An Examination of the Biology and Distribution of Walleye Pollock in Dixon Entrance, Hecate Strait, the Mainland Inlets off Queen Charlotte Sound, and in the Strait of Georgia during March 14 - April 21, 1978

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AN EXAMINATION OF THE BIOLOGY AND DISTRIBUTION OF WALLEYE POLLOCK IN DIXON ENTRANCE, HECATE STRAIT, THE MAINLAND INLETS OFF QUEEN CHARLOTTE SOUND, AND IN THE STRAIT OF GEORGIA DURING MARCH 14-APRIL 21, 1978

by

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ABSTRACT

Thompson, J. M., and R. J. Beamish. 1979. An examination of the biology and distribution of walleye pollock in Dixon Entrance, Hecate Strait, the mainland inlets off Queen Charlotte Sound, and in the Strait of Georgia during March 14-April 21, 1978. Can. Data Rep. Fish. Aquat. Sci. 173: 188 p.

Small quantities of pollock were found west of Butterworth Rocks and off Cape Chacon in Dixon Entrance. Most (90%) of the 201 adult females sampled were in an advanced stage of maturity, and a large proportion (62%) of the males were in spawning condition.

Pollock catch rates in Caamano Sound, Squally Channel, Finlayson Channel, and Fitz Hugh Sound ranged 0-105 kg/hr. Pollock caught in these inlets ranged 37-74 cm in fork length, 4-10 yrs in age, and were spawning during March 25-27. As determined by fin ray section ages, age 6 and 7 pollock dominated the sample from Finlayson Channel. The few Pacific hake caught in mainland inlets off Queen Charlotte Sound ranged 55-82 cm in fork length,6 - 20 yrs in age, and appeared to have completed spawning during March 26-27.

North of Howe Sound, in the Strait of Georgia, relatively small concentrations of pollock were found mixed with hake and dogfish in the deep midwater, below about 165 m (90 f). Highest catch rates of pollock in this area were obtained shallower, at about 85-100 m (46-55 f). Pollock concentrations were found in the midwater and on bottom between Active Pass and Point Roberts.

Pollock caught in Jervis Inlet, west of Texada Island, and in the Halibut Bank to Entrance Island area had largely completed spawning by the end of March, although a few advanced ripe females were caught near Halibut Bank on April 21. Peak spawning activity occurred in a concentration of pollock located between Point Roberts and Active Pass during the second week of April, and spawning was largely completed by April 20. The difference in spawning period may indicate that at least two stocks spawn in Georgia Strait.

Pollock males were in spawning condition sooner than females, and remained in that state longer. Proportionately more males were running ripe than females at any time during spawning. Running ripe males and females were more common in samples collected near bottom, in the lower third of the water column.

Key words: Pollock, hake, stock survey, Dixon Entrance, Hecate Strait, Strait of Georgia.

RÉSUMÉ

Thompson, J. M., and R. J. Beamish. 1979. An examination of the biology and distribution of walleye pollock in Dixon Entrance, Hecate Strait, the mainland inlets off Queen Charlotte Sound, and in the Strait of Georgia during March 14-April 21, 1978. Can. Data Rep. Fish. Aquat. Sci. 173: 188 p.

On a trouvé de faibles quantités de goberge à l'ouest des rochers Butterworth et au large du cap Chacon, dans l'entrée Dixon. La plupart (90%) des 201 femelles adultes étudiées présentaient un état de maturité avancée, et une forte proportion (62%) des mâles étaient prêts à se reproduire.

Dans l'entrée Caamano, le chenal Squally, le chenal Finlayson et le détroit de Fitz Hugh, les taux de capture des goberges allaient de 0 à 105 kg/h. Les poissons pris dans ces eaux mesuraient de 37 à 74 cm de longueur à la fourche, étaient âgés de 4 à 10 ans et ont frayé du 25 au 27 mars. D'après la section des rayons de nageoires, les goberges âgées de 6 et 7 ans dominaient dans l'échantillon provenant du chenal Finlayson. Les quelques merlus du Pacifique capturés dans les inlets du continent, le long du bassin Reine-Charlotte, mesuraient de 55 à 82 cm de longueur à la fourche, étaient âgés de 6 à 20 ans et semblaient avoir frayé les 26 et 27 mars.

Au nord de la baie Howe, dans le détroit de Géorgie, on a trouvé des concentrations relativement faibles de goberges, mélangees à des merlus et des aiguillats, dans la zone infrapélagique, au-delà d'une profondeur d'environ 165 m (90 brasses). Les taux de capture de goberges les plus hauts ont été relevés dans cette zone à une profondeur moindre, de l'ordre de 85 à 100 m (46 à 55 brasses). On a trouvé des bancs de goberges, entre deux eaux et sur le fond, entre la passe Active et la pointe Roberts.

Les goberges capturées dans l'inlet Jervis, à l'ouest de l'île Texada, et sur le banc Halibut jusqu'à la région de l'île Entrance, avaient en gros terminé leur fraye à la fin de mars, bien qu'on ait trouvé des femelles en état de maturité avancée, le 21 avril, près du banc Halibut. On a noté un sommet de l'activité de fraye parmi un banc de goberges, qui se trouvait entre la pointe Roberts et la passe Active, pendant la deuxieme semaine d'avril, et la fraye était en gros terminée le 20 avril. L'existence de deux périodes différentes de fraye peut indiquer qu'au moins deux populations de goberges viennent frayer dans le détroit de Géorgie.

Les mâles atteignaient la maturité sexuelle plus tôt que les femelles, et restaient plus longtemps dans cet état. En proportion, on relevait un nombre plus grand de mâles prêts à frayer que de femelles, pendant toute la période de reproduction. Les mâles et les femelles prêts à frayer étaient plus nombreux dans les échantillons prélevés près du fond, dans le tiers inférieur de la colonne d'eau.

Mots clés: goberge, merlu, relevé des stocks, entrée Dixon, détroit d'Hécate, détroit de Géorgie.

INTRODUCTION

The primary objective of the 4 cruises reported upon in this document was to locate spawning concentrations of walleye pollock (Theragra chalcogramma) in Dixon Entrance, northern Hecate Strait and the Strait of Georgia, in an effort to clarify stock relationships in those areas. Pollock stocks were first sampled in Dixon Entrance and northern Hecate Strait in August 1977, during an ARCTIC HARVESTER cruise. This report describes the second cruise in the area from March 16-27, 1979, which provided opportunities to sample spiny dogfish and other groundfish in northern waters (Fig. 1 and 2).

Pollock and hake populations in the Strait of Georgia have been the subject of over 20 cruises since 1974 (Beamish et al. 1976; Barner and Taylor 1976; Beamish et al. 1978, Weir et al. 1978, Cass et al. 1978, and reports in preparation). This report contains data collected during March and April 1978 at several stations in the Strait (Fig. 3 and 4) as part of the continuing program to examine the pollock and hake stocks. Stations in Jervis Inlet and the Strait of Georgia north of and including Halibut Bank were fished by the ARCTIC HARVESTER from March 28-31. A body of spawning pollock was reported between Active Pass and Point Roberts by commercial fishermen, and were surveyed by the CALIGUS from April 5-7 and April 10-13, and the G. B. REED from April 17-21.

METHODS

TRAWL SAMPLING

Midwater and bottom trawling was carried out in locations (Fig. 1-4) where the Simrad EK 38A echo sounder revealed targets, or at selected depths and locations. Stations in Jervis Inlet and the northern Strait of Georgia were chosen for comparison with earlier trawl surveys of hake and pollock (Beamish et al. 1976; Barner and Taylor 1976; Beamish et al. 1978; Cass et al. 1978, and Weir et al. 1978), at a time when pollock were assumed to be spawning.

Three nets were used on the ARCTIC HARVESTER (Table 1): Canadian Diamond Number 7 and Canadian Diamond Number 5 midwater trawls, both equipped with an ELAC LAZ 17 net sounder and 2.5 cm mesh liners in the codends, and an Engel "high-lift" bottom trawl, also fitted with a 2.5 cm mesh codend. The Diamond 7 had to be replaced by the Diamond 5 after it was destroyed during set 19. Catch rates for midwater sets 20-37 cannot be compared directly to sets 1-19 because the Diamond 5 is a smaller net. Most sets were directed at depths where the echo sounder indicated concentrations of fish, but a few were at depths above and below such targets. Set depths, locations, times, and directions are detailed in Appendix Table 1.

The CALIGUS and G. B. REED were used to sample bottom and midwater fish in the southern Strait of Georgia off Active Pass. Set locations for the bottom trawl tows carried out on CALIGUS are identified in Fig. 4. All CALIGUS catches were made with a small, orange-mesh bottom trawl (Thomson, 1967). Figure 4 also depicts sounder tracklines and set locations for the work done on the G. B. REED with an Engel 434 midwater trawl. Echograms obtained with the Simrad EM2F dry paper sounder on CALIGUS were not as clear as traces produced by the Simrad EK 38 wet paper sounder used on the G. B. REED. Choppy sea conditions prevented CALIGUS from completing a comprehensive sounder survey during April 5-13. The larger and more stable G. B. REED was not affected by sea conditions for the sounding during April 17-21.

BIOLOGICAL SAMPLING OF FISH

Catches aboard all three vessels were sorted by species into 55 l (12 gallon) galvenized tubs. The weight of each tub was measured on ARCTIC HARVESTER with a balance, but tub weights were estimated on CALIGUS and G. B. REED on the basis of mean tub weights reported for various species (Westrheim et al. 1968). Small catches were sampled in their entirety, and a representative subsample of large catches was taken (Westrheim, 1967). By this method the first two, middle two, and last two tubs filled are chosen for sampling to prevent bias introduced by the fishing or sorting techniques.

Table 2 summarizes the biological data collected from the fish species sampled during all three cruises. Fork lengths were measured for all fish except dogfish (where total length was measured), by rounding to the nearest whole centimeter. For example, measurements from 11.5 to 12.4 cm were recorded as 12 cm. Juvenile dogfish were measured to the millimeter after being anaesthetized in MS222.

Individual pollock were weighed at sea with a Digimetric model 30 DKI balance manufactured by Sybron Corporation. This electronic balance compensates for vessel motion (by integrating several readings over a user-controlled period of time), and can be reset to zero between weighings. All fish were weighed to the nearest gram. Weights were obtained for random (non-stratified) samples of adult pollock from Finlayson Channel and northern Georgia Strait. These fish were weighed with and without gonads, but stomach contents were not removed. Age 1 yr pollock from Chatham Sound were weighed round.

Left pectoral fins were collected from walleye pollock (Beamish, in prep.), otoliths from Pacific hake and first dorsal spines from spiny dogfish for age determination. Visual estimates of stomach contents by general taxonomic groupings and volume in milliliter were made for several species of fish. Maturities were estimated for pollock from a list of symptoms developed for hake (Weir et al. 1978), except that the 1R and 2R stages were not used during sampling on the ARCTIC HARVESTER. Muscle and liver tissues were taken from walleye pollock caught on Butterworth (set 3), in Dixon Entrance (set 5), Chatham Sound (juveniles, sets 7 and 18), Campania Sound (set 21), Finlayson Channel (sets 24 and 25), and the southern Strait of Georgia for a separate study of stock identity using electrophoretic analysis.

BIOMASS ESTIMATE

Spawning pollock were found during April on the bank that slopes west and south of Point Roberts (Fig. 5). Although midwater echoes appeared on the sounder while CALIGUS was on the ground, midwater samples were not collected until the G. B. REED was sent to the area during April 18-21. During April 18-21 the G. B. REED followed a pattern of track lines (Fig. 4) to collect echosounder observations of the distribution of fish over the area. The catch data and sounder paper were analyzed to estimate crudely the biomass of off-bottom fish.

Two patterns, distinct in depth and appearance, were recorded on the sounder paper. The shallower layer was comprised of "spots" that presumably represented dense schools of fish in midwater depths of 30-55 fm (55-101 m) over bottom depths greater than 40 fm (73 m), or 5-25 fm (9-46 m) in shallower water to the east of a line drawn between Alden Bank and Point Roberts (Fig. 5). This spotting was very similar to the 40-60 fm traces shown in photographs published by Barraclough and Herlinveaux (Fig. 12; 1965) and Westrheim (Fig. 6; 1974). A deeper layer of "speckling", similar to the deeper traces in both photographs, appeared from 60 fm (110 m) to the bottom over most of the area, except when the bottom was deeper than 80 fm (146 m) on the northwest slope, where the layer formed in the midwater between 60 and about 80 fm (Fig. 6). These sounder patterns were presumably caused by fish, but too few sets were made to determine which species caused the echoes in all locations.

The sounder paper was divided into horizontal sections representing about 0.3-0.6 nautical mile distances along the tracklines. Fish densities were subjectively determined on a scale of 0-4 for the shallower layer of spotting and 0-2 for the deeper layer of speckling, within each section, and related to fish densities on the basis of six midwater trawl catches (sets 48-52 and 54; Appendix Table 4A). Fish density (D_i) in each target type and trace density (i) was estimated from the volume of water strained by the net, using vertical opening as a measure of diameter and assuming that the opening was circular, and total catch in each set (Appendix Table 4B). Total fish biomass was calculated by multiplying D_i by a planimeter measurement of the area of each trace density (Fig. 4 and 5; plotted on Canadian Hydrographic Service Chart No. 3450, scale 1:80,000) and mean layer thickness (Appendix Table 4C). Species biomass was calculated by assuming that the proportion of catch weights contributed by each species (Appendix Table 4A) equalled its proportion of the total fish biomass.

HYDROGRAPHIC SAMPLING

Temperature and salinity profiles were obtained at selected hydrographic stations (Fig. 1, 2, and 3). Surface temperatures were measured with a thermometer from bucket samples. Water column temperature profiles were collected with either an expendable bathythermograph (XBT), or reversing thermometers attached to Nansen bottles. Salinity samples were collected with the Nansen bottles and processed ashore. Details of the stations occupied and the results obtained are listed in Appendix Tables 2-3.

RESULTS

WALLEYE POLLOCK

Dixon Entrance and Hecate Strait

Continuous sounder watch was maintained from Dundas Island west to Rose Spit and Langara Is., then north to Cape Muzon and Cape Chacon on a zig-zag trackline across depth contours ranging from 20 fm to 200 fm. East-west tracklines spaced 1-3 n.m. apart were followed on Dogfish Bank in northern Hecate Strait from 10 n.m. east of Graham Island to 3 n.m. west of Stephens Island, covering bottom depths of 10-60 fm (18-110 m), extending from 54°20'N south to 54°00'N. The White Rock, Freeman Pass, Oval Hill, Shell Ground and Pot Holes grounds, which are all located in the vicinity of fishing stations 11-13, were sounded over a single 24 hour period. The positions of fishing stations (Fig. 1) indicate where midwater concentrations of echoes were located. Midwater echoes were not common, and large dense targets were never found.

Very small concentrations of pollock were caught in five near-bottom midwater sets made throughout the area, and in one of two bottom trawl sets in the gully west of Butterworth Rocks. The largest catch was made near bottom in deep water off Cape Chacon (set 5), where 242 kg/hr of pollock were caught (Table 4). Two midwater sets near bottom in northern Chatham Sound (sets 17 and 18) together produced one pollock. At the south end of Chatham Sound, midwater sets 7 and 19 produced relatively large catches of age 1 yr pollock. Small catches of the same year-class were made in the gully off Butterworth Rocks (sets 1 and 3). These tows were also made near bottom. Adult fork lengths ranged 29-69 cm (Table 6 and 7). Age 1 pollock in Chatham Sound were 14.2 cm long (n = 255, R = 10-19 cm; Table 8), and weighed an average of 18.7 g (Table 10).

Of 95 males examined for maturity (Table 9), 19% had not spawned, 64% were running ripe, and 17% had spawned. Of 201 females, 90% had not spawned, 0.5% were running ripe, and 9% had spawned.

Inlets off Queen Charlotte Sound

Small concentrations of adult pollock, less than 110 kg/hr, were present in five of seven midwater sets in 4 mainland inlets off Queen Charlotte Sound: Caamano Sound, Squally Channel, Finlayson Channel and Fitz Hugh Sound (Fig. 2, Table 4). Lengths of pollock in these inlets ranged 37-74 cm (Table 6 and 7). Males comprised 35% of the 408 fish that were sexed, and did not account for more than 41% of the catch in any of the five samples.

All 153 pollock caught in Finlayson Channel (sets 23-25) were aged from petoral fin sectins (Beamish, MS). Two readers aged the sample and discussed specimens for which their interpretations differed by 2 or more years. Those that differed by one year were re-examined by one reader. All 4 of the smallest pollock (37-46 cm) were 4 yr of age (Table 11). Most (97%) of the sample ranged 50-71 cm in length, were contained in a single mode of the length frequency, and were 5-10 yr of age (Fig. 7). Growth in fork length was nearly completed for most of the sample at age 5. Mean length at age ranged 59.0 - 60.7 cm for males and 62.1 - 64.1 cm for females age 6 - 9. Males were smaller than females at age from 6 - 9. The 10-year-old female measured 51 cm in length. No estimate of mortality rate for the parent population was made because of the small size of the sample.

Maturities were sampled from five of the seven sets made in the inlets. Of the males, 41% were ripening, 4% were running ripe, and 54% were spent or recovering (n♂ = 136).[1] Of 251 females, 73% were ripening and 27% were spent or recovering (Table 9). No pollock were immature.

Jervis Inlet

Pollock were caught by midwater trawl in Jervis Inlet (Fig. 3) at depths of 200 m (set 29) and 165 m (set 30), but at low concentrations (Table 4). The shallower set produced 118 kg/hr of pollock, and the deepest only 16 kg/hr. Beamish et al. (1978) found pollock and hake in Jervis Inlet during the last week of January and the third week of February in 1975. At that time, as at present, pollock catch rates were below the maximum of 547 kg/hr (1,000 lb/hr) obtained in one set during January 1975. Fork lengths ranged to a maximum of 50 cm (Table 6 and 7), similar to the 52 cm maximum reported by Beamish et al. (op. cit.). The catch made at 165 m, near the top of a band of echoes that appeared on the sounder, was only 4% male (n = 120). Too few pollock were caught in the deeper haul in Jervis Inlet to obtain a meaningful sex ratio (21% male, n = 14). All of the adult pollock caught in Jervis Inlet at both depths had completed spawning, except 4% of the females from the shallower set, which contained ovaries in an advanced (1R) stage of ripening (Table 9).

Georgia Strait from Halibut Bank North

Three areas in Georgia Strait north of and including Halibut Bank were sampled by midwater trawl (Fig. 3). Less than 1 kg/hr of pollock were caught at two stations west of Mitlenatch Island (sets 27, 28). Very low concentrations were also encountered there from January through early March in 1975 (Beamish et al. 1978; and Weir et al. 1978). Just north of Sabine Channel, on the west side of Texada Island (sets 31 and 32), the largest pollock catch was made at a depth of 88 m, where the sounder showed a light spotting pattern at 82-111 m. The catch per unit of effort for this set, 541 kg/hr (988 lb/hr) is larger than the set made at a depth of 205 m in a near-bottom layer of echoes which generally contains hake, pollock, and dogfish in deeper waters throughout the Strait. This is similar to the maximum catch rate obtained in the same area during January and early February 1975, when a haul made at 110 m through a similar layer of spotting that occupied 80-120 m depths yielded 491 kg/hr of pollock (Beamish et al. 1978).

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[1]Throughout this report n is the total sample size, and n♂, n♀ are the sample sizes of males and females.

Between Halibut Bank and Entrance Island (sets 33-37, and 55), the sounder showed heavy spotting at 91-110 m (50-60 F). Midwater sets in this layer yielded the largest catches of pollock, in association with hake and dogfish (Table 4). Catch rates of pollock ranged from about 900 to about 1,200 kg/hr. Two sets by the ARCTIC HARVESTER (sets 33 and 37) in the deeper layer that appeared on the sounder at 156-300 m produced 90-136 kg/hr of pollock. One set by the G. B. REED in the same layer produced 926 kg/hr of pollock (set 55). The catches from these deeper sets were comprised mostly of hake, and some dogfish and pollock.

Length frequencies collected from pollock catches in the open strait ranged 30-58 cm, but only two fish were longer than 51 cm (Table 8). No younger juveniles were caught. The sex ratio was dominated by females (22.3% male, n = 1,080) in four sets in Georgia Strait from Halibut Bank to west of Texada Island. Two catches in the midwater layer of spotting were mostly female (4% male, n = 510; and 25%, n = 362), while two sets in the near-bottom layer were slightly dominated by males (69%, n = 90;and 66%, n = 98).

The maturity observations (Table 9) show that during March 29-30 less than 1% of the 673 females caught high in the midwater (86-110 m) near Halibut Bank and along the western shore of Texada Island were spawning condition. West of Texada Island most of the females (92%, n♀ = 519) had finished spawning, while the females near Halibut Bank were in near spawning (R - 2R, 25%, n♀ = 154) or spent (51%). Bottom depths were 238-311 m west of Texada Island (sets 31-32) and 274-320 m near Halibut Bank (sets 33-34). Fewer pollock were caught in the deeper sets at each location, but most of the females were advanced ripe or running ripe near Texada Island (60%, n♀ = 15) and near Halibut Bank (100%, n♀ = 19). The largest proportion of running ripe males in a sample (70%) came from set 33 in deep water (230 m net depth, 307 m bottom depth). Running ripe males were also found in the catches from sets 32 and 34. The 16 males caught in the shallower set west of Texada Island were spent, recovering or resting. On April 21 most of the pollock caught at 200 m near Halibut Bank (set 55) had completed spawning. The 34 females were advanced ripe (R - 2R, 12%) or recovering/resting (72%), and the males (n♂ = 65) were running ripe (8%), spent (45%) or recovering 37%).

The occurrence of males and females in spawning condition in the deeper sets, and pre-spawning or spent pollock shallower, suggests that spawning occurred in the lower third of the water column in deep water near Halibut Bank and, possibly, along the west coast of Texada Island. Spawning may have peaked before the end of March (Fig. 8A), however the sample size was so small (6 sets, 932 fish) that neither of these observations were considered by us to be firm conclusions.

Between Active Pass and Point Roberts

Bottom trawl sets from the small research vessel CALIGUS produced an average of 637 kg/hr of pollock during April 5-7 (sets 38-42). During the following week, April 11-13 (sets 44-47) the CPUE dropped to 60 kg/hr (Table 5). From April 18-21 midwater trawl sets from the G.B. REED produced an average of 843 kg/hr of pollock (sets 48-54) but the difference in fishing power of the two vessels and nets makes it difficult to compare catches. Midwater sets were not made together with bottom sets.

Males slightly outnumbered females in all tows: 60.7% of the 4,091 fish examined were male (Table 7). The catch from four sets (48, 49, 52, 54) in shallow midwater depths where spotting appeared on the sounder at 27-111 m (15-60 fm), was 27% male (n = 1,729, Table 6). Two midwater catches closer to the bottom (sets 50, 51) were 90% male (n = 667), and nine bottom trawl catches were 48% male (n = 1,695).

The fork lengths of both sexes ranged from 14-62 cm (n = 4,091), although 98.8% were 25-54 cm long, and only 0.8% were over 54 cm (Fig. 9). Age 1 pollock averaged 19.2 cm (n = 17) off Birch Bay (set 44), and 17.5 cm (n = 75) in Swanson Channel (set 43). These were the only sets in the southern Strait of Georgia where age 1 pollock were caught. From length frequencies (Table 6 and 7), age 2 pollock averaged about 29 cm. This length-class was caught in Swanson Channel and off Birch Bay with the yearlings, off Point Roberts (set 54), and in two sets in the midwater north of Patos Island (sets 48 and 49). Few age 2 pollock were evident among the spawning adults.

Relatively more small pollock were caught off Point Roberts (set 54), where an unusually large, dense concentration of schooled pollock were encountered, than in a sample collected on the ground fished by American and Canadian trawlers (set 38, Fig. 10). A port sample collected from a landing by a Canadian vessel shows the effect on samples of grading at about 41 cm (16 in.) by the crew or processors: the mean and minimum lengths of the research sample were 41.3 cm and 32 cm, respectively, while the mean and minimum lengths of the landing sample were 46.2 cm and 38 cm. Fin rays collected from this stock will be analyzed to determine age and the results reported elsewhere (Thompson, Beamish and Taylor, MS).

Maturity data are listed by set number in Table 9 and summarized in Fig. 7(B-D). During the first week of the survey (April 5-7) 62% of the 526 males sampled appeared to be running ripe. The females were largely at an advanced stage of ripening: 67% (n♀ = 447) contained ovaries that filled most of the body cavity and in many cases (50%) contained hydrated ova (1R or 2R). About 11% were running ripe and 25% seemed to have finished spawning. In the second week a larger percentage of the males appeared to have spawned, as 50% (n♂ = 54) were spent or recovering. One third of this small sample of males were running ripe. Somewhat fewer females had completed spawning: 47% (n♀ = 160) were spent, recovering of resting. During the last week of observation, April 19-20, 86% of the males (n♂ = 378) and 86% of the females (n♀ = 155) appeared to have finished spawning. The proportion of running ripe males was high but decreased from 61% to 13% of the number of males sampled per week over the 3-wk period of observations. Running ripe females were less common, but their proportion also decreased from a high of 11% to a low of 3%. Immature male pollock ranged 14-38 cm fork length and female pollock 15-36 cm (Fig. 11).

Stomach Contents

From all sites about 950 pollock stomachs were opened. The proportion of empty stomachs ranged from 13-72%, and mean stomach content volume (empty stomachs excluded) ranged 1.0-7.2 ml per stomach in the four study areas (Table 12). More pollock contained empty stomachs and the mean stomach content volume was generally lower than at other times of the year. Euphausiids, fish, and shrimp were the dominant prey species by number of stomachs (Table 13).

ESTIMATE OF FISH BIOMASS BETWEEN ACTIVE PASS AND POINT ROBERTS

The proportion of pollock varied from 29-99% of each catch in the five sets made in or just below the layer of spotting. The highest concentration of pollock present in this layer was situated 1.5-3.0 nautical miles (2.8-5.6 km) south of Point Roberts (set 54). Dogfish accounted for an estimated 14% of the total biomass in this layer, and contributed 0-60% of each catch. Herring and eulachon comprised 0.5-31% of the catches, or an estimated 4% of the total biomass. Hake were present in small amounts: 0-7% of each catch, or less than 1% of the total biomass in the upper midwater layer. The total biomass of fish in the midwater layer of spotting was estimated to be 2,500 mt. Based on catch rates, 82% of this biomass was estimated to be pollock.

Only one set (number 51) was made in the near-bottom layer of higher density speckling (type 2, Fig. 6). Based on this single set, the biomass of fish in the entire region of type 2 density, out to the 100 fm bottom contour in the northwest, was estimated to be 9,100 t. Pollock comprised 24% of the catch, therefore the estimated biomass of pollock in the region of higher density was 2,200 t. No sets were made in the region of lower density (type 1), where targets appeared in a volume of water 12 times larger than the volume of higher density, however it is likely that pollock were present in this area. If the biomass density of fish in this lower density region is arbitrarily assumed to be one-fifth that indicated by set 51, then the total biomass of fish in the region could have been about 2,230 t. If pollock also comprised about 24% of the biomass in this region, then the pollock biomass might have been 540 t. Dogfish comprised 73% of the catch of set 51. If this truely represents the proportion of dogfish in the total fish biomass in the near-bottom sounder patterns, then the biomass of dogfish in both regions combined could have been 8,300 mt. Similarly the hake biomass might have been 300 t.

Total fish biomass density was estimated from sets 49 to 52 and 54 to be $0.34 - 3.49 \times 10^{-3}$ kg/m^3, but too few sets were made to calculated confidence intervals for these estimates. As summarized in Appendix Table 4C, total pollock biomass for the region was estimated to be about 4,800 t. Dogfish biomass was about 8,700, and hake was about 350 t. It is stressed that these biomass estimates are extremely approximate.

PACIFIC HAKE

Pacific hake were sampled from the catches of 13 sets (Table 14). Hake were not caught in Dixon Entrance and northern Hecate Strait, but low concentrations, from 3-12 kg/hr (Table 4), were found by four of the six midwater sets made in deep water in the mainland inlets off Queen Charlotte Sound. Much larger catches of hake were made in Jervis Inlet and northern Georgia Strait. Hake were common but not abundant between Active Pass and Point Roberts in southern Georgia Strait.

The 25 hake sampled from catches made in the mainland inlets off Queen Charlotte Sound (sets 21-25) ranged 55-89 cm in fork length (Tables 15-16). Seventeen were longer than 64 cm, which was the maximum size recorded in Georgia Strait during this survey. Most were larger than the offshore hake fished by foreign vessels on the west coast of Vancouver Island each summer. Ages determined from otolith sections (Beamish 1979) ranged 6-20 yr (Table 17), which is similar to the range of ages determined for the Georgia Strait stock near Halibut Bank (Table 18), however these northern hake were much larger at age than those in Georgia Strait (Fig. 12). Ages determined by examining the otolith surface agreed with section ages to age 11, but were 1-9 yr lower than section ages determined from sections (Table 17).

Of 362 hake sampled for age from set 55 (near Halibut Bank), 97% were male. Ages were determined using otolith sections, and then all fish aged 5 or younger by sections were aged again from the surface. The oldest fish in the catch was 21 yr, and the modal age was 6 yr (Table 17). All fish aged 4 and older were mature (in spawning condition). From the growth curve presented in Fig. 12, it appears that hake in this population grow very slowly in length after age 4.

The catch curve for males (Fig. 13) can be analyzed (Robson and Chapman, 1961; FORTRAN Subroutine FRG705) to make an estimate of natural mortality, since hake were not fished in the Strait of Georgia before this survey. The shape of the curve suggests that one or more of three assumptions required by Chapman and Robson's method were violated. These assumptions are: (1) constant annual recruitment, (2) all fish are subject to equal probability of capture, and (3) all fish are subject to equal probability of death. Although male hake spawn at the age of 4 and older (Cass et al. 1978) the catch curve peaks at ages 6, 7, and 8, which could indicate that these year-classes experienced larger recruitment or a larger survival rate than younger and older cohorts. The long right tail, from ages 12 to 21, could be explained by a lower mortality rate in older year-classes than in those age 7-11. The possibilities of emigration of older fish from the survey area cannot be ruled out. Hake may segregate by sex and age (Beamish 1976 and Cass et al. 1978), therefore it is possible that older fish were present in the area and not captured in this sampling. Assuming that ages 6-11 were completely represented in the sample, and that recruitment and subsequent annual survival of those cohorts was equal and constant, then annual survival rate (S) for ages 7-11 was 0.55. This corresponds to an instantaneous mortality rate (Z) of 0.59, and annual mortality rate (A) of 0.45, and is the best estimate of natural mortality for age 7-11 male hake, unless further sampling determines that one or more of the assumptions were violated. If this single sample accurately represents the age composition of the sampled stock and if recruitment occurrs at age 4, then 90% of the commercially exploitable stock were aged 4-11 (Table 16), the ages which experienced the high mortality rate estimated here. A large collection of hake otoliths taken from commercial catches and other research cruises in the Strait of Georgia will be examined to determine the validity of the assumptions.

Females dominated the catch in Georgia Strait near Halibut Bank, where the sex ratio was 40% male (n = 1,385). Males outnumbered females in Jervis Inlet, accounting for 70% of the catch (n = 597). Of 24 hake checked for maturity in the inlets off Queen Charlotte Sound, 21 were spent, and

three females were ripe (Table 19). A high percentage of the males caught between Halibut Bank and Entrance Island were running ripe, or spent and recovering, on March 30-31. At the same location on April 21, all adult males examined were spent, recovering, or resting. Very few running ripe females were found March 30-31, when most were ripe, but on April 21 17% were running ripe and the rest were spent or recovering.

A small number of Pacific hake from the inlets off Queen Charlotte Sound were sampled for stomach contents (Table 20). Most were empty or everted. Fish or shrimp and squid were found in four stomachs.

SPINY DOGFISH

Dogfish were common in the sets made at the head of Dixon Entrance, west of Dundas Inlet, to the White Rocks ground, west of Porcher Island (Table 4). One 30-min bottom set (no. 10) produced an estimated 16,000 kg, most of which was dogfish. This catch was sampled for age by removing the first dorsal spine from 1,000 individuals chosen at random (Table 21). The spines will be examined and the results discussed in another document. Total lengths of the sampled fish ranged 59-110 cm (Table 22). Females comprised 61.4% of the sample. Dogfish were not caught in the midwater sets made in Chatham Sound (sets 7, 17-19), nor off Cape Muzon (sets 5 and 6).

Very small catches of dogfish were made in the inlets off Queen Charlotte Sound (midwater sets 20-26). The total lengths of 114 dogfish caught at 220-366 m (120-200 fm) in Finlayson Channel ranged 51-73 cm. Twenty-four dogfish stomachs from set 23 contained fish, shrimp, squid, and unidentifiable remains. Six stomachs were empty.

Six out of 527 dogfish caught in the deep midwater west of Mitlenatch Island were less than 300 mm in total length, and 8.5% were less than 60 cm (set 28). Dogfish caught in Jervis Inlet ranged upwards from 402 mm. Two sets (31, 34) at 91 m (50 fm) west of Texada Island and near Halibut Bank produced large numbers of dogfish 309-600 mm in length, but only two specimens less than 300 mm (Table 19). One sample of all size-classes from Jervis Inlet (set 28) was dominated by males (91.8%, n = 527), but the sex ratios of the other samples were closer to 50% (Table 19). The two largest dogfish catches north of Howe Sound were made by midwater sets in Jervis Inlet (977 kg/hr) and near Halibut Bank (about 2,000 kg/hr).

Adult dogfish were common and relatively abundant in the bottom and midwater trawl catches made between Active Pass and Point Roberts in Georgia Strait during April (Table 4, Fig. 4).

OTHER SPECIES

Very few Pacific cod were caught during any of the cruises (Table 4). Special age samples were collected from a few fish for an ageing

workshop (Table 23). Most of the 55 adult cod gonads examined at Butterworth appeared to be spent or resting in both sexes, but a few ripe males and females, and one running ripe female were recorded. Three tagged Pacific cod were caught in Swanson Channel, where the catch ranged 20-34 cm in fork length (Table 24).

Thirty-three chinook salmon were caught during the four cruises (Table 25). The salmon caught in Chatham Sound, Dixon Entrance, and northern Hecate Strait ranged 30-70 cm in fork length ($\bar{X}$ = 36.0 cm), while those caught in the Strait of Georgia were 35-68 cm and larger ($\bar{X}$ = 52.7 cm; Table 26). All chinook less than 56 cm in both areas were immature, while larger fish were maturing. Fish remains and/or euphausiids were found in nearly every stomach.

Biological data collected from Pacific halibut, Pacific herring, rockfish, and brown catshark are referenced or summarized by set number in Tables 27 to 30.

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Table 1. Vessels, nets, and sounders used during the March-April 1978 pollock study.

Vessel	Length	Horsepower	Type	Nets	Sounder
ARCTIC HARVESTER	140' 43 m	950 (fixed Kort nozzle effective power 1200 HP)	Stern Ramp	1. Canadian Diamond 7 (MWT)	1. Simrad EK38A
				2. Canadian Diamond 5 (MWT)	2. ELAC LAZ17 net sounder
				3. Engel High Lift (BT)	
CALIGUS	56' 17 m	203	Seine/Trawl	1. Orange Bottom Fish Trawl (BT)	1. Simrad EM2F (Dry Paper)
G.B. REED	176' 54 m	1,000	Side trawl	1. Engel 434 (MWT)	1. Simrad EK38
					2. Elac LAZ17 net sounder

Table 2. Biological data collected in British Columbia coastal waters during March and April 1978, aboard ARCTIC HARVESTER, CALIGUS, and G. B. REED.

