

**Midwater and Bottom Trawl Tows
and Catches Made by
*M.V. Blue Waters BW 78-3, Queen
Charlotte Sound, October 3-23, 1978***

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Nanaimo, British Columbia V9R 5K6



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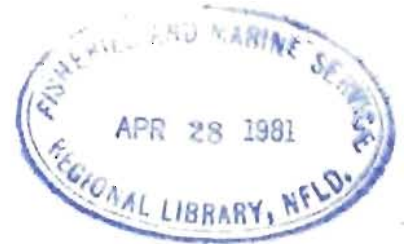
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Fisheries and Marine Service

Data Report 138

March 1979



MIDWATER AND BOTTOM TRAWL TOWS AND CATCHES MADE BY

M.V. BLUE WATERS BW 78-3, QUEEN CHARLOTTE SOUND

OCTOBER 3-23, 1978

by

L. W. Barner, F. H. C. Taylor, D. M. A. Bennett and S. Farlinger

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ABSTRACT

Barner, L. W., F. H. C. Taylor, D. M. A. Bennett and S. Farlinger. 1979.
Midwater and bottom trawl tows and catches made on M.V. BLUE WATERS
BW 78-3, October 3-23, 1978 in Queen Charlotte Sound. Fish. Mar.
Serv. Data Rep. 138: 72 p.

This report gives the midwater and bottom trawl catches, fishing positions and biological sampling data obtained during BLUE WATERS cruise, BW 78-3, October 3-23, 1978, in Queen Charlotte Sound. These tows were made to identify the species encountered during an acoustical survey. The survey was made to determine the distribution and abundance of fish within the area. Sex and length data were obtained for Chinook salmon, dogfish, dover sole, eulachons, lingcod, Pacific herring, walleye pollock, rockfish and sablefish.

Key words: Marine fish, midwater trawl, bottom trawl, catch composition, dogfish, eulachons, herring, lingcod, pollock, rockfish, sablefish, salmon and sole.

RESUME

Barner, L. W., F. H. C. Taylor, D. M. A. Bennett and S. Farlinger. 1979.
Midwater and bottom trawl tows and catches made on M. V. BLUE WATERS,
BW 78-3, October 3-23, 1978 in Queen Charlotte Sound. Fish. Mar.
Serv. Data Rep. 138: 72 p.

Le rapport présente les prises au chalut pélagique et semi-pélagique, les positions exactes de pêche et les données d'échantillonnage biologiques recueillies pendant l'excursion du BLUE WATERS, BW 78-3, du 3 au 23 octobre 1978, dans le bassin Reine-Charlotte. Les traits de filet ont servi à identifier les espèces présentées pendant un relevé acoustique servant à déterminer la distribution et l'abondance du poisson dans le secteur. On a obtenu des données sur le sexe et la longueur du saumon quinnat, de l'aiguillat, de la sole de Douvres, de l'eulachon, de l'ophiodon, du hareng du Pacifique, de la morue du Pacifique occidental, des scorpènes et de la morue charbonnière.

Mots-clefs: poisson de mer, chalut semi-pélagique, chalut pélagique, composition des prises, aiguillat, eulachon, hareng, ophiodon, goberge, scorpènes, morue charbonnière, saumon et sole.



INTRODUCTION

In 1978 an acoustic survey was carried out in Queen Charlotte Sound by the C.G.S. G. B. REED and the M.V. BLUE WATERS to determine the distribution and abundance of rockfish, (Sebastes spp.) and other fish stocks present. These stocks were primarily Sebastes flavidus (greenies), Sebastes proriger (redstripe), Clupea harengus pallasii (Pacific herring), Sebastes alutus (Pacific ocean perch), and Atheresthes stomias (turbot).

Coverage

The C.G.S. G. B. REED ran an acoustical survey covering the southern part of Queen Charlotte Sound and Goose Island bank (Fig. 1).

During these surveys midwater and bottom trawl tows were made to identify the major species of fish in the main sound scattering layers. The positions of any concentrations located by the G. B. REED were reported to the M.V. BLUE WATERS which was responsible for all of the fishing.

Equipment

Nets and fishing gear

Two types of nets were used on this cruise, the first a Canadian diamond number 7 midwater trawl. In these trawls, the mesh tapers from 32 in (stretched mesh) in the wings and forward section of the body to 1 1/2 in in the codend. The codend was lined with 3/4 in web and was rigged with a splitting strap. The headrope and footrope were 205 feet in length, the breast lines 186 feet. During operation the vertical opening of the net ranged from 49 to 65 feet. Two of these nets were used. The first was made entirely out of polyethylene and this material proved too weak, requiring constant mending. The second was constructed out of nylon and proved to be a much stronger net.

The second type of net used was a nylon NorEastern bottom fish trawl. In these trawls the mesh is 5 inches in the wings and belly and 3 1/2 in in the intermediate and codend and having a 1 1/2 in liner. The headrope is 90 feet and the footrope 105 feet with roller gear 102 feet. This net used 8 x 18 in bobbins in the wings and 10 x 14 in bobbins in the bosom. The measured vertical opening was 31 feet. A 3 x 30 fathom system of sweep lines is used which increases headrope height and allows the groundline to settle.

The same Russian oval combination doors were used with both the midwater and bottom nets. These doors are 7.75 feet in diameter and weigh 1500 pounds each.

Weight of Catch

The entire catch from each tow was brought aboard and sorted by species into galvanized tubs, with perforated bottoms to release water. Six tubs of each species were weighed on a beam balance and the remainder of the tubs counted. Also any incomplete or partially filled tubs were weighed. The average weight of the six tubs per species was applied to the other tubs counted for a total estimated weight.

Catch

This report contains the detailed tables showing the time, location and catches (kg) of midwater and bottom trawl tows made in Queen Charlotte Sound on cruise M.V. BLUE WATERS, October 3-23, 1978, (Fig. 2). Total catch by principal species is shown in Table 2 and a summary of species sampled in Table 3. Table 4 shows the species composition and catches in (kg).

The report also contains length, sex data on the following species:

Rockfish

<u>Sebastes alutus</u> (P.O.P.)	Appendix Table	1
<u>Sebastes brevispinis</u> (silvergray)	" "	2
<u>Sebastes entomelas</u> (widow)	" "	3
<u>Sebastes flavidus</u> (greenies)	" "	4
<u>Sebastes paucispinis</u> (longjaw)	" "	5
<u>Sebastes proriger</u> (redstripe)	" "	6
<u>Sebastes reedi</u> (yellowmouth)	" "	7

Roundfish

Blackcod (<u>Anoplopoma fimbria</u>)	Appendix Table	8
Chinook salmon (<u>Oncorhynchus tshawytscha</u>)	" "	9
Dogfish (<u>Squalus acanthias</u>)	" "	10
Dover sole (<u>Microstomus pacificus</u>)	" "	11
Eulachons (<u>Thaleichthys pacificus</u>)	" "	12
Pacific herring (<u>Clupea harengus pallasii</u>)	" "	13
Lingcod (<u>Ophiodon elongatus</u>)	" "	14
Walleye pollock (<u>Theragra chalcogramma</u>)	" "	15

Appendix table 16 contains the detailed information on the hauls.

The results of the acoustic surveys and the catches will be discussed in a future manuscript.

Table 1. Scientific and common names of species captured.

<u>Common name</u>	<u>Scientific name</u>
<u>Roundfish</u>	
Blackcod or sablefish	<u>Anoplopoma fimbria</u>
Blackfin sculpin	<u>Malacocottus kincaidi</u>
Blackfin poacher	<u>Bathyagonus nigripinnis</u>
Chinook salmon	<u>Oncorhynchus tshawytscha</u>
Eulachon	<u>Thaleichthys pacificus</u>
Pacific cod	<u>Gadus macrocephalus</u>
Lanternfish	<u>Myctophidae</u>
Lingcod	<u>Ophiodon elongatus</u>
Pacific herring	<u>Clupea harengus pallasii</u>
Pearly prickleback	<u>Bryozoichthys marjorius</u>
<u>Rockfish</u>	
Idiot or shortspine thornyhead	<u>Sebastolobus alascanus</u>
Pacific ocean perch	<u>Sebastes alutus</u>
Rougheye rockfish	<u>Sebastes aleutianus</u>
Redbanded rockfish or convicts	<u>Sebastes babcocki</u>
Silvergray rockfish	<u>Sebastes brevispinis</u>
Greenstriped rockfish	<u>Sebastes elongatus</u>
Widow rockfish	<u>Sebastes entomelas</u>
Yellowtail rockfish or greenies	<u>Sebastes flavidus</u>
Rosethorn rockfish	<u>Sebastes helvomaculatus</u>
Bocaccio rockfish or longjaw	<u>Sebastes paucispinis</u>
Canary rockfish	<u>Sebastes pinniger</u>
Redstripe rockfish	<u>Sebastes proriger</u>
Yellowmouth rockfish	<u>Sebastes reedi</u>
Yelloweye rockfish	<u>Sebastes ruberrimus</u>
Harlequin rockfish	<u>Sebastes variegatus</u>
Sharpchin rockfish	<u>Sebastes zacentrus</u>
<u>Flatfish</u>	
Brill or petrale sole	<u>Eopsetta jordani</u>
Dover sole	<u>Microstomus pacificus</u>
English sole or lemon sole	<u>Parophrys vetulus</u>
Flathead sole	<u>Hippoglossoides elassodon</u>
Rex sole	<u>Glyptocephalus zachirus</u>
Sand sole	<u>Psettichthys melanostictus</u>
Turbot	<u>Atheresthes stomias</u>
<u>Selachii</u>	
Dogfish	<u>Squalus acanthias</u>
Ratfish	<u>Hydrolagus colliei</u>
Longnose skate	<u>Raja rhina</u>

Table 2. Total catch by principal species. Queen Charlotte Sound, BLUE WATERS
78-3 October 3-23,1978.

Species	Kilograms	% of total catch
<u>Sebastes flavidus</u>	6383.0	45.35
<u>Sebastes proriger</u>	2842.3	20.19
<u>Sebastes entomelas</u>	1248.5	8.87
Pacific herring	715.7	5.08
<u>Sebastes alutus</u>	655.9	4.66
Turbot	476.3	3.38
Eulachons	241.6	1.72
<u>Sebastes reedi</u>	228.5	1.62
Dover sole	214.8	1.46
Walleye pollock	207.1	1.43
<u>Sebastes paucispinis</u>	180.8	1.22
Blackcod	179.1	1.27
<u>Sebastes brevispinis</u>	93.1	0.66
Lingcod	63.3	0.45
Dogfish	53.9	0.38
<u>Sebastes babcocki</u>	48.1	0.34
<u>Sebastes zacentrus</u>	44.9	0.32
<u>Sebastes alascanus</u>	34.3	0.24
<u>Sebastes pinniger</u>	34.2	0.24
Skates	41.7	0.30
Rex sole	16.2	0.12
Pacific cod	15.0	0.11
<u>Sebastes elongatus</u>	12.0	0.09
<u>Sebastes aleutianus</u>	11.5	0.08
Flathead sole	9.1	0.06
Chinook salmon	7.7	0.05
<u>Sebastes ruberrimus</u>	7.2	0.05
Ratfish	1.5	0.01
<u>Sebastes helvomaculatus</u>	4.2	0.03
<u>Sebastes variegatus</u>	3.0	0.02
Petrale sole	2.0	0.01
Total	14076.5	100.00

Table 3. Summary of species sampled, M.V. BLUE WATERS, October 3-23, 1978.

Species	Type and number of samples taken					
	Tow no.	Length	Sex		Otoliths taken	Sampling Remarks
			M	F		
<u>Sebastes alutus</u>	29	48	26	22	-	Total sample
	30	170	55	115	94	Total sample
	31	231	80	151	-	Total sample
	32	127	40	87	-	Total sample
	43	293	87	206	-	Total sample
	40	81	-	-	81	Total sample
Total	6	950	288	581	175	
<u>Sebastes brevispinis</u>	14	22	11	11	-	Total sample
<u>Sebastes entomelas</u>	3	10	-	10	-	Total sample
	9	39	3	36	-	Total sample
	22	143	43	100	72	Total sample
Total	3	192	46	146	72	Total sample
<u>Sebastes flavidus</u>	10	182	143	39	78	7 of 15 tubs
	11	164	140	24	-	Total sample
	20	152	149	3	64	6 of 13.5 tubs
	21	156	119	37	-	6 of 25 tubs
	22	142	121	21	124	6 of 94 tubs
	37	109	83	26	109	Total sample
Total	6	905	755	150	375	

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Table 3 (cont'd)

Type and number of samples taken						
Species	Tow no.	Length	Sex		Otoliths taken	Sampling Remarks
			M	F		
<u>Sebastes paucispinis</u>	44	28	9	19	-	Total sample
<u>Sebastes proriger</u>	3	94	31	63	-	Total sample
	14	9	2	7	-	Total sample
	20	309	180	129	309	Total sample
	24	197	44	153	-	Total sample
	26	412	163	249	-	Total sample
	43	487	282	205	-	6 of 20.5 tubs
	44	249	139	110	-	6 of 37 tubs
	51	50	17	33	-	Total sample
Total	8	1807	858	949	309	
<u>Sebastes reedi</u>	24	47	35	12	-	Total sample
	43	67	43	24	-	Total sample
	44	38	20	18	-	Total sample
Total	3	152	98	54		

Table 3 (cont'd)

