg) 77	78	79	80	81	82	83	84	85	86	87
Fish Species											
Spiny dogfish	39.5	153.8	15.0	--	4.5	34.0	--	25.9	6.7	10.8	28.8
Big skate	--	--	--	--	--	--	--	0.2	--	--	--
Longnose skate	1.3	--	--	--	--	--	--	--	--	--	--
Ratfish	--	--	--	--	--	--	--	--	--	--	--
Pacific herring	--	--	3.6	0.3	0.7	0.2	--	--	--	--	--
Chinook salmon	--	--	--	--	--	--	--	--	--	--	--
Smelts	--	--	--	--	--	--	--	--	--	--	--
Plainfin midshipman	0.8	2.0	3.9	0.3	1.0	3.9	--	--	0.4	1.0	0.3
Pacific cod	--	--	--	--	2.6	--	--	0.5	0.1	--	0.3
Pacific tomcod	--	--	0.5	--	--	1.7	0.2	--	--	--	--
Walleye pollock	--	--	19.8	6.0	0.5	1.9	0.2	--	--	--	--
Blackbelly eelpout	--	--	6.1	--	24.5	7.0	--	--	--	--	--
Shiner perch	--	0.3	6.5	1.5	0.7	0.2	--	--	--	--	0.1
Pricklebacks	--	--	0.5	1.0	2.6	1.7	--	--	--	--	--
Copper rockfish	--	--	--	--	--	--	--	--	--	--	--
Quillback rockfish	--	--	--	--	--	--	--	--	--	--	--
Yelloweye rockfish	--	--	--	--	--	--	--	--	--	--	--
Whitespotted greenling	--	--	--	0.3	0.1	--	--	--	--	--	0.3
Lingcod	--	--	--	--	--	--	--	1.4	0.3	0.1	1.0
Sculpins	3.4	1.6	0.2	3.5	1.7	1.7	0.2	0.3	0.6	--	0.3
Cabezon	--	--	--	--	--	--	--	9.6	--	--	--
Poachers	--	--	--	--	--	--	--	--	--	--	--
Pacific sanddab	21.3	64.5	10.4	13.2	16.9	6.8	19.5	0.3	0.3	--	--
Speckled sanddab	--	0.3	--	0.5	--	--	0.7	1.5	0.2	0.2	2.1
Flathead sole	--	1.3	--	--	8.6	--	--	--	--	--	--
Rock sole	49.8	159.6	20.8	19.9	--	--	21.4	11.5	17.4	21.3	16.5
Slender sole	4.9	71.8	3.4	0.5	1.7	0.8	--	--	0.1	0.3	--
English sole	4.6	7.2	22.3	28.8	40.7	38.0	27.1	6.9	17.6	51.9	5.2
Starry flounder	--	--	--	--	8.8	6.2	--	2.4	19.1	3.3	1.8
Other flatfish	0.7	4.3	--	--	1.2	2.5	--	--	--	0.2	--
Other fishes	--	0.3	--	--	0.2	--	--	--	--	--	--
Total fishes	126.3	467.0	113.0	75.5	116.9	106.6	69.3	60.5	62.8	89.0	56.7
Invertebrate Species											
Giant plumose anemone	--	--	1.9	3.7	5.5	1.4	--	--	1.0	--	--
Pink short-spined star	--	--	--	--	--	--	--	--	--	--	--
Sunflower starfish	--	--	--	0.8	--	--	0.2	--	--	1.1	3.0
Other sea stars	--	--	2.4	--	--	--	--	--	--	--	--
Urchins	--	--	--	--	--	--	--	--	--	--	--
Dungeness crab	--	--	2.1	3.9	5.9	--	1.3	--	0.4	--	2.7
Red rock crab	--	--	--	--	--	--	--	--	--	--	0.3
Shrimp	--	--	--	--	--	--	--	--	--	--	--
Octopus	--	--	--	--	--	--	--	--	--	--	--
Molluscs	--	--	--	--	--	--	--	--	--	--	--
Other invertebrates	--	--	--	--	--	--	--	--	--	--	--
Total invertebrates	0.0	0.0	6.5	8.4	11.4	1.4	1.5	0.0	1.4	1.1	6.0
Total catch	126.3	467.0	119.4	83.9	128.3	107.9	70.8	60.5	64.2	90.1	62.7

Appendix Table 3. Length, weight , condition factor (CF), and sex (1 = Male, 2 = Female, 3 = Unknown) for young-of-the-year (YOY) and age 1+ lingcod captured in the northern region of the Strait of Georgia, 2005 bottom trawl survey of young-of-the-year lingcod, CCGS *Neocaligus*, July 26 – August 8, 2005. For site names and locations, see Table 1. For definitions of depth strata (DS), see Table 2.

