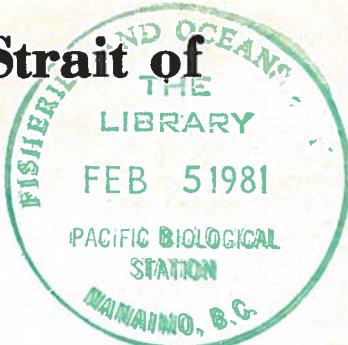


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Hake and Pollock Study, Strait of Georgia Cruise *G.B. Reed*, January 13-28, 1976



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and Aquatic Sciences No. 225**

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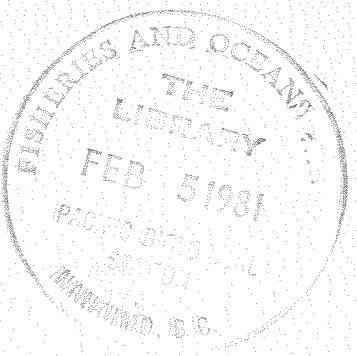
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HAKE AND POLLOCK STUDY, STRAIT OF GEORGIA CRUISE

G.B. REED, JANUARY 13-28, 1976

by

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RESUME

Cass, A. J., R. J. Beamish, M. S. Smith, and K. Weir. 1980. Hake and pollock study, Strait of Georgia cruise, G.B. REED, January 13-28, 1976. Can. Data Rep. Fish. Aquat. Sci. 225: 88 p.

Parmi les espèces capturées au moyen de 24 jeux de chaluts mésopélagiques mouillés dans le nord, le centre et le sud du détroit de Géorgie, y compris dans le détroit de Malaspina, le colin de l'Alaska dominait. Le merlu du Pacifique, l'aiguillat commun, Leuroglossus stilbius schmidti et Stenobrachius leucopsarus ont été capturés en quantités moindres.

Dans la plupart de ces secteurs, une couche de diffusion occupait le fond jusqu'à 100 m. Tous les jeux sauf cinq ont été mouillés dans cette couche.

90% de la biomasse du colin a été capturée au moyen de deux jeux, dans le centre du détroit de Géorgie. Le rythme de capture y a été de 3 904 kg/h comparativement à 72 pour les autres.

La plupart des colins mesuraient de 34 à 46 cm de longueur à la fourche, le mode étant de 36 à 38 cm. Les coupes de rayons des nageoires pectorales ont permis de mieux déterminer l'âge que la surface ou les coupes d'otolithes. Le gros de la prise était constitué de colins de 3 ans (mode: 36 à 37 cm de longueur). Les taux de mortalité naturelle des mâles et des femelles de 4 à 6 ans de cette espèce étaient de 0.79 et de 0.81 respectivement. La plupart des colins étaient adultes, à l'étape intermédiaire de la maturité.

Dans la couche de diffusion, le rythme de capture du merlu a été de 313 kg/h; au-dessus, il a été de 56 kg/h. Le merlu d'un an avait 9 cm de longueur modale; celui de 2 ans, 23 cm; et les classes supérieures d'âge, 43 à 45 cm. La longueur à laquelle la maturité de la moitié des merlus débutait était de 37 cm; la plupart des mâles et des femelles se trouvaient au début de ce stade et la plupart des merlus ne se nourissaient pas activement. Cependant, quand le contenu stomacal n'était pas nul, il était varié.

Les aiguillats étaient peu nombreux, et leur longueur totale variait entre 25 et 114 cm; son mode, entre 34 et 50 cm. 79% des femelles et 86% des mâles étaient immatures; en moyenne, leur maturation correspondait à une longueur de 90 et de 72 cm respectivement. La croissance des sujets de 50 cm ou moins de longueur passait de 3 à 4 cm/an chez ceux d'un à quatre ans à 1 cm/an chez les plus vieux. Le régime alimentaire de cette espèce était varié: calmars et zooplancton chez les moins de 60 cm de longueur; merlus, calmars, colins et autres poissons non identifiés chez les autres.

Mots clés: Détroit de Géorgie, merlu du Pacifique, colin de l'Alaska, aiguillat commun.

INTRODUCTION

The January 13-28, 1976 G.B. REED cruise was a cooperative attempt to study the distribution, biology and biomass of Pacific hake, walleye pollock and spiny dogfish in the Strait of Georgia. A cruise of similar intent was conducted January 9-February 21, 1975 (Beamish et al. 1978 and Taylor and Barner 1976a). It was of particular importance to locate concentrations of off-bottom fish species of commercial potential, specifically pollock. This report summarizes results of catch composition and biological studies. A separate report summarizes the results of the hydroacoustic and distribution studies (Taylor and Barner 1976b).

METHODS

An Engel 434 midwater trawl equipped with an Elac Model LAZ 17 headrope transducer and a 2-cm stretched mesh codend liner was used on all tows. Set locations (Fig. 1) were selected to examine distribution of hake, pollock and dogfish, and to assess pre-spawning populations of hake and pollock within the Strait of Georgia. Tows were also made to identify the species composition of hydroacoustic echograms as part of the acoustic biomass survey.

The dominant species captured were separated into 55 L galvanized tubs and weighed. Hake and pollock were measured for fork length and sexed when possible. Randomly selected samples of hake and pollock were sampled for maturity condition and stomach contents. Pectoral fins, scales, and otoliths were collected for age determinations from a sample of 273 pollock from set 23. Fins were air-dried, mounted in epoxy resin and cross-sectioned using a Bronwill Model TSM thin-sectioning machine. Fin ray sections were examined under reflected light using a compound microscope. Pollock otoliths were stored in 50% glycerin solution. The otolith surface was examined under reflected light using a dissecting microscope. Otoliths were also broken along the lateral axis by hand or by using forceps. Cross sections were made using an Isomet low speed saw. When possible, broken edges and cross sections were examined under reflected light using a dissecting microscope. Some sections were burnt and then examined.

Dogfish were measured for length by sex and examined for maturity condition and stomach contents. Spines from the second dorsal fin were collected for age determination from randomly stratified samples of up to 20 fish per centimeter interval for dogfish measuring 50 cm or less. Dogfish from 19 sets measuring 50 cm or less were weighed using a Digimetric 30 DTI top loading balance equipped with a digital integrator. Spines were cleaned and air-dried in envelopes. The method of age determination employed was a modified technique from Ketchen (1975) described by Beamish and Smith (1976).

Ovaries from 100 hake from one set were measured for length and volume and were weighed using the Digimetric balance. These data were collected for another investigation.

GENERAL CRUISE SUMMARY

A total of 28 species of fish were captured (Tables 1 and 2) in 24 sets positioned in the north, central, Malaspina Strait and southern regions of the Strait of Georgia (Fig. 1). Set information is listed in Appendix Table 1.

Walleye pollock was the most common species captured. Pacific hake, spiny dogfish, northern smoothtongue and northern lampfish were common but were less abundant than pollock. Smaller quantities of fish captured were, in order of abundance, brown cat shark, blackfin sculpin, ratfish, eulachon, English sole, California headlight fish, Pacific herring, splitnose rockfish, yellowtail rockfish, and chinook salmon. All other fish species were present in amounts less than 5 individuals.

A complete description of sound scatter layers is given by Taylor and Barner (1976b). In summary, a diffuse layer beginning about 100 m and extending to the bottom was present throughout most areas fished with some variability with area and depth. At some stations a very light scatter layer appeared above the main layer at 80-100 m. As reported by Taylor and Barner (1976b), the echograms were similar in appearance to those observed during the January 6-February 12, 1975 cruise.

All but 5 of the 24 sets completed were made within the scatter layer. On three occasions tows were made at different depths at the same location.

About 90% of the total biomass of pollock was captured in 2 sets (tows 6 and 23) made at relatively shallow net depths (60-70 m) above the main scatter layer in the central region of the Strait of Georgia. Catch rates averaged 3,904 kg/h during these sets compared to an average of about 72 kg/h for all other sets completed (Fig. 2).

Catch rates of hake averaged about 313 kg/h in the scatter layer and only 56 kg/h above the layer (Fig. 3). Catch rates of dogfish were slightly larger in the scatter layer, averaging 64 kg/h. Catch rates above the scatter layer averaged 58 kg/h and were higher in waters west of Texada Island and in the central portion of the Strait of Georgia (Fig. 4).

OTHER SPECIES SAMPLED

In addition to pollock, hake and dogfish, samples of brown cat shark, canary rockfish and splitnose rockfish were measured for length by

sex. Chinook salmon were measured for length by sex and examined for maturity and stomach contents (Table 3). The small numbers of these species captured precludes analysis within this report.

PACIFIC HAKE

A summary of biological samples collected is listed in Table 4. Hake of ages 1 and 2 yr were readily distinguished from the length frequencies of fish captured (Table 5; Fig. 5). Age 1 hake ranged from 6-11 cm (modal length of 9 cm) and were captured predominantly in set 1. This is contrary to the January 6-February 21, 1975 cruise where age 1 hake were found in about one third of the sets throughout the Strait of Georgia. The difference between years is noteworthy, but because of their small size age 1 hake are not fully vulnerable to the fishing gear and are therefore not present in representative quantities. Age 2 hake ranged from about 18-29 cm (modal length of 23 cm) and along with older hake were found in most sets throughout the Strait of Georgia. Hake older than age 2 had a modal length of about 43-45 cm for both males and females. However, hake captured in set 14 were larger than hake captured in other sets, having a modal length of 54-58 cm.

Hake from 17 sets were examined for maturity condition. Seventy-five percent of the 1,081 fish sampled were adults. The proportion of immature fish was the same for both sexes, averaging 28 cm and ranging from 18-44 cm in fork length. All but 2 adults were larger than 32 cm. This is similar to that observed during the January 6-February 21, 1975 cruise. The length at which 50% of the fish were maturing was about 37 cm for both sexes (Fig. 6). Eighty-six percent of the adult males were in an early stage (R1) of maturity, 11% were in an intermediate stage (R2) and 3% were in a spawning condition. Fifty-three percent of the adult females were in a stage of early ovarian development (R1). The remaining 47% were in an intermediate stage (R1-R2, R2). There were no females in a spawning condition. A similar state of maturity was observed during the same period in 1975 (Beamish et al. 1978).

Hake from 16 sets were examined for stomach contents. Of the 1,001 fish examined, 54% were found to be empty, 22% had everted stomachs and 24% or 239 fish contained a variety of food items. The average stomach volume for all fish including empty but excluding everted stomachs was 1.2 cc. Unidentified fish remains comprised 39% of the total volume, glass shrimp (Pasiphaea pacifica) 19%, squid 12%, young hake 10%, Leuroglossus 9%, lampfish 5%, and digested plankton 4%. Herring were found in one fish and comprised 1% of the total stomach volume. All other food items comprised less than 0.5% of the total. The proportion of empty stomachs indicates hake were not actively feeding during this cruise. This is similar to observations made during the January 6-February 21, 1975 cruise (Beamish et al. 1978).

Weights of ovaries (g) from 100 hake captured in set 17 were positively (slope=1) related to respective volume measurements (mL). This indicates ova are nearly neutrally buoyant over the range of maturities

sampled. This is expected for pelagic spawners such as hake. The average weight and volume was 13.7 g and 13.9 mL, respectively.

WALLEYE POLLOCK

A summary of biological samples collected is listed in Table 6. Pollock were present in minor quantities in 22 of 24 sets completed, but because of the relatively large concentrations encountered off Sandheads and McCall Bank (sets 6 and 23) pollock was the most abundant species captured, accounting for 51% of the total biomass.

Most pollock ranged from 34-46 cm in fork length (Table 7; Fig. 7). Modal lengths for both sexes were 36-38 cm. Male pollock accounted for 61% or 903 of the 1,481 pollock measured for length by sex. The size composition of male and female pollock was similar in all sets for fish greater than 30 cm.

Because young pollock (9-30 cm) were present in very minute quantities (in only 8 sets), the size composition of younger age-classes (age 1 and 2) could not be readily distinguished on the basis of identifiable length modes. Age 1 pollock, as identified by their distinctive small size (9-17 cm) were present in only 3 sets (sets 3, 9, and 10). These observations are similar to those made during the January 6-February 21, 1975 cruise when only a few small fish were encountered (Beamish et al. 1978). In general, age 1 pollock are rarely captured in the open waters of the Strait of Georgia.

Examination of otolith surfaces did not provide satisfactory indicators of age. Otolith edges were not clear and the first 3 or 4 annuli were often cloudy making age determination difficult. Sections of broken otoliths had numerous lines that did not display a prominent pattern of alternating opaque and translucent zones but appear to be annuli. Sectioning by machine was more time consuming and the sections produced were no easier to read than those broken manually. Burning otolith sections was also unsatisfactory. Sections produced by this method tended to crumble and therefore could not be re-read or stored. While burning tended to enhance the pattern of growth zones, it still did not provide a clear separation of zones. Annuli of pectoral fin ray sections were more readily distinguished. This is also evident in other Strait of Georgia pollock data (Beamish et al. 1978). Pollock ages determined by this method are summarized in Table 8.

The mean length at age was greater for females than for males of similar age (Fig. 8) as was found in previous Strait of Georgia pollock studies (Beamish et al. 1976). Length frequency by age-class is shown in Fig. 9. Age 3 pollock dominated the catches and represented 67% and 65% of the total number of males and females, respectively. The modal length of age 3 pollock was 36-37 cm for both sexes. Age 4 pollock, the second most dominant age-class, represented 26% and 28% of the males and females, respectively. These observations differ from 1975 data when age 4 pollock clearly dominated the catches (Beamish et al. 1978). This apparent

disparity between year-class strengths is also reflected in length-frequency distributions. During January 6-February 21, 1975 the modal length for combined sexes was about 41-43 cm while during January, 1976 the modal length was about 36-38 cm.

Annual natural mortality rates (A) estimated using the Jackson (1939) method are similar, albeit somewhat less, to that estimated for the 1975 data and are 0.79 and 0.81 for age 4-6 male and female pollock, respectively.

Pollock from 22 sets were examined for maturity condition. Based on gross gonadal observation of 554 fish, 96% were determined to be adults and were in an intermediate state of maturity. Adult males were not in a more advanced state of maturity as was noted during the March 17-24, 1975 cruise (Cass et al. 1978). The smallest adult pollock for both sexes was 31 cm. The average length of adult fish was 39 cm for males and 41 cm for females. The presence of only small quantities of immature pollock precluded an accurate estimate of the length at 50% maturity. However, first maturity appears to occur within a length range of 30-34 cm and corresponds to age 3 pollock.

SPINY DOGFISH

Dogfish were present in varying but minor quantities in all 24 sets however the largest catch rates were from the central and western regions of the Strait of Georgia (Fig. 4). This is contrary to the January 6-February 21, 1975 cruise where largest catch rates were from the northern end of the Strait (Beamish et al. 1978).

The biological samples collected are summarized in Table 9. Dogfish ranged from 25-114 cm in total length for combined sexes however dogfish measuring 60 cm or less represented 73% of the total number of dogfish sampled. Size composition of dogfish captured was similar to that observed during the January 6-February 21, 1975 cruise. The modal length ranged from 34-50 cm (Table 10; Fig. 10).

A total of 1,054 dogfish were examined for maturity condition. Maturity stages were classified according to the criteria of Beamish and Smith (1976) with modification allowing for the inclusion of an additional stage (I_2) of immature ovarian development. Within this stage ova are developed but are only 0-5 mm in diameter and the white, firm ovary fills less than 25% of the body cavity.

About 86% of the male dogfish examined for maturity condition were immature and ranged from 26-76 cm in total length. Maturing male dogfish ranged from 59-85 cm and averaged 81 cm in total length. The lack of maturing male dogfish has precluded an accurate estimate of the length at 50% maturity. However, it appears to occur at about 73-75 cm which is similar to a total length of 72 cm determined by Bonham et al. (1949) from more comprehensive data.

Approximately 2% of the females examined had I₁ ovarian and D₁ uterine development and ranged in total length from 23-33 cm and averaged 28 cm. The majority (79%) of female dogfish examined were immature with I₂ ovarian and D₁ uterine development. These fish ranged from 26-77 cm and averaged 42 cm in total length. Only 3 of the females examined were classified as having I₁ ovarian and D₂ uterine development. About 10% of those examined were immature (I₂) with some evidence of uterine thickening (D₂). These fish ranged from 46-86 cm and averaged 65 cm in total length. Only 8% of the female dogfish examined were maturing and ranged in stages of R₁ to R₃ ovarian development and stages of D₂ to D₅ uterine development. However most (38%) of the maturing females were classified as R₁ and D₃. Maturing females ranged from 52-114 cm and averaged 90 cm in total length. The paucity of maturing females has precluded an estimation of the length at 50% maturity.

Dogfish measuring 50 cm or less, for which ages were determined, ranged from 0-21 yr. Table 11 shows very little disparity between male and female average lengths at age indicating growth is similar for both sexes over the length range sampled. The rate of growth, based on mean lengths at age, between year classes for combined sexes decreases from about 3-4 cm/yr at ages 1-4 yr to about 1 cm/yr for dogfish older than 4 yr (Table 11; Fig. 11). This is similar to growth rates for juvenile dogfish from the Strait of Georgia determined by Beamish and Smith (1976).

The length-weight relationship for combined sexes (Fig. 12) for fish 50 cm and less is described by the following relationship:

$$\text{Weight (g)} = 0.0028 \text{ (total length (cm))}^{3.0725}$$

Sixty percent of the dogfish measuring 60 cm and less examined for stomach contents had empty stomachs. Those dogfish that contained food items fed on a variety of food items (Table 12). The dominant items found in stomachs of juvenile dogfish, in terms of volume ingested, were squid and unidentified zooplankton. Forty percent of the dogfish larger than 60 cm examined for stomach contents had empty stomachs. The dominant food items that could be identified in dogfish larger than 60 cm were hake, squid, pollock and unidentified digested fish remains. It is important to note that dogfish are opportunistic feeders. Therefore, because hake and pollock comprised a major components of the catches, the presence of hake and pollock in the stomach contents of dogfish is expected.

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Table 1. Scientific and common names of species captured, G.B. REED, January 13-28, 1976.

Common name	Scientific name
Pacific hake	<u>Merluccius productus</u>
Walleye pollock	<u>Theragra chalcogramma</u>
Spiny dogfish	<u>Squalus acanthias</u>
Brown cat shark	<u>Apristurus brunneus</u>
Ratfish	<u>Hydrolagus colliei</u>
Northern smoothtongue	<u>Leuroglossus stilbius schmidti</u>
Eulachon	<u>Thaleichthys pacificus</u>
Northern lampfish	<u>Stenobrachius leucopsarus</u>
California headlightfish	<u>Diaphus theta</u>
Pacific herring	<u>Clupea harengus pallasi</u>
Northern anchovy	<u>Engraulis mordax mordax</u>
Chinook salmon	<u>Onchorhynchus tshawytscha</u>
Pacific lamprey	<u>Lampetra tridentatus</u>
Snailfish	<u>Cyclopterusidae</u>
Blackfin sculpin	<u>Malacocottus kincaidi</u>
Soft sculpin	<u>Gilbertidia sigalutes</u>
Dover sole	<u>Microstomus pacificus</u>
English sole	<u>Parophrys vetulus</u>
Rock sole	<u>Lepidopsetta bilineata</u>
Arrowtooth flounder	<u>Atheresthes stomias</u>
Rougheye rockfish	<u>Sebastes aleutianus</u>
Splitnose rockfish	<u>Sebastes diploproa</u>
Yellowtail rockfish	<u>Sebastes flavidus</u>
Canary rockfish	<u>Sebastes pinniger</u>
Plainfin midshipman	<u>Porichthys notatus</u>
Glass shrimp	<u>Pasiphaea pacifica</u>
Sidestripe shrimp	<u>Pandalopsis dispar</u>
Squid (unidentified)	

Table 2. Species composition by set, G.B. REED, January 13-28, 1976.