Species	Number of fish sampled							Remarks
	Length	Sex	Weight	Age	Maturity	Stomach	Electrophoresis	
Walleye pollock	6,605	6,366	458	2,662	3,697	1,228	643	Tables 5-12
Pacific hake	2,191	2,096	0	25	1,396	24	0	Tables 13-17
Pacific cod	96	94	0	24	45	3	0	Tables 21-22
Spiny dogfish	3,734	3,734	0	1,000	0	24	0	Tables 18-20
Chinook salmon	33	33	0	0	32	33	0	Tables 23-24
Pacific halibut	6	6	0	6	0	1	0	Tables 25-26
Pacific herring	713	0	0	0	100	0	0	Tables 27-28 100 frozen whole for Washington State Dept. of Fisheries
Brown cat shark	13	13	0	0	0	0	0	Table 29

Table 3. List of common and scientific names[a] of all species caught on ARCTIC HARVESTER cruise, March 14-31, 1978.

Common name[a]	Scientific name
Fishes:	
Pacific lamprey	*Lampetra tridentatus*
Brown cat shark	*Apristurus brunneus*
Spiny dogfish	*Squalus acanthias*
Black skate	*Raja kincaidi*
Longnose skate	*Raja rhina*
Ratfish	*Hydrolagus colliei*
Pacific herring	*Clupea harengus pallasi*
Chinook salmon	*Oncorhynchus tshawytscha*
Rainbow smelt	*Osmerus mordax dentex*
Eulachon	*Thaleichthys pacificus*
Northern smoothtongue	*Leuroglossus stilbius schmidti*
Pacific viperfish	*Chauliodus macouni*
Lanternfishes	Unidentified Myctophids
Pacific cod	*Gadus macrocephalus*
Walleye pollock	*Theragra chalcogramma*
Blackmouth eelpout	*Lycodapus fierasfer*
Pacific sandfish	*Trichodon trichodon*
Rougheye rockfish	*Sebastes aleutianus*
Shortraker rockfish	*S. borealis*
Silvergray rockfish	*S. brevispinis*
Darkblotched rockfish	*S. crameri*
Widow rockfish	*S. entomelas*
Yellowtail rockfish	*S. flavidus*
Quillback rockfish	*S. maliger*
Black rockfish	*S. melanops*
Canary rockfish	*S. pinniger*
Redstripe rockfish	*S. proriger*
Yelloweye rockfish	*S. ruberrimus*
Harlequin rockfish	*S. variegatus*
Sablefish	*Anoplopoma fimbria*
Lingcod	*Ophiodon elongatus*
Blacktail snailfish	*Careproctus melanurus*
Slipskin snailfish	*Liparis fucensis*
Arrowtooth flounder	*Atheresthes stomias*
Petrale sole	*Eopsetta jordani*
Rex sole	*Glyptocephalus zachirus*
Flathead sole	*Hippoglossoides elassodon*
Pacific halibut	*Hippoglossus stenolepis*
Butter sole	*Isopsetta isolepis*
Rock sole	*Lepidopsetta bilineata*
Slender sole	*Lyopsetta exilis*
Dover sole	*Microstomus pacificus*
English sole	*Parophrys vetulus*
Sand sole	*Psettichthys melanostictus*

Table 3 (cont'd)

Common name	Scientific name
Invertebrates:	
Glass shrimp	
Sidestripe shrimp	
Jellyfish	
Sea stars	
Euphausiids	
Amphipods	

[a]Per Hart (1973).

Table 4. Trawl catches by species and set, March 14-April 21, 1978.

Vessel[a]	AH		AH		AH		AH	
Set no.	1		2		3		4	
Total catch (kg)	111.1		57.2		108.8		17.7	
Duration (min)	69		60		34		60	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Pacific lamprey	-	-	-	-	-	-	-	-
Brown catshark	-	-	-	-	-	-	-	-
Spiny dogfish	-	-	-	-	-	-	-	-
Black skate	-	-	-	-	-	-	-	-
Longnose skate	1	15.9	-	-	1	15.0	1	13.6
Unidentified skate	-	-	-	-	-	-	-	-
Ratfish	-	-	-	-	8	7.0	-	-
Pacific herring	-	5.4	-	49.9	-	5.9	-	-
Chinook salmon	-	-	3	1.4	1	4.5	2	0.5
Rainbow smelt	-	-	-	-	-	-	-	-
Eulachon	-	-	-	-	-	-	-	-
Northern smoothtongue	-	-	-	-	-	-	-	-
Pacific viperfish	-	-	-	-	-	-	-	-
Myctophids	-	-	-	-	-	-	-	-
Plainfin midshipman	-	-	-	-	-	-	-	-
Pacific cod	6	17.7	1	3.6	7	19.5	-	-
Pacific hake	-	-	-	-	-	-	-	-
Pacific tomcod	-	-	-	-	-	-	-	-
Walleye pollock	126	68.0	3	0.9	62	54.4	-	-
Wattled eelpout	-	-	-	-	-	-	-	-
Pacific sandfish	2	0.5	4	0.5	3	0.3	-	-
Other eelpouts	-	-	-	-	-	-	-	-
Rougheye rockfish	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-
Silvergray rockfish	-	-	-	-	-	-	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-
Widow rockfish	-	-	-	-	-	-	-	-
Yellowtail rockfish	1	0.7	-	-	-	-	-	-
Quillback rockfish	-	-	-	-	-	-	-	-
Black rockfish	-	-	-	-	-	-	-	-
Canary rockfish	-	-	-	-	-	-	-	-
Redstripe rockfish	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-
Sablefish	-	-	1	< 0.3	2	0.3	-	-
Lingcod	-	-	-	-	-	-	-	-
Sturgeon poacher	-	-	-	-	-	-	-	-
Other poachers	-	-	-	-	-	-	-	-
Blacktail snailfish	-	-	-	-	-	-	-	-
Unidentified snailfish	-	-	-	-	-	-	-	-
Arrowtooth flounder	1	2.3	-	-	7	8.2	2	3.6
Rex sole	-	-	-	-	-	-	-	-
Flathead sole	1	.03	-	-	-	-	-	-
Pacific halibut	-	-	-	-	-	-	-	-

Table 4 (cont'd)

Vessel[a]	AH		AH		AH		AH	
Set no.	1		2		3		4	
Total catch (kg)	111.1		57.2		108.8		17.7	
Duration (min)	69		60		34		60	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Butter sole	-	-	-	-	-	-	-	-
Rock sole	-	-	-	-	-	-	-	-
Slender sole	1	0.3	1	0.3	-	-	-	-
Dover sole	-	-	-	-	-	-	-	-
English sole	-	-	-	-	-	-	-	-
Sand sole	-	-	1	< 0.3	-	-	-	-
Other flatfish	-	-	-	-	-	-	-	-
Larval fish	-	-	-	-	3	-	-	-
Jellyfish	-	-	-	-	-	-	-	-
Glass shrimp	-	-	-	-	-	-	-	-
Sidestripe shrimp	-	-	-	-	-	-	-	-
Octopus	-	-	-	-	-	-	-	-
Squid	~20	< 0.5	-	< 0.3	~4	< 0.3	1	-
Crab	-	-	-	-	-	-	-	-
Other invertebrates	-	-	-	-	-	-	-	-

Table 4 (cont'd)

Vessel[a]	AH		AH		AH		AH	
Set no.	5		6		7		8	
Total catch (kg)	253.7		91.7		309.9		145.8	
Duration (min)	60		60		28		47	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Pacific lamprey	1	-	-	-	-	-	-	-
Brown catshark	-	-	-	-	-	-	-	-
Spiny dogfish	-	-	-	-	-	-	-	-
Black skate	-	-	-	-	-	-	-	-
Longnose skate	-	-	-	-	-	-	-	-
Unidentified skate	-	-	-	-	-	-	-	-
Ratfish	-	-	-	-	-	-	-	-
Pacific herring	-	-	-	-	-	32.7	-	122.5
Chinook salmon	1	0.5	-	-	-	-	3	2.0
Rainbow smelt	-	-	-	-	-	-	-	-
Eulachon	-	5.0	-	3.6	6	-	10	0.9
Northern smoothtongue	1	-	-	-	-	-	-	-
Pacific viperfish	2	-	-	-	-	-	-	-
Myctophids	-	0.9	-	< 0.5	-	-	-	-
Plainfin midshipman	-	-	-	-	-	-	-	-
Pacific cod	-	-	-	-	-	-	3	15.4
Pacific hake	-	-	-	-	-	-	-	-
Pacific tomcod	-	-	-	-	-	-	-	-
Walleye pollock	137	242.2	45	78.9	(juv.)	277.2	1	1.8
Wattled eelpout	-	-	-	-	-	-	-	-
Pacific sandfish	-	-	-	-	-	-	6	0.9
Other eelpouts	3	-	-	-	-	-	-	-
Rougheye rockfish	1	1.4	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-
Silvergray rockfish	-	-	-	-	-	-	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-
Widow rockfish	-	-	-	-	-	-	-	-
Yellowtail rockfish	-	-	1	1.4	-	-	-	-
Quillback rockfish	-	-	-	-	-	-	-	-
Black rockfish	-	-	-	-	-	-	-	-
Canary rockfish	-	-	-	-	-	-	-	-
Redstripe rockfish	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-
Sablefish	-	-	-	-	-	-	-	-
Lingcod	-	-	-	-	-	-	-	-
Sturgeon poacher	-	-	-	-	-	-	-	-
Other poachers	-	-	-	-	-	-	-	-
Blacktail snailfish	-	-	-	-	-	-	-	-
Unidentified snailfish	-	-	-	-	-	-	-	-
Arrowtooth flounder	2	2.7	-	-	-	-	1	2.3
Rex sole	-	-	-	-	-	-	-	-
Flathead sole	-	-	-	-	-	-	-	-
Pacific halibut	-	-	-	-	-	-	-	-

Table 4 (cont'd)

Vessel[a]	AH		AH		AH		AH	
Set no.	5		6		7		8	
Total catch (kg)	253.7		91.7		309.9		145.8	
Duration (min)	60		60		28		47	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Butter sole	-	-	-	-	-	-	-	-
Rock sole	-	-	-	-	-	-	-	-
Slender sole	-	-	-	-	-	-	-	-
Dover sole	-	-	-	-	-	-	-	-
English sole	-	-	-	-	-	-	-	-
Sand sole	-	-	-	-	-	-	-	-
Other flatfish	-	-	-	-	-	-	-	-
Larval fish	2	-	-	-	-	-	-	-
Jellyfish	1	-	-	-	-	-	-	-
Glass shrimp	-	-	-	7.3	-	-	-	-
Sidestripe shrimp	-	10.4	-	-	-	-	-	-
Octopus	-	-	-	-	-	-	-	-
Squid	1	-	-	-	1	-	-	-
Crab	-	-	-	-	-	-	-	-
Other invertebrates	-	P	-	-	-	-	-	-

Table 4 (cont'd)

Vessel[a]	AH		AH		AH		AH	
Set no.	9		10		11		12	
Total catch (kg)	982.2		16,000		< 1		143.4	
Duration (min)	54		30		25		30	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Pacific lamprey	-	-	-	-	-	-	-	-
Brown catshark	-	-	-	-	-	-	-	-
Spiny dogfish	557	877.3	-	15,900	-	-	-	-
Black skate	1	1.6	-	-	-	-	-	-
Longnose skate	-	-	-	45.4	-	-	-	-
Unidentified skate	-	-	-	-	-	-	-	-
Ratfish	-	-	-	22.7	-	-	-	-
Pacific herring	-	2.3	-	-	2	-	-	142.9
Chinook salmon	-	-	-	-	-	-	-	0.5
Rainbow smelt	-	-	-	-	-	-	-	-
Eulachon	-	56.7	-	-	-	-	-	-
Northern smoothtongue	-	-	-	-	-	-	-	-
Pacific viperfish	-	-	-	-	-	-	-	-
Myctophids	-	-	-	-	-	-	-	-
Plainfin midshipman	-	-	-	-	-	-	-	-
Pacific cod	-	-	-	-	-	-	-	-
Pacific hake	-	-	-	-	-	-	-	-
Pacific tomcod	-	-	-	-	-	-	-	-
Walleye pollock	2	1.7	-	-	-	-	-	-
Wattled eelpout	-	-	-	-	-	-	-	-
Pacific sandfish	-	0.9	-	-	-	-	-	-
Other eelpouts	-	-	-	-	-	-	-	-
Rougheye rockfish	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-
Silvergray rockfish	-	-	-	-	-	-	-	-
Darkblotched rockfish	-	-	1	-	-	-	-	-
Widow rockfish	-	-	-	-	-	-	-	-
Yellowtail rockfish	-	41.7	-	34.0	-	-	-	-
Quillback rockfish	-	-	-	-	-	-	-	-
Black rockfish	-	-	-	-	-	-	-	-
Canary rockfish	-	-	-	-	-	-	-	-
Redstripe rockfish	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-
Sablefish	-	-	-	-	-	-	-	-
Lingcod	-	-	-	-	-	-	-	-
Sturgeon poacher	-	-	-	-	-	-	-	-
Other poachers	-	-	-	-	-	-	-	-
Blacktail snailfish	-	-	-	-	-	-	-	-
Unidentified snailfish	-	-	-	-	-	-	-	-
Arrowtooth flounder	-	-	-	45.4	-	-	-	-
Rex sole	-	-	-	-	-	-	-	-
Flathead sole	-	-	-	-	-	-	-	-
Pacific halibut	-	-	-	-	-	-	-	-

Table 4 (cont'd)

Vessel[a]	AH		AH		AH		AH	
Set no.	9		10		11		12	
Total catch (kg)	982.2		16,000		< 1		143.4	
Duration (min)	54		30		25		30	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Butter sole	-	-	-	-	-	-	-	-
Rock sole	-	-	-	-	-	-	-	-
Slender sole	-	-	-	-	-	-	-	-
Dover sole	-	-	-	-	-	-	-	-
English sole	-	-	-	-	-	-	-	-
Sand sole	-	-	-	-	-	-	-	-
Other flatfish	-	-	-	-	-	-	-	-
Larval fish	-	-	-	-	-	-	-	-
Jellyfish	-	-	-	-	-	-	-	-
Glass shrimp	-	-	-	-	-	-	-	-
Sidestripe shrimp	-	-	-	-	-	-	-	-
Octopus	-	-	-	-	-	-	-	-
Squid	-	-	-	-	-	-	-	-
Crab	-	-	-	-	-	-	-	-
Other invertebrates	-	-	-	-	-	-	-	-

Table 4 (cont'd)

Vessel[a]	AH		AH		AH		AH	
Set no.	13		14		15		16	
Total catch (kg)	310.3		510.7		6806.4		35.4	
Duration (min)	30		30		38		50	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Pacific lamprey	-	-	-	-	-	-	-	-
Brown catshark	-	-	-	-	-	-	-	-
Spiny dogfish	-	16.8	14	15.9	-	614.2	-	-
Black skate	-	-	-	-	-	-	-	-
Longnose skate	-	-	4	39.0	8	113.2	-	-
Unidentified skate	-	-	-	-	-	-	-	-
Ratfish	-	63.1	-	3175.2	-	5665.7	-	-
Pacific herring	-	-	-	-	-	-	-	-
Chinook salmon	-	-	-	-	-	-	1	0.5
Rainbow smelt	-	-	-	-	-	-	-	-
Eulachon	-	-	-	-	-	-	-	13.6
Northern smoothtongue	-	-	-	-	-	-	-	-
Pacific viperfish	-	-	-	-	-	-	-	-
Myctophids	-	-	-	-	-	-	-	-
Plainfin midshipman	-	-	-	-	-	-	-	-
Pacific cod	-	3.4	3	10.0	33	75.3	-	-
Pacific hake	-	-	-	-	-	-	-	-
Pacific tomcod	-	-	-	-	-	-	-	-
Walleye pollock	2	3.2	-	-	5	6.8	1	1.8
Wattled eelpout	-	-	-	-	-	-	-	-
Pacific sandfish	-	-	-	-	-	-	-	-
Other eelpouts	-	-	-	-	-	-	-	-
Rougheye rockfish	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-
Silvergray rockfish	-	144.2	-	-	1	2.5	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-
Widow rockfish	-	0.5	-	-	-	-	-	-
Yellowtail rockfish	-	-	-	9.5	-	-	6	14.1
Quillback rockfish	-	10.0	-	-	3	3.2	-	-
Black rockfish	-	-	1	2.7	-	-	-	-
Canary rockfish	-	-	-	-	-	-	-	-
Redstripe rockfish	-	61.7	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	1	2.5	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-
Sablefish	-	-	-	-	-	-	-	-
Lingcod	-	-	-	-	-	29.5	-	-
Sturgeon poacher	-	-	-	-	-	-	-	-
Other poachers	-	-	-	-	-	-	-	-
Blacktail snailfish	-	-	-	-	-	-	-	-
Unidentified snailfish	-	-	-	-	-	-	-	-
Arrowtooth flounder	-	-	-	51.7	-	257.2	3	5.4
Rex sole	-	-	2	-	-	8.6	-	-
Flathead sole	-	-	-	-	1	-	-	-
Pacific halibut	1	3.6	1	2.7	4	10.9	-	-
Butter sole	-	-	-	-	1	-	-	-

Table 4 (cont'd)

Vessel[a]	AH		AH		AH		AH	
Set no.	13		14		15		16	
Total catch (kg)	310.3		510.7		6806.4		35.4	
Duration (min)	30		30		38		50	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Butter sole	-	-	-	-	1	-	-	-
Rock sole	-	27.2	2	-	1	-	-	-
Slender sole	-	-	2	-	-	-	-	-
Dover sole	-	-	-	-	-	-	-	-
English sole	-	-	-	61.7	-	16.8	-	-
Sand sole	-	-	2	-	-	-	-	-
Other flatfish	-	-	-	-	-	-	-	-
Larval fish	-	-	-	-	-	-	-	-
Jellyfish	-	-	-	-	-	-	-	-
Glass shrimp	-	-	-	-	-	-	-	-
Sidestripe shrimp	-	-	-	-	-	-	-	-
Octopus	-	-	-	-	-	-	-	-
Squid	-	-	-	-	-	-	-	-
Crab	-	-	-	-	-	-	-	-
Other invertebrates	-	-	-	-	-	-	-	-

Table 4 (cont'd)

Vessel[a]	AH		AH		AH		AH	
Set no.	17		18		19		20	
Total catch (kg)	8.4		1.8		40.8		< 10.0	
Duration (min)	65		60		18		60	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Pacific lamprey	-	-	-	-	-	-	-	-
Brown catshark	-	-	-	-	-	-	-	-
Spiny dogfish	-	-	-	-	-	-	-	-
Black skate	-	-	-	-	-	-	-	-
Longnose skate	-	-	-	-	-	-	-	-
Unidentified skate	-	-	-	-	-	-	-	-
Ratfish	-	-	-	-	-	-	-	-
Pacific herring	-	5.4	-	1.8	-	15.9	24	-
Chinook salmon	1	0.9	-	-	5	2.7	-	-
Rainbow smelt	-	-	-	-	-	-	-	-
Eulachon	-	-	-	-	-	-	-	-
Northern smoothtongue	-	-	-	-	-	-	-	-
Pacific viperfish	-	-	-	-	-	-	-	-
Myctophids	-	-	-	-	-	-	-	-
Plainfin midshipman	-	-	-	-	-	-	-	-
Pacific cod	-	-	-	-	-	-	-	-
Pacific hake	-	-	-	-	-	-	-	-
Pacific tomcod	-	-	-	-	-	-	-	-
Walleye pollock	1	0.7	-	-	(juv.)	22.2	1	-
Wattled eelpout	-	-	-	-	-	-	-	-
Pacific sandfish	-	-	-	-	-	-	-	-
Other eelpouts	-	-	-	-	-	-	-	-
Rougheye rockfish	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-
Silvergray rockfish	-	-	-	-	-	-	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-
Widow rockfish	1	1.4	-	-	-	-	-	-
Yellowtail rockfish	-	-	-	-	-	-	1	-
Quillback rockfish	-	-	-	-	-	-	-	-
Black rockfish	-	-	-	-	-	-	-	-
Canary rockfish	-	-	-	-	-	-	-	-
Redstripe rockfish	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-
Sablefish	-	-	-	-	-	-	-	-
Lingcod	-	-	-	-	-	-	-	-
Sturgeon poacher	-	-	-	-	-	-	-	-
Other poachers	-	-	-	-	-	-	-	-
Blacktail snailfish	-	-	-	-	-	-	-	-
Unidentified snailfish	-	-	-	-	-	-	-	-
Arrowtooth flounder	-	-	-	-	-	-	-	-
Rex sole	-	-	-	-	-	-	-	-
Flathead sole	-	-	-	-	-	-	-	-
Pacific halibut	-	-	-	-	-	-	-	-

Table 4 (cont'd)

Vessel[a]	AH		AH		AH		AH	
Set no.	17		18		19		20	
Total catch (kg)	8.4		1.8		40.8		< 10.0	
Duration (min)	65		60		18		60	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Butter sole	-	-	-	-	-	-	-	-
Rock sole	-	-	-	-	-	-	-	-
Slender sole	-	-	-	-	-	-	-	-
Dover sole	-	-	-	-	-	-	-	-
English sole	-	-	-	-	-	-	-	-
Sand sole	-	-	-	-	-	-	-	-
Other flatfish	-	-	-	-	-	-	-	-
Larval fish	-	-	-	-	-	-	-	-
Jellyfish	-	-	-	-	-	-	-	-
Glass shrimp	-	-	-	-	-	-	-	-
Sidestripe shrimp	-	-	-	-	-	-	-	-
Octopus	-	-	-	-	-	-	-	-
Squid	-	-	-	-	-	-	-	-
Crab	-	-	-	-	-	-	-	-
Other invertebrates	-	-	-	-	-	-	-	-

Table 4 (cont'd)

Vessel[a]	AH		AH		AH		AH	
Set no.	21		22		23		24	
Total catch (kg)	303.9		819.0		1191.8		109.4	
Duration (min)	150		120		130		120	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Pacific lamprey	-	-	-	-	-	-	-	-
Brown catshark	-	-	-	-	-	-	-	-
Spiny dogfish	-	-	3	4.3	24	21.8	47	52.2
Black skate	-	-	-	-	-	-	-	-
Longnose skate	-	-	-	-	-	-	-	-
Unidentified skate	-	-	-	-	-	-	-	-
Ratfish	-	-	-	-	-	-	-	-
Pacific herring	-	-	-	-	-	-	-	-
Chinook salmon	-	-	-	-	-	-	-	-
Rainbow smelt	-	-	-	P	-	-	-	-
Eulachon	-	-	-	-	-	-	-	-
Northern smoothtongue	-	-	-	P	-	64.0	-	27.2
Pacific viperfish	-	-	-	-	-	-	-	-
Myctophids	-	-	-	-	-	P	-	-
Plainfin midshipman	-	-	-	-	-	-	-	-
Pacific cod	-	-	-	-	-	-	-	-
Pacific hake	10	18.1	-	-	6	16.3	1	5.0
Pacific tomcod	-	-	-	-	-	-	-	-
Walleye pollock	203	263.1	52	77.6	30	66.2	80	153.3
Wattled eelpout	-	-	-	-	-	-	-	-
Pacific sandfish	-	-	-	-	-	-	-	-
Other eelpouts	-	-	-	-	-	P	-	-
Rougheye rockfish	-	-	-	-	1	1.5	1	2.0
Shortraker rockfish	-	-	-	-	1	6.8	1	3.2
Silvergray rockfish	-	-	-	-	-	-	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-
Widow rockfish	-	-	-	-	-	-	-	-
Yellowtail rockfish	-	-	-	-	-	-	-	-
Quillback rockfish	-	-	-	-	-	-	-	-
Black rockfish	-	-	-	-	-	-	-	-
Canary rockfish	-	-	-	-	-	-	-	-
Redstripe rockfish	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-
Sablefish	-	-	-	-	-	-	-	-
Lingcod	-	-	-	-	-	-	-	-
Sturgeon poacher	-	-	-	-	-	-	-	-
Other poachers	-	-	-	-	-	-	-	-
Blacktail snailfish	-	-	-	-	-	-	-	-
Unidentified snailfish	-	-	-	-	-	-	-	-
Arrowtooth flounder	-	-	-	-	-	-	-	-
Rex sole	-	-	-	-	-	-	-	-
Flathead sole	-	-	-	-	-	-	-	-
Pacific halibut	-	-	-	-	-	-	-	-

Table 4 (cont'd)

Vessel[a]	AH		AH		AH		AH	
Set no.	21		22		23		24	
Total catch (kg)	303.9		819.0		1191.8		109.4	
Duration (min)	150		120		130		120	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Butter sole	-	-	-	-	-	-	-	-
Rock sole	-	-	-	-	-	-	-	-
Slender sole	-	-	-	-	-	-	-	-
Dover sole	-	-	-	-	-	-	-	-
English sole	-	-	-	-	-	-	-	-
Sand sole	-	-	-	-	-	-	-	-
Other flatfish	-	-	-	-	-	-	-	-
Larval fish	-	-	-	-	-	P	-	-
Jellyfish	-	-	-	-	-	-	-	-
Glass shrimp	-	2.27	-	-	-	0.9	-	4.5
Sidestripe shrimp	-	-	-	-	-	-	-	-
Octopus	-	-	-	-	-	-	-	-
Squid	-	-	-	-	-	0.9	-	-
Crab	-	-	-	-	-	-	-	-
Other invertebrates	-	-	-	-	-	-	-	-

Table 4 (cont'd)

Vessel[a]	AH		AH		AH		AH	
Set no.	25		26		27		28	
Total catch (kg)	160.3		18.2		1.4		993.5	
Duration (min)	127		60		60		60	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Pacific lamprey	-	-	-	-	-	-	-	-
Brown catshark	-	-	-	-	-	-	2	0.7
Spiny dogfish	-	39.5	6	9.1	-	-	527	976.6
Black skate	-	-	-	-	-	-	-	-
Longnose skate	-	-	-	-	-	-	-	-
Unidentified skate	-	-	-	-	-	-	-	-
Ratfish	-	-	-	-	-	-	-	-
Pacific herring	-	-	-	-	-	-	-	-
Chinook salmon	-	-	-	-	2	1.4	2	3.2
Rainbow smelt	-	-	-	-	-	-	-	-
Eulachon	-	-	-	1.4	-	-	-	-
Northern smoothtongue	-	5.9	-	7.7	-	-	-	-
Pacific viperfish	-	-	-	-	-	-	-	-
Myctophids	-	-	-	-	-	-	-	-
Plainfin midshipman	-	-	-	-	-	-	-	-
Pacific cod	-	-	-	-	-	-	-	-
Pacific hake	8	24.5	-	-	-	-	52	11.3
Pacific tomcod	-	-	-	-	-	-	-	-
Walleye pollock	43	80.7	-	-	-	-	1	0.5
Wattled eelpout	-	-	-	-	-	-	-	-
Pacific sandfish	-	-	-	-	-	-	-	-
Other eelpouts	-	0.5	1	-	-	-	-	-
Rougheye rockfish	-	-	-	-	-	-	-	-
Shortraker rockfish	2	7.3	-	-	-	-	-	-
Silvergray rockfish	-	-	-	-	-	-	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-
Widow rockfish	-	-	-	-	-	-	-	-
Yellowtail rockfish	-	-	-	-	-	-	-	-
Quillback rockfish	-	-	-	-	-	-	-	-
Black rockfish	-	-	-	-	-	-	-	-
Canary rockfish	-	-	-	-	-	-	-	-
Redstripe rockfish	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-
Harlequin rockfish	1	0.5	-	-	-	-	-	-
Sablefish	-	-	-	-	-	-	-	-
Lingcod	-	-	-	-	-	-	-	-
Sturgeon poacher	-	-	-	-	-	-	-	-
Other poachers	-	-	-	-	-	-	-	-
Blacktail snailfish	-	-	-	-	-	-	1	-
Unidentified snailfish	-	-	-	-	-	-	-	-
Arrowtooth flounder	-	-	-	-	-	-	-	-
Rex sole	-	-	-	-	-	-	1	0.5
Flathead sole	-	-	-	-	-	-	-	-
Pacific halibut	-	-	-	-	-	-	-	-

Table 4 (cont'd)

Vessel[a]	AH		AH		AH		AH	
Set no.	25		26		27		28	
Total catch (kg)	160.3		18.2		1.4		993.5	
Duration (min)	127		60		60		60	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Butter sole	-	-	-	-	-	-	-	-
Rock sole	-	-	-	-	-	-	-	-
Slender sole	-	-	-	-	-	-	-	-
Dover sole	-	-	-	-	-	-	-	-
English sole	-	-	-	-	-	-	1	0.2
Sand sole	-	-	-	-	-	-	-	-
Other flatfish	-	-	-	-	-	-	-	-
Larval fish	-	-	-	-	-	-	-	-
Jellyfish	-	-	-	-	-	-	-	-
Glass shrimp	-	0.9	-	P	-	-	-	-
Sidestripe shrimp	-	-	-	-	-	-	-	-
Octopus	-	-	-	-	-	-	-	-
Squid	-	0.5	-	-	-	-	2	0.5
Crab	-	-	-	-	-	-	-	-
Other invertebrates	-	-	-	-	-	-	-	-

Table 4 (cont'd)

Vessel[a]	AH		AH		AH		AH	
Set no.	29		30		31		32	
Total catch (kg)	3139.0		117.4		833.1		169.6	
Duration (min)	30		35		35		23	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Pacific lamprey	-	-	-	-	-	-	-	-
Brown catshark	6	2.7	-	-	-	-	2	0.9
Spiny dogfish	50	46.3	36	26.3	-	195.5	-	19.5
Black skate	-	-	-	-	-	-	-	-
Longnose skate	-	-	-	-	-	-	-	-
Unidentified skate	-	-	-	-	-	-	-	-
Ratfish	-	-	-	-	-	-	-	-
Pacific herring	-	-	-	-	-	-	-	-
Chinook salmon	1	2.7	-	-	2	7.3	1	2.7
Rainbow smelt	-	-	-	-	-	-	-	-
Eulachon	-	-	-	-	-	-	-	-
Northern smoothtongue	-	-	-	-	-	-	-	-
Pacific viperfish	-	-	-	-	-	-	-	-
Myctophids	-	-	-	-	-	-	-	-
Plainfin midshipman	-	-	-	-	-	-	-	-
Pacific cod	-	-	-	-	-	-	-	-
Pacific hake	604	254.0	101	18.1	-	-	-	132.0
Pacific tomcod	-	-	-	-	-	-	-	-
Walleye pollock	14	8.2	120	68.9	-	315.3	19	12.2
Wattled eelpout	-	-	-	-	-	-	-	-
Pacific sandfish	-	-	-	-	-	-	-	-
Other eelpouts	-	-	-	-	-	-	-	-
Rougheye rockfish	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-
Silvergray rockfish	-	-	-	-	-	-	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-
Widow rockfish	-	-	-	-	-	-	-	-
Yellowtail rockfish	-	-	-	-	-	-	-	-
Quillback rockfish	-	-	-	-	-	-	-	-
Black rockfish	-	-	-	-	-	-	-	-
Canary rockfish	-	-	1	3.6	-	-	-	-
Redstripe rockfish	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-
Sablefish	-	-	-	-	-	-	-	-
Lingcod	-	-	-	-	-	-	-	-
Sturgeon poacher	-	-	-	-	-	-	-	-
Other poachers	-	-	-	-	-	-	-	-
Blacktail snailfish	-	-	-	-	-	-	-	-
Unidentified snailfish	-	-	-	-	-	-	-	-
Arrowtooth flounder	-	-	-	-	-	-	-	-
Rex sole	-	-	-	-	-	-	-	-
Flathead sole	-	-	-	-	-	-	-	-
Pacific halibut	-	-	-	-	-	-	-	-

Table 4 (cont'd)

Vessel[a]	AH		AH		AH		AH	
Set no.	29		30		31		32	
Total catch (kg)	3139.0		117.4		833.1		169.6	
Duration (min)	30		35		35		23	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Butter sole	-	-	-	-	-	-	-	-
Rock sole	-	-	-	-	-	-	-	-
Slender sole	-	-	-	-	-	-	-	-
Dover sole	-	-	-	-	-	-	-	-
English sole	-	-	1	0.5	-	-	-	-
Sand sole	-	-	-	-	-	-	-	-
Other flatfish	-	-	-	-	-	-	-	-
Larval fish	-	-	-	-	-	-	-	-
Jellyfish	-	-	-	-	-	-	-	-
Glass shrimp	-	-	-	-	-	-	-	-
Sidestripe shrimp	-	-	-	-	-	-	-	-
Octopus	-	-	-	-	-	-	-	-
Squid	-	-	-	-	-	-	5	2.3
Crab	-	-	-	-	-	-	-	-
Other invertebrates	-	-	-	-	-	-	-	-

Table 4 (cont'd)

Vessel[a]	AH		AH		AH		AH	
Set no.	33		34		35		36	
Total catch (kg)	3804.1		1500.0		3940.0		270.0	
Duration (min)	30		?		20		25	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Pacific lamprey	-	-	-	-	-	-	-	-
Brown catshark	13	-	-	-	-	-	-	-
Spiny dogfish	-	136.1	-	900.0	-	40.0	-	30.0
Black skate	-	-	-	-	-	-	-	-
Longnose skate	-	-	-	-	-	-	-	-
Unidentified skate	-	-	-	-	-	-	-	-
Ratfish	-	-	-	-	-	-	-	-
Pacific herring	-	-	-	-	-	-	-	-
Chinook salmon	-	-	2	-	-	-	-	-
Rainbow smelt	-	-	-	-	-	-	-	-
Eulachon	-	-	-	-	-	-	-	-
Northern smoothtongue	-	-	-	-	-	-	-	-
Pacific viperfish	-	-	-	-	-	-	-	-
Myctophids	-	-	-	-	-	-	-	-
Plainfin midshipman	-	-	-	-	-	-	-	-
Pacific cod	-	-	-	-	-	-	-	-
Pacific hake	-	3600.0	-	-	-	3600.0	-	100.0
Pacific tomcod	-	-	-	-	-	-	-	-
Walleye pollock	-	68.0	-	600.0	-	300.0	-	540.0
Wattled eelpout	-	-	-	-	-	-	-	-
Pacific sandfish	-	-	-	-	-	-	-	-
Other eelpouts	-	-	-	-	-	-	-	-
Rougheye rockfish	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-
Silvergray rockfish	-	-	-	-	-	-	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-
Widow rockfish	-	-	-	-	-	-	-	-
Yellowtail rockfish	-	-	1	-	-	-	-	-
Quillback rockfish	-	-	-	-	-	-	-	-
Black rockfish	-	-	-	-	-	-	-	-
Canary rockfish	-	-	-	-	-	-	-	-
Redstripe rockfish	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-
Sablefish	-	-	-	-	-	-	-	-
Lingcod	-	-	-	-	-	-	-	-
Sturgeon poacher	-	-	-	-	-	-	-	-
Other poachers	-	-	-	-	-	-	-	-
Blacktail snailfish	-	-	-	-	-	-	-	-
Unidentified snailfish	-	-	-	-	-	-	-	-
Arrowtooth flounder	-	-	-	-	-	-	-	-
Rex sole	-	-	-	-	-	-	-	-
Flathead sole	-	-	-	-	-	-	-	-
Pacific halibut	-	-	-	-	-	-	-	-

Table 4 (cont'd)

Vessel[a]	AH			AH			AH			AH		
Set no.	33			34			35			36		
Total catch (kg)	3804.1			1500.0			3940.0			670.0		
Duration (min)	30			?			20			25		
Species[b]	No.	Wt.	(kg)	No.	Wt.	(kg)	No.	Wt.	(kg)	No.	Wt.	(kg)
Butter sole	-		-	-		-	-		-	-		-
Rock sole	-		-	-		-	-		-	-		-
Slender sole	-		-	-		-	-		-	-		-
Dover sole	-		-	-		-	-		-	-		-
English sole	-		-	-		-	-		-	-		-
Sand sole	-		-	-		-	-		-	-		-
Other flatfish	-		-	-		-	-		-	-		-
Larval fish	-		-	-		-	-		-	-		-
Jellyfish	-		-	-		-	-		-	-		-
Glass shrimp	-		-	-		-	-		-	-		-
Sidestripe shrimp	-		-	-		-	-		-	-		-
Octopus	-		-	-		-	-		-	-		-
Squid	6		-	-		-	-		-	-		-
Crab	-		-	-		-	-		-	-		-
Other invertebrates	-		-	-		-	-		-	-		-