DS	Site	Tow	Length (mm)	Weight (g)	CF (g/mm^3)	Sex	Type	DS	Site	Tow	Length (mm)	Weight (g)	CF (g/mm^3)	Sex	Type
1	BC	67	182	42	0.7	--	YOY	1	CL	57	169	28	0.6	--	YOY
1	BC	68	158	25	0.6	--	YOY	1	CX	62	159	25	0.6	--	YOY
1	BW	44	153	25	0.7	--	YOY	1	CX	62	162	25	0.6	--	YOY
1	BW	44	160	29	0.7	--	YOY	1	CX	62	157	22	0.6	--	YOY
1	BW	44	165	35	0.8	--	YOY	1	CX	62	185	40	0.6	--	YOY
1	BW	44	157	26	0.7	--	YOY	1	CX	62	158	21	0.5	--	YOY
1	BW	44	155	25	0.7	--	YOY	1	CX	62	154	23	0.6	--	YOY
1	BW	44	183	39	0.6	--	YOY	1	CX	62	170	33	0.7	--	YOY
1	BW	44	160	25	0.6	--	YOY	1	CX	62	167	27	0.6	--	YOY
1	BW	44	151	24	0.7	--	YOY	1	CX	62	147	20	0.6	--	YOY
1	BW	44	167	33	0.7	--	YOY	1	CX	62	158	27	0.7	--	YOY
1	BW	44	157	26	0.7	--	YOY	1	CX	62	159	24	0.6	--	YOY
1	BW	44	145	26	0.9	--	YOY	1	CX	62	175	31	0.6	--	YOY
1	BW	44	157	26	0.7	--	YOY	1	CX	62	163	27	0.6	--	YOY
1	BW	44	168	35	0.7	--	YOY	1	CX	62	155	24	0.6	--	YOY
1	BW	44	158	29	0.7	--	YOY	1	CX	62	176	35	0.6	--	YOY
1	BW	44	158	29	0.7	--	YOY	1	CX	62	176	42	0.8	--	YOY
1	BW	44	168	33	0.7	--	YOY	1	CX	62	164	27	0.6	--	YOY
1	BW	44	165	27	0.6	--	YOY	1	CX	62	155	23	0.6	--	YOY
1	BW	44	142	20	0.7	--	YOY	1	CX	62	144	17	0.6	--	YOY
1	BW	44	150	26	0.8	--	YOY	1	CX	62	188	40	0.6	--	YOY
1	BW	44	150	22	0.7	--	YOY	1	CX	62	165	29	0.7	--	YOY
1	BW	44	176	39	0.7	--	YOY	1	CX	62	166	28	0.6	--	YOY
1	BW	44	131	16	0.7	--	YOY	1	CX	62	152	26	0.7	--	YOY
1	BW	44	132	16	0.7	--	YOY	1	CX	62	171	38	0.8	--	YOY
1	BW	46	134	15	0.6	--	YOY	1	CX	62	176	36	0.7	--	YOY
1	BW	46	152	21	0.6	--	YOY	1	CX	63	158	24	0.6	--	YOY
1	BW	46	167	32	0.7	--	YOY	1	CX	63	145	20	0.7	--	YOY
1	BW	46	142	21	0.7	--	YOY	1	CX	63	135	14	0.6	--	YOY
1	BW	46	151	26	0.8	--	YOY	1	CX	63	179	34	0.6	--	YOY
1	BW	46	171	36	0.7	--	YOY	1	CX	63	149	18	0.5	--	YOY
1	BW	46	149	20	0.6	--	YOY	1	CX	63	155	23	0.6	--	YOY
1	BW	46	157	24	0.6	--	YOY	1	FC	84	145	19	0.6	--	YOY
1	BW	46	143	17	0.6	--	YOY	1	FC	84	159	27	0.7	--	YOY
1	BW	46	155	23	0.6	--	YOY	1	FC	84	162	28	0.7	--	YOY
1	BW	46	147	22	0.7	--	YOY	1	FC	84	154	22	0.6	--	YOY
1	BW	46	136	16	0.6	--	YOY	1	FC	84	152	20	0.6	--	YOY
1	BW	46	147	23	0.7	--	YOY	1	FC	84	158	25	0.6	--	YOY
1	BW	46	152	21	0.6	--	YOY	1	FC	84	161	28	0.7	--	YOY
1	CL	55	149	21	0.6	--	YOY	1	FC	84	157	25	0.7	--	YOY
1	CL	55	151	24	0.7	--	YOY	1	FC	84	151	24	0.7	--	YOY
1	CL	55	143	17	0.6	--	YOY	1	FC	84	151	19	0.6	--	YOY
1	CL	55	152	21	0.6	--	YOY	1	FC	84	149	22	0.7	--	YOY
1	CL	55	159	25	0.6	--	YOY	1	FC	84	164	27	0.6	--	YOY
1	CL	55	145	18	0.6	--	YOY	1	FC	84	181	41	0.7	--	YOY
1	CL	55	163	31	0.7	--	YOY	1	FC	84	168	34	0.7	--	YOY
1	CL	55	182	51	0.9	--	YOY	1	FC	84	168	33	0.7	--	YOY
1	CL	55	139	16	0.6	--	YOY	1	FC	84	148	24	0.7	--	YOY
1	CL	55	137	17	0.7	--	YOY	1	FC	84	158	28	0.7	--	YOY
1	CL	55	172	31	0.6	--	YOY	1	FC	84	156	24	0.6	--	YOY
1	CL	55	171	33	0.7	--	YOY	1	FC	84	173	36	0.7	--	YOY
1	CL	55	163	27	0.6	--	YOY	1	FC	84	155	24	0.6	--	YOY
1	CL	57	167	30	0.6	--	YOY	1	FC	84	157	22	0.6	--	YOY
1	CL	57	171	28	0.6	--	YOY	1	FC	84	152	23	0.7	--	YOY
1	CL	57	281	167	0.8	1	1+	1	FC	84	159	27	0.7	--	YOY
1	CL	57	314	229	0.7	1	1+	1	FC	84	178	33	0.6	--	YOY
1	CL	57	160	25	0.6	--	YOY	1	FC	84	154	22	0.6	--	YOY
1	CL	57	163	26	0.6	--	YOY	1	FC	84	159	24	0.6	--	YOY
1	CL	57	173	30	0.6	--	YOY	1	FC	84	153	23	0.6	--	YOY
1	CL	57	161	26	0.6	--	YOY	1	FC	84	151	22	0.6	--	YOY
1	CL	57	185	41	0.7	--	YOY	1	FC	84	152	24	0.7	--	YOY
1	CL	57	193	46	0.6	--	YOY	1	FC	84	154	22	0.6	--	YOY
1	CL	57	165	26	0.6	--	YOY	1	FC	84	151	21	0.6	--	YOY