Table 2 (cont'd)

Set number	6		7		8		9		10	
Total catch (kg)	1912 ^a		152		175		25		157	
Duration (min)	30		30		30		30		30	
Species	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No
Pacific hake	4	2	101	205	123	250	9	17	74	127
Walleye pollock	1894 ^a	11,306 ^a	10	8	4	8	11	32	59	106
Spiny dogfish	14	16	38	59	44	46	<0.5	3	12	15
Brown cat shark			1	4	3	11			1	4
Ratfish									5	8
Northern smoothtongue			-	b	-	b				
Eulachon							0.5	10	-	5
Northern lampfish										
California headlightfish										
Pacific herring							0.5	8	-	1
Northern anchovy							-	2		
Chinook salmon			1	1						
Pacific lamprey									-	1
Snailfish							-	1		
Blackfin sculpin										
Soft sculpin										
Dover sole									-	1
English sole							1	6	1	6
Rock sole										
Arrowtooth flounder										
Rougheye rockfish										
Splitnose rockfish										
Yellowtail rockfish										
Canary rockfish										
Plainfin midshipman										
Glass shrimp			-	b	<0.5	100	-	400	<0.5	-
Sidestripe shrimp			0.5	2	1	4	-	20		
Squid							1	4	4	24

Table 2 (cont'd)

Set number	11		12		13		14		15	
Total catch (kg)	80		49		722		115		48	
Duration (min)	30		30		30		30		30	
Species	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No
Pacific hake	37	96	10	36	652	1240 ^a	23	47	5	8
Walleye pollock	4	9	15	20	9	10	36	48	4	2
Spiny dogfish	38	116	22	58	58	111	53	113	38	23
Brown cat shark	0.5	1			1	6				
Ratfish										
Northern smoothtongue	-	50	-	b						
Eulachon										
Northern lampfish			-	15					-	4
California headlightfish										
Pacific herring										
Northern anchovy										
Chinook salmon										
Pacific lamprey							-	1	-	1
Snailfish										
Blackfin sculpin	-	1								
Soft sculpin										
Dover sole										
English sole										
Rock sole										
Arrowtooth flounder										
Rougheye rockfish										
Splitnose rockfish										
Yellowtail rockfish					2	1	2	1	1	1
Canary rockfish							2	1		
Plainfin midshipman									1	4
Glass shrimp	-	100	-	b					-	20
Sidestripe shrimp										
Squid			1	5	-		1	1	4	

Table 2 (cont'd)

Set number	16		17		18		19		20	
Total catch (kg)	349		398		90		163		161	
Duration (min)	30		30		30		30		30	
Species	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No
Pacific hake	281	476 ^a	350	680 ^a	74	229	148	314	121	293
Walleye pollock	39	53	4	7	1	1	-	-	7	12
Spiny dogfish	24	44	39	49	13	9	14	13	30	64
Brown cat shark			2	6	1	2	1	4	3	1
Ratfish										
Northern smoothtongue	1	-					-	15	-	b
Eulachon										
Northern lampfish							-	12	-	15
California headlightfish										
Pacific herring										
Northern anchovy										
Chinook salmon										
Pacific lamprey										
Snailfish										
Blackfin sculpin							-	16		
Soft sculpin										
Dover sole										
English sole										
Rock sole						<0.5	1			
Arrowtooth flounder			2	1						
Rougheye rockfish	2	1								
Splitnose rockfish	2	3	1	2						
Yellowtail rockfish										
Canary rockfish										
Plainfin midshipman										
Glass shrimp						-	50	<0.5	-	b
Sidestripe shrimp										
Squid						1	3		1	2

Table 2 (cont'd)

Set number	21		22		23		24		Totals ^c	
Total catch (kg)	262		134		2044		208			
Duration (min)	30		30		30		30		8125	
Species	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No
Pacific hake	203	338	<0.5	2	<0.5	26	125	401	2973	6085
Walleye pollock	12	20	123	303	2010	5468 ^a	13	24	4302	17506
Spiny dogfish	30	50	7	4	34	28	69	76	756	1085
Brown cat shark	10	29					1	2	38	96
Ratfish	5	6							12	16
Northern smoothtongue							-	40	-	580
Eulachon									0.5	15
Northern lampfish									1	226
California headlightfish							-	2	<0.5	9
Pacific herring									0.5	9
Northern anchovy									-	2
Chinook salmon		4	6						5	7
Pacific lamprey					-	1			-	4
Snailfish									-	1
Blackfin sculpin									1	37
Soft sculpin							<0.5	1	<0.5	1
Dover sole									0.5	3
English sole									2	12
Rock sole									<0.5	1
Arrowtooth flounder									2	1
Rougheye rockfish									2	1
Splitnose rockfish	1	1							7	8
Yellowtail rockfish									8	8
Canary rockfish	1	1							3	2
Plainfin midshipman									1	4
Glass shrimp									-	672
Sidestripe shrimp									-	20
Squid	-	1							12	59

^acomputed value - extrapolated from portion of the catch sampled.

^bminor quantities present in mesh.

^ctotals are a summation of values only and do not represent total catches as values for weights and numbers are not available for all tows.

Table 3. Summary of species sampled, other than hake, pollock and dogfish, G.B. REED, January 13-28, 1976.

Species	Set no.	Type of sample taken					Total no. in catch
		Length	Sex	Maturity	Stomach contents		
Chinook salmon	7	1	1	1	1		1
	22	6	6	6	6		6
Brown cat shark	2	3	3				3
	4	1	1				1
	24	2	2				2
Canary rockfish	14	1	1				1
Splitnose rockfish	15	1	1				1

Table 4. Summary of hake sampled, G.B. REED, January 13-28, 1976.

Set no.	Length			Maturity	Stomach contents	Otoliths	Ovary weights	Type of sample
	Male	Female	Total ^a					
1	2	1	103	-	-	-	-	Total catch
2	139	89	228	40	40	-	-	Total catch
3	198	331	532	90	90	-	-	Total catch
4	38	40	78	-	-	-	-	Total catch
5	249	210	459	72	72	-	-	Total catch
6	-	1	1	1	1	-	-	Total catch
7	85	120	205	-	-	-	-	Total catch
8	115	135	250	70	70	-	-	Total catch
9	3	14	17	17	17	-	-	Total catch
10	22	107	129	59	59	-	-	Total catch
11	53	43	96	96	96	-	-	Total catch
12	15	11	36	-	-	-	-	Total catch
13	342	154	496	82	82	-	-	Random 6 tubs of 15
14	20	27	47	47	47	-	-	Total catch
15	4	4	8	8	8	-	-	Total catch
16	137	271	408	65	65	-	-	Random 6 tubs of 7
17	255	198	453	164	89	-	-	Random 6 tubs of 9
18	114	111	229	103	103	-	-	Total catch
19	201	113	314	66	66	-	-	Total catch
20	193	100	293	98	98	-	-	Total catch
21	168	170	338	-	-	-	-	Total catch
22	-	-	2	-	-	-	-	Total catch
23	-	-	26	-	-	-	-	Total catch
24	115	78	401	-	-	-	-	Total catch
Total	2,468	2,328	5,149	1,081	1,003	-	100	

^aTotal includes unsexed fish

Table 5. Length frequency of hake, G.B. REED, January 13-28, 1976.

Fork length (cm)	Set number											
	1			2			3			4		
	M	F	T ^a	M	F	T	M	F	T	M	F	T
6	-	-	3	-	-	-	-	-	-	-	-	-
7	-	-	8	-	-	-	-	-	-	-	-	-
8	-	-	29	-	-	-	-	-	1	-	-	-
9	-	-	35	-	-	-	-	-	2	-	-	-
10	-	-	19	-	-	-	-	-	0	-	-	-
11	-	-	5	-	-	-	-	-	0	-	-	-
12	-	-	1	-	-	-	-	-	0	-	-	-
13	-	-	0	-	-	-	-	-	0	-	-	-
14	-	-	0	-	-	-	-	-	0	-	-	-
15	-	-	0	-	-	-	-	-	0	-	-	-
16	-	-	0	-	-	-	-	-	0	-	-	-
17	-	-	0	-	-	-	-	-	0	-	1	1
18	-	-	0	-	-	-	1	-	1	-	0	0
19	-	-	0	-	-	-	3	1	4	-	0	0
20	-	1	1	0	-	0	2	8	10	-	4	4
21	-	0	0	2	2	7	9	16	1	1	2	-
22	-	0	2	2	4	6	20	26	1	4	5	-
23	-	0	0	5	5	5	18	23	0	3	3	-
24	-	0	2	2	4	5	9	14	0	1	1	-
25	-	0	1	2	3	3	6	9	0	4	4	-
26	-	0	1	1	2	1	0	1	0	0	0	0
27	-	0	0	0	0	0	2	2	4	0	0	0
28	-	0	0	0	0	0	0	0	0	0	0	0
29	-	0	0	0	0	0	1	2	3	0	0	0
30	-	-	0	0	0	0	1	5	6	0	0	0
31	-	-	0	0	0	0	2	2	4	1	0	1
32	-	-	0	1	0	1	4	5	9	0	0	0
33	-	-	0	0	0	0	1	9	10	0	0	0
34	-	-	0	0	0	0	3	12	15	0	0	0
35	-	-	0	1	0	1	11	9	20	0	0	0
36	-	-	0	2	3	5	14	13	27	0	0	0
37	-	-	0	1	1	2	11	8	19	0	0	0
38	-	-	0	4	2	6	18	14	32	0	0	0
39	-	-	0	7	3	10	15	15	30	1	0	1
40	-	-	0	10	2	12	16	12	28	0	0	0
41	-	-	0	3	3	6	4	14	18	3	2	5
42	-	-	0	13	12	25	9	9	18	6	0	6
43	-	-	0	13	5	18	14	21	35	5	1	6
44	1	-	1	24	7	31	18	23	41	7	3	10
45	1	-	1	13	11	24	7	30	37	4	3	7
46	-	-	-	8	4	12	8	18	26	1	1	2
47	-	-	-	3	3	6	3	17	20	6	2	8
48	-	-	-	0	1	1	2	11	13	1	7	8
49	-	-	-	1	2	3	0	4	4	0	1	1

Table 5 (cont'd)

Fork length (cm)	Set number											
	1			2			3			4		
	M	F	T	M	F	T	M	F	T	M	F	T
50	-	-	-	0	0	0	0	5	5	1	2	3
1	-	-	-	0	1	1	0	-	0	-	-	-
2	-	-	-	0	1	1	0	-	0	-	-	-
3	-	-	-	0	-	0	0	-	0	-	-	-
4	-	-	-	0	-	0	0	-	0	-	-	-
5	-	-	-	0	-	0	0	-	0	-	-	-
6	-	-	-	1	-	1	0	-	0	-	-	-
7	-	-	-	-	-	-	1	-	1	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
Total	2	1	103	113	75	188	198	331	532	38	40	78

Table 5 (cont'd)

Fork length (cm)	Set number											
	5			6			7			8		
	M	F	T	M	F	T	M	F	T	M	F	T
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	1	1
20	1	1	2	-	-	-	-	1	1	-	0	0
1	6	2	8	-	-	-	3	3	6	4	0	4
2	2	3	5	-	-	-	1	4	5	2	3	5
3	1	1	2	-	-	-	1	4	5	0	3	3
4	3	7	10	-	-	-	2	5	7	3	3	6
5	2	1	3	-	-	-	1	4	5	1	1	2
6	2	2	4	-	-	-	1	2	3	0	0	0
7	0	0	0	-	-	-	1	3	4	1	4	5
8	0	1	1	-	-	-	1	0	1	0	0	0
9	0	0	0	-	-	-	0	0	0	1	0	1
30	0	0	0	-	-	-	0	0	0	0	1	1
1	0	0	0	-	-	-	0	0	0	0	0	0
2	1	0	1	-	-	-	3	0	3	1	1	2
3	6	2	8	-	-	-	1	1	2	0	2	2
4	4	2	6	-	-	-	1	1	2	2	3	5
5	6	5	11	-	-	-	3	2	5	3	2	5
6	5	6	11	-	-	-	3	3	6	2	0	2
7	6	4	10	-	-	-	1	1	2	4	3	7
8	11	11	22	-	-	-	2	2	4	3	5	8
9	15	13	28	-	-	-	4	6	10	5	8	13
40	22	16	38	-	-	-	1	7	8	8	4	12
1	18	13	31	-	-	-	10	2	12	3	4	7
2	21	13	34	-	-	-	10	2	12	11	11	22
3	35	8	43	-	-	-	3	8	11	11	5	16
4	24	22	46	-	-	-	15	15	30	21	12	33
5	27	26	53	-	-	-	4	16	20	12	18	30
6	11	22	33	-	-	-	8	7	15	6	11	17
7	9	12	21	-	-	-	3	6	9	4	6	10
8	10	10	20	-	-	-	2	4	6	4	14	18
9	1	2	3	-	-	-	4	4	2	6	6	8

Table 5 (cont'd)

Fork length (cm)	Set number											
	5			6			7			8		
	M	F	T	M	F	T	M	F	T	M	F	T
50	-	2	2	-	-	-	-	1	1	0	2	2
1	-	1	1	-	-	-	-	1	1	0	2	2
2	-	0	0	-	-	-	-	1	1	0	-	0
3	-	1	1	-	-	-	-	1	1	0	-	0
4	-	0	0	-	-	-	-	0	0	0	-	0
5	-	0	0	-	-	-	-	1	1	0	-	0
6	-	1	1	-	-	-	-	1	1	0	-	0
7	-	-	-	-	-	-	-	0	0	0	-	0
8	-	-	-	-	-	-	-	0	0	0	-	0
9	-	-	-	-	-	-	-	0	0	0	-	0
60	-	-	-	-	-	-	-	0	0	1	-	1
1	-	-	-	-	-	-	-	0	0	-	-	-
2	-	-	-	-	-	-	-	0	0	-	-	-
3	-	-	-	-	1	1	-	0	0	-	-	-
4	-	-	-	-	-	-	-	0	0	-	-	-
5	-	-	-	-	-	-	-	0	0	-	-	-
6	-	-	-	-	-	-	-	0	0	-	-	-
7	-	-	-	-	-	-	-	1	1	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
Total	249	210	459	0	1	1	85	120	205	115	135	250

Table 5 (cont'd)

Fork length (cm)	Set number											
	9			10			11			12		
	M	F	T	M	F	T	M	F	T	M	F	T
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	1
10	-	-	-	-	-	-	-	-	-	-	-	5
11	-	-	-	-	-	-	-	-	-	-	-	1
12	-	-	-	-	-	-	-	-	-	-	-	0
13	-	-	-	-	-	-	-	-	-	-	-	0
14	-	-	-	-	-	-	-	-	-	-	-	0
15	-	-	-	-	-	-	-	-	-	-	-	0
16	-	-	-	-	-	-	-	-	-	-	-	0
17	-	-	-	-	-	-	-	-	-	-	-	0
18	-	-	-	-	-	-	-	-	-	-	-	0
19	-	-	-	-	-	-	-	-	-	-	-	0
20	-	-	-	-	2	2	2	1	3	-	-	0
21	-	-	-	3	5	8	3	3	6	-	-	0
22	-	-	-	0	3	3	4	4	8	-	-	0
23	-	-	-	0	4	4	2	5	7	-	-	0
24	-	-	-	1	1	2	2	2	4	-	-	0
25	-	-	-	0	2	2	0	0	0	-	-	0
26	-	-	-	0	0	0	1	0	1	-	-	0
27	-	-	-	0	0	0	0	0	0	-	-	0
28	-	-	-	0	0	0	0	0	0	-	-	0
29	-	-	-	1	0	1	3	0	3	-	-	0
30	-	-	-	0	0	0	0	0	0	-	-	0
31	-	-	-	0	0	0	1	0	1	-	-	0
32	-	-	-	0	0	0	0	0	0	-	-	0
33	-	-	-	0	0	0	0	0	0	-	-	0
34	-	-	-	0	0	0	0	0	0	-	-	0
35	-	-	-	0	0	0	0	0	0	-	-	0
36	-	-	-	0	0	0	0	0	0	-	-	0
37	-	-	-	0	0	0	0	0	0	-	-	0
38	-	-	-	0	0	0	0	0	0	-	-	0
39	-	-	-	0	0	0	0	1	1	-	-	0
40	-	-	-	0	0	0	1	0	1	-	-	0
41	-	-	-	0	0	0	2	0	2	1	1	2
42	-	-	-	1	0	1	4	3	7	3	0	3
43	1	-	1	2	0	2	6	2	8	1	1	2
44	0	2	2	0	1	1	11	4	15	2	2	4
45	0	0	0	2	1	3	5	5	10	3	0	3
46	2	1	3	3	8	11	3	4	7	3	1	4
47	-	0	0	3	5	8	1	1	2	1	1	2
48	-	5	5	-	5	5	1	4	5	1	3	4
49	-	3	3	-	9	9	0	3	3	-	1	1

Table 5 (cont'd)

Fork length (cm)	Set number											
	9			10			11			12		
	M	F	T	M	F	T	M	F	T	M	F	T
50	-	0	0	-	2	2	0	0	0	-	1	1
1	-	0	0	-	1	1	1	0	1	-	-	-
2	-	1	1	-	3	3	-	0	0	-	-	-
3	-	1	1	-	0	0	-	1	1	-	-	-
4	-	0	0	-	0	0	-	-	-	-	-	-
5	-	1	1	-	1	1	-	-	-	-	-	-
6	-	-	-	-	1	1	-	-	-	-	-	-
7	-	-	-	-	0	0	-	-	-	-	-	-
8	-	-	-	-	0	0	-	-	-	-	-	-
9	-	-	-	-	0	0	-	-	-	-	-	-
60	-	-	-	-	0	0	-	-	-	-	-	-
1	-	-	-	-	0	0	-	-	-	-	-	-
2	-	-	-	-	0	0	-	-	-	-	-	-
3	-	-	-	-	0	0	-	-	-	-	-	-
4	-	-	-	-	0	0	-	-	-	-	-	-
5	-	-	-	-	0	0	-	-	-	-	-	-
6	-	-	-	-	0	0	-	-	-	-	-	-
7	-	-	-	-	0	0	-	-	-	-	-	-
8	-	-	-	-	0	0	-	-	-	-	-	-
9	-	-	-	-	0	0	-	-	-	-	-	-
70	-	-	-	-	0	0	-	-	-	-	-	-
1	-	-	-	-	0	0	-	-	-	-	-	-
2	-	-	-	-	-	1	1	-	-	-	-	-
Total	3	14	17	16	55	71	53	43	96	15	11	33

Table 5 (cont'd)

Fork length (cm)	Set number											
	13			14			15			16		
	M	F	T	M	F	T	M	F	T	M	F	T
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	0	0	-	0	0	0
21	-	-	-	-	-	-	0	0	1	0	0	1
22	-	-	-	-	-	-	0	0	1	1	1	2
23	-	-	-	-	-	-	0	0	2	3	5	5
24	-	-	-	-	-	-	0	0	3	1	4	4
25	-	-	-	-	-	-	0	0	0	1	1	1
26	-	-	-	-	-	-	0	0	2	0	2	2
27	-	2	2	-	-	-	0	0	1	1	1	2
28	-	0	0	-	-	-	0	0	0	0	3	3
29	-	0	0	-	-	-	0	0	3	0	3	3
30	-	0	0	1	2	3	-	0	0	1	1	2
31	3	0	3	4	0	4	-	0	0	2	2	4
32	4	2	6	1	0	1	-	0	0	1	2	3
33	3	1	4	1	0	1	-	0	0	1	1	2
34	4	3	7	0	2	2	-	0	0	1	2	3
35	7	7	14	0	0	0	-	0	0	0	0	0
36	4	5	9	0	2	2	-	0	0	1	2	3
37	16	2	18	0	0	0	-	0	0	2	1	3
38	28	13	41	0	1	1	-	0	0	0	0	0
39	26	10	36	1	0	1	-	0	0	1	1	2
40	30	13	43	0	0	0	-	0	0	0	0	0
41	38	8	46	0	0	0	-	0	0	4	0	4
42	47	10	57	0	0	0	3	1	4	10	3	13
43	42	22	64	0	0	0	0	0	0	19	7	26
44	39	14	53	0	0	0	0	0	0	20	15	35
45	27	20	47	1	0	1	1	1	2	13	28	41
46	12	5	17	0	0	0	-	1	1	22	48	70
47	6	5	11	0	0	0	-	-	-	17	38	55
48	2	7	9	0	0	0	-	-	-	5	49	54
49	2	3	5	0	1	1	-	-	-	2	22	24

Table 5 (cont'd)

Fork length (cm)	Set number											
	13			14			15			16		
	M	F	T	M	F	T	M	F	T	M	F	T
50	2	1	3	0	0	0	-	-	-	1	16	17
1	-	1	1	0	0	0	-	-	-	0	8	8
2	-	0	0	3	0	3	-	-	-	1	10	11
3	-	0	0	2	1	3	-	-	-	-	0	0
4	-	0	0	1	3	4	-	-	-	-	0	0
5	-	0	0	2	2	4	-	-	-	-	1	1
6	-	0	0	1	2	3	-	-	-	-	0	0
7	-	0	0	1	3	4	-	-	-	-	0	0
8	-	0	0	1	4	5	-	-	-	-	1	1
9	-	1	1	-	0	0	-	-	-	-	0	0
60	-	-	-	-	2	2	-	-	-	-	0	0
1	-	-	-	-	1	1	-	-	-	-	0	0
2	-	-	-	-	1	1	-	-	-	-	0	0
3	-	-	-	-	-	-	-	-	-	-	0	0
4	-	-	-	-	-	-	-	-	-	-	0	0
5	-	-	-	-	-	-	-	-	-	-	1	1
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
Total	342	154	496	20	27	47	4	4	8	137	271	408

Table 5 (cont'd)

Fork length (cm)	Set number											
	17			18			19			20		
	M	F	T	M	F	T	M	F	T	M	F	T
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	1	-	-	-	-	-	-
8	-	-	-	-	-	0	-	-	-	-	-	1
9	-	-	-	-	-	2	-	-	-	-	-	2
10	-	-	-	-	-	0	-	-	-	-	-	0
11	-	-	-	-	-	0	-	-	-	-	-	2
12	-	-	-	-	-	0	-	-	-	-	-	0
13	-	-	-	-	-	1	-	-	-	-	-	0
14	-	-	-	-	-	0	-	-	-	-	-	0
15	-	-	-	-	-	0	-	-	-	-	-	0
16	-	-	-	-	-	0	-	-	-	-	-	0
17	-	-	-	-	-	0	-	-	-	-	-	0
18	1	-	1	-	1	1	-	-	-	-	-	0
19	0	-	0	-	5	5	-	-	-	-	1	1
20	1	3	4	3	6	9	1	-	1	5	1	6
21	2	5	7	4	9	13	1	1	2	3	3	6
22	2	3	5	12	11	23	2	1	3	3	0	3
23	3	4	8	9	10	19	2	1	3	2	4	6
24	4	5	3	8	6	10	16	1	3	4	4	5
25	5	1	3	4	8	5	13	0	2	2	4	9
26	6	1	0	1	3	3	6	3	2	5	1	0
27	7	1	2	3	1	2	3	1	0	1	0	0
28	8	1	1	2	0	0	0	1	0	1	2	0
29	9	0	0	0	1	1	3	0	3	0	0	0
30	2	0	2	1	0	1	0	0	0	0	0	0
31	1	0	1	1	0	1	0	2	2	0	0	0
32	2	1	3	3	1	4	3	0	3	0	2	2
33	3	5	3	8	1	0	1	2	0	2	2	3
34	4	1	2	3	1	0	1	3	0	3	0	0
35	5	3	4	7	0	0	0	2	1	3	1	2
36	6	2	6	8	0	0	0	5	2	7	2	4
37	7	3	2	5	0	0	0	10	2	12	10	11
38	8	6	5	11	1	0	1	15	3	18	4	1
39	9	8	9	17	0	0	0	10	7	17	2	3
40	5	4	9	2	0	2	13	6	19	7	3	10
41	16	6	22	1	0	1	17	14	31	6	5	11
42	27	7	34	5	1	6	23	9	32	12	4	16
43	29	14	43	7	2	9	26	13	39	22	8	30
44	37	18	55	9	9	18	21	15	36	17	4	21
45	31	34	65	12	10	22	20	11	31	10	6	16
46	31	19	50	9	7	16	9	9	18	6	7	13
47	13	14	27	5	5	10	4	5	9	5	2	7
48	7	8	15	7	4	11	3	0	3	-	0	0
49	6	6	12	1	4	5	-	4	4	-	1	1

