

**Catches and Trawl Locations of M/V  
*Blue Waters* During Rockfish  
Exploration and Assessment Cruise to  
the West Coast of the Queen Charlotte  
Islands, 1979**

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CATCHES AND TRAWL LOCATIONS OF M/V BLUE WATERS  
DURING ROCKFISH EXPLORATION AND ASSESSMENT CRUISE  
TO THE WEST COAST OF THE QUEEN CHARLOTTE ISLANDS, 1979

by

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ABSTRACT

Nagtegaal, D. A. and S. P. Farlinger. 1980. Catches and trawl locations of M/V BLUE WATERS during rockfish explorations and assessment cruise to the west coast of the Queen Charlotte Islands, 1979. Can. Data Rep. Fish. Aquat. Sci. 215: 74 p.

The purpose of the survey was to estimate the biomass of rockfishes, concentrating on three areas of higher abundance located in 1978: Rennell Sound, Buck Point and Anthony Island. In addition, the area off Langara Island, commonly known as Langara Spit, was briefly surveyed. Mean catch rates for most localities were approximately the same as in 1978. This Data Report presents the general results of the cruise with regard to haul locations, catches of important species and biological data collected.

Key words: biomass, rockfish, exploration.

RÉSUMÉ

Nagtegaal, D. A. and S. P. Farlinger. 1980. Catches and trawl locations of M/V BLUE WATERS during rockfish explorations and assessment cruise to the west coast of the Queen Charlotte Islands, 1979. Can. Data Rep. Fish. Aquat. Sci. 215: 74 p.

L'objet du levé était d'évaluer la biomasse des scorpènes, principalement dans les trois secteurs où l'on a observé les niveaux d'abondance les plus élevés en 1978, soit la baie Rennell, la pointe Buck et l'île Anthony. En outre, on a fait un levé sommaire dans la région située au large de l'île Langara, mieux connue sous le nom de flèche Langara. En moyenne, les taux de prise pour la plupart des endroits sont sensiblement identiques à ceux de 1978. Le rapport de données présente les résultats généraux de l'expédition concernant les lieux de relevage, les prises des principales espèces et les données biologiques recueillies.

Mots-clés: biomasse, scorpènes, exploration.



## INTRODUCTION

The Pacific Biological Station conducted a bottom trawl survey off the west coast of the Queen Charlotte Islands during May-June, 1979. The purpose of the survey was to estimate the biomass of rockfishes, concentrating on three areas of higher abundance located in 1978 (Nagtegaal et al. 1980). In addition, the area north of 54°N off Langara Island was briefly surveyed. This Data Report presents the general results of the cruise with regard to haul locations, catches of important species and biological data collected. Analysis of these data and detailed results will be presented in a later report.

## VESSEL AND GEAR

The vessel awarded the charter for the survey was the M/V BLUE WATERS, a 28 m stern trawler. Detailed vessel specifications are contained in Appendix Table 1. Two trawl nets were used during the cruise: an Atlantic Western III rigged for rough bottom trawling and a Danish midwater rope trawl. Russian saucer doors were used with the midwater trawl while 1,043 kg standard steel V-doors were used with the bottom trawl. Detailed gear specifications are contained in Appendix Table 2.

## FISHING LOCATIONS AND CATCH SAMPLING

The survey area was the west coast of the Queen Charlotte Islands between Gray Rock and Langara Island. The trawl survey consisted of three parts. The first segment was very similar to the survey done in 1978 (Nagtegaal et al. 1980) with one additional trackline off Gray Rock. Tracklines parallel to Loran C lines and approximately normal to isobaths were used to position fishing locations. The survey pattern consisted of a total of 32 tracklines positioned along Loran C lines approximately 40 microseconds (5 naut mi) apart between Frederick Island and Gray Rock. Along each line bottom trawl hauls were attempted in each 55 m stratum between 55 m and 550 m. If no suitable trawl location was found along the trackline in each stratum, the area five microseconds on each side of the trackline was searched within the stratum.

The second part involved an intensive survey in three areas of higher rockfish abundance: Rennell Sound, Buck Point and Anthony Island. Additional tracklines were placed in these areas resulting in a set of lines approximately 10 microseconds apart. Once again, trawl hauls were attempted in each 55 m stratum.

Finally, a limited survey was directed to the area west of Langara Island, generally known as Langara Spit. Fishing positions were determined by searching along a set of tracklines 20 microseconds apart between Loran C lines 11310 and 11420. Locations of all tracklines and trawl hauls are shown in Figures 1 and 2, respectively.

A total of 75 hauls were made, 5 midwater tows and the remaining 70 with bottom gear. Midwater gear was used in an attempt to determine the species composition in the shallow, rough bottom areas. Catch and bridge log information is contained in Appendix Table 3.

Sampling of the catch was conducted in one of two general ways: (i) for hauls of <0.5 t, the entire catch was sorted and weighed by species; (ii) for hauls of >0.5 t, the codend was flected aboard and weighed with an electronic load cell<sup>1</sup>, emptied and reweighed to obtain the weight of the catch by difference; the catch was then subsampled to obtain the species composition by weight. Subsampling was accomplished by removing tubs of fish from the beginning, middle, and end of the catch. The number of tubs used in any subsample was determined according to the species composition and size of the catch. On a number of occasions the load cell was not functioning properly. When this was the case and large hauls were encountered the entire catch weight was estimated according to the sampling technique developed by Westrheim (1967).

The primary emphasis of biological sampling was to obtain representative samples of all rockfish species in order to estimate growth, mortality and age composition of their populations. In addition, maturity data was collected for many of the rockfish species. Sample size was 100 length/sex/maturity/otoliths plus as many more length/sex measurements as were contained in the subsample. Biological samples collected are listed in Table 1.

## RESULTS

Sebastes alutus and S. reedi comprised a large percentage (61%) of the total catch. A summary of the catch weights by major species is contained in Table 2. Mean catch rates (kg/hr) for most localities were approximately the same as in 1978 although in some areas such as Flamingo Inlet and Anthony Island the rates increased considerably, due to more effective sampling. Only a few hauls (2) were made in this area the previous year and as such the catch rates were probably unrepresentative of the population. Individual rockfish catch rates varied with depth and locality. Highest rockfish mean catch rates occurred in the 274 - 328 m range. Rennell Sound and the Buck Point/Englefield Bay areas produced the greatest quantity of rockfish. No significant concentrations of rockfishes were discovered in areas unknown to the commercial industry. Mean rockfish catch rates for all localities off the west coast of the Queen Charlotte Islands are contained in Table 3.

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<sup>1</sup>Sea Weigh, Measurement Systems Incorporated, Seattle, Washington.

The area surveyed off Langara Island was characterized by small catches and similar indications on the sounder. The results of this survey may not be indicative of the area since a limited number of tracklines were searched and few hauls made. Catch rates by depth interval for Langara Spit are contained in Table 4.

As mentioned above, maturity data were collected for some rockfish species. Many rockfish were spawning or had just recently spawned. A summary of the rockfish maturities collected is presented in Table 6. Most of the rockfish had a sex ratio of approximately 1:1 although S. crameri, S. zacentrus and to a lesser extent S. proriger had a skewed sex distribution. There were very few S. crameri males and few S. zacentrus females while S. proriger had a ratio of 40% males to 60% females. Appendix Table 4 presents the species composition by haul.

#### ACKNOWLEDGMENTS

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Table 1. Biological samples collected on M/V BLUE WATERS rockfish cruise, May 22-June 13, 1979.

Species	Len-sex	Len-sex-oto <sup>a</sup>	Len-sex-oto-mat <sup>a</sup>
<u>Sebastes aleutianus</u>	784	100	100
<u>S. alutus</u>	4105	-	-
<u>S. brevispinis</u>	35	-	199
<u>S. crameri</u>	406	-	199
<u>S. proriger</u>	691	-	200
<u>S. reedi</u>	895	-	200
<u>S. zacentrus</u>	667	-	100
<u>Sebastolobus alascanus</u>	-	1 <sup>b</sup>	-
Total	7583	101	998

<sup>a</sup>Double otolith samples.  
<sup>b</sup>Large specimen.

Table 2. Summary of catch weights by important species (common names in Appendix Table 5).

Species	Weight (kg)	Percent
<u>Sebastes alutus</u>	14, 587	31.58
<u>S. reedi</u>	13,676	29.60
<u>S. aleutianus</u>	3,594	7.78
<u>S. brevispinis</u>	1,709	3.70
<u>Sebastolobus alascanus</u>	1,314	2.84
<u>Sebastes crameri</u>	1,257	2.72
<u>Atheresthes stomias</u>	1,183	2.56
<u>S. borealis</u>	853	1.85
<u>S. zacentrus</u>	752	1.63
<u>Microstomus pacificus</u>	566	1.23
Other*	6,706	14.51
Total	46,197	100.00

\*Includes species less than 1% of the total catch.

Table 3. Mean rockfish CPUE (kg/hr) for all localities off the west coast of Queen Charlotte Islands, M/V BLUE WATERS cruise, May 22-June 13, 1979.\*

Depth interval (m)	165-218	219-273	274-328	329-382
<u>Sebastes aleutianus</u>	34.0	9.1	53.4	176.3
<u>S. alutus</u>	172.0	470.6	674.1	485.5
<u>S. babcocki</u>	-	3.4	89.4	7.1
<u>S. borealis</u>	-	-	8.2	50.8
<u>S. brevispinis</u>	121.5	108.5	52.6	.3
<u>S. ciliatus</u>	-	0.6	0.1	-
<u>S. crameri</u>	-	4.6	57.8	10.1
<u>S. diploproa</u>	-	0.1	1.2	0.3
<u>S. elongatus</u>	-	1.2	-	-
<u>S. entomelas</u>	56.0	5.0	3.2	-
<u>S. helvomaculatus</u>	-	7.2	4.4	9.0
<u>S. melanops</u>	-	0.1	-	-
<u>S. paucispinis</u>	2.0	12.1	23.8	1.3
<u>S. pinniger</u>	4.0	2.8	0.8	-
<u>S. proriger</u>	1236.0	66.4	75.4	0.5
<u>S. reedi</u>	219.7	273.8	238.8	143.8
<u>S. ruberrimus</u>	3.0	-	-	-
<u>S. variegatus</u>	56.0	-	-	-
<u>S. zacentrus</u>	-	5.7	22.1	-
<u>Sebastolobus alascanus</u>	-	7.8	44.7	58.0

\*Not including Langara Spit.

Table 3 (cont'd)

Depth interval (m)	383-437	438-492
<u>Sebastes aleutianus</u>	182.9	192.7
<u>S. alutus</u>	64.0	10.0
<u>S. babcocki</u>	4.3	-
<u>S. borealis</u>	64.5	45.0
<u>S. brevispinis</u>	-	1.8
<u>S. diploproa</u>	2.0	1.3
<u>S. proriger</u>	-	1.2
<u>S. zacentrus</u>	-	0.6
<u>Sebastolobus alascanus</u>	76.7	29.1

Table 4. Mean rockfish CPUE (kg/hr) for Langara Spit, M/V BLUE WATERS rockfish cruise, May 22-June 13, 1979.

Depth interval (m)	165-218	219-273
<u>Sebastes aleutianus</u>	-	4.3
<u>S. alutus</u>	17.0	146.3
<u>S. babcocki</u>	1.0	5.5
<u>S. brevispinis</u>	20.0	53.3
<u>S. ciliatus</u>	-	2.4
<u>S. crameri</u>	18.0	309.8
<u>S. elongatus</u>	2.0	-
<u>S. helvomaculatus</u>	2.0	4.3
<u>S. proriger</u>	40.0	10.4
<u>S. reedi</u>	22.0	29.4
<u>S. variegatus</u>	Tr	26.9
<u>S. zacentrus</u>	13.0	300.0
<u>Sebastolobus alascanus</u>	-	7.9

Table 5. Description of rockfish maturity stages.<sup>1</sup>

Maturity code	Gonad condition
1	IMMATURE (translucent; males, stringlike; females small)
FEMALES: 2	MATURING (small, yellow eggs; translucent or opaque)
3	MATURE (large, yellow eggs; opaque)
4	FERTILIZED (large, orange-yellow eggs; translucent)
5	EMBRYOS or LARVAE (includes eyed eggs)
6	SPENT (large, flaccid, red ovaries. A few larvae may be present).
7	RESTING (moderate size, firm, red-grey ovaries)
MALES: 8	MATURE (ribbon-like; small brown to large white)
8A	RESTING (ribbon-like; small, brown)
8B	DEVELOPING (swelling, brown-white)
8C	DEVELOPED (large, white; easily broken)
8D	RUNNING (running sperm)
8E	SPENT (flaccid, red)
9	MATURING (stringlike, translucent, white)

<sup>1</sup>Slightly modified version of the stages described by Harling (1971). In Sebastes flavidus an intermediate stage, characterized by small white testes, exists between the resting (8A) and the developing (8B) stages. Some color variations also occur in the female maturing stage (2). S. reedi ovaries exhibit small orange eggs while S. aleutianus and S. brevispinis small eggs are pinkish in color.