Type and number of samples taken						
Species	Tow no.	Length	Sex		Stomach	Sampling Remarks
			M	F		
Dogfish	28	8	-	8	8	Total sample
	31	2	-	2	2	Total sample
Total	2	10	-	10	10	
Eulachons	4	82	-	-		Random sub-sample
	13	100	-	-		Random sub-sample
	39	99	-	-		Random sub-sample
Total	3	281	-	-		
Dover sole	30	60				1 of 2 tubs
Herring	1	105	-	-		Random sub-sample
	4	47	-	-		Total sample
	5	100	58	42		Random sub-sample
	6	100	43	57		Random sub-sample
	7	100	37	63		Random sub-sample
	13	27	13	14		Total sample
	16	100	60	40		Random sub-sample
	18	100	53	47		Random sub-sample
	23	100	56	44		Random sub-sample
	36	100	46	54		Random sub-sample
	37	100	43	57		Random sub-sample
	45	100	35	65		Random sub-sample
	50	100	49	51		Random sub-sample
	Total	13	1179	493	534	

Table 3 (cont'd)

Species	Tow no.	Length	Sex			Stomach	Sampling Remarks
			M	F	U		
Lingcod	22	2	-	2	-		Total sample
	44	4	-	4	-		Total sample
Total	2	6	-	6	-		
Walleye pollock	9	81	23	58	-		Total sample
	14	7	3	4	-		Total sample
	30	38	14	24	-		Total sample
	47	9	-	9	-		Total sample
Total	4	135	40	95	-		
Sablefish	31	28	17	10	1		Total sample
	32	87	85	2	-		Total sample
Total	2	115	102	12	1		
Chinook salmon	14	1	-	1	-		Total sample
	26	1	1	-	-		Total sample
Total	2	2	1	1	-		

Table 4 (cont'd)

Midwater or bottom net	Bottom		Bottom		Bottom		Bottom	
Tow Number	29		30		31		32	
Total catch (kg)	123.3		535.3		555.2		439.8	
Duration minutes	23		30		30		32	
	Wt	No.	Wt	No.	Wt	No.	Wt	No.
<u>Roundfish</u>								
Blackcod	-	-	Tr	1	113.5	28	63.1	87
Blackfin sculpin	Tr	3	Tr	1	-	-	-	-
Blackfin poacher	Tr	1	-	-	-	-	-	-
Eulachon	-	-	-	-	-	-	-	-
Pacific cod	-	-	13.2	7	-	-	-	-
Hake	-	-	-	-	-	-	1.5	1
Lingcod	-	-	-	-	-	-	-	-
Pacific herring	-	-	-	-	-	-	-	-
Pearly prickleback	Tr	1	-	-	-	-	-	-
Chinook salmon	-	-	-	-	-	-	-	-
Walleye Pollock	7.4	6	32.0	24	8.0	7	6.4	6
<u>Pockfish</u>								
<u>Sebastes alascanus</u>	8.5	26	11.5	29	11.3	15	3.0	8
<u>Sebastes alutus</u>	50.6	48	177.8	170	187.4	231	117.0	127
<u>Sebastes aleutianus</u>	0.5	3	-	-	7.0	1	-	-
<u>Sebastes babcocki</u>	5.2	6	31.2	22	6.0	5	5.7	5
<u>Sebastes brevispinis</u>	-	-	-	-	-	-	-	-
<u>Sebastes elongatus</u>	Tr	3	-	-	-	-	-	-
<u>Sebastes entomelas</u>	-	-	-	-	-	-	-	-
<u>Sebastes flavidus</u>	0.8	1	-	-	-	-	-	-
<u>Sebastes helvomaculatus</u>	4.2	4	-	-	-	-	-	-
<u>Sebastes paucispinis</u>	3.0	2	3.3	1	-	-	-	-
<u>Sebastes pinniger</u>	-	-	-	-	-	-	-	-
<u>Sebastes proriger</u>	-	-	-	-	-	-	1.0	2
<u>Sebastes reedi</u>	-	-	-	-	-	-	-	-
<u>Sebastes ruberrimus</u>	4.8	1	-	-	-	-	-	-
<u>Sebastes variegatus</u>	-	-	-	-	-	-	-	-
<u>Sebastes zacentrus</u>	4.6	-	Tr	1	-	-	1.0	3
<u>Flatfish</u>								
Dover sole	16.2	24	65.2	133	130.8	147	2.6	7
Brill or petrale sole	-	-	-	-	-	-	2.0	1
Flathead sole	-	-	6.1	23	-	-	3.0	12
Rex sole	3.0	14	3.4	19	-	-	9.8	38
Sand sole	Tr	1	-	-	-	-	-	-
Turbot	13.5	15	174.1	185	86.0	100	189.3	-
<u>Selachii</u>								
Dogfish	-	-	13.3	4	5.2	2	-	-
Ratfish	-	-	Tr	1	-	-	1.0	-
Skates	-	-	-	-	-	-	33.4	4
Squid	-	-	-	-	-	-	-	-
<u>Invertebrates</u>								
Pink shrimp	Tr	-	4.2	-	-	-	-	-
Prawns	1.0	14	-	-	-	-	-	-

Table 4 (cont'd)

Midwater or bottom net	Midwater		Midwater	
Tow Number	53		54	
Total catch (kg)	-		Tr	
Duration minutes	32		41	
	Wt	No.	Wt	No.
<u>Roundfish</u>				
Blackcod	-	-	-	-
Blackfin sculpin	-	-	-	-
Blackfin poacher	-	-	-	-
Eulachon	-	-	-	-
Pacific cod	-	-	-	-
Lanternfish	-	-	-	-
Lingcod	-	-	-	-
Pacific herring	-	-	Tr	-
Pearly prickleback	-	-	-	-
Chinook salmon	-	-	-	-
Walleye Pollock	-	-	-	-
<u>Rockfish</u>				
<u>Sebastes alascanus</u>	-	-	-	-
<u>Sebastes alutus</u>	-	-	-	-
<u>Sebastes aleutianus</u>	-	-	-	-
<u>Sebastes babcocki</u>	-	-	-	-
<u>Sebastes brevispinis</u>	-	-	-	-
<u>Sebastes elongatus</u>	-	-	-	-
<u>Sebastes entomelas</u>	-	-	-	-
<u>Sebastes flavidus</u>	-	-	-	-
<u>Sebastes helvomaculatus</u>	-	-	-	-
<u>Sebastes paucispinis</u>	-	-	-	-
<u>Sebastes pinniger</u>	-	-	-	-
<u>Sebastes proriger</u>	-	-	-	-
<u>Sebastes reedi</u>	-	-	-	-
<u>Sebastes ruberrimus</u>	-	-	-	-
<u>Sebastes variegatus</u>	-	-	-	-
<u>Sebastes zacentrus</u>	-	-	-	-
<u>Flatfish</u>				
Dover sole	-	-	-	-
Brill or petrale sole	-	-	-	-
Flathead sole	-	-	-	-
Rex sole	-	-	-	-
Sand sole	-	-	-	-
Turbot	-	-	-	-
<u>Selachii</u>				
Dogfish	-	-	-	-
Ratfish	-	-	-	-
Skates	-	-	-	-
Squid	-	-	-	-
<u>Invertebrates</u>				
Pink Shrimp	-	-	-	-
Prawns	-	-	-	-

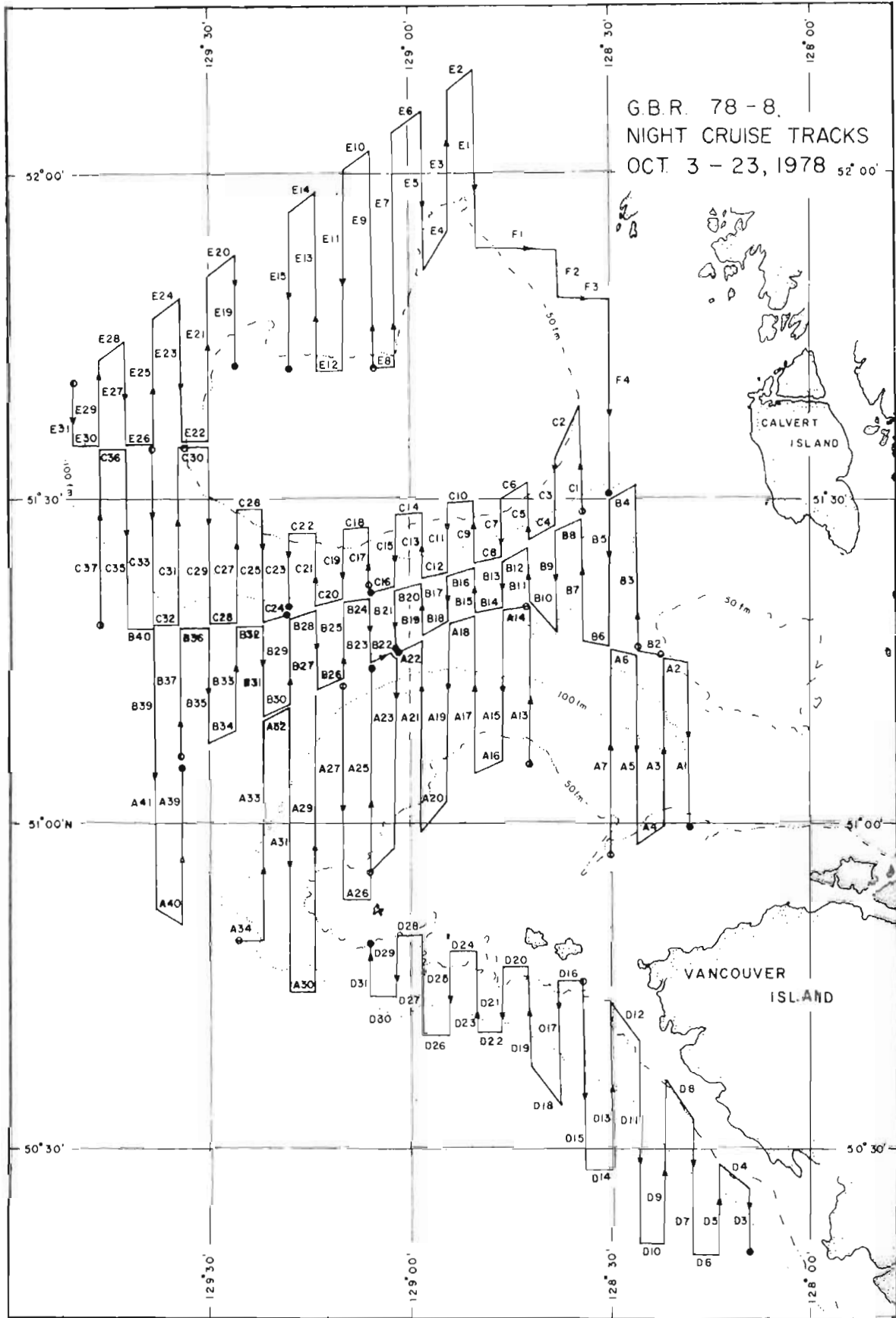


Fig. 1. Cruise tracks for G. B. REED cruise GBR78-8 October 3-23, 1978 showing area surveyed in Queen Charlotte Sound.

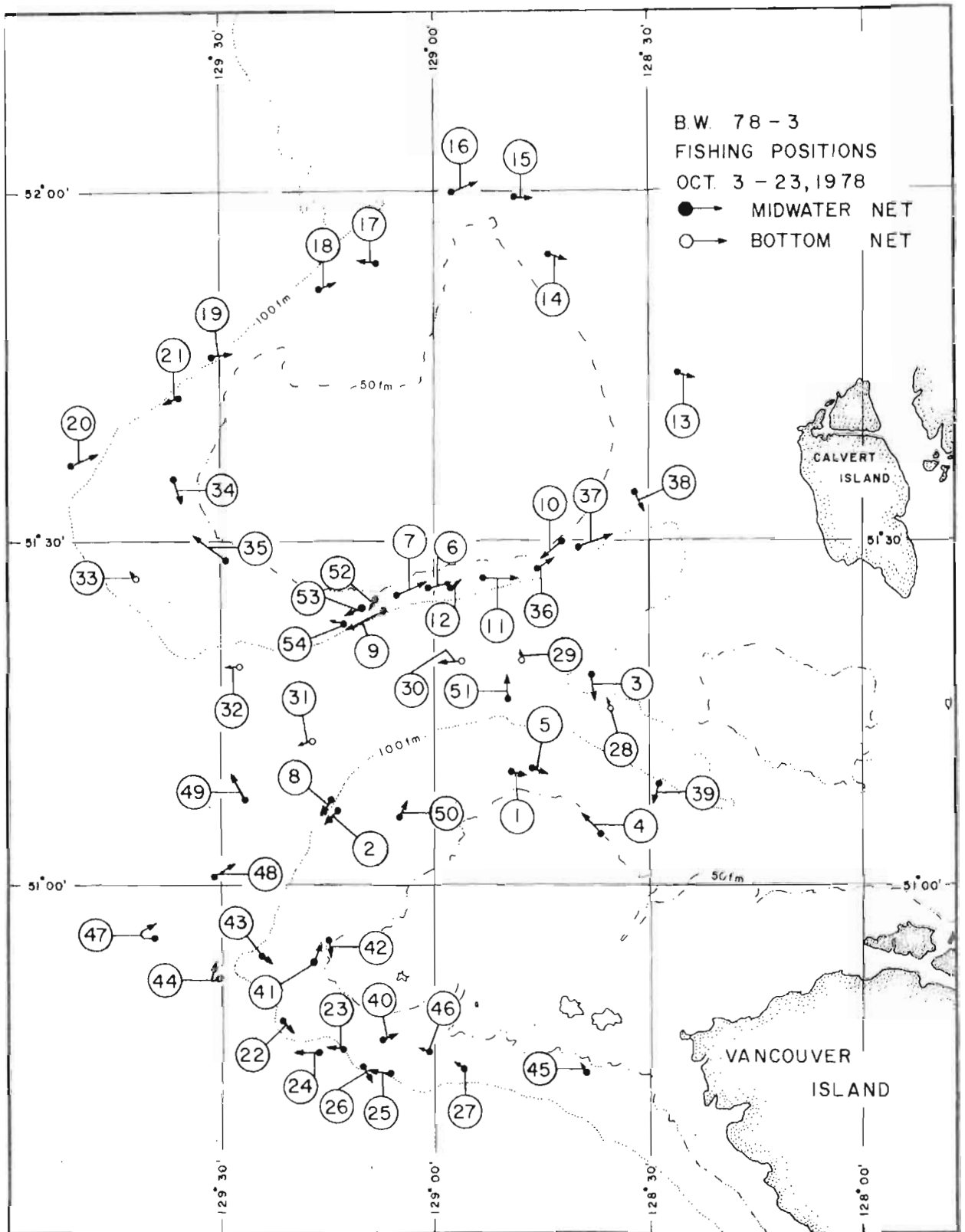


Fig. 2. Location of midwater and bottom tows, Queen Charlotte Sound, cruise BLUE WATER 78-3, October 3-23, 1978.