Table 5 (cont'd)

Fork length (cm)	Set number											
	17			18			19			20		
	M	F	T	M	F	T	M	F	T	M	F	T
50	1	5	6	0	3	3	-	-	-	-	1	1
51	-	5	5	1	1	2	-	-	-	-	-	-
52	-	1	1	1	0	1	-	-	-	-	-	-
53	-	0	0	-	0	0	-	-	-	-	-	-
54	-	1	1	-	1	1	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-	-	-
61	-	-	-	-	-	-	-	-	-	-	-	-
62	-	-	-	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	-	-
64	-	-	-	-	-	-	-	-	-	-	-	-
65	-	-	-	-	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	-	-	-	-	-
Total	255	198	453	114	111	229	201	113	314	130	66	201

Table 5 (cont'd)

Fork length (cm)	Set number											
	21			22			23			24		
	M	F	T	M	F	T	M	F	T	M	F	T
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	1	-	-	6	-	-	-
9	-	-	-	-	-	0	-	-	11	-	-	2
10	-	-	-	-	-	0	-	-	7	-	-	3
11	-	-	-	-	-	1	-	-	2	-	-	0
12	-	-	-	-	-	-	-	-	-	-	-	0
13	-	-	-	-	-	-	-	-	-	-	-	0
14	-	-	-	-	-	-	-	-	-	-	-	0
15	-	-	-	-	-	-	-	-	-	-	-	0
16	-	-	-	-	-	-	-	-	-	-	-	0
17	-	-	-	-	-	-	-	-	-	-	-	0
18	-	-	-	-	-	-	-	-	-	-	-	0
19	-	-	-	-	-	-	-	-	-	-	-	0
20	1	-	1	-	-	-	-	-	-	-	-	8
21	3	2	5	-	-	-	-	-	-	-	-	19
22	1	4	5	-	-	-	-	-	-	-	-	39
23	7	1	8	-	-	-	-	-	-	-	-	31
24	3	4	7	-	-	-	-	-	-	-	-	35
25	0	5	5	-	-	-	-	-	-	-	-	27
26	1	1	2	-	-	-	-	-	-	-	-	19
27	2	0	2	-	-	-	-	-	-	-	-	8
28	0	1	1	-	-	-	-	-	-	-	-	2
29	0	0	0	-	-	-	-	-	-	-	-	0
30	1	1	2	-	-	-	-	-	-	-	-	4
31	0	2	2	-	-	-	-	-	-	-	-	1
32	1	1	2	-	-	-	-	-	-	-	-	2
33	2	0	2	-	-	-	-	-	-	-	-	1
34	5	0	5	-	-	-	-	-	-	-	-	4
35	6	3	9	-	-	-	-	-	-	1	1	2
36	7	5	12	-	-	-	-	-	-	2	3	5
37	11	2	13	-	-	-	-	-	-	1	2	3
38	15	6	21	-	-	-	-	-	-	4	1	5
39	7	11	18	-	-	-	-	-	-	7	3	10
40	8	9	17	-	-	-	-	-	-	7	1	8
41	14	15	29	-	-	-	-	-	-	9	0	9
42	13	10	23	-	-	-	-	-	-	13	4	17
43	17	10	27	-	-	-	-	-	-	18	4	22
44	17	23	40	-	-	-	-	-	-	18	12	30
45	15	15	30	-	-	-	-	-	-	22	8	30
46	8	13	21	-	-	-	-	-	-	6	16	22
47	1	3	4	-	-	-	-	-	-	6	6	12
48	0	4	4	-	-	-	-	-	-	1	9	10
49	0	3	3	-	-	-	-	-	-	4	4	4

Table 5 (cont'd)

Fork length (cm)	Set number											
	21			22			23			24		
	M	F	T	M	F	T	M	F	T	M	F	T
50	-	3	3	-	-	-	-	-	-	-	2	2
1	-	1	1	-	-	-	-	-	-	-	2	2
2	-	1	1	-	-	-	-	-	-	-	-	-
3	-	1	1	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
Total	168	160	328	0	0	2	0	0	26	115	78	401

Table 5 (cont'd)

Fork length (cm)	Set number		
	Total		
	M	F	T
6	-	-	3
7	-	-	9
8	-	-	38
9	-	-	55
10	-	-	34
11	-	-	11
12	-	-	1
13	-	-	1
14	-	-	0
15	-	1	1
16	-	0	0
17	-	1	1
18	2	1	3
19	7	9	19
20	16	28	52
21	41	45	105
22	39	63	141
23	35	66	132
24	40	52	127
25	21	41	89
26	17	11	47
27	10	16	34
28	9	6	17
29	8	3	11
30	7	10	21
31	15	8	24
32	25	15	42
33	25	20	46
34	25	27	56
35	44	36	80
36	49	52	101
37	76	29	105
38	111	64	175
39	109	88	197
40	130	77	207
41	149	87	236
42	231	99	330
43	271	131	402
44	301	201	502
45	230	243	473
46	156	202	358
47	90	131	221
48	46	145	191
49	15	83	98

Table 5 (cont'd)

Fork length (cm)	Set number		
	Total		
	M	F	T
50	5	46	51
1	2	24	26
2	5	18	23
3	2	8	10
4	1	3	4
5	2	6	8
6	2	5	7
7	2	3	5
8	1	5	6
9	0	1	1
60	1	2	3
1	-	1	1
2	-	1	1
3	-	1	1
4	-	0	0
5	-	1	1
6	-	0	0
7	-	1	1
8	-	0	0
9	-	0	0
70	-	0	0
1	-	0	0
2	-	1	1
Total	2,373	2,218	4,946

^aIncludes unsexed fish.

Table 6. Summary of pollock sampled, G.B. REED, January 13-28, 1976.

Set no.	Length			Maturity	Stomach contents	Fins & scales	Otoliths	Type of sample
	Male	Female	Total					
1	-	2	2	2	-	-	-	Total catch
2	2	2	4	4	-	-	-	Total catch
3	6	15	21	-	-	-	-	Total catch
4	3	6	9	-	-	-	-	Total catch
5	17	16	33	33	33	-	-	Total catch
6	206	59	265	-	-	-	-	Random 3 tubs of 22
7	10	8	18	18	18	-	-	Total catch
9	14	17	31	31	31	-	-	Total catch
10	71	35	106	64	64	-	-	Total catch
11	3	6	9	9	9	-	-	Total catch
12	4	16	20	20	20	-	-	Total catch
13	4	6	10	10	10	-	-	Total catch
14	13	35	48	48	48	-	-	Total catch
15	1	1	2	2	2	-	-	Total catch
16	25	28	53	53	53	-	-	Total catch
17	6	1	7	7	7	-	-	Total catch
18	-	1	1	1	1	-	-	Total catch
20	10	2	12	12	12	-	-	Total catch
21	10	10	20	20	20	-	-	Total catch
22	235	68	303	52	52	-	-	Total catch
23	292	256	548	93	93	273	273	Random 6 tubs of 51
24	12	12	24	24	-	-	-	Total catch
Total	944	602	1,546	503	473	273	273	

Table 7. Length frequency of pollock, G.B. REED, January 13-28, 1976.

Fork length (cm)	Set number											
	1			2			3			4		
	M	F	T ^a	M	F	T	M	F	T	M	F	T
9	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	2	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-	1	1	-	-	-
30	-	-	-	-	-	-	-	0	0	-	-	-
31	-	-	-	-	-	-	-	0	0	-	-	-
32	-	-	-	-	-	-	-	0	0	-	-	-
33	-	-	-	-	-	-	-	0	0	-	-	-
34	-	-	-	-	-	-	-	1	1	-	-	-
35	-	-	-	-	-	-	-	0	0	-	-	-
36	-	-	-	-	-	-	-	1	0	-	-	-
37	-	-	-	-	-	-	-	0	0	-	-	-
38	-	-	-	-	-	-	-	1	1	-	-	-
39	-	-	-	-	-	-	-	0	0	-	-	-
40	-	-	0	-	0	1	2	3	1	1	2	-
41	-	-	0	-	0	1	1	2	0	0	0	0
42	-	-	1	-	1	1	0	1	1	0	0	1
43	-	-	-	-	-	-	1	0	1	0	1	1
44	-	-	-	-	-	-	1	2	3	1	0	1
45	-	2	2	-	-	-	0	0	-	1	1	-
46	-	-	-	-	-	-	0	0	-	3	3	-
47	-	-	-	-	-	-	-	1	1	-	-	-
48	-	-	-	-	-	-	-	1	1	-	-	-
49	-	-	-	-	-	-	-	1	1	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-	-	-	-
53	-	-	-	-	-	-	-	-	-	-	-	-
54	-	-	-	-	-	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	-	-	-	-
Total	0	2	2	2	2	4	6	13	21	3	6	9

Table 7 (cont'd)

Fork length (cm)	Set number											
	5			6			7			9		
	M	F	T	M	F	T	M	F	T	M	F	T
9	-	-	-	-	-	-	-	-	-	-	-	1
10	-	-	-	-	-	-	-	-	-	-	-	0
1	-	-	-	-	-	-	-	-	-	-	-	0
2	-	-	-	-	-	-	-	-	-	-	-	0
3	-	-	-	-	-	-	-	-	-	1	-	1
4	-	-	-	-	-	-	-	-	-	0	-	0
5	-	-	-	-	-	-	-	-	-	0	-	0
6	-	-	-	-	-	-	-	-	-	0	-	0
7	-	-	-	-	-	-	-	-	-	1	-	1
8	-	-	-	-	-	-	-	-	-	0	-	0
9	-	-	-	-	-	-	-	-	-	0	-	0
20	-	-	-	-	-	-	-	-	-	0	-	0
1	-	-	-	-	-	-	-	-	-	0	-	0
2	-	-	-	-	-	-	-	-	-	0	-	0
3	-	-	-	-	-	-	-	-	-	0	-	0
4	-	-	-	-	-	-	-	-	-	0	-	0
5	-	-	-	-	-	-	-	-	-	0	-	0
6	-	-	-	-	-	-	-	-	-	0	-	0
7	-	-	-	1	-	1	-	-	-	0	-	0
8	1	-	1	0	-	0	-	-	-	0	-	0
9	0	-	0	1	-	1	-	-	-	0	-	0
30	0	-	0	0	1	1	-	1	1	0	-	0
1	0	2	2	1	1	2	-	0	0	0	-	0
2	0	0	0	2	0	2	-	0	0	0	-	0
3	0	0	0	6	0	6	-	0	0	1	1	2
4	1	1	2	27	2	29	-	0	0	0	1	1
5	0	0	0	35	4	39	2	0	2	4	0	4
6	3	0	3	31	7	38	1	0	1	3	1	4
7	2	1	3	30	9	39	3	2	5	1	0	1
8	1	1	2	38	10	48	0	2	2	0	4	4
9	1	0	1	17	7	24	2	1	3	1	4	5
40	3	0	3	12	8	20	1	1	2	2	2	4
1	1	4	5	3	5	8	0	0	0	-	1	1
2	0	0	0	0	5	5	0	0	0	-	1	1
3	2	1	3	2	-	2	0	1	1	-	0	0
4	1	2	3	-	-	0	-	0	-	-	0	0
5	0	0	0	-	-	0	-	0	-	-	0	0
6	1	0	1	-	-	-	1	-	1	-	1	1
7	-	2	2	-	-	-	-	-	-	-	0	0
8	-	1	1	-	-	-	-	-	-	-	0	0
9	-	0	0	-	-	-	-	-	-	-	0	0
50	-	0	0	-	-	-	-	-	-	0	0	0
1	-	0	0	-	-	-	-	-	-	0	0	0
2	-	0	0	-	-	-	-	-	-	0	0	0
3	-	0	0	-	-	-	-	-	-	1	1	1
4	-	0	0	-	-	-	-	-	-	-	-	-
5	-	0	0	-	-	-	-	-	-	-	-	-
6	-	1	1	-	-	-	-	-	-	-	-	-
Total	17	16	33	206	59	265	10	8	18	14	17	32

Table 7 (cont'd)

Fork length (cm)	Set number											
	10			11			12			13		
	M	F	T	M	F	T	M	F	T	M	F	T
9	-		-		-		-		-		-	
10	-		-		-		-		-		-	
1	-		-		-		-		-		-	
2	-		-		-		-		-		-	
3	-		1	1	-		-		-		-	
4	-		0	0	-		-		-		-	
5	-		0	0	-		-		-		-	
6	-		0	0	-		-		-		-	
7	-		0	0	-		-		-		-	
8	-		0	0	-		-		-		-	
9	-		0	0	-		-		-		-	
20	-		0	0	-		-		-		-	
1	-		0	0	-		-		-		-	
2	-		0	0	-		-		-		-	
3	-		0	0	-		-		-		-	
4	-		0	0	-		-		-		-	
5	-		0	0	-		-		-		-	
6	-		0	0	-		-		-		-	
7	-		1	1	-		-		-		-	
8	-		1	1	-		-		-		-	
9	1		1	2	-		-		-		-	
30	0	1	1	-	-	-	-	-	-	-	-	-
1	0	0	0	-	-	-	-	-	-	-	-	-
2	0	1	1	-	-	-	-	-	-	-	-	-
3	0	1	1	-	-	-	-	-	-	-	-	-
4	3	1	4	-	-	-	-	-	-	-	-	-
5	8	1	9	-	-	-	-	-	-	-	-	-
6	4	0	4	-	-	-	-	-	-	-	1	1
7	2	0	2	1	-	1	-	1	1	-	0	0
8	5	0	5	0	1	1	-	1	1	-	0	0
9	3	0	3	0	1	1	-	0	0	-	1	1
40	2	0	2	0	0	0	1	0	1	-	1	1
1	1	0	1	1	0	1	1	2	3	3	0	3
2	0	0	0	0	0	0	0	1	2	3	0	0
3	0	1	1	0	1	1	0	1	1	0	1	1
4	0	2	2	1	1	2	0	2	2	1	1	2
5	0	1	1	-	0	0	0	1	1	-	0	0
6	0	-	0	-	0	0	0	4	4	-	0	0
7	0	-	0	-	2	2	1	2	3	-	1	1
8	0	-	0	-	-	-	-	-	-	-	-	-
9	0	-	0	-	-	-	-	-	-	-	-	-
50	0	-	0	-	-	-	-	-	-	-	-	-
1	1	-	1	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
Total	30	13	43	3	6	9	4	16	20	4	6	10

Table 7 (cont'd)

Fork length (cm)	Set number											
	14			15			16			17		
	M	F	T	M	F	T	M	F	T	M	F	T
9	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	2	1	3	-	-	-
3	-	-	-	-	-	-	0	0	0	-	-	-
4	-	-	-	-	-	-	0	0	0	-	-	-
5	-	-	-	-	-	-	1	0	1	-	-	-
6	-	1	1	-	-	-	0	0	0	-	-	-
7	-	1	1	-	-	-	1	0	1	1	-	1
8	-	2	2	-	-	-	1	0	1	0	-	0
9	-	4	4	-	-	-	0	0	0	0	-	0
40	-	6	6	-	-	-	0	2	2	0	-	0
1	3	1	4	-	-	-	1	1	2	4	-	4
2	5	2	7	-	-	-	6	3	9	0	-	0
3	3	3	6	1	1	2	3	2	5	0	-	0
4	2	4	6	-	-	-	7	0	7	1	-	1
5	-	5	5	-	-	-	0	2	2	-	-	0
6	-	4	4	-	-	-	1	9	10	-	-	0
7	-	1	1	-	-	-	1	5	6	-	-	0
8	-	1	1	-	-	-	1	2	3	-	-	0
9	-	-	-	-	-	-	0	0	0	1	-	1
50	-	-	-	-	-	-	-	0	0	-	-	-
1	-	-	-	-	-	-	-	1	1	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
Total	13	35	48	1	1	2	25	28	53	6	1	7

Table 7 (cont'd)

Fork length (cm)	Set number											
	18			20			21			22		
	M	F	T	M	F	T	M	F	T	M	F	T
9	-		-	-		-	-		-	-		-
10	-		-	-		-	-		-	-		-
1	-		-	-		-	-		-	-		-
2	-		-	-		-	-		-	-		-
3	-		-	-		-	-		-	-		-
4	-		-	-		-	-		-	-		-
5	-		-	-		-	-		-	-		-
6	-		-	-		-	-		-	-		-
7	-		-	-		-	-		-	-		-
8	-		-	-		-	-		-	-		-
9	-		-	-		-	-		-	-		-
20	-		-	-		-	-		-	-		-
1	-		-	-		-	-		-	-		-
2	-		-	-		-	-		-	-		-
3	-		-	-		-	-		-	-		-
4	-		-	-		-	1		1	-		-
5	-		-	-		-	0		0	-		-
6	-		-	-		-	1		1	-		-
7	-		-	-		-	0		0	-		-
8	-		-	-		-	0		0	-		-
9	-		-	-		-	0		0	-		-
30	-		-	-		-	0		0	-		-
1	-		-	-		-	0		0	2		1 3
2	-		-	-		-	0		0	0		0 0
3	-		-	-		-	0		0	1		1 2
4	-		-	-		-	0		0	0		15 0 15
5	-		-	-		-	0		2	2		14 4 18
6	-		-	2		2	1		0	1		26 0 26
7	-		-	1		1	0		0	0		39 9 48
8	-		-	1		1	2		1	1		59 6 65
9	-		-	2		0	2		0	1		36 12 48
40	-		-	0		0	0		1	1		19 10 29
1	-		-	1		0	1		2	1		10 13 23
2	-		-	2		0	2		3	0		3 8 11
3	1		1	0		0	0		1	1		1 4
4	-		-	0		1	1		1	1		3 1 4
5	-		-	1		-	1		0	0		1 0 1
6	-		-	-		-	-		1	1		0 0 0
7	-		-	-		-	-		1	1		0 0 1
8	-		-	-		-	-		1	1		0 0 0
9	-		-	-		-	-		1	1		1 1 2
50	-		-	-		-	-		-	1		0 1
1	-		-	-		-	-		-	0		1 1
2	-		-	-		-	-		-	0		0 0
3	-		-	-		-	-		-	0		0 0
4	-		-	-		-	-		-	0		0 0
5	-		-	-		-	-		-	1		1 1
6	-		-	-		-	-		-	-		-
Total	0	1	1	10	2	12	10	10	20	235	68	303

Table 7 (cont'd)

Fork length (cm)	Set number								
	23			24			Total		
	M	F	T	M	F	T	M	F	T
9	-	-	-	-	-	-	-	-	1
10	-	-	-	-	-	-	-	-	0
11	-	-	-	-	-	-	-	-	0
12	-	-	-	-	-	-	-	-	2
13	-	-	-	-	-	-	1	1	2
14	-	-	-	-	-	-	0	0	0
15	-	-	-	-	-	-	0	0	0
16	-	-	-	-	-	-	0	0	0
17	-	-	-	-	-	-	1	0	1
18	-	-	-	-	-	-	0	0	0
19	-	-	-	-	-	-	0	0	0
20	-	-	-	-	-	-	0	0	0
21	-	-	-	-	-	-	0	0	0
22	-	-	-	-	-	-	0	0	0
23	-	-	-	-	-	-	0	0	0
24	-	-	-	-	-	-	1	0	1
25	-	-	-	-	1	1	0	1	1
26	-	-	-	-	0	0	1	0	1
27	-	-	-	-	0	0	1	1	2
28	-	1	1	-	0	0	1	2	3
29	-	0	0	-	0	0	2	2	4
30	2	0	2	-	0	0	2	3	5
31	4	0	4	-	0	0	7	4	11
32	11	2	13	-	0	0	15	4	19
33	15	7	22	-	0	0	23	10	33
34	43	23	66	-	0	0	89	29	118
35	50	32	82	2	0	2	116	43	159
36	69	50	119	1	1	2	142	61	203
37	51	32	83	4	0	4	136	55	191
38	16	31	47	0	1	1	122	62	184
39	11	18	29	3	1	4	77	53	130
40	8	24	32	0	1	1	51	58	109
41	4	14	18	0	3	3	36	46	82
42	3	5	8	1	0	1	27	26	53
43	2	6	8	0	0	0	17	22	39
44	3	5	8	1	1	2	22	23	45
45	-	1	1	-	1	1	2	14	16
46	-	3	3	-	1	1	3	26	29
47	-	0	0	-	0	0	3	15	18
48	-	0	0	-	0	0	1	6	7
49	-	1	1	-	0	0	1	5	6
50	-	0	0	-	1	1	1	1	2
51	-	0	0	-	-	-	1	2	3
52	-	1	1	-	-	-	0	1	1
53	-	-	-	-	-	-	0	1	1
54	-	-	-	-	-	-	0	0	0
55	-	-	-	-	-	-	1	0	1
56	-	-	-	-	-	-	-	1	1
Total	292	256	548	12	12	24	903	578	1,484

^aIncludes unsexed fish.

Table 8. Mean size of pollock for each age class, Set 23, G.B. REED, January 13-28, 1976.