Table 6 (cont.)

Species: S. brevispinis  
 Locality: S.W. Tian Head  
 Date: May 26, 1979  
 Haul: 15  
 Depth: 298-284 m.

Condition:	Male								Female						
	1	9	8	8A	8B	8C	8D	8E	1	2	3	4	5	6	7
<u>Length (cm)</u>															
40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
42	1	-	-	0	-	-	-	-	-	1	-	-	-	-	-
43	0	-	-	0	-	-	-	-	-	0	-	-	-	-	-
44	1	-	-	0	-	-	-	-	-	1	-	-	-	-	-
45	0	-	-	0	1	-	-	-	-	0	-	-	-	3	-
46	1	-	-	3	0	-	-	-	-	1	-	-	-	0	-
47	-	-	-	4	0	-	-	-	-	1	-	-	1	0	-
48	-	-	-	2	0	-	-	1	-	0	-	-	0	0	1
49	-	-	-	6	0	-	-	0	-	0	-	1	0	1	1
50	-	-	-	11	0	-	-	0	-	1	-	0	0	1	0
51	-	-	-	10	0	-	-	0	-	-	-	1	2	0	0
52	-	-	-	8	0	-	-	5	-	-	-	0	1	0	1
53	-	-	-	8	0	-	-	1	-	-	-	0	-	0	-
54	-	-	-	4	0	-	-	3	-	-	-	0	-	0	-
55	-	-	-	2	1	-	-	0	-	-	-	0	-	3	-
56	-	-	-	0	-	-	-	1	-	-	-	0	-	-	-
57	-	-	-	1	-	-	-	-	-	-	-	0	-	-	-
58	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-
59	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-
60	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
<u>Subtotal</u>	3	-	-	60	2	-	-	11	-	5	-	3	4	8	3
<u>% maturity</u>	4	-	-	79	3	-	-	14	-	22	-	13	17	35	13
<u>Total</u>					76								23		
<u>Sex ratio</u>					77								23		

Table 6 (cont'd)

Species: S. brevispinis  
 Locality: Englefield Bay  
 Date: June 7, 1979  
 Haul: 59  
 Depth: 232-285 m

Condition:	Male								Female						
	1	9	8	8A	8B	8C	8D	8E	1	2	3	4	5	6	7
<u>Length (cm)</u>															
35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	0	-	-	-	1	-	-	-	1	1	-	-	-	-	-
44	1	-	-	-	1	-	-	-	0	0	-	-	-	-	-
45	3	-	-	-	0	-	-	-	1	1	-	-	-	-	-
46	3	-	-	-	1	-	-	1	0	0	2	-	1	-	-
47	-	-	-	-	1	-	-	3	1	0	0	-	1	1	1
48	-	-	-	1	2	-	-	8	0	1	1	2	0	0	1
49	-	-	-	0	1	-	-	6	0	0	0	1	0	0	1
50	-	-	-	1	0	-	-	9	1	0	2	1	0	0	0
51	-	-	-	-	1	-	-	8	-	0	2	2	0	0	0
52	-	-	-	-	-	-	-	4	-	0	0	1	1	0	0
53	-	-	-	-	-	-	-	6	-	0	2	0	-	0	0
54	-	-	-	-	-	-	-	2	-	1	-	0	-	-	1
55	-	-	-	-	-	-	-	3	-	-	-	0	-	-	-
56	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-
57	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-
58	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-
59	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-
60	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Subtotal	8	-	-	2	8	-	-	50	-	4	4	9	8	3	4
% Maturity	12			3	12			73		12.5	12.5	28	25	9.5	12.5
Total	68								32						
Sex ratio	68								32						

Table 6 (cont'd)

Species:	<u>S. crameri</u>														
Locality:	Langara Spit														
Date:	June 10, 1979														
Haul:	72														
Depth:	234-241 m														
Condition:	Male								Female						
	1	9	8	8A	8B	8C	8D	8E	1	2	3	4	5	6	7
<u>Length (cm)</u>															
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	5	-	-	-	-	-	-	-	2	-	-
26	-	-	-	-	5	-	-	-	-	-	-	2	4	-	-
27	-	-	-	-	1	-	-	-	-	-	-	1	6	-	-
28	-	-	-	-	1	-	-	-	-	-	-	-	13	-	-
29	-	-	-	1	-	-	-	1	-	-	-	-	10	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-
32	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-
33	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-
34	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-
35	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
36	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-
37	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-
38	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	-	-	-	1	12	-	-	1	-	-	-	3	82	-	-
% Maturity				7	86			7				4	96		
Total					14								85		
Sex ratio					14								86		

Table 6 (cont'd)

Species: S. crameri  
 Locality: S.W. Tian Head  
 Date: May 26, 1979  
 Haul: 15  
 Depth: 298-285 m

Condition:	Male								Female						
	1	9	8	8A	8B	8C	8D	8E	1	2	3	4	5	6	7
Length (cm)															
30	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-
32	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
33	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-
34	-	-	-	-	-	-	-	-	-	-	-	4	4	-	-
35	-	-	-	-	-	-	-	-	-	-	-	10	11	-	-
36	-	-	-	-	-	-	-	-	-	-	-	13	20	-	-
37	-	-	-	-	-	-	-	-	-	-	-	10	13	-	-
38	-	-	-	-	-	-	-	-	-	-	-	2	5	-	-
39	-	-	-	-	-	-	-	-	-	-	-	2	1	-	-
40	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Subtotal													41	59	
% Maturity													41	59	
Total													100		
Sex ratio													100		

Table 6 (cont'd)

Species:	<u>S. proriger</u>														
Locality:	W. Tian Head														
Date:	May 26, 1979														
Haul:	16														
Depth:	233-219 m														
Condition:	Male								Female						
	1	9	8	8A	8B	8C	8D	8E	1	2	3	4	5	6	7
Length (cm)															
27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-
32	-	-	-	-	1	-	-	-	1	2	-	-	-	1	-
33	-	-	-	-	0	-	-	-	-	1	-	1	-	0	-
34	-	-	-	-	0	1	-	-	-	0	-	1	-	2	-
35	-	-	-	-	1	-	-	-	-	2	-	1	-	3	-
36	-	-	-	-	-	-	-	-	-	1	-	0	1	2	-
37	-	-	-	-	-	-	-	-	-	0	-	0	1	4	-
38	-	-	-	-	-	-	-	-	-	1	-	0	1	13	-
39	-	-	-	-	-	-	-	-	-	-	-	0	2	10	-
40	-	-	-	-	-	-	-	-	-	-	-	1	7	13	-
41	-	-	-	-	-	-	-	-	-	-	-	0	3	3	-
42	-	-	-	-	-	-	-	-	-	-	-	2	5	4	-
43	-	-	-	-	-	-	-	-	-	-	-	1	1	2	-
44	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-
45	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-
46	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	-	-	-	-	3	1	-	1	1	8	-	7	21	58	-
% Maturity	-	-	-	-	60	20	-	20	1	8	-	7	22	62	-
Total					5					95					
Sex ratio					5					95					

Table 6 (cont'd)

Species:	<u>S. proriger</u>															
Locality:	Rennell Sound															
Date:	May 27, 1979															
Haul:	33															
Depth:	277-281 m															
Condition:	Male								Female							
	1	9	8	8A	8B	8C	8D	8E	1	2	3	4	5	6	7	
<u>Length (cm)</u>																
30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
33	-	-	-	4	4	-	-	-	-	-	-	-	1	-	-	-
34	-	-	-	3	7	-	-	1	-	-	-	-	0	1	-	-
35	1	-	-	6	6	-	-	0	-	-	1	-	0	3	-	-
36	-	-	-	1	-	-	-	0	-	-	1	-	0	10	-	-
37	-	-	-	1	-	-	-	1	-	-	1	-	2	19	-	-
38	-	-	-	-	-	-	-	0	-	-	1	-	4	8	-	-
39	-	-	-	-	-	-	-	0	-	-	-	-	2	3	-	-
40	-	-	-	-	-	-	-	1	-	-	-	-	-	5	-	-
41	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-
42	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	1	-	-	15	18	-	-	3	-	-	4	-	9	50	-	-
% Maturity	3			40	49			8			7		14	79		
Total				37									63			
Sex ratio				37									63			



Table 6 (cont'd)

Species: S. reedi  
 Locality: Rennell Sound  
 Date: May 28, 1979  
 Haul: 32  
 Depth: 230-223 m

Condition:	Male								Female						
	1	9	8	8A	8B	8C	8D	8E	1	2	3	4	5	6	7
Length (cm)															
35	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	4	-	-	1	-	-	-	-	-	1	-	-	-	-	-
37	3	-	-	1	-	-	-	-	-	1	1	-	-	2	1
38	0	-	-	2	-	-	-	1	-	1	4	-	-	2	0
39	0	-	-	0	-	-	-	0	-	-	0	-	-	1	0
40	4	-	-	5	-	-	-	3	-	-	1	-	-	5	2
41	-	-	-	4	-	-	-	5	-	-	-	-	-	6	0
42	-	-	-	4	-	-	-	3	-	-	-	-	-	5	1
43	-	-	-	1	1	-	-	3	-	-	-	-	-	10	-
44	-	-	-	0	-	-	-	3	-	-	-	-	-	2	-
45	-	-	-	2	-	-	-	-	-	-	-	-	1	1	-
Subtotal	13	-	-	20	1	-	-	18	-	3	6	-	1	34	4
% Maturity	25	-	-	38	2	-	-	35	-	6	12	-	3	71	8
Total				52									48		
Sex ratio				52									48		

Table 6 (cont'd)

Species: S. zacentrus  
 Locality: Langara Spit  
 Date: June 10, 1979  
 Haul: 72  
 Depth: 234-241 m

Condition:	Male								Female						
	1	9	8	8A	8B	8C	8D	8E	1	2	3	4	5	6	7
<u>Length (cm)</u>															
20	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-
22	5	-	-	-	-	-	-	-	1	-	-	-	-	-	-
23	7	-	-	-	2	-	-	-	1	-	-	-	-	-	-
24	3	-	-	5	6	-	-	-	0	-	-	-	-	-	-
25	5	-	-	6	10	-	-	-	1	1	2	-	-	-	-
26	1	-	-	4	8	-	-	-	-	0	1	1	1	-	-
27	-	-	-	3	9	-	-	-	-	1	0	1	1	1	-
28	-	-	-	0	1	-	-	-	-	1	1	0	-	0	-
29	-	-	-	2	2	-	-	-	-	-	1	0	-	1	-
30	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Subtotal	23	-	-	20	38	-	-	-	4	3	5	3	2	2	-
% Maturity	28	-	-	25	47	-	-	-	21	16	26	16	10.5	10.5	-
Total				81								19			
Sex ratio				81								19			