Appendix Table 1. Size composition of Sebastes alutus, numbers sampled, by haul, by sex for BLUE WATERS cruise, BW78-3, October 3-23, 1978.

Fork length (cm)	Haul No.															Grand total
	29			30			31			32			43			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
21	-	-	-	-	-	-	-	-	-	-	-	-	3	-	3	3
22	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2	2
23	-	-	-	-	-	-	-	-	-	-	-	-	3	-	3	3
24	-	-	-	-	-	-	-	-	-	-	-	-	11	5	16	16
25	-	-	-	-	-	-	-	-	-	1	-	1	17	6	23	24
26	-	-	-	-	-	-	-	-	-	0	-	0	24	10	34	34
27	-	-	-	-	-	-	-	-	-	0	-	0	14	7	21	21
28	-	-	-	-	-	-	-	-	-	1	-	1	8	21	29	30
29	-	-	-	-	-	-	1	-	1	0	-	0	3	29	32	33
30	-	-	-	-	-	-	0	-	0	0	-	0	2	34	36	36
31	-	-	-	-	1	1	0	-	0	0	-	0	-	30	30	31
32	1	-	1	-	1	1	2	2	4	1	-	1	-	15	15	22
33	2	-	2	1	2	3	4	2	6	2	1	3	-	16	16	30
34	0	-	0	2	0	2	5	2	7	2	0	2	-	8	8	19
35	6	-	6	0	2	2	6	3	9	3	2	5	-	8	8	30
36	1	2	3	9	1	10	11	5	16	6	2	8	-	5	5	42
37	1	2	3	11	7	18	9	8	17	4	9	13	-	6	6	57
38	3	0	3	14	4	18	13	15	28	6	5	11	-	5	5	65
39	2	1	3	6	5	11	13	13	26	5	6	11	-	1	1	52
40	6	0	6	4	8	12	8	12	20	4	9	13	-	-	-	51
41	1	0	1	2	8	10	4	17	21	5	6	11	-	-	-	43
42	1	0	1	3	8	11	2	19	21	-	9	9	-	-	-	42
43	0	3	3	2	14	16	1	23	24	-	9	9	-	-	-	52
44	0	6	6	0	15	15	1	21	22	-	16	16	-	-	-	59
45	1	3	4	1	19	20	-	9	9	-	4	4	-	-	-	37
46	1	3	4	-	7	7	-	7	7	-	2	2	-	-	-	20
47	-	0	0	-	11	11	-	1	1	-	4	4	-	-	-	16
48	-	2	2	-	2	2	-	-	-	-	3	3	-	-	-	7
Total	26	22	48	55	115	170	80	159	239	40	87	127	87	206	293	877

Appendix Table 1 (cont'd), juvenile
Sebastes alutus

	Haul No.
	40
Fork length (cm)	Mixed sex
8	1
9	1
10	13
11	24
12	22
13	20
Total	81

Appendix Table 2. Size composition of Sebastes brevispinis numbers sampled, by haul, by sex for BLUE WATERS cruise 78-3, October 3-23, 1978.

Fork length (cm)	Haul No.						Grand total
	14			44			
	M	F	T	M	F	T	
37	-	-	-	-	-	-	-
38	-	1	1	-	-	-	1
39	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-
41	-	-	-	-	-	-	-
42	-	-	-	-	-	-	-
43	-	-	-	-	-	-	-
44	-	-	-	-	-	-	-
45	-	-	-	1	-	1	1
46	-	-	-	1	-	1	1
47	-	-	-	1	1	2	2
48	-	-	-	2	0	2	2
49	-	-	-	0	0	0	0
50	-	-	-	0	0	0	0
51	-	-	-	0	1	1	1
52	-	-	-	1	2	3	3
53	-	-	-	1	0	1	1
54	-	-	-	1	1	2	2
55	-	-	-	2	3	5	5
56	-	-	-	0	1	1	1
57	-	-	-	1	2	3	3
Total	0	1	1	11	11	22	23

Appendix Table 3. Size composition of Sebastes entomelas, numbers sampled, by haul, by sex for BLUE WATERS cruise BW78-3, October 3-23, 1978.

Fork length (cm)	Haul No.									Grand total
	3			9			22			
	M	F	T	M	F	T	M	F	T	
36	-	-	-	-	-	-	1	1	2	2
37	-	-	-	-	-	-	0	0	0	0
38	-	-	-	-	-	-	1	0	1	1
39	-	-	-	-	-	-	1	1	2	2
40	-	-	-	-	-	-	3	1	4	4
41	-	-	-	-	-	-	2	1	3	3
42	-	-	-	-	-	-	5	3	8	8
43	-	-	-	-	-	-	3	0	3	3
44	-	-	-	-	-	-	7	3	10	10
45	-	-	-	-	-	-	13	6	19	19
46	-	-	-	-	-	-	4	4	8	8
47	-	-	-	-	-	-	2	7	9	9
48	-	-	-	1	-	1	0	8	8	9
49	-	2	2	1	1	2	1	17	18	22
50	-	1	1	0	2	2	-	23	23	26
51	-	1	1	1	4	5	-	12	12	18
52	-	0	0	-	7	7	-	5	5	12
53	-	3	3	-	8	8	-	6	6	17
54	-	2	2	-	8	8	-	2	2	12
55	-	0	0	-	4	4	-	-	-	4
56	-	1	1	-	2	2	-	-	-	3
Total		10	10	3	36	39	43	100	143	192

Appendix Table 4. Size composition of Sebastes flavidus, number sampled, by haul, by sex for BLUE WATERS cruise, BW78-3, October 3-23, 1978.

Fork length (cm)	Haul No.																		Grand total
	10			11			20			21			22			37			
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
31	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
32	0	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
33	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
34	1	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
35	0	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
36	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
37	0	0	0	1	-	1	-	-	-	-	-	-	-	-	-	2	5	7	8
38	1	5	6	0	2	2	-	-	-	1	-	1	-	-	-	3	1	4	13
39	1	4	5	1	2	3	-	-	-	2	-	2	-	-	-	1	0	1	11
40	3	2	5	5	1	6	-	-	-	1	2	3	-	-	-	2	2	4	18
41	0	2	2	1	4	5	-	-	-	1	1	2	-	-	-	3	5	8	17
42	3	4	7	2	1	3	-	-	-	1	3	4	-	-	-	1	5	6	20
43	5	3	8	1	2	3	2	-	2	7	2	9	-	-	-	4	1	5	27
44	6	3	9	6	2	8	2	1	3	2	5	7	-	-	-	4	0	4	31
45	6	3	9	12	1	13	12	0	12	12	3	15	4	-	4	6	1	7	60
46	25	1	26	21	2	23	33	0	33	25	3	28	15	-	15	11	0	11	136
47	38	1	39	41	1	42	40	0	40	24	1	25	27	-	27	21	1	22	195
48	27	0	27	24	0	24	32	0	32	19	7	26	26	-	26	16	0	16	151
49	17	3	20	17	2	19	14	0	14	15	4	19	29	2	31	5	1	6	109
50	4	1	5	4	0	4	11	1	12	8	3	11	17	1	18	3	0	3	53
51	4	1	5	2	0	2	3	0	3	1	1	2	3	8	11	0	3	3	26
52	0	3	3	1	2	3	-	0	0	-	1	1	-	2	2	1	0	1	10
53	1	-	1	0	2	2	-	0	0	-	0	0	-	2	2	-	0	0	5
54	-	-	-	1	-	1	-	1	1	-	1	1	-	5	5	-	1	1	9
55	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	1
Total	143	39	182	140	24	164	149	3	152	119	37	156	121	21	142	83	26	109	905

Appendix Table 5. Size composition of *Sebastes paucispinis*, numbers sampled, by haul, by sex for BLUE WATERS cruise, BW78-3, October 3-23, 1978.

Fork length (cm)	Haul No.		
	44		
	M	F	T
59	-	1	1
60	-	1	1
61	1	1	2
62	0	0	0
63	0	0	0
64	3	1	4
65	1	0	1
66	2	2	4
67	0	0	0
68	0	2	2
69	1	3	4
70	0	0	0
71	1	1	2
72	-	1	1
73	-	3	3
74	-	0	0
75	-	0	0
76	-	0	0
77	-	0	0
78	-	2	2
79	-	0	0
80	-	0	0
81	-	1	1
Total	9	19	28

Appendix Table 6. Size composition of Sebastes proriger, numbers sampled, by haul, by sex for BLUE WATERS cruise BW78-3, October 3-23, 1978.

Fork length (cm)	Haul No.											
	3			14			20			24		
	M	F	T	M	F	T	M	F	T	M	F	T
24	-	1	1	-	-	-	-	-	-	-	-	-
25	-	0	0	-	-	-	-	-	-	-	-	-
26	-	0	0	-	-	-	1	-	1	-	-	-
27	2	0	2	1	-	1	0	-	0	-	-	-
28	3	0	3	0	-	0	5	-	5	-	-	-
29	5	0	5	0	-	0	12	1	13	1	-	1
30	8	7	15	0	-	0	24	0	24	8	3	11
31	4	10	14	0	-	0	40	4	44	17	4	21
32	5	6	11	0	-	0	42	5	47	9	14	23
33	1	7	8	0	-	0	29	17	46	6	33	39
34	2	1	3	1	-	1	20	12	32	3	27	30
35	0	9	9	-	1	1	3	12	15	-	15	15
36	0	8	8	-	1	1	1	13	14	-	9	9
37	0	6	6	-	0	0	2	14	16	-	11	11
38	0	4	4	-	0	0	1	23	24	-	16	16
39	1	2	3	-	0	0	-	18	18	-	12	12
40	-	0	0	-	0	0	-	7	7	-	5	5
41	-	1	1	-	2	2	-	1	1	-	2	2
42	-	1	1	-	0	0	-	2	2	-	2	2
43	-	-	-	-	1	1	-	-	-	-	-	-
44	-	-	-	-	2	2	-	-	-	-	-	-
45	-	-	-	-	-	-	-	-	-	-	-	-
Total	31	63	94	2	7	9	180	129	309	44	153	197

Appendix Table 6 (cont'd)

Fork length (cm)	Haul No.												Grand total
	26			43			44			51			
	M	F	T	M	F	T	M	F	T	M	F	T	
24	-	-	-	-	-	-	-	-	-	-	-	-	1
25	-	-	-	-	-	-	-	-	-	-	-	-	0
26	2	1	3	-	-	-	1	-	1	1	-	1	6
27	1	0	1	-	-	-	0	-	0	1	-	1	5
28	4	1	5	5	2	7	3	-	3	1	-	1	24
29	24	3	27	16	4	20	3	1	4	5	-	5	75
30	54	5	59	54	5	59	19	2	21	4	-	4	193
31	46	5	51	63	9	72	29	5	34	2	-	2	238
32	15	17	32	64	13	77	40	5	45	1	2	3	238
33	8	37	45	49	28	77	31	9	40	0	6	6	261
34	6	71	77	24	31	55	9	20	29	2	6	8	235
35	3	52	55	4	23	27	4	13	17	0	6	6	145
36	-	28	28	2	17	19	-	8	8	-	4	4	91
37	-	8	8	0	16	16	-	11	11	-	2	2	70
38	-	2	2	1	24	25	-	14	14	-	1	1	86
39	-	4	4	-	20	20	-	14	14	-	2	2	73
40	-	5	5	-	6	6	-	1	1	-	2	2	26
41	-	4	4	-	4	4	-	2	2	-	0	0	16
42	-	2	2	-	2	2	-	3	3	-	1	1	13
43	-	2	2	-	1	1	-	1	1	-	1	1	6
44	-	1	1	-	-	-	-	1	1	-	-	-	4
45	-	1	1	-	-	-	-	-	-	-	-	-	1
Total	163	249	412	282	205	487	139	110	249	17	33	50	1807

Appendix Table 7. Size composition of Sebastes reedi, numbers sampled, by haul, by sex for BLUE WATERS cruise, BW78-3, October 3-23, 1978.