Appendix Table 3 (Cont.)

DS	Site	Tow	Length (mm)	Weight (g)	CF	Sex	Type	DS	Site	Tow	Length (mm)	Weight (g)	CF	Sex	Type
1	FC	84	142	19	0.7	--	YOY	1	KC	60	297	191	0.7	1	1+
1	FC	84	167	28	0.6	--	YOY	1	KC	60	182	37	0.6	--	YOY
1	FC	84	176	33	0.6	--	YOY	1	OB	71	273	152	0.8	1	1+
1	FC	84	133	12	0.5	--	YOY	1	OB	71	302	223	0.8	1	1+
1	FC	84	143	19	0.7	--	YOY	1	OB	72	171	30	0.6	3	YOY
1	FC	84	172	32	0.6	--	YOY	1	QU	35	169	33	0.7	--	YOY
1	FC	84	161	28	0.7	--	YOY	1	QU	35	125	12	0.6	--	YOY
1	FC	84	158	21	0.5	--	YOY	1	QU	35	161	27	0.7	--	YOY
1	FC	84	144	19	0.6	--	YOY	1	QU	35	163	30	0.7	--	YOY
1	FC	84	176	38	0.7	--	YOY	1	QU	35	170	34	0.7	--	YOY
1	FC	84	167	30	0.6	--	YOY	1	QU	35	138	16	0.6	--	YOY
1	FC	84	163	25	0.6	--	YOY	1	QU	35	165	32	0.7	--	YOY
1	FC	84	164	30	0.7	--	YOY	1	QU	35	144	19	0.6	--	YOY
1	FC	84	135	15	0.6	--	YOY	1	QU	35	145	20	0.7	--	YOY
1	FC	84	150	22	0.7	--	YOY	1	QU	35	167	28	0.6	--	YOY
1	FC	84	146	19	0.6	--	YOY	1	QU	35	168	38	0.8	--	YOY
1	FC	84	148	20	0.6	--	YOY	1	QU	35	165	30	0.7	--	YOY
1	FC	84	154	24	0.7	--	YOY	1	QU	35	145	23	0.8	--	YOY
1	FC	84	162	29	0.7	--	YOY	1	QU	35	148	22	0.7	--	YOY
1	FC	84	152	22	0.6	--	YOY	1	QU	35	132	13	0.6	--	YOY
1	FC	84	159	24	0.6	--	YOY	1	QU	43	166	28	0.6	--	YOY
1	FC	84	171	32	0.6	--	YOY	1	QU	43	139	15	0.6	--	YOY
1	FC	84	164	23	0.5	--	YOY	1	QU	43	145	16	0.5	--	YOY
1	FC	87	150	20	0.6	--	YOY	2	BC	66	182	38	0.6	--	YOY
1	FC	87	171	30	0.6	--	YOY	2	BC	66	170	34	0.7	--	YOY
1	FC	87	159	26	0.7	--	YOY	2	BC	66	235	88	0.7	1	1+
1	FC	87	153	21	0.6	--	YOY	2	BC	66	186	41	0.6	--	YOY
1	FC	87	161	26	0.6	--	YOY	2	BC	66	168	34	0.7	--	YOY
1	FC	87	148	20	0.6	--	YOY	2	BC	66	191	48	0.7	--	YOY
1	FC	87	145	19	0.6	--	YOY	2	BC	66	174	33	0.6	--	YOY
1	FC	87	162	27	0.6	--	YOY	2	BC	66	186	38	0.6	--	YOY
1	FC	87	151	23	0.7	--	YOY	2	BC	69	179	34	0.6	--	YOY
1	FC	87	154	26	0.7	--	YOY	2	BW	45	159	29	0.7	--	YOY
1	FC	87	153	22	0.6	--	YOY	2	BW	45	149	25	0.8	--	YOY
1	FC	87	158	27	0.7	--	YOY	2	BW	45	160	26	0.6	--	YOY
1	FC	87	158	26	0.7	--	YOY	2	BW	45	183	37	0.6	--	YOY
1	FC	87	158	23	0.6	--	YOY	2	BW	45	140	24	0.9	--	YOY
1	FC	87	146	20	0.6	--	YOY	2	BW	45	147	24	0.8	--	YOY
1	FC	87	161	28	0.7	--	YOY	2	BW	45	157	27	0.7	--	YOY
1	FC	87	140	16	0.6	--	YOY	2	BW	45	162	29	0.7	--	YOY
1	FC	87	158	25	0.6	--	YOY	2	BW	45	163	31	0.7	--	YOY
1	FC	87	184	46	0.7	--	YOY	2	BW	45	145	20	0.7	--	YOY
1	FC	87	161	26	0.6	--	YOY	2	BW	45	174	37	0.7	--	YOY
1	FC	87	156	23	0.6	--	YOY	2	BW	45	132	16	0.7	--	YOY
1	FC	87	131	17	0.8	--	YOY	2	BW	45	155	26	0.7	--	YOY
1	FC	87	175	42	0.8	--	YOY	2	BW	45	154	26	0.7	--	YOY
1	FC	87	191	52	0.8	--	YOY	2	BW	45	161	28	0.7	--	YOY
1	FC	87	175	35	0.7	--	YOY	2	BW	45	162	31	0.7	--	YOY
1	FC	87	164	29	0.7	--	YOY	2	BW	45	166	33	0.7	--	YOY
1	FC	87	183	41	0.7	--	YOY	2	BW	45	148	24	0.7	--	YOY
1	FC	87	165	30	0.7	--	YOY	2	BW	45	156	25	0.7	--	YOY
1	FC	87	153	25	0.7	--	YOY	2	BW	47	145	21	0.7	--	YOY
1	FC	87	151	23	0.7	--	YOY	2	BW	47	143	15	0.5	--	YOY
1	FC	87	168	33	0.7	--	YOY	2	CL	54	168	23	0.5	--	YOY
1	FC	87	153	21	0.6	--	YOY	2	CL	54	148	19	0.6	--	YOY
1	FC	87	145	23	0.8	--	YOY	2	CL	54	171	31	0.6	--	YOY
1	FC	87	147	19	0.6	--	YOY	2	CL	54	168	29	0.6	--	YOY
1	FC	87	157	23	0.6	--	YOY	2	CL	54	187	40	0.6	--	YOY
1	FC	87	148	17	0.5	--	YOY	2	CL	56	163	23	0.5	--	YOY
1	KC	59	258	138	0.8	1	1+	2	CL	56	160	27	0.7	--	YOY
1	KC	59	240	91	0.7	1	1+	2	CL	56	160	26	0.6	--	YOY
1	KC	59	172	30	0.6	3	YOY	2	CL	56	162	25	0.6	--	YOY
1	KC	59	180	38	0.7	3	YOY	2	CL	56	163	31	0.7	--	YOY
1	KC	59	293	198	0.8	2	1+	2	CL	56	179	37	0.7	--	YOY
1	KC	59	283	162	0.7	--	1+	2	CL	56	163	27	0.6	--	YOY
1	KC	59	285	170	0.7	--	1+	2	CL	56	159	23	0.6	--	YOY
1	KC	60	194	43	0.6	--	YOY	2	CL	56	175	30	0.6	--	YOY