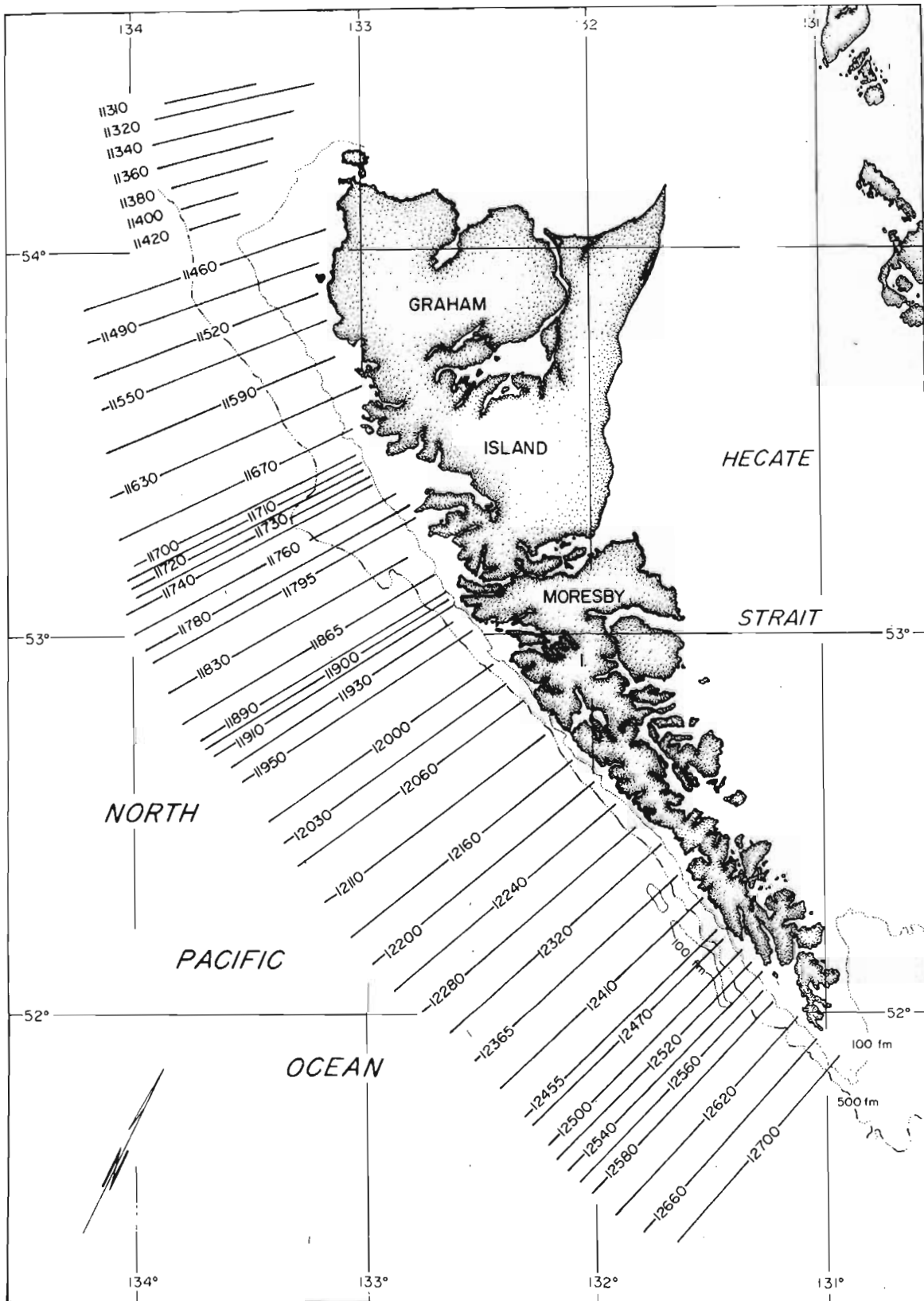


Fig. 1. Locations of tracklines, M/V BLUE WATERS rockfish cruise, May 22-June 13, 1979.



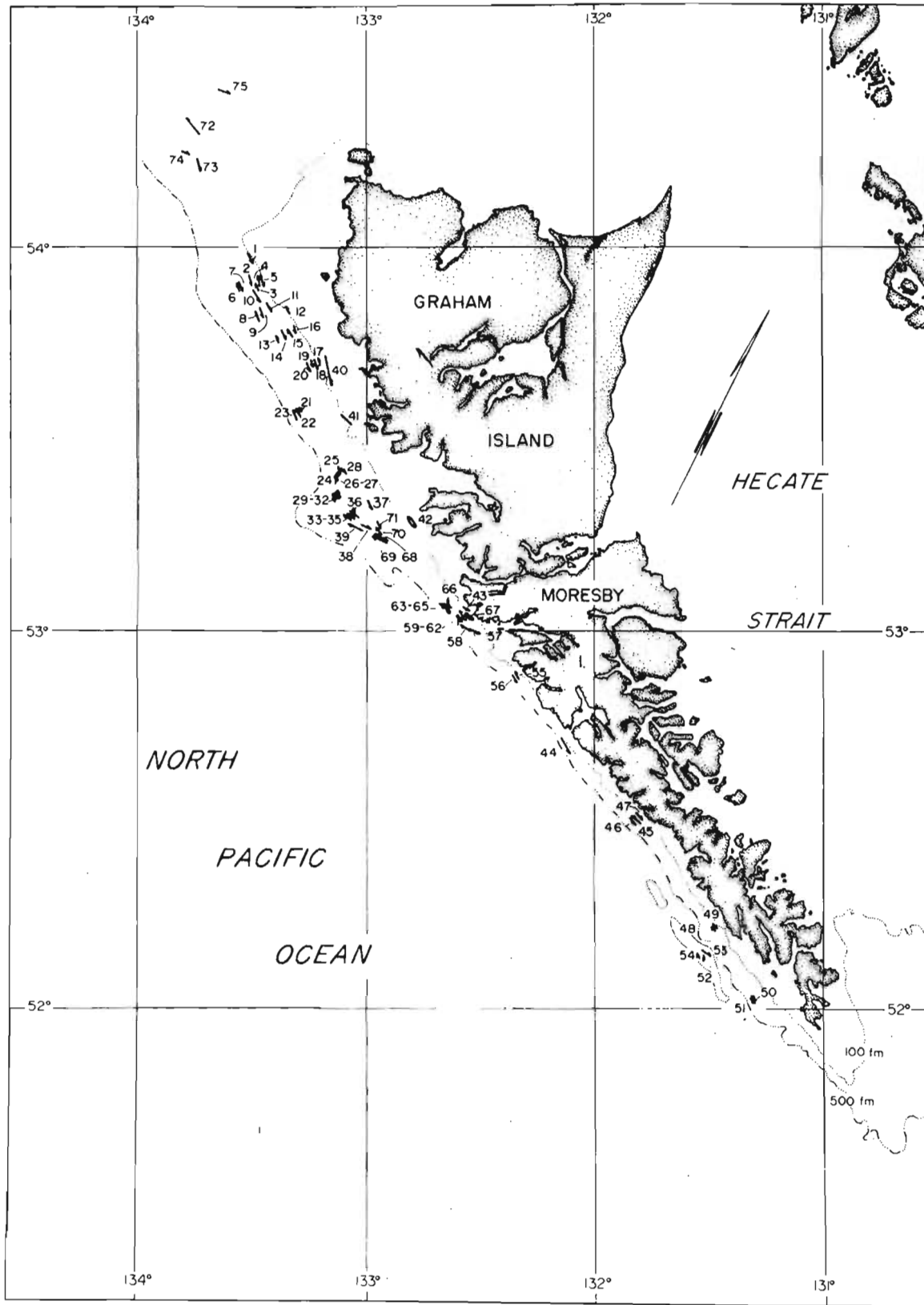


Fig. 2. Locations of trawl hauls, M/V BLUE WATERS rockfish cruise, May 22-June 13, 1979.



Appendix Table 1. Vessel specifications.

Vessel name: BLUE WATERS  
Skipper: Donald Vaccher  
Landing port: Prince Rupert  
Gross tons: 180  
Overall length: 28 m  
Hp: 640  
Crew (total): 4  
Fish storage: refrigerated seawater

Electronic aids:

Sounder: Elac, Simrad  
Radar: Furuno  
Autopilot: Decca  
Loran: Internav, Bendix  
Sounder (net): Elac

Trawl gear:

Double gear and double winches

Cable:

Amount per single spool:

Length: 915 m  
Diameter: 1.9 cm

Net reel:

Hydraulic seine

Appendix Table 2: Net Dimensions And Characteristics of the Atlantic Western III

Vessel

BLUE WATERS

Observation Period

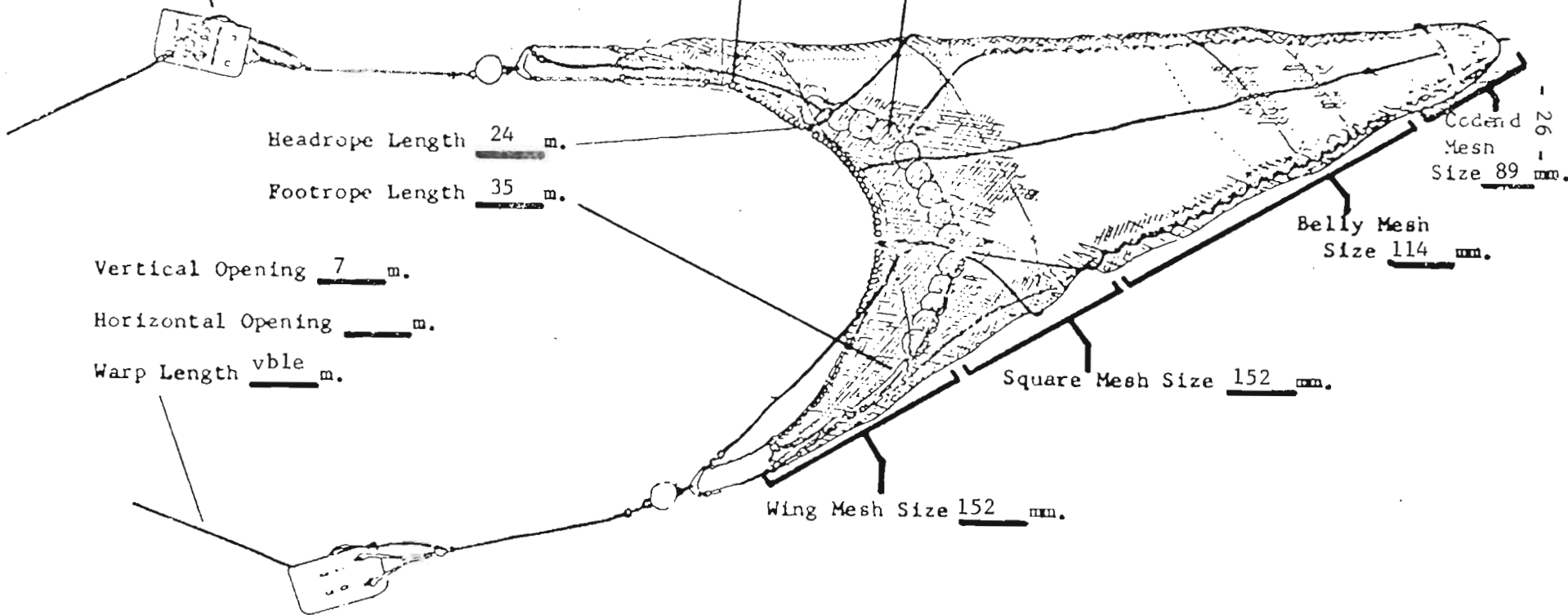
May 22-June 13, 1979

Trawl Doors: Shape Vee  
 Type steel  
 Dimensions 1.9 m. x 2.9 m.  
 Weight 1043 kg

Bridles: 37 m

Floats: Number 80  
 Size 20 cm. - equivalent  
 Material aluminum  
 Shape round

Bobbins: Number 28  
 Size 46 cm.  
 Material rubber  
 Shape 20 half-eggs  
8 rollers



Headrope Length 24 m.

Footrope Length 35 m.

Vertical Opening 7 m.

Horizontal Opening \_\_\_\_\_ m.

Warp Length vble m.

Codend Mesh Size 89 mm.

Belly Mesh Size 114 mm.

Square Mesh Size 152 mm.

Wing Mesh Size 152 mm.

Fish Finder

Name \_\_\_\_\_  
 Model Number \_\_\_\_\_  
 Frequency \_\_\_\_\_ kc.  
 Paper Type (wet or dry) \_\_\_\_\_  
 Speed of Advance \_\_\_\_\_

Net Recorder

Name \_\_\_\_\_  
 Model Number \_\_\_\_\_  
 Frequency \_\_\_\_\_ kc.

Appendix Table 2 (cont'd)

NET DIMENSIONS AND CHARACTERISTICS OF THE DANISH MIDWATER TRAWL

VESSEL NAME BLUE WATERS VESSEL TYPE Stern trawler OBSERVATION PERIOD May 22-June 13, 1979

TRAWL DOORS

Shape Round  
 Type Steel  
 Dimensions 2.1 m x 2.1 m  
 Weight 839 kg

FLOATS

SWEEPLINE /  
 DANDYLINE  
 Length \_\_\_\_\_ m.