Fork length (cm)	Haul No.									Grand total
	24			43			44			
	M	F	T	M	F	T	M	F	T	
34	-	-	-	1	-	1	-	-	-	1
35	-	-	-	0	1	1	1	1	2	3
36	-	-	-	0	3	3	0	0	0	3
37	-	-	-	0	2	2	0	0	0	2
38	-	-	-	1	2	3	0	1	1	4
39	-	1	1	1	2	3	0	0	0	4
40	-	0	0	2	0	2	1	1	2	4
41	-	0	0	1	1	2	2	0	2	4
42	-	0	0	2	0	2	2	1	3	5
43	1	0	1	4	2	6	4	2	6	13
44	2	0	2	6	1	7	5	4	9	18
45	9	1	10	7	2	9	4	4	8	27
46	4	3	7	8	3	11	1	2	3	21
47	8	2	10	6	2	8	-	1	1	19
48	1	2	3	2	2	4	-	0	0	7
49	1	2	3	1	1	2	-	0	0	5
50	6	0	6	1	-	1	-	1	1	8
51	1	1	2	-	-	-	-	-	-	2
52	0	-	0	-	-	-	-	-	-	0
53	0	-	0	-	-	-	-	-	-	0
54	0	-	0	-	-	-	-	-	-	0
55	0	-	0	-	-	-	-	-	-	0
56	0	-	0	-	-	-	-	-	-	0
57	1	-	1	-	-	-	-	-	-	1
58	1	-	1	-	-	-	-	-	-	1
Total	35	12	47	43	24	67	20	18	38	152

Appendix Table 8. Size composition of Blackcod or sablefish (*Anoplopoma fimbria*) numbers sampled, by haul, by sex for BLUE WATERS cruise BW78-3, October 3-23, 1978.

Fork length (cm)	Haul No.						Grand total	
	31				32			
	M	F	I	T	M	F		T
37	-	-	-	-	1	-	1	1
38	-	-	-	-	0	-	0	0
39	-	-	-	-	3	-	3	3
40	-	-	-	-	13	-	13	13
41	-	-	-	-	18	-	18	18
42	-	-	-	-	16	-	16	16
43	-	-	-	-	13	-	13	13
44	-	-	-	-	10	-	10	10
45	-	-	-	-	5	-	5	5
46	-	-	1	1	3	-	3	4
47	-	-	-	-	3	-	3	3
48	-	-	-	-	-	-	-	0
49	-	-	-	-	-	-	-	0
50	-	-	-	-	-	-	-	0
51	-	-	-	-	-	-	-	0
52	-	-	-	-	-	-	-	0
53	-	-	-	-	-	-	-	0
54	2	-	-	2	-	-	-	2
55	2	2	-	4	-	-	-	4
56	1	0	-	1	-	-	-	1
57	2	1	-	3	-	-	-	3
58	1	2	-	3	-	1	-	4
59	2	0	-	2	-	-	-	2
60	1	0	-	1	-	-	-	1
61	2	1	-	3	-	-	-	3
62	0	0	-	0	-	-	-	0
63	1	0	-	1	-	1	-	2
64	1	0	-	1	-	-	-	1

Appendix Table 8 (cont'd)

Fork length (cm)	Haul No.							Grand total
	31				32			
	M	F	I	T	M	F	T	
65	0	0	-	0	-	-	-	0
66	1	1	-	2	-	-	-	2
67	0	0	-	0	-	-	-	0
68	0	0	-	0	-	-	-	0
69	0	1	-	1	-	-	-	1
70	0	0	-	0	-	-	-	0
71	0	0	-	0	-	-	-	0
72	0	0	-	0	-	-	-	0
73	1	0	-	1	-	-	-	1
74	-	0	-	0	-	-	-	0
75	-	0	-	0	-	-	-	0
76	-	0	-	0	-	-	-	0
77	-	0	-	0	-	-	-	0
78	-	0	-	0	-	-	-	0
79	-	0	-	0	-	-	-	0
80	-	0	-	0	-	-	-	0
81	-	1	-	1	-	-	-	1
82	-	0	-	0	-	-	-	0
83	-	0	-	0	-	-	-	0
84	-	0	-	0	-	-	-	0
85	-	0	-	0	-	-	-	0
86	-	0	-	0	-	-	-	0
87	-	0	-	0	-	-	-	0
88	-	0	-	0	-	-	-	0
89	-	0	-	0	-	-	-	0
90	-	1	-	1	-	-	-	1
Total	17	10	1	28	85	2	87	115

Appendix Table 9. Size composition of chinook salmon (Onchorhynchus tshawytscha), numbers sampled, by haul, by sex for BLUE WATERS cruise 78-3, October 3-23, 1978.

Haul number	Fork length (cm)	Weight (kg.)	Sex	Stomach
BW78-3-14	61.0	1.0*	F	Empty
BW78-3-26	79.5	6.7	M	Empty

*Fish had lamprey scar and was very thin and sickly.

Appendix Table 10. Size composition of dogfish (Squalus acanthias), numbers sampled, by haul, by sex for BLUE WATERS cruise BW78-3, October 3-23, 1978.

Fork length (cm)	Haul No.						Grand total
	28			31			
	M	F	T	M	F	T	
81	-	1	1	-	-	-	1
82	-	0	0	-	-	-	0
83	-	0	0	-	-	-	0
84	-	0	0	-	-	-	0
85	-	0	0	-	-	-	0
86	-	1	1	-	-	-	1
87	-	1	1	-	-	-	1
88	-	0	0	-	-	-	0
89	-	1	1	-	-	-	1
90	-	0	0	-	-	-	0
91	-	1	1	-	1	1	2
92	-	0	0	-	-	-	0
93	-	0	0	-	-	-	0
94	-	0	0	-	-	-	0
95	-	0	0	-	-	-	0
96	-	0	0	-	1	1	1
97	-	1	1	-	-	-	1
98	-	0	0	-	-	-	0
99	-	1	1	-	-	-	1
100	-	1	1	-	-	-	1
Total	0	8	8	0	2	2	10

Appendix Table 11. Size composition of dover sole (Microstomus pacificus), numbers sampled, by haul, by sex for BLUE WATERS cruise BW78-3, Oct. 3-23, 1978.

	Haul No.
	30
Fork length (cm)	Mixed sex
32	1
33	0
34	1
35	0
36	2
37	7
38	4
39	3
40	6
41	6
42	4
43	7
44	4
45	0
46	2
47	3
48	4
49	0
50	1
51	0
52	0
53	1
54	1
55	0
56	0
57	2
58	1
Total	60

Appendix Table 12. Size composition of eulachons, (*Thaleichthys pacificus*), numbers sampled, by haul, by sex for BLUE WATERS cruise BW78-3, Oct. 3-23, 1978.

Fork length (mm)	Haul No.			Grand total
	4*	13	39	
	Mixed sex			
62	-	-	1	1
93- 95	-	-	1	1
96- 98	-	-	3	3
99-101	-	1	4	5
102-104	-	0	9	9
105-107	-	1	6	7
108-110	-	0	11	11
111-113	-	0	7	7
114-116	-	1	9	10
117-119	-	0	2	2
120-122	-	0	4	4
123-125	-	2	6	8
126-128	-	1	2	3
129-131	-	2	3	5
132-134	-	3	4	7
135-137	-	2	4	6
138-140	-	3	4	7
141-143	-	4	0	4
144-146	-	5	1	6
147-149	-	2	3	5
150-152	-	7	3	10
153-155	-	9	3	12
156-158	-	6	1	7
159-161	3	5	0	8
162-164	0	5	0	5
165-167	0	7	1	8
168-170	19	10	2	31
171-173	0	5	2	7
174-176	0	5	2	7
177-179	0	5	0	5
180-182	33	3	1	37
183-185	0	1	0	1
186-188	0	4	0	4
189-191	23	0	1	24
192-194	0	0	-	0
195-197	0	0	-	0
198-200	3	0	-	3
201-203	0	1	-	1
204-206	0	-	-	0
207-209	0	-	-	0
210-212	1	-	-	1
Total	82	100	100	282

*Tow number 4, fish measured to the nearest centimeter.

Appendix Table 13. Size composition of herring, (*Clupea harengus pallasii*), numbers sampled, by haul, by sex, for BLUE WATERS cruise BW78-3, October 3-23, 1978.

Fork length (mm)	Haul No.										
	1*	4*	5			6			7		
	Mixed	Mixed	M	F	T	M	F	T	M	F	T
138-140	2	5	-	-	-	-	-	-	-	-	-
141-143	0	0	-	-	-	-	-	-	-	-	-
144-146	0	0	1	1	2	-	-	-	-	-	-
147-149	0	0	0	0	0	0	3	3	-	-	-
150-152	9	13	1	0	1	0	2	2	0	3	3
153-155	0	0	4	1	5	5	1	6	0	2	2
156-158	0	0	5	3	8	3	1	4	1	2	3
159-161	32	25	8	3	11	5	7	12	3	2	5
162-164	0	0	11	4	15	8	11	19	5	12	17
165-167	0	0	9	6	15	7	6	13	7	8	15
168-170	39	4	10	6	16	9	12	21	10	13	23
171-173	0	-	3	8	11	3	9	12	2	6	8
174-176	0	-	2	6	8	1	3	4	3	8	11
177-179	0	-	0	3	3	2	1	3	4	1	5
180-182	18	-	3	1	4	0	1	1	1	0	1
183-185	0	-	0	0	0	-	-	-	0	0	0
186-188	0	-	0	0	0	-	-	-	0	0	0
189-191	1	-	0	-	0	-	-	-	0	0	0
192-194	0	-	0	-	0	-	-	-	0	0	0
195-197	0	-	0	-	0	-	-	-	0	1	1
198-200	2	-	0	-	0	-	-	-	0	2	2
201-203	0	-	0	-	0	-	-	-	0	0	0
204-206	0	-	0	-	0	-	-	-	0	1	1
207-209	0	-	1	-	1	-	-	-	0	1	1
210-212	1	-	-	-	-	-	-	-	0	1	1
213-215	0	-	-	-	-	-	-	-	1	0	1
216-218	0	-	-	-	-	-	-	-	-	-	-
219-221	1	-	-	-	-	-	-	-	-	-	-
Total	105	47	58	42	100	43	57	100	37	63	100

Appendix Table 13 (cont'd)

Fork length (mm)	Haul No.														
	13			16			18			23			36		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
138-140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
141-143	1	0	1	-	-	-	-	-	-	-	-	-	-	-	-
144-146	0	1	1	-	-	-	-	-	-	-	-	-	-	1	1
147-149	0	3	3	1	0	1	-	-	-	-	-	-	2	2	4
150-152	3	2	5	0	0	0	-	-	-	-	-	-	7	3	10
153-155	2	0	2	3	1	4	-	-	-	-	-	-	5	7	12
156-158	1	0	1	0	2	2	-	-	-	-	-	-	6	3	9
159-161	1	2	3	4	2	6	6	2	8	-	-	-	8	11	19
162-164	2	3	5	6	4	10	5	4	9	1	2	3	6	12	18
165-167	0	3	3	9	2	11	6	6	12	0	0	0	4	6	10
168-170	1	0	1	18	17	35	21	13	34	7	7	14	7	6	13
171-173	1	0	1	9	3	12	5	12	17	6	4	10	1	1	2
174-176	1	0	1	5	6	11	6	8	14	15	3	18	-	1	1
177-179	-	-	-	4	1	5	4	2	6	7	4	11	-	0	0
180-182	-	-	-	0	2	2	-	-	-	8	13	21	-	1	1
183-185	-	-	-	0	-	0	-	-	-	4	5	9	-	-	-
186-188	-	-	-	0	-	0	-	-	-	2	1	3	-	-	-
189-191	-	-	-	0	-	0	-	-	-	0	1	1	-	-	-
192-194	-	-	-	0	-	0	-	-	-	2	2	4	-	-	-
195-197	-	-	-	0	-	0	-	-	-	1	0	1	-	-	-
198-200	-	-	-	0	-	0	-	-	-	1	1	2	-	-	-
201-203	-	-	-	0	-	0	-	-	-	1	0	1	-	-	-
204-206	-	-	-	1	-	1	-	-	-	0	0	0	-	-	-
207-209	-	-	-	-	-	-	-	-	-	0	0	0	-	-	-
210-212	-	-	-	-	-	-	-	-	-	1	0	1	-	-	-
213-215	-	-	-	-	-	-	-	-	-	0	0	0	-	-	-
216-218	-	-	-	-	-	-	-	-	-	0	0	0	-	-	-
219-221	-	-	-	-	-	-	-	-	-	0	1	1	-	-	-
Total	13	14	27	60	40	100	53	47	100	56	44	100	46	54	100

Appendix Table 13 (cont'd)

Fork length (mm)	Haul No.									Grand total
	37			45			50			
	M	F	T	M	F	T	M	F	T	
138-140	-	-	-	-	-	-	-	-	-	7
141-143	-	-	-	1	-	1	-	-	-	2
144-146	1	0	1	1	1	2	-	-	-	7
147-149	0	0	0	0	2	2	1	-	1	14
150-152	2	2	4	3	2	5	1	2	3	55
153-155	2	5	7	8	8	16	2	1	3	57
156-158	5	5	10	2	10	12	1	4	5	54
159-161	5	5	10	2	7	9	4	3	7	147
162-164	6	9	15	5	11	16	5	4	9	136
165-167	2	8	10	4	7	11	9	5	14	114
168-170	11	11	22	4	9	13	8	6	14	249
171-173	4	7	11	3	3	6	6	6	12	102
174-176	0	3	3	1	2	3	4	4	8	82
177-179	1	1	2	0	2	2	1	4	5	42
180-182	1	0	1	1	1	2	3	3	6	57
183-185	3	1	4	-	-	-	0	3	3	16
186-188	-	-	-	-	-	-	1	1	2	5
189-191	-	-	-	-	-	-	0	1	1	3
192-194	-	-	-	-	-	-	0	0	0	4
195-197	-	-	-	-	-	-	0	0	0	2
198-200	-	-	-	-	-	-	0	0	0	6
201-203	-	-	-	-	-	-	2	0	2	3
204-206	-	-	-	-	-	-	0	0	0	2
207-209	-	-	-	-	-	-	0	0	0	2
210-212	-	-	-	-	-	-	1	1	2	5
213-215	-	-	-	-	-	-	-	-	-	1
216-218	-	-	-	-	-	-	-	-	-	0
219-221	-	-	-	-	-	-	-	-	-	2
Total	43	57	100	35	65	100	49	48	97	1176

*Tows 1 and 4 fish measured to the nearest centimeter.