Table 4 (cont'd)

Vessel[a]	AH		C		C		C	
Set no.	37		38		39		40	
Total catch (kg)	540.0		545.0		803.0		953.0	
Duration (min)	?		30		30		30	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Pacific lamprey	-	-	-	-	-	-	-	-
Brown catshark	4	-	-	-	-	-	-	-
Spiny dogfish	-	45.0	-	318.0	-	91.0	-	91.0
Black skate	-	-	-	-	-	-	-	-
Longnose skate	-	-	-	-	-	-	-	-
Unidentified skate	-	-	-	18.0	-		-	45.0
Ratfish	-	-	-	23.0	-	136.0	-	91.0
Pacific herring	-	-	-	-	-	-	-	-
Chinook salmon	-	-	-	-	-	-	-	-
Rainbow smelt	-	-	-	-	-	-	-	-
Eulachon	-	-	-	-	-	-	-	-
Northern smoothtongue	-	-	-	-	-	-	-	-
Pacific viperfish	-	-	-	-	-	-	-	-
Myctophids	-	-	-	-	-	-	-	-
Plainfin midshipman	-	-	-	-	-	-	-	-
Pacific cod	-	-	1	-	1	-	-	-
Pacific hake	-	450.0	-	5.0	4	-	-	-
Pacific tomcod	-	-	-	-	-	-	-	-
Walleye pollock	-	45.0	361	181.0	-	544.0	-	726.0
Wattled eelpout	-	-	-	-	-	-	-	-
Pacific sandfish	-	-	-	-	-	-	-	-
Other eelpouts	-	-	-	-	-	-	-	-
Rougheye rockfish	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-
Silvergray rockfish	-	-	-	-	-	-	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-
Widow rockfish	-	-	-	-	-	-	-	-
Yellowtail rockfish	-	-	-	-	-	-	-	-
Quillback rockfish	-	-	-	-	-	-	-	-
Black rockfish	-	-	-	-	-	-	-	-
Canary rockfish	-	-	-	-	-	-	-	-
Redstripe rockfish	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-
Sablefish	-	-	-	-	-	-	-	-
Lingcod	-	-	-	-	-	-	-	-
Sturgeon poacher	-	-	-	-	-	-	-	-
Other poachers	-	-	-	-	-	-	-	-
Blacktail snailfish	-	-	-	-	-	-	-	-
Unidentified snailfish	-	-	-	-	-	-	-	-
Arrowtooth flounder	-	-	-	-	-	-	-	-
Rex sole	-	-	-	-	-	-	-	-
Flathead sole	-	-	-	-	-	-	-	-
Pacific halibut	-	-	-	-	-	-	-	-

Table 4 (cont'd)

Vessel[a]	AH		C		C		C	
Set no.	37		38		39		40	
Total catch (kg)	540.0		545.0		803.0		953.0	
Duration (min)	?		30		30		30	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Butter sole	-	-	-	-	-	-	-	-
Rock sole	-	-	-	-	-	-	-	-
Slender sole	-	-	-	-	-	-	-	-
Dover sole	-	-	-	-	-	-	-	-
English sole	-	-	-	-	-	-	-	-
Sand sole	-	-	-	-	-	-	-	-
Other flatfish	-	-	-	-	-	32.0	-	P
Larval fish	-	-	-	-	-	-	-	-
Jellyfish	-	-	-	-	-	-	-	-
Glass shrimp	-	-	-	-	-	-	-	-
Sidestripe shrimp	-	-	4	-	-	-	-	P
Octopus	-	-	-	-	-	-	-	-
Squid	-	-	-	-	-	-	-	-
Crab	-	-	-	5.0	-	P	-	P
Other invertebrates	-	-	-	-	-	-	-	P

Table 4 (cont'd)

Vessel[a]	C		C		C		C	
Set no.	41		42		30		44	
Total catch (kg)	145.0		136.0		91.0		136.0	
Duration (min)	30		30		30		30	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Pacific lamprey	-	-	-	-	-	-	-	-
Brown catshark	-	-	-	-	-	-	-	-
Spiny dogfish	1	68.0	-	45.0	-	-	3	-
Black skate	-	-	-	P	-	-	-	P
Longnose skate	-	-	-	-	-	-	-	-
Unidentified skate	-	-	-	-	-	-	-	-
Ratfish	-	P	-	P	-	-	-	-
Pacific herring	-	-	-	-	-	-	-	-
Chinook salmon	-	-	-	-	-	-	-	-
Rainbow smelt	-	-	-	-	-	-	-	-
Eulachon	-	-	-	-	-	-	-	-
Northern smoothtongue	-	-	-	-	-	-	-	-
Pacific viperfish	-	-	-	-	-	-	-	-
Myctophids	-	-	-	-	-	-	-	-
Plainfin midshipman	-	-	-	-	-	-	3	-
Pacific cod	-	-	-	-	-	18.0	-	41.0
Pacific hake	-	-	4	-	-	-	-	-
Pacific tomcod	-	-	-	-	-	-	-	14.0
Walleye pollock	107	68.0	129	73.0	-	18.0	-	41.0
Wattled eelpout	-	-	-	-	-	-	3	-
Pacific sandfish	-	-	-	-	-	-	-	-
Other eelpouts	-	-	-	-	-	-	1	-
Rougheye rockfish	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-
Silvergray rockfish	-	-	-	-	-	-	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-
Widow rockfish	-	-	-	-	-	-	-	-
Yellowtail rockfish	-	-	-	-	-	-	-	-
Quillback rockfish	-	-	-	-	-	-	-	-
Black rockfish	-	-	-	-	-	-	-	-
Canary rockfish	-	-	-	-	-	-	-	-
Redstripe rockfish	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-
Sablefish	-	-	-	-	-	-	-	-
Lingcod	-	-	-	-	-	-	-	-
Sturgeon poacher	-	-	-	-	-	-	-	P
Other poachers	-	-	-	-	-	-	-	-
Blacktail snailfish	-	-	-	-	-	-	-	-
Unidentified snailfish	-	-	-	-	-	-	-	-
Arrowtooth flounder	-	-	-	-	-	-	-	-
Rex sole	-	-	-	-	-	-	-	-
Flathead sole	-	-	-	-	-	-	-	P
Pacific halibut	-	-	-	-	-	-	-	-

Table 4 (cont'd)

Vessel[a]	C		C		C		C	
Set no.	41		42		43		44	
Total catch (kg)	145.0		136.0		91.0		136.0	
Duration (min)	30		30		30		30	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Butter sole	-	-	-	-	-	-	-	-
Rock sole	-	-	-	-	-	-	-	-
Slender sole	-	-	-	-	-	-	-	-
Dover sole	-	-	-	-	-	-	-	-
English sole	-	-	-	-	-	-	-	P
Sand sole	-	-	-	-	-	-	-	-
Other flatfish	-	P	-	P	-	-	-	-
Larval fish	-	-	-	-	-	-	-	-
Jellyfish	-	-	-	-	-	-	-	-
Glass shrimp	-	-	-	-	-	-	-	-
Sidestripe shrimp	-	P	-	P	-	P	-	P
Octopus	-	-	-	-	-	P	-	-
Squid	-	-	-	-	-	P	-	-
Crab	-	P	-	P	-	P	-	18.0
Other invertebrates	-	P	-	P	-	P	-	-

Table 4 (cont'd)

Vessel[a]	C		C		C		G	
Set no.	45		46		47		48	
Total catch (kg)	91.0		227.0		454.0		141.0	
Duration (min)	25		60		70		31	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Pacific lamprey	-	-	-	-	-	-	-	-
Brown catshark	-	-	-	-	1	-	-	-
Spiny dogfish	-	-	-	45.0	-	-	7	5.0
Black skate	-	P	-	P	-	-	-	-
Longnose skate	-	-	-	-	-	-	-	-
Unidentified skate	-	-	-	-	-	45.0	-	-
Ratfish	-	23.0	-	23.0	-	45.0	-	-
Pacific herring	-	-	-	-	-	-	-	91.0
Chinook salmon	-	-	-	-	-	-	1	-
Rainbow smelt	-	-	-	-	-	-	-	-
Eulachon	-	P	-	-	-	-	1	-
Northern smoothtongue	-	-	-	-	-	-	-	-
Pacific viperfish	-	-	-	-	-	-	-	-
Myctophids	-	-	-	-	-	-	-	-
Plainfin midshipman	-	-	-	-	2	-	-	-
Pacific cod	-	-	-	-	-	70.0	-	-
Pacific hake	-	-	-	14.0	-	18.0	1	-
Pacific tomcod	-	P	-	-	-	-	-	-
Walleye pollock	-	18.0	-	91.0	-	36.0	95	45.0
Wattled eelpout	-	P	-	P	-	P	-	-
Pacific sandfish	-	-	-	-	-	-	-	-
Other eelpouts	-	-	-	-	-	-	-	-
Rougheye rockfish	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-
Silvergray rockfish	-	-	-	-	-	-	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-
Widow rockfish	-	-	-	-	-	-	-	-
Yellowtail rockfish	-	-	-	-	1	-	-	-
Quillback rockfish	-	-	-	-	-	-	-	-
Black rockfish	-	-	-	-	-	-	-	-
Canary rockfish	-	P	-	-	-	-	-	-
Redstripe rockfish	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-
Sablefish	-	-	-	-	-	-	-	-
Lingcod	-	-	-	-	-	-	-	-
Sturgeon poacher	-	P	-	-	-	-	-	-
Other poachers	-	-	-	-	-	-	-	-
Blacktail snailfish	-	-	-	-	-	-	-	-
Unidentified snailfish	-	-	-	-	-	-	-	-
Arrowtooth flounder	-	-	-	P	-	-	-	-
Rex sole	-	-	-	-	-	-	-	-
Flathead sole	-	-	-	P	-	-	-	-
Pacific halibut	-	-	-	-	-	-	-	-

Table 4 (cont'd)

Vessel[a]	C		C		C		G	
Set no.	45		46		47		48	
Total catch (kg)	91.0		227.0		454.0		141.0	
Duration (min)	25		60		70		31	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Butter sole	-	-	-	-	-	-	-	-
Rock sole	-	-	-	-	-	-	-	-
Slender sole	-	-	-	-	-	-	-	-
Dover sole	-	-	-	-	-	-	-	-
English sole	-	P	-	P	-	-	-	-
Sand sole	-	-	-	-	-	-	-	-
Other flatfish	-	P	-	P	-	136.0	-	-
Larval fish	-	-	-	-	-	-	-	-
Jellyfish	-	-	-	-	-	-	-	-
Glass shrimp	-	-	-	-	-	-	-	-
Sidestripe shrimp	-	P	-	P	30	-	-	-
Octopus	-	-	-	-	-	-	-	-
Squid	-	-	-	-	-	-	-	-
Crab	-	P	-	23.0	-	36.0	-	-
Other invertebrates	-	-	-	-	-	-	-	-

Table 4 (cont'd)

Vessel[a]	G		G		G		G	
Set no.	49		50		51		52	
Total catch (kg)	272.0		540.0		680.0		294.0	
Duration (min)	67		29		60		60	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Pacific lamprey	-	-	-	-	-	-	-	-
Brown catshark	-	-	-	-	-	-	-	-
Spiny dogfish	-	113.0	-	327.0	-	499.0	-	45.0
Black skate	-	-	-	-	-	-	-	-
Longnose skate	-	-	-	-	-	-	-	-
Unidentified skate	-	-	-	-	-	-	-	-
Ratfish	-	-	-	-	-	-	-	-
Pacific herring	-	P	-	2.0	-	P	1	-
Chinook salmon	-	-	2	-	-	-	-	-
Rainbow smelt	-	-	-	-	-	-	-	-
Eulachon	-	P	-	16.0	-	P	-	-
Northern smoothtongue	-	-	-	-	-	-	-	-
Pacific viperfish	-	-	-	-	-	-	-	-
Myctophids	-	-	-	-	-	-	-	-
Plainfin midshipman	-	-	-	-	-	-	-	-
Pacific cod	-	-	-	-	-	-	-	-
Pacific hake	5	-	-	36.0	-	18.0	-	-
Pacific tomcod	-	-	-	-	-	-	-	-
Walleye pollock	-	159.0	-	159.0	-	163.0	-	249.0
Wattled eelpout	-	-	-	-	-	-	-	-
Pacific sandfish	-	-	-	-	-	-	-	-
Other eelpouts	-	-	-	-	-	-	-	-
Rougheye rockfish	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-
Silvergray rockfish	-	-	-	-	-	-	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-
Widow rockfish	-	-	-	-	-	-	-	-
Yellowtail rockfish	-	-	-	-	-	-	-	-
Quillback rockfish	-	-	-	-	-	-	-	-
Black rockfish	-	-	-	-	-	-	-	-
Canary rockfish	-	-	-	-	-	-	-	-
Redstripe rockfish	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-
Sablefish	-	-	-	-	-	-	-	-
Lingcod	-	-	-	-	-	-	-	-
Sturgeon poacher	-	-	-	-	-	-	-	-
Other poachers	-	-	-	-	-	-	-	-
Blacktail snailfish	-	-	-	-	-	-	-	-
Unidentified snailfish	1	-	1	-	-	-	-	-
Arrowtooth flounder	-	-	-	-	-	-	-	-
Rex sole	-	-	-	-	-	-	-	-
Flathead sole	-	-	-	-	-	-	-	-
Pacific halibut	-	-	-	-	-	-	-	-

Table 4 (cont'd)

Vessel[a]	G		G		G		G	
Set no.	49		50		51		52	
Total catch (kg)	272.0		540.0		680.0		294.0	
Duration (min)	67		29		60		60	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Butter sole	-	-	-	-	-	-	-	-
Rock sole	-	-	-	-	-	-	-	-
Slender sole	-	-	-	-	-	-	-	-
Dover sole	-	-	-	-	-	-	-	-
English sole	-	-	-	-	-	-	-	-
Sand sole	-	-	-	-	-	-	-	-
Other flatfish	-	-	-	-	-	-	-	-
Larval fish	-	-	-	-	-	-	-	-
Jellyfish	-	-	-	-	-	-	-	-
Glass shrimp	-	-	-	-	-	-	-	-
Sidestripe shrimp	-	-	-	-	-	-	-	-
Octopus	-	-	-	-	-	-	-	-
Squid	-	-	1	-	2	-	-	-
Crab	-	-	-	-	-	-	-	-
Other invertebrates	-	-	-	-	-	-	-	-

Table 4 (cont'd)

Vessel[a]	G		G		G		G	
Set no.	53		54		55		56	
Total catch (kg)	18.0		2980		579		0	
Duration (min)	23		25		25		60	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Pacific lamprey	-	-	-	-	-	-	-	-
Brown catshark	-	P	-	27.0	-	-	-	-
Spiny dogfish	-	-	-	-	-	154	-	-
Black skate	-	-	-	-	-	-	-	-
Longnose skate	-	-	-	-	-	-	-	-
Unidentified skate	-	-	-	-	-	-	-	-
Ratfish	-	-	-	-	-	-	-	-
Pacific herring	-	P	-	P	-	-	-	-
Chinook salmon	-	-	4	-	-	-	-	-
Rainbow smelt	-	-	-	-	-	-	-	-
Eulachon	-	-	-	-	-	-	-	-
Northern smoothtongue	-	-	-	-	-	-	-	-
Pacific viperfish	-	-	-	-	-	-	-	-
Myctophids	-	-	-	-	-	-	-	-
Plainfin midshipman	-	-	-	-	-	-	-	-
Pacific cod	-	-	-	-	-	-	-	-
Pacific hake	-	-	-	5	-	39	-	-
Pacific tomcod	-	-	-	-	-	-	-	-
Walleye pollock	-	P	-	2939	-	386	-	-
Wattled eelpout	-	-	-	-	-	-	-	-
Pacific sandfish	-	-	-	-	-	-	-	-
Other eelpouts	-	-	-	-	-	-	-	-
Rougheye rockfish	-	-	-	-	-	-	-	-
Shortraker rockfish	-	-	-	-	-	-	-	-
Silvergray rockfish	-	-	-	-	-	-	-	-
Darkblotched rockfish	-	-	-	-	-	-	-	-
Widow rockfish	-	-	-	-	-	-	-	-
Yellowtail rockfish	-	-	-	-	-	-	-	-
Quillback rockfish	-	-	-	-	-	-	-	-
Black rockfish	-	-	-	-	-	-	-	-
Canary rockfish	-	-	-	-	-	-	-	-
Redstripe rockfish	-	-	-	-	-	-	-	-
Yelloweye rockfish	-	-	-	-	-	-	-	-
Harlequin rockfish	-	-	-	-	-	-	-	-
Sablefish	-	-	-	-	-	-	-	-
Lingcod	-	-	-	-	-	-	-	-
Sturgeon poacher	-	-	-	-	-	-	-	-
Other poachers	-	-	-	-	-	-	-	-
Blacktail snailfish	-	-	-	-	-	-	-	-
Unidentified snailfish	-	-	-	-	-	-	-	-
Arrowtooth flounder	-	-	-	-	-	-	-	-
Rex sole	-	-	-	-	-	-	-	-
Flathead sole	-	-	-	-	-	-	-	-
Pacific halibut	-	-	-	-	-	-	-	-

Table 4 (cont'd)

Vessel[a]	G		G		G		G	
Set no.	53		54		55		56	
Total catch (kg)	18.0		2112		579		0	
Duration (min)	23		25		25		60	
Species[b]	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)	No.	Wt. (kg)
Butter sole	-	-	-	-	-	-	-	-
Rock sole	-	-	-	-	-	-	-	-
Slender sole	-	-	-	-	-	-	-	-
Dover sole	-	-	-	-	-	-	-	-
English sole	-	-	-	-	-	-	-	-
Sand sole	-	-	-	-	-	-	-	-
Other flatfish	-	-	-	-	-	-	-	-
Larval fish	-	-	-	-	-	-	-	-
Jellyfish	-	-	-	-	-	-	-	-
Glass shrimp	-	-	-	-	-	-	-	-
Sidestripe shrimp	-	-	-	-	-	-	-	-
Octopus	-	-	-	-	-	-	-	-
Squid	-	-	1	-	2	-	-	-
Crab	-	-	-	-	-	-	-	-
Other invertebrates	-	-	-	-	-	-	-	-

[a]AH - ARCTIC HARVESTER, March 14-31, 1978;
C - CALIGUS, April 5-13, 1978;
G - G.B. REED, April 17-21, 1978.

[b]Order of fish species follows Hart (1973).

P - Present in catch.

Table 5. Inventory of walleye pollock samples by set.

Set no.	Location (Ground)	Number of fish sampled: Age (left pectoral fin)	Length	Weight	Sex	Maturity	Stomach	Electrophoresis	Sample numbers	Remarks
					ARCTIC HARVESTER					
1	Butterworth Edge	-	126	-	100	68	59	-	11365-11432	26 small (< 18 cm) frozen. gonads photographed. Several ovary samples preserved in 10% formalin.
2	Butterworth	-	3	-	-	-	-	-	-	
3	Butterworth Gully	-	46	-	46	46	46	40	11433-11478	16 small pollock frozen whole
5	N. Dixon Entrance	137	137	-	137	137	137	53	11479-11615	
6	N. Dixon Entrance	45	45	-	45	45	-	-	11616-11660	
7	Chatham Sound									
	Adults	36	36	-	36	36	36	-	11661-11696	
	Juveniles	150	332	182	213	-	-	100	11697-11846	15 frozen whole.
8	N. Butterworth	-	1	-	1	-	-	-	-	
9	W. Dundas	-	2	-	-	-	-	-	-	
13	W. of Porcher Is.	-	2	-	-	-	-	-	-	Photographed.

Table 5 (cont'd)

Set no.	Location (Ground)	Number of fish sampled: Age (left pectoral fin)	Length	Weight	Sex	Maturity	Stomach	Electro-phoresis	Sample numbers	Remarks
16	Butterworth	-	1	-	1	1	1	-		
17	Chatham Sound	-	1	-	1	-	-	-		
19	Chatham Sound	-	4	-	-	-	-	100		40 juvenile pollock frozen whole).
21	Campania Sound	203	202	-	203	203	153	100	11847-12049	
22	Squally Channel	52	52	-	52	52	-	-	12050-12101	
23	Finlayson Channel	30	30	30	30	30	30	-	12102-12131	Weight of gonad on all fish.
24	Finlayson Channel	80	80	80	80	80	71	80	12132-12211	Weight of ♀ gonads, body weight without gonads ♂.
25	Finlayson Channel	43	43	43	43	43	1	20	12212-12254	Weights of gonads (g).
28	N. of Mittlenatch I.	-	1	-	1	1	-	-	-	
29	Jervis Inlet	-	14	-	14	14	-	-	-	
30	Jervis Inlet	120	120	-	120	120	25	100	12255-12374	
31	W. of Texada Is.	175	510	123	510	510	106	-	12375-12884	119 gonad weights.

Table 5 (cont'd)

Set no.	Location (Ground)	Number of fish sampled: Age (left pectoral fin)	Length	Weight	Sex	Maturity	Stomach	Electro-phoresis	Sample numbers	Remarks
32	W. of Texada Is.	-	19	-	19	19	-		12885-12903	
33	Halibut Bank	-	90	-	90	90	-			
34	Halibut Bank		362	-	362	196	-		12994-13189	
						CALIGUS				
38	N. Active Pass	360	360		360	360	100		13190-13549	
39	N. Active Pass	213	414		414	213			13550-13762	
40	N. Active Pass	212	452		452	212			13763-13974	
41	N. Active Pass	108	108		108	108	108		13975-14082	
42	N. Active Pass	130	130		130	130			14083-14212	
43	Swanson Channel	145	145		145	145			14213-14357	
44	Off Birch Bay		120		120	120			-	
45	N. Active Pass	27	27		27	27			14359-14385	
46	Active-Roberts		60		60	60	60		-	
47	Active -Roberts		36		36	36				

Table 5 (cont'd)

Set no	Location (Ground)	Number of fish sampled: Age (left pectoral fin)	Length	Weight	Sex	Maturity	Stomach	Electro-phoresis	Sample numbers	Remarks
						G.B. REED				
48	N. of Patos Is.		95	95	95	95			14386-14480	
49	N. of Patos Is.		341	341	100	25			14481-14580	
50	Off Saturna Is.		328	328	100				14581-14680	
51	Active Pass		339		339	100			14681-14780	
52	Off Mayne Is.		530		530	100	75		14781-14879	
54	Off Pt. Roberts	200	763		763	100	100		14880-15138	
55	Halibut Bank		98		98				-	

Table 6. Length frequency of pollock, March 16-April 21, 1978. Collected aboard ARCTIC HARVESTER, CALIGUS and G.B. REED.

Fork length (cm)	Vessel and set no.																	
	AH 1[a]			AH 3[a]			AH 5			AH 6			AH 7[a]			AH 8		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
10																		
11																		
12																		
13																		
14																		
15																		
16																		
17																		
18																		
19																		
20													1		1			
21																		
22																		
23																		
24																		
25																		
26																		
27																		
28																		
29	1		1											1	1			
30	1		1															
31	3		3										4	1	5			
32	1		1		1	1							2	1	3			
33		1	1	1		1							3	1	4			
34	1		1										1	1	2			
35	2		2	1		1							1	3	4			
36	3	1	4		1	1							4	1	5			
37	1		1											1	1			
38	11	2	13	2		2							1		1			
39	5	6	11	1		1							1	1	2			
40	9	2	11	2	2	4							1		1			
41	8	2	10	1		1												
42	3	4	7															
43	5	1	6	1	1	2												
44	2	2	4										1	3	4			
45					1	1												
46	1	1	2											1	1			
47	3	2	5		1	1												
48	1	1	2		1	1	1		1									
49	3	1	4		1	1		1	1									

Table 6 (cont'd)

Fork length (cm)	Vessel and set no.																	
	AH 1[a]			AH 3[a]			AH 5			AH 6			AH 7[a]			AH 8		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
50	2	1	3	1		1		1	1									
51		1	1				2	3	5	1		1						
52				1		1		1	1									
53	1		1		5	5		7	7									
54					6	6		6	6		3	3						
55		1	1		3	3		8	8		5	5						
56		1	1	1	3	4		12	12	1	3	4	1	1				
57					1	1	2	9	11		6	6						
58					1	1	1	8	9		4	4						
59	1	1	2		2	2		15	15		5	5						
60							1	12	13		7	7					1	1
61				1		1	1	14	15		3	3						
62		1	1					8	8		2	2						
63								11	11		3	3						
64				1	1	2	1	4	5									
65							1	3	4		1	1						
66					1	1		1	1		1	1						
67																		
68								1	1									
69								1	1									
70																		
71																		
72																		
73																		
74																		
Total	68	32	100	14	32	46	10	126	136	2	43	45	20	16	36	0	1	1

Table 6 (cont'd) - pollock

Fork length (cm)	Vessel and set no.																	
	AH 9			AH 13			AH 16			AH 17			AH 19			AH 21		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
10																		
11																		
12																		
13																		
14																		
15																		
16																		
17																		
18																		
19																		
20																		
21																		
22																		
23																		
24																		
25																		
26																		
27																		
28																		
29																		
30															2			
31																		
32																		
33																		
34																		
35																		
36																		
37																	1	1
38																		
39																1		1
40			1			1										2		2
41																	1	1
42											1	1				2	4	6
43																5	1	6
44																3	5	8
45															2	2	5	7
46																5	6	11
47																4	8	12
48																3	2	5
49																4	4	8

Table 6 (cont'd)

Fork length (cm)	Vessel and set no.																	
	AH 9			AH 13			AH 16			AH 17			AH 19			AH 21		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
50																4	4	8
51																3	11	14
52																3	6	9
53																10	7	17
54																9	8	17
55																7	5	12
56																6	7	13
57																4	7	11
58																	8	8
59																	6	6
60																2	3	5
61								1	1								1	1
62						1											3	3
63																	6	6
64																	2	2
65																		
66																	1	1
67																	1	1
68																		
69																		
70																		
71																		
72																		
73																		
74																		1
Total	0	0	2	0	0	2	0	1	1	0	1	1	0	0	4	80	123	203

Table 6 (cont'd) - pollock

Fork length (cm)	Vessel and set no.																	
	AH 22			AH 23			AH 24			AH 25			AH 28			AH 29		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
10																		
11																		
12																		
13																		
14																		
15																		
16																		
17																		
18																		
19																		
20																		
21																		
22																		
23																		
24																		
25																		
26																		
27																		
28																		
29																		
30																		
31																		
32													1		1			
33																		
34																		
35																		
36																		
37								1	1									
38																		
39																1		1
40							1		1								1	1
41																1		1
42		1	1					1	1								2	2
43		1	1														2	2
44		1	1														4	4
45																1	1	2
46							1		1									
47	1	1	2															
48		2	2															
49	1		1														1	1

Table 6 (cont'd)

Fork length (cm)	Vessel and set no.																	
	AH 22			AH 23			AH 24			AH 25			AH 28			AH 29		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
50	3	4	7				1	1	2									
51	2	4	6					1	1									
52		1	1				1		1		1	1						
53	3	1	4				1	3	4		1	1						
54	3	4	7					1	1		2	2						
55	2	3	5				1		1		1	1						
56	2	1	3				3	2	5									
57		4	4	1		1	2	2	4	1		1						
58		4	4		1	1	9	3	12	2	6	8						
59		1	1		1	1	4	2	6	1	3	4						
60		1	1	1	3	4	2	2	4	1	4	5						
61	1		1	1	2	3	1	3	4		2	2						
62					2	2	2	4	6		1	1						
63					1	1	3	4	7		2	2						
64					3	3	1	5	6	3	4	7						
65				1	3	4		1	1		3	3						
66				1	5	6		7	7		1	1						
67					2	2		2	2		3	3						
68																		
69					2	2		1	1		1	1						
70																		
71								1	1									
72																		
73																		
74																		
Total	18	34	52	5	25	30	33	47	80	8	35	43	1	0	1	3	11	14

Table 6 (cont'd) - pollock

Fork length (cm)	Vessel and set no.																	
	AH 30			AH 31			AH 32			AH 33			AH 34			C 38		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
10																		
11																		
12																		
13																		
14																		
15																		
16																		
17																		
18																		
19																		
20																		
21																		
22																		
23																		
24																		
25																		
26																		
27																		
28																		
29			1												1			
30													1		1			
31				1		1					1	1						
32													1		1	1		1
33		1	1	1		1				1		1	3	3	3	2	1	3
34				1	2	3							5	3	8	6	1	7
35	1	1	2		5	5							6	10	16	5	2	7
36		1	1		13	13	1		1	3		3	13	10	23	7	6	13
37					14	14		1	1				4	26	30	11	4	15
38					10	10				2		2	9	13	22	16	5	21
39				1	22	23	1		1	3	1	4	7	9	16	30	12	42
40	1	3	4	5	27	32				9	3	12	4	13	17	41	6	47
41	1	3	4		36	36	1	1	2	11	2	13	15	13	28	42	7	49
42	1	13	14	5	63	68				14	1	15	9	14	23	27	12	39
43		20	20	1	95	96		5	5	6	1	7	4	27	31	21	10	31
44		25	25	3	82	85		3	3	2	4	6	4	28	32	12	14	26
45		21	21		46	46		1	1	1	4	5	2	41	43	5	9	14
46		7	7	1	39	40		2	2	4	4	8	1	18	19	1	17	18
47	1	7	8		19	19		2	2	1	2	3	2	20	22	1	5	6
48		9	9		7	7				2	1	3		16	16	1	3	4
49		1	1		6	6				1	2	3		5	5	1	2	3

Table 6 (cont'd)

Fork length (cm)	Vessel and set no.																	
	AH 30			AH 31			AH 32			AH 33			AH 34			C 38		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
50		3	3		4	4					1	1		4	4	2	3	5
51					1	1								1	1			
52																	1	1
53																	2	2
54																	1	1
55														1	1			
56																		
57																	1	1
58											1	1						
59																		
60																	1	1
61																		
62																	1	1
63																		
64																		
65																		
66																		
67																		
68																		
69																		
70																		
71																		
72																		
73																		
74																		
Total	5	115	120	19	491	510	4	15	19	62	28	90	90	272	362	232	126	358

Table 6 (cont'd) - pollock

Fork length (cm)	Vessel and set no.																	
	C 39			C 40			C 41			C 42			C 43			C 44		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
10																		
11																		
12																		
13															2			
14															4	1		1
15															6		1	1
16															15	1		1
17															7		1	1
18															24		2	2
19															5	1	2	3
20															4		2	2
21															5	3		3
22															1	1		1
23														2	2	1		1
24																	1	1
25																1		1
26													2		2	1		1
27													3	5	8	3		3
28													11	6	17	3	1	4
29	1		1	1		1							3	7	10	7	9	16
30													8	8	16	1	2	3
31								1	1				1	5	6	5	6	11
32		2	2								1	1	3	4	7	1	9	10
33				2		2		1	1							1	4	5
34	1		1	4	1	5				2	1	3				1		1
35	2	3	5	7	4	11	1	1	2	3	2	5					1	1
36	9	5	14	7		7	1	2	3	3	2	5	1		1	3		3
37	6	7	13	13	7	20	4	3	7		4	4				4	3	7
38	9	8	17	22	13	35	3	3	6	2	2	4	1		1		1	1
39	14	20	34	33	12	45	6	2	8	5	3	8	1		1		1	1
40	23	14	37	38	12	50	10	3	13	6	6	12				2		2
41	12	15	27	42	17	59	8	3	11	8	7	15				3		3
42	20	35	55	40	19	59	10	3	13	7	8	15					1	1
43	12	31	43	33	24	57	5	7	12	2	8	10					4	4
44	8	26	34	11	17	28	3	4	7	4	12	16					2	2
45	1	23	24	4	16	20	1	1	2	4	5	9		1	1		3	3
46		27	27	4	12	16	3	4	7	2	6	8					3	3
47	4	18	22	2	6	8	1	3	4		7	7					3	3
48	3	21	24	2	12	14		1	1	1	2	3					3	3
49	1	8	9		3	3		4	4								2	2

Table 6 (cont'd)

Fork length (cm)	Vessel and set no.																	
	C 39			C 40			C 41			C 42			C 43			C 44		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
50	1	6	7	1	3	4		1	1		1	1					4	4
51		8	8		3	3	1		1		1	1					1	1
52		1	1	1		1		1	1		1	1						
53		5	5		1	1												
54		1	1					1	1								1	1
55		1	1					1	1								1	1
56		2	2		1	1					1	1					1	1
57											1	1						
58					1	1		1	1									
59																		
60																		
61																		
62					1	1												
63																		
64																		
65																		
66																		
67																		
68																		
69																		
70																		
71																		
72																		
73																		
74																		
Total	127	287	414	267	185	452	57	51	108	49	81	130	34	38	82	41	69	110

Table 6 (cont'd) - pollock

Fork length (cm)	Vessel and set no.																	
	C 45			C 46			C 47			GBR 48			GBR 49			GBR 50		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
10																		
11																		
12																		
13																		
14																		
15																		
16																		
17																		
18																		
19																		
20																		
21																		
22																		
23																		
24																		
25																		
26													1		1			
27										1		1	2	1	3			
28													4	1	5			
29										1	1	2	5	2	7			
30		1	1							4		4	8	8	16			
31										4	2	6	11	3	14	2		2
32										3	4	7	4	5	9	3	2	5
33										3	2	5	11	3	14	1		1
34							1		1	3	1	4	5	5	10	4	1	5
35										5	2	7	9	8	17	9	2	11
36				1	1	2				4	1	5	22	6	28	9	4	13
37		1	1	2	1	3	1	1	2	5	1	6	15	11	26	13	2	15
38		1	1	2		2				2	3	5	11	10	21	13	1	14
39	1		1	1		1		1	1	2		2	11	2	13	30	4	34
40	1	1	2	4	2	6		1	1	5	1	6	19	6	25	40	1	41
41				5	1	6		3	3	5		5	12	3	15	55	1	56
42	2	1	3	5	3	8				9	1	10	16	1	17	28	3	31
43		1	1	1	2	3		1	1	3	1	4	14	4	18	26	4	30
44				1	2	3		5	5	2		2	15	7	22	18	8	26
45		4	4	1	5	6		2	2	2	2	4	4	10	14	14	4	18
46		2	2	1	5	6		2	2	1		1	4	10	14	5	4	9
47		1	1		4	4	1	2	3	1	3	4	2	9	11	2		2
48		2	2					3	3					4	4		3	3
49					2	2		3	3		1	1		5	5	1	4	5

Table 6 (cont'd)

Fork length (cm)	Vesseland set no.																	
	C 45			C 46			C 47			GBR 48			GBR 49			GBR 50		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
50				1	2	3		2	2		1	1		5	5	2	1	3
51		2	2		1	1								2	2		1	1
52					1	1		1	1		1	1						
53		2	2		1	1											1	1
54		1	1								1	1		1	1	1		1
55								1	1									
56					2	2		4	4					2	2			
57														1	1			
58		1	1															
59		2	2															
60								1	1								1	1
61																		
62														1	1			
63											1	1						
64																		
65																		
66																		
67																		
68																		
69																		
70																		
71																		
72																		
73																		
74																		
Total	4	23	27	25	35	60	3	33	36	65	30	95	205	136	341	276	52	328

Table 6 (cont'd) - pollock

Fork length (cm)	Vessel and set no.											
	GBR 51			GBR 52			GBR 54			GBR 55		
	M	F	T	M	F	T	M	F	T	M	F	T
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26								1	1			
27							2	1	3			
28							1	1	2			
29	1	2	3				6	4	10			
30							21	8	29			
31	2		2	5	2	7	24	18	42			
32	1		1	5	6	11	30	21	51			
33	2		2	15	2	17	36	24	60	2	1	3
34				31	10	41	43	30	73	3		3
35	4		4	35	11	46	66	23	89	3	1	4
36	5		5	31	19	50	66	30	96	4	3	7
37	6		6	30	21	51	55	42	97	12	4	16
38	8		8	21	11	32	25	40	65	2	7	9
39	36	1	37	35	17	52	18	18	36	7	2	9
40	54		54	37	10	47	27	16	43	7	1	8
41	54	2	56	36	4	40	17	8	25	8	2	10
42	67	2	69	28	5	33	12	6	18	10		10
43	26	1	27	26	5	31	8	3	11	4	4	8
44	17	2	19	6	11	17	2	2	4	1	3	4
45	13		13	5	9	14	1	4	5	1	2	3
46	6		6		14	14					1	1
47	9	3	12	2	10	12		2	2	1	1	2
48					6	6					1	1
49	7		7		5	5		1	1			

Table 6 (cont'd)

Fork length (cm)	Vessel and set no.											
	GBR 51			GBR 52			GBR 54			GBR 55		
	M	F	T	M	F	T	M	F	T	M	F	T
50	3	1	4	1								
51					2	3						
52	1	1	2									
53												
54												
55												
56		1	1									
57		1	1									
58												
59												
60												
61												
62												
63												
64												
65												
66												
67												
68												
69												
70												
71												
72												
73												
74												
Total	322	17	339	349	181	530	460	303	763	65	33	98

[a]Refer to Table 8 for small (< 20 cm) pollock.