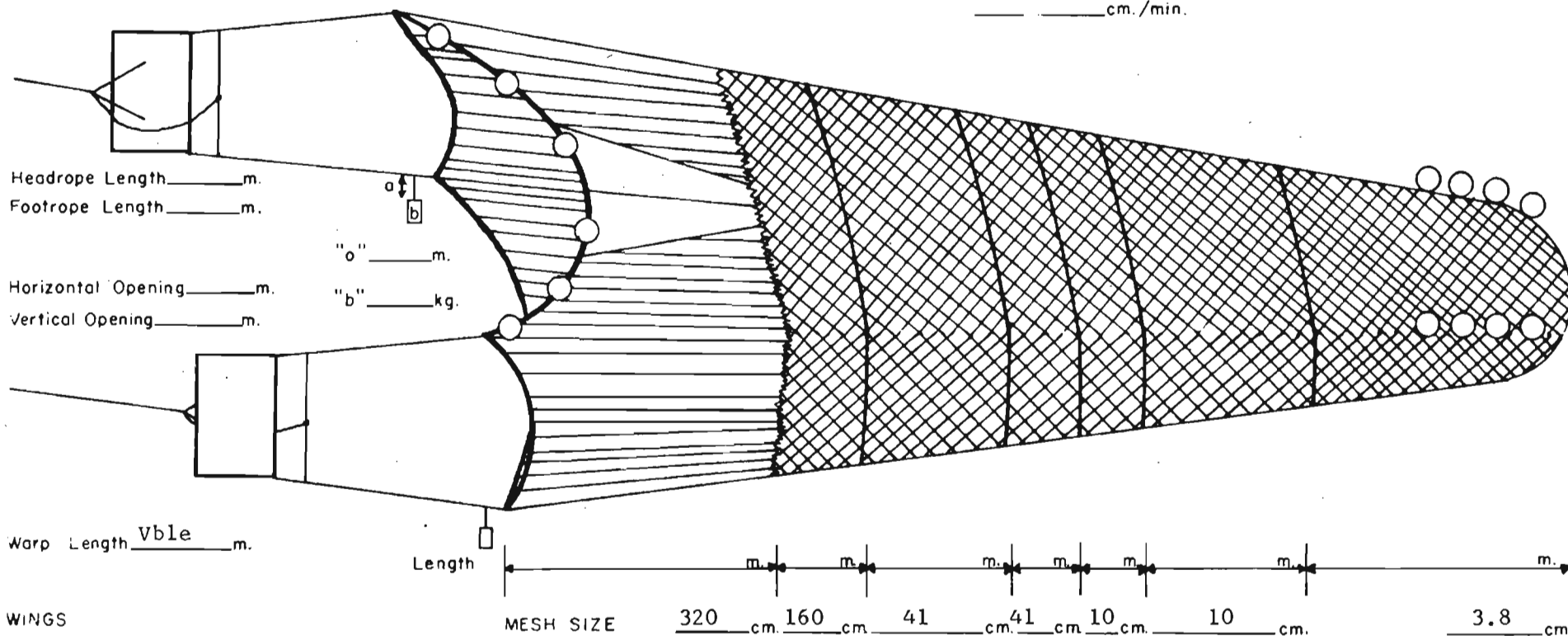
Number \_\_\_\_\_  
 Size \_\_\_\_\_ cm.  
 Shape \_\_\_\_\_  
 Material \_\_\_\_\_

FISH FINDER

Name \_\_\_\_\_  
 Model No. \_\_\_\_\_  
 Frequency \_\_\_\_\_ kc.  
 Paper Type (wet or dry)  
 Speed of Advance  
 \_\_\_\_\_ cm./min.

NET RECORDER

Name Elac  
 Model No. LAZ 72  
 Frequency \_\_\_\_\_ kc.



WINGS

(mesh or line)  
 Mesh Size \_\_\_\_\_ cm.  
 Line Spacing \_\_\_\_\_ cm.  
 Line Thickness \_\_\_\_\_ cm.  
 Material \_\_\_\_\_  
 Height of Wings \_\_\_\_\_ m.

Mesh Material \_\_\_\_\_

CODEND

(floats or weights)  
 Number \_\_\_\_\_  
 Size \_\_\_\_\_ cm.  
 Weight \_\_\_\_\_ kg.  
 Material \_\_\_\_\_  
 Shape \_\_\_\_\_

Appendix Table 3. Fishing log for M/V BLUE WATERS rockfish cruise May 22-June 13, 1979. (See footnotes for explanation of terms).

Haul number	1	2	3	4	5
Date	May 23	May 23	May 23	May 23	May 23
Area	QCI	QCI	QCI	QCI	QCI
Start time (PDST)	0820	1120	1238	1355	1505
Duration (min)	32	30	30	30	30
Start N. Lat. (deg)	053	053	053	053	053
(min)	59.0	56.0	55.0	55.5	55.5
W. Long. (deg)	133	133	133	133	133
(min)	30.1	30.0	29.0	28.0	27.5
Direction (deg.true)	330	160	320	340	140
Finish N. Lat. (deg)	053	053	053	053	053
(min)	57.5	54.0	53.2	54.0	54.0
W. Long. (deg)	133	133	133	133	133
(min)	28.0	29.0	27.5	28.0	27.0
Haul distance (n.m.)	1.6	1.5	1.5	1.5	1.5
Depth (meters)	250-296	343-345	298-320	259-263	206-206
Water temp. (deg. C)					
Surface	8.2	8.5	8.5	8.5	8.5
Depth	-	-	-	-	-
Bottom	-	-	-	-	-
Type of gear	3	3	3	3	3
Total catch (kg)	658	230	327	348	53*
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 3 (cont'd)

Haul number	1	2	3	4	5
Date	May 23	May 23	May 23	May 23	May 23
Area	QCI	QCI	QCI	QCI	QCI
Total catch (kg)	658	230	327	348	53*
Arrowtooth flounder	41	21	7	109	30
Dover sole	19	33	12	-	-
Pacific halibut	10	-	-	-	1
Rex sole	14	4	3	48	-
Other flatfish	Tr	-	-	-	3
Subtotal	84	58	22	157	34
<u>S. aleutianus</u>	-	1	1	-	-
<u>S. alutus</u>	215	59	121	36	-
<u>S. babcocki</u>	4	16	28	-	-
<u>S. borealis</u>	-	-	-	-	-
<u>S. brevispinis</u>	50	Tr	5	84	8
<u>S. crameri</u>	65	Tr	27	-	-
<u>S. entomelas</u>	2	Tr	-	5	-
<u>S. helvomaculatus</u>	6	Tr	9	Tr	-
<u>S. paucispinis</u>	6	-	-	4	4
<u>S. pinniger</u>	6	-	-	-	-
<u>S. proriger</u>	-	-	-	-	-
<u>S. reedi</u>	4	Tr	3	Tr	-
<u>S. variegatus</u>	-	-	-	-	-
<u>S. zacentrus</u>	148	Tr	20	2	-
<u>Seb. alascanus</u>	19	54	38	2	-
Other rockfish	-	2	5	Tr	-
Subtotal	525	133	257	133	12
Lingcod	16	-	-	-	-
Pacific cod	-	-	-	-	2*
Sablefish	3	17	14	-	-
Walleye pollock	13	1	15	24	2*
Other roundfish	3	Tr	12	-	-
Subtotal	35	18	41	24	4*
Longnose skate	-	-	-	31	-
Ratfish	14	-	7	3	3
Other selachii	-	-	-	-	-
Subtotal	14	-	7	34	3
Invertebrates	-	21	Tr	-	-

Appendix Table 3 (cont'd)

Haul number	6	7	8	9	10
Date	May 23	May 23	May 25	May 25	May 25
Area	QCI	QCI	QCI	QCI	QCI
Start time (PDST)	1745	1850	0805	1128	1347
Duration (min)	30	44	30	32	30
Start N. Lat. (deg)	053	053	053	053	053
(min)	54.5	54.5	50.0	50.5	53.5
W. Long. (deg)	133	133	133	133	133
(min)	33.5	33.5	28.5	28.0	29.5
Direction (deg.true)	140	170	140	310	320
Finish N. Lat. (deg)	053	053	053	053	053
(min)	53.0	53.0	48.5	49.0	51.5
W. Long. (deg)	133	133	133	133	133
(min)	32.5	32.0	28.0	27.0	27.5
Haul distance (n.m.)	1.5	2.2	1.5	1.6	1.5
Depth (meters)	290-310	287-296	442-438	352-360	296-292
Water temp. (deg. C)					
Surface	9.0	8.5	8.5	8.5	8.5
Depth	-	-	-	-	-
Bottom	-	-	-	-	-
Type of gear	3	3	3	3	3
Total catch (kg)	10*	292	443	276	314
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 3 (cont'd)

Haul number	6	7	8	9	10
Date	May 23	May 23	May 25	May 25	May 25
Area	QCI	QCI	QCI	QCI	QCI
Total catch (kg)	10*	292	443	276	314
Arrowtooth flounder	1*	9	8	20	22
Dover sole	-	Tr	144	13	6
Pacific halibut	-	-	-	-	-
Rex sole	Tr	1	1	8	9
Other flatfish	-	-	-	-	-
Subtotal	1*	10	153	41	37
<u>S. aleutianus</u>	-	3	190	31	-
<u>S. alutus</u>	2*	190	9	103	122
<u>S. babcocki</u>	-	5	-	6	4
<u>S. borealis</u>	-	-	64	-	-
<u>S. brevispinis</u>	3*	-	-	Tr	43
<u>S. crameri</u>	Tr	26	-	-	-
<u>S. entomelas</u>	-	-	-	-	2
<u>S. helvomaculatus</u>	-	7	Tr	Tr	Tr
<u>S. paucispinis</u>	-	-	-	-	8
<u>S. pinniger</u>	-	-	-	-	1
<u>S. proriger</u>	-	-	-	-	2
<u>S. reedi</u>	2*	-	-	-	10
<u>S. variegatus</u>	-	-	-	-	-
<u>S. zacentrus</u>	-	10	-	Tr	9
<u>Seb. alascanus</u>	Tr	32	17	46	18
Other rockfish	-	-	2	-	-
Subtotal	7*	273	282	186	219
Lingcod	-	-	-	-	-
Pacific cod	-	-	-	-	-
Sablefish	-	-	8	19	2
Walleye pollock	Tr	-	-	-	53
Other roundfish	Tr	1	-	Tr	-
Subtotal	Tr	1	8	19	55
Longnose skate	1*	-	-	-	3
Ratfish	1*	8	Tr	-	Tr
Other selachii	-	-	-	-	Tr
Subtotal	2*	8	Tr	-	3
Invertebrates	-	-	-	30	Tr

Appendix Table 3 (cont'd)

Haul number	11	12	13	14	15
Date	May 25	May 25	May 26	May 26	May 26
Area	QCI	QCI	QCI	QCI	QCI
Start time (PDST)	1425	1700	0748	0930	1050
Duration (min)	35	10	34	30	30
Start N. Lat. (deg)	053	053	053	053	053
(min)	51.5	50.5	46.5	47.0	47.5
W. Long. (deg)	133	133	133	133	133
(min)	26.0	20.5	23.5	21.5	20.5
Direction (deg.true)	140	310	140	140	150
Finish N. Lat. (deg)	053	053	053	053	053
(min)	50.0	50.0	45.5	46.0	46.5
W. Long. (deg)	133	133	133	133	133
(min)	24.5	20.0	23.0	20.5	19.0
Haul distance (n.m.)	1.7	0.5	1.7	1.5	1.5
Depth (meters)	237-232	168-168	446-448	358-347	298-285
Water temp. (deg. C)					
Surface	8.5	8.0	8.5	8.5	8.5
Depth	-	-	-	-	-
Bottom	-	-	-	-	-
Type of gear	3	3	3	3	3
Total catch (kg)	191	48	260	169	892
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 3 (cont'd)

Haul number	11	12	13	14	15
Date	May 25	May 25	May 26	May 26	May 26
Area	QCI	QCI	QCI	QCI	QCI
Total catch (kg)	191	48	260	169	892
Arrowtooth flounder	95	24	9	11	7
Dover sole	-	-	32	9	7
Pacific halibut	-	-	-	-	-
Rex sole	7	Tr	2	2	4
Other flatfish	-	-	-	-	-
Subtotal	102	24	43	22	18
<u>S. aleutianus</u>	-	2	135	20	-
<u>S. alutus</u>	16	-	Tr	74	155
<u>S. babcocki</u>	-	-	-	3	18
<u>S. borealis</u>	-	-	4	13	-
<u>S. brevispinis</u>	8	4	3	-	212
<u>S. crameri</u>	-	-	-	-	374
<u>S. entomelas</u>	-	-	-	-	4
<u>S. helvomaculatus</u>	8	-	-	Tr	-
<u>S. paucispinis</u>	-	-	-	-	11
<u>S. pinniger</u>	-	2	-	-	Tr
<u>S. proriger</u>	1	7	2	Tr	7
<u>S. reedi</u>	1	7	-	-	50
<u>S. variegatus</u>	-	Tr	-	-	-
<u>S. zacentrus</u>	21	Tr	1	-	4
<u>Seb. alascanus</u>	Tr	Tr	28	25	4
Other rockfish	2	2	-	-	-
Subtotal	57	24	173	135	839
Lingcod	1	Tr	-	-	-
Pacific cod	3	-	-	-	-
Sablefish	-	-	34	-	14
Walleye pollock	9	Tr	-	-	14
Other roundfish	-	-	-	Tr	Tr
Subtotal	13	Tr	34	Tr	28
Longnose skate	-	-	9	-	Tr
Ratfish	10	Tr	1	-	7
Other selachii	9	-	-	-	-
Subtotal	19	Tr	10	-	7
Invertebrates	-	-	-	12	Tr