Age	Set number 23								
	Male			Female			Total		
	Mean length (cm)	S.E.	n	Mean length (cm)	S.E.	n	Mean length (cm)	S.E.	n
2				32	-	1	32	-	1
3	35.5	0.27	69	36.8	0.25	79	36.2	0.18	148
4	36.7	0.36	27	38.1	0.50	34	37.5	0.32	61
5	37.5	1.82	6	41.8	2.92	5	39.5	1.65	11
6	41	-	1	43.0	2.08	3	42.5	1.80	4
Total			103			122			225

Table 9. Summary of dogfish sampled, G.B. REED, January 13-28, 1976.

Set no.	Length			Maturity	Stomach contents	Spines	Wt.	Remarks
	Male	Female	Total					
1	-	2	2	2	-	-	-	Total catch
2	15	24	39	39	39	39	-	Total catch
3	23	19	42	42	42	17	17	Age & wt. only on fish \leq 50 cm.
4	13	20	33	10	10	10	10	Wt, age, maturity, stom, on fish \leq 50 cm.
5	45	27	72	72	72	43	43	Wt. & spines on fish \leq 50 cm.
6	3	5	8	8	8	4	4	Wt. & spines on fish \leq 50 cm.
7	36	23	59	59	59	37	37	Wt. & spines on fish \leq 50 cm.
8	24	22	46	46	46	25	25	Wt. & spines on fish \leq 50 cm.
9	-	3	3	3	3	3	3	Total catch
10	5	10	15	15	15	11	11	Wt. & spines on fish \leq 50 cm.
11	55	61	116	116	116	98	98	Wt. & spines on fish \leq 50 cm.
12	30	28	58	58	58	36	36	Wt. & spines on fish \leq 50 cm.
13	66	45	111	111	111	47	47	Wt. & spines on fish \leq 50 cm.
14	75	38	113	113	113	19	19	Wt. & spines on fish \leq 50 cm.
15	22	1	23	23	23	1	-	Wt. & spines on fish \leq 50 cm.
16	8	36	44	44	44	8	8	Wt. & spines on fish \leq 50 cm.
17	38	11	49	49	49	7	7	Wt. & spines on fish \leq 50 cm.
18	7	2	9	9	9	-	-	Total catch
19	4	9	13	13	13	1	1	Wt. & spines on fish \leq 50 cm.
20	26	38	64	64	64	1	1	Wt. & spines on fish \leq 50 cm.
21	21	29	50	50	50	2	2	Wt. & spines on fish \leq 50 cm.
22	4	-	4	4	4	-	-	Total catch
23	13	15	28	28	28	11	11	Wt. & spines on fish \leq 50 cm.
24	36	40	76	76	76	1	1	Wt. & spines on fish \leq 50 cm.
Total		569	508	1,077	1,054	1,055	421	381

Table 10. Length frequency of dogfish, G.B. REED, January 13-28, 1976.

Total length (cm)	Set number											
	1			2			3			4		
	M	F	T	M	F	T	M	F	T	M	F	T
25	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	1	1	-	-
5	-	-	-	-	-	-	-	1	0	1	-	-
6	-	-	-	-	-	-	-	0	0	0	-	-
7	-	-	-	-	-	-	-	0	0	0	-	-
8	-	-	-	-	-	-	-	0	0	0	-	-
9	-	-	-	1	1	2	0	1	1	-	-	-
40	-	-	-	0	0	0	1	0	1	-	-	-
1	-	-	-	0	0	0	0	1	1	-	-	-
2	-	-	-	0	0	0	0	0	0	-	-	-
3	-	-	-	0	0	0	1	1	2	-	-	-
4	-	-	-	1	0	1	1	0	1	-	-	-
5	-	-	-	1	0	1	1	0	1	-	-	-
6	-	-	-	1	1	2	2	0	2	-	1	1
7	-	-	-	0	0	0	0	0	0	1	3	4
8	-	-	-	1	1	2	1	1	2	0	0	0
9	-	-	-	0	0	0	1	1	2	1	0	1
50	-	-	-	0	0	0	2	0	2	1	3	4
1	-	-	-	0	0	0	0	0	0	0	0	0
2	-	-	-	0	2	2	1	1	2	1	2	3
3	-	-	-	0	1	1	0	0	0	0	2	2
4	-	-	-	0	1	1	0	0	0	0	0	0
5	-	-	-	0	0	0	0	0	0	0	1	1
6	-	-	-	1	1	2	0	0	0	0	0	0
7	-	-	-	1	1	2	0	0	0	0	1	0
8	-	-	-	0	0	0	0	0	0	1	0	1
9	-	-	-	0	2	2	0	0	0	0	1	1
60	-	-	-	0	1	1	1	0	1	2	0	2
1	-	-	-	1	1	2	1	0	1	0	0	0
2	-	-	-	0	1	1	0	0	0	0	0	0
3	-	-	-	2	0	2	2	0	2	0	1	1
4	-	-	-	0	0	0	1	0	1	0	0	0
5	-	-	-	0	0	0	1	0	1	0	0	0
6	-	-	-	1	0	1	0	0	0	0	0	0
7	-	-	-	0	0	0	0	2	2	0	0	0
8	-	-	-	1	1	2	0	3	3	0	0	0
9	-	-	-	0	0	0	1	0	1	1	0	1

Table 10 (cont'd)

Total length (cm)	Set number											
	1			2			3			4		
	M	F	T	M	F	T	M	F	T	M	F	T
70	-	-	-	0	0	0	0	0	0	0	0	0
71	-	-	-	0	1	1	0	0	0	0	1	1
72	-	-	-	0	1	1	1	1	2	0	0	0
73	-	-	-	0	0	0	0	1	1	0	1	1
74	-	-	-	0	0	0	0	0	0	0	0	0
75	-	-	-	0	0	0	0	1	1	0	0	0
76	-	-	-	0	1	1	1	0	1	0	1	1
77	-	-	-	1	0	1	0	1	1	0	0	0
78	-	-	-	1	0	1	0	0	0	1	0	1
79	-	-	-	0	0	0	0	0	0	1	0	1
80	-	-	-	0	2	2	0	0	0	0	0	0
81	-	-	-	0	1	1	0	0	0	1	0	1
82	-	-	-	1	0	1	1	0	1	0	0	0
83	-	-	-	-	0	0	1	0	1	0	0	0
84	-	-	-	-	0	0	-	1	1	0	0	0
85	-	-	-	-	0	0	-	0	0	0	0	0
86	-	-	-	-	0	0	-	1	1	1	0	1
87	-	-	-	-	2	2	-	0	0	-	1	1
88	-	-	-	-	0	0	-	0	0	-	1	1
89	-	-	-	-	0	0	-	0	0	-	0	0
90	-	1	1	-	0	0	-	0	0	-	0	0
91	-	0	0	-	0	0	-	0	0	-	0	0
92	-	1	1	-	0	0	-	0	0	-	0	0
93	-	-	-	-	0	0	-	0	0	-	0	0
94	-	-	-	-	1	1	-	0	0	-	0	0
95	-	-	-	-	-	-	-	0	0	-	0	0
96	-	-	-	-	-	-	-	0	0	-	0	0
97	-	-	-	-	-	-	-	1	1	-	0	0
98	-	-	-	-	-	-	-	-	-	-	1	1
99	-	-	-	-	-	-	-	-	-	-	0	0
100	-	-	-	-	-	-	-	-	-	-	-	-
101	-	-	-	-	-	-	-	-	-	-	-	-
102	-	-	-	-	-	-	-	-	-	-	-	-
103	-	-	-	-	-	-	-	-	-	-	-	-
104	-	-	-	-	-	-	-	-	-	-	-	-
105	-	-	-	-	-	-	-	-	-	-	-	-
106	-	-	-	-	-	-	-	-	-	-	-	-
107	-	-	-	-	-	-	-	-	-	-	-	-
108	-	-	-	-	-	-	-	-	-	-	-	-
109	-	-	-	-	-	-	-	-	-	-	-	-
110	-	-	-	-	-	-	-	-	-	-	-	-
111	-	-	-	-	-	-	-	-	-	-	-	-
112	-	-	-	-	-	-	-	-	-	-	-	-
113	-	-	-	-	-	-	-	-	-	-	-	-
114	-	-	-	-	-	-	-	-	-	-	-	-
Total	0	2	2	15	24	39	23	19	42	13	20	33

Table 10 (cont'd)

Table 10 (cont'd)

Total length (cm)	Set number											
	5			6			7			8		
	M	F	T	M	F	T	M	F	T	M	F	T
70	0	0	0	-	1	1	1	0	1	1	0	1
1	1	0	1	-	-	-	1	0	1	0	0	0
2	0	2	2	-	-	-	0	0	0	0	1	1
3	2	0	2	-	-	-	0	0	0	0	0	0
4	0	0	0	-	-	-	0	1	1	0	0	0
5	0	0	0	-	-	-	0	-	0	0	0	0
6	0	1	1	-	-	-	0	-	0	0	0	0
7	0	0	0	-	-	-	0	-	0	1	0	1
8	1	0	1	-	-	-	0	-	0	0	1	1
9	0	1	1	-	-	-	1	-	1	0	1	1
80	1	0	1	-	-	-	0	-	0	1	0	1
1	0	0	0	-	-	-	1	-	1	0	0	0
2	0	0	0	-	-	-	0	-	0	0	0	0
3	0	0	0	-	-	-	0	-	0	1	0	1
4	0	0	0	-	-	-	0	-	0	1	1	2
5	0	0	0	-	-	-	1	-	1	1	0	1
6	2	0	2	-	-	-	0	-	0	-	0	0
7	-	0	0	-	-	-	1	-	1	-	0	0
8	-	0	0	-	-	-	1	-	1	-	0	0
9	-	0	0	-	-	-	-	-	-	0	0	0
90	-	0	0	-	-	-	-	-	-	-	0	0
1	-	0	0	-	-	-	-	-	-	-	0	0
2	-	0	0	-	-	-	-	-	-	-	0	0
3	-	0	0	-	-	-	-	-	-	-	0	0
4	-	0	0	-	-	-	-	-	-	-	0	0
5	-	0	0	-	-	-	-	-	-	-	0	0
6	-	1	1	-	-	-	-	-	-	-	1	1
7	-	-	-	-	-	-	-	-	-	-	1	1
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
100	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
110	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
Total	45	27	72	3	5	8	36	23	59	24	22	46

Table 10 (cont'd)

Total length (cm)	Set number											
	9			10			11			12		
	M	F	T	M	F	T	M	F	T	M	F	T
25	-	-	-	-	-	-	-	1	1	-	-	-
6	-	1	1	1	2	3	-	-	-	-	-	-
7	-	0	0	2	2	4	-	-	-	-	-	-
8	-	2	2	0	1	1	-	-	-	-	-	-
9	-	-	-	0	0	-	-	-	-	1	-	1
30	-	-	-	1	0	1	-	1	1	0	-	0
1	-	-	-	0	0	0	-	1	1	0	1	1
2	-	-	-	0	0	0	-	0	0	1	0	1
3	-	-	-	0	0	0	1	0	1	0	0	0
4	-	-	-	0	0	0	0	2	2	1	1	2
5	-	-	-	0	0	0	1	0	1	0	2	2
6	-	-	-	0	0	0	1	3	4	5	2	7
7	-	-	-	0	0	0	5	5	10	5	7	12
8	-	-	-	0	0	0	3	3	6	5	3	8
9	-	-	-	0	0	0	2	8	10	0	3	3
40	-	-	-	0	0	0	4	8	12	5	3	8
1	-	-	-	0	0	0	1	1	2	1	0	1
2	-	-	-	0	0	0	5	6	11	3	3	6
3	-	-	-	0	1	1	3	4	7	0	1	1
4	-	-	-	0	0	0	6	4	10	0	0	0
5	-	-	-	0	0	0	4	4	8	0	1	1
6	-	-	-	0	0	0	3	3	6	0	0	0
7	-	-	-	0	0	0	3	2	5	0	0	0
8	-	-	-	0	0	0	1	2	3	0	0	0
9	-	-	-	1	0	1	2	1	3	0	0	0
50	-	-	-	-	0	0	2	1	3	0	0	0
1	-	-	-	-	0	0	0	0	0	0	0	0
2	-	-	-	-	1	1	0	1	1	0	0	0
3	-	-	-	-	0	0	1	1	2	0	0	0
4	-	-	-	-	0	0	0	0	0	0	0	0
5	-	-	-	-	0	0	1	0	1	0	0	0
6	-	-	-	-	0	0	0	0	0	0	0	0
7	-	-	-	-	0	0	3	1	4	0	0	0
8	-	-	-	-	1	1	0	-	0	1	0	1
9	-	-	-	-	0	0	0	-	0	0	-	0
60	-	-	-	-	0	0	2	-	2	0	-	0
1	-	-	-	-	0	0	0	-	0	0	-	0
2	-	-	-	-	0	0	0	-	0	0	-	0
3	-	-	-	-	0	0	0	-	0	0	-	0
4	-	-	-	-	0	0	0	-	0	0	-	0
5	-	-	-	-	0	0	0	-	0	0	-	0
6	-	-	-	-	0	0	0	-	0	1	-	1
7	-	-	-	-	0	0	1	-	1	0	-	0
8	-	-	-	-	0	0	-	-	-	0	-	0
9	-	-	-	-	0	0	-	-	-	0	-	0

Table 10 (cont'd)

Total length (cm)	Set number											
	9			10			11			12		
	M	F	T	M	F	T	M	F	T	M	F	T
70	-	-	-	-	0	0	-	-	-	0	-	0
1	-	-	-	-	0	0	-	-	-	0	-	0
2	-	-	-	-	0	0	-	-	-	0	-	0
3	-	-	-	-	0	0	-	-	-	0	-	0
4	-	-	-	-	0	0	-	-	-	1	-	1
5	-	-	-	-	0	0	-	-	-	0	-	0
6	-	-	-	-	1	1	-	-	-	1	-	1
7	-	-	-	-	0	0	-	-	-	0	-	0
8	-	-	-	-	0	0	-	-	-	1	-	1
9	-	-	-	-	0	0	-	-	-	-	-	-
80	-	-	-	-	0	0	-	-	-	-	-	-
1	-	-	-	-	0	0	-	-	-	-	-	-
2	-	-	-	-	0	0	-	-	-	-	-	-
3	-	-	-	-	0	0	-	-	-	-	-	-
4	-	-	-	-	0	0	-	-	-	-	-	-
5	-	-	-	-	0	0	-	-	-	-	-	-
6	-	-	-	-	0	0	-	-	-	-	-	-
7	-	-	-	-	0	0	-	-	-	-	-	-
8	-	-	-	-	0	0	-	-	-	-	-	-
9	-	-	-	-	0	0	-	-	-	-	-	-
90	-	-	-	-	0	0	-	-	-	-	-	-
1	-	-	-	-	0	0	-	-	-	-	-	-
2	-	-	-	-	0	0	-	-	-	-	-	-
3	-	-	-	-	0	0	-	-	-	-	-	-
4	-	-	-	-	0	0	-	-	-	-	-	-
5	-	-	-	-	0	0	-	-	-	-	-	-
6	-	-	-	-	0	0	-	-	-	-	-	-
7	-	-	-	-	0	0	-	-	-	-	-	-
8	-	-	-	-	0	0	-	-	-	-	-	-
9	-	-	-	-	0	0	-	-	-	-	-	-
100	-	-	-	-	0	0	-	-	-	-	-	-
1	-	-	-	-	0	0	-	-	-	-	-	-
2	-	-	-	-	0	0	-	-	-	-	-	-
3	-	-	-	-	0	0	-	-	-	-	-	-
4	-	-	-	-	0	0	-	-	-	-	-	-
5	-	-	-	-	0	0	-	-	-	-	-	-
6	-	-	-	-	0	0	-	-	-	-	-	-
7	-	-	-	-	0	0	-	-	-	-	-	-
8	-	-	-	-	0	0	-	-	-	-	-	-
9	-	-	-	-	0	0	-	-	-	-	-	-
110	-	-	-	-	0	0	-	-	-	-	-	-
1	-	-	-	-	0	0	-	-	-	-	-	-
2	-	-	-	-	0	0	-	-	-	-	-	-
3	-	-	-	-	0	0	-	-	-	-	-	-
4	-	-	-	-	1	1	-	-	-	-	-	-
Total	0	3	3	5	10	15	55	63	118	32	27	59

Table 10 (cont'd)

Total length (cm)	Set number											
	13			14			15			16		
	M	F	T	M	F	T	M	F	T	M	F	T
25	-		-		-		-		-		-	
6	-		-		-		-		-		-	
7	-		-		-		-		-		-	
8	-		-		-		-		-		-	
9	-		-		-		-		-		-	
30	1	-	1	-	-	-	-	-	-	-	-	-
1	2	-	2	-	-	-	-	-	-	-	-	-
2	3	-	3	2	-	2	-	-	-	-	-	-
3	4	4	8	0	-	0	-	-	-	-	-	-
4	3	4	7	2	4	6	-	-	-	-	-	-
5	5	4	9	2	2	4	-	-	-	-	-	-
6	8	8	16	7	5	12	-	-	-	-	-	-
7	3	4	7	5	3	8	-	-	-	-	1	1
8	6	1	7	7	5	12	-	-	-	-	1	1
9	4	4	8	7	4	11	-	-	-	-	0	0
40	1	3	4	4	2	6	-	-	-	-	0	0
1	2	4	6	1	2	3	-	-	-	-	1	1
2	3	0	3	2	1	3	-	-	-	-	1	1
3	3	1	4	2	1	3	-	-	-	-	2	2
4	0	1	1	6	1	7	-	-	-	-	3	3
5	0	1	1	6	0	6	-	-	-	1	1	2
6	2	0	2	1	1	2	-	1	1	0	3	3
7	1	0	1	2	1	3	-	-	0	1	2	3
8	0	0	0	2	1	3	-	-	0	1	5	6
9	0	0	0	0	1	1	-	-	0	0	2	2
50	0	0	0	0	0	0	-	-	0	0	2	2
1	0	2	2	2	0	2	-	-	0	0	4	4
2	0	0	0	0	0	0	-	-	0	0	0	0
3	0	0	0	1	0	1	-	-	0	1	1	2
4	0	0	0	1	0	1	-	-	0	0	1	1
5	1	0	1	0	1	1	-	-	0	1	0	1
6	0	0	0	0	0	0	-	-	0	1	0	1
7	0	0	0	0	0	0	-	-	0	0	0	0
8	0	0	0	1	1	2	-	-	0	0	1	1
9	0	0	0	0	0	0	-	-	0	0	0	0
60	0	1	1	2	0	2	-	-	0	1	1	2
1	1	0	1	0	0	0	-	-	0	0	1	1
2	0	1	1	0	0	0	-	-	0	0	1	1
3	1	0	1	1	0	1	-	-	0	0	0	0
4	1	0	1	0	0	0	-	-	0	0	0	0
5	0	0	0	0	0	0	-	-	0	0	0	0
6	0	0	0	1	0	1	-	-	0	1	1	2
7	0	0	0	0	0	0	-	-	0	-	0	0
8	0	0	0	0	0	0	-	-	0	-	0	0
9	0	0	0	1	0	1	-	-	0	-	0	0

Table 10 (cont'd)

Total length (cm)	Set number											
	13			14			15			16		
	M	F	T	M	F	T	M	F	T	M	F	T
70	4	0	4	1	0	1	1	-	1	-	0	0
1	0	0	0	1	0	1	1	-	1	-	0	0
2	1	0	1	0	0	0	0	-	0	-	0	0
3	0	0	0	0	0	0	0	-	0	-	0	0
4	1	0	1	1	0	1	0	-	0	-	1	1
5	1	0	1	0	0	0	0	-	0	-	-	-
6	0	0	0	1	0	1	0	-	0	-	-	-
7	0	0	0	0	1	1	1	-	1	-	-	-
8	0	0	0	0	0	0	1	-	1	-	-	-
9	1	0	1	1	1	2	0	-	0	-	-	-
80	1	0	1	0	-	0	3	-	3	-	-	-
1	0	0	0	0	-	0	0	-	0	-	-	-
2	2	0	2	1	-	1	4	-	4	-	-	-
3	-	0	0	1	-	1	3	-	3	-	-	-
4	-	0	0	-	-	-	1	-	1	-	-	-
5	-	0	0	-	-	-	0	-	0	-	-	-
6	-	0	0	-	-	-	2	-	2	-	-	-
7	-	0	0	-	-	-	0	-	0	-	-	-
8	-	0	0	-	-	-	2	-	2	-	-	-
9	-	0	0	-	-	-	1	-	1	-	-	-
90	-	0	0	-	-	-	2	-	2	-	-	-
1	-	0	0	-	-	-	-	-	-	-	-	-
2	-	0	0	-	-	-	-	-	-	-	-	-
3	-	0	0	-	-	-	-	-	-	-	-	-
4	-	0	0	-	-	-	-	-	-	-	-	-
5	-	0	0	-	-	-	-	-	-	-	-	-
6	-	0	0	-	-	-	-	-	-	-	-	-
7	-	0	0	-	-	-	-	-	-	-	-	-
8	-	0	0	-	-	-	-	-	-	-	-	-
9	-	0	0	-	-	-	-	-	-	-	-	-
100	-	0	0	-	-	-	-	-	-	-	-	-
1	-	0	0	-	-	-	-	-	-	-	-	-
2	-	1	1	-	-	-	-	-	-	-	-	-
3	-	0	0	-	-	-	-	-	-	-	-	-
4	-	0	0	-	-	-	-	-	-	-	-	-
5	-	1	1	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
110	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
Total	66	45	111	75	38	113	22	1	23	8	36	44

Table 10 (cont'd)