Note: See Table 7 for grand totals by area.

Table 7. Combined length frequencies of walleye pollock collected during March 16-April 21, 1978 in British Columbia coastal waters, by region.

Fork length (cm)	Region[a] and set no.								
	A[b] 1-19			B 20-26			C 27-28,31-37,55		
	M	F	T	M	F	T	M	F	T
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20	1		1[b]						
21									
22									
23									
24									
25									
26									
27									
28									
29	1	1	2						
30	1		3				1	0	1
31	7	1	8				1	1	2
32	3	2	5				2	0	2
33	4	2	6				7	1	8
34	2	1	3				12	5	17
35	4	3	7				9	16	25
36	7	3	10				21	26	47
37	1	1	2	0	2	2	16	45	61
38	14	2	16				13	30	43
39	7	7	14	1	0	1	19	34	53
40	12	4	18	3	0	3	25	44	69
41	9	2	11	0	1	1	35	54	89
42	3	5	8	2	6	8	38	78	116
43	6	2	8	5	2	7	15	132	147
44	3	5	8	3	6	9	10	120	130
45	0	1	3	2	5	7	4	94	98
46	1	2	3	6	6	12	6	64	70
47	3	3	6	5	9	14	4	44	48
48	2	2	4	3	4	7	2	25	27
49	3	3	6	5	4	9	1	13	14

Table 7 (cont'd)

Fork length (cm)	Region[a] and set no.								
	A[b] 1-19			B 20-26			C 27-28,31-37,55		
	M	F	T	M	F	T	M	F	T
50	3	2	5	8	9	17	0	9	9
51	3	4	7	5	16	21	0	2	2
52	1	1	2	4	8	12			
53	1	12	13	14	12	26			
54	0	15	15	12	15	27			
55	0	17	17	10	9	19	0	1	1
56	2	20	22	11	10	21			
57	2	16	19	8	13	21			
58	1	13	14	11	22	33	0	1	1
59	1	23	24	5	13	18			
60	1	20	21	6	13	19			
61	2	18	20	3	8	11			
62	0	11	12	2	10	12			
63	0	14	14	3	13	16			
64	2	5	7	4	14	18			
65	1	4	5	1	7	8			
66	0	3	3	1	14	15			
67				0	8	8			
68	0	1	1						
69	0	1	1	0	4	4			
70									
71				0	1	1			
72									
73									
74				1	0	1			
Total	114	252	374	144	264	408	241	839	1080
Mean	41.6	54.6	50.4	53.5	56.3	55.3	39.7	42.7	42.0
S.D.	8.47	8 28	10.33	6.16	7.05	6.87	3.56	3.50	3.73

Table 7 (cont'd) - walleye pollock

Fork length (cm)	Region[a] and set no.								
	D 29,30			E 38-42,44-54			F 43		
	M	F	T	M	F	T	M	F	T
10									
11									
12									
13									2
14				1		1			4
15				0	1	1			6
16				1	0	1			15
17				0	1	1			7
18				0	2	2			24
19				1	2	3			5
20				0	2	2			4
21				3	0	3			5
22				1	0	1			1
23				1	0	1	0	2	2
24				0	1	1			
25				1	0	1			
26				2	1	3	2	0	2
27				8	2	10	3	5	8
28				8	3	11	11	6	17
29				22	18	40	3	7	10
30				34	19	53	8	8	16
31				53	32	85	1	5	6
32	0	1	1	48	50	98	3	4	7
33				73	37	110			
34	1	1	2	101	50	151			
35	0	1	1	146	59	205			
36				168	76	244	1	0	1
37				165	108	273			
38				134	98	232	1	0	1
39	1	0	1	222	93	315	1	0	1
40	1	4	5	307	79	386			
41	2	3	5	299	71	370			
42	1	15	16	271	100	371			
43	0	22	22	177	106	283			
44	0	29	29	99	112	211			
45	1	22	23	55	97	152	0	1	1
46	0	7	7	27	106	133			
47	1	7	8	25	76	101			
48	0	9	9	7	60	67			
49	0	2	2	10	40	50			

Table 7 (cont'd) - walleye pollock

Fork length (cm)	Region[a] and set no. D 29,30 M	D F	D T	E 38-42,44-54 M	E F	E T	F 43 M	F F	F T
50	0	3	3	11	32	43			
51				1	20	21			
52				2	8	10			
53				0	12	12			
54				1	7	8			
55				0	4	4			
56				0	14	14			
57				0	4	4			
58				0	3	3			
59				0	2	2			
60				0	3	3			
61				0	3	3			
62				0	1	1			
63									
64									
65									
66									
67									
68									
69									
70									
71									
72									
73									
74									
Total	8	126	134	2485	1615	4100	34	38	145
Mean	41.1	44.1	43.9	38.9	41.1	39.8	29.6	29.7	23.4
S.D.	3.91	2.70	2.86	4.21	6.16	5.18	2.99	3.33	6.67

[a]A - Northern Hecate Strait, Dixon Extrance and Chatham Sound;
B - Mainland inlets off Queen Charlotte Sound;
C - Georgia Strait north of and including Halibut Bank;
D - Jervis Inlet;
E - Georgia Strait between Active Pass and Point Roberts;
F - Swanson Channel.

[b]See Table 8 for pollock < 20 cm.

Table 8. Length frequency of pollock < 20 cm collected from Butterworth and Chatham Sound, March 16-31, 1978.

Fork length (cm)	Vessel and set no.											
	AH 1			AH 3			AH 7			AH 1,3,7		
	M	F	T	M	F	T	M	F	T	M	F	T
10.0						1						1
10.5			1									1
11.0			1			1	1	1	2	1	1	4
11.5							1	2	3	1	2	3
12.0			3			3	7	5	12	7	5	18
12.5			2				6	8	14	6	8	16
13.0			3			1	17	8	25	17	8	29
13.5			2				12	11	23	12	11	25
14.0			3			3	12	14	26	12	14	32
14.5			1				17	16	33	17	16	34
15.0			2				19	21	40	19	21	42
15.5							9	8	17	9	8	17
16.0			3			2	7	4	11	7	4	16
16.5			1				3	3	6	3	3	7
17.0			2			2	1	0	1	1	0	5
17.5			1									1
18.0						3						3
18.5												
19.0			1									1
19.5												
20.0												
Total			26			16	112	101	213	112	101	255
Mean			14.2			14.5	14.1	14.1	14.1	14.1	14.1	14.2
S.D.			2.15			2.68	1.25	1.21	1.23	1.25	1.21	1.47

Table 9. Walleye pollock maturities and sex ratios, March-April 1978.

Date	Location	Haul no.	Sex	Sample size	Frequency (%)											
					I1	I2	R1	R2	R	1R	2R	RR	S	RSB	Rec.	Rest.
78-3-16	Butterworth	1	M	67				3	15			67	15			
			F[a]	0												
78-3-17	Butterworth	3	M	14		14			43			43				
			F	32		9					56		6		22	6
78-3-18	N. Dixon Entrance	5	M	10								50	50			
			F	127				10	82		2		1		5	
78-3-18	N. Dixon Entrance	6	M	2								100				
			F	43					98			2				
78-3-19	Chatham Sound	7	M	10	45	25						25	5			
	(large fish only)		F	16	38	50		6	6							
78-3-25	Campania Sound	21	M	79	3	5	4	14	33			4	32		5	1
			F	123		10	20	20	26				17	1	7	
78-3-25	Squally Channel	22	M	18			11	22	17				50			
			F	34		3	29	27	6				6	3	18	9
78-3-26	Finlayson Channel	23	M	5					20			20	60			
			F	25				8	72				20			
78-3-26	Finlayson Channel	24	M	33				18				3	79			
			F	47			4	32	64							
78-3-27	Finlayson Channel	25	M	8								13	87			
			F	35					37				63			
78-3-29	Jervis Inlet	29	M	3									100			
			F	11									100			

Table 9 (cont'd)

Date	Location	Haul no.	Sex	Sample size	Frequency (%)											
					I1	I2	R1	R2	R	1R	2R	RR	S	RSB	Rec.	Rest.
78-3-29	Jervis Inlet	30	M	4		25							50			25
			F	114						4			92			4
78-3-29	W. Texada Island	31	M	19	5	10							47		5	32
			F	224[b]			1	1	1			2	2		16	77
			F	295[c]		1			2			1	5		48	44
78-3-29	W. Texada Island	32	M	4								100				
			F	15					20			40	40			
78-3-30	Halibut Bank	33	M	56		2			16			70	2		11	
			F	23		4			26	26	13	17			13	
78-3-30	Halibut Bank	34	M	43					2			19			79	
			F	154		5			10	6	9		7	1	51	10
78-4-5	N. Active Pass	38	M	229			1		4			63	13		16	2
			F	123				2	11	16	27	15	11		16[d]	
78-4-6	N. Active Pass	39	M	73					29			53	1		16	
			F	140		1		1	24	24	35	2	4		8[d]	1
78-4-6	N. Active Pass	40	M	122		1			17			55	14[e]		13	
			F	87				6	16	14	37	8	7		13	
78-4-7	N. Active Pass	41	M	56			2		11	2		73	4		9[e]	
			F	51		4			20	14	29	8	12		14[d]	
78-4-7	N. Active Pass	42	M	48					10		2	65	8		15[e]	
			F	80					13	11	33	21	18[d]		5	

Table 9 (cont'd)

Date	Location	Haul no.	Sex	Sample size	Frequency (%)											
					I1	I2	R1	R2	R	1R	2R	RR	S	RSB	Rec.	Rest.
78-4-11	Swanson Channel (large fish)	43	M	34	41	50	(26-32 cm)		3			6				
			F	38	5	92	(26-32 cm)								3	
78-4-12	Off Birch Bay	44	M	44	34	32	(14-37 cm)		5			7	9		14	
			F	75	13	41	(19-37 cm)						9		33	3
78-4-12	N. Active Pass	45	M	4					25						75	
			F	23		4			17	13	9		17		39	
78-4-13	Active-Roberts	46	M	47					11			29	17		11	
			F	71			1	1	25	17	24	11	11		7	1
78-4-13	Active-Roberts	47	M	3					33			33			33	
			F	33					15	15	27		24		15	3
78-4-19	N. of Patos Island	48	M	65	5	14						3	14		52	12
			F	30		37				3		3	3		20	33
78-4-19	N. of Patos Island	49	M	60	2	17						5	2		72	3
			F	40		18				3	3		3		65	7
78-4-19	Off Saturna Island	50	M	82		2			2			15	46		33	1
			F	18		11			22		11	11		6	28	11
78-4-20	Active Pass	51	M	90								26	26		48	1
			F	10		10			10	10	20	20			30	

Table 9 (cont'd)

Date	Location	Haul no.	Sex	Sample size	Frequency (%)											
					I1	I2	R1	R2	R	1R	2R	RR	S	RSB	Rec.	Rest.
78-4-20	Off Mayne Island	52	M	57		9			2			16	42		26	5
			F	42			5	2		2			26		43	21
78-4-20	Off Pt. Roberts	54	M	57		7							4		68	21
			F	43		9							5		40	47
78-4-21	Halibut Bank	55	M	65		2				2		8	45		37	8
			F	32		6			3	3	6		6	3	38	38

[a]Females sampled for roe processing study.

[b]Sampled by J. Thompson (P = present, less than 3%).

[c]Sampled by R. Scarsbrook.

[d]Some resting/recovering.

[e]Some spent/recovering.

Table 10. Individual fresh, round weights of age 1 walleye pollock, Set 7, ARCTIC HARVESTER, March 19, 1978.

Fork length (cm)	Weight (g)								No. fish
				Random sample[a]					
11.0	8.7								1
11.5	9.3								1
12.0	11.1	10.5	10.5						3
12.5	10.5	11.8	11.2	10.8					4
13.0	13.3	13.1	13.7	12.9	13.6	14.9	15.0	14.9	
	13.9	13.6	12.9	14.3	14.1	12.2	14.0	15.4	16
13.5	13.7	14.8	16.0	13.1	14.6	15.8	14.6	16.1	
	14.5	15.2	17.0	14.8	16.0	15.6	15.0	15.0	
	13.3	13.9							18
14.0	15.9	18.8	18.8	17.1	17.8	18.2	16.5	16.9	
	17.2	18.0	17.5	17.3	15.7	16.9	19.0	15.9	
	16.1	18.1	16.9	14.8					20
14.5	19.8	19.7	20.7	18.7	20.0	20.6	17.6	18.2	
	17.8	20.2	16.3	19.8					12
15.0	20.2	22.8	22.6	21.3	20.1	22.4	19.3	19.2	
	21.7	21.3	21.9	19.2	21.8	21.4	24.4	20.4	
	18.8								17
15.5	21.8	24.8	23.1	24.5	23.1	24.8	24.8	22.4	
	26.8	22.5	26.4	22.8					12
16.0	25.7	23.3	26.6	26.4	25.3	26.2	24.4	24.1	
	27.3								9
16.5	30.2	25.7	30.0	29.6	29.4				5
17.5	40.9								1
				Stratified sample (by length)					
11.5	10.0	9.3	7.9	8.2					4
12.0	10.1	10.2	9.5	10.6	10.6	9.8	9.6	9.8	
	10.5	9.9	10.3						11
12.5	11.5	11.4	11.2	11.8	11.1	11.3			6
13.0	15.1	13.4	13.3	14.0					4
13.5	15.5	15.0							2
14.5	17.5	17.4	19.0	17.7	19.6	19.5	19.2	15.4	8
15.0	16.9	19.6	21.1						3
15.5	21.6	22.5	22.9	25.2	23.1	22.4			6
16.0	25.8	23.4	24.2	25.4	24.2				5
16.5	28.8	29.6	28.1	28.4	27.4				5
17.0	29.4	30.2	33.6	30.7	35.4				5
17.5	33.1								1

[a]Mean fork length = 14.27 cm (SD = 1.22, n = 119).

[b]Mean weight = 18.69 g (SD = 5.36, n = 119).

Table 11. Length frequency of age of walley pollock from Finlayson Channel (sets 23-25).

Fork length (cm)	Frequency (no. of fish)													
	Age (yrs)													
	Sex													
	4		5		6		7		8		9		10	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
37		1												
38														
39														
40	1													
41														
42		1												
43														
44														
45														
46	1													
47														
48														
49														
50							(1)	(1)						
51								0						(1)
52			1					1						
53			0	3	1	1		0						
54			0	0	0	0		1				1		
55			1	0	0	1		0				0		
56			1	1	1	1	1	0				0		
57			1	0	1	1	1	1	1			0		
58			4	2	2	4	2	2	3			1		
59			1	0	1	1	1	3	1	2	1	0		

Table 11 (cont'd).

Fork length (cm)	Frequency (no. of fish)													
	Age (yrs)													
	Sex													
	4		5		6		7		8		9		10	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
60			0	1	1	4	2	1	1	3	0	0		
61			0	1	1	3	1	2	0	1	0	0		
62			0		0	2	0	3	1	1	1	1		
63			1		2	2	0	4	0	0		1		
64						4	2	4	2	3		1		
65						3	1	3		1		0		
66						5	1	2		4		1		
67						3		3		1				
68								0		0				
69								1		2				
70										0				
71										1				
N	2	2	10	8	10	36	13	33	9	19	2	6	-	1
$\bar{x}$[a]	43.0	39.5	57.4	57.4	59.0	62.1	60.7	62.4	60.0	64.1	60.5	61.2	-	-

[a]Mean lengths do not include observations in parentheses.

Table 12. Frequency of empty stomachs, mean stomach contents volume, and dominant prey species in walleye pollock samples during March-April, 1978.

Date	Location	Sample size	Frequency of empty stomachs (%)	Mean stomach contents volume[a] (cc)	Dominant prey species (frequency of occurrence)
March 16-19	Dixon Entrance & Chatham Sd. (AH 3-77)	277	20	7.2	Euphausiids, Fish and shrimp
March 25-26	QCS mainland inlets	256	19	4.5	Euphausiids, Fish and shrimp
March 29	N. Georgia Strait[b]	106	22	1.0	Euphausiids
April 5-13	S. Georgia Strait[c]	206	72	3.1	Euphausiids and shrimp
April 19-20	S. Georgia Strait[c]	304	13	1.7	Euphausiids

[a]Excluding empty stomachs.

[b]North of and including Halibut Bank.

[c]South of Halibut Bank.

Table 13. Stomach contents of walleye pollock by set, March 14-April 20, 1978.

Set no.	Location (Date)	Sex and no. of fish	Vol. (mℓ) / Freq. no. fish	Stomach contents: Fish[a]	Shrimp	Squid[b]	Euphausiids	Unidentified digested matter	Amphipods	Unidentified invertebrates[c]	Jellyfish	Other	Empty	Total volume (cc)	Mean volume[a]
1	Butterworth 78-3-16	♂ 59	V	46.8	29.9	0.4	2.0	28.0	0	2.8	0	2.8[d]	0	112.7	1.9
			F	7	8	1	3	6	0	4	0	5	29		
3	Butterworth 78-3-17	♂ 14	V	66.6[e]	2.5[f]	0	0	1.0	0	0	0	0.4[g]	0	70.5	5.0
			F	6	2	0	0	2	0	0	0	1	6		
		♀ 31	V	113.6	83.2	12.0	34.9	2.0	0	0	0	18.8	0	264.5	8.5
			F	10[h]	16[i]	2	5	3	0	0	0	7[j]	3		
5	N. Dixon Entrance 78-3-18	♂ 10	V	0	13.0	1.4	0	0	6.9	10.7	0	0	0	29.0	2.9
			F	0	5[k]	2	0	0	2	3	0	0	1		
		♀ 127	V	194.9	368.2	27.8	12.7	21.0	67.4	237.6	0	0.5	0	929.5	7.3
			F	15	70[k]	4	6	6	47	87	0	1	5		
7	Chatham Sound 78-3-19	♂ 20	V	87.9	0[l]	0	1.0	0.5	0	1.4	0	0	0	90.8	4.5
			F	12	0	0	1	1	1	2	0	0	5		
		♀ 16	V	101.0	4.0	0	0	0.7	0	1.8	0	0	0	107.5	6.7
			F	7	1	0	0	1	0	2	0	0	7		
21	Campania Sound 78-3-25	♂ 79	V	81.5	61.2	25.1	12.7	6.0	1.5	8.5	12.0	0	0	208.5	2.6
			F	4	31	5	4	10	2	5	1	0	24		
		♀ 78	V	21.5	86.0	1	9.8	5	21.7	0	9.5	0	0	154.5	2.0
			F	3	31	2	11	3	1	13	2	0	16		

Table 13 (cont'd)

Set no.	Location (Date)	Sex and no. of fish	Vol. (mℓ) / Freq. no. fish	Stomach contents: Fish[a]	Shrimp	Squid[b]	Euphausiids	Unidentified digested matter	Amphipods	Unidentified invertebrates[c]	Jellyfish	Other	Empty	Total volume (cc)	Mean volume[d]
23	Finlayson Channel 78-3-26	♂	V	1.0	6.0	0	0.5	0	0	0	0	1.0	0	8.5	1.7
		5	F	1	2	0	1	0	0	0	0	1	0		
		♀	V	93.4[q]	25.7	0	1.2	9.2	0	6.0	0	0	0	135.5	5.42
		25	F	11	10	0	2	7	0	1	0	0	0		
24	Finlayson Channel 78-3-26	♂	V	103.6	17.0	2.5	0	1.5	1	0	0	0	0	124.6	4.3
		29	F	14	18	1	0	2	1	0	0	0	1		
		♀	V	223.2	51.5	0.2	0.3	2.0	0	0.8	0	0	0	278	7.0
		40	F	24	24	1	1	1	0	1	0	0	7		
30	Jervis Inlet 78-3-29	♂	V	0	0	0	0	0	0	0	0	0	0	0	0
		1	F	0	0	0	0	0	0	0	0	0	1		
		♀	V	0	0	0	44.0	1.0	0.5	0	0	0	0	45.5	1.9
		24	F	0	0	0	14	1	1	0	0	0	8		
31	W. of Texada Is. 78-3-29	♀	V	0	0	0	5.0	0	0	0	0	0	0	5.0	2.5
		2	F	0	0	0	2	0	0	0	0	0	0		
		♀	V	0	0	0	64.2	9.8	0	1.0	0	0	0	74.0	0.7
		104	F	0	0	0	67	16	0	1	0	0	23		

Table 13 (cont'd)

Set no.	Location (Date)	Sex and no. of fish	Vol. (mℓ) / Freq. no. fish	Stomach contents: Fish[a]	Shrimp	Squid[b]	Euphausiids	Unidentified digested matter	Amphipods	Unidentified invertebrates[c]	Jellyfish	Other	Empty	Total volume (cc)	Mean volume[u]
38	Active-Roberts 78-4-5	♂ 64	V	0	3.5	0	4.75	1.5	0	0.25	0	0	0	10.0	0.16
			F	0	3	0	8	3	0	1	0	0	49		
		♀ 35	V	1.0	5.0[f,o]	0	3.75	0.5	0	0	0	0.5[d]	0	10.75	0.31
			F	1	4	0	3	1	0	0	0	1	25		
41	Active-Roberts 78-4-7	♂ 56	V	0.2	1.35[o]	0	7.55	1.8	0	0	0	4.1	0	15.0	0.27
			F	1	2	6	4	4	0	0	0	17	27		
		♀ 51	V	0	9.65[k,o]	0	11.8	1.6	1.0	0	0	0.4[t]	0	24.45	0.48
			F	0	10	0	9	7	1	0	0	3	24		
46	Active-Roberts 78-4-13	♂ 24	V	40.0	1.0	0	7.75	0	0	0	0	1.5	0	50.25	2.09
			F	1	1	0	8	0	0	0	0	3	11		
		♀ 35	V	50.0	3.5	0	8.15	0	0	0	0	7.6	0	69.25	1.98
			F	1	2	0	10	0	0	0	0	9	12		
48	N. of Patos Island 78-4-19	♂ 65	V	14.0	0	0	40.0	1.5	0	0	0	4.3[c]	0	19.8	0.30
			F	3	0	0	42	2	0	0	0	6	12		
		♀ 30	V	15.5	0	0	14.7	0.5	0	0	0	0.25[c]	0	31.0	1.03
			F	3	0	0	19	1	0	0	0	1	6		

Table 13 (cont'd)

Set no.	Location (Date)	Sex and no. of fish	Vol. (mℓ) / Freq. no. fish	Stomach contents: Fish[a]	Shrimp	Squid[b]	Euphausiids	Unidentified digested matter	Amphipods	Unidentified invertebrates[c]	Jellyfish	Other	Empty	Total volume (cc)	Mean volume[d]
49	N. of Patos Island 78-4-19	♂	V	20.0	0	0	3.75	0	0	0	0	0.25[t]	0	24.0	1.85
		13	F	1	0	0	8	0	0	0	0	1	3		
		♀	V	5.0	0	0	5.75	0	0	0	0	0	0	10.75	0.90
		12	F	1	0	0	8	0	0	0	0	0	3		
52	Off Mayne Island 78-4-20	♂	V	0	0	0	8.75	1.25	0	0.75[c]	0	0	0	10.75	0.77
		14	F	0	0	0	7	2	0	2	0	0	3		
		♀	V	0	0	0	7.0	0	0	0.5[c]	0	0	0	7.5	0.68
		11	F	0	0	0	7	0	0	1	0	0	3		
54	Off Pt. Roberts 78-4-20	♂	V	94.6	0	0	107.1	0	0	0	0	0	0	201.7	3.54
		57	F	6	0	0	49	0	0	0	0	0	5		
		♀	V	49.8	0	0	100.95	0	0	0	0	0	0	150.75	3.51
		43	F	5	0	0	36	0	0	0	0	0	3		

Footnotes to Table 13

[a]Includes whole fish, digested fish remains, scales or other recognizable feature.

[b]Includes whole squid, beak or other recognizable feature.

[c]In all cases includes zooplankton.

[d]Crab, copepods.

[e]Herring, sandlance, juvenile pollock.

[f]Crangon

[g]*Limacena* (pelagic pterapod)

[h]Includes herring, sandlance, juvenile flatfish.

[i]*Crangon*, ghost shrimp

[j]*Limacena*, unidentified gastropods, polychaetes.

[k]Glass shrimp.

[l]*Crangon*

[m]Includes herring, juvenile pollock.

[n]Includes *Spirinchus* sp.

[o]Includes glass shrimp.

[p]Includes myctophids.

[q]Includes *Leuroglossus*.

[r]Includes *Leuroglossus*, eelpout, and rainbow smelt.

[s]Rocks.

[t]Eggs.

[u]Empty stomachs included.

Table 14. Inventory of Pacific hake (*Merluccius productus*) sampled by set number, ARCTIC HARVESTER, CALIGUS and G.B. REED, March 14-31, 1978.

Set no.	Location (ground)	Number of fish sampled						Sample numbers	Remarks
		Otoliths	Length	Weight	Sex	Maturity	Stomach		
					ARCTIC HARVESTER				
21	Campania Sound	10	10	-	10	10	10	B3920-B3929	2 kept for lab
23	Finlayson Channel	6	6	-	6	6	6	B3930-B3935	2 green livers frozen
24	Finlayson Channel	1	1	-	-	-	-	B5354	89 cm, frozen whole
25	Finlayson Channel	8	8	-	8	8	8	B3936-B3943	
28	N. of Mittlenatch Island	-	52	-	13	-	-		All large hake spent or partly spent
29	Jervis Inlet	-	604	-	556	-	-		90% spent, 10% RR or R
30	Jervis Inlet	-	101	-	41	-	-		
33	Halibut Bank		293	-	293	293		B3944-B4236	Fish numbers refer to maturity
35	Entrance Island		300	-	300	300	-	B4237-B4536	" "
36	Half way between Halibut Bank and Entrance Island		154	-	154	154	-	B4537-B4690	" "
37	Half way between Halibut Bank and Entrance Island		300	-	300	300	-	B4691-B4990	" "

Table 14 (cont'd)

Set no.	Location (ground)	Number of fish sampled						Sample numbers	Remarks
		Otoliths	Length	Weight	Sex	Maturity	Stomach		
					CALIGUS AND G.B. REED				
51	Active Pass	-	-	-	-	-	-		40 lb - took some otoliths only from large fish
55	Halibut Bank	349	362	-	325	325	-	B4991-B5353	Fish numbers refer to maturities

Table 15. Length frequency of Pacific hake collected aboard ARCTIC HARVESTER, CALIGUS and G.B. REED, March 16-April 21, 1978.

Fork length (cm)	Vessel and set no.																	
	AH 21			AH 23			AH 24			AH 25			AH 28			AH 29		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
10																		4
11																		5
12																		7
13																		10
14																		7
15																		4
16																		1
17																		1
18																		
19															2			
20															1			
21															3		1	1
22															2	1	0	1
23															4	1	0	2
24																1	1	3
25															3			1
26															6	1	0	1
27															2	1	2	3
28															3			1
29															5	1	0	3
30															1		1	2
31															1	6	0	6
32															3	6	1	7
33																8	4	12
34															1	15	4	19
35															2	16	5	21
36																22	9	31
37																30	10	40
38																27	9	36
39																22	9	31
40																37	5	42
41																36	7	43
42																28	9	37
43													1	0	1	36	10	46
44													1	0	1	28	10	38
45																28	9	38
46														2	2	24	17	42
47														2	2	18	10	28
48													1	3	4	8	9	17
49																2	5	7

Table 15 (cont'd) - Pacific hake

Fork length (cm)	Vessel and set no. AH 30 M	AH 30 F	AH 30 T	AH 33 M	AH 33 F	AH 33 T	AH 35 M	AH 35 F	AH 35 T
10			4						
11			7						
12			11						
13			17						
14			11						
15			9						
16			1						
17									
18									
19		1	1						
20	1	0	1						
21		1	1						
22	1	1	2						
23	2	2	4						
24	2	0	2						
25	1	1	2						
26		1	1						
27	2	0	2						
28									
29	1	0	1						
30		1	1		1	1			
31		2	2						
32									
33	1	0	1						
34	2	2	4		1	1			
35		1	1						
36									
37		2	2	1	0	1	1	1	2
38		1	1	2	0	2			
39				1	2	3	1	4	5
40				2	2	4		1	1
41		1	1	10	4	14		7	7
42		1	1	4	10	14	1	9	10
43	1	1	2	16	19	35	1	17	18
44				16	28	44	2	24	26
45		1	1	17	32	49	2	46	48
46		1	1	11	34	45	2	48	50
47				1	30	31	1	51	52
48		3	3	2	18	20	1	36	37
49		3	3	1	13	14		22	22

Table 15 (cont'd)

Fork length (cm)	Vessel and set no.																	
	AH 21			AH 23			AH 24			AH 25			AH 28			AH 29		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
50													1	2	3	1	2	3
51																	1	1
52																		
53																		
54																		
55	1	0	1															
56																	1	1
57																	1	1
58	1	0	1															
59	1	0	1															
60	1	1	2															
61																		
62																		
63	1	0	1															
64	1	1	2															
65																		
66				1	0	1												
67											1	1						
68																		
69											1	1						
70					1	1												
71		1	1		2	2												
72		1	1		1	1					1	1						
73																		
74											1	1						
75																		
76											1	1						
77											1	1						
78				1	0	1												
79																		
80																		
81																		
82											2	2						
83																		
84																		
85																		
86																		
87																		
88																		
89									1									
Total	6	4	10	2	4	6			1	0	8	8	4	9	52	404	152	604

Table 15 (cont'd)

Fork length (cm)	Vessel and set no.								
	AH 30			AH 33			AH 35		
	M	F	T	M	F	T	M	F	T
50				1	5	6		12	12
51				1	6	7		2	2
52								5	5
53								3	3
54									
55									
56									
57									
58					1	1			
59									
60									
61					1	1			
62									
63									
64									
65									
66									
67									
68									
69									
70									
71									
72									
73									
74									
75									
76									
77									
78									
79									
80									
81									
82									
83									
84									
85									
86									
87									
88									
89									
Total	14	27	101	86	207	293	12	288	300

Table 15 (cont'd) - Pacific hake

Fork length (cm)	Vessel and set no.								
	AH 36			AH 37			GBR 55		
	M	F	T	M	F	T	M	F	T
10									5
11									3
12									9
13									9
14									5
15									4
16									
17									
18									
19					1	1			
20				1	0	1			1
21					2	2			
22		1	1		1	1			1
23				1	2	3			
24				1	2	3		1	1
25									
26	1	1	2		2	2	2	0	2
27				3	2	5	1	1	2
28	1		1	1	1	2			
29					1	1			
30		1	1	1	1	2		1	1
31				3	0	3		1	1
32	2	0	2	5	1	6			
33	1	0	1	1	1	2			
34	6	0	6	1	2	3			
35	1	0	1		6	6			
36	3	0	3	8	3	11	2	0	2
37	4	0	4	1	1	2	2	0	2
38	2	1	3	4	2	6	3	0	3
39	6	0	6	4	2	6	11	0	11
40	9	0	9	1	7	8	27	0	27
41	10	0	10	11	9	20	36	0	36
42	12	1	13	11	13	24	42	0	42
43	26	2	28	21	9	30	58	2	60
44	12	3	15	16	24	40	46	3	49
45	14	1	15	15	30	45	37	0	37
46	13	3	16	6	12	18	19	1	20
47	6	1	7		14	14	11	1	12
48	7	1	8	3	15	18	8	0	8
49		1	1	2	4	6	3	0	3

Table 15 (cont'd)

Fork length (cm)	Vessel and set no. 36 M	36 F	36 T	37 M	37 F	37 T	55 M	55 F	55 T
50		1	1		4	4	2	0	2
51					2	2			
52					1	1			
53							1	1	2
54									
55							1	0	1
56							1	0	1
57									
58					1	1			
59									
60									
61									
62									
63									
64					1	1			
65									
66									
67									
68									
69									
70									
71									
72									
73									
74									
75									
76									
77									
78									
79									
80									
81									
82									
83									
84									
85									
86									
87									
88									
89									
Total	136	18	154	121	179	300	313	12	362

Table 16. Combined length frequencies of Pacific hake collected during March 16-April 21, 1978 by region.

Fork length (cm)	Region[a] and set no.								
	A 21,23,24,25			B 28,33,35,36,37,55			C 29,30		
	M	F	T	M	F	T	M	F	T
10						5			8
11						3			12
12						9			18
13						9			27
14						5			18
15						4			13
16									2
17									1
18									
19					1	3		1	1
20				1	0	3	1	0	1
21					2	5	0	2	2
22					2	5	2	1	3
23				1	2	7	3	2	6
24				1	3	4	3	1	5
25						3	1	1	3
26				3	3	12	1	1	2
27				4	3	9	3	2	5
28				2	1	6			1
29					1	6	2	0	4
30				1	4	6		2	3
31				3	1	5	6	2	8
32				7	1	11	6	1	7
33				2	1	3	9	4	13
34				7	3	11	17	6	23
35				1	6	9	16	6	22
36				13	3	16	22	9	31
37				9	2	11	30	12	42
38				11	3	14	27	10	37
39				23	8	31	22	9	31
40				39	10	49	37	5	42
41				67	20	87	36	8	44
42				70	33	103	28	10	38
43				123	49	172	37	11	48
44				93	82	175	28	10	38
45				85	109	194	28	10	39
46				51	100	151	24	18	43
47				19	99	118	18	10	28
48				22	73	95	8	12	20
49				6	40	46	2	8	10

Table 16 (cont'd)

Fork length (cm)	Region[a] and set no.								
	A			B			C		
	M	F	T	M	F	T	M	F	T
50				4	24	28	1	2	3
51				1	10	11		1	1
52					6	6			
53				1	4	5			
54									
55	1	0	1	1	0	1			
56				1	0	1		1	1
57								1	1
58	1	0	1	0	2	2			
59	1	0	1	0	0	0			
60	1	1	2						
61					1	1			
62									
63	1	0	1						
64	1	1	2		1	1			
65									
66	1	0	1						
67		1	1						
68									
69		1	1						
70		1	1						
71		3	3						
72		3	3						
73									
74		1	1						
75									
76		1	1						
77		1	1						
78	1	0	1						
79									
80									
81									
82		2	2						
83									
84									
85									
86									
87									
88									
89			1						
Total	8	16	25	672	713	1461	418	179	705
Mean	62.9	71.9	69.7	42.5	44.8	4.25	39.9	40.8	36.2
S.D.	7.06	5.74	8.33	3.99	4.79	7.13	5.15	6.80	10.91

[a]A = Mainland inlets off Queen Charlotte Sound; B = Strait of Georgia, north of and including Halibut Bank; C = Jervis Inlet.