Appendix Table 3 (cont'd)

Haul number	16	17	18	19	20
Date	May 26	May 26	May 26	May 26	May 26
Area	QCI	QCI	QCI	QCI	QCI
Start time (PDST)	1227	1530	1646	1758	1917
Duration (min)	43	30	30	33	31
Start N. Lat. (deg)	053	053	053	053	053
(min)	48.0	43.5	42.5	42.5	42.5
W. Long. (deg)	133	133	133	133	133
(min)	18.5	12.5	13.5	13.5	15.5
Direction (deg.true)	330	150	330	135	320
Finish N. Lat. (deg)	053	053	053	053	053
(min)	47.0	41.5	41.5	41.0	41.0
W. Long. (deg)	133	133	133	133	133
(min)	18.0	12.0	12.5	12.5	14.5
Haul distance (n.m.)	2.2	1.7	1.4	1.6	1.5
Depth (meters)	223-219	234-235	298-290	336-343	435-384
Water temp. (deg. C)					
Surface	8.5	8.5	9.0	-	-
Depth	-	-	-	-	-
Bottom	-	-	-	-	-
Type of gear	3	3	3	3	3
Total catch (kg)	745	314	342	276	143
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 3 (cont'd)

Haul number	16	17	18	19	20
Date	May 26	May 26	May 26	May 26	May 26
Area	QCI	QCI	QCI	QCI	QCI
Total catch (kg)	745	314	342	276	143
Arrowtooth flounder	110	29	2	21	11
Dover sole	9	2	-	6	1
Pacific halibut	3	6	-	-	-
Rex sole	83	7	2	1	-
Other flatfish	-	-	-	-	-
Subtotal	205	44	4	28	12
<u>S. aleutianus</u>	-	-	-	14	104
<u>S. alutus</u>	6	87	122	107	12
<u>S. babcocki</u>	-	5	62	13	1
<u>S. borealis</u>	-	-	-	46	5
<u>S. brevispinis</u>	184	59	11	2	-
<u>S. crameri</u>	34	3	6	-	-
<u>S. entomelas</u>	9	5	-	-	-
<u>S. helvomaculatus</u>	2	2	3	-	-
<u>S. paucispinis</u>	28	6	11	-	-
<u>S. pinniger</u>	9	-	-	-	-
<u>S. proriger</u>	208	6	-	-	-
<u>S. reedi</u>	3	40	5	-	-
<u>S. variegatus</u>	-	-	-	-	-
<u>S. zacentrus</u>	6	2	3	-	-
<u>Seb. alascanus</u>	Tr	5	101	46	8
Other rockfish	9	1	2	1	-
Subtotal	498	221	326	229	130
Lingcod	Tr	11	-	-	-
Pacific cod	15	8	-	-	-
Sablefish	6	-	1	8	Tr
Walleye pollock	9	27	11	-	-
Other roundfish	-	-	Tr	-	-
Subtotal	30	46	12	8	Tr
Longnose skate	-	-	-	-	-
Ratfish	9	3	Tr	-	1
Other selachii	3	-	-	1	-
Subtotal	12	3	Tr	1	1
Invertebrates	-	-	-	10	-

Appendix Table 3 (cont'd)

Haul number	21	22	23	24	25
Date	May 26	May 26	May 27	May 27	May 27
Area	QCI	QCI	QCI	QCI	QCI
Start time (PDST)	2155	2250	0005	0718	0917
Duration (min)	15	35	35	30	30
Start N. Lat. (deg)	053	053	053	053	053
(min)	35.5	35.5	35.0	24.5	26.0
W. Long. (deg)	133	133	133	133	133
(min)	17.5	17.0	19.0	08.0	07.5
Direction (deg.true)	150	000	160	340	160
Finish N. Lat. (deg)	053	053	053	053	053
(min)	34.5	33.5	33.5	23.9	24.5
W. Long. (deg)	133	133	133	133	133
(min)	17.0	15.0	18.0	08.0	07.0
Haul distance (n.m.)	0.7	1.8	1.6	1.7	1.5
Depth (meters)	310-321	376-371	435-429	502-413	230-237
Water temp. (deg. C)					
Surface	9.0	9.0	-	9.0	9.0
Depth	-	-	-	-	-
Bottom	-	-	-	-	-
Type of gear	3	3	3	3	3
Total catch (kg)	25	244	337	41	1407*
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 3 (cont'd)

Haul number	21	22	23	24	25
Date	May 26	May 26	May 26	May 27	May 27
Area	QCI	QCI	QCI	QCI	QCI
Total catch (kg)	25	244	337	41	1407*
Arrowtooth flounder	5	2	5	-	Tr
Dover sole	Tr	10	9	1	-
Pacific halibut	-	-	-	-	97
Rex sole	Tr	4	4	-	-
Other flatfish	-	-	-	-	-
Subtotal	5	16	18	1	97
<u>S. aleutianus</u>	2	107	228	30	13
<u>S. alutus</u>	1	43	12	6	-
<u>S. babcocki</u>	-	-	-	-	-
<u>S. borealis</u>	11	34	46	Tr	-
<u>S. brevispinis</u>	-	-	-	-	17
<u>S. crameri</u>	-	-	-	-	-
<u>S. entomelas</u>	-	-	-	-	13
<u>S. helvomaculatus</u>	-	-	-	-	-
<u>S. paucispinis</u>	-	-	-	-	17
<u>S. pinniger</u>	-	-	-	-	-
<u>S. proriger</u>	-	-	-	-	80
<u>S. reedi</u>	-	-	-	-	1153
<u>S. variegatus</u>	-	-	-	-	-
<u>S. zacentrus</u>	-	-	-	-	-
<u>Seb. alascanus</u>	5	41	33	2	Tr
Other rockfish	-	-	Tr	-	-
Subtotal	19	225	319	38	1293
Lingcod	-	-	-	-	-
Pacific cod	-	-	-	-	-
Sablefish	-	3	-	2	17*
Walleye pollock	-	-	-	-	-
Other roundfish	Tr	Tr	-	-	-
Subtotal	Tr	3	-	2	17*
Longnose skate	-	-	-	-	-
Ratfish	1	-	-	-	-
Other selachii	-	-	-	-	-
Subtotal	1	-	-	-	-
Invertebrates	-	-	-	-	Tr

Appendix Table 3 (cont'd)

Haul number	26	27	28	29	30
Date	May 27	May 27	May 27	May 28	May 28
Area	QCI	QCI	QCI	QCI	QCI
Start time (PDST)	2047	2205	2324	0550	0658
Duration (min)	40	30	23	30	32
Start N. Lat. (deg)	053	053	053	053	053
(min)	25.0	25.0	24.5	22.0	22.2
W. Long. (deg)	133	133	133	133	133
(min)	07.5	07.5	05.5	09.0	08.5
Direction (deg.true)	140	330	140	160	340
Finish N. Lat. (deg)	053	053	053	053	053
(min)	23.5	23.5	26.0	20.5	20.7
W. Long. (deg)	133	133	133	133	133
(min)	07.5	07.5	07.0	08.5	08.3
Haul distance (n.m.)	2.0	1.5	1.2	1.5	1.6
Depth (meters)	301-301	402-340	237-248	265-274	325-329
Water temp. (deg. C)					
Surface	9.8	9.8	9.6	9.2	-
Depth	-	-	-	-	-
Bottom	-	-	-	-	-
Type of gear	3	3	3	3	3
Total catch (kg)	509	635	151	316	3058
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 3 (cont'd)

Haul number	26	27	28	29	30
Date	May 27	May 27	May 27	May 28	May 28
Area	QCI	QCI	QCI	QCI	QCI
Total catch (kg)	509	635	151	316	3058
Arrowtooth flounder	2	1	1	1	1
Dover sole	8	23	2	3	17
Pacific halibut	-	-	-	-	-
Rex sole	1	Tr	Tr	1	Tr
Other flatfish	-	-	-	-	-
Subtotal	11	24	3	5	18
<u>S. aleutianus</u>	20	36	4	-	24
<u>S. alutus</u>	435	495	57	232	2932
<u>S. babcocki</u>	5	-	Tr	3	1
<u>S. borealis</u>	-	26	-	-	-
<u>S. brevispinis</u>	-	-	2	12	-
<u>S. cramerii</u>	-	-	-	-	5
<u>S. entomelas</u>	-	-	7	-	-
<u>S. helvomaculatus</u>	3	47	5	2	3
<u>S. paucispinis</u>	-	-	-	4	11
<u>S. pinniger</u>	-	-	-	-	-
<u>S. proriger</u>	-	-	-	6	4
<u>S. reedi</u>	3	-	52	42	10
<u>S. variegatus</u>	-	-	-	-	-
<u>S. zacentrus</u>	-	-	-	-	-
<u>Seb. alascanus</u>	22	-	11	5	48
Other rockfish	-	-	-	1	-
Subtotal	488	604	138	307	3038
Lingcod	-	-	-	-	-
Pacific cod	-	-	-	-	-
Sablefish	10	7	10	4	1
Walleye pollock	-	-	-	Tr	1
Other roundfish	Tr	Tr	-	-	Tr
Subtotal	10	7	10	4	2
Longnose skate	-	-	-	-	-
Ratfish	-	-	-	-	-
Other selachii	-	-	-	-	-
Subtotal	-	-	-	-	-
Invertebrates	-	Tr	-	-	-

Appendix Table 3 (cont'd)

Haul number	31	32	33	34	35
Date	May 28	May 28	May 28	May 28	May 28
Area	QCI	QCI	QCI	QCI	QCI
Start time (PDST)	0857	1014	1225	1405	1545
Duration (min)	30	30	30	30	30
Start N. Lat. (deg)	053	053	053	053	053
(min)	22.4	22.6	19.0	19.5	20.0
W. Long. (deg)	133	133	133	133	133
(min)	08.3	08.1	06.0	05.0	04.0
Direction (deg.true)	160	330	320	140	310
Finish N. Lat. (deg)	053	053	053	053	053
(min)	20.9	21.1	17.0	17.5	18.0
W. Long. (deg)	133	133	133	133	133
(min)	08.1	07.9	04.0	03.0	02.0
Haul distance (n.m.)	1.5	1.5	1.5	1.5	1.5
Depth (meters)	365-384	230-223	277-281	329-334	374-385
Water temp. (deg. C)					
Surface	-	9.2	-	-	10.0
Depth	-	-	-	-	-
Bottom	-	-	-	-	-
Type of gear	3	3	3	3	3
Total catch (kg)	243	552	2165	620	848
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 3 (cont'd)

Haul number	31	32	33	34	35
Date	May 28	May 28	May 28	May 28	May 28
Area	QCI	QCI	QCI	QCI	QCI
Total catch (kg)	243	552	2165	620	848
Arrowtooth flounder	-	1	2	2	2
Dover sole	5	-	-	9	41
Pacific halibut	-	-	-	-	-
Rex sole	1	-	-	-	4
Other flatfish	-	-	-	-	-
Subtotal	6	1	2	11	47
<u>S. aleutianus</u>	18	-	-	26	114
<u>S. alutus</u>	176	20	98	498	475
<u>S. babcocki</u>	-	Tr	2	6	2
<u>S. borealis</u>	31	-	-	13	94
<u>S. brevispinis</u>	1	28	57	-	-
<u>S. crameri</u>	-	-	1	2	4
<u>S. entomelas</u>	-	2	19	-	-
<u>S. helvomaculatus</u>	Tr	1	6	3	1
<u>S. paucispinis</u>	-	-	22	5	-
<u>S. pinniger</u>	-	-	-	-	-
<u>S. proriger</u>	-	55	174	2	-
<u>S. reedi</u>	-	445	1773	34	4
<u>S. variegatus</u>	-	-	-	-	-
<u>S. zacentrus</u>	-	-	-	-	-
<u>Seb. alascanus</u>	9	-	7	18	106
Other rockfish	-	-	-	-	-
Subtotal	235	551	2159	607	800
Lingcod	-	-	-	-	-
Pacific cod	-	-	-	-	-
Sablefish	2	-	4	-	1
Walleye pollock	-	-	-	-	-
Other roundfish	-	-	-	Tr	-
Subtotal	2	-	4	Tr	1
Longnose skate	-	-	-	-	-
Ratfish	-	-	-	-	-
Other selachii	-	-	-	-	-
Subtotal	-	-	-	-	-
Invertebrates	-	-	-	2	Tr