Appendix Table 14. Size composition of Lingcod, (*Ophiodon elongatus*), numbers sampled, by haul, by sex for BLUE WATERS cruise BW78-3, October 3-23, 1978.

Fork length (cm)	Haul No.				Grand total
	22		44		
	M	F	M	F	
81	-	-	-	1	1
82	-	-	-	0	0
83	-	-	-	1	1
84	-	-	-	1	1
85	-	-	-	-	0
86	-	-	-	-	0
87	-	-	-	-	0
88	-	-	-	-	0
89	-	-	-	-	0
90	-	-	-	-	0
91	-	-	-	-	0
92	-	-	-	-	0
93	-	-	-	-	0
94	-	-	-	-	0
95	-	-	-	-	0
96	-	-	-	-	0
97	-	-	-	-	0
98	1	-	-	-	1
99	-	-	-	-	0
100	-	-	-	-	0
101	-	-	-	-	0
102	1	-	-	-	1
103	-	-	-	-	-
104	-	-	-	-	-
105	-	-	-	-	-
106	-	-	-	-	-
107	-	-	-	-	-
Total	2	0	0	3	5

Appendix Table 15. Size composition of pollock, (Theragra chalcogramma), numbers sampled, by haul, by sex for BLUE WATERS cruise BW78-3, October 3-23, 1978.

Fork length (cm)	Haul No.												Grand total
	9			14			30			47			
	M	F	T	M	F	T	M	F	T	M	F	T	
45	-	-	-	-	-	-	1	-	1	-	-	-	1
46	1	-	1	-	-	-	0	-	0	-	-	-	1
47	0	-	0	-	-	-	3	1	4	-	-	-	4
48	0	-	0	-	-	-	1	0	1	-	-	-	1
49	1	-	1	-	1	1	2	0	2	-	-	-	4
50	3	-	3	-	0	0	3	0	3	-	-	-	6
51	1	2	3	-	0	0	1	1	2	-	-	-	5
52	4	1	5	1	0	1	0	1	1	-	-	-	7
53	6	4	10	0	0	0	0	1	1	-	-	-	11
54	1	4	5	0	1	1	0	0	0	-	-	-	6
55	2	4	6	0	0	0	0	1	1	-	-	-	7
56	0	5	5	1	0	1	2	0	2	-	-	-	8
57	1	2	3	0	0	0	0	1	1	-	-	-	4
58	0	9	9	0	1	1	0	0	0	-	-	-	10
59	1	4	5	0	0	0	0	2	2	-	-	-	7
60	1	5	6	0	0	0	0	0	0	-	-	-	6
61	0	3	3	0	0	0	1	0	1	-	-	-	4
62	0	3	3	0	0	0	-	0	0	-	1	1	4
63	1	5	6	0	0	0	-	0	0	-	1	1	7
64	-	0	0	0	0	0	-	1	1	-	4	4	5
65	-	3	3	0	1	1	-	0	0	-	2	2	6
66	-	0	0	0	-	0	-	0	0	-	0	0	0
67	-	0	0	0	-	0	-	1	1	-	0	0	1
68	-	2	2	1	-	1	-	-	0	-	0	0	3
69	-	2	2	-	-	-	-	-	-	-	0	0	2
70	-	-	-	-	-	-	-	-	-	-	1	1	1
Total	23	58	81	3	4	7	14	10	24	0	9	9	121

Appendix Table 16.

VESSEL: BLUE WATERS DATE: 78 10 04 Yr Mo Day SET/HAUL NO: 1
 LOCATION: Cape Scott Grounds AREA: Queen Charlotte Sound
 START: Lat. 51° 10.0' Long. 128° 49.4'
 END: Lat. 51° 09.8' Long. 128° 47.5'
 GEAR: C.D. #7 poly START TIME (1842) : 1925 DURATION: 43 min.
 BOTTOM DEPTH m: Start: 113 End: 106 Est. Av. Depth: 110
 *NET DEPTH RANGE m: 22 from bottom Est. Av. Depth: -- mi.
 DIRECTION OF SET °true: 85 SPEED kn: 2.0 DISTANCE TRAVELLED: 1.4 mi.
 SET ON: 10 fm on bottom WATER CONDITION: ripple TIDE: Ebb
 WIND DIRECTION: Nil WIND SPEED: -- RECORDER: W. Barner
 TTM: -- TDM: -- BT: 1 OTHER OCEANOGRAPHIC DATA: --
 REMARKS: _____

VESSEL: BLUE WATERS DATE: 78 10 05 Yr Mo Day SET/HAUL NO: 2
 LOCATION: Triangle Island Grounds AREA: Queen Charlotte Sound
 START: Lat. 51° 06.5' Long. 129° 13.6'
 END: Lat. 51° 05.6' Long. 129° 15.4'
 GEAR: C.D. #7 poly START TIME (0930): 1000 DURATION: 30 min.
 BOTTOM DEPTH m: Start: 170 End: 170 Est. Av. Depth: 170
 *NET DEPTH RANGE m: 25 from surface Est. Av. Depth: -- mi.
 DIRECTION OF SET °true: 225 SPEED kn: 2.4 DISTANCE TRAVELLED: 1.2 mi.
 SET ON: Surface layer WATER CONDITION: glass TIDE: Low slack
 WIND DIRECTION: -- WIND SPEED: -- RECORDER: W. Barner
 TTM: -- TDM: -- BT: 2 OTHER OCEANOGRAPHIC DATA: --
 REMARKS: Warp 30 fms.

Jellyfish in the net.

*Net Depth Range on all tows = Depth headrope of net is from surface or from sea bottom as indicated.

Footrope of net 15-20 meters below headrope of net.

VESSEL: BLUE WATERS DATE: 78 10 05 Yr Mo Day SET/HAUL NO: 3
LOCATION: Virgin Rocks AREA: Queen Charlotte Sound
START: Lat. 51° 18.3' Long. 128° 38.2'
END: Lat. 51° 16.0' Long. 128° 37.5'
GEAR: G.D. #7 poly START TIME (1433): 1513 DURATION: 40^{min.}
BOTTOM DEPTH m: Start: 165 End: 174 Est. Av. Depth: 170
NET DEPTH RANGE m: 45 off bottom Est. Av. Depth: --
DIRECTION OF SET °true: 170 SPEED kn: 3.3 DISTANCE TRAVELLED: 2.2^{mi.}
SET ON: Nothing WATER CONDITION: ripple TIDE: Flood
WIND DIRECTION: 65° T WIND SPEED: 5 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: 3 OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 125 fms.

VESSEL: BLUE WATERS DATE: 78 10 05 Yr Mo Day SET/HAUL NO: 4
LOCATION: Cape Scott Grounds AREA: Queen Charlotte Sound
START: Lat. 51° 04.6' Long. 128° 36.8'
END: Lat. 51° 05.0' Long. 128° 39.0'
GEAR: G.D. #7 poly START TIME (1735): 1815 DURATION: 40^{min.}
BOTTOM DEPTH m: Start: 106 End: 104 Est. Av. Depth: 105
NET DEPTH RANGE m: 22-27 from bottom Est. Av. Depth: --
DIRECTION OF SET °true: 315 SPEED kn: 3.3 DISTANCE TRAVELLED: 2.2^{mi.}
SET ON: 10 fm bottom school WATER CONDITION: ripple TIDE: Ebb
WIND DIRECTION: 45° T WIND SPEED: 5 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: 4 OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 75 fms. Net open 20 meters.

Yr Mo Day
VESSEL: BLUE WATERS DATE: 78 10 06 SET/HAUL NO: 5
LOCATION: Cape Scott Grounds AREA: Queen Charlotte Sound
START: Lat. 51° 09.3' Long. 128° 46.3'
END: Lat. 51° 09.9' Long. 128° 45.2'
GEAR: C.D. #7 poly START TIME (0800) : 0824 DURATION: 24^{min.}
BOTTOM DEPTH m: Start: 106 End: 106 Est. Av. Depth: 106
NET DEPTH RANGE m: 24 off bottom Est. Av. Depth: --
DIRECTION OF SET °true: 110 SPEED kn: 2.0 DISTANCE TRAVELLED: 0.8^{mi.}
SET ON: 10 fm bottom school WATER CONDITION: Lt. chop TIDE: Ebb
WIND DIRECTION: 90° T WIND SPEED: 10 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: 5 OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 75 fms. Net opening 1.8 meters.

Yr Mo Day
VESSEL: BLUE WATERS DATE: 78 10 06 SET/HAUL NO: 6
LOCATION: S.E. Edge AREA: Queen Charlotte Sound
START: Lat. 51° 25.8' Long. 129° 01.0'
END: Lat. 51° 26.2' Long. 128° 58.2'
GEAR: C.D. #7 poly START TIME (1316) : 1346 DURATION: 30^{min.}
BOTTOM DEPTH m: Start: 128 End: 135 Est. Av. Depth: 132
NET DEPTH RANGE m: 29 off bottom Est. Av. Depth: --
DIRECTION OF SET °true: 95 SPEED kn: 3.6 DISTANCE TRAVELLED: 1.8^{mi.}
SET ON: 10 fm off bottom WATER CONDITION: Lt. chop TIDE: Flood
WIND DIRECTION: 90° T WIND SPEED: 5 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: 6 OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 100 fms. 1320 hrs and 6 fms.

Gear touched bottom when added 6 fms warp.
Net mouth opening 19 meters.

VESSEL: BLUE WATERS DATE: 78 10 06 Yr Mo Day SET/HAUL NO: 7
LOCATION: S.E.C. Goose Island AREA: Queen Charlotte Sound
START: Lat. 51° 25.2' Long. 129° 05.5'
END: Lat. 51° 26.2' Long. 129° 00.8'
GEAR: C.D. #7 poly START TIME (1535) : 1643 DURATION: 68^{min.}
BOTTOM DEPTH m: Start: 128 End: 110 Est. Av. Depth: 119
NET DEPTH RANGE m: 20-27 off bottom Est. Av. Depth: --
DIRECTION OF SET °true: 60 SPEED kn: 2.5 DISTANCE TRAVELLED: 2.8^{mi.}
SET ON: -- WATER CONDITION: Lt. chop TIDE: Flood
WIND DIRECTION: 180° T WIND SPEED: 10 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 100 fms.

VESSEL: BLUE WATERS DATE: 78 10 07 Yr Mo Day SET/HAUL NO: 8
LOCATION: Cape Scott AREA: Queen Charlotte Sound
START: Lat. 51° 07.4' Long. 129° 14.5'
END: Lat. 51° 06.2' Long. 129° 16.0'
GEAR: C.D. #7 poly START TIME (1346): 1443 DURATION: 57^{min.}
BOTTOM DEPTH m: Start: 187 End: 194 Est. Av. Depth: 190
NET DEPTH RANGE m: 35-51 from bottom Est. Av. Depth: --
DIRECTION OF SET °true: 210 SPEED kn: 1.6 DISTANCE TRAVELLED: 1.5^{mi.}
SET ON: M.W. layer WATER CONDITION: heavy TIDE: Flood
WIND DIRECTION: 180° T WIND SPEED: 10 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: 7 OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 135 fms.

6 large yellow jellyfish - total catch.

VESSEL: BLUE WATERS DATE: 78 10 07 Yr Mo Day SET/HAUL NO: 9
LOCATION: S.E. Edge AREA: Queen Charlotte Sound
START: Lat. 51° 23.8' Long. 129° 07.0'
END: Lat. 51° 22.3' Long. 129° 11.5'
GEAR: C.D. #7 poly START TIME (1800) : 1922 DURATION: 82^{min.}
BOTTOM DEPTH m: Start: 165 End: 183 Est. Av. Depth: --
NET DEPTH RANGE m: 22 off bottom Est. Av. Depth: --
DIRECTION OF SET °true: 225 SPEED kn: 2.5 DISTANCE TRAVELLED: 3.4^{mi.}
SET ON: Small scratch WATER CONDITION: Lt. chop TIDE: Ebb
WIND DIRECTION: 140° T WIND SPEED: 10 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: 8 OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 130 fms.

Net towed with footrope on bottom, this scared fish off bottom.

VESSEL: BLUE WATERS DATE: 78 10 09 Yr Mo Day SET/HAUL NO: 10
LOCATION: N.E. Corner G. I. AREA: Queen Charlotte Sound
START: Lat. 51° 30.0' Long. 128° 42.0'
END: Lat. 51° 28.5' Long. 128° 45.1'
GEAR: C.D. #7 poly START TIME (1125) : 1225 DURATION: 60^{min.}
BOTTOM DEPTH m: Start: 139 End: 146 Est. Av. Depth: --
NET DEPTH RANGE m: 26-40 off bottom Est. Av. Depth: 26
DIRECTION OF SET °true: 230 SPEED kn: 2.5 DISTANCE TRAVELLED: 2.5^{mi.}
SET ON: M.W. Layer WATER CONDITION: Lt. chop TIDE: Ebb
WIND DIRECTION: 230° T WIND SPEED: 5 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 110 fms. Net open 18 meters.