Total length (cm)	Set number											
	17			18			19			20		
	M	F	T	M	F	T	M	F	T	M	F	T
25	-	1	1	-	-	-	-	-	-	-	-	-
6	-	0	0	-	-	-	-	-	-	-	-	-
7	-	0	0	-	-	-	-	-	-	-	-	-
8	-	0	0	-	-	-	-	-	-	-	-	-
9	-	0	0	-	-	-	-	-	-	-	-	-
30	-	0	0	-	-	-	-	-	-	-	-	-
1	-	0	0	-	-	-	-	-	-	-	-	-
2	-	0	0	-	-	-	-	-	-	-	-	-
3	-	0	0	-	-	-	-	-	-	-	-	-
4	-	0	0	-	-	-	-	-	-	-	-	-
5	-	0	0	-	-	-	-	-	-	-	-	-
6	-	0	0	-	-	-	-	-	-	-	-	-
7	-	0	0	-	-	-	-	-	-	-	1	1
8	-	0	0	-	-	-	-	-	-	3	1	4
9	-	0	0	-	-	-	-	-	-	1	1	2
40	1	0	1	-	-	-	1	1	4	3	7	
1	0	2	2	-	-	-	1	1	2	3	5	
2	1	1	2	1	-	1	0	0	1	6	7	
3	3	2	5	0	-	0	0	0	1	6	7	
4	2	0	2	0	-	0	0	0	4	1	5	
5	3	0	3	0	1	1	2	2	1	1	2	
6	2	0	2	0	1	1	1	1	3	3	6	
7	1	0	1	0	-	0	1	0	1	2	2	4
8	1	1	2	0	-	0	0	0	2	3	5	
9	2	1	3	0	-	0	0	0	0	0	0	
50	1	0	1	0	-	0	0	1	1	0	1	
1	1	0	1	0	-	0	0	0	1	0	1	
2	0	0	0	0	-	0	2	0	2	0	0	
3	1	0	1	0	-	0	1	0	1	0	0	
4	1	0	1	0	-	0	0	0	0	1	1	
5	2	0	2	0	-	0	0	0	0	0	0	
6	0	0	0	0	-	0	0	0	0	0	0	
7	0	0	0	0	-	0	0	0	0	0	0	
8	1	1	2	0	-	0	0	0	0	1	1	
9	2	0	2	0	-	0	0	0	0	0	0	
60	1	0	1	0	-	0	-	0	0	0	0	
1	0	1	1	0	-	0	-	0	0	0	0	
2	1	0	1	0	-	0	-	0	0	0	0	
3	0	0	0	0	-	0	-	0	0	0	0	
4	0	0	0	0	-	0	-	0	0	0	0	
5	0	0	0	0	-	0	-	0	0	0	0	
6	0	0	0	0	-	0	-	0	0	0	0	
7	1	0	1	0	-	0	-	0	0	0	0	
8	0	0	0	0	-	0	-	0	0	0	0	
9	0	0	0	0	-	0	-	0	0	0	0	

Table 10 (cont'd)

Total length (cm)	Set number											
	17			18			19			20		
	M	F	T	M	F	T	M	F	T	M	F	T
70	1	0	1	0	-	0	-	0	0	-	0	0
1	0	0	0	0	-	0	-	0	0	-	0	0
2	1	0	1	0	-	0	-	0	0	-	0	0
3	0	0	0	1	-	1	-	0	0	-	1	1
4	0	1	1	0	-	0	-	0	0	-	1	1
5	1	-	1	1	-	1	-	0	0	-	0	0
6	0	-	0	2	-	2	-	0	0	-	0	0
7	0	-	0	0	-	0	-	0	0	-	0	0
8	1	-	1	0	-	0	-	1	1	-	0	0
9	0	-	0	1	-	1	-	0	0	-	0	0
80	2	-	2	1	-	1	-	0	0	-	1	1
1	2	-	2	-	-	-	-	0	0	-	0	0
2	0	-	0	-	-	-	-	0	0	-	0	0
3	1	-	1	-	-	-	-	0	0	-	0	0
4	1	-	1	-	-	-	-	0	0	-	0	0
5	-	-	-	-	-	-	-	0	0	-	0	0
6	-	-	-	-	-	-	-	0	0	-	0	0
7	-	-	-	-	-	-	-	0	0	-	0	0
8	-	-	-	-	-	-	-	1	1	-	0	0
9	-	-	-	-	-	-	-	0	0	-	0	0
90	-	-	-	-	-	-	-	0	0	-	0	0
1	-	-	-	-	-	-	-	0	0	-	0	0
2	-	-	-	-	-	-	-	0	0	-	0	0
3	-	-	-	-	-	-	-	1	1	-	0	0
4	-	-	-	-	-	-	-	-	-	-	2	2
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
100	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
110	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
Total	38	11	49	7	2	9	4	9	13	26	38	64

Table 10 (cont'd)

Total length (cm)	Set number												M	F	T			
	21			22			23			24								
	M	F	T	M	F	T	M	F	T	M	F	T						
25	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2			
6	-	-	-	-	-	-	-	-	-	-	-	-	1	3	4			
7	-	-	-	-	-	-	-	-	-	-	-	-	2	2	4			
8	-	-	-	-	-	-	-	-	-	-	-	-	1	3	4			
9	-	-	-	-	-	-	-	-	-	-	-	-	1	0	1			
30	-	-	-	-	-	-	-	-	-	-	-	-	2	1	3			
1	-	-	-	-	-	-	4	2	6	-	-	-	6	4	10			
2	-	-	-	-	-	-	1	0	1	-	-	-	7	1	8			
3	-	-	-	-	-	-	2	1	3	-	-	-	7	5	12			
4	-	-	-	-	-	-	2	0	2	1	-	1	11	13	24			
5	-	-	-	-	-	-	0	0	0	1	-	1	11	9	20			
6	-	-	-	-	-	-	1	0	1	0	-	0	23	21	44			
7	-	1	1	-	-	-	0	1	1	3	2	5	22	27	49			
8	1	0	1	-	-	-	0	2	2	0	2	2	26	21	47			
9	2	1	3	-	-	-	0	0	0	0	1	1	18	27	45			
40	1	3	4	-	-	-	0	1	1	0	3	3	24	30	54			
1	1	1	2	-	-	-	0	0	0	3	2	5	17	20	37			
2	0	6	6	-	-	-	0	1	1	3	1	4	28	28	56			
3	1	3	4	-	-	-	0	0	0	2	2	4	24	28	52			
4	1	2	3	-	-	-	0	0	0	3	1	4	32	18	50			
5	3	5	8	-	-	-	0	0	0	3	2	5	26	21	47			
6	1	1	2	-	-	-	0	0	0	1	3	4	19	21	40			
7	1	2	3	-	-	-	0	0	0	1	1	2	19	17	36			
8	0	1	1	-	-	-	0	0	0	1	2	3	12	20	32			
9	1	0	1	-	-	-	0	0	0	1	0	1	13	9	22			
50	1	0	1	-	-	-	0	0	0	1	1	2	12	9	21			
1	1	0	1	-	-	-	0	0	0	0	0	0	9	8	17			
2	1	0	1	-	-	-	0	0	0	2	0	2	11	7	18			
3	0	0	0	-	-	-	0	0	0	0	3	3	6	12	18			
4	0	0	0	-	-	-	0	0	0	0	1	1	4	5	9			
5	0	0	0	-	-	-	0	0	0	0	0	0	0	5	7			
6	0	0	0	-	-	-	0	0	0	0	0	0	0	3	2			
7	0	0	0	-	-	-	0	0	0	0	0	1	1	8	5			
8	1	0	1	-	-	-	0	0	0	1	0	1	9	6	15			
9	0	0	0	-	-	-	0	0	0	0	0	0	3	3	6			
60	0	1	1	-	-	-	0	0	0	0	1	1	9	6	15			
1	0	0	0	-	-	-	0	0	0	0	0	0	3	3	6			
2	0	0	0	-	-	-	0	0	0	0	0	0	2	3	5			
3	0	0	0	-	-	-	0	0	0	0	2	2	6	4	10			
4	0	0	0	-	-	-	0	0	0	0	1	1	3	2	5			
5	0	0	0	-	-	-	0	0	0	0	0	0	1	1	2			
6	0	0	0	-	-	-	0	0	0	1	0	1	6	2	8			
7	0	0	0	-	-	-	0	0	0	1	0	1	4	3	7			
8	0	0	0	-	-	-	0	0	0	0	1	1	3	6	9			
9	1	0	1	-	-	-	0	0	0	0	0	0	5	0	5			

Table 10 (cont'd)

Total length (cm)	Set number												Total		
	21			22			23			24					
	M	F	T	M	F	T	M	F	T	M	F	T			
70	0	0	0	0	-	0	0	0	0	0	0	0	9		
1	0	1	1	0	-	0	0	0	0	0	0	0	1		
2	1	0	1	0	-	0	0	0	0	0	0	0	4		
3	1	0	1	0	-	0	0	0	0	0	0	0	4		
4	1	0	1	0	-	0	0	0	0	0	0	0	4		
5	-	0	0	0	-	0	0	0	1	0	1	0	4		
6	-	0	0	1	-	1	0	0	0	0	0	0	6		
7	-	0	0	0	-	0	0	0	0	0	0	0	4		
8	-	0	0	0	-	0	1	0	1	0	0	0	3		
9	-	0	0	0	-	0	0	0	0	0	0	0	2		
80	-	0	0	0	-	0	1	0	1	0	0	0	10		
1	-	0	0	1	-	1	0	0	0	0	0	0	5		
2	-	0	0	0	-	0	0	0	0	1	2	3	10		
3	-	0	0	0	-	0	0	0	0	0	0	0	7		
4	-	1	1	0	-	0	0	0	0	1	0	1	4		
5	-	-	-	1	-	1	0	0	0	0	0	0	3		
6	-	-	-	0	-	0	0	0	0	2	0	2	7		
7	-	-	-	0	-	0	0	0	0	0	0	0	1		
8	-	-	-	0	-	0	0	1	1	1	1	2	4		
9	-	-	-	1	-	1	0	0	0	0	0	0	2		
90	-	-	-	-	-	-	0	0	0	1	2	3	3		
1	-	-	-	-	-	-	0	0	0	-	0	0	6		
2	-	-	-	-	-	-	0	0	0	-	1	1	0		
3	-	-	-	-	-	-	0	0	0	-	-	-	2		
4	-	-	-	-	-	-	0	1	1	-	-	-	1		
5	-	-	-	-	-	-	1	1	2	-	-	-	4		
6	-	-	-	-	-	-	0	0	0	-	-	-	3		
7	-	-	-	-	-	-	0	0	0	-	-	-	1		
8	-	-	-	-	-	-	1	1	1	-	-	-	1		
9	-	-	-	-	-	-	0	0	0	-	-	-	1		
100	-	-	-	-	-	-	-	-	-	-	-	-	1		
1	-	-	-	-	-	-	-	1	1	-	-	-	1		
2	-	-	-	-	-	-	-	0	0	-	-	-	0		
3	-	-	-	-	-	-	-	1	1	-	-	-	2		
4	-	-	-	-	-	-	-	0	0	-	-	-	0		
5	-	-	-	-	-	-	-	1	1	-	-	-	0		
6	-	-	-	-	-	-	-	0	0	-	-	-	2		
7	-	-	-	-	-	-	-	1	1	-	-	-	0		
8	-	-	-	-	-	-	-	0	0	-	-	-	0		
9	-	-	-	-	-	-	-	1	1	-	-	-	0		
110	-	-	-	-	-	-	-	-	-	-	-	-	0		
1	-	-	-	-	-	-	-	-	-	-	-	-	1		
2	-	-	-	-	-	-	-	-	-	-	-	-	0		
3	-	-	-	-	-	-	-	-	-	-	-	-	0		
4	-	-	-	-	-	-	-	-	-	-	-	-	1		
Total	21	29	50	4	0	4	13	15	28	36	40	76	571	509	1,080

Table 11. Mean size of dogfish for each age class for fish measuring 50 cm or less, G.B. REED, January 13-28, 1976.

Age	Male			Female			Total		
	Mean length (cm)	S.E.	n	Mean length (cm)	S.E.	n	Mean length (cm)	S.E.	n
0	30.6	0.84	13	27.9	0.79	14	30.2	0.56	27
1	33.0	0.42	20	33.8	0.40	17	33.4	0.29	37
2	36.1	0.52	17	35.7	0.50	20	35.9	0.36	37
3	38.4	0.51	21	38.4	0.43	25	38.4	0.33	46
4	40.0	0.59	22	40.2	0.54	26	40.1	0.40	48
5	42.6	0.59	24	43.1	0.99	15	42.8	0.53	39
6	43.8	0.92	17	44.6	0.75	23	44.3	0.58	40
7	46.2	0.73	15	43.8	1.00	15	45.0	0.62	30
8	44.9	0.89	9	45.6	1.16	10	45.3	0.74	19
9	46.5	1.39	9	47.0	0.62	7	46.7	0.83	16
10	46.3	0.93	10	46.0	1.48	6	46.2	0.80	16
11	48.0	1.15	3	48.5	0.50	2	48.2	0.75	5
12	48.0	1.10	6	48.8	0.49	4	48.3	0.70	10
13	46.5	0.50	2	49.5	0.50	2	48.0	0.35	4
14	49.3	0.33	3	49.0	1.00	2	49.2	0.42	5
15	-	-	-	46.0	1.00	2	46.0	1.00	2
17	50.0	-	1	-	-	-	50.0	-	1
21	-	-	-	47.0	-	1	47.0	-	1
Total			192			191			383

Table 12. Dogfish stomach contents, G.B. REED, January 13-28, 1976.

	Dogfish <60 cm (Total length)	Dogfish >60 cm (Total length)	Total
	volume (cc)	volume (cc)	Total
Number examined	839	216	1,055
Number empty	506	89	595
Hake	14	2,657	2,671
Pollock	-	450	450
<u>Leuroglossus</u>	68	73	141
Myctophid (unidentified)	14	-	14
Fish remains (unidentified)	54	477	531
Squid	352	836	1,188
Octopus	4	2	6
Glass shrimp	6	5	11
Shrimp (unidentified)	2	9	11
Euphausids	36	2	38
Ctenophores	45	31	76
Jellyfish (unidentified)	12	13	25
Polychaetes	9	1	10
Unidentified zooplankton	191	61	252
Amphipods	5	-	5

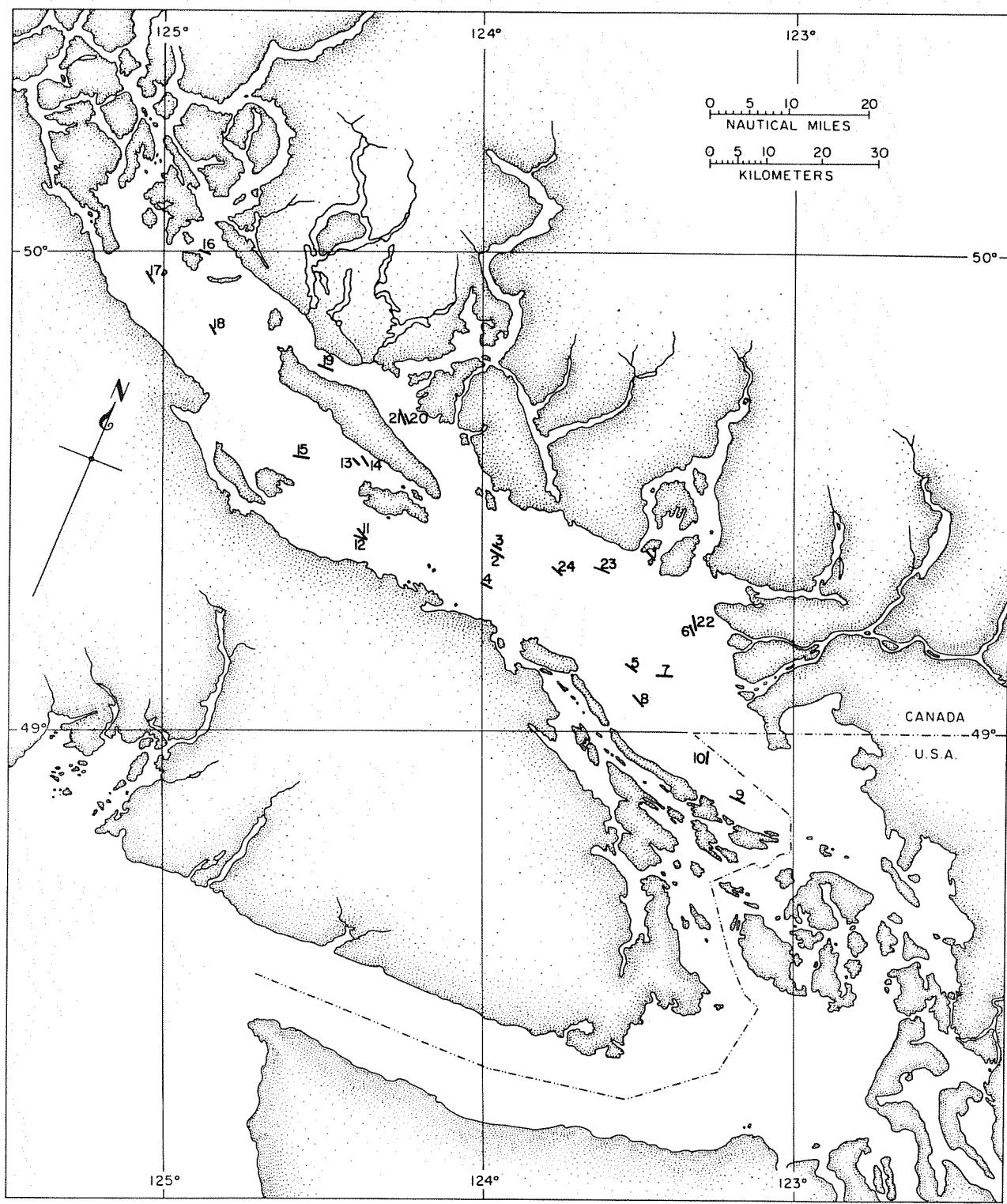


Fig. 1. Set locations, G. B. REED, January 13-28, 1976.

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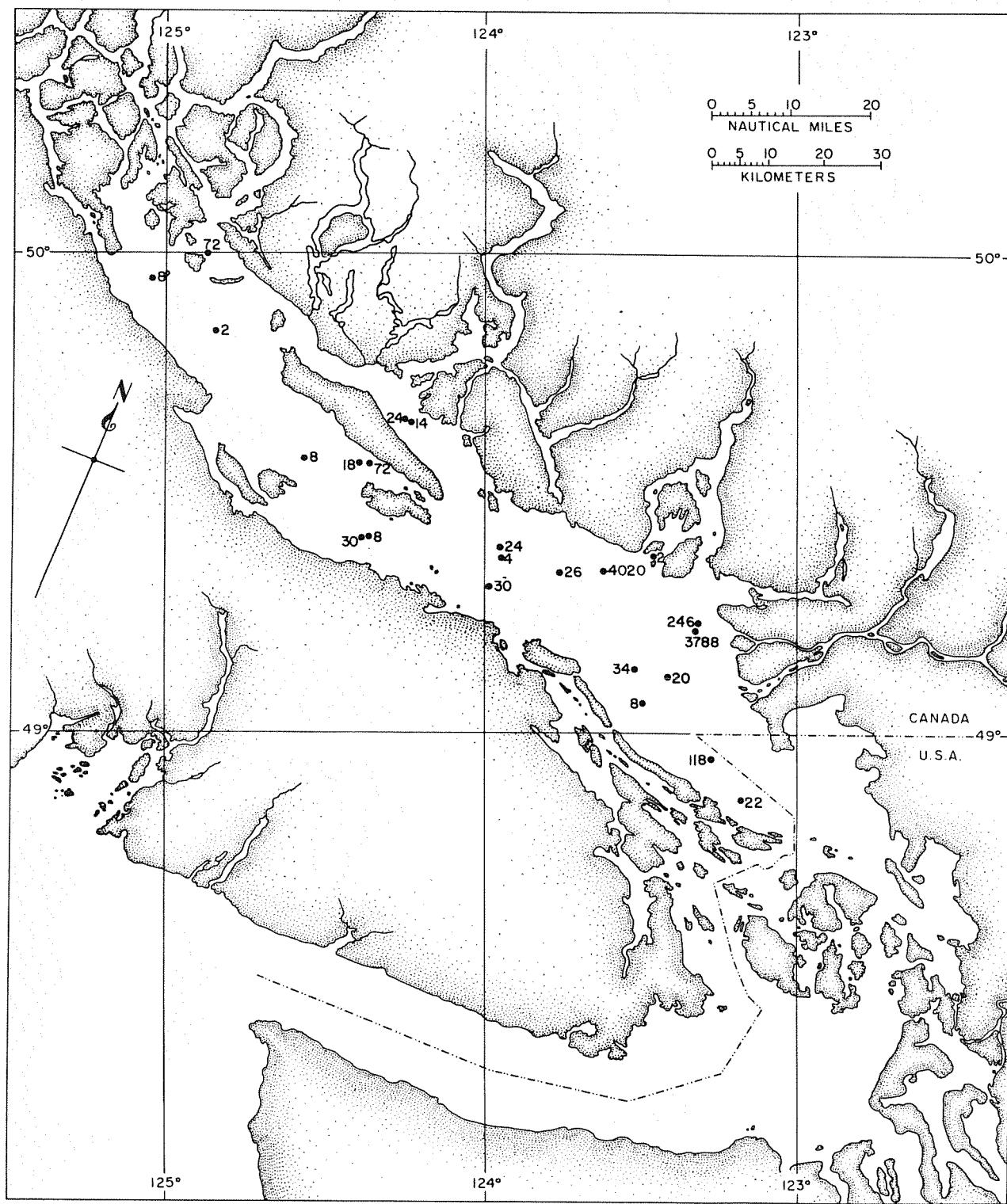


Fig. 2. Catches of pollock (kg/h), G. B. REED, January 13-28, 1976.