Appendix Table 3 (cont'd)

Haul number	36	37	38	39	40
Date	May 28	May 28	May 28	May 28	Jun 1
Area	QCI	QCI	QCI	QCI	QCI
Start time (PDST)	1707	2017	2118	2234	1305
Duration (min)	14	30	32	30	100
Start N. Lat. (deg)	053	053	053	053	053
(min)	19.0	21.0	17.0	16.0	43.0
W. Long. (deg)	133	132	133	133	133
(min)	04.0	59.5	01.0	01.0	11.0
Direction (deg.true)	130	145	120	300	000
Finish N. Lat. (deg)	053	053	053	053	053
(min)	18.5	19.0	16.0	17.0	38.5
W. Long. (deg)	133	132	133	133	133
(min)	03.0	58.5	08.5	05.0	09.5
Haul distance (n.m.)	0.7	1.5	1.6	1.5	5.0
Depth (meters)	223-224	206-197	331-331	380-374	164-195
Water temp. (deg. C)					
Surface	10.0	9.9	9.9	9.8	9.2
Depth	-	-	-	-	-
Bottom	-	-	-	-	-
Type of gear	3	3	3	3	22
Total catch (kg)	328	11143	248	991	1
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 3 (cont'd)

Haul number	36	37	38	39	40
Date	May 28	May 28	May 28	May 28	Jun 1
Area	QCI	QCI	QCI	QCI	QCI
Total catch (kg)	328	11143	248	991	1
Arrowtooth flounder	1	Tr	1	3	-
Dover sole	1	Tr	21	18	-
Pacific halibut	-	-	-	-	-
Rex sole	-	Tr	2	5	-
Other flatfish	-	-	-	-	-
Subtotal	2	Tr	24	26	-
<u>S. aleutianus</u>	-	-	3	384	-
<u>S. alutus</u>	34	334	160	431	-
<u>S. babcocki</u>	-	Tr	Tr	2	-
<u>S. borealis</u>	-	-	12	36	-
<u>S. brevispinis</u>	9	223	-	-	1
<u>S. crameri</u>	-	-	5	-	-
<u>S. entomelas</u>	-	112	-	-	-
<u>S. helvomaculatus</u>	9	Tr	-	1	-
<u>S. paucispinis</u>	-	-	-	-	-
<u>S. pinniger</u>	-	-	-	-	-
<u>S. proriger</u>	208	2451	2	-	-
<u>S. reedi</u>	64	7911	9	3	-
<u>S. variegatus</u>	Tr	112	Tr	-	-
<u>S. zacentrus</u>	Tr	-	-	-	-
<u>Seb. alascanus</u>	2	Tr	30	88	-
Other rockfish	Tr	-	-	-	-
Subtotal	326	11143	221	945	1
Lingcod	-	-	-	-	-
Pacific cod	-	-	-	-	-
Sablefish	-	Tr	3	20	-
Walleye pollock	-	-	-	-	-
Other roundfish	-	Tr	-	-	-
Subtotal	-	Tr	3	20	-
Longnose skate	-	-	-	-	-
Ratfish	-	-	-	-	-
Other selachii	-	-	-	-	-
Subtotal	-	-	-	-	-
Invertebrates	-	-	-	-	Tr

Appendix Table 3 (cont'd)

Haul number	41	42	43	44	45
Date	Jun 1	Jun 2	Jun 2	Jun 2	Jun 3
Area	QCI	QCI	QCI	QCI	QCI
Start time (PDST)	1920	0740	1244	1858	1342
Duration (min)	52	60	115	57	28
Start N. Lat. (deg)	053	053	053	052	052
(min)	33.5	18.0	03.0	43.0	30.5
W. Long. (deg)	133	132	132	132	131
(min)	08.0	49.0	34.0	09.0	51.0
Direction (deg.true)	330	310	155	160	330
Finish N. Lat. (deg)	053	053	053	052	052
(min)	32.0	16.5	02.0	41.0	29.0
W. Long. (deg)	133	132	132	132	131
(min)	04.0	47.0	32.0	06.5	49.5
Haul distance (n.m.)	2.6	3.0	5.7	2.8	1.4
Depth (meters)	179-246	259-228	237-213	182-457	310-245
Water temp. (deg. C)					
Surface	9.6	9.8	10.1	10.6	10.5
Depth	-	-	-	-	-
Bottom	-	-	-	-	-
Type of gear	22	22	22	22	3
Total catch (kg)	0	0	0	98	236
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 3 (cont'd)

Haul number	41	42	43	44	45
Date	Jun 1	Jun 2	Jun 2	Jun 2	Jun 3
Area	QCI	QCI	QCI	QCI	QCI
Total catch (kg)	0	0	0	98	236
Arrowtooth flounder	-	-	-	-	9
Dover sole	-	-	-	-	1
Pacific halibut	-	-	-	-	-
Rex sole	-	-	-	-	1
Other flatfish	-	-	-	-	-
Subtotal	-	-	-	-	11
<u>S. aleutianus</u>	-	-	-	-	15
<u>S. alutus</u>	-	-	-	-	95
<u>S. babcocki</u>	-	-	-	-	45
<u>S. borealis</u>	-	-	-	-	-
<u>S. brevispinis</u>	-	-	-	2	3
<u>S. crameri</u>	-	-	-	-	-
<u>S. entomelas</u>	-	-	-	-	-
<u>S. helvomaculatus</u>	-	-	-	-	1
<u>S. paucispinis</u>	-	-	-	-	4
<u>S. pinniger</u>	-	-	-	49	-
<u>S. proriger</u>	-	-	-	42	-
<u>S. reedi</u>	-	-	-	-	Tr
<u>S. variegatus</u>	-	-	-	-	-
<u>S. zacentrus</u>	-	-	-	-	2
<u>Seb. alascanus</u>	-	-	-	-	21
Other rockfish	-	-	-	5	3
Subtotal	-	-	-	98	189
Lingcod	-	-	-	-	-
Pacific cod	-	-	-	-	-
Sablefish	-	-	-	-	1
Walleye pollock	-	-	-	-	8
Other roundfish	-	-	-	-	-
Subtotal	-	-	-	-	9
Longnose skate	-	-	-	-	-
Ratfish	-	-	-	-	26
Other selachii	-	-	-	-	-
Subtotal	-	-	-	-	26
Invertebrates	Tr	-	-	-	1

Appendix Table 3 (cont'd)

Haul number	46	47	48	49	50
Date	Jun 3	Jun 3	Jun 4	Jun 4	Jun 6
Area	QCI	QCI	QCI	QCI	QCI
Start time (PDST)	1450	1745	0915	1048	0745
Duration (min)	19	15	30	10	35
Start N. Lat. (deg)	052	052	052	052	052
(min)	30.0	31.5	13.5	13.0	01.8
W. Long. (deg)	131	131	131	131	131
(min)	51.0	49.0	29.5	29.0	19.2
Direction (deg.true)	135	130	330	140	325
Finish N. Lat. (deg)	052	052	052	052	052
(min)	29.0	30.0	12.5	13.0	01.0
W. Long. (deg)	131	131	131	131	131
(min)	49.5	48.0	28.0	27.0	18.0
Haul distance (n.m.)	0.9	0.7	1.5	0.5	1.7
Depth (meters)	440-356	201-192	320-329	292-281	268-265
Water temp. (deg. C)					
Surface	-	10.5	10.1	10.5	10.0
Depth	-	-	-	-	-
Bottom	-	-	-	-	-
Type of gear	3	3	3	3	3
Total catch (kg)	50	54	241	0	206
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 3 (cont'd)

Haul number	46	47	48	49	50
Date	Jun 3	Jun 3	Jun 4	Jun 4	Jun 6
Area	QCI	QCI	QCI	QCI	QCI
Total catch (kg)	50	54	241	0	206
Arrowtooth flounder	2	11	30	-	6
Dover sole	-	Tr	3	-	2
Pacific halibut	-	-	-	-	-
Rex sole	-	-	1	-	1
Other flatfish	-	-	-	-	-
Subtotal	2	11	34	-	9
<u>S. aleutianus</u>	10	31	12	-	-
<u>S. alutus</u>	16	5	32	-	93
<u>S. babcocki</u>	1	-	1	-	9
<u>S. borealis</u>	11	-	129	-	-
<u>S. brevispinis</u>	-	-	-	-	17
<u>S. crameri</u>	-	-	-	-	3
<u>S. entomelas</u>	-	-	-	-	-
<u>S. helvomaculatus</u>	-	-	-	-	2
<u>S. paucispinis</u>	-	-	-	-	-
<u>S. pinniger</u>	-	1	-	-	-
<u>S. proriger</u>	-	-	-	-	2
<u>S. reedi</u>	-	-	-	-	8
<u>S. variegatus</u>	-	-	-	-	-
<u>S. zacentrus</u>	Tr	-	-	-	2
<u>Seb. alascanus</u>	Tr	Tr	12	-	26
Other rockfish	-	-	-	-	-
Subtotal	38	37	186	-	162
Lingcod	-	-	-	-	10
Pacific cod	-	-	-	-	3
Sablefish	6	-	6	-	-
Walleye pollock	-	3	2	-	5
Other roundfish	-	-	-	-	1
Subtotal	6	3	8	-	19
Longnose skate	-	-	3	-	-
Ratfish	3	3	7	-	16
Other selachii	-	-	2	-	-
Subtotal	3	3	12	-	16
Invertebrates	1	-	1	-	-

Appendix Table 3 (cont'd)

Haul number	51	52	53	54	55
Date	Jun 6	Jun 6	Jun 6	Jun 6	Jun 7
Area	QCI	QCI	QCI	QCI	QCI
Start time (PDST)	1412	1742	1945	2210	0833
Duration (min)	31	23	30	10	35
Start N. Lat. (deg)	052	052	052	052	052
(min)	02.2	09.0	09.8	09.0	53.5
W. Long. (deg)	131	131	131	131	132
(min)	19.0	31.5	32.0	33.0	20.0
Direction (deg.true)	330	045	120	310	320
Finish N. Lat. (deg)	052	052	052	052	052
(min)	01.2	07.8	08.8	08.3	52.5
W. Long. (deg)	131	131	131	131	132
(min)	18.0	31.5	30.2	32.5	19.5
Haul distance (n.m.)	1.5	1.1	1.5	0.5	1.7
Depth (meters)	340-343	248-257	307-393	245-237	212-274
Water temp. (deg. C)					
Surface	-	10.6	10.6	10.0	10.0
Depth	-	-	-	-	-
Bottom	-	-	-	-	-
Type of gear	3	3	3	3	3
Total catch (kg)	197	1522	765	324	334
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 3 (cont'd)

Haul number	51	52	53	54	55
Date	Jun 6	Jun 6	Jun 6	Jun 6	Jun 7
Area	QCI	QCI	QCI	QCI	QCI
Total catch (kg)	197	1522	765	324	334
Arrowtooth flounder	5	-	-	-	43
Dover sole	6	-	-	-	Tr
Pacific halibut	-	-	-	-	5
Rex sole	Tr	-	-	Tr	1
Other flatfish	-	-	-	-	2
Subtotal	11	-	-	Tr	51
<u>S. aleutianus</u>	56	31	19	-	Tr
<u>S. alutus</u>	60	1366	712	317	131
<u>S. babcocki</u>	10	Tr	-	4	5
<u>S. borealis</u>	21	Tr	-	-	-
<u>S. brevispinis</u>	-	-	-	-	18
<u>S. crameri</u>	10	-	-	-	-
<u>S. entomelas</u>	-	-	-	-	-
<u>S. helvomaculatus</u>	2	13	9	Tr	Tr
<u>S. paucispinis</u>	-	-	-	-	11
<u>S. pinniger</u>	-	-	-	-	5
<u>S. proriger</u>	1	-	-	-	1
<u>S. reedi</u>	2	108	22	-	3
<u>S. variegatus</u>	-	-	-	-	-
<u>S. zacentrus</u>	-	-	-	1	Tr
<u>Seb. alascanus</u>	16	4	3	2	1
Other rockfish	-	-	-	-	Tr
Subtotal	178	1522	765	324	175
Lingcod	-	-	-	-	-
Pacific cod	-	-	-	-	-
Sablefish	7	-	-	-	-
Walleye pollock	-	-	-	-	26
Other roundfish	Tr	Tr	-	Tr	-
Subtotal	7	Tr	-	Tr	26
Longnose skate	-	-	-	-	-
Ratfish	1	-	-	-	82
Other selachii	-	-	-	-	-
Subtotal	1	-	-	-	82
Invertebrates	-	-	-	-	Tr