VESSEL: BLUE WATERS DATE: 78 10 09 SET/HAUL NO: 11
LOCATION: N.E. Edge AREA: Queen Charlotte Sound
START: Lat. 51°26.6' Long. 128°53.3'
END: Lat. 51°26.8' Long. 128°49.2'
GEAR: C.D. #7 poly START TIME (1359): 1514 DURATION: 75^{min.}
BOTTOM DEPTH m: Start: 163 End: 174 Est. Av. Depth: 167
NET DEPTH RANGE m: 22-46 off bottom Est. Av. Depth: 29
DIRECTION OF SET °true: 70 SPEED kn: 2.1 DISTANCE TRAVELLED: 2.6^{mi.}
SET ON: M.W. schools WATER CONDITION: Lt. chop TIDE: Flood
WIND DIRECTION: 230° T WIND SPEED: 15 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: 9 OTHER OCEANOGRAPHIC DATA: --
REMARKS: Net open 20 meters. Warp 125 fms.

VESSEL: BLUE WATERS DATE: 78 10 09 SET/HAUL NO: 12
LOCATION: S.E. Edge AREA: Queen Charlotte Sound
START: Lat. 51°25.8' Long. 128°57.8'
END: Lat. 51°26.5' Long. 128°56.5'
GEAR: C.D. #7 poly START TIME (1643): 1705 DURATION: 22^{min.}
BOTTOM DEPTH m: Start: 159 End: 141 Est. Av. Depth: 145
NET DEPTH RANGE m: 18-27 off bottom Est. Av. Depth: 22
DIRECTION OF SET °true: 230 SPEED kn: 3.3 DISTANCE TRAVELLED: 1.2^{mi.}
SET ON: -- WATER CONDITION: Lt. chop TIDE: Flood
WIND DIRECTION: 160° T WIND SPEED: 20 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: 10 OTHER OCEANOGRAPHIC DATA: --
REMARKS: Net touched bottom. Net open 18 meters.

VESSEL: BLUE WATERS DATE: 78 10 10 Yr Mo Day SET/HAUL NO: 13
LOCATION: Queens Sound AREA: Q.C.S.
START: Lat. 54°45.6' Long. 128°24.3'
END: Lat. 51°44.0' Long. 128°24.0'
GEAR: C.D. #7 poly START TIME (1024) : 1103 DURATION: 39 min.
BOTTOM DEPTH m: Start: 146 End: 146 Est. Av. Depth: 146
NET DEPTH RANGE m: 29-31 off bottom Est. Av. Depth: 30
DIRECTION OF SET °true: 110 SPEED kn: 3.5 DISTANCE TRAVELLED: 2.3 mi.
SET ON: M.W. layer WATER CONDITION: lg. swell TIDE: Ebb
WIND DIRECTION: 230° T WIND SPEED: 10 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: 11 OTHER OCEANOGRAPHIC DATA: --
REMARKS: Net open 18.0 meters. Warp 110 fms.
SOUNDER SUMMARY:

VESSEL: BLUE WATERS DATE: 78 10 10 Yr Mo Day SET/HAUL NO: 14
LOCATION: N.W. corner AREA: Q.C.S.
START: Lat. 51°54.5' Long. 128°44.0'
END: Lat. 51°54.0' Long. 128°41.8'
GEAR: G.D. #7 poly START TIME (1330) : 1413 DURATION: 43 min.
BOTTOM DEPTH m: Start: 143 End: 146 Est. Av. Depth: 145
NET DEPTH RANGE m: 27-37 off bottom Est. Av. Depth: --
DIRECTION OF SET °true: 120 SPEED kn: 2.2 DISTANCE TRAVELLED: 1.6 mi.
SET ON: Small M.W. schools WATER CONDITION: lg. swell TIDE: Ebb
WIND DIRECTION: 230° T WIND SPEED: 20 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: 12 OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 110 fms. Net open 19.0 meters.

VESSEL: BLUE WATERS DATE: 78 10 10 Yr Mo Day SET/HAUL NO: 15
LOCATION: N.W. corner AREA: Q.C.S.
START: Lat. 51° 59.5' Long. 128° 48.8'
END: Lat. 51° 59.2' Long. 128° 46.6'
GEAR: C.D. #7 poly START TIME (1545) : 1617 DURATION: 32^{min.}
BOTTOM DEPTH m: Start: 178 End: 167 Est. Av. Depth: --
NET DEPTH RANGE m: 55 off bottom Est. Av. Depth: 55
DIRECTION OF SET °true: 130° SPEED kn: 2.6 DISTANCE TRAVELLED: 1.4^{mi.}
SET ON: M.W. layer WATER CONDITION: H. swell TIDE: flood
WIND DIRECTION: 230° T WIND SPEED: 25 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: 13 OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 125 fms.
SOUNDER SUMMARY:

VESSEL: BLUE WATERS DATE: 78 10 10 Yr Mo Day SET/HAUL NO: 16
LOCATION: N.W. corner AREA: Q.C.S.
START: Lat. 51° 59.8' Long. 128° 57.2'
END: Lat. 52° 00.7' Long. 128° 54.5'
GEAR: C.D. #7 poly START TIME (1828): 1858 DURATION: 30^{min.}
BOTTOM DEPTH m: Start: 141 End: 201 Est. Av. Depth: 141
NET DEPTH RANGE m: 73-101 Est. Av. Depth: --
DIRECTION OF SET °true: 70° SPEED kn: 3.8 DISTANCE TRAVELLED: 1.9^{mi.}
SET ON: M.W. schools WATER CONDITION: -- TIDE: Flood
WIND DIRECTION: 230° T WIND SPEED: 15 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: 14 OTHER OCEANOGRAPHIC DATA: --
REMARKS:

VESSEL: BLUE WATERS DATE: 78 10 11 Yr Mo Day SET/HAUL NO: 17
LOCATION: S.W. edge AREA: Q.C.S.
START: Lat. 51° 53.5' Long. 129° 09.2'
END: Lat. 51° 53.6' Long. 129° 09.9'
GEAR: C.D. #7 poly START TIME (0627) : 0704 DURATION: 37^{min.}
BOTTOM DEPTH m: Start: 113 End: 119 Est. Av. Depth: 115
NET DEPTH RANGE m: 70-73 off bottom Est. Av. Depth: --
DIRECTION OF SET °true: 260 SPEED kn: 3.0 DISTANCE TRAVELLED: 1.5^{mi.}
SET ON: layer WATER CONDITION: Lt. chop TIDE: Flood
WIND DIRECTION: 270° T WIND SPEED: 15 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: 15 OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 50 fms.
SOUNDER SUMMARY:

VESSEL: BLUE WATERS DATE: 78 10 11 Yr Mo Day SET/HAUL NO: 18
LOCATION: S.W. edge AREA: Q.C.S.
START: Lat. 51° 04.0' Long. 129° 16.2'
END: Lat. 52° 00.0' Long. 129° 13.8'
GEAR: C.D. #7 poly START TIME (0842): 0915 DURATION: 33^{min.}
BOTTOM DEPTH m: Start: 128 End: 126 Est. Av. Depth: 128
NET DEPTH RANGE m: 24-26 off bottom Est. Av. Depth: 24
DIRECTION OF SET °true: 270 SPEED kn: 2.9 DISTANCE TRAVELLED: 1.6^{mi.}
SET ON: 10 fm. bottom school WATER CONDITION: Lt. chop TIDE: Flood
WIND DIRECTION: 270° T WIND SPEED: 15 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: 16 OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 110 fms.

VESSEL: BLUE WATERS DATE: 78 10 11 Yr Mo Day SET/HAUL NO: 19
LOCATION: S.W. corner AREA: Q.C.S.
START: Lat. 51° 45.8' Long. 129° 31.2'
END: Lat. 51° 45.1' Long. 129° 28.5'
GEAR: C.D. #7 poly START TIME (1235) : 1325 DURATION: 50^{min.}
BOTTOM DEPTH m: Start: 216 End: 156 Est. Av. Depth: 183
NET DEPTH RANGE m: 46-64 off bottom Est. Av. Depth: 55
DIRECTION OF SET °true: 70° SPEED kn: 2.0 DISTANCE TRAVELLED: 1.7^{mi.}
SET ON: M.W. School WATER CONDITION: H. chop TIDE: Ebb
WIND DIRECTION: 270° WIND SPEED: 15 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: 17 OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 125 fms. Net open 20 meters.
SOUNDER SUMMARY:

VESSEL: BLUE WATERS DATE: 78 10 11 Yr Mo Day SET/HAUL NO: 20
LOCATION: S.W. Corner AREA: Q.C.S.
START: Lat. 51° 36.4' Long. 129° 51.0'
END: Lat. 51° 36.6' Long. 129° 47.7'
GEAR: C.D. #7 poly START TIME (1645) : 1740 DURATION: 55^{min.}
BOTTOM DEPTH m: Start: 210 End: 198 Est. Av. Depth: 201
NET DEPTH RANGE m: 29 off bottom Est. Av. Depth: 29
DIRECTION OF SET °true: 80 SPEED kn: 2.5 DISTANCE TRAVELLED: 2.3^{mi.}
SET ON: M.W. School WATER CONDITION: H. Chop TIDE: Flood
WIND DIRECTION: 270° T WIND SPEED: 15 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: 18 OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 150 fms.

VESSEL: BLUE WATERS DATE: 78 10 11 Yr Mo Day SET/HAUL NO: 21
 LOCATION: S.W. Corner AREA: Q.C.S.
 START: Lat. 51° 42.5' Long. 129° 35.6'
 END: Lat. 51° 41.9' Long. 129° 38.0'
 GEAR: C.D. #7 poly START TIME (1930) : 2015 DURATION: 45^{min.}
 BOTTOM DEPTH m: Start: 137 End: 165 Est. Av. Depth: --
 NET DEPTH RANGE m: 27-37 off bottom Est. Av. Depth: --
 DIRECTION OF SET °true: 240 SPEED kn: 2.0 DISTANCE TRAVELLED: 1.5^{mi.}
 SET ON: -- WATER CONDITION: Chop TIDE: Flood
 WIND DIRECTION: 270° T WIND SPEED: 10 kts RECORDER: W. Barner
 TTM: -- TDM: -- BT: 19 OTHER OCEANOGRAPHIC DATA: --
 REMARKS: Warp 110 fms.
 SOUNDER SUMMARY:

VESSEL: BLUE WATERS DATE: 78 11 12 Yr Mo Day SET/HAUL NO: 22
 LOCATION: 10 mi W by S Triangle I AREA: Q.C.S.
 START: Lat. 50° 47.8' Long. 129° 21.4'
 END: Lat. 50° 46.8' Long. 129° 20.1'
 GEAR: C.D. #7 poly START TIME (0708) : 0757 DURATION: 49^{min.}
 BOTTOM DEPTH m: Start: 150 End: 150 Est. Av. Depth: 150
 NET DEPTH RANGE m: 27-37 off bottom Est. Av. Depth: --
 DIRECTION OF SET °true: -- SPEED kn: -- DISTANCE TRAVELLED: --^{mi.}
 SET ON: Large bottom school WATER CONDITION: ripple TIDE: Flood
 WIND DIRECTION: 270° T WIND SPEED: 5 kts RECORDER: W. Barner
 TTM: -- TDM: -- BT: 20 OTHER OCEANOGRAPHIC DATA: --
 REMARKS: Warp 115 fms.

VESSEL: BLUE WATERS DATE: Yr 78 Mo 10 Day 12 SET/HAUL NO: 23
LOCATION: 8 mi S.W. Triangle Is. AREA: Q.C.S.
START: Lat. 50° 45.4' Long. 129° 12.8'
END: Lat. 50° 45.4' Long. 129° 15.4'
GEAR: C.D.#7 poly START TIME (1015) : 1600 DURATION: 45^{min.}
BOTTOM DEPTH m: Start: 148 End: 161 Est. Av. Depth: 148
NET DEPTH RANGE m: 27-40 off bottom Est. Av. Depth: --
DIRECTION OF SET °true: 270° SPEED kn: 2.0 DISTANCE TRAVELLED: 1.5^{mi.}
SET ON: -- WATER CONDITION: -- TIDE: --
WIND DIRECTION: 220° T WIND SPEED: 5 kts RECORDER: S. Farlinger
TTM: -- TDM: -- BT: 21 OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 125 fms.

SOUNDER SUMMARY:

VESSEL: BLUE WATERS DATE: Yr 78 Mo 10 Day 12 SET/HAUL NO: 24
LOCATION: S.W. Triangle Is. AREA: Q.C.S.
START: Lat. 50° 44.8' Long. 129° 16.6'
END: Lat. 50° 44.9' Long. 129° 19.8'
GEAR: C.D. #7 poly START TIME (1230): 1318 DURATION: 48^{min.}
BOTTOM DEPTH m: Start: 178 End: 220 Est. Av. Depth: 201
NET DEPTH RANGE m: 26-37 off bottom Est. Av. Depth: --
DIRECTION OF SET °true: 300 SPEED kn: 2.6 DISTANCE TRAVELLED: 2.1^{mi.}
SET ON: Bottom schools WATER CONDITION: ripple TIDE: Low
WIND DIRECTION: 220° T WIND SPEED: 5 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: 22 OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 150 fms.