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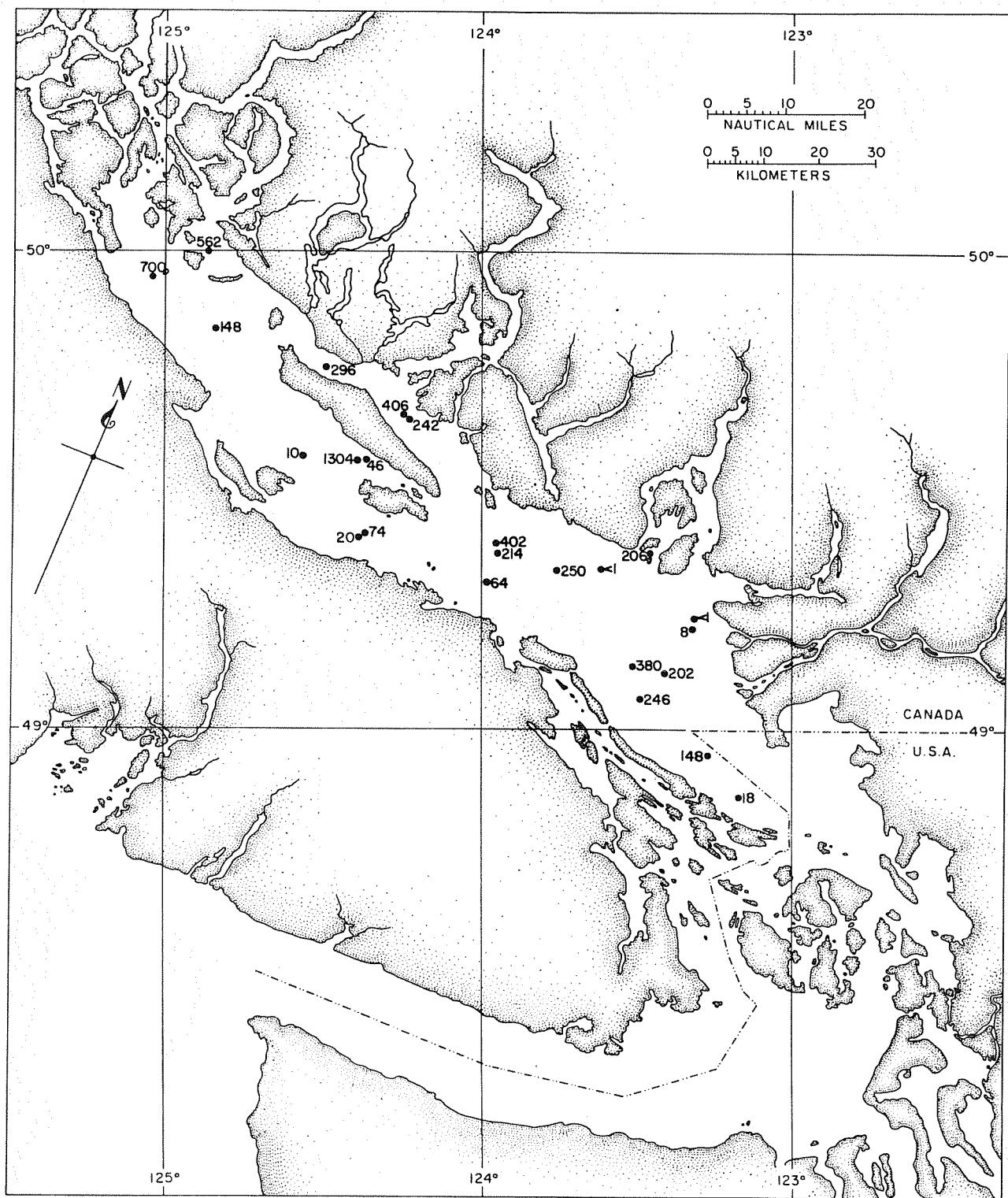


Fig. 3. Catches of hake (kg/h), G. B. REED, January 13-28, 1976.

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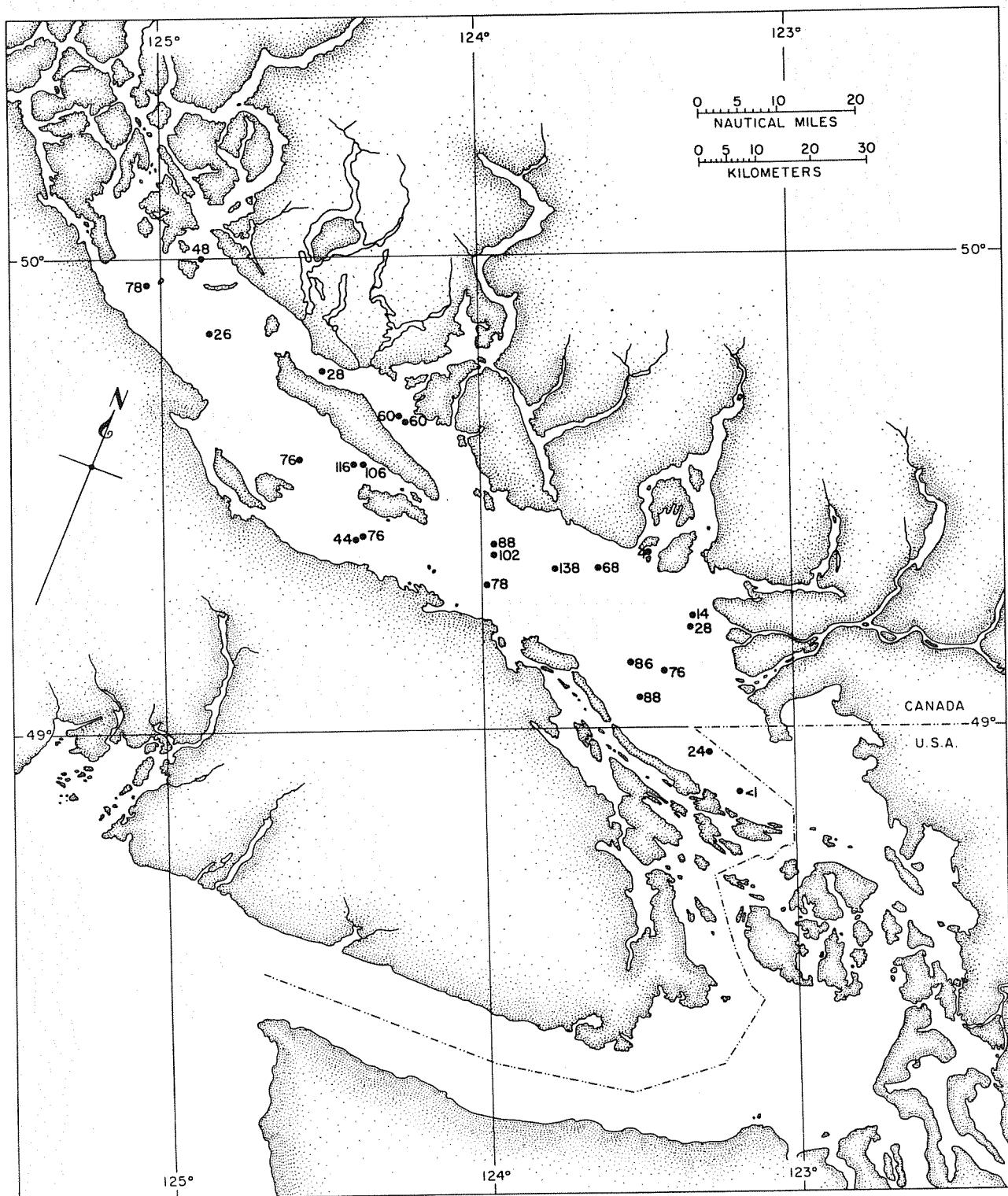


Fig. 4. Catches of dogfish (kg/h), G. B. REED, January 13-28, 1976.

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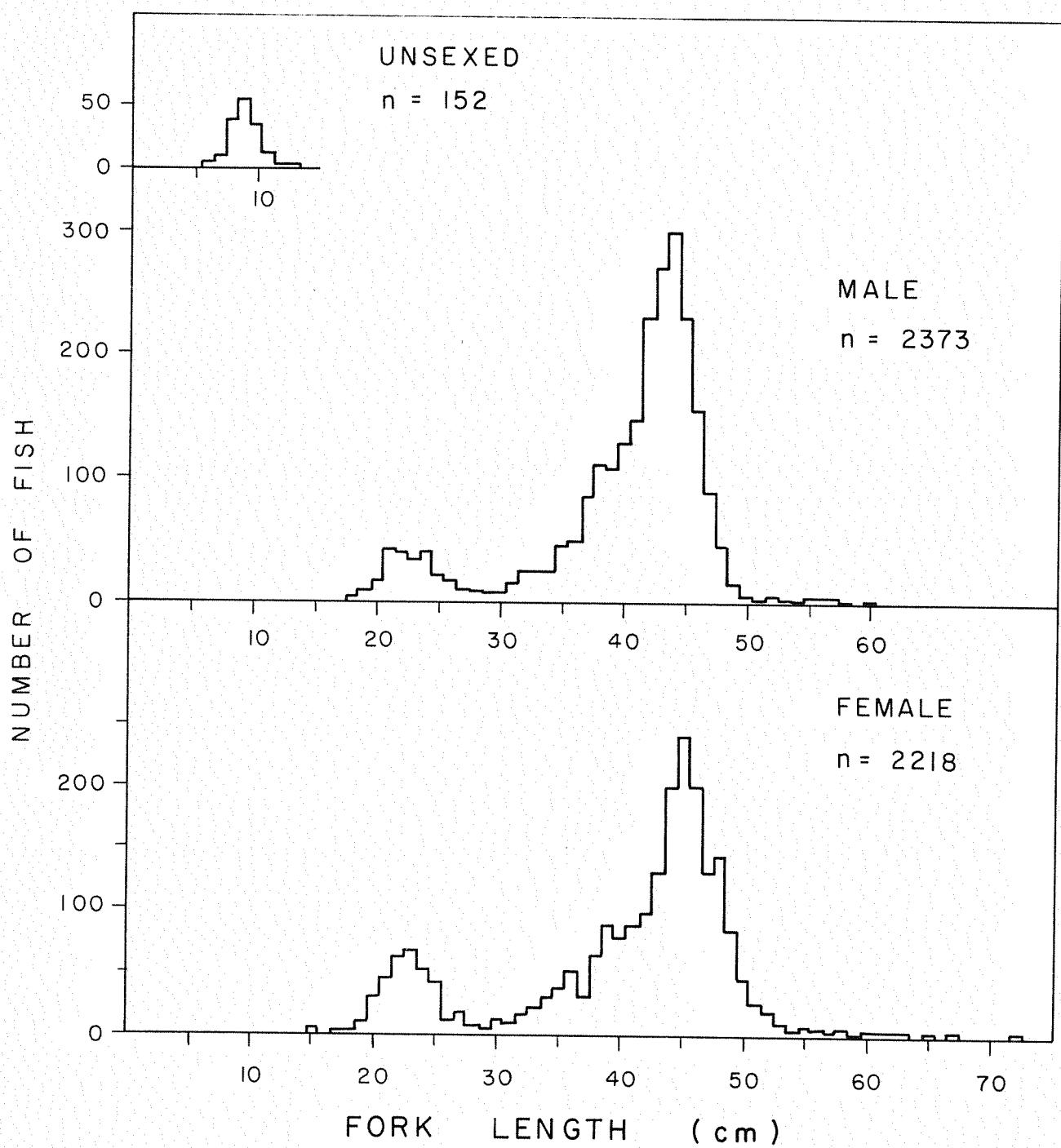


Fig. 5. Length frequency of hake, G. B. REED, January 13-28, 1976.

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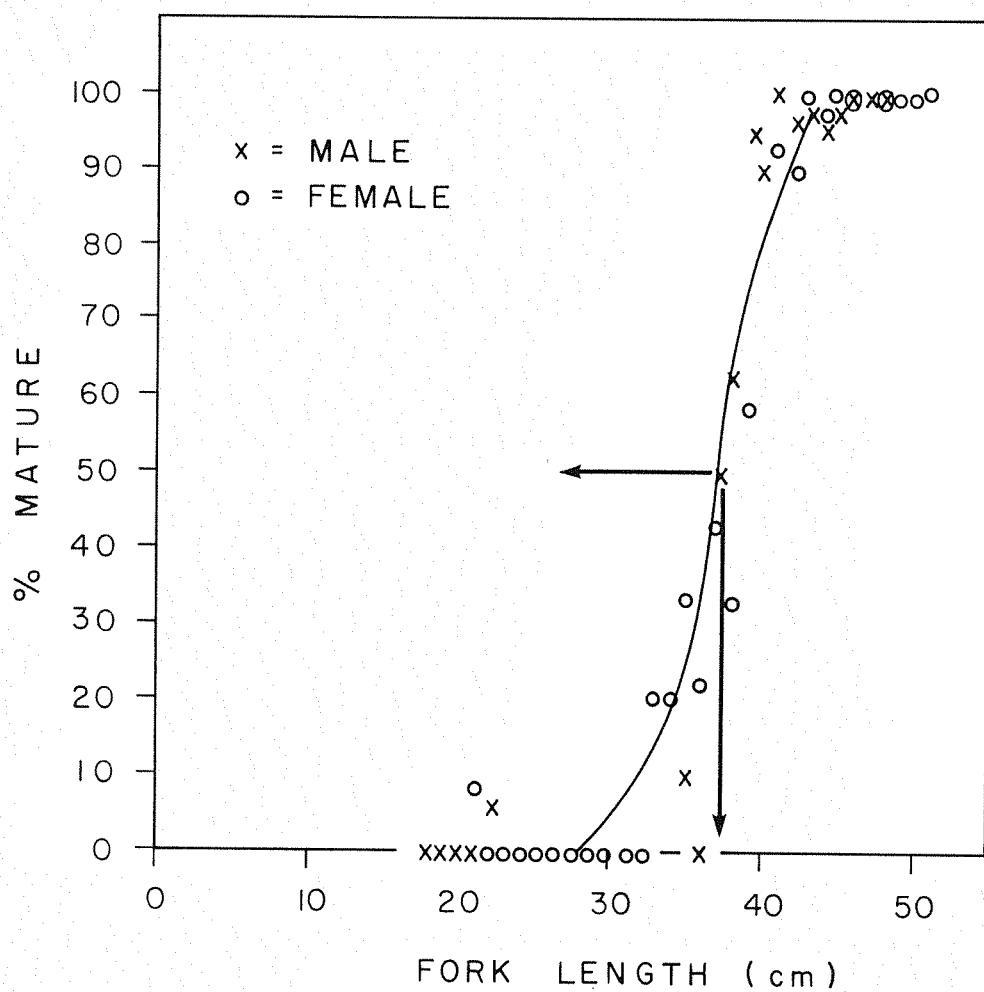


Fig. 6. Percent of maturing hake at length, G. B. REED,
January 13-28, 1976.

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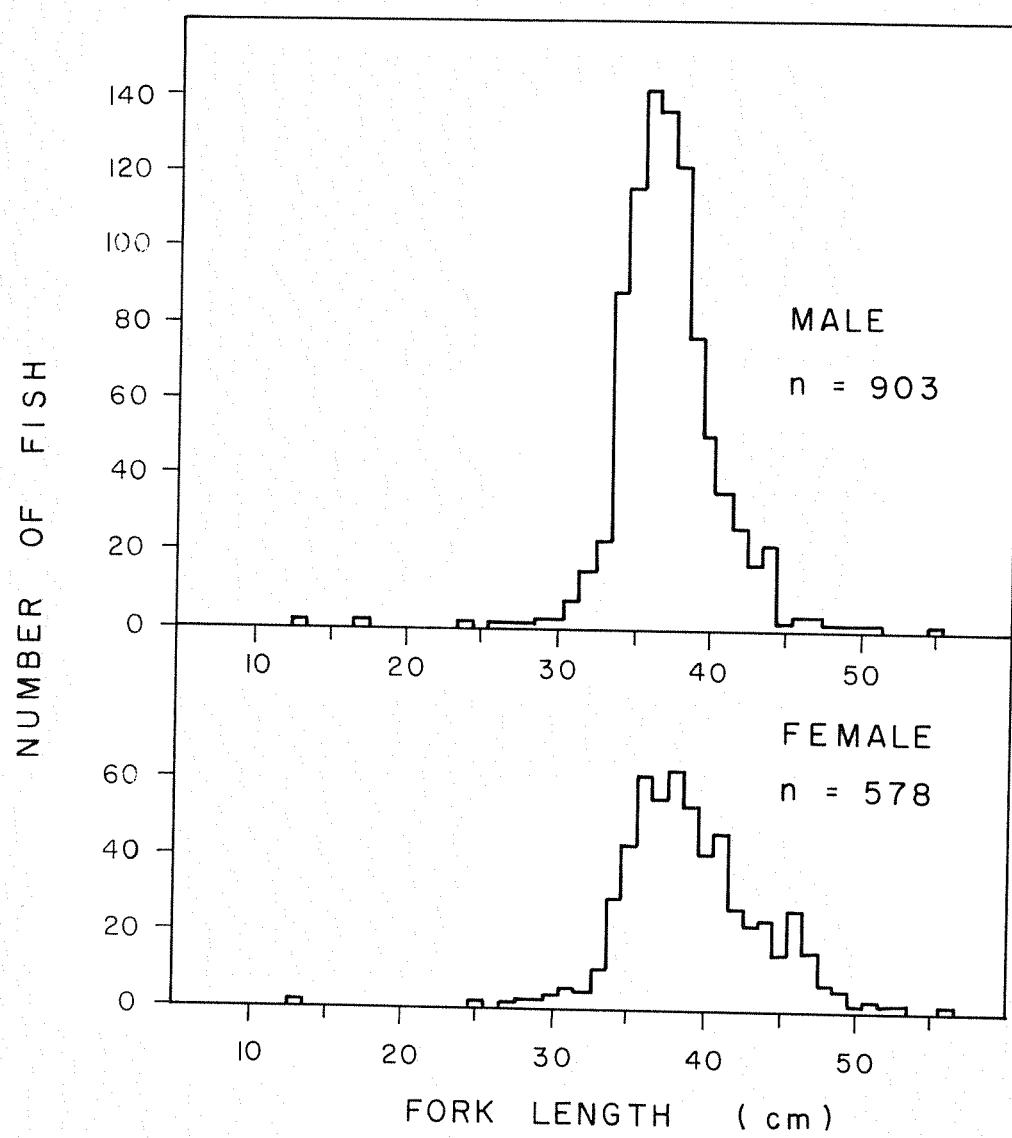


Fig. 7. Length frequency of pollock, G. B. REED, January 13-28, 1976.

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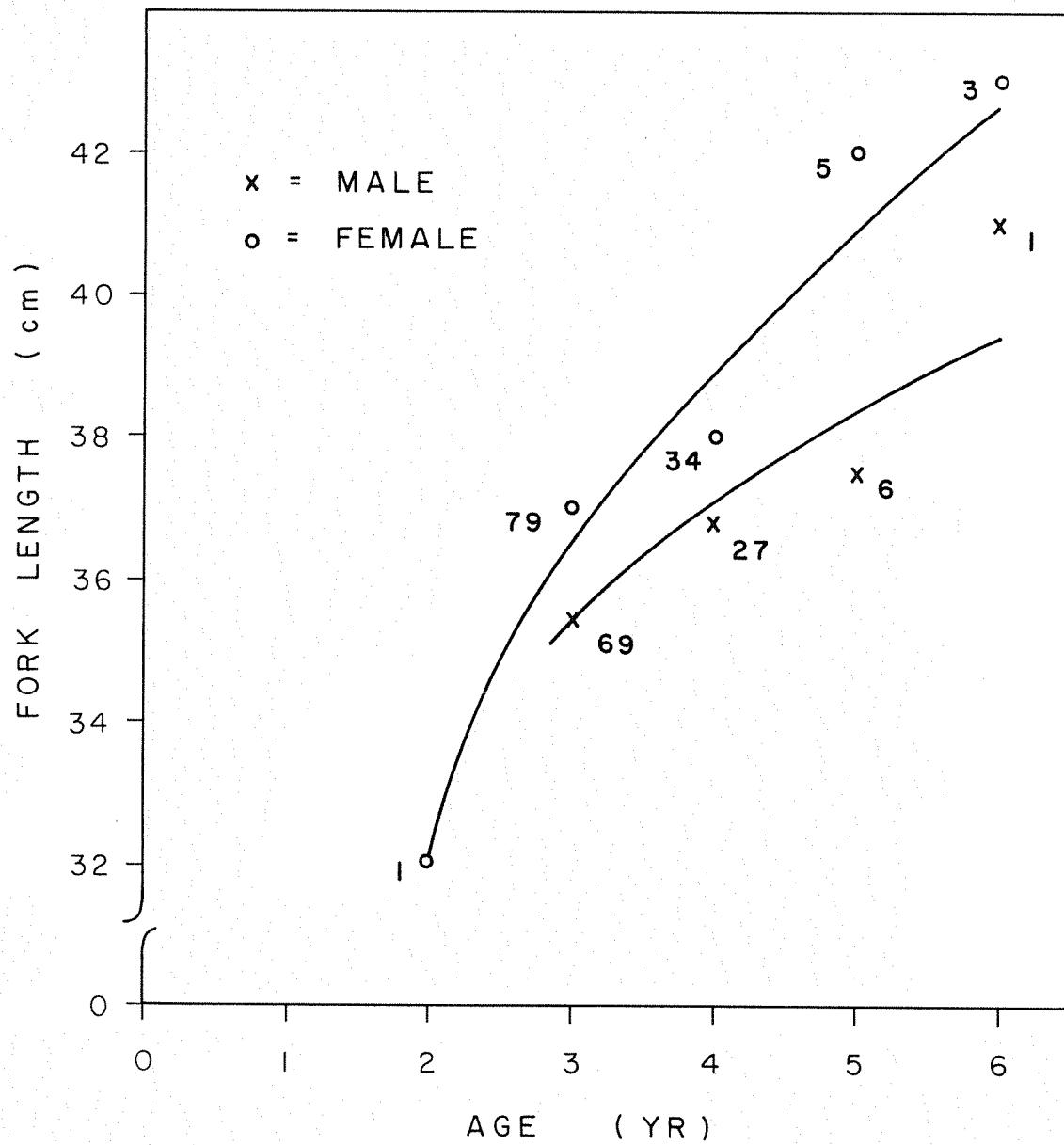


Fig. 8. Pollock growth curve based on mean length at age and showing numbers of fish aged in each age class, set 23, G. B. REED, January 13-28, 1976.