Appendix Table 3 (Cont.)

DS	Site	Tow	Length (mm)	Weight (g)	CF	Sex	Type	DS	Site	Tow	Length (mm)	Weight (g)	CF	Sex	Type
2	CL	56	158	24	0.6	--	YOY	2	QU	39	164	30	0.7	--	YOY
2	CL	56	167	28	0.6	--	YOY	2	QU	39	156	26	0.7	--	YOY
2	CL	56	174	33	0.6	--	YOY	2	QU	39	158	25	0.6	--	YOY
2	CL	56	151	20	0.6	--	YOY	2	QU	39	158	24	0.6	--	YOY
2	CX	61	177	42	0.8	--	YOY	2	QU	48	155	22	0.6	--	YOY
2	CX	61	168	34	0.7	--	YOY	2	QU	48	145	18	0.6	--	YOY
2	CX	61	170	29	0.6	--	YOY	2	QU	48	125	13	0.7	--	YOY
2	CX	61	147	19	0.6	--	YOY	2	QU	48	145	19	0.6	--	YOY
2	CX	61	271	150	0.8	1	1+	2	QU	48	142	20	0.7	--	YOY
2	CX	64	186	35	0.5	--	YOY	2	QU	48	145	22	0.7	--	YOY
2	FC	34	134	16	0.7	--	YOY	2	QU	48	155	24	0.6	--	YOY
2	FC	34	160	25	0.6	--	YOY	2	QU	48	148	22	0.7	--	YOY
2	FC	34	163	29	0.7	--	YOY	2	QU	48	155	28	0.8	--	YOY
2	FC	34	138	15	0.6	--	YOY	2	QU	48	150	26	0.8	--	YOY
2	FC	34	153	25	0.7	--	YOY	2	QU	48	153	26	0.7	--	YOY
2	FC	34	175	39	0.7	--	YOY	2	QU	48	162	28	0.7	--	YOY
2	FC	34	145	17	0.6	--	YOY	3	QU	37	163	28	0.7	--	YOY
2	FC	34	144	21	0.7	--	YOY	3	QU	37	162	29	0.7	--	YOY
2	FC	34	146	19	0.6	--	YOY	3	QU	37	163	25	0.6	--	YOY
2	FC	34	158	23	0.6	--	YOY	3	QU	38	168	32	0.7	--	YOY
2	FC	34	168	28	0.6	--	YOY	3	QU	38	170	32	0.7	--	YOY
2	FC	34	154	24	0.7	--	YOY	3-4	QU	38	165	30	0.7	--	YOY
2	FC	34	154	23	0.6	--	YOY	3-4	QU	38	164	22	0.5	--	YOY
2	FC	34	149	23	0.7	--	YOY	3-4	QU	38	158	21	0.5	--	YOY
2	FC	34	155	23	0.6	--	YOY	3-4	QU	38	152	22	0.6	--	YOY
2	FC	34	169	35	0.7	--	YOY	4	FC	86	167	26	0.6	--	YOY
2	FC	34	170	35	0.7	--	YOY	4	FC	86	173	34	0.7	--	YOY
2	FC	34	156	25	0.7	--	YOY	4	FC	86	151	24	0.7	--	YOY
2	FC	34	147	21	0.7	--	YOY	4	FC	86	162	29	0.7	--	YOY
2	FC	34	151	24	0.7	--	YOY	4	MP	33	150	23	0.7	--	YOY
2	FC	34	144	20	0.7	--	YOY	4	MP	33	172	34	0.7	--	YOY
2	FC	34	162	30	0.7	--	YOY	4	MP	33	153	22	0.6	--	YOY
2	FC	34	154	29	0.8	--	YOY	4	MP	33	156	26	0.7	--	YOY
2	FC	34	145	22	0.7	--	YOY	4	MP	33	148	25	0.8	--	YOY
2	FC	85	164	27	0.6	--	YOY	4	MP	33	150	27	0.8	--	YOY
2	FC	85	154	23	0.6	--	YOY	4	QU	40	164	26	0.6	--	YOY
2	FC	85	168	36	0.8	--	YOY	4	QU	40	161	28	0.7	--	YOY
2	FC	85	153	25	0.7	--	YOY	4	QU	40	163	24	0.6	--	YOY
2	FC	85	161	24	0.6	--	YOY	4	QU	49	138	14	0.5	--	YOY
2	FC	85	154	24	0.7	--	YOY	4	QU	49	139	15	0.6	--	YOY
2	FC	85	182	36	0.6	--	YOY	4	QU	49	167	29	0.6	--	YOY
2	FC	85	111	26	1.9	--	YOY	4	QU	49	176	38	0.7	--	YOY
2	FC	85	161	28	0.7	--	YOY	5	QU	41	123	10	0.5	--	YOY
2	FC	85	160	27	0.7	--	YOY	5	QU	41	148	18	0.6	--	YOY
2	KC	58	273	154	0.8	2	1+	5	QU	41	147	19	0.6	--	YOY
2	KC	58	217	70	0.7	1	YOY	5	QU	41	165	28	0.6	--	YOY
2	KC	58	228	72	0.6	2	YOY	5	QU	50	155	22	0.6	--	YOY
2	KC	58	216	59	0.6	--	YOY	5	QU	50	195	54	0.7	--	YOY
2	KC	58	180	34	0.6	--	YOY	5	QU	50	158	24	0.6	--	YOY
2	KC	58	191	48	0.7	--	YOY	5	QU	50	186	46	0.7	--	YOY
2	KC	58	184	38	0.6	--	YOY	5	QU	50	178	33	0.6	--	YOY
2	KC	65	177	34	0.6	--	YOY	5	QU	50	172	33	0.7	--	YOY
2	MP	32	119	11	0.7	--	YOY	5	QU	50	150	18	0.5	--	YOY
2	MP	32	178	39	0.7	--	YOY	5	QU	50	170	31	0.6	--	YOY
2	MP	32	162	29	0.7	--	YOY	5	QU	50	169	26	0.5	--	YOY
2	MP	32	152	24	0.7	--	YOY	5	QU	50	149	19	0.6	--	YOY
2	MP	32	150	20	0.6	--	YOY	5	QU	50	169	31	0.6	--	YOY
2	MP	32	148	24	0.7	--	YOY	5	QU	50	152	18	0.5	--	YOY
2	OB	70	184	40	0.6	--	YOY	6	QU	42	137	15	0.6	--	YOY
2	OB	70	241	103	0.7	2	1+	6	QU	42	169	29	0.6	--	YOY
2	OB	70	242	93	0.7	2	1+	6	QU	42	141	14	0.5	--	YOY
2	OB	70	174	30	0.6	--	YOY	6	QU	42	174	31	0.6	--	YOY
2	OB	70	240	107	0.8	2	1+	6	QU	42	148	18	0.6	--	YOY
2	OB	73	256	108	0.6	2	1+	6	QU	51	140	16	0.6	--	YOY
2	QU	39	170	35	0.7	--	YOY	6	QU	51	162	23	0.5	--	YOY
2	QU	39	149	21	0.6	--	YOY	6	QU	51	164	28	0.6	--	YOY
2	QU	39	159	24	0.6	--	YOY	6	QU	51	165	26	0.6	--	YOY

Appendix Table 4. Length, weight , condition factor (CF), and sex (1 = Male, 2 = Female, 3 = Unknown) for young-of-the-year (YOY) and age 1+ lingcod (*Ophiodon elongatus*) captured in the eastern, southern, and southwestern regions of the Strait of Georgia, 2005 bottom trawl survey of young-of-the-year lingcod, CCGS *Neocaligus*, July 26 – August 8, 2005. For site names and locations, see Table 1. For definitions of depth strata (DS), see Table 2.