VESSEL: BLUE WATERS DATE: Yr 78 Mo 10 Day 12 SET/HAUL NO: 25
LOCATION: Off Triangle Is. AREA: Q.C.S.
START: Lat. 50° 43.2' Long. 129° 06.5'
END: Lat. 50° 43.6' Long. 129° 09.5'
GEAR: C.D. #7 poly START TIME (1517) : 1607 DURATION: 50^{min.}
BOTTOM DEPTH m: Start: 188 End: 179 Est. Av. Depth: 183
NET DEPTH RANGE m: 20-64 off bottom Est. Av. Depth: --
DIRECTION OF SET °true: 270 SPEED kn: 2.5 DISTANCE TRAVELLED: 2.1^{mi.}
SET ON: Bottom school WATER CONDITION: ripple TIDE: Ebb
WIND DIRECTION: 140 WIND SPEED: 10 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: 23 OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 160 fms.

SOUNDER SUMMARY:

VESSEL: BLUE WATERS DATE: Yr 78 Mo 10 Day 12 SET/HAUL NO: 26
LOCATION: Off Triangle Is. AREA: Q.C.S.
START: Lat. 50° 43.8' Long. 129° 10.2'
END: Lat. 50° 42.8' Long. 129° 09.0'
GEAR: C.D. #7 poly START TIME (1707): 1740 DURATION: 33^{min.}
BOTTOM DEPTH m: Start: 159 End: 329 Est. Av. Depth: 165
NET DEPTH RANGE m: 20-27 off bottom Est. Av. Depth: 22
DIRECTION OF SET °true: 135 SPEED kn: 2.5 DISTANCE TRAVELLED: 1.4^{mi.}
SET ON: -- WATER CONDITION: H. chop TIDE: Slack
WIND DIRECTION: 140° T WIND SPEED: 20 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: 24 OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 125 fms.

VESSEL: BLUE WATERS DATE: 78 10 12 SET/HAUL NO: 27
LOCATION: Off Sartine Is. AREA: Q.C.S.
START: Lat. 50° 43.5' Long. 128° 56.1'
END: Lat. 50° 44.2' Long. 128° 57.1'
GEAR: G.D. #7 poly START TIME (1955) : 2022 DURATION: 27^{min.}
BOTTOM DEPTH m: Start: 146 End: 135 Est. Av. Depth: 141
NET DEPTH RANGE m: 18-27 off bottom Est. Av. Depth: 22
DIRECTION OF SET °true: 270 SPEED kn: 2.0 DISTANCE TRAVELLED: 0.9^{mi.}
SET ON: -- WATER CONDITION: H. Chop TIDE: Flood
WIND DIRECTION: 140° T WIND SPEED: 15 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 125 fms.
SOUNDER SUMMARY:

VESSEL: BLUE WATERS DATE: 78 10 15 SET/HAUL NO: 28
LOCATION: Stump Ranch AREA: Q.C.S.
START: Lat. 51° 16.3' Long. 128° 35.5'
END: Lat. 51° 16.7' Long. 128° 36.2'
GEAR: "Nor" Eastern START TIME (1047): 1053 DURATION: 6^{min.}
BOTTOM DEPTH m: Start: 196 End: 181 Est. Av. Depth: --
NET DEPTH RANGE m: Bottom net Est. Av. Depth: --
DIRECTION OF SET °true: 295 SPEED kn: 2.0 DISTANCE TRAVELLED: 0.2^{mi.}
SET ON: Bottom WATER CONDITION: H. Chop TIDE: Flood
WIND DIRECTION: 135° T WIND SPEED: 20 kts RECORDER: --
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: Gear hung up. Warp 30 fms.

VESSEL: BLUE WATERS DATE: 78 10 15 Yr Mo Day SET/HAUL NO: 29
LOCATION: Gully AREA: Q.C.S.
START: Lat. 51° 19.4' Long. 128° 47.6'
END: Lat. 51° 20.3' Long. 128° 48.0'
GEAR: "Nor" Eastern START TIME (1257) : 1320 DURATION: 23^{min.}
BOTTOM DEPTH m: Start: 225 End: 225 Est. Av. Depth: 225
NET DEPTH RANGE m: On bottom Est. Av. Depth: 225
DIRECTION OF SET °true: 270 SPEED kn: 2.1 DISTANCE TRAVELLED: 0.8^{mi.}
SET ON: Bottom WATER CONDITION: H. Chop TIDE: Slack
WIND DIRECTION: 135° T WIND SPEED: 25 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 350 fms.

SOUNDER SUMMARY:

VESSEL: BLUE WATERS DATE: 78 10 15 Yr Mo Day SET/HAUL NO: 30
LOCATION: Gully AREA: Q.C.S.
START: Lat. 51° 19.6' Long. 128° 56.2'
END: Lat. 51° 19.2' Long. 128° 58.8'
GEAR: "Nor" Eastern START TIME (1559) : 1629 DURATION 30^{min.}
BOTTOM DEPTH m: Start: 242 End: 245 Est. Av. Depth: 244
NET DEPTH RANGE m: On bottom Est. Av. Depth: 244
DIRECTION OF SET °true: 275 SPEED kn: 3.2 DISTANCE TRAVELLED: 1.6^{mi.}
SET ON: Nothing WATER CONDITION: -- TIDE: Ebb
WIND DIRECTION: -- WIND SPEED: 20 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: _____

VESSEL: BLUE WATERS DATE: 78 10 15 Yr Mo Day SET/HAUL NO: 31
LOCATION: Gully AREA: Q.C.S.
START: Lat. 51° 12.6' Long. 129° 17.1'
END: Lat. 51° 11.9' Long. 129° 18.7'
GEAR: "Nor" Eastern START TIME (1925) : 1955 DURATION: 30^{min.}
BOTTOM DEPTH m: Start: 289 End: 291 Est. Av. Depth: 290
NET DEPTH RANGE m: On bottom Est. Av. Depth: _____
DIRECTION OF SET °true: 240 SPEED kn: 2.8 DISTANCE TRAVELLED: 1.4^{mi.}
SET ON: Nothing WATER CONDITION: Lt. chop TIDE: --
WIND DIRECTION: 170° WIND SPEED: 7 kts RECORDER: Dave Smith
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 475 fms.
SOUNDER SUMMARY:

VESSEL: BLUE WATERS DATE: 78 10 16 Yr Mo Day SET/HAUL NO: 32
LOCATION: S.E. edge AREA: Q.C.S.
START: Lat. 51° 12.7' Long. 129° 17.5'
END: Lat. 51° 19.1' Long. 129° 29.0'
GEAR: On bottom START TIME (0649) : 0721 DURATION: 32^{min.}
BOTTOM DEPTH m: Start: 225 End: 220 Est. Av. Depth: 223
NET DEPTH RANGE m: On bottom Est. Av. Depth: _____
DIRECTION OF SET °true: 280 SPEED kn: 2.2 DISTANCE TRAVELLED: 1.2^{mi.}
SET ON: -- WATER CONDITION: -- TIDE: Ebb
WIND DIRECTION: -- WIND SPEED: -- RECORDER: W. Barner
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 350 fms.

VESSEL: BLUE WATERS DATE: 78 10 16 SET/HAUL NO: 33
LOCATION: S.E. Edge AREA: Q.C.S.
START: Lat. 51°26.8' Long. 129°41.9'
END: Lat. 51°27.8' Long. 129°42.4'
GEAR: "Nor" Eastern START TIME (0900) : 0907 DURATION: 7 min.
BOTTOM DEPTH m: Start: 164 End: 166 Est. Av. Depth: 165
NET DEPTH RANGE m: On bottom Est. Av. Depth: --
DIRECTION OF SET °true: 315 SPEED kn: 2.0 DISTANCE TRAVELLED: 0.3 mi.
SET ON: On bottom WATER CONDITION: Calm TIDE: --
WIND DIRECTION: Nil WIND SPEED: Nil RECORDER: D. Smith
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: Gear torn end to end.
SOUNDER SUMMARY:

VESSEL: BLUE WATERS DATE: 78 10 16 SET/HAUL NO: 34
LOCATION: S.E. Corner AREA: Q.C.S.
START: Lat. 51°35.3' Long. 129°36.7'
END: Lat. 51°33.2' Long. 129°35.0'
GEAR: C.D. #7 Nylon START TIME (1545) : 1658 DURATION: 73 min.
BOTTOM DEPTH m: Start: 113 End: 113 Est. Av. Depth: 113
NET DEPTH RANGE m: 22-24 off bottom Est. Av. Depth: --
DIRECTION OF SET °true: 220 SPEED kn: 2.0 DISTANCE TRAVELLED: 2.5 mi.
SET ON: -- WATER CONDITION: ripple TIDE: Ebb
WIND DIRECTION: Nil WIND SPEED: Nil RECORDER: --
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 100 fms.

VESSEL: BLUE WATERS DATE: 78 10 16 Yr Mo Day SET/HAUL NO: 35
LOCATION: S.E. Corner AREA: Q.C.S.
START: Lat. 51° 28.5' Long. 129° 29.2'
END: Lat. 51° 30.5' Long. 129° 33.5'
GEAR: C.D. #7 Nylon START TIME (1955) : 2055 DURATION: 60^{min.}
BOTTOM DEPTH m: Start: 113 End: 113 Est. Av. Depth: 113
NET DEPTH RANGE m: 36-46 off bottom Est. Av. Depth: --
DIRECTION OF SET °true: 290 SPEED kn: 3.2 DISTANCE TRAVELLED: 3.2^{mi.}
SET ON: M.W. School WATER CONDITION: Ripple TIDE: Ebb
WIND DIRECTION: Nil WIND SPEED: Nil RECORDER: W. Barner
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 75 fms.

SOUNDER SUMMARY:

VESSEL: BLUE WATERS DATE: 78 10 17 Yr Mo Day SET/HAUL NO: 36
LOCATION: N.E. Corner AREA: Q.C.S.
START: Lat. 51° 27.4' Long. 128° 46.0'
END: Lat. 51° 28.4' Long. 128° 43.7'
GEAR: C.D. #7 Nylon START TIME (1028) : 1048 DURATION: 20^{min.}
BOTTOM DEPTH m: Start: 154 End: 146 Est. Av. Depth: 150
NET DEPTH RANGE m: 46-36 Est. Av. Depth: --
DIRECTION OF SET °true: 65 SPEED kn: 4.2 DISTANCE TRAVELLED: 1.4^{mi.}
SET ON: M.W. School WATER CONDITION: Ripple TIDE: Flood
WIND DIRECTION: 135° WIND SPEED: 5 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: _____

VESSEL: BLUE WATERS DATE: 78 10 17 Yr Mo Day SET/HAUL NO: 37
LOCATION: N.E. Corner AREA: Q.C.S.
START: Lat. 51° 29.4' Long. 128° 40.0'
END: Lat. 51° 30.5' Long. 128° 35.2'
GEAR: C.D. #7 Nylon START TIME (1128) : 1223 DURATION: 55^{min.}
BOTTOM DEPTH m: Start: 157 End: 165 Est. Av. Depth: 161
NET DEPTH RANGE m: 37 off bottom Est. Av. Depth: 37
DIRECTION OF SET °true: 95 SPEED kn: 3.5 DISTANCE TRAVELLED: 3.2^{mi.}
SET ON: M.W. Schools WATER CONDITION: Ripple TIDE: Flood
WIND DIRECTION: 135° T WIND SPEED: 5 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 150 fms.

SOUNDER SUMMARY:

VESSEL: BLUE WATERS DATE: 78 10 17 Yr Mo Day SET/HAUL NO: 38
LOCATION: G.I.G. AREA: Q.C.S.
START: Lat. 51° 34.2' Long. 128° 32.1'
END: Lat. 51° 32.7' Long. 128° 31.0'
GEAR: C.D. #7 Nylon START TIME (1350): 1418 DURATION: 28^{min.}
BOTTOM DEPTH m: Start: 168 End: 168 Est. Av. Depth: 168
NET DEPTH RANGE m: 26 off bottom Est. Av. Depth: --
DIRECTION OF SET °true: 160 SPEED kn: -- DISTANCE TRAVELLED: --^{mi.}
SET ON: M.W. School WATER CONDITION: Ripple TIDE: Flood
WIND DIRECTION: 135° T WIND SPEED: 7 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: _____

VESSEL: BLUE WATERS DATE: Yr 78 Mo 10 Day 17 SET/HAUL NO: 39
LOCATION: Gully AREA: Q.C.S.
START: Lat. 51° 08.8' Long. 128° 28.7'
END: Lat. 51° 07.2' Long. 128° 29.3'
GEAR: C.D. #7 Nylon START TIME (1914) : 1948 DURATION: 34^{min.}
BOTTOM DEPTH m: Start: 184 End: 184 Est. Av. Depth: 184
NET DEPTH RANGE m: 20-38 off bottom Est. Av. Depth: --
DIRECTION OF SET °true: 130 SPEED kn: 2.6 DISTANCE TRAVELLED: 1.5^{mi.}
SET ON: Surface layer WATER CONDITION: Ripple TIDE: Ebb
WIND DIRECTION: Nil WIND SPEED: Nil RECORDER: W. Barner
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 75 fms.