Appendix Table 3 (cont'd)

Haul number	56	57	58	59	60
Date	Jun 7	Jun 7	Jun 7	Jun 7	Jun 7
Area	QCI	QCI	QCI	QCI	QCI
Start time (PDST)	1045	1455	1600	1727	1923
Duration (min)	30	20	28	30	30
Start N. Lat. (deg)	052	053	053	053	053
(min)	53.0	05.0	01.0	01.0	02.0
W. Long. (deg)	132	132	132	132	132
(min)	21.5	33.0	35.0	35.0	35.0
Direction (deg.true)	110	140	130	123	330
Finish N. Lat. (deg)	052	053	053	053	053
(min)	52.5	00.0	00.0	00.0	02.5
W. Long. (deg)	132	132	132	132	132
(min)	20.0	31.5	32.0	32.0	36.0
Haul distance (n.m.)	1.5	1.0	1.4	1.5	1.5
Depth (meters)	475-391	281-314	331-336	232-285	283-274
Water temp. (deg. C)					
Surface	10.0	10.3	10.3	-	-
Depth	-	-	-	-	-
Bottom	-	-	-	-	-
Type of gear	3	3	3	3	3
Total catch (kg)	309	332	279	588	1452
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 3 (cont'd)

Haul number	56	57	58	59	60
Date	Jun 7	Jun 7	Jun 7	Jun 7	Jun 7
Area	QCI	QCI	QCI	QCI	QCI
Total catch (kg)	309	332	279	588	1452
Arrowtooth flounder	22	1	32	13	11
Dover sole	3	Tr	-	-	-
Pacific halibut	-	-	-	-	-
Rex sole	3	Tr	2	3	-
Other flatfish	-	-	Tr	-	-
Subtotal	28	1	34	16	11
<u>S. aleutianus</u>	129	-	7	8	4
<u>S. alutus</u>	12	155	156	-	1255
<u>S. babcocki</u>	5	47	8	-	43
<u>S. borealis</u>	109	-	42	-	-
<u>S. brevispinis</u>	-	22	-	328	32
<u>S. crameri</u>	-	-	10	8	-
<u>S. entomelas</u>	-	-	-	-	-
<u>S. helvomaculatus</u>	-	-	1	-	-
<u>S. paucispinis</u>	-	41	4	10	64
<u>S. pinniger</u>	-	-	-	-	-
<u>S. proriger</u>	-	1	-	3	7
<u>S. reedi</u>	-	12	-	175	11
<u>S. variegatus</u>	-	-	-	-	-
<u>S. zacentrus</u>	-	3	-	15	-
<u>Seb. alascanus</u>	10	3	13	-	4
Other rockfish	1	-	-	5	-
Subtotal	266	284	241	552	1420
Lingcod	-	-	-	-	-
Pacific cod	-	Tr	-	-	-
Sablefish	10	-	-	-	-
Walleye pollock	-	32	4	15	7
Other roundfish	Tr	Tr	Tr	-	-
Subtotal	10	32	4	15	7
Longnose skate	-	-	-	-	-
Ratfish	5	3	-	5	-
Other selachii	-	12	Tr	-	7
Subtotal	5	15	Tr	5	7
Invertebrates	-	-	-	-	7

Appendix Table 3 (cont'd)

Haul number	61	62	63	64	65
Date	Jun 7	Jun 7	Jun 8	Jun 8	Jun 8
Area	QCI	QCI	QCI	QCI	QCI
Start time (PDST)	2110	2224	0623	0728	0840
Duration (min)	35	30	31	30	30
Start N. Lat. (deg)	053	053	053	053	053
(min)	02.8	01.0	04.0	03.5	04.5
W. Long. (deg)	132	132	132	132	132
(min)	36.5	35.0	42.0	41.0	39.0
Direction (deg.true)	140	340	320	135	330
Finish N. Lat. (deg)	053	053	053	053	053
(min)	01.5	02.5	03.5	04.0	03.0
W. Long. (deg)	132	132	132	132	132
(min)	33.5	36.0	38.0	38.0	38.0
Haul distance (n.m.)	1.7	1.5	1.5	1.5	1.5
Depth (meters)	332-336	402-387	277-279	332-329	385-391
Water temp. (deg. C)					
Surface	10.5	10.3	10.5	10.4	10.4
Depth	-	-	-	-	-
Bottom	-	-	-	-	-
Type of gear	3	3	3	3	3
Total catch (kg)	365	234	76	153	365
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 3 (cont'd)

Haul number	61	62	63	64	65
Date	Jun 7	Jun 7	Jun 8	Jun 8	Jun 8
Area	QCI	QCI	QCI	QCI	QCI
Total catch (kg)	365	234	76	153	365
Arrowtooth flounder	36	34	7	16	28
Dover sole	6	27	1	3	28
Pacific halibut	-	-	-	-	-
Rex sole	2	7	1	3	11
Other flatfish	Tr	-	-	Tr	Tr
Subtotal	44	68	9	22	67
<u>S. aleutianus</u>	6	39	Tr	3	69
<u>S. alutus</u>	238	40	31	68	93
<u>S. babcocki</u>	3	2	5	4	4
<u>S. borealis</u>	-	13	-	19	10
<u>S. brevispinis</u>	-	-	1	-	-
<u>S. crameri</u>	5	-	-	-	-
<u>S. entomelas</u>	-	-	-	-	-
<u>S. helvomaculatus</u>	-	-	-	-	-
<u>S. paucispinis</u>	-	-	5	-	-
<u>S. pinniger</u>	-	-	-	-	-
<u>S. proriger</u>	5	-	-	-	-
<u>S. reedi</u>	1	-	6	-	-
<u>S. variegatus</u>	-	-	-	-	-
<u>S. zacentrus</u>	-	-	-	-	-
<u>Seb. alascanus</u>	19	52	6	6	72
Other rockfish	-	3	1	-	2
Subtotal	277	149	55	100	250
Lingcod	-	-	-	-	-
Pacific cod	-	-	-	-	-
Sablefish	23	16	-	27	40
Walleye pollock	20	-	12	4	1
Other roundfish	-	-	-	Tr	-
Subtotal	43	16	12	31	41
Longnose skate	-	-	-	-	-
Ratfish	1	-	-	-	2
Other selachii	-	-	-	-	5
Subtotal	1	-	-	-	7
Invertebrates	-	1	1	-	-

Appendix Table 3 (cont'd)

Haul number	66	67	68	69	70
Date	Jun 8	Jun 8	Jun 8	Jun 9	Jun 9
Area	QCI	QCI	QCI	QCI	QCI
Start time (PDST)	1000	1135	1912	0947	1325
Duration (min)	30	30	35	34	30
Start N. Lat. (deg)	053	053	053	053	053
(min)	05.0	02.0	15.5	15.3	17.0
W. Long. (deg)	132	132	132	132	132
(min)	38.5	34.0	58.0	58.0	57.0
Direction (deg.true)	150	330	315	310	170
Finish N. Lat. (deg)	053	053	053	053	053
(min)	04.0	03.0	14.5	14.6	15.0
W. Long. (deg)	132	132	132	132	132
(min)	38.0	35.0	54.0	54.0	56.0
Haul distance (n.m.)	1.5	1.5	1.7	1.7	1.5
Depth (meters)	235-223	228-228	347-371	325-363	351-343
Water temp. (deg. C)					
Surface	10.4	10.0	10.0	10.0	10.0
Depth	-	-	-	-	-
Bottom	-	-	-	-	-
Type of gear	3	3	3	3	3
Total catch (kg)	569	524	1095	2359	465
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 3 (cont'd)

Haul number	66	67	68	69	70
Date	Jun 8	Jun 8	Jun 8	Jun 9	Jun 9
Area	QCI	QCI	QCI	QCI	QCI
Total catch (kg)	569	524	1095	2359	465
Arrowtooth flounder	31	78	-	-	1
Dover sole	-	Tr	4	-	6
Pacific halibut	-	30	-	-	-
Rex sole	-	Tr	-	-	Tr
Other flatfish	-	4	-	-	-
Subtotal	31	112	4	-	7
<u>S. aleutianus</u>	7	-	524	356	164
<u>S. alutus</u>	273	27	445	682	42
<u>S. babcocki</u>	-	-	-	-	-
<u>S. borealis</u>	-	-	-	-	-
<u>S. brevispinis</u>	86	67	-	-	-
<u>S. crameri</u>	-	Tr	72	6	-
<u>S. entomelas</u>	2	-	-	-	-
<u>S. helvomaculatus</u>	-	-	7	12	9
<u>S. paucispinis</u>	14	13	-	-	-
<u>S. pinniger</u>	-	12	-	-	-
<u>S. proriger</u>	7	218	-	-	-
<u>S. reedi</u>	108	6	25	1261	230
<u>S. variegatus</u>	-	-	-	-	-
<u>S. zacentrus</u>	-	Tr	-	-	-
<u>Seb. alascanus</u>	2	Tr	18	42	13
Other rockfish	Tr	Tr	-	-	-
Subtotal	499	343	1091	2359	458
Lingcod	10	14	-	-	-
Pacific cod	-	-	-	-	-
Sablefish	-	-	-	-	-
Walleye pollock	24	42	-	-	-
Other roundfish	Tr	-	-	-	Tr
Subtotal	34	56	-	-	Tr
Longnose skate	-	-	-	-	-
Ratfish	5	13	-	-	-
Other selachii	-	-	-	-	-
Subtotal	5	13	-	-	-
Invertebrates	-	-	-	-	-

Appendix Table 3 (cont'd)

Haul number	71	72	73	74	75
Date	Jun 9	Jun 10	Jun 11	Jun 11	Jun 11
Area	QCI	QCI	QCI	QCI	QCI
Start time (PDST)	1655	2025	0957	1720	2230
Duration (min)	40	60	38	10	60
Start N. Lat. (deg)	053	054	054	054	054
(min)	18.0	19.5	13.5	15.0	24.5
W. Long. (deg)	132	133	133	133	133
(min)	57.0	46.5	44.0	48.0	38.5
Direction (deg.true)	165	140	180	135	245
Finish N. Lat. (deg)	053	054	054	054	054
(min)	16.0	17.0	12.0	14.0	23.5
W. Long. (deg)	132	133	133	133	133
(min)	56.0	43.5	43.0	46.0	35.0
Haul distance (n.m.)	2.0	3.0	1.9	0.5	3.0
Depth (meters)	369-301	234-241	239-232	305-281	204-212
Water temp. (deg. C)					
Surface	10.0	10.0	10.0	10.0	10.0
Depth	-	-	-	-	-
Bottom	-	-	-	-	-
Type of gear	3	3	3	3	3
Total catch (kg)	817	549	971	0	172
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 3 (cont'd)

Haul number	71	72	73	74	75
Date	Jun 9	Jun 10	Jun 11	Jun 11	Jun 11
Area	QCI	QCI	QCI	QCI	QCI
Total catch (kg)	817	549	971	0	172
Arrowtooth flounder	7	9	17	-	5
Dover sole	11	2	-	-	2
Pacific halibut	-	-	6	-	-
Rex sole	-	-	Tr	-	2
Other flatfish	-	-	-	-	Tr
Subtotal	18	11	23	-	9
<u>S. aleutianus</u>	520	7	Tr	-	-
<u>S. alutus</u>	110	59	182	-	17
<u>S. babcocki</u>	Tr	5	4	-	1
<u>S. borealis</u>	64	-	-	-	-
<u>S. brevispinis</u>	-	45	42	-	20
<u>S. crameri</u>	-	184	322	-	18
<u>S. entomelas</u>	-	-	-	-	-
<u>S. helvomaculatus</u>	4	7	Tr	-	2
<u>S. paucispinis</u>	-	-	-	-	-
<u>S. pinniger</u>	-	-	-	-	-
<u>S. proriger</u>	-	-	17	-	40
<u>S. reedi</u>	-	14	34	-	22
<u>S. variegatus</u>	-	2	42	-	Tr
<u>S. zacentrus</u>	-	193	297	-	13
<u>Seb. alascanus</u>	86	9	4	-	-
Other rockfish	-	-	4	-	2
Subtotal	784	525	948	-	135
Lingcod	-	-	-	-	-
Pacific cod	-	-	-	-	10
Sablefish	11	-	-	-	-
Walleye pollock	-	-	-	-	-
Other roundfish	4	8	Tr	-	-
Subtotal	15	8	Tr	-	10
Longnose skate	-	-	-	-	-
Ratfish	-	5	Tr	-	18
Other selachii	-	-	-	-	-
Subtotal	-	5	Tr	-	18
Invertebrates	-	-	-	-	-

FOOTNOTES TO APPENDIX TABLE 3

Area: QCI = West coast of Queen Charlotte Islands.