DS	Site	Tow	Length (mm)	Weight (g)	CF	Sex	Type	DS	Site	Tow	Length (mm)	Weight (g)	CF	Sex	Type
Eastern Region															
5	MI	75	179	41	0.7	--	YOY	--	--	--	--	--	--	--	
Southern Region															
1	NS	29	144	16	0.5	--	YOY	2	PY	25	152	22	0.6	--	YOY
1	NS	29	165	35	0.8	--	YOY	2	PY	25	169	29	0.6	--	YOY
1	NS	29	123	9	0.5	--	YOY	2	PY	25	168	31	0.7	--	YOY
1	NS	29	158	24	0.6	--	YOY	2	PY	25	171	31	0.6	--	YOY
1	NS	30	135	12	0.5	--	YOY	3	NN	83	171	35	0.7	--	YOY
2	NS	31	133	13	0.6	--	YOY	--	--	--	--	--	--	--	--
Southwestern Region															
1	PB	17	289	134	0.6	2	1+	2	PB	20	351	319	0.7	1	1+
2	AH	16	192	167	2.4	2	1+	--	--	--	--	--	--	--	--

Appendix Table 5. Length, weight, sex (1 = Male, 2 = Female, 3 = Unknown), and maturity data for copper rockfish (*Sebastes caurinus*), Puget Sound rockfish (*S. emphaeus*), quillback rockfish (*S. maliger*), and yelloweye rockfish (*S. ruberrimus*), 2005 bottom trawl survey of young-of-the-year lingcod in the Strait of Georgia, CCGS *Neocaligus*, July 26 – August 8, 2005. For site names and locations, see Table 1. For definitions of depth strata (DS), see Table 2. For definitions of maturity codes, see Appendix Table 10.

Site	DS	Tow	Length (mm)	Weight (g)	Sex	Maturity
Copper rockfish[1]						
KC	1	60	163	65	1	1
KC	2	65	147	50	2	1
NS	1	29	253	256	1	1
PY	2	25	171	75	1	1
PY	2	25	177	95	2	1
QU	5	41	286	34	1	1
QU	5	41	301	46	2	2
SD	3	14	318	541	1	7
TI	2	22	97	15	3	1
Puget Sound rockfish						
SB	3	81	138	35	1	1
Quillback rockfish						
CL	1	55	117	25	1	1
CL	1	55	129	39	2	1
CL	1	55	130	37	2	1
KC	2	65	103	16	3	1
KC	2	65	106	18	3	1
KC	2	65	120	27	1	1
LZ	3	28	99	15	2	1
LZ	3	28	99	18	3	1
LZ	3	28	112	29	3	1
LZ	3	28	118	27	2	1
LZ	3	28	119	28	2	1
LZ	3	28	120	27	2	1
LZ	3	28	128	35	1	1
LZ	3	28	141	40	1	1
LZ	3	28	148	56	2	1
LZ	3	28	150	60	2	1
LZ	3	28	171	81	1	2
LZ	3	28	179	90	2	1
QU	4	49	144	51	3	1
QU	4	49	156	65	3	1
QU	4	49	159	49	3	1
QU	4	49	162	75	3	1
QU	5	41	102	18	2	1
QU	5	41	117	23	3	1
QU	5	41	122	27	2	1
QU	5	41	134	36	1	1
QU	5	41	245	41	2	1
QU	5	41	246	45	2	1
QU	5	41	272	75	1	1
QU	5	50	121	29	3	1
QU	5	50	122	36	3	1
QU	5	50	124	31	3	1
QU	5	50	153	58	3	1
QU	5	50	416	134	1	3
QU	6	51	137	45	3	1
SB	3	81	93	13	3	1
Yelloweye rockfish						
QU	5	41	585	358	2	1
QU	5	41	658	476	2	1
QU	6	51	180	74	3	1

[1]Three copper rockfish were inadvertently discarded prior to sampling.

Appendix Table 6. Length frequency for Spiny dogfish (*Squalus acanthias*) by depth stratum (DS) and region, 2005 bottom trawl survey of young-of-the-year lingcod in the Strait of Georgia, CCGS *Neocaligus*, July 26 – August 8, 2005. For definitions of depth strata, see Table 2.

	North (DS=1)			South (DS=2)		
Length (cm)	Males	Females	Total	Males	Females	Total
44	--	--	--	--	1	1
45	--	--	--	--	0	0
46	--	--	--	--	0	0
47	--	--	--	--	0	0
48	--	--	--	--	0	0
49	--	--	--	--	0	0
50	--	--	--	--	0	0
51	--	--	--	--	0	0
52	--	--	--	--	0	0
53	--	--	--	--	1	1
54	--	--	--	1	0	1
55	--	--	--	0	0	0
56	--	--	--	0	2	2
57	--	--	--	0	1	1
58	--	--	--	0	1	1
59	--	--	--	0	0	0
60	--	--	--	1	1	2
61	--	--	--	0	2	2
62	--	--	--	1	0	1
63	1	1	2	1	0	1
64	0	0	0	0	1	1
65	0	1	1	0	1	1
66	0	0	0	0	2	2
67	0	0	0	0	0	0
68	3	1	4	0	0	0
69	0	1	1	0	2	2
70	0	0	0	2	2	4
71	0	2	2	0	0	0
72	2	3	5	0	2	2
73	1	0	1	1	1	2
74	1	1	2	1	1	2
75	1	1	2	0	1	1
76	4	3	7	0	0	0
77	0	0	0	0	2	2
78	4	0	4	1	0	1
79	3	2	5	1	0	1
80	0	0	0	--	0	0
81	2	1	3	--	0	0
82	3	0	3	--	0	0
83	0	1	1	--	0	0
84	0	0	0	--	1	1
85	0	1	1	--	--	--
86	0	1	1	--	--	--
87	1	1	2	--	--	--
88	0	0	0	--	--	--
89	1	0	1	--	--	--
90	--	0	0	--	--	--
91	--	1	1	--	--	--
Total	27	22	49	10	25	35

Appendix Table 7. Length frequency for Pacific cod (*Gadus macrocephalus*), Walleye pollock (*Theragra chalcogramma*), and Pacific tomcod (*Microgadus proximus*) by depth stratum (DS) and region, 2005 bottom trawl survey of young-of-the-year lingcod in the Strait of Georgia, CCGS *Neocaligus*, July 26 – August 8, 2005. For definitions of depth strata, see Table 2.