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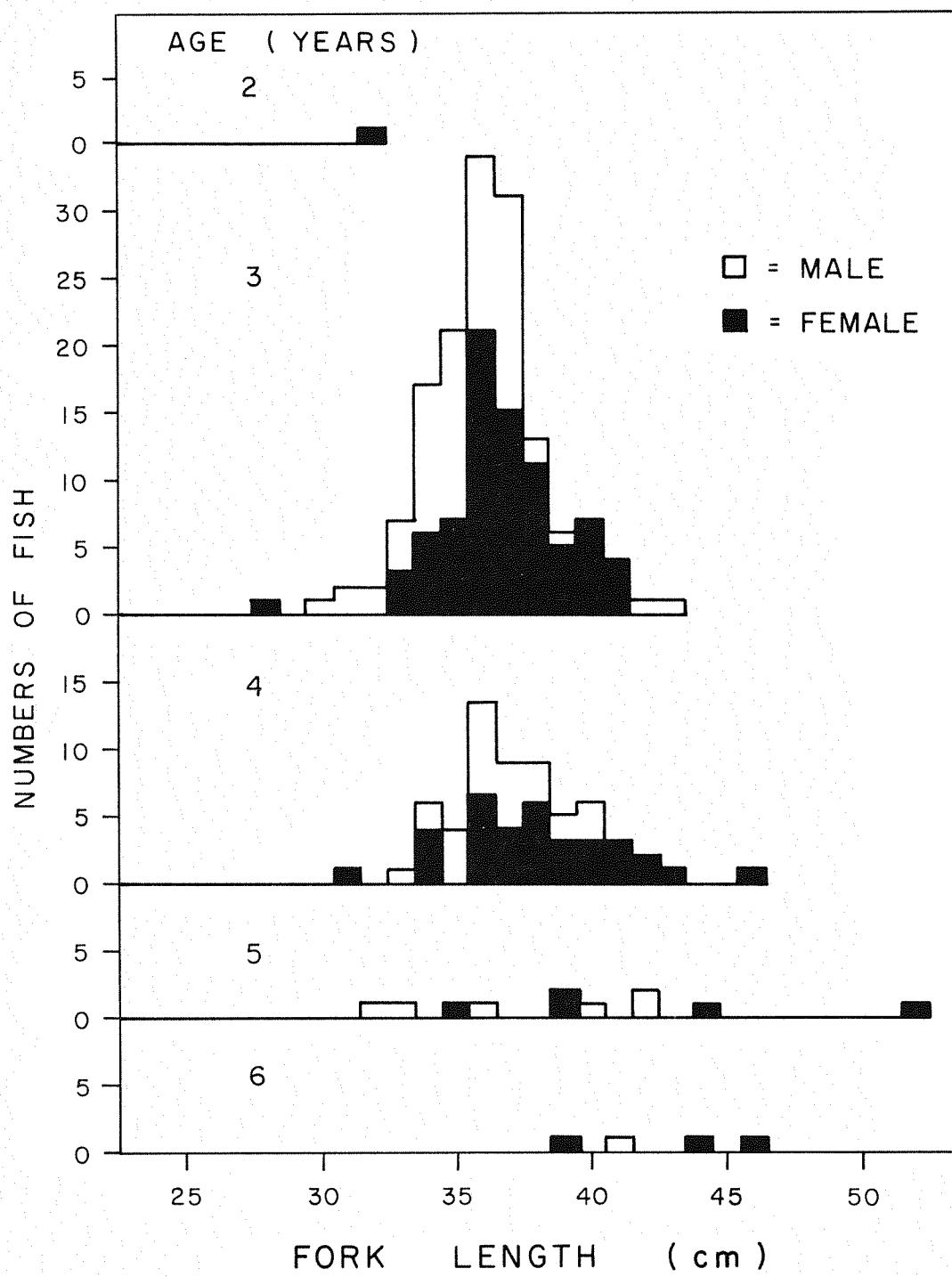


Fig. 9. Length frequency of pollock by age class, set 23, G. B. REED, January 13-28, 1976.

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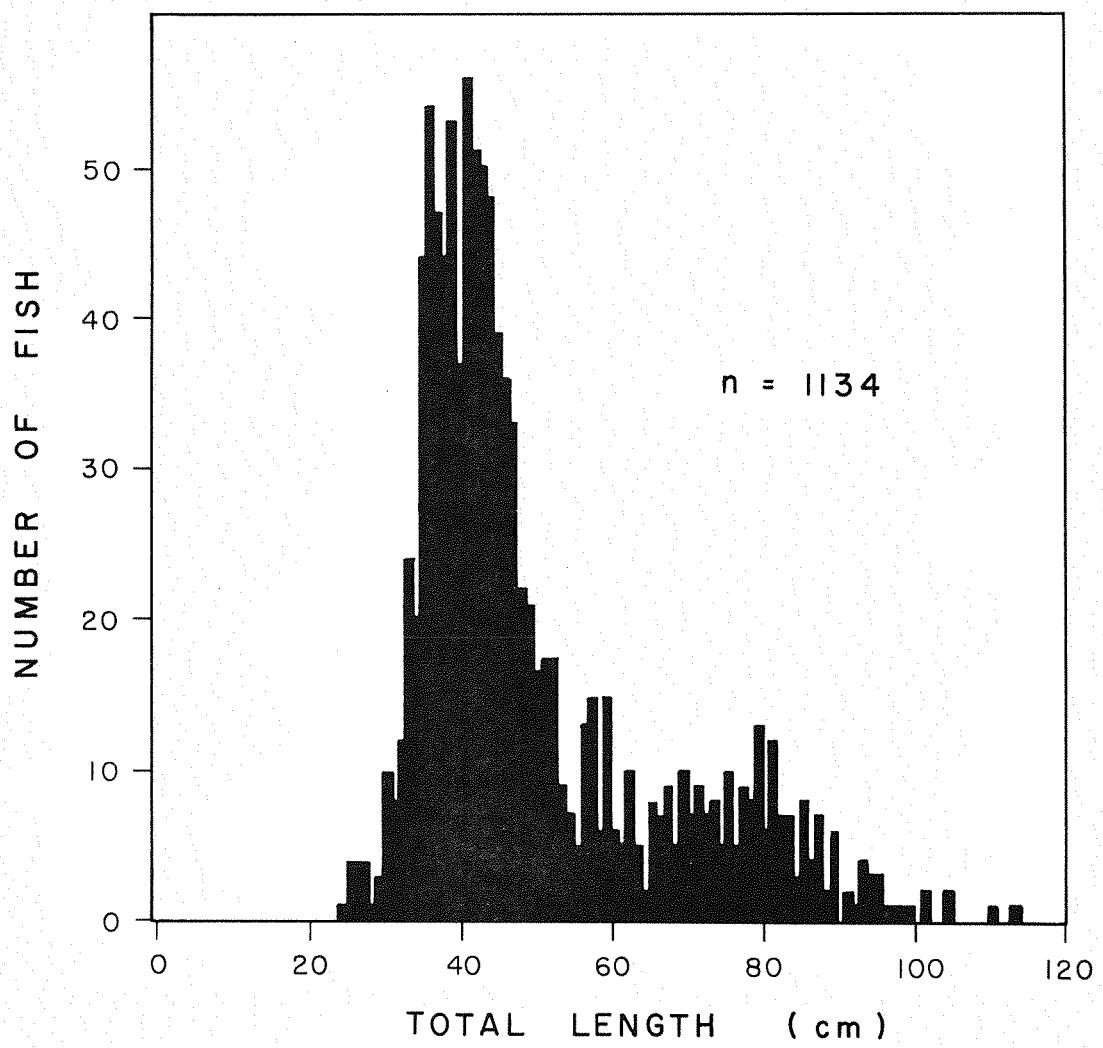


Fig. 10. Length frequency of dogfish ($\delta + \varphi$), G. B. REED, January 13-28, 1976.

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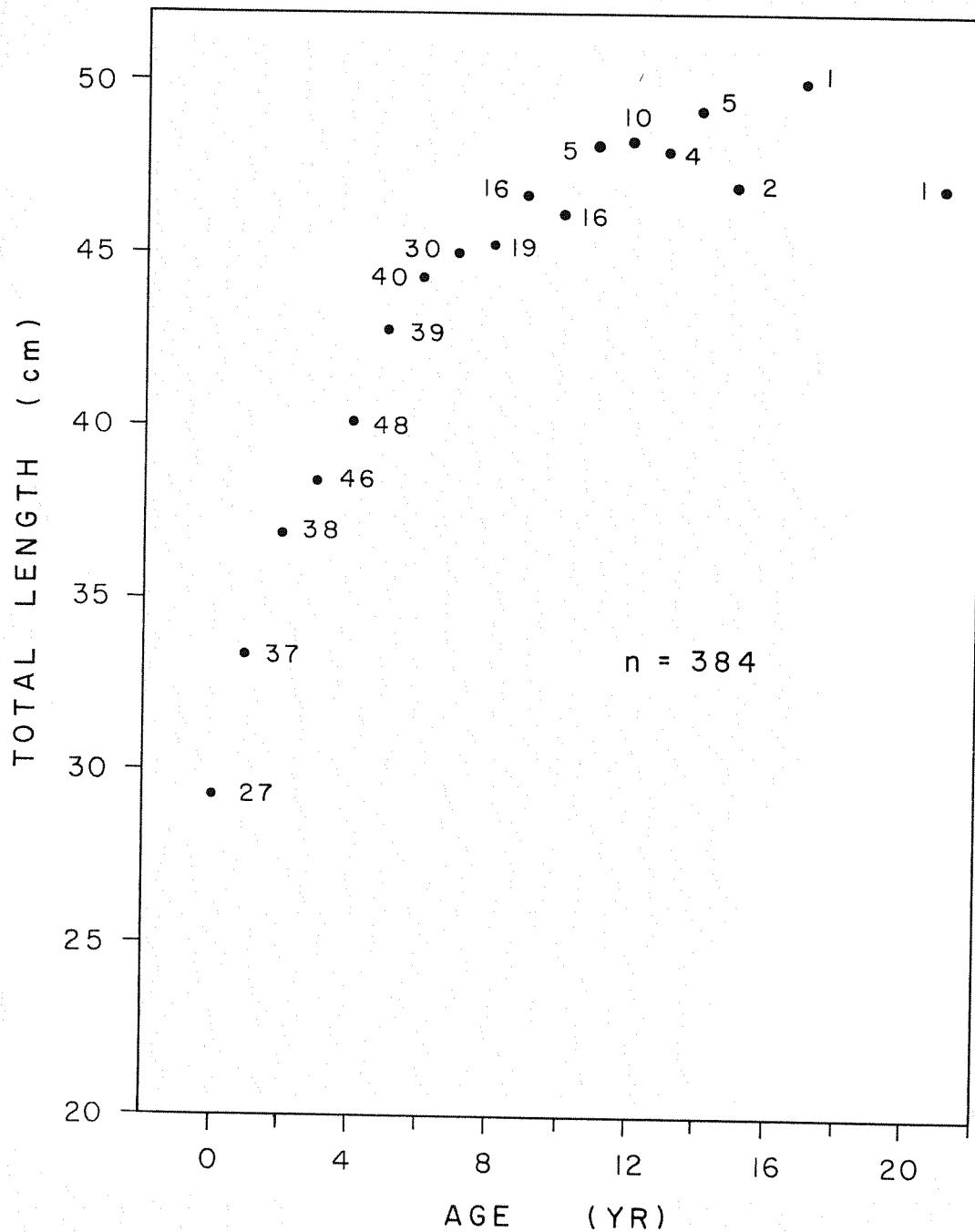


Fig. 11. Dogfish growth curve based on mean length at age and showing numbers of fish aged in each age class for fish less than or equal to 50 cm total length, G. B. REED, January 13-28, 1976.

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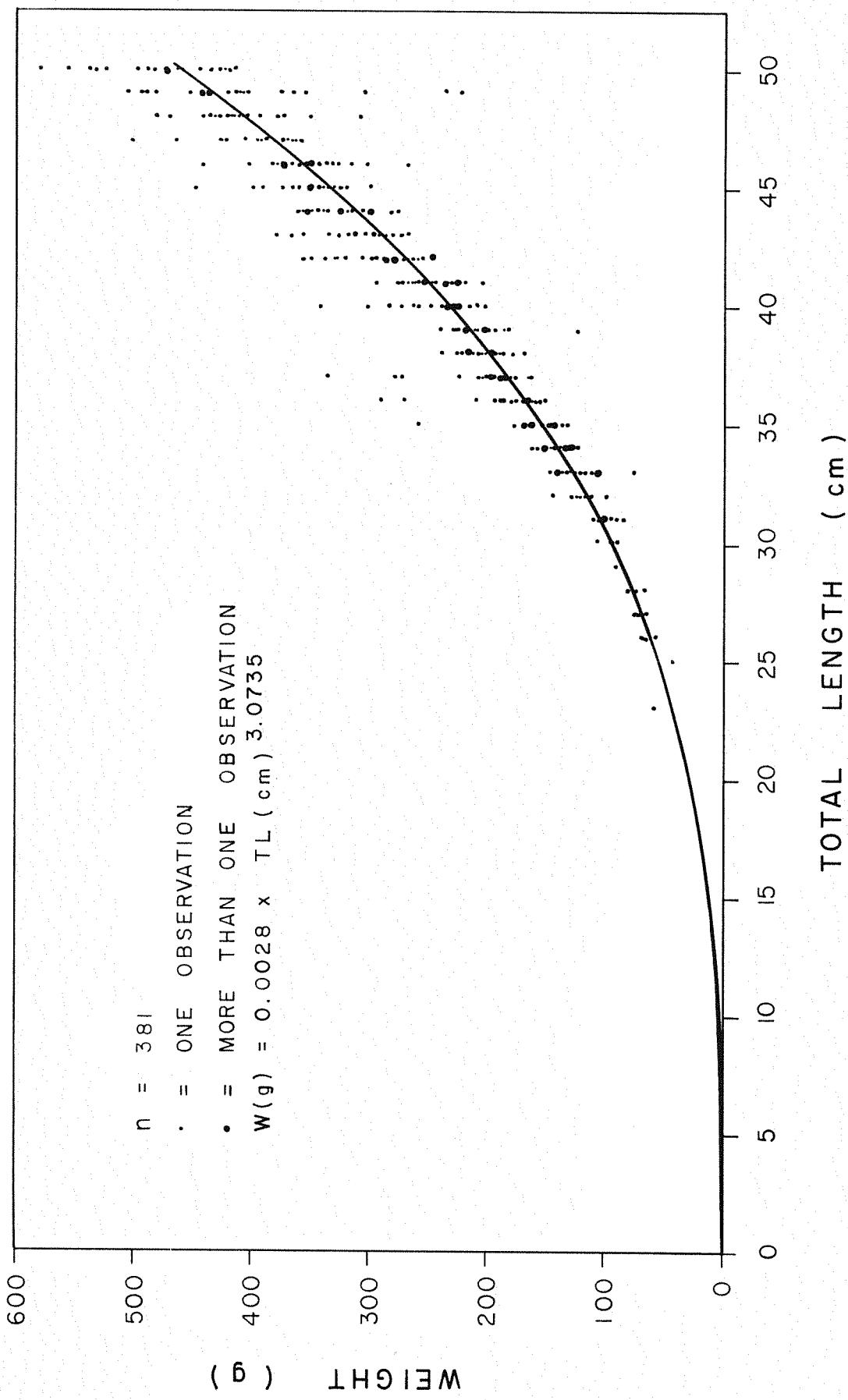


Fig. 12. Length-weight relationship for dogfish less than or equal to 50 cm total length, G. B. REED,
January 13-28, 1976.

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Appendix Table 1. Set information, G. B. REED, January 13-28, 1976.

VESSEL:	G.B. REED	DATE:	1976 Jan 13	SET/HAUL NO:	1
LOCATION:	Merry Island	AREA:	Strait of Georgia		
START:	Lat. 49° 22.1'N	Long.	123° 56.3'W		
END:	Lat. 49° 23.1'N	Long.	123° 58.0'W		
GEAR:	Engel 434	START TIME (PST):	0943	DURATION:	30 min.
BOTTOM DEPTH m:	Start: 215	End:	238	Est. Av. Depth:	227
NET DEPTH RANGE m:	132-132			Est. Av. Depth:	132
DIRECTION OF SET °true:	304	SPEED kn:	2.5	DISTANCE TRAVELED:	1.6 mi.
SET ON:	Target - 110 m	WATER CONDITION:	Light chop	TIDE:	Flood
WIND DIRECTION:	Southeast	WIND SPEED:	15	RECORDER:	Keni Weir
TTM:	-	TDM:	-	BT:	#1
REMARKS:	Net open ~13 m				
SOUNDER SUMMARY: Heavy scatter 92-165m; Light spotting 165 m to bottom continuous throughout set.					

VESSEL:	G.B. REED	DATE:	1976 Jan 13	SET/HAUL NO:	2
LOCATION:	Merry Island	AREA:	Strait of Georgia		
START:	Lat. 49° 23.0'N	Long.	123° 57.7'W		
END:	Lat. 49° 21.3'N	Long.	123° 55.1'W		
GEAR:	Engel 434	START TIME (PST):	1111	DURATION:	48 min.
BOTTOM DEPTH m:	Start: 399	End:	371	Est. Av. Depth:	385
NET DEPTH RANGE m:	183-183			Est. Av. Depth:	183
DIRECTION OF SET °true:	124	SPEED kn:	3.2	DISTANCE TRAVELED:	2.5 mi.
SET ON:	Target - 183 m	WATER CONDITION:	Light chop	TIDE:	Flood
WIND DIRECTION:	Southeast	WIND SPEED:	20	RECORDER:	Keni Weir
TTM:	-	TDM:	-	BT:	-
REMARKS:					
SOUNDER SUMMARY: Heavy scatter 92-165 m; Light spotting 165 m to bottom continuous throughout set.					

Appendix Table 1 (cont'd)

VESSEL: G.B. REED DATE: 1976 Jan 13 Yr Mo Day SET/HAUL NO: 3
LOCATION: Merry Island AREA: Strait of Georgia
START: Lat. 49° 22.5'N Long. 123° 57.5'W
END: Lat. 49° 23.5'N Long. 123° 59.2'W
GEAR: Engel 434 START TIME (PST): 1305 DURATION: 30 min.
BOTTOM DEPTH m: Start: 402 End: 399 Est. Av. Depth: 401
NET DEPTH RANGE m: 384-395 Est. Av. Depth: 390
DIRECTION OF SET °true: 304 SPEED kn: 3 DISTANCE TRAVELED: 1.6 mi.
SET ON: Target - 384 m WATER CONDITION: chop TIDE: Ebb
WIND DIRECTION: Southeast WIND SPEED: 22 RECORDER: Keni Weir
TTM: - TDM: - BT: - OTHER OCEANOGRAPHIC DATA: -
REMARKS: _____

SOUNDER SUMMARY: Heavy scatter 92-165 m; Light spotting 165 m to bottom continuous throughout set.

VESSEL: G.B. REED DATE: 1976 Jan 13 Yr Mo Day SET/HAUL NO: 4
LOCATION: 3.5 mi.E. of Winchelsea Is. AREA: Strait of Georgia
START: Lat. 49° 18.5'N Long. 124° 0.0'W
END: Lat. 49° 18.1'N Long. 123° 58.2'W
GEAR: Engel 434 START TIME (PST): 1550 DURATION: 30 min.
BOTTOM DEPTH m: Start: 417 End: 417 Est. Av. Depth: 417
NET DEPTH RANGE m: 234-234 Est. Av. Depth: 234
DIRECTION OF SET °true: 115 SPEED kn: 2.5 DISTANCE TRAVELED: 1.3 mi.
SET ON: Target-242 m WATER CONDITION: chop TIDE: Ebb
WIND DIRECTION: Southeast WIND SPEED: 25 RECORDER: Keni Weir
TTM: - TDM: - BT: - OTHER OCEANOGRAPHIC DATA: -
REMARKS: _____

SOUNDER SUMMARY: Very light scattering 234-247 m.

Appendix Table 1 (cont'd)

VESSEL:	G.B. REED	DATE:	Yr 1976	Mo Jan	Day 15	SET/HAUL NO:	5
LOCATION:	5 mi. East of Thrasher Rock	AREA:	Strait of Georgia				
START:	Lat. 49° 7.7'N	Long.	123° 31.4'W				
END:	Lat. 49° 8.8 'N	Long.	123° 32.6'W				
GEAR:	Engel 434	START TIME (PST):	0825		DURATION:	min. 30	
BOTTOM DEPTH m:	Start: 366	End:	366	Est. Av. Depth: 366			
NET DEPTH RANGE m:	256-256	Est. Av. Depth: 256					mi.
DIRECTION OF SET °true:	330	SPEED kn:	2.5-3.0	DISTANCE TRAVELED:			1.4
SET ON:	Target-256 m	WATER CONDITION:	Light chop	TIDE:	Ebb		
WIND DIRECTION:	Southeast	WIND SPEED:	10	RECODER:	Keni Weir		
TTM:	-	TDM:	-	BT:	#2	OTHER OCEANOGRAPHIC DATA:	-
REMARKS:	Net open ~14 m.						