Table 17. Pacific hake ages from sets 21-25 in the inlets off Queen Charlotte Sound (March 25-27, 1979).

Section age	Deviations from surface ages (yr)	Fork lengths (cm)		Mean fork length (cm)
		Male	Female	
6	-1		64	64.0
7	0, -1	55	60	57.5
9[a]			76	76
11	0, 0, +3	58, 60	71	63.0
12	+2, +2	63, 64		63.5
13	+3, +4, +1, 0	78	70, 71, 72	72.8
14	+4	66		66.0
15	+4	59		59
16[b]	+5, +4		72, 89	80.5
17[c]	+7		71, 82	77.0
18	+4		72, 82	73.3
19	+8, +9		69, 74, 77	67
20			67	59

[a] Surface age.

[b] Otolith section burned in one case.

[c] Otolith section burned.

Table 18. Age composition of Pacific hake from set 55 (G.B. REED April 21, 1978). Ages were determined from otolith sections.

	Male				Female			
Age	Mean	S	Range	N	Mean	S	Range	N
1[a]	12.5	1.52	10-15	35				
2	21.0	-	20-22	2	27.0	-	27	1
3	26.3	0.58	26-27	3	27.0	-	24-30	2
4	40.5	1.64	37.43	24	-	-	-	0
5	41.1	1.82	36-44	44	27.0	-	46-53	2
6	42.1	1.87	37-47	61	43.5	-	43-44	2
7	44.0	2.69	39-53	59	46.0	-	44-47	2
8	44.0	2.38	40-55	50	43.5	-	43-44	2
9	43.9	1.97	41-48	27				
10	46.2	2.17	43-50	9				
11	46.0	1.00	45-47	3				
12	46.6	2.41	44-50	5				
13	46.4	1.94	45-49	5				
14	46.1	1.35	45-48	7				
15	47.3	0.58	47-48	3				
16	44.6	2.51	41-48	5				
17	43-8	1.30	43-46	5				
18	-	-	-	0				
19	47.0	-	47	1				
20	-	-	-	0				
21	44.0	-	44	1				
Total	42.9[b]	3.42[b]	10-55	349	40.5[b]	9.2	24-53	11

[a] Not sexed.

[b] Excluding ages 1, 2.

Table 19. Pacific hake maturities collected in British Columbia coastal waters during March and April 1978.

Date	Location	Haul no.	Sex	Sample size	Frequency (%)											
					I_1	I_2	R_1	R_2	R	1R	2R	RR	S	RSB	Rec.	Rest.
78-3-25	Campania Sound	21	M	6									100			
			F	4									75	25		
78-3-26	Finlayson Channel	23	M	2									100			
			F	4									100			
78-3-27	Finlayson Channel Channel	25	F	8					37.5				62.5			
78-3-30	Halibut Bank Area	33	M	86	2.3[a]				18.6		1.2	77.9				
			F	207	1.4[a]		0.5	4.3	78.3	2.9	9.7	2.4	0.5			
78-3-31	Entrance Island	35	M	12					8.3			83.0			8.3	
			F	285		1.1	0.7	1.8	62.1	1.8	1.1		1.1		30.2	0.4
78-3-31	Half-way between Halibut Bank and Entrance Island	36	M	135	1.5	5.9			11.9			80.0				0.7
			F	17	17.6				64.7						17.6	
78-3-31	Half-way between Halibut Bank and Entrance Island	37	M	121	7.4	13.2			24.0			54.5			0.8	
			F	179	8.4	6.7	0.6	0.6	69.3	1.7	2.8				9.5	0.6
78-4-21	Halibut Bank	55	M	312	0.3	0.6							13.5		85.3	0.3
			F	12	33.3							16.7	16.7		33.3	

[a] I_1 and I_2 were not distinguished.

Table 20. Pacific hake stomach contents sampled aboard ARCTIC HARVESTER, March 16-31, 1978. Data are number of stomachs and total volume in milliliters.

Set no.	Sex		Euphausiids	Fish	Shrimp	Squid	Unidentified	Empty	Total	Average volume (mℓ)
21	Male	F[b]	0	0	0	0	0	0	6	
		V[b]	0	0	0	0	0	0	0	0
	Female	F	0	0	1	1	0	2[a]	4	
		V	0	0	3.0	210.0	0	0	213.0	53.25
23	Male	F	0	1	0	0	0	1[a]	2	
		V	0	25.0	0	0	0	0	25.0	12.5
	Female	F	0	1	0	0	0	3[a]	4	
		V	0	50.0	0	0	0	0	50.0	16.67
25	Female	F	0	1	0	0	0	2, 5[a]	8	
		V	0	2.0	0	0	0	0	2.0	0.25

[a]Some everted.

[b]F = frequency in no. of stomachs; V = volume in milliliters.

Table 21. Inventory of spiny dogfish (*Squalus acanthias*) sampled by set number, ARCTIC HARVESTER, CALIGUS, and G.B. REED, March 16-April 21, 1978.

Set no.	Location (ground)	Number of fish sampled						Fish numbers	Remarks
		Age data	Length	Weight	Sex	Maturity	Stomach		
9	W. Dundas	-	557	-	557	-	-		
10	W. Dundas	1,000	1,000	-	1,000	-	-	12340-13339	
14	Butterworth								5 frozen whole
23	Finlayson Channel	-	24	-	24	-	24	13340-13363	
24	Finlayson Channel	-	47	-	47	-	-		
25	Finlayson Channel	-	45	-	45	-	-		
26	Fitz Hugh Sound	-	-	-	-	-	-		Caught 6, 21 lb
28	N. of Mittlenatch Island	-	527	-	527	-	-		< 60 cm to nearest mm total catch
29	Jervis Inlet	-	50	-	50	-	-		< 60 cm to nearest mm total catch
30	Jervis Inlet	-	36	-	36	-	-		< 60 cm to nearest mm total catch
31	W. of Texada Island	-	456	-	456	-	-		Sampled 3 of 5 tubs - length to nearest mm
34	Halibut Bank	-	992	-	992	-	-		Random 6 tubs

Table 22. Length frequency of spiny dogfish by set, March 14-April 21, 1978.

Total length (mm)	Vessel and set no.														
	AH 9			AH 10			AH 23			AH 24			AH 25		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
489															
490															
491															
492															
493															
494															
495															
496															
497															
498															
499															
500															
501															
502															
503															
504															
505															
506															
507															
508															
509															
510							1	0	1						
511															
512															
513															
514															
515															
516															
517															
518															
519															
520							0	1	1				0	1	1
521															
522															
523															
524															
525															
526															
527															
528															
529															

Table 22 (cont'd) - spiny dogfish

Total Length (mm)	Vessel and set no.														
	AH 9			AH 10			AH 23			AH 24			AH 25		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
530										1	0	1	0	1	1
531															
532															
533															
534															
535															
536															
537															
538															
539															
540							1	0	1	1	1	2	0	2	2
541															
542															
543															
544															
545															
546															
547															
548															
549															
550													0	1	1
551															
552															
553															
554															
555															
556															
557															
558															
559															
560										0	2	2			
561															
562															
563															
564															
565															
566															
567															
568															
569															

Table 22 (cont'd) - spiny dogfish

Total length (mm)	Vessel and set no.														
	AH 9			AH 10			AH 23			AH 24			AH 25		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
570							3	2	5	1	3	4	1	0	1
571															
572															
573															
574															
575															
576															
577															
578															
579															
580	0	1	1				2	1	3	1	0	1	2	6	8
581															
582															
583															
584															
585															
586															
587															
588															
589															
590	1	2	3	1	1	2	0	1	1	1	2	3	1	3	4
591															
592															
593															
594															
595															
596															
597															
598															
599															
600	3	3	6	1	3	4				0	2	2	1	4	5
610	3	3	6	0	4	4	1	0	1	0	3	3	0	2	2
620	3	6	9	1	5	6	0	2	2				0	1	1
630	4	14	18	4	8	12				0	3	3	0	2	2
640	4	18	22	6	10	16	0	3	3	2	1	3	3	4	7
650	3	20	23	5	13	18	1	1	2	1	3	4	0	3	3
660	6	15	21	5	18	23	0	1	1	1	4	5	0	1	1
670	11	19	30	9	27	36	0	1	1	0	3	3	0	3	3
680	11	19	30	14	30	44									
690	19	23	42	24	26	50	0	1	1	0	2	2	0	1	1
700	16	29	45	15	49	64				0	5	5			
710	8	25	33	24	41	65				0	3	3			
720	19	19	38	26	28	54				0	1	1			
730	15	17	32	34	42	76	1	0	1						

Table 22 (cont'd) - spiny dogfish

Total length (mm)	Vessel and set no.														
	AH 28			AH 29			AH 30			AH 31			AH 34		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
247	0	1	1												
248															
249															
250															
251	1	0	1												
252															
253															
254	1	0	1												
255															
256															
257															
258															
259															
260															
261															
262															
263															
264															
265															
266															
267															
268															
269															
270	0	1	1												
271															
272															
273															
274															
275	0	1	1												
276										1	0	1			
277															
278															
279															
280															
281															
282															
283															
284															
285															
286															
287															
288	0	1	1												
289															

Table 22 (cont'd) - spiny dogfish

Total length (mm)	Vessel and set no.														
	AH 28			AH 29			AH 30			AH 31			AH 34		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
290															
291															
292															
293															
294															
295										1	0	1			
296															
297															
298															
299															
300															
301															
302															
303															
304															
305															
306															
307															
308															
309													0	1	1
310															
311															
312															
313															
314															
315															
316															
317										0	1	1	0	1	1
318										0	2	2			
319															
320															
321													1	0	1
322															
323															
324															
325													0	1	1
326													0	1	1
327										1	1	2			
328													0	1	1
329													0	1	1

Table 22 (cont'd) - spiny dogfish

Total length (mm)	Vessel and set no.														
	AH 28			AH 29			AH 30			AH 31			AH 34		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
330										1	0	1	0	1	1
331													0	1	1
332										2	0	2			
333										1	1	2			
334															
335													1	0	1
336										0	1	1	1	0	1
337															
338										0	1	1	1	1	2
339															
340													1	1	2
341															
342										1	2	3	1	1	2
343													2	1	3
344															
345										1	0	1	1	0	1
346										1	0	1	0	1	1
347										0	1	1	1	0	1
348													1	1	2
349													1	1	2
350													1	1	2
351										2	0	2			
352													1	7	8
353										1	0	1	1	2	3
354										0	1	1	1	2	3
355										2	2	4	1	0	1
356										0	1	1	1	1	2
357													1	3	4
358										2	0	2	2	2	4
359										0	1	1	2	0	2
360										3	0	3	0	3	3
361										1	0	1	4	3	7
362										2	0	2	4	3	7
363										1	0	1	2	0	2
364										1	0	1	1	3	4
365													0	4	4
366													1	1	2
367										1	1	2	2	0	2
368										0	1	1	2	2	4
369										1	1	2	3	1	4
370										0	2	2	6	5	11
371										2	1	3	4	1	5
372										1	0	1	1	9	10
373										1	0	1	3	9	12

Table 22 (cont'd) - spiny dogfish

Total length (mm)	Vessel and set no.														
	AH 9			AH 10			AH 23			AH 24			AH 25		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
740	16	16	32	28	39	67									
750	13	16	29	36	39	75									
760	16	8	24	29	27	56									
770	14	14	28	22	23	45									
780	17	7	24	23	22	45									
790	10	8	18	21	21	42									
800	4	3	7	13	22	35									
810	1	4	5	12	16	28									
820	1	3	4	5	11	16									
830	3	3	6	5	9	14									
840	4	1	5	8	9	17									
850	2	1	3	5	10	15									
860	0	1	1	1	5	6									
870	1	0	1	5	7	12									
880				2	7	9									
890	0	3	3	0	5	5									
900	0	1	1	1	6	7									
910				0	2	2									
920				1	5	6									
930				0	2	2									
940	0	1	1	0	3	3									
950				0	2	2									
960	0	2	2	0	4	4									
970	0	2	2	0	3	3									
980				0	3	3									
990				0	4	4									
1,100				0	2	2									
Total	228	327	555	386	613	999	10	14	24	9	38	47	8	35	43

Table 22 (cont'd) - spiny dogfish

Total length (mm)	Vessel and set no.														
	AH 28			AH 29			AH 30			AH 31			AH 34		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
374													6	8	14
375										2	2	4	8	2	10
376										2	2	4	11	5	16
377													6	5	11
378										4	1	5	1	3	4
379										1	0	1	4	1	5
380										2	3	5	4	3	7
381										5	3	8	1	8	9
382										2	3	5	8	4	12
383													0	2	2
384										0	2	2	4	3	7
385										1	2	3	4	4	8
386	1	0	1							1	5	6	5	9	14
387										2	1	3	8	4	12
388										0	4	4	8	4	12
389										3	2	5	4	5	9
390										5	0	5	4	3	7
391										5	2	7	3	4	7
392										6	4	10	4	11	15
393													5	1	6
394										3	0	3	8	1	9
395										5	3	8	2	6	8
396										4	2	6	4	3	7
397										6	1	7	7	5	12
398										2	6	8	5	10	15
399										4	2	6	6	1	7
400										2	2	4	6	3	9
401										2	2	4	4	4	8
402				0	1	1				5	4	9	11	2	13
403										3	2	5	4	6	10
404										4	5	9	7	10	17
405										6	1	7	5	3	8
406										6	5	11	4	1	5
407										1	1	2	3	5	8
408										2	1	3	8	5	13
409										3	8	11	3	0	3
410										2	3	5	6	6	12
411										6	3	9	6	3	9
412										2	2	4	8	5	13
413										1	5	6	2	4	6
414										5	4	9	1	3	4
415	1	1	2							0	4	4	5	5	10
416										3	3	6	5	4	9

Table 22 (cont'd) - spiny dogfish

Total length (mm)	Vessel and set no.														
	AH 28			AH 29			AH 30			AH 31			AH 34		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
417													10	4	14
418										4	7	11	2	5	7
419										3	4	7	3	3	6
420										1	2	3	3	4	7
421										8	3	11	5	7	12
422										4	1	5	8	6	14
423													9	4	13
424										3	2	5	2	2	4
425										3	3	6	4	1	5
426										3	2	5	5	7	12
427							0	1	1	4	2	6	0	2	2
428										3	0	3	2	2	4
429				0	1	1				2	2	4	3	1	4
430										2	1	3	4	4	8
431										1	2	3	6	6	12
432										1	1	2	3	6	9
433	0	1	1							1	1	2	4	2	6
434										3	1	4	3	6	9
435	0	1	1							7	3	10	3	1	4
436										0	2	2	4	5	9
437										1	3	4	5	4	9
438										3	3	6	6	3	9
439				1	0	1				0	1	1	1	1	2
440										2	1	3	7	2	9
441										1	2	3	3	2	5
442										1	0	1	3	3	6
443													1	2	3
444				0	1	1				1	2	3	4	2	6
445							0	1	1	2	2	4	0	3	3
446							1	1	2	2	2	4	2	5	7
447										1	0	1	1	3	4
448										3	0	3	1	2	3
449							0	1	1	1	2	3	3	4	7
450				0	1	1				2	1	3	3	0	3
451										3	3	6	2	0	2
452										0	1	1	1	3	4
453										0	1	1	2	2	4
454										0	3	3	4	1	5
455										1	1	2	2	0	2
456										1	0	1	2	4	6
457							0	1	1				1	6	7
458										0	1	1	2	0	2
459	0	1	1	1	0	1				0	1	1	2	3	5

Table 22 (cont'd) - spiny dogfish

Total length (mm)	Vessel and set no.														
	AH 28			AH 29			AH 30			AH 31			AH 34		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
460	0	1	1	1	0	1				2	1	3	5	0	5
461										2	1	3	2	1	3
462										3	0	3	2	0	2
463													2	6	8
464				1	0	1				0	2	2	0	2	2
465	0	1	1							1	1	2	2	1	3
466										1	0	1	1	0	1
467										0	1	1	4	3	7
468													1	1	2
469															
470							1	0	1	1	0	1	1	0	1
471	0	1	1	0	1	1				0	2	2	2	3	5
472							1	0	1				0	7	7
473				0	1	1							1	4	5
474										0	1	1	3	1	4
475										1	0	1	1	0	1
476													1	1	2
477	0	1	1	0	1	1	0	1	1	1	0	1	2	2	4
478													0	1	1
479	0	1	1	1	1	2							0	1	1
480													2	1	3
481										0	1	1	1	1	2
482													1	1	2
483													1	1	2
484										1	0	1			
485							0	1	1				1	0	1
486	0	2	2	0	1	1	1	0	1	0	1	1	3	4	7
487	0	1	1							0	1	1	1	5	6
488													2	2	4
489							1	0	1				1	1	2
490										0	1	1			
491							0	1	1				1	0	1
492													0	5	5
493													1	0	1
494													0	1	1
495				0	1	1	0	1	1				1	1	2
496				0	1	1	0	1	1				1	2	3
497				0	1	1				0	1	1	2	2	4
498	1	0	1							0	1	1	0	2	2
499															

Table 22 (cont'd) - spiny dogfish

Total length (mm)	Vessel and set no.														
	AH 28			AH 29			AH 30			AH 31			AH 34		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
500	1	0	1										1	1	2
501															
502							1	0	1				1	1	2
503													1	1	2
504													1	1	2
505							0	1	1				1	0	1
506													2	0	2
507				0	1	1									
508							0	1	1				0	1	1
509	0	1	1												
510	0	1	1				0	1	1				3	1	4
511				0	1	1							1	1	2
512	0	1	1	0	1	1							2	1	3
513				0	1	1									
514															
515				0	1	1				1	0	1	1	2	3
516	0	1	1										1	2	3
517				1	0	1	1	0	1				0	2	2
518													1	2	3
519							0	1	1	1	0	1	2	1	3
520				0	1	1	0	1	1				2	0	2
521															
522				1	0	1				1	0	1	0	1	1
523				0	1	1									
524	0	1	1										0	1	1
525															
526													1	0	1
527													1	0	1
528				1	0	1				1	0	1			
529													0	1	1
530	1	0	1										1	0	1
531													0	1	1
532				0	1	1									
533				1	1	2									
534													0	1	1
535													1	0	1
536													1	1	2
537															
538															
539															
540				0	1	1									
541															
542	1	0	1										0	1	1
543													1	0	1

Table 22 (cont'd) - spiny dogfish

Total length (mm)	Vessel and set no.														
	AH 28			AH 29			AH 30			AH 31			AH 34		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
544													1	1	2
545													3	0	3
546															
547	0	1	1										2	0	2
548							1	1	2				2	0	2
549				0	1	1									
550				0	1	1							1	0	1
551													2	0	2
552							1	0	1						
553															
554															
555							0	1	1						
556	0	2	2	2	0	2									
557													1	1	2
558										0	1	1			
559															
560				0	1	1	1	0	1				1	0	1
561													1	0	1
562															
563															
564															
565															
566															
567	1	0	1										1	0	1
568															
569	1	1	2				1	0	1						
570															
571															
572							0	1	1						
573															
574	1	1	2												
575	0	2	2												
576	0	1	1	0	1	1									
577													1	0	1
578													0	1	1
579							1	0	1						
580	0	1	1												
581													1	0	1
582							0	1	1						
583							0	1	1						
584															
585															
586															
587															

Table 22 (cont'd) - spiny dogfish

Total length (mm)	Vessel and set no.														
	AH 28			AH 29			AH 30			AH 31			AH 34		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
588	0	1	1												
589	0	1	1												
590															
591															
592															
593															
594	0	1	1												
595															
596	0	1	1												
597															
598															
599	0	1	1												
600	1	0	1												
610	1	2	3												
620	2	0	2										1	0	1
630															
640	6	1	7												
650	1	2	3										0	1	1
660	2	0	2												
670	5	0	5												
680	3	0	3												
690	8	0	8												
700	5	1	6												
710	2	0	2												
720	18	1	19												
730	17	0	17												
740	17	0	17												
750	29	0	29												
760	39	0	39												
770	42	1	43												
780	37	0	37												
790	38	0	38												
800	34	0	34												
810	20	0	20												
820	31	0	31												
830	23	0	23												
840	31	0	31												
850	20	0	20												
860	22	0	22												
870	5	0	5												
880	10	0	10												
890	3	0	3												

Table 22 (cont'd) - spiny dogfish

Total length (mm)	Vessel and set no.														
	AH 28			AH 29			AH 30			AH 31			AH 34		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
900															
910	1	0	1												
920															
930															
940															
950															
960															
970															
980															
990															
1,100															
Total	484	43	527	11	26	37	12	20	32	244	211	455	507	485	992

Table 23. Inventory of Pacific cod (*Gadus macrocephalus*) sampled by set number, March 14-April 21, 1978.

Set no.	Location (ground)	Number of fish sampled						Sample numbers	Remarks
		Age data	Length	Weight	Sex	Maturity	Stomach		
1	Butterworth	3	3	-	3	-	-	-	3 (2 ♀, 10 ♂) cut and frozen, 1 (59 cm) frozen whole.
2	Butterworth	-	1	-	-	-	-	-	64 cm.
3	Butterworth	3	7	-	6	6	-	1382-1387	2nd dorsal and scales kept 1 (67 cm) frozen whole; 1 male kept for B. Leaman.
8	Butterworth	-	3	-	3	3	3	1388-1390	
13	W. of Porcher Island	15	15	-	15	-	-		Juveniles: scales and fins sampled on August 1, 1978.
14	Butterworth	3	3	-	3	3	-	1391-1393	
15	Butterworth	-	33	-	33	33	-		
43	Swanson Channel	-	31	-	31	-	-		3 tagged fish kept for B. Leaman.

Table 24. Length frequency of Pacific cod by set, March 14-April 21, 1978.

Fork length (cm)	Vessel, set no., and location					
	ARCTIC HARVESTER 15 Butterworth			CALIGUS[a] 43 Swanson Channel		
	M	F	T	M	F	T
20				1		1
21				0	1	1
22				0		0
23				0		0
24				1		1
25				0	3	3
26				1	1	2
27				3	3	6
28				2	7	9
29				2	0	2
30				2	0	2
31				0	3	3
32				0		0
33				0		0
34				1		1
35						
36						
37						
38						
39						
40						
41						
42						
43						
44		1	1			
45			0			
46			0			
47	1		1			
48	0		0			
49	0		0			
50	0	2	2			
51	4		4			
52	1		1			
53	0		0			
54	1	1	2			
55	1	0	1			
56	1	1	2			
57	1	0	1			
58	1	1	2			
59	1	4	5			

Table 24 (cont'd)

Fork length (cm)	Vessel, set no., and location					
	ARCTIC HARVESTER 15 Butterworth			CALIGUS 43 Swanson Channel		
	M	F	T	M	F	T
60	3	1	4			
61	1	0	1			
62	1	0	1			
63	1	1	2			
64	0		0			
65	0		0			
66	1		1			
67	0		0			
68	1		1			
69	0		0			
70	1		1			
Total	21	12	23	13	18	31

[a]Three cod were tagged. They were sent to B. Leaman without being measured.

Table 25. Inventory of chinook salmon (*Oncorhynchus tshawytscha*) sampled by set number, ARCTIC HARVESTER, March 14-31, 1978.

Set no.	Location (ground)	Numbers of fish sampled						Remarks
		Age data	Length	Weight	Sex	Maturity	Stomach	
2	Butterworth	-	3	-	3	3	3	Sandlance in stomachs
3	Butterworth Gully	-	1	-	1	1	1	
4	Butterworth Gully	-	2	-	2	1	2	Herring, sandlance in stomachs
5	N. Dixon Entrance	-	1	-	1	1	1	Lamprey marks
8	N. Butterworth	-	1	-	1	1	1	
12	Freemans Pass	-	1	-	1	1	1	
16	Butterworth	-	1	-	1	1	1	
17	Chatham Sound	-	1	-	1	1	1	
19	Chatham Sound	-	5	-	5	5	5	
27	N. of Mittlenatch	-	2	-	2	2	2	
28	N. of Mittlenatch	-	2	-	2	2	2	
29	Jervis Inlet	-	1	-	1	1	1	
31	W. Texada Island	-	2	-	2	2	2	
32	W. Texada Island	-	1	-	1	1	1	

Table 25 (cont'd)

Set no.	Location (ground)	Numbers of fish sampled						Remarks
		Age data	Length	Weight	Sex	Maturity	Stomach	
48	N. of Patos Island		1		1	1	1	
50	Off Entrance Island		2		2	2	2	
54	Off Point Roberts		4		4	4	4	Euphausiids and eulachon in stomachs

Table 26. Chinook salmon biological data collected March 14-April 21, 1978.

Set no.	Sex	Length (cm)	Maturity[a]	Stomach contents
2	M	37	Immature	30 mℓ - fish remains; 29.5 cm sandlance
	M	32	Immature	10 mℓ - fish remains; 8 cm sandlance
	F	31	Immature	10 mℓ - fish remains; 10 cm sandlance
3	M	70		60 mℓ - 2 sandlances (9 cm); 8 herring (20 cm)
4	M	28		25 mℓ - 9 herring (2-11 cm); 1 sandlance (11 cm)
	F	30	Immature	11 mℓ - 10 herring (11 cm); fish remains
5	M	34	Immature	100 mℓ - 10 herring (11 cm)
8	M	42	Immature	1 mℓ - fish remains
	M	39	Immature	5 mℓ - sandlance
	F	32	Immature	12 mℓ - sandlance
12	M	30	Immature	5.0 mℓ - fish remains
16	F	34	Immature	10 mℓ - 10 euphausiids
17	M	43	Immature	1 mℓ - fish remains
19	M	41	Immature	1 mℓ - squid
	M	32	Immature	5.0 mℓ - euphausiids
	M	31	Immature	10 mℓ - fish remains
	F	31	Immature	
	F	31	Immature	8.0 mℓ - sandlance
27	F	45	Immature	
	F	40	Immature	2.0 mℓ - euphausiids

Table 26(cont'd)

Set no.	Sex	Length (cm)	Maturity	Stomach contents
28	M	56	Immature	6.0 mℓ - euphausiids
	F	35	Immature	2.0 mℓ - larval fish
29	M	58	Maturing	3.0 mℓ - euphausiids
31	M	60	Maturing	25 mℓ - euphausiids
	F	68	Maturing	3 mℓ - fish skeleton
32	F	60	Mature	40 mℓ - fish remains
48	M	64	Maturing	200 mℓ - partly digested herring
50	M	36	Immature	5 mℓ - fish remains
	F	59	Maturing	150 mℓ - eulachon
54	M	54	Maturing	2.0 mℓ - euphausiids
	F	55	Maturing	150 mℓ - 2-18 cm eulachon
	F	51	Maturing	
	F	49	Maturing	75 mℓ - eulachon 18 cm

[a]Sampled by R. Scarsbrook.

Table 27. Inventory of Pacific halibut (*Hippoglossus stenolepis*) samples by set number, ARCTIC HARVESTER March 14-31, 1978.

Set no.	Location (ground)	Number of fish sampled						Fish numbers	Remarks
		Age data	Length	Weight	Sex	Maturity	Stomach		
13	W. of Porcher Island	1	1	-	1	-	1	18	Total catch
14	Butterworth	1	1	-	1	-	-	19	Total catch
15	Butterworth	4	4	-	4	-	-	20-23	Total catch

Table 28. Halibut length, sex, and stomach data by set March 14-April 21, 1978.

Set no.	Sex	Length (cm)	Stomach contents	Fish no.
13	M	65	75 mℓ - fish remains	18
14	M	63		19
15	M	53		20
15	M	64		23
15	F	63		21
15	F	63		22

Table 29. Inventory of Pacific herring, rockfish, brown cat shark and eulachon samples by set March 14-April 21, 1978.

Species	Set no.	Location (ground)	No. fish sampled			Remarks
			Length	Sex	Maturity	
Pacific herring	2	Butterworth	191	-	-	Random subsample.
	7	Chatham Sound	265	-	-	Stratified subsamples.
	8	Butterworth	-	-	About 90% juvenile	T.C.
	12	Freeman Pass	255	-	-	Random subsample.
	20	Caamano Sound	-	-	Mostly juvenile	T.C.
	48	N. of Patos Island	-	-	100	100 frozen whole and sent to U.S.
Eulachon	16	Butterworth	61	-	-	Selected "small" fish for measurement.
	41	N. Active Pass	1	-	-	Photo of RR male.
Brown cat shark	33	Halibut Bank	13	-	-	T.C.
	41	N. Active Pass	1	-	-	Photo of male.
Silvergrey rockfish	13	W. Porcher Island	124	124	-	T.C.

Table 30. Length frequency of Pacific herring and silvergrey rockfish by set, March 14-April, 1978.

Fork length (cm)	Species and set no.					
	Herring 2	Herring[a] 7	Herring 12	Silvergrey rockfish 13		
	T	T	T	M	F	T
9		1				
10	13	42				
11	74	49				
12	80	6				
13	9					
14	3					
15	5	2				
16	5	2				
17		1				
18						
19						
20		3				
21		15	1			
22		36	18			
23	1	34	38			
24		22	25			
25	1	24	52			
26		18	69			
27		9	29			
28		1	16		1	1
29			5			0
30			2	2		2
31				1	1	2
32				0	0	0
33				2	1	3
34				1	1	2
35				1	5	6
36				0	1	1
37				0	2	2
38				2	0	2
39				5	3	8
40				3	5	8
41				1	0	1
42				11	10	21
43				8	7	15
44				9	3	12
45				6	11	17
46				6	3	9
47				1	4	5
48				3	4	7
49						

Table 30 (cont'd)

Fork length (cm)	Species and set no.					
	Herring 2	Herring 7	Herring 12	Silvergrey rockfish 13		
	T	T	T	M	F	T
50						
51						
52						
53						
54						
55						
Total	191	265	255	62	62	124

[a]Stratified sample.

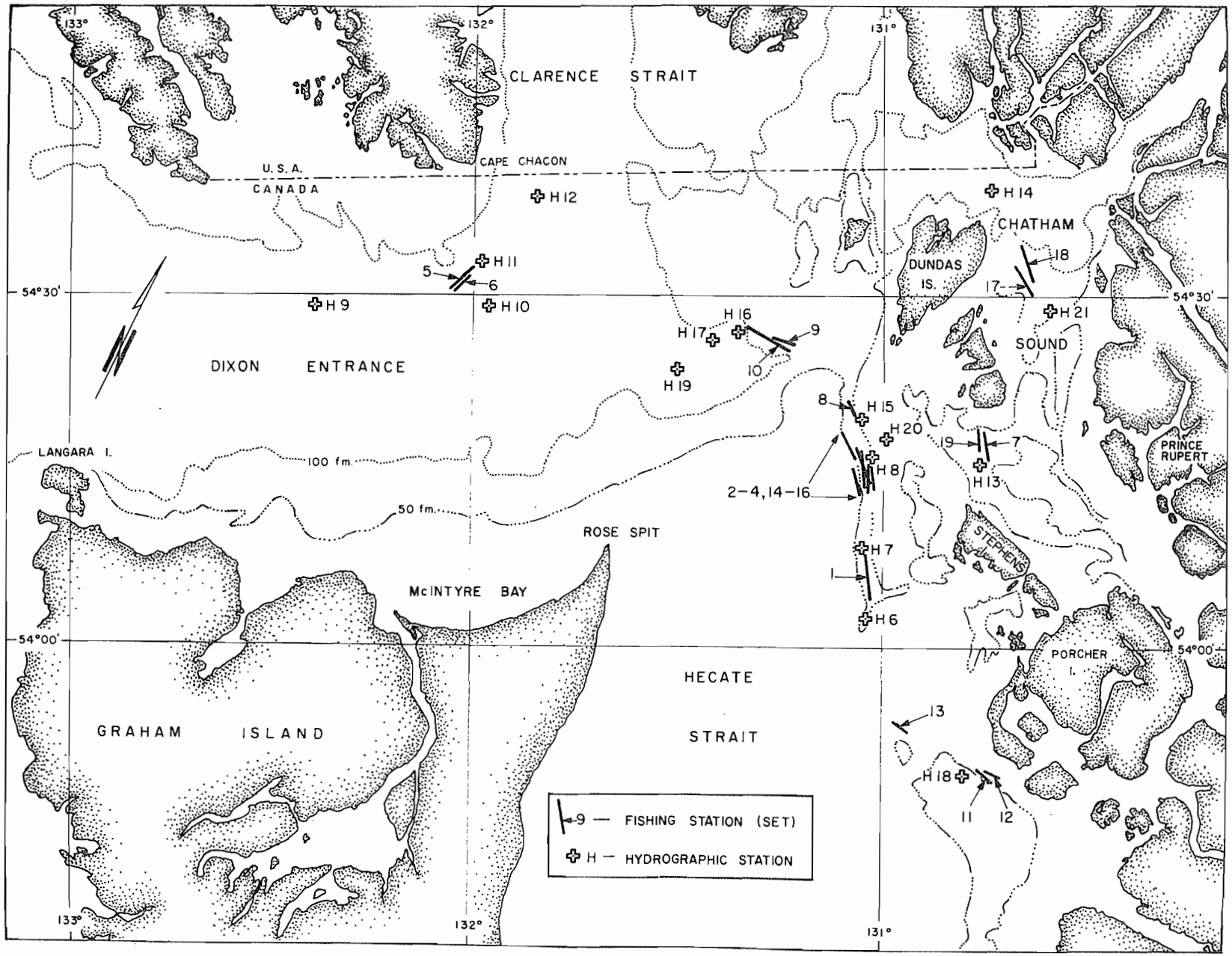

Fig. 1. ARCTIC HARVESTER fishing and hydrographic stations occupied during March, 1978 in Dixon Entrance and northern Hecate Strait.

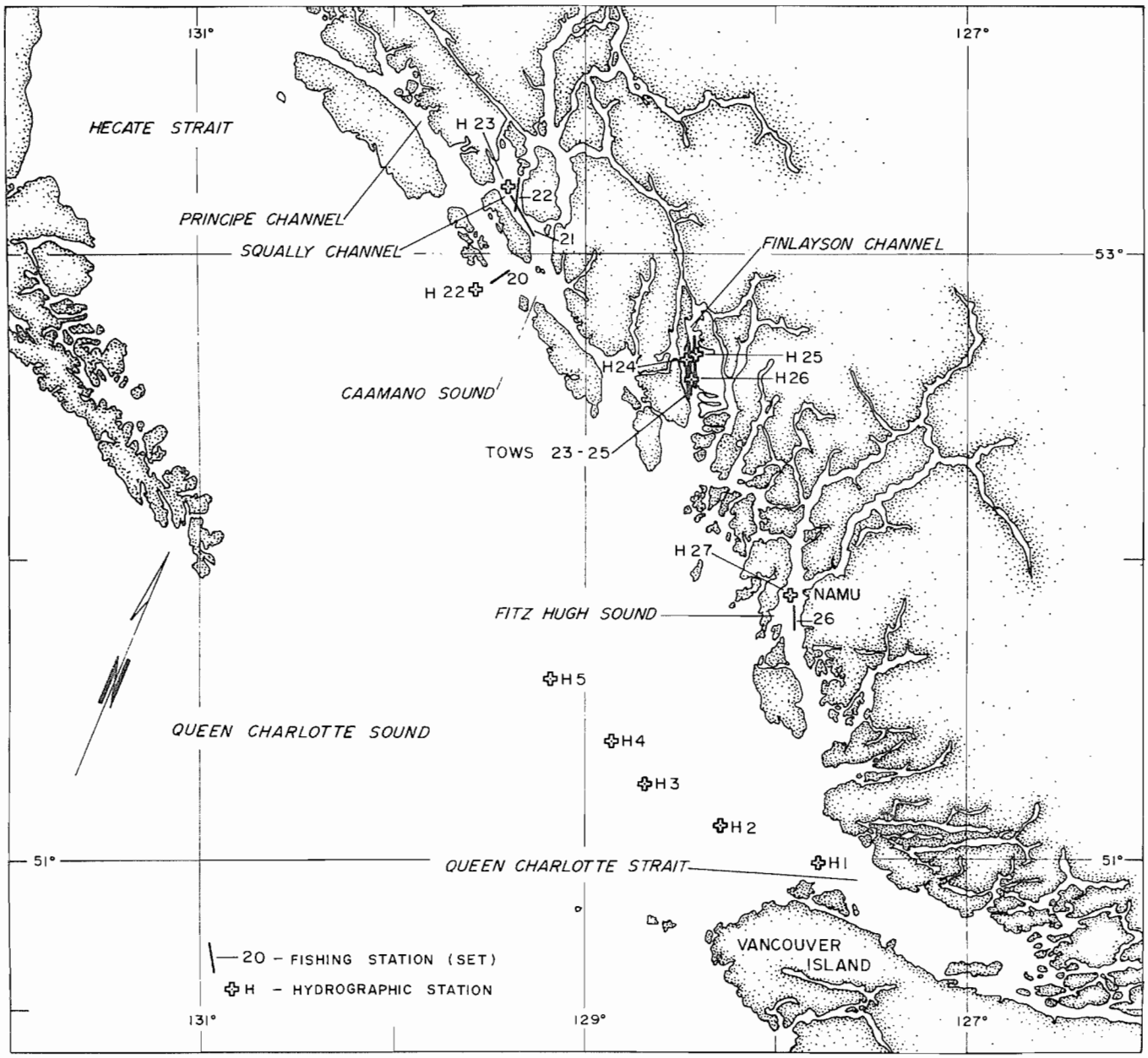

Fig. 2. ARCTIC HARVESTER fishing and hydrographic stations occupied during March, 1978 in southern Hecate Strait and Queen Charlotte Sound.