	Pacific cod	Walleye pollock	Pacific tomcod	
Length (cm)	North (DS=2)	South (DS=4)	North (DS=2)	South (DS=2)
1	--	--	--	--
2	--	--	--	--
3	--	--	--	--
4	--	--	--	--
5	--	--	--	--
6	--	6	--	4
7	--	35	--	4
8	--	66	--	6
9	--	35	3	5
10	4	7	9	2
11	34	2	8	3
12	43	--	9	2
13	41	--	1	0
14	15	--	0	0
15	9	--	0	0
16	1	--	0	1
17	--	--	2	2
18	--	--	4	10
19	--	--	31	17
20	--	--	22	14
21	--	--	18	10
22	--	--	2	7
23	--	--	0	3
24	--	--	0	2
25	--	--	2	--
Total	147	151	111	92

Appendix Table 8. Length frequency for Pacific sanddab (*Citharichthys sordidus*), rock sole (*Lepidopsetta bilineata*), and English sole (*Parophrys vetulus*) by depth stratum (DS) and region, 2005 bottom trawl survey of young-of-the-year lingcod in the Strait of Georgia, CCGS *Neocaligus*, July 26 – August 8, 2005. For definitions of depth strata, see Table 2.

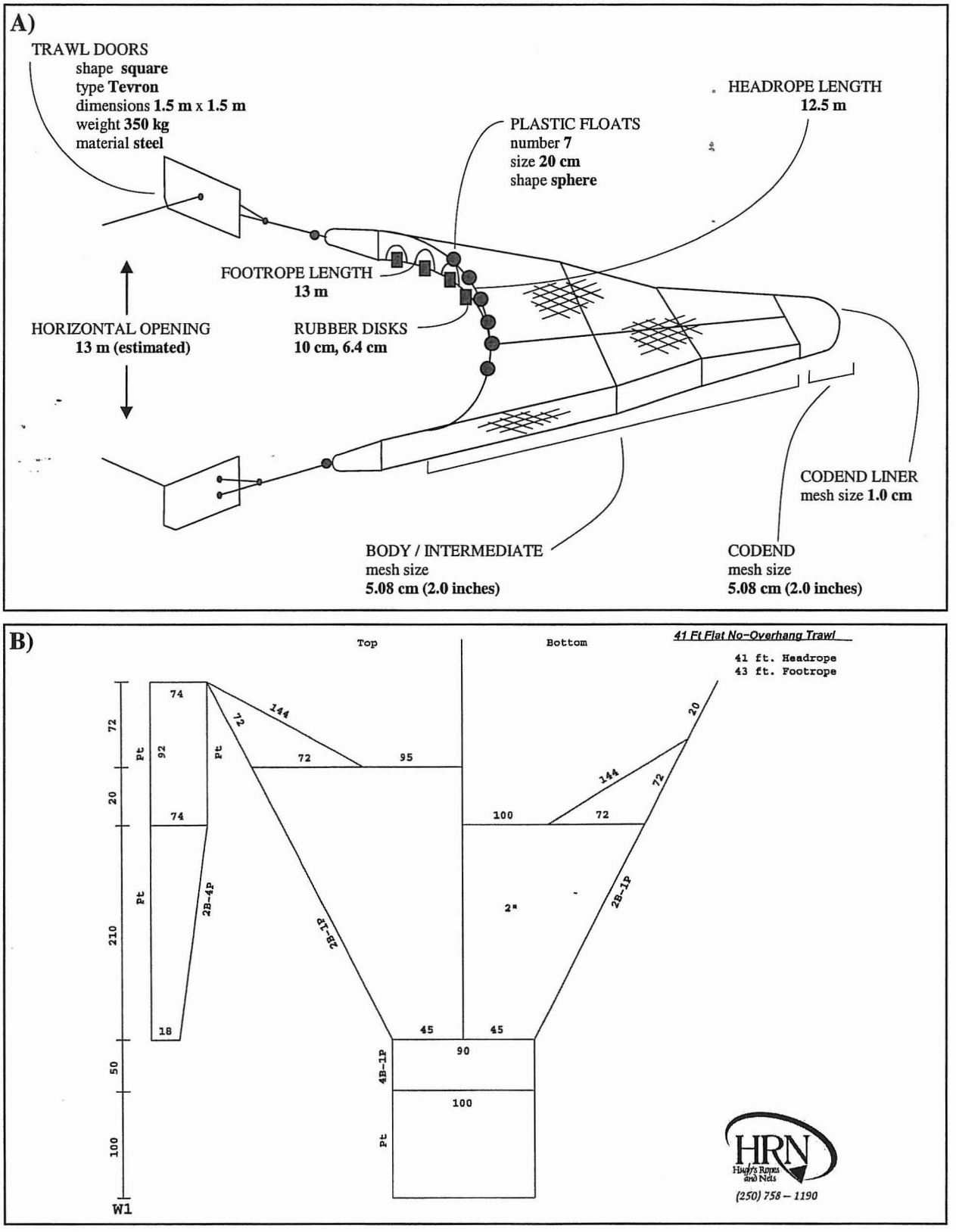
	Pacific sanddab				Rock sole				English sole			
	DS=2				DS=1		DS=2		DS=1		DS=2	
Length (cm)	Southwest	East			North	South	North	South	North	South	North	South
		Males	Females	Total								
7	--	--	--	--	--	--	--	2	--	--	--	--
8	5	--	--	--	--	--	--	9	--	--	--	--
9	7	--	--	--	1	--	1	31	--	--	--	--
10	6	--	--	--	1	--	2	47	--	1	--	--