SOUNDER SUMMARY:

VESSEL: BLUE WATERS DATE: Yr 78 Mo 10 Day 18 SET/HAUL NO: 40
LOCATION: Off Triangle Is. AREA: Q.C.S.
START: Lat. 50° 46.2' Long. 129° 07.3'
END: Lat. 50° 46.5' Long. 129° 05.8'
GEAR: C.D. #7 Nylon START TIME (0925): 0947 DURATION: 22^{min.}
BOTTOM DEPTH m: Start: 117 End: 95 Est. Av. Depth: --
NET DEPTH RANGE m: 22 off bottom Est. Av. Depth: 22
DIRECTION OF SET °true: 95 SPEED kn: 3.3 DISTANCE TRAVELLED: 1.2^{mi.}
SET ON: M.W. School WATER CONDITION: Ripple TIDE: Flood
WIND DIRECTION: 180° T WIND SPEED: 15 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 75 fms.

VESSEL: BLUE WATERS DATE: 78 10 18 Yr Mo Day SET/HAUL NO: 41
LOCATION: Off Triangle Is. AREA: Q.C.S.
START: Lat. 50° 53.3' Long. 129° 17.3'
END: Lat. 50° 55.8' Long. 129° 15.7'
GEAR: C.D. #7 Nylon START TIME (1225) : 1256 DURATION: 31^{min.}
BOTTOM DEPTH m: Start: 108 End: 108 Est. Av. Depth: 108
NET DEPTH RANGE m: 20-22 off bottom Est. Av. Depth: 20
DIRECTION OF SET °true: 315 SPEED kn: 3.2 DISTANCE TRAVELLED: 1.7^{mi.}
SET ON: M.W. School WATER CONDITION: Lt. Chop TIDE: Flood
WIND DIRECTION: 180° T WIND SPEED: 10 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 75 fms.
SOUNDER SUMMARY:

VESSEL: BLUE WATERS DATE: 78 10 18 Yr Mo Day SET/HAUL NO: 42
LOCATION: Off Triangle Is. AREA: Q.C.S.
START: Lat. 50° 55.0' Long. 129° 14.8'
END: Lat. 50° 53.2' Long. 129° 14.7'
GEAR: C.D. #7 Nylon START TIME (1320): 1358 DURATION: 38^{min.}
BOTTOM DEPTH m: Start: 112 End: 112 Est. Av. Depth: 112
NET DEPTH RANGE m: 44 off bottom Est. Av. Depth: 44
DIRECTION OF SET °true: 180° T SPEED kn: 3.4 DISTANCE TRAVELLED: 1.7^{mi.}
SET ON: Surface schools WATER CONDITION: Lt. Chop TIDE: Flood
WIND DIRECTION: 135° T WIND SPEED: 10 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 50 fms.

VESSEL: BLUE WATERS DATE: 78 10 18 Yr Mo Day SET/HAUL NO: 43
LOCATION: Off Triangle Is. AREA: Q.C.S.
START: Lat. 50° 53.7' Long. 129° 24.6'
END: Lat. 50° 53.0' Long. 129° 23.2'
GEAR: G.D. #7 Nylon START TIME (1511) : 1533 DURATION: 22^{min.}
BOTTOM DEPTH m: Start: 178 End: 179 Est. Av. Depth: --
NET DEPTH RANGE m: 20 off bottom Est. Av. Depth: --
DIRECTION OF SET °true: 270 SPEED kn: 3.0 DISTANCE TRAVELLED: 1.1^{mi.}
SET ON: -- WATER CONDITION: Lt. Chop TIDE: Slack
WIND DIRECTION: 180° T WIND SPEED: 15 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: _____
SOUNDER SUMMARY:

VESSEL: BLUE WATERS DATE: 78 10 18 Yr Mo Day SET/HAUL NO: 44
LOCATION: Off Triangle Is. AREA: Q.C.S.
START: Lat. 50° 52.6' Long. 129° 30.3'
END: Lat. 50° 51.6' Long. 129° 30.6'
GEAR: G.D. #7 Nylon START TIME (1625) : 1735 DURATION: 70^{min.}
BOTTOM DEPTH m: Start: 185 End: 181 Est. Av. Depth: 183
NET DEPTH RANGE m: 20 m off bottom Est. Av. Depth: 2.0
DIRECTION OF SET °true: 170 SPEED kn: 2.1 DISTANCE TRAVELLED: 2.5^{mi.}
SET ON: On bottom WATER CONDITION: Choppy TIDE: --
WIND DIRECTION: 180° T WIND SPEED: -- RECORDER: D. Smith
TTM: -- TDM: -- BT: --- OTHER OCEANOGRAPHIC DATA: --
REMARKS: _____

VESSEL: BLUE WATERS DATE: 78 10 19 Yr Mo Day SET/HAUL NO: 45
LOCATION: Off Cox Is. AREA: Q.C.S.
START: Lat. 50° 44.4' Long. 128° 39.0'
END: Lat. 50° 43.0' Long. 128° 39.8'
GEAR: C.D. #7 Nylon START TIME (1012) : 1044 DURATION: 32^{min.}
BOTTOM DEPTH m: Start: 113 End: 108 Est. Av. Depth: 112
NET DEPTH RANGE m: 29-37 off bottom Est. Av. Depth: 37
DIRECTION OF SET °true: 275 SPEED kn: 1.9 DISTANCE TRAVELLED: 1.0^{mi.}
SET ON: -- WATER CONDITION: Ripple TIDE: Ebb
WIND DIRECTION: 180° T WIND SPEED: 10 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 100 fms.
SOUNDER SUMMARY:

VESSEL: BLUE WATERS DATE: 78 10 19 Yr Mo Day SET/HAUL NO: 46
LOCATION: Off Sartine Is. AREA: Q.C.S.
START: Lat. 50° 44.5' Long. 129° 00.8'
END: Lat. 50° 45.4' Long. 129° 02.1'
GEAR: C.D. #7 Nylon START TIME (1346) : 1356 DURATION: 10^{min.}
BOTTOM DEPTH m: Start: 117 End: 117 Est. Av. Depth: 117
NET DEPTH RANGE m: 18-22 off bottom Est. Av. Depth: --
DIRECTION OF SET °true: 280 SPEED kn: 3.0 DISTANCE TRAVELLED: 0.5^{mi.}
SET ON: -- WATER CONDITION: H. Chop TIDE: Flood
WIND DIRECTION: 290° T WIND SPEED: 20 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 100 fms.

VESSEL: BLUE WATERS DATE: 78 10 19 Yr Mo Day SET/HAUL NO: 47
 LOCATION: Gully AREA: Q.C.S.
 START: Lat. 50° 55.1' Long. 129° 40.0'
 END: Lat. 50° 57.0' Long. 129° 39.0'
 GEAR: C.D. #7 Nylon START TIME (1730) : 1846 DURATION: 76^{min.}
 BOTTOM DEPTH m: Start: 229 End: 249 Est. Av. Depth: 238
 NET DEPTH RANGE m: 18-64 off bottom Est. Av. Depth: 37
 DIRECTION OF SET °true: 270 SPEED kn: 2.3 DISTANCE TRAVELLED: 3.0^{mi.}
 SET ON: M.W. Layer WATER CONDITION: H. Chop TIDE: Ebb
 WIND DIRECTION: 270° T WIND SPEED: 10 kts RECORDER: W. Barner
 TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
 REMARKS: Warp 200 fms. Net open 15 meters.

VESSEL: BLUE WATERS DATE: 78 10 19 Yr Mo Day SET/HAUL NO: 48
 LOCATION: Gully AREA: Q.C.S.
 START: Lat. 51° 00.8' Long. 129° 31.0'
 END: Lat. 51° 01.8' Long. 129° 28.0'
 GEAR: C.D. #7 Nylon START TIME (2013) : 2116 DURATION: 63^{min.}
 BOTTOM DEPTH m: Start: 220 End: 232 Est. Av. Depth: --
 NET DEPTH RANGE m: -- Est. Av. Depth: --
 DIRECTION OF SET °true: 50° T SPEED kn: 2.1 DISTANCE TRAVELLED: 2.2^{mi.}
 SET ON: -- WATER CONDITION: Chop TIDE: Ebb
 WIND DIRECTION: 270° T WIND SPEED: 10 kts RECORDER: W. Barner
 TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
 REMARKS: Warp 150 fms.
 SOUNDER SUMMARY:

Layer followed footrope towards bottom as gear was lowered. Net open 15 meters.

VESSEL: BLUE WATERS DATE: Yr 78 Mo 10 Day 19 SET/HAUL NO: 49
LOCATION: Gully AREA: Q.C.S.
START: Lat. 51° 07.3' Long. 129° 26.6'
END: Lat. 51° 09.5' Long. 129° 28.7'
GEAR: C.D. #7 Nylon START TIME (2235): 2336 DURATION: 61^{min.}
BOTTOM DEPTH m: Start: 264 End: 285 Est. Av. Depth: --
NET DEPTH RANGE m: 18 off bottom Est. Av. Depth: 18 off bottom
DIRECTION OF SET °true: 330 SPEED kn: 2.3 DISTANCE TRAVELLED: 2.3^{mi.}
SET ON: M.W. Layer WATER CONDITION: Lt. Chop TIDE: Slack
WIND DIRECTION: 270° T WIND SPEED: 10 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 225 fms. Net open 15 meters.

VESSEL: BLUE WATERS DATE: Yr 78 Mo 10 Day 20 SET/HAUL NO: 50
LOCATION: Triangle Is. grounds AREA: Q.C.S.
START: Lat. 51° 04.3' Long. 129° 05.1'
END: Lat. 51° 07.1' Long. 129° 04.2'
GEAR: C.D. #7 Nylon START TIME (0711): 0747 DURATION: 36^{min.}
BOTTOM DEPTH m: Start: 130 End: 119 Est. Av. Depth: --
NET DEPTH RANGE m: 24-42 off bottom Est. Av. Depth: --
DIRECTION OF SET °true: 40 SPEED kn: 2.2 DISTANCE TRAVELLED: 1.3^{mi.}
SET ON: M.W. Layer WATER CONDITION: Lt. Chop TIDE: Ebb
WIND DIRECTION: 340° T WIND SPEED: 10 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 75 fm

VESSEL: BLUE WATERS DATE: 78 10 20 Yr Mo Day SET/HAUL NO: 51
LOCATION: Gully AREA: Q.C.S.
START: Lat. 51° 16.2' Long. 128° 49.8'
END: Lat. 51° 17.9' Long. 128° 50.0'
GEAR: C.D. #7 Nylon START TIME (1006) : 1048 DURATION: 42^{min.}
BOTTOM DEPTH m: Start: 189 End: 216 Est. Av. Depth: --
NET DEPTH RANGE m: 18-51 Est. Av. Depth: --
DIRECTION OF SET °true: 15 SPEED kn: 2.6 DISTANCE TRAVELLED: 1.8^{mi.}
SET ON: M.W. Layer WATER CONDITION: Lt. Chop TIDE: Slack
WIND DIRECTION: 340° T WIND SPEED: 10 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 150 fms.

VESSEL: BLUE WATERS DATE: 78 10 20 Yr Mo Day SET/HAUL NO: 52
LOCATION: S.E. Edge AREA: Q.C.S.
START: Lat. 51° 25.0' Long. 129° 08.5'
END: Lat. 51° 24.3' Long. 129° 09.0'
GEAR: C.D. #7 Nylon START TIME (1253) : 1302 DURATION: 9^{min.}
BOTTOM DEPTH m: Start: 99 End: 104 Est. Av. Depth: --
NET DEPTH RANGE m: 28.0 Est. Av. Depth: 28.0
DIRECTION OF SET °true: 190 SPEED kn: 3.3 DISTANCE TRAVELLED: 0.5^{mi.}
SET ON: Bottom schools WATER CONDITION: Ripple TIDE: Flood
WIND DIRECTION: 260° T WIND SPEED: 10 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS:

VESSEL: BLUE WATERS DATE: Yr 78 Mo 10 Day 20 SET/HAUL NO: 53
LOCATION: S.E. Edge AREA: Q.C.S.
START: Lat. 51° 24.0' Long. 129° 10.0'
END: Lat. 51° 23.7' Long. 129° 11.7'
GEAR: G.D. #7 Nylon START TIME (1317) : 1349 DURATION 32^{min.}
BOTTOM DEPTH m: Start: 117 End: 113 Est. Av. Depth: 115
NET DEPTH RANGE m: 22-28 Est. Av. Depth: 26
DIRECTION OF SET °true: 220 SPEED kn: 2.4 DISTANCE TRAVELLED: 1.3^{mi.}
SET ON: M.W. School WATER CONDITION: Ripple TIDE: Flood
WIND DIRECTION: 260° T WIND SPEED: 10 kts RECORDER: W. Barner
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 75 fms.

VESSEL: BLUE WATERS DATE: Yr 78 Mo 10 Day 20 SET/HAUL NO: 54
LOCATION: S.E. Edge AREA: Q.C.S.
START: Lat. 51° 23.0' Long. 129° 12.7'
END: Lat. 51° 23.0' Long. 129° 14.2'
GEAR: G.D. #7 Nylon START TIME (1414) : 1455 DURATION: 41^{min.}
BOTTOM DEPTH m: Start: 110 End: 106 Est. Av. Depth: 108
NET DEPTH RANGE m: 20-27 Est. Av. Depth: --
DIRECTION OF SET °true: 190 SPEED kn: 1.8 DISTANCE TRAVELLED: 1.2^{mi.}
SET ON: M.W. School WATER CONDITION: Ripple TIDE: Flood
WIND DIRECTION: 260° T WIND SPEED: 10 kts. RECORDER: W. Barner
TTM: -- TDM: -- BT: -- OTHER OCEANOGRAPHIC DATA: --
REMARKS: Warp 75 fms.