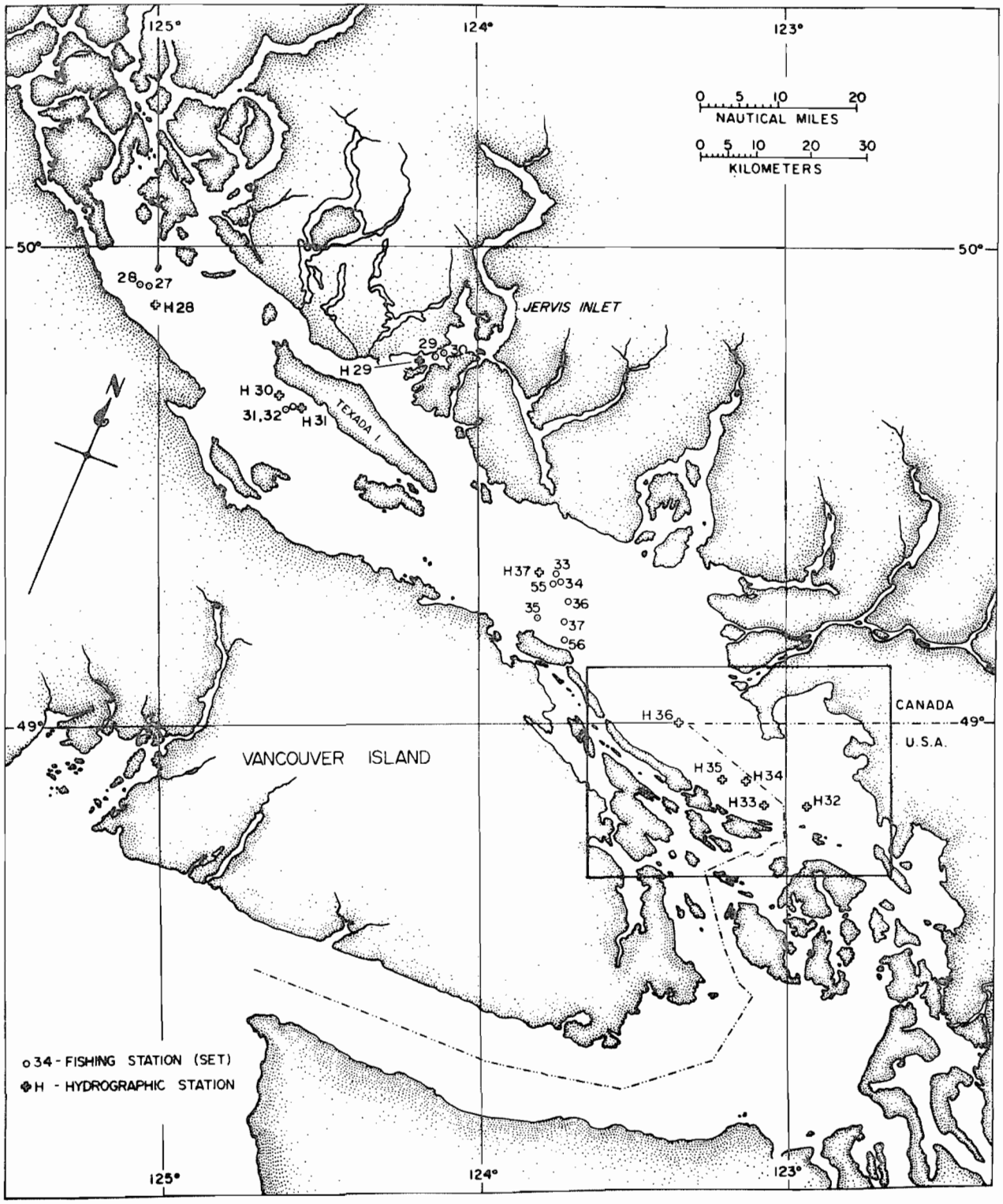

Fig. 3. Fishing stations occupied by the ARCTIC HARVESTER and hydrographic stations occupied by ARCTIC HARVESTER and G.B. REED during March-April, 1978 in the Strait of Georgia.

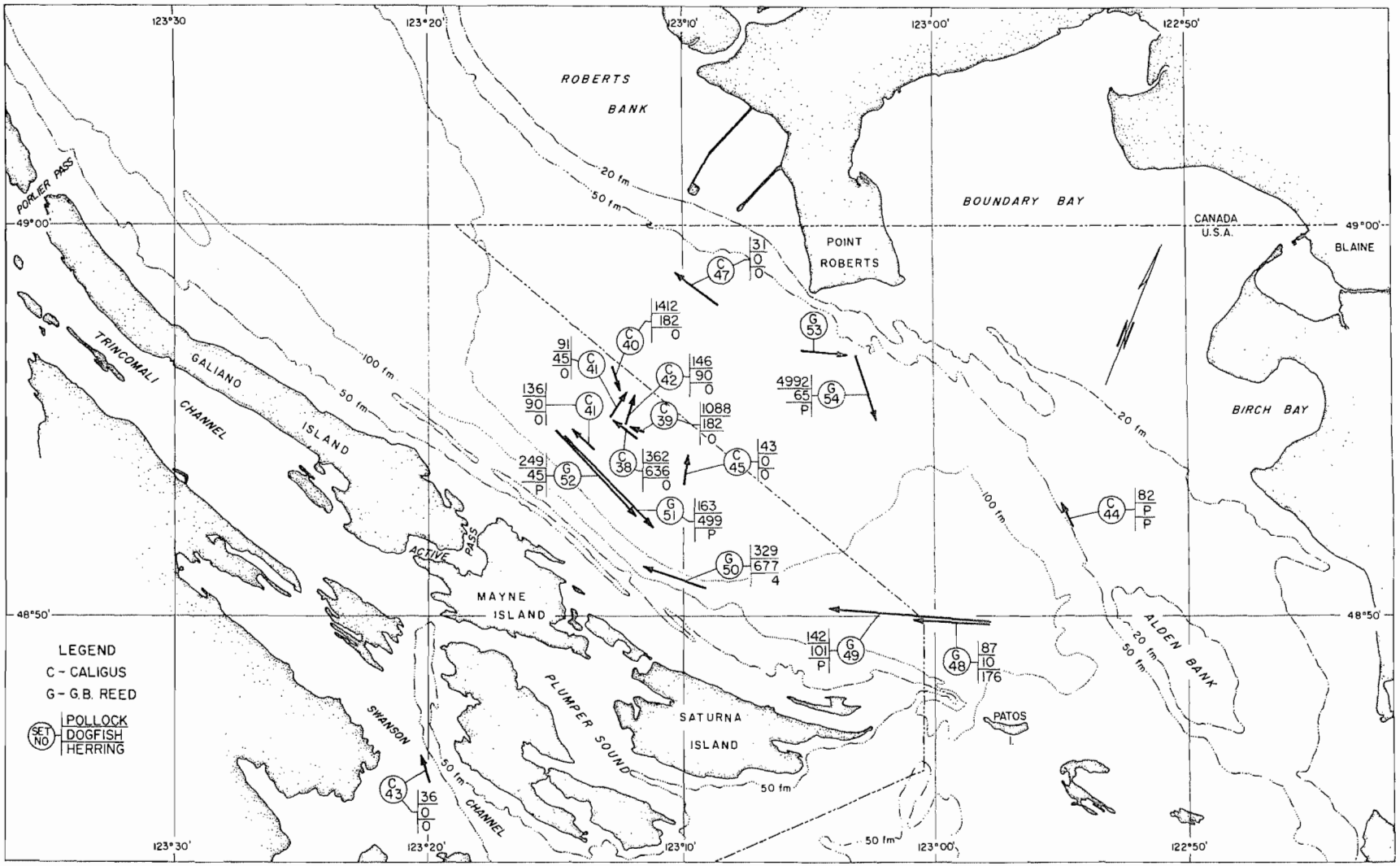

Fig. 4. Fishing stations occupied by CALIGUS and G.B. REED during April, 1978 in the southern Strait of Georgia. Pollock, dogfish and herring CPUE (kg/hr) are shown for each set. Only the start locations and directions of the CALIGUS sets are depicted, but both start and finish locations are shown for the G.B. REED sets. (P = present).

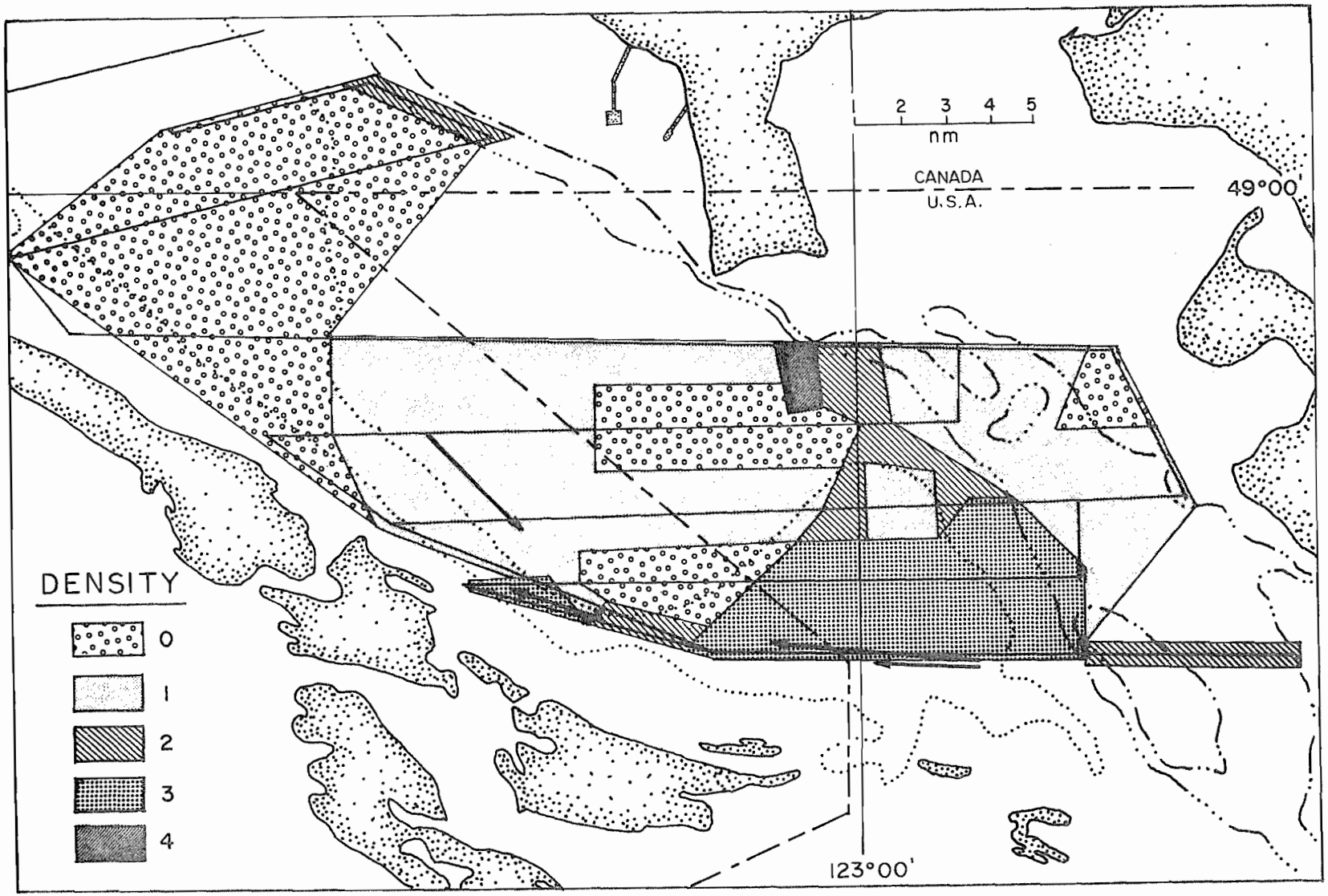

Fig. 5. Distribution and density of midwater echoes in the layer of spotting during April 18-21, 1978. G.B. REED trawl sets in this layer and sounding tracklines are also shown. Low numbers correspond to low densities.

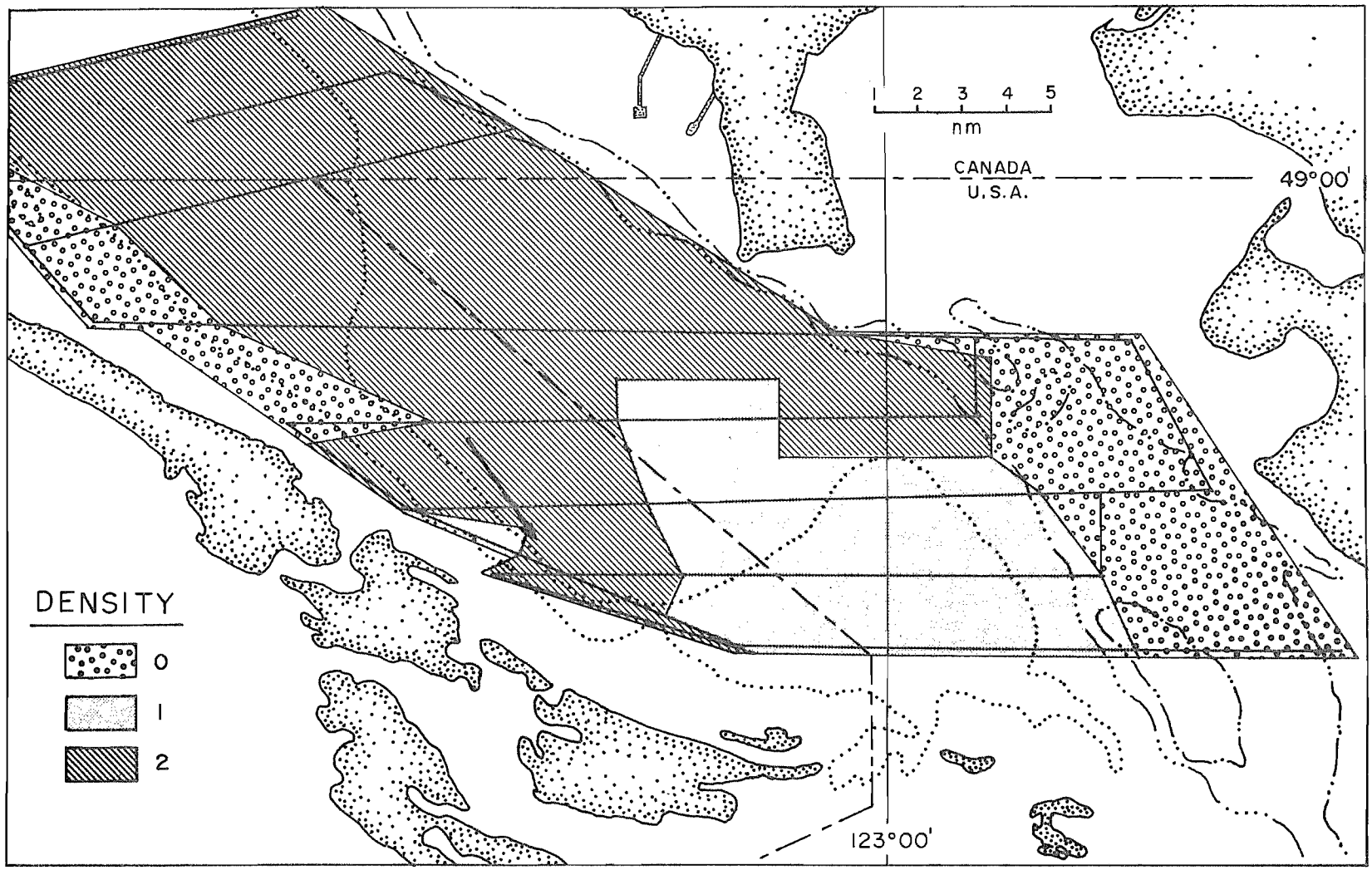

Fig. 6. Distribution and density of midwater echoes in the near-bottom layer of speckling during April 18-21, 1978. G.B. REED trawl sets in this layer and sounding tracklines are also shown. Low numbers correspond to low density.

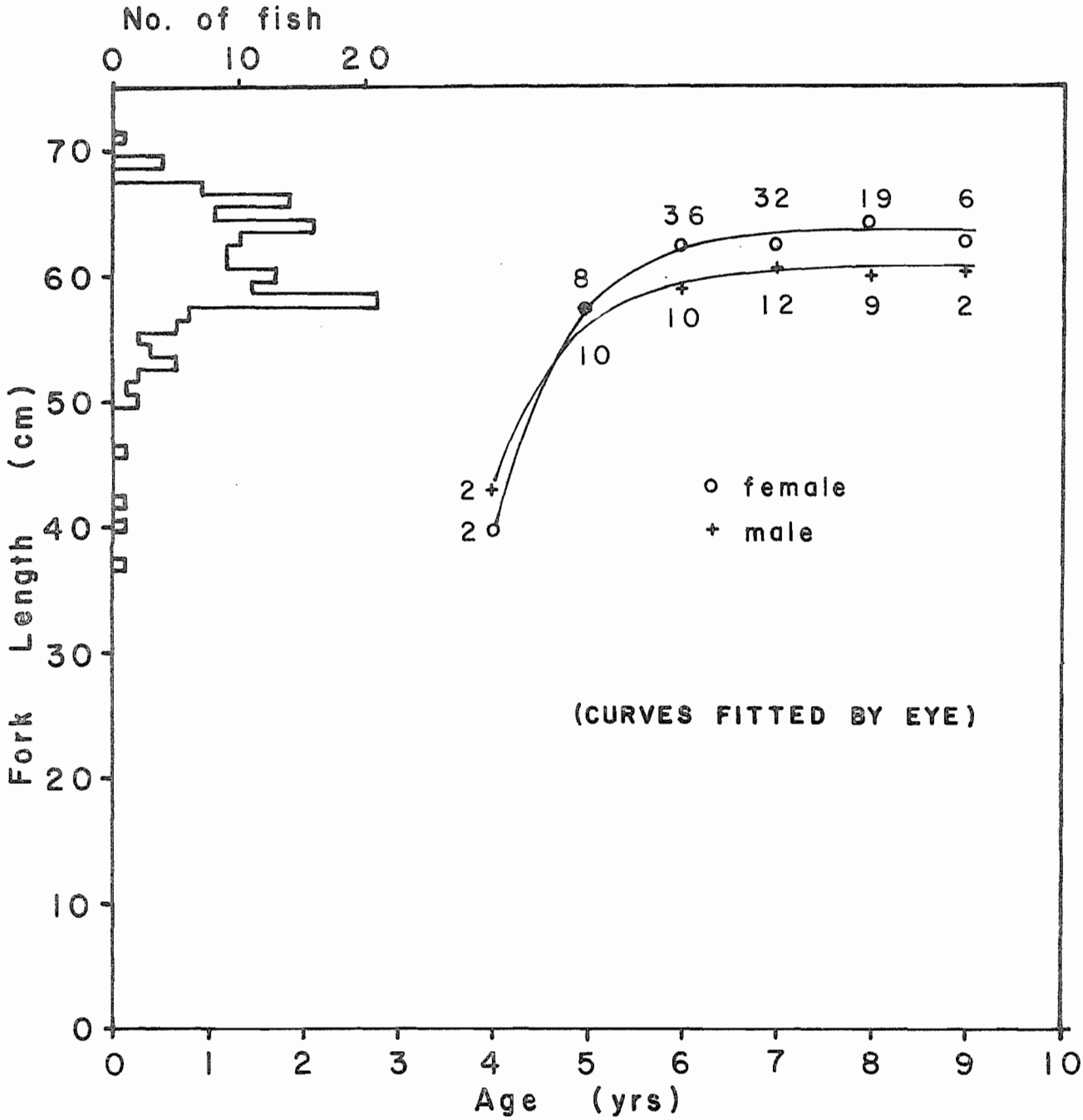

Fig. 7. Mean length at age and length frequency of walleye pollock from Finlayson Channel (sets 23-25) March 27, 1978.

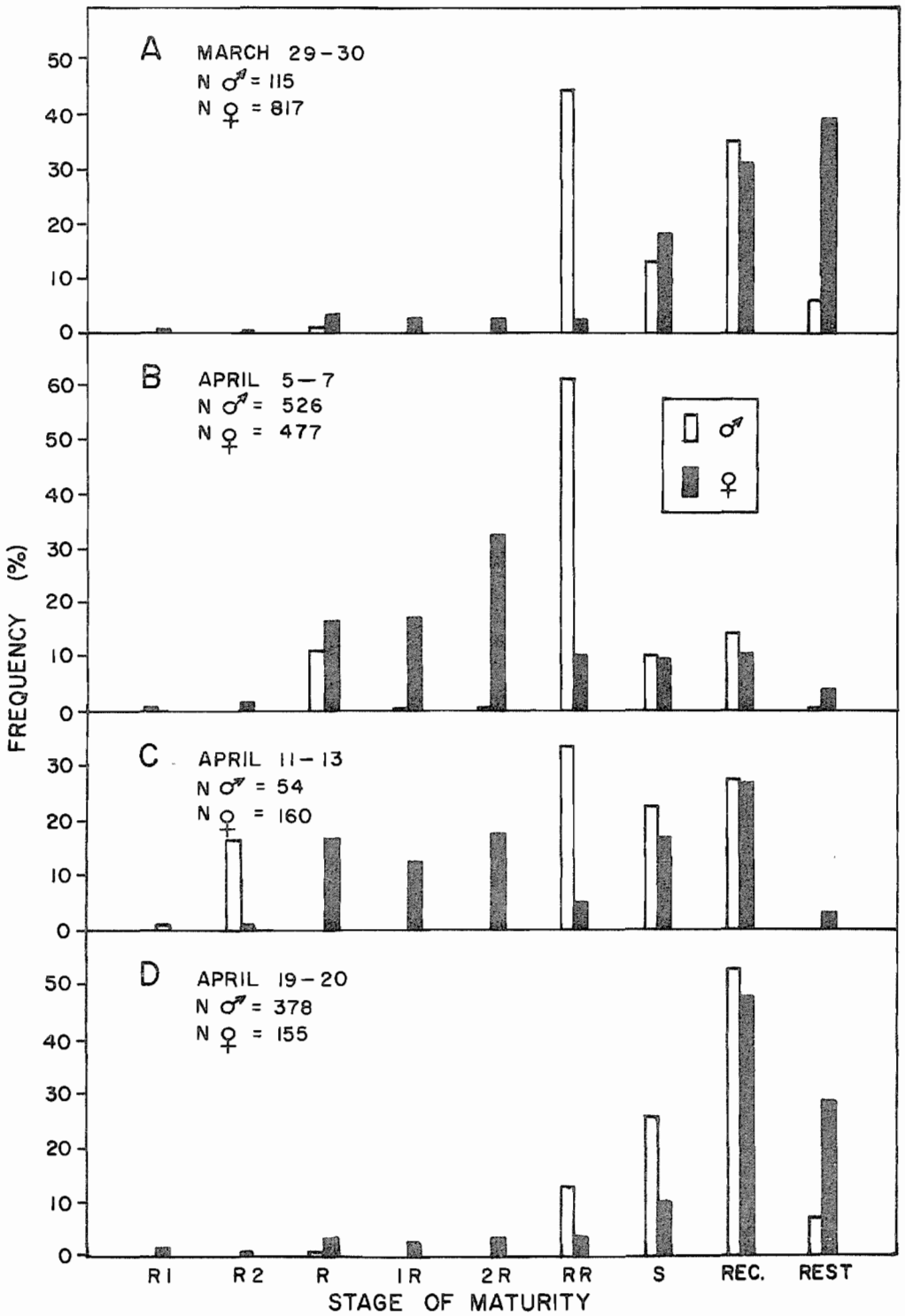

Fig. 8. Percent frequency of maturity states of walleye pollock collected in the Strait of Georgia during 1978 (A) from Halibut Bank, Jervis Inlet and west Texada Island and (B-D) from the open Strait of Georgia south of the Fraser River.

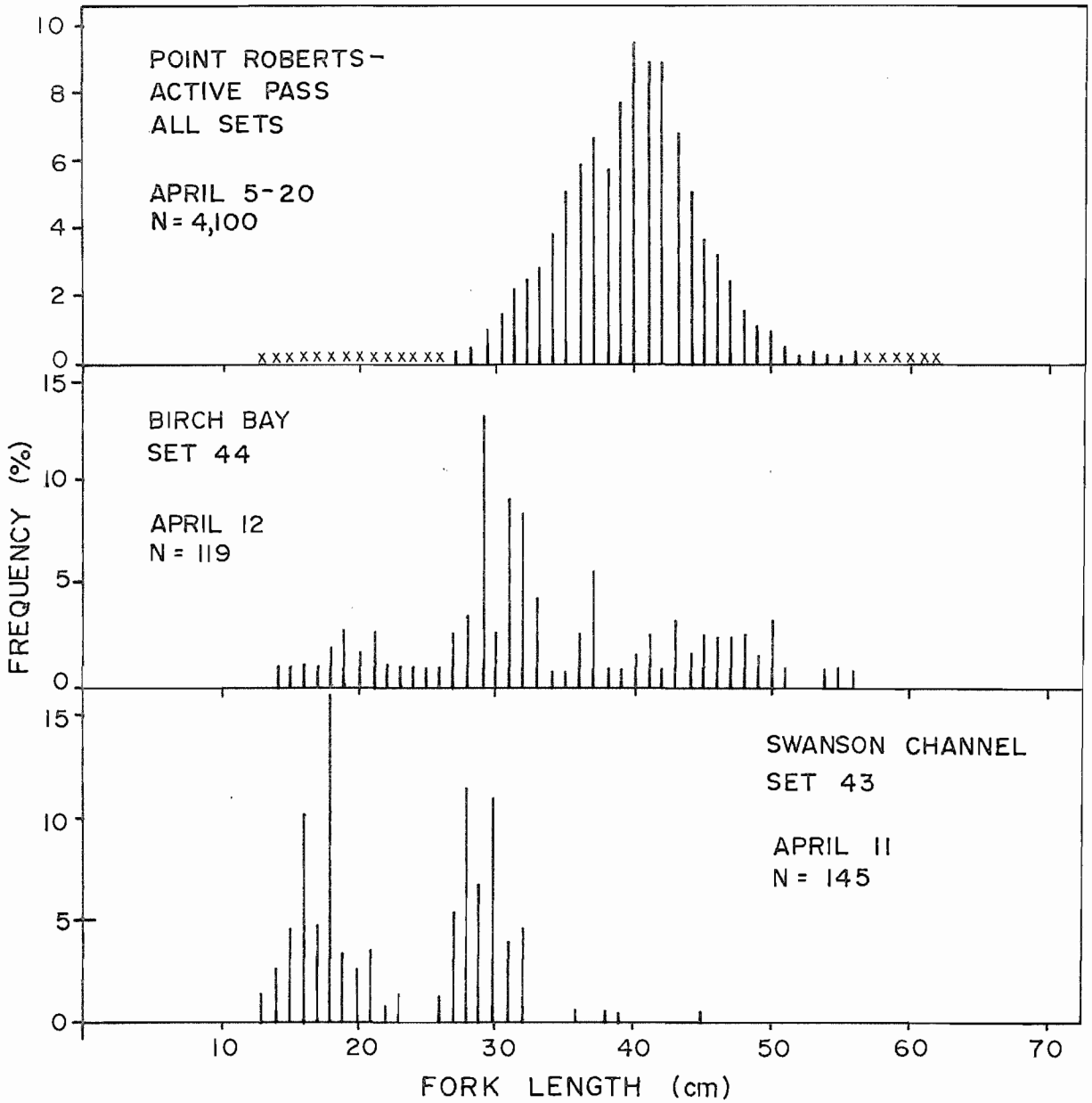

Fig. 9. Walleye pollock length frequencies collected in the Strait of Georgia during April, 1978.

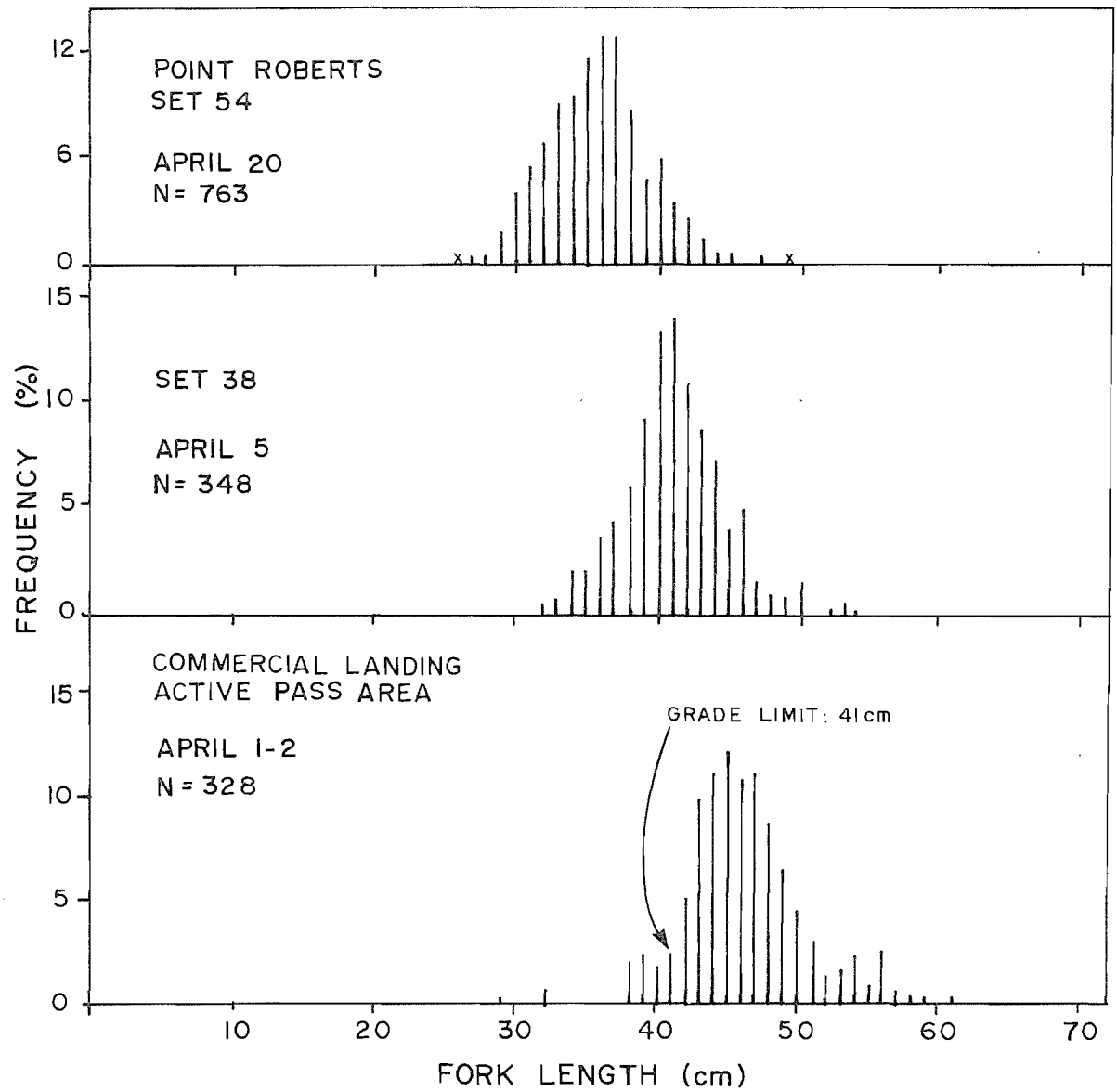

Fig. 10. Walleye pollock length frequencies collected in the Strait of Georgia during April, 1978.

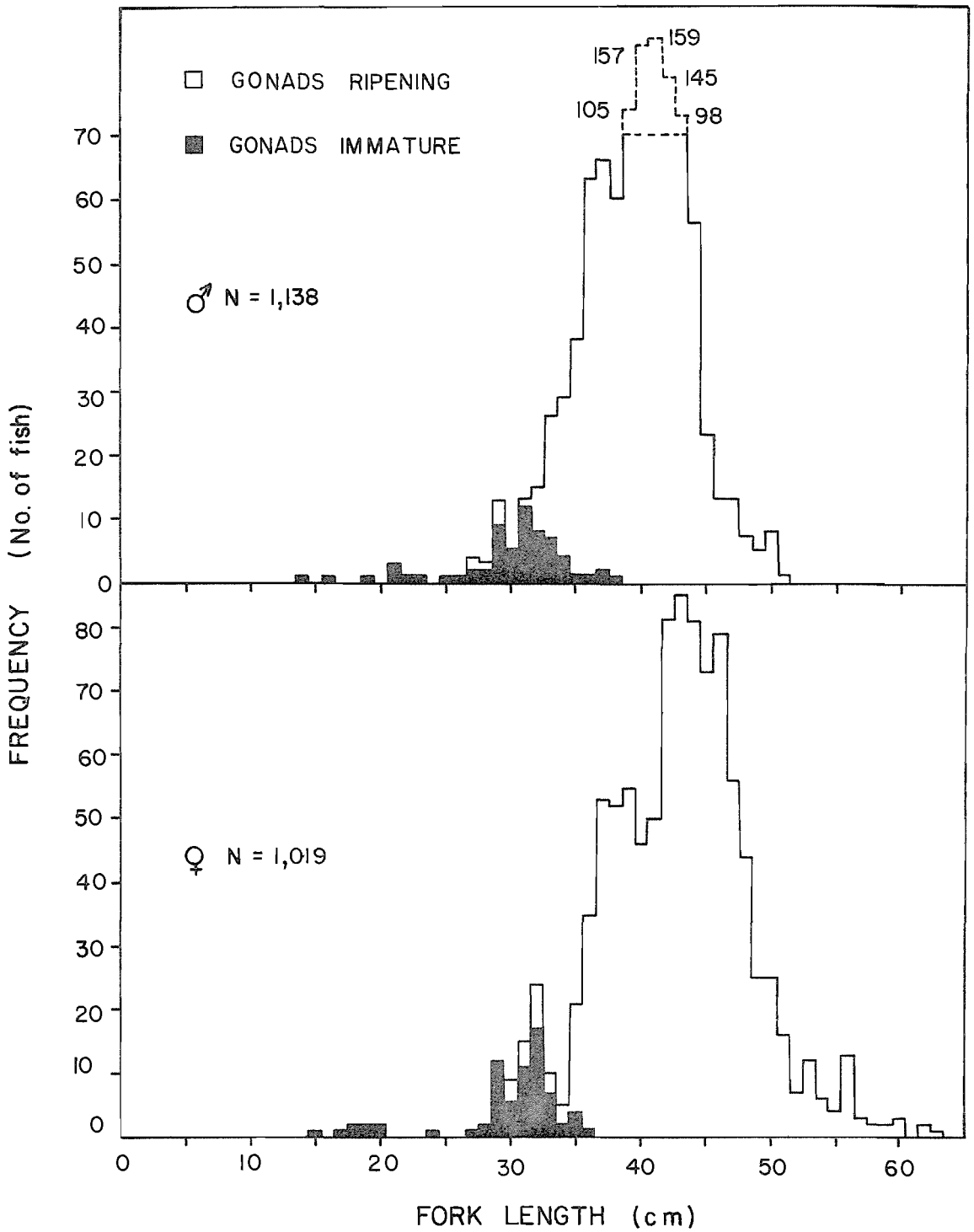

Fig. 11. Length frequencies of immature (never spawned) and mature (ripening or spawning) walleye pollock collected between Point Roberts and Active Pass, April 5-21, 1978. (Sets 38-54).