11	1	--	--	--	2	1	0	31	--	1	--	--
12	0	--	--	--	0	4	1	20	--	1	--	--
13	0	--	--	--	3	6	4	15	2	5	--	1
14	4	--	--	--	4	2	4	18	13	11	--	4
15	8	--	--	--	1	1	3	35	13	25	--	6
16	4	--	--	--	2	0	4	17	33	22	4	8
17	6	--	--	--	2	0	5	25	23	30	4	10
18	6	--	--	--	4	1	3	14	16	10	3	18
19	10	--	--	--	0	1	3	18	10	6	4	13
20	7	--	--	--	4	1	2	6	5	1	6	12
21	18	--	--	--	3	0	0	6	3	1	3	10
22	14	1	--	1	2	1	2	4	4	3	5	7
23	8	6	--	6	5	1	6	4	3	--	0	7
24	3	1	--	1	2	1	1	4	1	--	4	10
25	6	5	1	6	2	1	1	1	1	--	2	2
26	4	10	3	13	5	3	2	0	3	--	4	2
27	4	3	3	6	2	1	1	0	0	--	0	0
28	1	1	5	6	6	3	2	0	1	--	5	6
29	2	--	2	2	2	3	1	1	0	--	3	4
30	1	--	4	4	5	2	12	0	4	--	3	0
31	1	--	4	4	1	0	5	1	1	--	1	2
32	--	--	3	3	2	2	4	0	0	--	2	0
33	--	--	2	2	1	4	7	1	1	--	1	0
34	--	--	1	1	1	0	3	0	--	--	3	0
35	--	--	0	0	--	0	0	1	--	--	1	1
36	--	--	1	1	--	2	0	--	--	--	2	0
37	--	--	--	--	--	2	1	--	--	--	1	0
38	--	--	--	--	--	0	--	--	--	--	--	0
39	--	--	--	--	--	1	--	--	--	--	--	0
40	--	--	--	--	--	0	--	--	--	--	--	0
41	--	--	--	--	--	0	--	--	--	--	--	0
42	--	--	--	--	--	0	--	--	--	--	--	0
43	--	--	--	--	--	1	--	--	--	--	--	1
44	--	--	--	--	--	--	--	--	--	--	--	--
45	--	--	--	--	--	--	--	--	--	--	--	--
Total	126	27	29	56	63	45	80	311	137	117	61	124