SONDER SUMMARY: Moderate spotting 146 m to bottom continuous throughout set.

VESSEL:	G.B. REED	DATE:	Yr 1976	Mo Jan	Day 15	SET/HAUL NO:	6
LOCATION:	West of North Arm Jetty	AREA:	Strait of Georgia				
START:	Lat. 49° 14.0'N	Long.	123° 19.0'W				
END:	Lat. 49° 12.4'N	Long.	123° 18.2'W				
GEAR:	Engel 434	START TIME (PST):	1057		DURATION:	min. 30	
BOTTOM DEPTH m:	Start: 168	End:	99	Est. Av. Depth: 134			
NET DEPTH RANGE m:	70-60	Est. Av. Depth: 65					mi.
DIRECTION OF SET °true:	160	SPEED kn:	3.5	DISTANCE TRAVELED:			1.8
SET ON:	Target-55 m.	WATER CONDITION:	Light chop	TIDE:	Flood		
WIND DIRECTION:	Southeast	WIND SPEED:	2	RECODER:	Keni Weir		
TTM:	-	TDM:	-	BT:	#3	OTHER OCEANOGRAPHIC DATA:	-
REMARKS:	Net open ~14 m; Brought 1 split aboard - lost second split.						

SONDER SUMMARY: Heavy scattering layer at 55 m, Light scattering 91 m to bottom.

Appendix Table 1 (cont'd)

VESSEL: G.B. REED DATE: 1976 Jan 15 Yr Mo Day SET/HAUL NO: 7
LOCATION: Sand Heads AREA: Strait of Georgia
START: Lat. 49° 7.0'N Long. 123° 25.6'W
END: Lat. 49° 7.5'N Long. 123° 24.6'W min.
GEAR: Engel 434 START TIME (PST) : 1332 DURATION: 30
BOTTOM DEPTH m: Start: 305 End: 283 Est. Av. Depth: 294
NET DEPTH RANGE m: 265-243 Est. Av. Depth: 254 mi.
DIRECTION OF SET °true: 090 SPEED kn: 3 DISTANCE TRAVELED: 1.4
SET ON: Target - 165 m WATER CONDITION: Ripple TIDE: Flood
WIND DIRECTION: Southeast WIND SPEED: 10 RECORDER: Keni Weir
TTM: - TDM: - BT: #4 OTHER OCEANOGRAPHIC DATA: -
REMARKS: Net open ~14 m.
SOUNDER SUMMARY: Very light spotting 243-265 m.

VESSEL: G.B. REED DATE: 1976 Jan 15 Yr Mo Day SET/HAUL NO: 8
LOCATION: Porlier Pass AREA: Strait of Georgia
START: Lat. 49° 3.3'N Long. 123° 28.7'W
END: Lat. 49° 4.8'N Long. 123° 29.1'W
GEAR: Engel 434 START TIME (PST): 1515 DURATION: 30 min.
BOTTOM DEPTH m: Start: 307 End: 311 Est. Av. Depth: 309
NET DEPTH RANGE m: 253-256 Est. Av. Depth: 254 mi.
DIRECTION OF SET °true: 340 SPEED kn: 2.5 DISTANCE TRAVELED: 1.6
SET ON: Target - 227 m. WATER CONDITION: Light chop TIDE: Flood
WIND DIRECTION: Southeast WIND SPEED: 10 RECORDER: Keni Weir
TTM: - TDM: - BT: #5 OTHER OCEANOGRAPHIC DATA: -
REMARKS: Net open ~14 m.
SOUNDER SUMMARY: Very light scatter 146 m to bottom. Moderate scattering layer 227-256 m.

Appendix Table 1 (cont'd)

VESSEL:	G.B. REED	DATE:	Yr 1976	Mo Jan	Day 16	SET/HAUL NO:	9
LOCATION:	East Active Pass	AREA:	Strait of Georgia				
START:	Lat. 48° 51. 9'N	Long.	123° 9.2'W				
END:	Lat. 48° 52.0'N	Long.	123° 11.0'W				
GEAR:	Engel 434	START TIME (PST)	0819 DURATION: 30 min.				
BOTTOM DEPTH m:	Start: 146	End: 156	Est. Av. Depth: 151				
NET DEPTH RANGE m:	106-116					Est. Av. Depth:	111
DIRECTION OF SET °true:	300	SPEED kn:	3.0 DISTANCE TRAVELED: 1.3 mi.				
SET ON:	Target - 101 m	WATER CONDITION:	calm TIDE: Ebb				
WIND DIRECTION:	Light air	WIND SPEED:	- RECORDER: Keni Weir				
TTM:	-	TDM:	-	BT:	#6	OTHER OCEANOGRAPHIC DATA:	-
REMARKS:							

SONDER SUMMARY: Very light scattering surface to bottom.

VESSEL:	G.B. REED	DATE:	Yr 1976	Mo Jan	Day 16	SET/HAUL NO:	10
LOCATION:	Active Pass	AREA:	Strait of Georgia				
START:	Lat. 48° 56.4'N	Long.	123° 17.2'W				
END:	Lat. 48° 57.8'N	Long.	123° 17.3'W				
GEAR:	Engel 434	START TIME (PST)	0958 DURATION: 30 min.				
BOTTOM DEPTH m:	Start: 168	End: 179	Est. Av. Depth: 174				
NET DEPTH RANGE m:	135-146					Est. Av. Depth:	141
DIRECTION OF SET °true:	330	SPEED kn:	- DISTANCE TRAVELED: 1.4 mi.				
SET ON:	Target - 144 m	WATER CONDITION:	calm TIDE: Ebb				
WIND DIRECTION:	Light air	WIND SPEED:	- RECORDER: Keni Weir				
TTM:	-	TDM:	-	BT:	#7	OTHER OCEANOGRAPHIC DATA:	-
REMARKS:							

SONDER SUMMARY: Moderate spotting 234 m to bottom, continuous throughout set.

Appendix Table 1 (cont'd)

VESSEL: G.B. REED DATE: 1976 Jan 20 Yr Mo Day SET/HAUL NO: 11
LOCATION: West of Lasqueti Is AREA: Strait of Georgia
START: Lat. 49° 25.1'N Long. 124° 22.0'W
END: Lat. 49° 24.5'N Long. 124° 20.4'W min.
GEAR: Engel 434 START TIME (PST): 0821 DURATION: 30
BOTTOM DEPTH m: Start: 351 End: 351 Est. Av. Depth: 351
NET DEPTH RANGE m: 270-270 Est. Av. Depth: 270 mi.
DIRECTION OF SET °true: 118 SPEED kn: - DISTANCE TRAVELED: 1.3
SET ON: Target - 285 m. WATER CONDITION: Ripple TIDE: Ebb
WIND DIRECTION: Southeast WIND SPEED: 8 RECORDER: Keni Weir
TTM: - TDM: - BT: #8 OTHER OCEANOGRAPHIC DATA: -
REMARKS: _____
SOUNDER SUMMARY: Light spotting 220 m to bottom, continuous throughout set.

VESSEL: G.B. REED DATE: 1976 Jan 20 Yr Mo Day SET/HAUL NO: 12
LOCATION: West of Lasqueti Is AREA: Strait of Georgia
START: Lat. 49° 24.3'N Long. 124° 21.0'W
END: Lat. 49° 25.0'N Long. 124° 22.8'W min.
GEAR: Engel 434 START TIME (PST): 0937 DURATION: 30
BOTTOM DEPTH m: Start: 348 End: 346 Est. Av. Depth: 347
NET DEPTH RANGE m: 129-127 Est. Av. Depth: 128 mi.
DIRECTION OF SET °true: 290 SPEED kn: 2.8 DISTANCE TRAVELED: 1.5
SET ON: Target - 130 m. WATER CONDITION: Ripple TIDE: Ebb
WIND DIRECTION: Southeast WIND SPEED: 8 RECORDER: Keni Weir
TTM: - TDM: - BT: - OTHER OCEANOGRAPHIC DATA: -
REMARKS: _____
SOUNDER SUMMARY: Light spotting 220 m. to bottom, continuous throughout set.

Appendix Table 1 (cont'd)

VESSEL: G.B. REED DATE: 1976 Jan 20 Yr Mo Day SET/HAUL NO: 13
LOCATION: West end of Sabine Channel AREA: Strait of Georgia
START: Lat. 49° 33.4'N Long. 124° 22.0'W
END: Lat. 49° 34.2'N Long. 124° 23.4'W
GEAR: Engel 434 START TIME (PST): 1223 DURATION: 30 min.
BOTTOM DEPTH m: Start: 300 End: 350 Est. Av. Depth: 325
NET DEPTH RANGE m: 278-378 Est. Av. Depth: 303
DIRECTION OF SET °true: 305 SPEED kn: 2.5 DISTANCE TRAVELED: 1.3 mi.
SET ON: Target - 278 m WATER CONDITION: calm TIDE: Ebb
WIND DIRECTION: - WIND SPEED: nil RECORDER: Keni Weir
TTM: - TDM: - BT: - OTHER OCEANOGRAPHIC DATA: -
REMARKS:
SOUNDER SUMMARY: Heavy scattering 256 m. to bottom, continuous throughout set.

VESSEL: G.B. REED DATE: 1976 Jan 20 Yr Mo Day SET/HAUL NO: 14
LOCATION: West end of Sabine Channel AREA: Strait of Georgia
START: Lat. 49° 34.3'N Long. 124° 22.3'W
END: Lat. 49° 33.2'N Long. 124° 20.5'W
GEAR: Engel 434 START TIME (PST): 1344 DURATION: 30 min.
BOTTOM DEPTH m: Start: 322 End: 348 Est. Av. Depth: 335
NET DEPTH RANGE m: 154-180 Est. Av. Depth: 167
DIRECTION OF SET °true: 120 SPEED kn: 2.5 DISTANCE TRAVELED: 1.6 mi.
SET ON: Target - 174 m WATER CONDITION: calm TIDE: Ebb
WIND DIRECTION: - WIND SPEED: - RECORDER: Keni Weir
TTM: - TDM: - BT: - OTHER OCEANOGRAPHIC DATA: -
REMARKS:
SOUNDER SUMMARY: Light spotting layer 128-220 m.

Appendix Table 1 (cont'd)

VESSEL:	G.B. REED	DATE:	Yr 1976	Mo Jan	Day 20	SET/HAUL NO:	15
LOCATION:	East Hornby Island	AREA:	Strait of Georgia				
START:	Lat. 49° 34.9'N	Long.	124° 34.7'W				
END:	Lat. 49° 34.2'N	Long.	124° 32.4'W				
GEAR:	Engel 434	START TIME (PST):	1540		DURATION:	30 min.	
BOTTOM DEPTH m:	Start: 172	End:	172		Est. Av. Depth:	172	
NET DEPTH RANGE m:	154-154		Est. Av. Depth:	154		mi.	
DIRECTION OF SET °true:	110	SPEED kn:	3		DISTANCE TRAVELED:	1.6	
SET ON:	Target - 153 m	WATER CONDITION:	Ripple		TIDE:	Ebb	
WIND DIRECTION:	Southeast	WIND SPEED:	8		RECORDER:	Keni Weir	
TTM:	-	TDM:	#10		OTHER OCEANOGRAPHIC DATA:	-	
REMARKS:							

SONDER SUMMARY: Light continuous scatter 135 m to bottom.

VESSEL:	G.B. REED	DATE:	Yr 1976	Mo Jan	Day 22	SET/HAUL NO:	16
LOCATION:	Hernando Barrier	AREA:	Strait of Georgia				
START:	Lat. 50°00'N	Long.	124° 51.8'W				
END:	Lat. 50° 1.4'N	Long.	124° 52.9'W				
GEAR:	Engel 434	START TIME (PST):	0814		DURATION:	30 min.	
BOTTOM DEPTH m:	Start: 271	End:	245		Est. Av. Depth:	258	
NET DEPTH RANGE m:	267-238		Est. Av. Depth:	257		mi.	
DIRECTION OF SET °true:	322	SPEED kn:	2.5		DISTANCE TRAVELED:	1.5	
SET ON:	Target - 217 m	WATER CONDITION:	Light chop		TIDE:	Flood	
WIND DIRECTION:	Southeast	WIND SPEED:	10		RECORDER:	Keni Weir	
TTM:	-	TDM:	#11		OTHER OCEANOGRAPHIC DATA:	-	
REMARKS:							

SONDER SUMMARY: Very heavy scatter 165 m to bottom.

Appendix Table 1 (cont'd)

VESSEL:	G.B. REED	DATE:	Yr 1976	Mo Jan	Day 22	SET/HAUL NO:	17
LOCATION:	Mitlenatch Island	AREA:	Strait of Georgia				
START:	Lat. 49° 57.5'N	Long.	125° 3.5'W				
END:	Lat. 49° 56.1'N	Long.	125° 2.5'W				
GEAR:	Engel 434	START TIME (PST):	1019	DURATION:	min. 30		
BOTTOM DEPTH m:	Start: 296	End: 298	Est. Av. Depth:	297			
NET DEPTH RANGE m:	237-239	Est. Av. Depth:	238				
DIRECTION OF SET °true:	130	SPEED kn:	3	DISTANCE TRAVELED:	mi. 1.5		
SET ON:	Target - 221 m.	WATER CONDITION:	chop	TIDE:	Ebb		
WIND DIRECTION:	Southeast	WIND SPEED:	20	RECORDER:	Keni Weir		
TTM:	-	TDM:	-	BT:	#12	OTHER OCEANOGRAPHIC DATA:	-
REMARKS:	Net open ~14 m.						

SONDER SUMMARY: Light scattering 146-220 m; medium spotting 220 m to bottom, continuous throughout set.

VESSEL:	G.B. REED	DATE:	Yr 1976	Mo Jan	Day 22	SET/HAUL NO:	18
LOCATION:	Cape Lazo	AREA:	Strait of Georgia				
START:	Lat. 49° 50.5'N	Long.	124° 51.4'W				
END:	Lat. 49° 49.6'N	Long.	124° 49.6'W				
GEAR:	Engel 434	START TIME (PST):	1226	DURATION:	min. 30		
BOTTOM DEPTH m:	Start: 322	End: 293	Est. Av. Depth:	308			
NET DEPTH RANGE m:	252-223	Est. Av. Depth:	238				
DIRECTION OF SET °true:	130	SPEED kn:	2.5	DISTANCE TRAVELED:	mi. 1.5		
SET ON:	Target - 234 m.	WATER CONDITION:	Light chop	TIDE:	Ebb		
WIND DIRECTION:	Southeast	WIND SPEED:	15	RECORDER:	Keni Weir		
TTM:	-	TDM:	-	BT:	#13	OTHER OCEANOGRAPHIC DATA:	-
REMARKS:	Net open ~14 m.						

SONDER SUMMARY: Light scattering layer 139-165 m. Light scattering 165 m to bottom continuous throughout set.

Appendix Table 1 (cont'd)

		Yr	Mo	Day	
VESSEL:	G.B. REED	DATE:	1976	Jan 22	SET/HAUL NO: 19
LOCATION:	Grief Point	AREA:	Malaspina Strait		
START:	Lat. 49° 46.5'N	Long.	124° 30.7'W		
END:	Lat. 49° 45.5'N	Long.	124° 28.9'W		
GEAR:	Engel 434	START TIME (PST):	1503	DURATION:	30 min.
BOTTOM DEPTH m:	Start: 326 End: 311	Est. Av. Depth:	319		
NET DEPTH RANGE m:	244-311	Est. Av. Depth:	237		mi.
DIRECTION OF SET °true:	120	SPEED kn:	2.5	DISTANCE TRAVELED:	1.5
SET ON:	Target - 245 m	WATER CONDITION:	Chop	TIDE:	Ebb
WIND DIRECTION:	Southeast	WIND SPEED:	20	RECORDER:	Keni Weir
TTM:	-	TDM:	-	BT:	#14 OTHER OCEANOGRAPHIC DATA: -
REMARKS:					

SAUNDER SUMMARY: Light scattering 165 m to bottom; heavier spotting 216-242 m, continuous throughout set.

		Yr	Mo	Day	
VESSEL:	G.B. REED	DATE:	1976	Jan 23	SET/HAUL NO: 20
LOCATION:	Cape Cockburn	AREA:	Strait of Georgia		
START:	Lat. 49° 39.9'N	Long.	124° 14.8'W		
END:	Lat. 49° 38.6'N	Long.	124° 13.3'W		
GEAR:	Engel 434	START TIME (PST):	0811	DURATION:	30 min.
BOTTOM DEPTH m:	Start: 371 End: 359	Est. Av. Depth:	365		
NET DEPTH RANGE m:	239-227	Est. Av. Depth:	233		mi.
DIRECTION OF SET °true:	145	SPEED kn:	2.5	DISTANCE TRAVELED:	1.7
SET ON:	Target - 229 m	WATER CONDITION:	Ripple	TIDE:	Flood
WIND DIRECTION:	Northwest	WIND SPEED:	9	RECORDER:	Keni Weir
TTM:	-	TDM:	-	BT:	#15 OTHER OCEANOGRAPHIC DATA: -
REMARKS:	Net open ~14 m.				

SAUNDER SUMMARY: Moderate scattering 201-256 m, continuous throughout set.

Appendix Table 1 (cont'd)

VESSEL:	G.B. REED	DATE:	Yr 1976	Mo Jan	Day 23	SET/HAUL NO:	21
LOCATION:	Cape Cockburn	AREA:	Strait of Georgia				
START:	Lat. 49° 40.1'N	Long.	124° 15.2'W				
END:	Lat. 49° 38.6'N	Long.	124° 13.6'W				
GEAR:	Engel 434	START TIME (PST):	0936		DURATION:	min. 40	
BOTTOM DEPTH m:	Start: 362	End: 355	Est. Av. Depth: 359				
NET DEPTH RANGE m:	344-337	Est. Av. Depth: 341					mi.
DIRECTION OF SET °true:	145	SPEED kn:	3		DISTANCE TRAVELED:	1.8	
SET ON:	Target - 350 m	WATER CONDITION:	Ripple		TIDE:	Flood	
WIND DIRECTION:	-	WIND SPEED:	Light		RECORDER:	Ken Weir	
TTM:	-	TDM:	-		BT:	-	
REMARKS:							

SONDER SUMMARY: Moderate scatter 201 m to bottom. continuous throughout set.

VESSEL:	G.B. REED	DATE:	Yr 1976	Mo Jan	Day 28	SET/HAUL NO:	22
LOCATION:	Iona Jetty	AREA:	Strait of Georgia				
START:	Lat. 49° 13.1'N	Long.	123° 18.7'W				
END:	Lat. 49° 15.1'N	Long.	123° 18.9'W				
GEAR:	Engel 434	START TIME (PST):	1103		DURATION:	min. 30	
BOTTOM DEPTH m:	Start: 157	End: 154	Est. Av. Depth: 156				
NET DEPTH RANGE m:	-	Est. Av. Depth: -					mi.
DIRECTION OF SET °true:	360	SPEED kn:	3		DISTANCE TRAVELED:	2.0	
SET ON:	Target - 64-70 m	WATER CONDITION:	Ripple		TIDE:	Flood	
WIND DIRECTION:	East	WIND SPEED:	10		RECORDER:	Mike Smith	
TTM:	-	TIM:	#16		BT:	-	
REMARKS:	Net open ~15 m.						

SONDER SUMMARY: Occasional spotting 64-70 m, very light scattering 128 m to bottom.

Appendix Table 1 (cont'd)

VESSEL:	DATE:	Yr Mo Day	SET/HAUL NO:
G.B. REED	1976 Jan 28	23	
LOCATION: McCall Bank	AREA: Strait of Georgia		
START: Lat. 49° 20.7'N	Long. 123° 38.1'W		
END: Lat. 49° 20.0'N	Long. 123° 35.3'W		
GEAR: Engel 434	START TIME (PST): 1335	DURATION: 30	min.
BOTTOM DEPTH m: Start: 128	End: 141	Est. Av. Depth: 135	
NET DEPTH RANGE m: 46-62		Est. Av. Depth: 62	mi.
DIRECTION OF SET °true: 120	SPEED kn: 2.5	DISTANCE TRAVELED: 1.9	
SET ON: Preselected	WATER CONDITION: Light chop	TIDE: Flood	
WIND DIRECTION: East	WIND SPEED: 20	RECORDER: Mike Smith	
TTM: -	TDM: -	BT: #17	OTHER OCEANOGRAPHIC DATA: -
REMARKS: _____			
SOUNDER SUMMARY: Very light scatter 126 m to bottom.			

VESSEL:	DATE:	Yr Mo Day	SET/HAUL NO:
G.B. REED	1976 Jan 28	24	
LOCATION: Halibut Bank	AREA: Strait of Georgia		
START: Lat. 49° 20.7'N	Long. 123° 38.1'W		
END: Lat. 49° 20.0'N	Long. 123° 35.3'W		min.
GEAR: Engel 434	START TIME (PST): 1335	DURATION: 30	
BOTTOM DEPTH m: Start: 240	End: 296	Est. Av. Depth: 268	
NET DEPTH RANGE m: 46-62		Est. Av. Depth: 62	mi.
DIRECTION OF SET °true: 140	SPEED kn: 2.5	DISTANCE TRAVELED: 1.5	
SET ON: Target - 62 m.	WATER CONDITION: chop	TIDE: Ebb	
WIND DIRECTION: East	WIND SPEED: 18	RECORDER: Mike Smith	
TTM: -	TDM: -	BT: #18	OTHER OCEANOGRAPHIC DATA: -
REMARKS: _____			
SOUNDER SUMMARY: Very light scatter 231 m to bottom.			