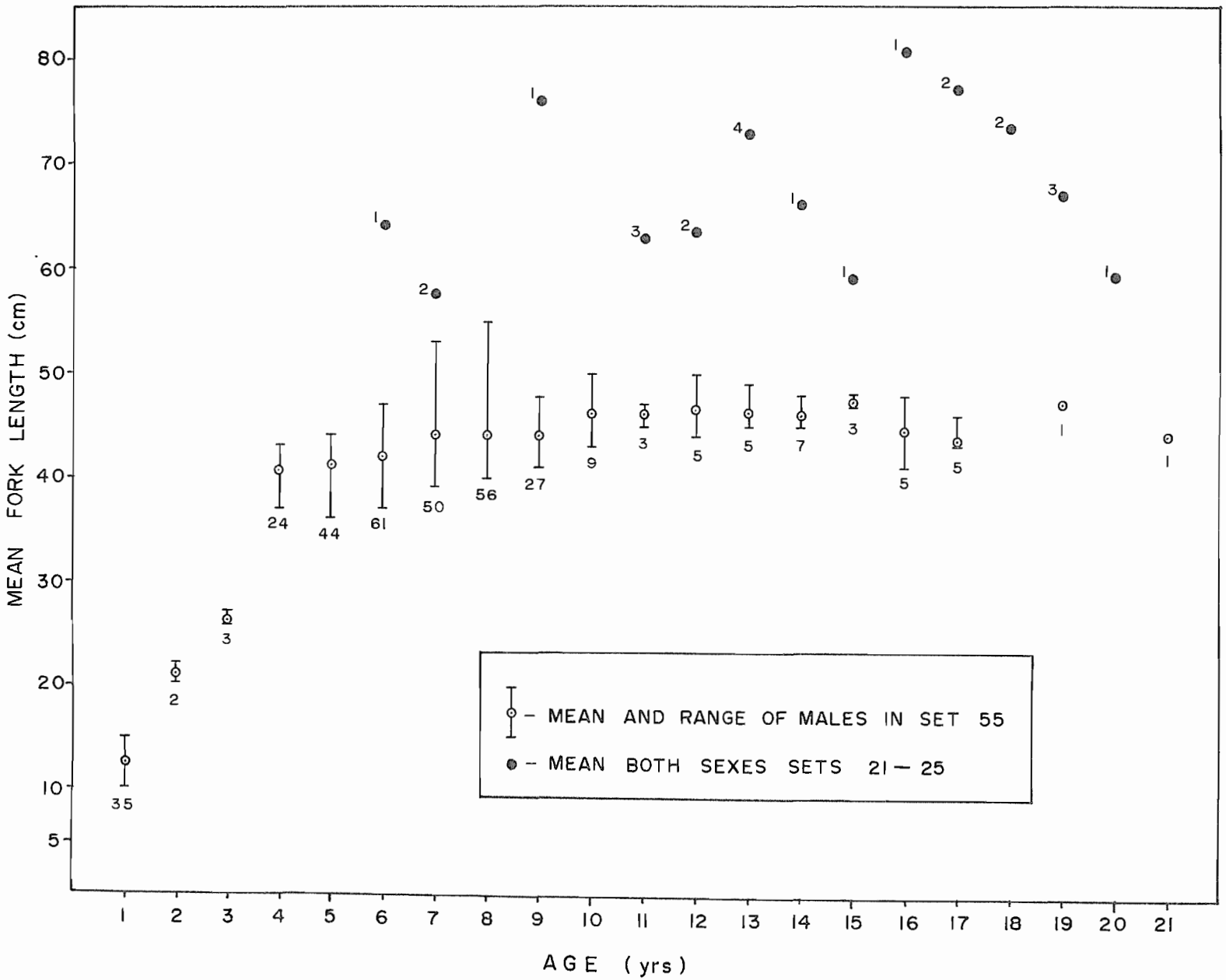

Fig. 12. Mean length at age of Pacific hake collected in the mainland inlets off Queen Charlotte Sound (sets 21-25) and in the Strait of Georgia (set 55) during March and April, 1978.

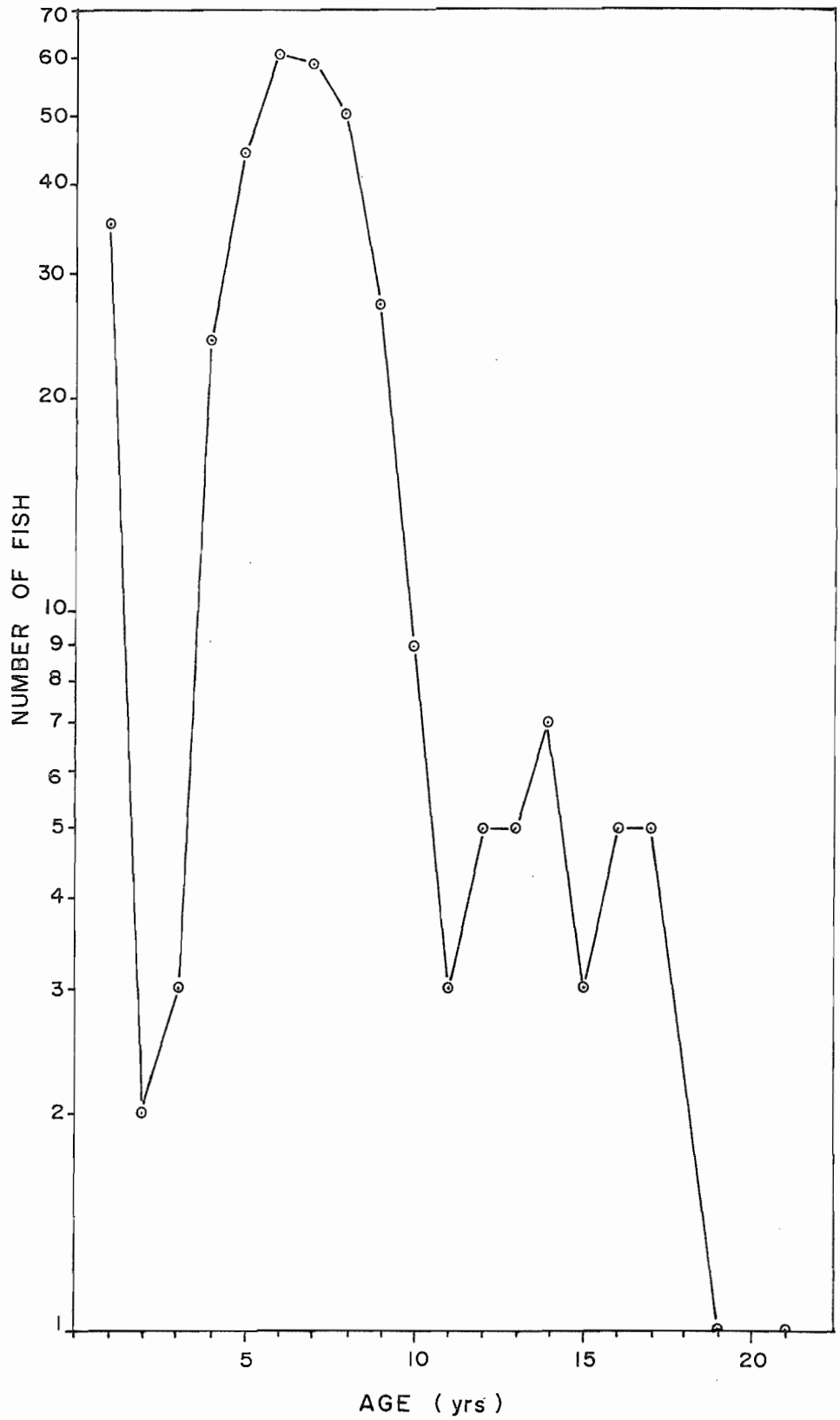

Fig. 13. Pacific hake catch curve, set 55 in Georgia Strait on April 21, 1978.

Appendix Table 1. Bridge log data by set.

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 16 SET/HAUL NO: 1

LOCATION: Butterworth Edge AREA: Hecate Strait

START: Lat. 54°4.8'N Long. 131°1.5'W

END: Lat. 54°8.6'N Long. 131°2.5'W

GEAR: D-7 1 in. liner START TIME (PST) : 1525 DURATION: 69 min.

BOTTOM DEPTH m: Start: 101 End: 106 Est. Av. Depth: 108

NET DEPTH RANGE m: 88-95 Est. Av. Depth: 90

DIRECTION OF SET °true: 358 SPEED kn: 3.3 DISTANCE TRAVELLED: 3.8 mi.

SET ON: WATER CONDITION: Rippled TIDE:

WIND DIRECTION: W (270) WIND SPEED: 5 RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY: Very light speckling lower 27 m.

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 17 SET/HAUL NO: 2

LOCATION: Butterworth AREA: Hecate Strait

START: Lat. 54°16.8'N Long. 131°4.3'W

END: Lat. 54°14.2'N Long. 131°3.3'W

GEAR: D-7 1 in. liner START TIME (PST): 0844 DURATION: 60 min.

BOTTOM DEPTH m: Start: 64 End: 91 Est. Av. Depth: 82

NET DEPTH RANGE m: 46-70 Est. Av. Depth: 64

DIRECTION OF SET °true: 153 SPEED kn: 3.6 DISTANCE TRAVELLED: mi.

SET ON: WATER CONDITION: TIDE:

WIND DIRECTION: WIND SPEED: RECORDER: Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

Very light speckling 64-73 m (35-40 fm) to bottom.

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 17 SET/HAUL NO: 3

LOCATION: Butterworth Gully AREA: Hecate Strait

START: Lat. 54°14.2'N Long. 131°2.3'W

END: Lat. 54°16.3'N Long. 131°3.0'W

GEAR: D-7 1 in. liner START TIME (PST) : 1023 DURATION: 34 min.

BOTTOM DEPTH m: Start: 106 End: 115 Est. Av. Depth: 113

NET DEPTH RANGE m: 88-99 Est. Av. Depth: 97

DIRECTION OF SET °true: 358 SPEED kn: 3.0 DISTANCE TRAVELLED: 2.2 mi.

SET ON: WATER CONDITION: TIDE:

WIND DIRECTION: WIND SPEED: RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY: Light speckles bottom 5 F.

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 17 SET/HAUL NO: 4

LOCATION: Butterworth Gully AREA: Hecate Strait

START: Lat. 54°17.9'N Long. 131°4.1'W

END: Lat. 54°14.8'N Long. 131°2.4'W

GEAR: D-7 1 in. liner START TIME (PST): 1131 DURATION: 60 min.

BOTTOM DEPTH m: Start: 117 End: 117 Est. Av. Depth: 117

NET DEPTH RANGE m: 37-51 Est. Av. Depth: 38

DIRECTION OF SET °true: 170 SPEED kn: 3.6 DISTANCE TRAVELLED: 3.5 mi.

SET ON: WATER CONDITION: Rippled TIDE:

WIND DIRECTION: N.W. WIND SPEED: 5 RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

Light speckles lower 10 F.

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 18 SET/HAUL NO: 5

LOCATION: AREA: North Dixon Entrance

START: Lat. 54°31.0'N Long. 132°4.0'W

END: Lat. 54°33.3'N Long. 132°1.0'W

GEAR: D-7 1 in. liner START TIME (PST): 1109 DURATION: 60 min.

BOTTOM DEPTH m: Start: 271 End: 296 Est. Av. Depth: 280

NET DEPTH RANGE m: 256-263 Est. Av. Depth: 262

DIRECTION OF SET °true: SPEED kn: DISTANCE TRAVELLED: mi.

SET ON: WATER CONDITION: Choppy TIDE:

WIND DIRECTION: SE WIND SPEED: 15-20 RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

Light speckling 125 F to bottom.

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 18 SET/HAUL NO: 6

LOCATION: AREA: North Dixon Entrance

START: Lat. 54°30.8'N Long. 132°3.0'W

END: Lat. 54°32.6'N Long. 132°1.5'W

GEAR: D-7 1 in. liner START TIME (PST): 1410 DURATION: 60 min

BOTTOM DEPTH m: Start: 262 End: 274 Est. Av. Depth: 271

NET DEPTH RANGE m: 194-230 Est. Av. Depth: 212

DIRECTION OF SET °true: SPEED kn: DISTANCE TRAVELLED: mi.

SET ON: WATER CONDITION: TIDE:

WIND DIRECTION: SE WIND SPEED: 15-20 RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 19 SET/HAUL NO: 7

LOCATION: AREA: Chatham Sound

START: Lat. 54°19.1'N Long. 130°44.8'W

END: Lat. 54°17.0'N Long. 130°44.5'W

GEAR: D-7 1 in. liner START TIME (PST): 0754 DURATION: 28 min.

BOTTOM DEPTH m: Start: 212 End: 174 Est. Av. Depth: 188

NET DEPTH RANGE m: 159-174 Est. Av. Depth: 161

DIRECTION OF SET °true: 180 SPEED kn: 2.6 DISTANCE TRAVELLED: 2.1 mi.

SET ON: WATER CONDITION: Light chop TIDE: flood (HS 0953)

WIND DIRECTION: SE WIND SPEED: 10-15 RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS: XBT done 15 min after tow.

SOUNDER SUMMARY:
Moderate speckling 70-90 F (128-165 m), light speckling below.

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 19 SET/HAUL NO: 8

LOCATION: North Butterworth AREA: Hecate Strait

START: Lat. 54°22.0'N Long. 131°5.2'W

END: Lat. 54°20.5'N Long. 131°4.5'W

GEAR: D-7 1 in. liner START TIME (PST): 1310 DURATION: 47 min

BOTTOM DEPTH m: Start: 101 End: 106 Est. Av. Depth: 102

NET DEPTH RANGE m: 84-91 Est. Av. Depth: 86

DIRECTION OF SET °true: SPEED kn: 3.5 DISTANCE TRAVELLED: mi.

SET ON: WATER CONDITION: TIDE:

WIND DIRECTION: S WIND SPEED: 15-20 RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS: Surface temperature 7.0°C

SOUNDER SUMMARY:

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 20 SET/HAUL NO: 9

LOCATION: West Dundas AREA: Dixon Entrance

START: Lat. 54°26.0'N Long. 131°13.0'W

END: Lat. 54°28.0'N Long. 131°19.3'W

GEAR: D-7 1 in. liner START TIME (PST): 0936 DURATION: 54 min.

BOTTOM DEPTH m: Start: 150 End: 165 Est. Av. Depth: 150

NET DEPTH RANGE m: 130-146 Est. Av. Depth: 132

DIRECTION OF SET °true: 285 SPEED kn: DISTANCE TRAVELLED: 3.3 mi.

SET ON: WATER CONDITION: TIDE:

WIND DIRECTION: SW WIND SPEED: 5 RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS: Surface temperature 6.4°

SOUNDER SUMMARY:

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 20 SET/HAUL NO: 10

LOCATION: West Dundas AREA: Dixon Entrance

START: Lat. 54°26.7'N Long. 131°15.5'W

END: Lat. 54°26.2'N Long. 131°14.0'W

GEAR: Hi-lift Engel bottom trawl START TIME (PST): 1250 DURATION: 30 min.

BOTTOM DEPTH m: Start: 146 End: 155 Est. Av. Depth: 152

NET DEPTH RANGE m: 146-155 Est. Av. Depth: 152

DIRECTION OF SET °true: 130 SPEED kn: DISTANCE TRAVELLED: 1.4 mi.

SET ON: WATER CONDITION: TIDE:

WIND DIRECTION: SW WIND SPEED: 10 RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 21 SET/HAUL NO: 11

LOCATION: Freeman Passage AREA: Hecate Strait

START: Lat. 53°49.0'N Long. 130°43.0'W

END: Lat. 53°49.7'N Long. 130°44.5'W

GEAR: D-7 1 in. liner START TIME (PST) : 0821 DURATION: 25 min.

BOTTOM DEPTH m: Start: 86 End: 73 Est. Av. Depth: 79

NET DEPTH RANGE m: 18-24 Est. Av. Depth: 24

DIRECTION OF SET °true: 310 SPEED kn: _____ DISTANCE TRAVELLED: 1.0 mi.

SET ON: _____ WATER CONDITION: Rippled TIDE: _____

WIND DIRECTION: NE WIND SPEED: _____ RECORDER: J. Thompson

TTM: _____ TDM: _____ BT: _____ OTHER OCEANOGRAPHIC DATA: _____

REMARKS: _____

SOUNDER SUMMARY:

Moderate spotting 10-30 F; light speckling lower 5 F.

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 21 SET/HAUL NO: 12

LOCATION: Freeman Passage AREA: Hecate Strait

START: Lat. 53°49.5'N Long. 130°44.0'W

END: Lat. 53°49.0'N Long. 130°42.0'W

GEAR: D-7 1 in. liner START TIME (PST): 0915 DURATION: 30 min.

BOTTOM DEPTH m: Start: 82 End: 86 Est. Av. Depth: 82

NET DEPTH RANGE m: 68-68 Est. Av. Depth: 68

DIRECTION OF SET °true: _____ SPEED kn: _____ DISTANCE TRAVELLED: _____ mi.

SET ON: _____ WATER CONDITION: _____ TIDE: _____

WIND DIRECTION: _____ WIND SPEED: 5 RECORDER: J. Thompson

TTM: _____ TDM: _____ BT: _____ OTHER OCEANOGRAPHIC DATA: _____

REMARKS: _____

SOUNDER SUMMARY:

Moderate spotting 10-30 F; light speckling lower 5 F.

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 21 SET/HAUL NO: 13

LOCATION: W. of Porcher Island AREA: Hecate Strait

START: Lat. 53°54.5'N Long. 130°57.6'W

END: Lat. 53°53.6'N Long. 130°56.0'W

GEAR: Hi-lift Engel START TIME (PST) : 1610 DURATION: 30 min.

BOTTOM DEPTH m: Start: 81 End: 88 Est. Av. Depth: 82

NET DEPTH RANGE m: 81-88 Est. Av. Depth: 82

DIRECTION OF SET °true: 125 SPEED kn: 31 DISTANCE TRAVELLED: 1.4 mi.

SET ON: _____ WATER CONDITION: _____ TIDE: _____

WIND DIRECTION: NW WIND SPEED: 8-10 RECORDER: J. Thompson

TTM: _____ TDM: _____ BT: _____ OTHER OCEANOGRAPHIC DATA: _____

REMARKS: Snag - broke headrope and wing

SOUNDER SUMMARY:

Very light targets on bottom.

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 22 SET/HAUL NO: 14

LOCATION: Butterworth AREA: Hecate Strait-Dixon Entrance

START: Lat. 54°18.8'N Long. 131°5.8'W

END: Lat. 54°17.5'N Long. 131°4.7'W

GEAR: Hi-lift Engel START TIME (PST): 0825 DURATION: 30 min.

BOTTOM DEPTH m: Start: 86 End: 82 Est. Av. Depth: 84

NET DEPTH RANGE m: 82-86 Est. Av. Depth: 84

DIRECTION OF SET °true: 165 SPEED kn: _____ DISTANCE TRAVELLED: 1.7 mi.

SET ON: _____ WATER CONDITION: Light chop TIDE: _____

WIND DIRECTION: NW WIND SPEED: 10-15 RECORDER: J. Thompson

TTM: _____ TDM: _____ BT: _____ OTHER OCEANOGRAPHIC DATA: _____

REMARKS: _____

SOUNDER SUMMARY:

Very light speckling lower 10 F.

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 22 SET/HAUL NO: 15

LOCATION: Butterworth Gully AREA: Hecate Strait-Dixon Entrance

START: Lat. 54°16.6'N Long. 131°2.4'W

END: Lat. 54°14.8'N Long. 131°2.0'W

GEAR: Hi-lift Engel START TIME (PST): 0953 DURATION: 38 min.

BOTTOM DEPTH m: Start: 128 End: 115 Est. Av. Depth: 117

NET DEPTH RANGE m: 115-128 Est. Av. Depth: 117

DIRECTION OF SET °true: 170 SPEED kn: _____ DISTANCE TRAVELLED: _____ mi.

SET ON: _____ WATER CONDITION: _____ TIDE: _____

WIND DIRECTION: ENE WIND SPEED: 10-15 RECORDER: J. Thompson

TTM: _____ TDM: _____ BT: _____ OTHER OCEANOGRAPHIC DATA: _____

REMARKS: _____

SOUNDER SUMMARY:

Very light speckling lower 10 F.

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 22 SET/HAUL NO: 16

LOCATION: Butterworth AREA: Hecate Strait-Dixon Entrance

START: Lat. 54°17.2'N Long. 131°3.0'W

END: Lat. 54°13.3'N Long. 131°2.4'W

GEAR: D-7 1 in. liner START TIME (PST): 1325 DURATION: 50 min.

BOTTOM DEPTH m: Start: 121 End: 123 Est. Av. Depth: 121

NET DEPTH RANGE m: 81-95 Est. Av. Depth: 86

DIRECTION OF SET °true: 170 SPEED kn: _____ DISTANCE TRAVELLED: 2.0 mi.

SET ON: _____ WATER CONDITION: _____ TIDE: _____

WIND DIRECTION: NE WIND SPEED: 5-10 RECORDER: J. Thompson

TTM: _____ TDM: _____ BT: _____ OTHER OCEANOGRAPHIC DATA: _____

REMARKS: _____

SOUNDER SUMMARY:

Light speckling lower 10 F.

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 23 SET/HAUL NO: 17

LOCATION: Chatham Sound AREA:

START: Lat. 54°33.3'N Long. 130°40.9'W

END: Lat. 54°31.3'N Long. 130°37.6'W

GEAR: D-7 1 in. liner START TIME (PST): 0820 DURATION: 65 min.

BOTTOM DEPTH m: Start: 106 End: 95 Est. Av. Depth: 99

NET DEPTH RANGE m: 77-84 Est. Av. Depth: 81

DIRECTION OF SET °true: 150 SPEED kn: DISTANCE TRAVELLED: 2.8 mi.

SET ON: WATER CONDITION: Choppy TIDE:

WIND DIRECTION: NW WIND SPEED: 15 RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:
Very rare targets on bottom.

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 23 SET/HAUL NO: 18

LOCATION: Chatham Sound AREA:

START: Lat. 54°32.0'N Long. 130°37.4'W

END: Lat. 54°34.8'N Long. 130°40.3'W

GEAR: D-7 1 in. liner START TIME (PST): 1004 DURATION: 60 min.

BOTTOM DEPTH m: Start: 102 End: 124 Est. Av. Depth: 119

NET DEPTH RANGE m: 9-22 Est. Av. Depth: 18

DIRECTION OF SET °true: 340 SPEED kn: DISTANCE TRAVELLED: 3.3 mi.

SET ON: WATER CONDITION: Rippled TIDE:

WIND DIRECTION: NE WIND SPEED: 5 RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:
Very rare targets on bottom.

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 23 SET/HAUL NO: 19

LOCATION: Chatham Sound AREA:

START: Lat. 54°19.3'N Long. 130°46.6'W

END: Lat. 54°18.1'N Long. 130°46.8'W

GEAR: D-7 1 in. liner START TIME (PST): 1414 DURATION: 18 min.

BOTTOM DEPTH m: Start: 192 End: 176 Est. Av. Depth: 188

NET DEPTH RANGE m: 139-165 Est. Av. Depth: 146

DIRECTION OF SET °true: 170 SPEED kn: DISTANCE TRAVELLED: 1.3 mi.

SET ON: E WATER CONDITION: 5 TIDE: J. Thompson

WIND DIRECTION: WIND SPEED: RECORDER:

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS: Destroyed net

SOUNDER SUMMARY:

Moderate speckling 90-100 F (165-183 m)

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 24 SET/HAUL NO: 20

LOCATION: Caamano Sound AREA: Hecate Strait

START: Lat. 52°58.2'N Long. 129°25.6'W

END: Lat. 52°53.9'N Long. 129°29.8'W

GEAR: D-5 1 in. liner START TIME (PST): 1735 DURATION: 60 min.

BOTTOM DEPTH m: Start: 187 End: 243 Est. Av. Depth: 263

NET DEPTH RANGE m: 132-152 Est. Av. Depth: 146

DIRECTION OF SET °true: 190 SPEED kn: 3 DISTANCE TRAVELLED: 3.0 mi.

SET ON: WATER CONDITION: Choppy TIDE:

WIND DIRECTION: SE WIND SPEED: 10-15 RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

Light spotting 60-90 F (110-165 m).

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 25 SET/HAUL NO: 21

LOCATION: Campania Sound AREA: Hecate Strait

START: Lat. 53°2.3'N Long. 129°17.0'W

END: Lat. 53°9.6'N Long. 129°23.2'W

GEAR: D-5 1 in. liner START TIME (PST) : 1040 DURATION: 150 min.

BOTTOM DEPTH m: Start: 399 End: 538 Est. Av. Depth: 586

NET DEPTH RANGE m: 183-316 Est. Av. Depth: 181 and 265

DIRECTION OF SET °true: 350 SPEED kn: 3.4 DISTANCE TRAVELLED: 8.3 mi.

SET ON: _____ WATER CONDITION: _____ TIDE: _____

WIND DIRECTION: S WIND SPEED: 15-20 RECORDER: J. Thompson

TTM: _____ TDM: _____ BT: _____ OTHER OCEANOGRAPHIC DATA: _____

REMARKS: _____

SOUNDER SUMMARY:

Light speckling 80-160 F (146-293 m).

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 25 SET/HAUL NO: 22

LOCATION: Squally Channel AREA: Hecate Strait

START: Lat. 53°13.1'N Long. 129°21.5'W

END: Lat. 53°7.4'N Long. 129°22.3'W

GEAR: D-5 1 in. liner START TIME (PST): 1757 DURATION: 120 min.

BOTTOM DEPTH m: Start: 541 End: 610 Est. Av. Depth: 512

NET DEPTH RANGE m: 165-234 Est. Av. Depth: 183

DIRECTION OF SET °true: 220 SPEED kn: 3.2 DISTANCE TRAVELLED: 6.3 mi.

SET ON: _____ WATER CONDITION: _____ TIDE: _____

WIND DIRECTION: S WIND SPEED: 25 RECORDER: J. Thompson

TTM: _____ TDM: _____ BT: _____ OTHER OCEANOGRAPHIC DATA: _____

REMARKS: _____

SOUNDER SUMMARY:

Very light spotting 70-120 F (128-220 F).

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 26 SET/HAUL NO: 23

LOCATION: Finlayson Channel AREA: Queen Charlotte Sound

START: Lat. _____ Long. _____

END: Lat. _____ Long. _____

GEAR: D-5 1 in. liner START TIME (PST): 1035 DURATION: 130 min.

BOTTOM DEPTH m: Start: 713 End: 603 Est. Av. Depth: 658

NET DEPTH RANGE m: 220-278 Est. Av. Depth: 271

DIRECTION OF SET °true: _____ SPEED kn: 4.0 DISTANCE TRAVELLED: 8.7 mi.

SET ON: _____ WATER CONDITION: Calm TIDE: _____

WIND DIRECTION: _____ WIND SPEED: _____ RECORDER: J. Thompson

TTM: _____ TDM: _____ BT: _____ OTHER OCEANOGRAPHIC DATA: _____

REMARKS: _____

SOUNDER SUMMARY:

Light spottting and speckling below 120 F (220 m).

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 26 SET/HAUL NO: 24

LOCATION: Finlayson Channel AREA: Queen Charlotte Sound

START: Lat. 52°32.5'N Long. 128°28.0'W

END: Lat. 52°39.5'N Long. 128°28.2'W

GEAR: D-5 1 in. liner START TIME (PST): 1655 DURATION: 120 min.

BOTTOM DEPTH m: Start: 640 End: 841 Est. Av. Depth: 677

NET DEPTH RANGE m: 348-366 Est. Av. Depth: 366

DIRECTION OF SET °true: 350 SPEED kn: 2.9 DISTANCE TRAVELLED: 5.8 mi.

SET ON: _____ WATER CONDITION: Rippled TIDE: _____

WIND DIRECTION: _____ WIND SPEED: Calm RECORDER: J. Thompson

TTM: _____ TDM: _____ BT: _____ OTHER OCEANOGRAPHIC DATA: _____

REMARKS: _____

SOUNDER SUMMARY:

Light spotting and speckling below 120 F (220 m).

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 27 SET/HAUL NO: 25

LOCATION: Finlayson Channel AREA: Queen Charlotte Sound

START: Lat. 52°34.6'N Long. 128°27.4'W

END: Lat. 52°41.2'N Long. 128°29.0'W

GEAR: D-5 1 in. liner START TIME (PST) : 0820 DURATION: min. 127

BOTTOM DEPTH m: Start: 585 End: 677 Est. Av. Depth: 658

NET DEPTH RANGE m: 256-293 Est. Av. Depth: 278

DIRECTION OF SET °true: 195 SPEED kn: 3.1 DISTANCE TRAVELLED: mi. 6.3

SET ON: WATER CONDITION: Rippled TIDE:

WIND DIRECTION: S WIND SPEED: 5 RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

Light speckling 150 F (274 m) and deeper.

VESSEL: ARCTIC HARVESTER DATE: Yr Mo Day SET/HAUL NO: 26

LOCATION: Fitz Hugh Sound AREA: Queen Charlotte Sound

START: Lat. 51°47.0'N Long. 127°56.5'W

END: Lat. 51°51.1'N Long. 127°57.0'W

GEAR: D-5 1 in. liner START TIME (PST): 1903 DURATION: min. 60

BOTTOM DEPTH m: Start: 329 End: 318 Est. Av. Depth: 318

NET DEPTH RANGE m: 232-256 Est. Av. Depth: 252

DIRECTION OF SET °true: 000 SPEED kn: 4.1 DISTANCE TRAVELLED: mi. 4.1

SET ON: WATER CONDITION: TIDE:

WIND DIRECTION: WIND SPEED: RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

Very light speckling 150 F (274 m) to bottom.

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 28 SET/HAUL NO: 27

LOCATION: N. of Mitlenatch AREA: Strait of Georgia

START: Lat. 49°56.2'N Long. 125°3.7'W

END: Lat. 49°53.6'N Long. 125°0.6'W

GEAR: D-5 1 in. liner START TIME (PST) : 1530 DURATION: 60 min.

BOTTOM DEPTH m: Start: 274 End: 284 Est. Av. Depth: 284

NET DEPTH RANGE m: 15-24 Est. Av. Depth: 18

DIRECTION OF SET °true: 140 SPEED kn: 3.8 DISTANCE TRAVELLED: 3.8 mi.

SET ON: WATER CONDITION: Calm TIDE:

WIND DIRECTION: SE WIND SPEED: 5 RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

Moderate speckling 110-120 F (201-220 m).

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 28 SET/HAUL NO: 28

LOCATION: N. of Mittlenatch AREA: Strait of Georgia

START: Lat. 49°56.7'N Long. 125°4.1'W

END: Lat. 49°54.0'N Long. 125°2.6'W

GEAR: D-5 1 in. liner START TIME (PST): 1820 DURATION: 60 min.

BOTTOM DEPTH m: Start: 256 End: 247 Est. Av. Depth: 251

NET DEPTH RANGE m: 192-201 Est. Av. Depth: 198

DIRECTION OF SET °true: 145 SPEED kn: 3.5 DISTANCE TRAVELLED: 3.5 mi.

SET ON: WATER CONDITION: Rippled TIDE:

WIND DIRECTION: WIND SPEED: RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

Light speckling at 65-75 F (119-137 m) and 110 F (201 m) to bottom.

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 29 SET/HAUL NO: 29

LOCATION: Jervis Inlet AREA: Strait of Georgia

START: Lat. 49°46.3'N Long. 124°5.8'W

END: Lat. 49°46.2'N Long. 124°8.3'W

GEAR: D-5 1 in. liner START TIME (PST) : 0835 DURATION: min. 30

BOTTOM DEPTH m: Start: 550 End: 527 Est. Av. Depth: 549

NET DEPTH RANGE m: 198-201 Est. Av. Depth: 201

DIRECTION OF SET °true: 145 SPEED kn: 3.4 DISTANCE TRAVELLED: mi. 1.7

SET ON: WATER CONDITION: Calm TIDE:

WIND DIRECTION: WIND SPEED: Calm RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

Moderate speckling in congruent bands 90-140 F (165-256 m).

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 29 SET/HAUL NO: 30

LOCATION: Jervis Inlet AREA: Strait of Georgia

START: Lat. 49°46.2'N Long. 124°7.6'W

END: Lat. 49°47.2'N Long. 124°5.0'W

GEAR: D-5 1 in. liner START TIME (PST): 1000 DURATION: min. 35

BOTTOM DEPTH m: Start: 567 End: 603 Est. Av. Depth: 585

NET DEPTH RANGE m: 165 Est. Av. Depth: 165

DIRECTION OF SET °true: 080 SPEED kn: 3.4 DISTANCE TRAVELLED: mi. 2.0

SET ON: WATER CONDITION: Calm TIDE:

WIND DIRECTION: WIND SPEED: Calm RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

Moderate speckling 90-140 F (165-256 m).

VESSEL: ARCTIC HARVESTER DATE: Yr Mo Day SET/HAUL NO: 31

LOCATION: West Texada Island AREA: Strait of Georgia

START: Lat. 49°39.9'N Long. 124°33.8'W

END: Lat. 49°40.4'N Long. 124°36.6'W

GEAR: D-5 1 in. liner START TIME (PST) : 1500 DURATION: 35 min.

BOTTOM DEPTH m: Start: 256 End: 333 Est. Av. Depth: 284

NET DEPTH RANGE m: 86-91 Est. Av. Depth: 88

DIRECTION OF SET °true: 310 SPEED kn: 417 DISTANCE TRAVELLED: 2.3 mi.

SET ON: WATER CONDITION: Calm TIDE:

WIND DIRECTION: WIND SPEED: Calm RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

Light spotting 45-55 F (82-111 m), moderate speckling in layers 110 F (201 m) to bottom.

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 29 SET/HAUL NO: 32

LOCATION: West of Texada Island AREA: Strait of Georgia

START: Lat. 49°40.0'N Long. 124°34.7'W

END: Lat. 49°38.8'N Long. 124°32.7'W

GEAR: D-5 1 in. liner START TIME (PST): 1620 DURATION: 23 min.

BOTTOM DEPTH m: Start: 311 End: 238 Est. Av. Depth: 265

NET DEPTH RANGE m: 201-210 Est. Av. Depth: 205

DIRECTION OF SET °true: 130 SPEED kn: 5.1 DISTANCE TRAVELLED: 2.0 mi.

SET ON: WATER CONDITION: TIDE:

WIND DIRECTION: N.W. WIND SPEED: 2-5 RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

Light spotting 45-55 F (82-111 m), moderate speckling 110 F (201 m) to bottom.