Appendix Table 9. The Beaufort Scale

Beaufort 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 Table 10. Reproductive maturity codes for rockfish (*Sebastes sp.*)

Maturity Stage	Male	Female
STAGE 1: Immature	• Testes are translucent and string-like. • Located in the back of the body cavity	• Ovaries are translucent and very small • Colouring can be clear, amber, or yellow
STAGE 2: Maturing - small	• Testes are ribbon-like and swelling in size • Colour is translucent-white or brown-white	• Ovaries developing for this year's cycle but still relatively small • Ovaries semi-translucent or opaque • Colouring usually yellow, but can be 7 pink
STAGE 3: Maturing - large	• Testes are large • Colour is translucent-white	• Ovaries large and contain eggs that can be distinguished by direct observation • Eggs opaque and orange-yellow or cream
STAGE 4: Mature	• Testes are very large and easily broken • Colour is white	• Ovaries are large • Eggs are translucent and orange-yellow or cream
STAGE 5: Ripe	• Testes are very large with free flowing sperm • Colour is white • Sperm is running when gonad is cut or fish's body cavity is pressed	• Ovaries large and full of eyed eggs or larvae • Eyed eggs translucent yellow with visible black dots • Larvae grey to grey-green with black dots • Eyed eggs and larvae flow freely from vent when pressure applied to body cavity
STAGE 6: Spent	• Testes are smaller. • Colour is creamy-brown. • When testes are broken, some remaining sperm is evident but is of a thicker consistency, not flowing	• Ovaries large and flaccid • Colour red to red-purple • A few larvae may be present
STAGE 7: Resting	• Testes are smaller and ribbon-like • Colour is brown	• Ovaries firm and moderate in size • Colour red-grey; some with black blotches



Appendix Figure 1. Bottom trawl net (Marinovich flat regular Gulf Coast style) fished by the CCGS *Neocaligus* during the 2005 bottom trawl survey of young-of-the-year lingcod in the Strait of Georgia, July 26 – August 8, 2005. A) Net dimensions and characteristics. B) Schematic diagram (provided by Hugh's Rope and Nets, 2230 McGarrigle Road, Nanaimo, BC).