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 30 SET/HAUL NO: 33

LOCATION: Halibut Bank AREA: Strait of Georgia

START: Lat. 49°19.5'N Long. 123°46.0'W

END: Lat. 49°18.25'N Long. 123°43.8'W

GEAR: D-5 1 in. liner START TIME (PST): 0955 DURATION: 30 min.

BOTTOM DEPTH m: Start: 320 End: 293 Est. Av. Depth: 307

NET DEPTH RANGE m: 225-234 Est. Av. Depth: 229

DIRECTION OF SET °true: 135 SPEED kn: _____ DISTANCE TRAVELLED: 1.4 mi.

SET ON: Layer - heavy WATER CONDITION: Choppy TIDE: _____

WIND DIRECTION: W WIND SPEED: 20 RECORDER: R. Scarsbrook

TTM: _____ TDM: _____ BT: _____ OTHER OCEANOGRAPHIC DATA: _____

REMARKS: _____

SOUNDER SUMMARY:

Medium-heavy spotting 91-110 m (50-60 fm); medium-heavy layer at 165-256 m (90-140 fm).

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 30 SET/HAUL NO: 34

LOCATION: Halibut Bank AREA: Strait of Georgia

START: Lat. 49°18.3'N Long. 123°45.5'W

END: Lat. 49°16.5'N Long. 123°41.9'W

GEAR: D-5 1 in. liner START TIME (PST): 1315 DURATION: _____ min.

BOTTOM DEPTH m: Start: 274 End: _____ Est. Av. Depth: _____

NET DEPTH RANGE m: 91-110 Est. Av. Depth: _____

DIRECTION OF SET °true: 120 SPEED kn: 3.5 DISTANCE TRAVELLED: _____ mi.

SET ON: spots 91-110 (50-60 fm) WATER CONDITION: Choppy TIDE: _____

WIND DIRECTION: W WIND SPEED: 20 RECORDER: R. Scarsbrook

TTM: _____ TDM: _____ BT: _____ OTHER OCEANOGRAPHIC DATA: _____

REMARKS: _____

SOUNDER SUMMARY:

Medium-heavy spotting 91-110 m (50-60 fm); medium-heavy layer at 165-256 m.

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 31 SET/HAUL NO: 35

LOCATION: Entrance Island AREA: Strait of Georgia

START: Lat. 49°13.6'N Long. 123°48.9'W

END: Lat. 49°13.7'N Long. 123°47.7'W

GEAR: D-5 1 in. liner START TIME (PST): 0805 DURATION: 20 min.

BOTTOM DEPTH m: Start: 216 End: 183 Est. Av. Depth: 200

NET DEPTH RANGE m: 124-128 Est. Av. Depth: 126

DIRECTION OF SET °true: 70 SPEED kn: 2.9 DISTANCE TRAVELLED: mi.

SET ON: Targets at 70 WATER CONDITION: Rippled TIDE: Flood

WIND DIRECTION: W WIND SPEED: 5 RECORDER: R. Scarsbrook

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

Heavy layer 128 m (70 fm), medium layer on bottom.

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 31 SET/HAUL NO: 36

LOCATION: Halfway between Halibut Bank & Entrance Island AREA: Strait of Georgia

START: Lat. 49°15.1'N Long. 123°43.7'W

END: Lat. 49°15.0'N Long. 123°40.8'W

GEAR: D-5 1 in. liner START TIME (PST): 0930 DURATION: 25 min.

BOTTOM DEPTH m: Start: 404 End: 397 Est. Av. Depth: 400

NET DEPTH RANGE m: 80-86-88 Est. Av. Depth:

DIRECTION OF SET °true: 55 SPEED kn: 2.5 DISTANCE TRAVELLED: mi.

SET ON: Top layer 155 m (85 fm) WATER CONDITION: Rippled TIDE: Flood

WIND DIRECTION: W WIND SPEED: 5-10 RECORDER: R. Scarsbrook

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

Layer 155-256 m (85-140 fm).

VESSEL: ARCTIC HARVESTER DATE: Yr 78 Mo 03 Day 31 SET/HAUL NO: 37

LOCATION: Half-way between Halibut Bank & Entrance Island AREA: Strait of Georgia

START: Lat. 49°15.3'N Long. 123°42.1'W

END: Lat. 49°14.7'N Long. 123°43.6'W

GEAR: D-5 1 in. liner START TIME (PST): 1045 DURATION: 15 min.

BOTTOM DEPTH m: Start: 401 End: 402 Est. Av. Depth: 401.5

NET DEPTH RANGE m: 238-256 Est. Av. Depth: 247

DIRECTION OF SET °true: 255 SPEED kn: _____ DISTANCE TRAVELLED: _____ mi.

SET ON: Below layer WATER CONDITION: _____ TIDE: _____

WIND DIRECTION: W WIND SPEED: 5-10 RECORDER: R. Scarsbrook

TTM: _____ TDM: _____ BT: _____ OTHER OCEANOGRAPHIC DATA: _____

REMARKS: _____

SOUNDER SUMMARY:

VESSEL: CALIGUS DATE: Yr 78 Mo 04 Day 05 SET/HAUL NO: 38

LOCATION: North Active Pass AREA: Strait of Georgia

START: Lat. 48°54.3'N Long. 123°11.4'W

END: Lat. _____ Long. _____

GEAR: Large bottom trawl 1 in. liner START TIME (PST): 1715 DURATION: 30 min.

BOTTOM DEPTH m: Start: _____ End: _____ Est. Av. Depth: _____

NET DEPTH RANGE m: Bottom Est. Av. Depth: _____

DIRECTION OF SET °true: _____ SPEED kn: _____ DISTANCE TRAVELLED: _____ mi.

SET ON: _____ WATER CONDITION: Choppy TIDE: _____

WIND DIRECTION: SE WIND SPEED: 10 RECORDER: J. Thompson

TTM: _____ TDM: _____ BT: _____ OTHER OCEANOGRAPHIC DATA: _____

REMARKS: _____

SOUNDER SUMMARY:

VESSEL: CALIGUS DATE: Yr 78 Mo 04 Day 06 SET/HAUL NO: 39

LOCATION: North Active Pass AREA: Strait of Georgia

START: Lat. 48°54.7'N Long. 123°11.6'W

END: Lat. Long.

GEAR: Large bottom trawl 1 in. liner START TIME (PST): 0915 DURATION: 30 min.

BOTTOM DEPTH m: Start: 132 End: 139 Est. Av. Depth: 135

NET DEPTH RANGE m: Bottom Est. Av. Depth:

DIRECTION OF SET °true: 303 SPEED kn: 2 DISTANCE TRAVELLED: 0.75-1 mi.

SET ON: WATER CONDITION: Choppy TIDE:

WIND DIRECTION: NW WIND SPEED: 10-15 RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

Light speckling lower 11 m (6 fm) and moderate patches at 91 m (50 fm).

VESSEL: CALIGUS DATE: Yr 78 Mo 04 Day 06 SET/HAUL NO: 40

LOCATION: North Active Pass AREA: Strait of Georgia

START: Lat. 48°56.3'N Long. 123°12.9'W

END: Lat. Long.

GEAR: Large bottom trawl 1 in. liner START TIME (PST): 1125 DURATION: 30 min.

BOTTOM DEPTH m: Start: 128 End: 132 Est. Av. Depth: 130

NET DEPTH RANGE m: Bottom Est. Av. Depth: 130

DIRECTION OF SET °true: 170 SPEED kn: DISTANCE TRAVELLED: mi.

SET ON: WATER CONDITION: Choppy TIDE:

WIND DIRECTION: NW WIND SPEED: 10-15 RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

Light to moderate speckling bottom 11 m (6 fm), very light at 91 m (50 fm).

VESSEL: CALIGUS DATE: Yr 78 Mo 04 Day 07 SET/HAUL NO: 41

LOCATION: North Active Pass AREA: Strait of Georgia

START: Lat. 48°54.3'N Long. 123°13.6'W

END: Lat. Long.

GEAR: Large bottom trawl 1 in. liner START TIME (PST): 0850 DURATION: 30 min.

BOTTOM DEPTH m: Start: 143 End: 150 Est. Av. Depth: 146

NET DEPTH RANGE m: 143-150 Est. Av. Depth: 146

DIRECTION OF SET °true: 340 SPEED kn: DISTANCE TRAVELLED: mi.

SET ON: WATER CONDITION: Calm TIDE:

WIND DIRECTION: Calm WIND SPEED: Calm RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:
Very light spotting 73-91 m (40-50 fm), light speckling lower 5.5 m (3 fm) and 15-22 m (8-12 fm) off bottom.

VESSEL: CALIGUS DATE: Yr 78 Mo 04 Day 07 SET/HAUL NO: 42

LOCATION: North Active Pass AREA: Strait of Georgia

START: Lat. 48°55.4'N Long. 128°12.1'W

END: Lat. Long.

GEAR: Large bottom trawl 1 in. liner START TIME (PST): 1026 DURATION: 30 min.

BOTTOM DEPTH m: Start: 134 End: 130 Est. Av. Depth: 132

NET DEPTH RANGE m: 130-134 Est. Av. Depth: 132

DIRECTION OF SET °true: 020 SPEED kn: DISTANCE TRAVELLED: mi.

SET ON: WATER CONDITION: Calm TIDE:

WIND DIRECTION: Calm WIND SPEED: Calm RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS: Sunny

SOUNDER SUMMARY:
Light spotting 91 m (50 fm), very light lower 18 m (10 fm), middle band gone.

VESSEL: CALIGUS DATE: Yr 78 Mo 04 Day 11 SET/HAUL NO: 43

LOCATION: Swanson Channel AREA: Gulf Islands

START: Lat. 48°45.7'N Long. 123°20.0'W

END: Lat. Long.

GEAR: Large bottom trawl 1 in. liner START TIME (PST): 1335 DURATION: 30 min.

BOTTOM DEPTH m: Start: 73 End: 66 Est. Av. Depth: 69

NET DEPTH RANGE m: 66-73 Est. Av. Depth: 69

DIRECTION OF SET °true: 350 SPEED kn: DISTANCE TRAVELLED: 0.9 mi.

SET ON: WATER CONDITION: Calm TIDE:

WIND DIRECTION: NW WIND SPEED: 5 RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

VESSEL: CALIGUS DATE: Yr 78 Mo 04 Day 12 SET/HAUL NO: 44

LOCATION: Off Birch Bay AREA: Strait of Georgia (U.S.A)

START: Lat. 48°52.3'N Long. 122°54.6'W

END: Lat. Long.

GEAR: Large bottom trawl 1 in. liner START TIME (PST): 1513 DURATION: 30 min.

BOTTOM DEPTH m: Start: 91 End: 82 Est. Av. Depth: 86

NET DEPTH RANGE m: 82-91 Est. Av. Depth: 86

DIRECTION OF SET °true: 330 SPEED kn: DISTANCE TRAVELLED: mi.

SET ON: WATER CONDITION: Calm TIDE:

WIND DIRECTION: Calm WIND SPEED: Calm RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

Moderate heavy speckling lower 7 m (4 fm).

VESSEL: CALIGUS DATE: Yr 78 Mo 04 Day 12 SET/HAUL NO: 45

LOCATION: North Active Pass AREA: Strait of Georgia

START: Lat. 48°53.3'N Long. 123°10.0'W

END: Lat. Long.

GEAR: Large bottom trawl 1 in. liner START TIME (PST): 2045 DURATION: 25 min.

BOTTOM DEPTH m: Start: 130 End: 124 Est. Av. Depth: 128

NET DEPTH RANGE m: 124-130 Est. Av. Depth: 128

DIRECTION OF SET °true: 010 SPEED kn: DISTANCE TRAVELLED: mi.

SET ON: WATER CONDITION: TIDE:

WIND DIRECTION: SE WIND SPEED: 10 RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

Very light bottom 3.7 m (2 fm), heavy spotting 0-55 m (0-30 fm).

VESSEL: CALIGUS DATE: Yr 78 Mo 04 Day 13 SET/HAUL NO: 46

LOCATION: Active-Roberts AREA: Strait of Georgia

START: Lat. 48°55.1'N Long. 123°12.9'W

END: Lat. Long.

GEAR: Large bottom trawl 1 in. liner START TIME (PST): 1015 DURATION: 60 min.

BOTTOM DEPTH m: Start: 135 End: 139 Est. Av. Depth: 135

NET DEPTH RANGE m: 130-139 Est. Av. Depth: 135

DIRECTION OF SET °true: 020 SPEED kn: DISTANCE TRAVELLED: mi.

SET ON: WATER CONDITION: TIDE:

WIND DIRECTION: SE WIND SPEED: 10 RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

Moderate spotting 59-91 m (32-50 fm), light speckling lower 11 m (6 fm).

VESSEL: CALIGUS DATE: Yr 78 Mo 04 Day 13 SET/HAUL NO: 47

LOCATION: Roberts-Active AREA: Strait of Georgia

START: Lat. 48°58.0'N Long. 123°8.5'W

END: Lat. Long.

GEAR: Large bottom trawl 1 in. liner START TIME (PST) : 1230 DURATION: 70 min.

BOTTOM DEPTH m: Start: 110 End: 117 Est. Av. Depth: 113

NET DEPTH RANGE m: 110-117 Est. Av. Depth: 113

DIRECTION OF SET °true: 300 SPEED kn: 210 DISTANCE TRAVELLED: 2.0 mi.

SET ON: WATER CONDITION: TIDE:

WIND DIRECTION: WIND SPEED: RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

Scattered spotting midwater, light speckling lower 4 m (2 fm).

VESSEL: G.B. REED DATE: Yr 78 Mo 04 Day 19 SET/HAUL NO: 48

LOCATION: North of Patos Island AREA: Strait of Georgia

START: Lat. 48°49.8'N Long. 122°58.1'W

END: Lat. 48°49.9'N Long. 123°00.8'W

GEAR: Engel 434 MWT 3/4 in. liner START TIME (PST): 0820 DURATION: 31 min.

BOTTOM DEPTH m: Start: 218 End: 199 Est. Av. Depth: 201

NET DEPTH RANGE m: 82-91 Est. Av. Depth: 88

DIRECTION OF SET °true: 270 SPEED kn: 3.4 DISTANCE TRAVELLED: 1.7 mi.

SET ON: WATER CONDITION: Rippled TIDE:

WIND DIRECTION: NW WIND SPEED: RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

Dense layer 45-55 f (82-111 m) very light speckling below.

VESSEL: G.B. REED DATE: Yr 78 Mo 04 Day 19 SET/HAUL NO: 49

LOCATION: North of Patos Island AREA: Strait of Georgia

START: Lat. 48°49.8'N Long. 122°57.9'W

END: Lat. 48°50.2'N Long. 123°04.1'W

GEAR: Engel 434 MWT 3/4 in. liner START TIME (PST): 1041 DURATION: min. 67

BOTTOM DEPTH m: Start: 223 End: 199 Est. Av. Depth: 201

NET DEPTH RANGE m: 134-115 Est. Av. Depth: 128

DIRECTION OF SET °true: 270 SPEED kn: DISTANCE TRAVELLED: mi. 4.0

SET ON: 270 WATER CONDITION: Light chop TIDE:

WIND DIRECTION: WIND SPEED: RECORDER:

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

Opening 13 m (7 fm), dense layer 45-55 F (82-111 m), very light speckling below.

VESSEL: G.B. REED DATE: Yr 78 Mo 04 Day SET/HAUL NO: 50

LOCATION: Off Saturna Island AREA: Strait of Georgia

START: Lat. 48°50.7'N Long. 123°9.1'N

END: Lat. 48°51.2'N Long. 123°11.5'N

GEAR: Engel 434 MWT 3/4 in. liner START TIME (PST): 1523 DURATION: min. 29

BOTTOM DEPTH m: Start: 216 End: 201 Est. Av. Depth: 210

NET DEPTH RANGE m: 182-155 Est. Av. Depth: 172

DIRECTION OF SET °true: 287 SPEED kn: 3.4 DISTANCE TRAVELLED: mi.

SET ON: WATER CONDITION: Calm TIDE:

WIND DIRECTION: Calm WIND SPEED: Calm RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

Opening 15 m (8 fm), rare spotting 20-30 F (37-55 m), moderate speckling 35 F (64 m) to bottom.

VESSEL: G.B. REED DATE: Yr 78 Mo 04 Day 20 SET/HAUL NO: 51

LOCATION: Active Pass AREA: Strait of Georgia

START: Lat. 48°54.6'N Long. 123°14.7'W

END: Lat. 48°52.8'N Long. 123°11.2'W

GEAR: Engel 434 MWT 3/4 in. liner START TIME (PST) : 0853 DURATION: 60 min.

BOTTOM DEPTH m: Start: 150 End: 154 Est. Av. Depth: 150

NET DEPTH RANGE m: 133-133 Est. Av. Depth: 133

DIRECTION OF SET °true: 127 SPEED kn: 2.7 DISTANCE TRAVELLED: 3.3 mi.

SET ON: WATER CONDITION: Choppy TIDE: Ebb

WIND DIRECTION: SE WIND SPEED: 10 RECORDER: K. Weir

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS: Net depth from headline

SOUNDER SUMMARY:

Occasional spotting 73-110 m, moderate to heavy (speckling lower 10 F (20 m).

VESSEL: G.B. REED DATE: Yr 78 Mo 04 Day 20 SET/HAUL NO: 52

LOCATION: Off Mayne Island AREA: Strait of Georgia

START: Lat. 48°54.8'N Long. 123°15.0'W

END: Lat. 48°52.5'N Long. 123°11.8'W

GEAR: Engel 434 MWT 3/4 in. liner START TIME (PST): 1056 DURATION: 60 min.

BOTTOM DEPTH m: Start: 148 End: 152 Est. Av. Depth: 150

NET DEPTH RANGE m: 93-99 Est. Av. Depth: 95

DIRECTION OF SET °true: 127 SPEED kn: DISTANCE TRAVELLED: mi.

SET ON: Light spotting 82-101 m (45-55 fm) WATER CONDITION: TIDE:

WIND DIRECTION: SE WIND SPEED: 15 RECORDER: J. Thompson

TTM: TDM: BT: OTHER OCEANOGRAPHIC DATA:

REMARKS:

SOUNDER SUMMARY:

Occasional spotting 35-45 F (64-82 m), moderate speckling lower 20 m.

VESSEL: G.B. REED DATE: Yr 78 Mo 04 Day 20 SET/HAUL NO: 53

LOCATION: South Point Roberts AREA: South Strait of Georgia

START: Lat. 48°56.8'N Long. 123°5.4'W

END: Lat. 48°56.6'N Long. 123°3.4'W

GEAR: Engel 434 MWT 3/4 in. liner START TIME (PST) : 1506 DURATION: 23 min.

BOTTOM DEPTH m: Start: 124 End: 119 Est. Av. Depth: 123

NET DEPTH RANGE m: 71-73 Est. Av. Depth: 73

DIRECTION OF SET °true: 092 SPEED kn: _____ DISTANCE TRAVELLED: 1.2 mi.

SET ON: _____ WATER CONDITION: Rippled TIDE: _____

WIND DIRECTION: SE (130) WIND SPEED: 10 RECORDER: J. Thompson

TTM: _____ TDM: _____ BT: _____ OTHER OCEANOGRAPHIC DATA: _____

REMARKS: Net fouled

SOUNDER SUMMARY:

Heavy spotting 35-48 F (64-88 m), moderate speckling 88 m to bottom.

VESSEL: G.B. REED DATE: Yr 78 Mo 04 Day 20 SET/HAUL NO: 54

LOCATION: Off Point Roberts AREA: South Strait of Georgia

START: Lat. 48°56.6'N Long. 123°3.1'W

END: Lat. 48°55.0'N Long. 123°2.3'W

GEAR: Engel 434 MWT 3/4 in. liner START TIME (PST): 1810 DURATION: 25 min.

BOTTOM DEPTH m: Start: 119 End: 132 Est. Av. Depth: 128

NET DEPTH RANGE m: 55-82 Est. Av. Depth: 79

DIRECTION OF SET °true: 155 SPEED kn: _____ DISTANCE TRAVELLED: 1.8 mi.

SET ON: _____ WATER CONDITION: _____ TIDE: _____

WIND DIRECTION: SW WIND SPEED: _____ RECORDER: J. Thompson

TTM: _____ TDM: _____ BT: _____ OTHER OCEANOGRAPHIC DATA: _____

REMARKS: _____

SOUNDER SUMMARY:

Heavy spotting 15-35 fm, light speckling 35 fm to bottom.

VESSEL: G.B. REED DATE: Yr 78 Mo 04 Day 21 SET/HAUL NO: 55

LOCATION: Halibut Bank AREA: Strait of Georgia

START: Lat. 49°17.5'N Long. 123°45.4'W

END: Lat. 49°19.0'N Long. 123°46.4'W

GEAR: Engel 434 3/4 in. liner START TIME (PST) : 0825 DURATION: 25 min.

BOTTOM DEPTH m: Start: 311 End: 329 Est. Av. Depth: 311

NET DEPTH RANGE m: 205-190 Est. Av. Depth: 195

DIRECTION OF SET °true: 330 SPEED kn: _____ DISTANCE TRAVELLED: 1.7 mi.

SET ON: _____ WATER CONDITION: Light chop TIDE: _____

WIND DIRECTION: E WIND SPEED: 8 RECORDER: J. Thompson

TTM: _____ TDM: _____ BT: _____ OTHER OCEANOGRAPHIC DATA: _____

REMARKS: _____

SOUNDER SUMMARY:

Moderate-heavy speckling 100-170 F (183-311 m).

VESSEL: _____ DATE: Yr Mo Day _____ SET/HAUL NO: _____

LOCATION: _____ AREA: _____

START: Lat. _____ Long. _____

END: Lat. _____ Long. _____

GEAR: _____ START TIME (____): _____ DURATION: _____ min.

BOTTOM DEPTH m: Start: _____ End: _____ Est. Av. Depth: _____

NET DEPTH RANGE m: _____ Est. Av. Depth: _____

DIRECTION OF SET °true: _____ SPEED kn: _____ DISTANCE TRAVELLED: _____ mi.

SET ON: _____ WATER CONDITION: _____ TIDE: _____

WIND DIRECTION: _____ WIND SPEED: _____ RECORDER: _____

TTM: _____ TDM: _____ BT: _____ OTHER OCEANOGRAPHIC DATA: _____

REMARKS: _____

SOUNDER SUMMARY:

Appendix Table 2. Hydrographic data collected during pollock surveys of British Columbia coastal waters during March-April 1978 from the ARCTIC HARVESTER and G.B. REED. Station locations are shown in Fig. .

Station number	Date	Time (GMT)	Location		Depth (m)	Temperature (°C)			Salinity (‰)	
			Area	Lat.-Long.		Bucket	Nansen	XBT	Bucket	Nansen
H1	78-3-15	1616	Q. Charlotte Strait	50°59'N 127°48'W	0	7.6		7.6	31.227	
					162			8.0		
H2	78-3-15	1818	Q. Charlotte Strait	51°08'N 128°19'W	0			8.8		
					177			7.5		
H3	78-3-15	1950	Q. Charlotte Sound	51°16'N 128°42'W	0	8.7		8.7	31.513	
					175			7.0		
H4	78-3-15	2050	Q. Charlotte Sound	51°24'N 128°53'W	0			8.4		
					208			6.4		
H5	78-3-15	2224	Q. Charlotte Sound	51°36'N 129°10'W	0	8.7		8.2	31.707	
					47			8.4		
H6	78-3-16	2132	Butterworth	54°01'N 131°00'W	0	7.8		7.3		
					96			7.0		
H7	78-3-17	0045	Butterworth	54°09'N 131°02'W	0			7.3		
H8	78-3-17	1911	Butterworth	54°16'N 131°03'W	0	6.9		7.1	31.676	
H9	78-3-18	1640	Dixon Entrance	54°30'N 132°25'W	0	6.0		6.0		
					3		5.7			31.963
					340		5.8			33.796
					350			6.9		

Appendix Table 2 (cont'd)

Station number	Date	Time (GMT)	Location		Depth (m)	Temperature (°C)			Salinity (‰)	
			Area	Lat.-Long.		Bucket	Nansen	XBT	Bucket	Nansen
H10	78-3-18	1000	Dixon Entrance	54°29'N 131°59'W	0		5.7			
					279		5.9			
H11	78-3-18	2018	Dixon Entrance	54°33'N 132°01'W	0	5.9		5.9	31.432	
					296			5.9		
H12	78-3-19	0120	Dixon Entrance	54°40'N 131°52'W	0			5.8		
					340			6.2		
H13	78-3-19	1630	Chatham Sound	54°17'N 130°46'W	0	7.0		6.8	31.645	
					179			6.8		
H14	78-3-20	0230	North of Dundas Is.	54°40'N 130°43'W	0	6.9		6.5	31.397	
					3		6.5			31.393
					200		6.2			32.172
					640		6.4			32.510
H15	78-3-20	1030	Butterworth	54°20'N 131°04'W	0			7.0		
					92			6.6		
H16	78-3-20	1850	Butterworth	54°28'N 131°190'W	0	6.5		6.4		
					170			5.6		
H17	78-3-21	0215	Head of Dixon Entrance	54°27'N 131°25'W	0	6.7			31.928	
					3		6.1			31.938
					250		6.3			33.261
H18	78-3-21	1800	Freeman Passage	53°42'N 130°49'W	0	6.5			31.046	
H19	78-3-22	0210	Head of Dixon Entrance	54°25'N 131°29'W	3		6.1			31.994
					270		6.1			33.273

Appendix Table 2 (cont'd)

Station number	Date	Time (GMT)	Location		Depth (m)	Temperature (°C)			Salinity (‰)	
			Area	Lat.-Long.		Bucket	Nansen	XBT	Bucket	Nansen
H20	78-3-22	1710	Butterworth	54°17'N	0	6.4		6.3	32.025	
				131°05'W	93			6.0		
H21	78-3-23	1745	Chatham	54°29'N						
			Sound	130°37'W	0	6.7		6.5	30.102	
					93			6.5		
H22	78-3-25	0315	Caamano	52°54'N	0			7.0		
			Sound	129°31'W	272			7.3		
H23	78-3-25	2150	Squally	53°11'N	0	6.3		6.2	30.522	
			Channel	129°23'W	460			7.4		
H24	78-3-26	2130	Finlayson	52°39'N	0	6.6		6.8	28.712	
			Channel	128°29'W	3		6.7			30.599
					200		7.1			32.755
					460			6.6		
					496		6.5			
H25	78-3-27	0330	Finlayson	52°40'N	0			6.8		
			Channel	128°28'W	460			6.5		
H26	78-3-27	1855	Finlayson	52°35'N	0			6.8		
			Channel	128°28'W	460			6.6		
H27	78-3-28	0430	Fitz Hugh	51°51'N	0	7.7		7.4	29.757	
			Sound	127°57'W	308	7.2				
H28	78-3-29	0055	North	49°53'N	0			8.2		
			Georgia	125°00'W	288			9.0		
			Strait							

Appendix Table 2 (cont'd)

Station number	Date	Time (GMT)	Location		Depth (m)	Temperature (°C)			Salinity (‰)	
			Area	Lat.-Long.		Bucket	Nansen	XBT	Bucket	Nansen
H29	78-3-29	1730	Jervis Inlet	49°46'N 124°09'W		9.0		8.7 8.7	24.926	
H30	78-3-29	2358	West Texada Island	49°41'N 124°36'W	0 346			8.7 9.1		
H31	78-3-30	0113	West Texada Island	49°40'N 124°34'W	0 349			8.5 9.2		
H32	78-4-18	2105	N. Orcas Island	48°50'N 122°56'W	4 73 183		9.1 8.6 8.4			29.880 26.949 31.181
H33	78-4-19	1220	N. Saturna Island	48°50'N 123°04'W	4 183		9.4 8.4			27.312 31.173
H34	78-4-19	1920	West of Active Pass	48°53'N 123°09'W	4 55 91 128		9.3 8.1 8.5 8.5			28.148 29.718 30.171 30.568
H35	78-4-20	1235	West of Active Pass	48°53'N 123°13'W	4 55 91 146		9.1 8.3 8.2 8.5			28.255 29.588 29.929 30.522
H36	78-4-20	2215	West of Porlier Pass	49°00' 123°20'	4 37 91 209		9.3 8.2 8.4 8.5			27.373 29.623 30.102 30.972

Appendix Table 2 (cont'd)

Station number	Date	Time (GMT)	Location		Depth (m)	Temperature (°C)			Salinity (‰)	
			Area	Lat.-Long.		Bucket	Nansen	XBT	Bucket	Nansen
H37	78-4-21	0950	South of Halibut Bank	49°19'N 123°47'W	4		9.1			27.312
					37		8.3			29.335
					192		8.9			30.658
					265		9.1			30.857
					348		9.1			30.942

Appendix Table 3. Temperature-depth profiles as determined by XBT (expendable bathythermograph), ARCTIC HARVESTER cruise, March 14-31, 1978.

Station and location															
H1 Q.C. Strait		H2 Q.C. Strait		H3 Q.C. Strait		H4 Q.C. Sound		H5 Q.C. Sound		H6 Butterworth		H7 Butterworth		H8 Butterworth	
Z(m)	T(°C)	Z(m)	T(°C)	Z(m)	T(°C)	Z(m)	T(°C)	Z(m)	T(°C)	Z(m)	T(°C)	Z(m)	T(°C)	Z(m)	T(°C)
0	7.6	0	8.8	0	8.7	0	8.4	0	8.2	0	7.3	0	7.3	0	7.1
50	7.6	7	10.0	38	8.7	44	8.5	47	8.4	96	7.0	7	7.1	13	7.0
51	7.7	12	9.3	50	9.0	45	8.7	bot-		bot-		11	7.1	17	6.9
56	7.8	18	9.0	58	9.0	77	8.8	tom		tom		14	7.0	55	6.8
74	7.9	40	8.8	60	8.8	130	7.5					40	6.9	82	6.6
80	8.2	72	9.1	120	8.1	190	6.4					100	6.9	88	6.6
110	8.2	80	8.1	150	7.9	208	6.4					bot-		95	6.5
120	8.0	130	7.7	160	7.8	bot-						tom		100	6.4
162	8.0	177	7.5	168	7.0	tom								105	6.1
bot-		bot-		175	7.0									116	6.1
tom		tom		bot-										bot-	
				tom										tom	

Appendix Table 3 (cont'd)

Station and location															
H10 Dixon E.		H9 Dixon E.		H11 Dixon E.		H12 Dixon E.		H-13 Chatham S.		H15 Butterworth		H16 West Dundas		H20 Butterworth	
Z(m)	T(°C)	Z(m)	T(°C)	Z(m)	T(°C)	Z(m)	T(°C)	Z(m)	T(°C)	Z(m)	T(°C)	Z(m)	T(°C)	Z(m)	T(°C)
0	5.7	0	6.0	0	5.4	0	5.8	0	6.8	0	7.0	0	6.4	0	6.3
8	5.7	64	6.1	15	5.7	50	6.3	20	6.8	2	6.9	40	5.7	8	6.2
15	5.8	211	7.1	22	6.6	175	6.0	45	6.9	55	6.8	72	5.6	9	6.1
30	5.8	215	7.4	32	6.7	338	5.9	179	6.8	58	6.9	82	5.7	10	6.2
38	6.0	225	7.0	33	6.2	340	6.2	bot-		85	6.9	94	5.6	28	6.1
48	6.0	285	6.8	52	6.3	bot-		tom		92	6.6	170	5.7	35	6.0
50	6.2	295	7.1	112	6.2	tom				bot-		bot-		93	6.0
57	6.2	310	7.0	113	6.6					tom		tom		bot-	
65	6.3	333	7.0	286	5.9									tom	
84	6.0	335	7.7	bot-											
130	6.0	338	7.0	tom											
145	6.2	340	7.7												
150	6.0	355	7.0												
279	5.9	370	6.9												
bot-		bot-													
tom		tom													

Appendix Table 3 (cont'd)

Station and location															
H21 Chatham S.		H22 Caamano S.		H26 Finlayson C.		H27 Fitz Hugh S.		H28 N. Georgia St.		H29 Jervis In.		H30 W. Texada		H31 W. Texada	
Z(m)	T(°C)	Z(m)	T(°C)	Z(m)	T(°C)	Z(m)	T(°C)	Z(m)	T(°C)	Z(m)	T(°C)	Z(m)	T(°C)	Z(m)	T(°C)
0	6.5	0	7.0	0	6.8	0	7.4	0	8.2	0	8.6	0	8.5	0	8.5
3	6.8	43	7.0	100	6.6	80	6.7	10	8.0	10	8.6	40	7.8	20	8.0
40	6.9	50	7.2	150	7.2	122	6.8	80	8.1	35	8.0	300	9.1	350	9.2
90	6.7	60	7.3	180	7.0	133	7.5	220	9.0	250	8.9	450	9.2		
92	6.5	70	7.3	250	7.0	180	7.8	288	9.0	328	8.7				
bot-		90	7.4	400	6.6	318	7.2								
tom		150	7.4												
		272	7.3												
		bot-													
		tom													

Appendix Tables 4A-4C. Calculation of fish biomass estimates for the Active Pass-Point Roberts region. (See Fig. 5 and 6).

TABLE 4A

Vessel: G. B. REED

Net: Engel 434 midwater trawl with small mesh codend liner

Period: April 18-21, 1978

Chart: Canadian 3450 (scale 1:80,000)

Sounder: Simrad EK 38A (wet paper)

Set no.	Total catch (kg)	Catch % by weight				Duration (min)	Layer
		Pollock	Dogfish	Other	Hake		
48	144	63	0	31	1	31	Spotting 3
49	286	56	40	3	< 1	67	Spotting 3
50	541	29	60	3	7	29	Spotting 3
51	687	24	73	< 1	3	60	Near bottom 2
52	295	85	15	< 1	0	60	Spotting 1
54	2,989	99	< 1	< 1	< 1	25	Spotting 4

Appendix Tables 4A-4C (Cont'd)

TABLE 4B

Set no.	Vertical mouth opening (m)	Headrope depth (m)	Distance travelled over bottom (m)	Circular area of mouth (m^2)	Volume strained (m^3)	Total fish biomass density (10^{-3} kg/m^3)
48	12.8	82 - 91	3,334	128.7	429,005	.336
49	12.8	115 - 139	7,593	128.7	977,035	.296
50	14.6	155 - 182	3,056	167.4	511,607	1.058
51	11.0	133	6,112	95.0	580,826	1,182
52	12.8	93 - 99	5,631	128.7	724.574	.407
54	18.3	52 - 82	3,260	263.0	857,426	3,486
-	M	-	S	ΠM^2	$S \cdot \Pi M^2$	-

Appendix Tables 4A-4C (cont'd)

TABLE 4C

Density layer	Mean width (m)	Area (10^6 m^2)	Volume (10^9 m^3)	Fish biomass density (10^{-3} kg/m^3)	Based on set no.	Total fish biomass (10^3 kg)	Est. biomass by species (10^3 kg)			
							Pollock	Dogfish	Hake	Other
				Shallower layer of spotting						
1	-[a]	214.714	3.614	.407	52	1,471	1,250	221	0	7
2	19.31	20.933	0.404	-	-	-	-	-	-	-
2B	33.18	4.583	0.152	-	-	-	-	-	-	-
2	-	25.517	0.556	.407	52	227	193	34	0	1
3A	13.55	64.384	0.873	.301	48,49	263	153	70	1	32
3B	27.91	3.952	0.110	1.058	50	117	34	70	8	4
4	27.40	4.355	0.120	3.486	54	417	412	2	2	2
Subtotal						2,495	2,042	397	11	46
				Near-bottom layer of speckling						
1	65.90	143.146	9.434	.236	20% of 51	2,230	535	1,628	67	11
2(to 100 fm)	28.31	272.283	7.709	1.182	51	9,112	2,187	6,651	273	46
Subtotal						11,342	2,722	8,279	340	57
Grand total						13,837	4,764	8,676	351	103

[a]Range of means in several regions: 11.34-27.60 m.