Start time: Pacific Daylight Saving Time.

Distance travelled: Nautical miles. These are estimates only.

Depth (meters): Depth at beginning and end of haul.

Water temperatures (Deg. C): Temperatures recorded at surface only.

Type of gear: 3 = Western III trawl, 15.2 cm mesh in intermediate, 8.9 cm mesh in codend with 3.2 cm liner sewn in codend. Standard otter trawl 1.5 m x 2.7 m steel doors.  
22 = Midwater nylon Dane trawl, 3.2 cm liner sewn in codend. Russian saucer doors.

Total catch: Kilograms. Asterisk denotes estimate.

Flatfish: arrowtooth flounder (Atheresthes stomias); Dover sole (Microstomus pacificus); Pacific halibut (Hippoglossus stenolepis); rex sole (Glyptocephalus zachirus).

Roundfish: lingcod (Ophiodon elongatus); Pacific cod (Gadus macrocephalus); sablefish (Anoplopoma fimbria); walleye pollock (Theragra chalcogramma).

Selachii: longnose skate (Raja rhina); ratfish (Hydrolagus colliei).

Other fish (any group): all species whose catch never exceeded 30 kg in any one haul.

English sole (Parophrys vetulus); petrale sole (Eopsetta jordani); slender sole (Lyopsetta exilis); Sebastes ciliatus; S. diploproa; S. elongatus; S. flavidus; S. melanops; S. ruberrimus; bigmouth sculpin (Hemitripterus bolini); bigfin eelpout (Aprodon cortezianus); sturgeon poacher (Agonus acipenserinus); prowfish (Zaprora silenus); spinyhead sculpin (Dascycottus setiger); spaced snipe eel (Avocettina gilli); big skate (Raja binoculata); black skate (Raja kincaidi); spiny dogfish (Squalus acanthias).

Invertebrates: crab, octopus, shrimp, prawn, sponge, squid, starfish, urchins.

Appendix Table 4. Species composition by haul, M/V BLUE WATERS rockfish cruise, May 22-June 13, 1979.

Haul no.	<u>S. aleutianus</u>														
	8			13			20			23			39		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-
30	0	-	0	-	-	-	-	-	-	-	-	-	-	-	-
31	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-
32	0	-	0	-	-	-	-	-	-	-	-	-	-	-	-
33	0	-	0	-	-	-	-	-	-	-	-	-	-	-	-
34	0	-	0	-	-	-	-	-	-	-	-	-	-	-	-
35	0	-	0	-	-	-	1	-	1	-	-	-	-	-	-
36	0	-	0	-	-	-	0	-	0	-	-	-	-	-	-
37	0	-	0	1	-	1	0	-	0	-	-	-	-	1	1
38	0	-	0	0	-	0	1	-	1	-	-	-	-	0	0
39	2	-	2	1	2	3	1	1	2	-	-	-	-	0	0
40	1	1	2	4	1	5	1	1	2	-	1	1	2	3	5
41	2	2	4	0	3	3	2	2	4	-	0	0	2	0	2
42	2	1	3	2	2	4	1	0	1	1	0	1	3	2	5
43	4	0	4	7	4	11	2	3	5	4	2	6	3	1	4
44	7	5	12	9	5	19	5	1	6	0	2	2	0	9	9
45	7	1	8	1	8	15	4	8	12	14	3	17	10	20	30
46	7	3	10	2	4	6	7	12	19	11	5	16	9	19	28
47	11	1	12	8	7	15	4	10	14	15	6	21	5	14	19
48	12	4	16	10	2	12	6	5	11	18	8	26	4	10	14
49	5	4	9	1	5	6	5	2	7	18	10	28	2	8	10
50	8	3	11	1	1	2	4	5	9	6	8	14	4	6	10
51	1	1	2	0	1	1	3	3	6	2	4	6	1	-	1
52	0	1	1	1	-	1	3	2	5	1	2	3	0	-	0
53	0	0	0	-	-	-	0	1	1	1	-	1	1	-	1
54	1	0	1	-	-	-	1	0	1	-	-	-	-	-	-
55	1	0	1	-	-	-	0	1	1	-	-	-	-	-	-
56	0	1	1	-	-	-	0	-	0	-	-	-	-	-	-
57	0	-	0	-	-	-	0	-	0	-	-	-	-	-	-
58	0	-	0	-	-	-	0	-	0	-	-	-	-	-	-
59	1	-	1	-	-	-	0	-	0	-	-	-	-	-	-
60	-	-	-	-	-	-	0	-	0	-	-	-	-	-	-
61	-	-	-	-	-	-	0	-	0	-	-	-	-	-	-
62	-	-	-	-	-	-	0	-	0	-	-	-	-	-	-
63	-	-	-	-	-	-	0	-	0	-	-	-	-	-	-
64	-	-	-	-	-	-	0	-	0	-	-	-	-	-	-
65	-	-	-	-	-	-	0	-	0	-	-	-	-	-	-
66	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	74	28	102	54	45	99	52	57	109	91	51	142	46	93	139
Depth (m)	442-438			446-448			435-384			435-429			380-374		

Appendix Table 4 (cont'd)

Haul no.	<u>S. aleutianus</u> (cont'd)									Total		
	68			70			71			M	F	T
	M	F	T	M	F	T	M	F	T			
29	-	-	-	-	-	-	-	-	-	1	-	1
30	-	-	-	-	-	-	-	-	-	0	-	0
31	-	-	-	-	-	-	-	-	-	1	-	1
32	-	-	-	-	-	-	-	-	-	0	-	0
33	-	-	-	-	-	-	-	-	-	0	-	0
34	-	-	-	-	-	-	-	-	-	0	-	0
35	-	-	-	-	-	-	-	-	-	1	-	1
36	-	-	-	-	-	-	-	-	-	0	-	0
37	-	-	-	-	-	-	-	-	-	1	1	2
38	-	-	-	2	-	2	1	1	2	4	1	5
39	1	1	2	0	-	0	0	0	0	5	4	9
40	0	0	0	2	1	3	1	0	1	11	8	19
41	1	0	1	3	4	7	2	0	2	12	11	23
42	2	1	3	2	3	5	2	7	9	15	16	31
43	4	0	4	3	2	5	6	1	7	33	13	46
44	5	4	10	5	4	9	5	6	11	37	36	73
45	6	4	11	2	2	4	9	10	19	60	56	116
46	3	1	4	2	9	11	12	12	24	53	65	118
47	6	8	14	4	8	12	11	9	20	64	63	127
48	7	9	16	8	5	13	18	12	30	83	55	138
49	8	7	15	3	5	8	11	4	15	53	45	98
50	8	8	16	2	3	5	8	5	13	41	39	80
51	6	4	10	0	3	3	8	1	9	21	17	38
52	3	6	9	1	5	6	6	1	7	15	17	32
53	2	1	3	1	2	3	1	0	1	6	4	10
54	0	2	2	2	0	2	1	0	1	5	2	7
55	1	0	1	-	0	0	2	0	2	4	1	5
56	-	0	0	-	0	0	-	0	0	0	1	1
57	-	0	0	-	0	0	-	1	1	0	1	1
58	-	3	3	-	0	0	-	-	-	0	-	0
59	-	0	0	-	0	0	-	-	-	1	-	1
60	-	1	1	-	1	1	-	-	-	0	-	0
61	-	-	-	-	-	-	-	-	-	0	-	0
62	-	-	-	-	-	-	-	-	-	0	-	0
63	-	-	-	-	-	-	-	-	-	0	-	0
64	-	-	-	-	-	-	-	-	-	0	-	0
65	-	-	-	-	-	-	-	-	-	0	-	0
66	-	-	-	-	-	-	-	-	-	1	-	1
67	-	-	-	-	-	-	-	-	-	-	-	-
Total	65	60	125	42	57	99	104	70	174	528	456	984
Depth (m)	347-371			351-343			369-301					

Appendix Table 4 (cont'd).

S. alutus

Haul no:	1				7			11				26		
	♂	♀	U	T	♂	♀	T	♂	♀	U	T	♂	♀	T
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	1	1	-	-	-	-	-	3	3	-	-	-
13	1	-	0	1	-	-	-	1	3	7	11	-	-	-
14	1	-	0	1	-	-	-	5	6	13	24	-	-	-
15	0	-	1	1	-	-	-	9	9	15	33	-	-	-
16	0	-	0	0	-	-	-	1	2	0	3	-	-	-
17	0	-	3	3	-	-	-	1	1	0	2	-	-	-
18	1	1	1	3	-	-	-	1	0	1	2	-	-	-
19	1	0	0	1	-	-	-	0	0	0	0	-	-	-
20	0	1	0	1	-	-	-	0	0	0	0	-	-	-
21	0	0	0	0	-	-	-	0	0	0	0	-	-	-
22	0	0	1	1	-	1	1	0	0	0	0	-	-	-
23	0	2	0	2	-	0	0	0	1	0	1	-	-	-
24	0	0	0	0	1	0	1	0	0	0	0	-	-	-
25	1	3	0	4	0	0	0	0	0	0	0	-	-	-
26	0	1	0	1	0	0	0	0	0	0	0	-	-	-
27	0	0	0	0	0	0	0	0	0	0	0	-	-	-
28	1	0	0	1	0	0	0	0	0	0	0	-	-	-
29	0	0	1	1	0	1	1	0	0	0	0	-	-	-
30	0	1	-	1	0	0	0	0	0	0	0	-	-	-
31	0	2	-	2	0	0	0	0	0	0	0	-	-	-
32	2	3	-	5	0	0	0	1	1	0	2	-	-	-
33	1	2	-	3	2	4	6	0	0	0	0	-	-	-
34	2	1	-	3	4	5	9	0	0	1	1	-	-	-
35	2	3	-	5	7	7	14	0	1	-	1	-	-	-
36	4	2	-	6	6	10	16	4	4	-	8	-	-	-
37	2	4	-	6	9	13	22	2	2	-	4	2	-	2
38	2	0	-	2	12	10	22	0	1	-	1	6	-	6
39	1	0	-	1	9	9	18	1	1	-	2	14	6	20
40	0	0	-	0	19	9	28	-	-	-	-	18	7	25
41	1	0	-	1	24	4	28	-	-	-	-	13	7	20
42	4	0	-	4	7	10	17	-	-	-	-	15	18	33
43	0	0	-	0	16	6	22	-	-	-	-	6	24	30
44	3	5	-	8	14	4	18	-	-	-	-	2	26	28
45	3	7	-	10	0	4	4	-	-	-	-	2	16	18
46	3	5	-	8	1	5	6	-	-	-	-	-	12	12
47	1	10	-	11	-	-	-	-	-	-	-	-	4	4
48	1	11	-	12	-	-	-	-	-	-	-	-	-	-
49	-	4	-	4	-	-	-	-	-	-	-	-	-	-
50	-	2	-	2	-	-	-	-	-	-	-	-	-	-
51	-	1	-	1	-	-	-	-	-	-	-	-	-	-
52	-	1	-	1	-	-	-	-	-	-	-	-	-	-
Total	38	72	8	118	131	102	233	26	32	41	99	78	120	198
Depth (m)	250-296				287-296			237-232				301-301		

Appendix Table 4 (cont'd).

		<u>S. alutus</u>								
Haul no:		27			29			30		
		♂	♀	T	♂	♀	T	♂	♀	T
Length (cm)	10	-	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-	-
	13	-	-	-	-	-	-	-	-	-
	14	-	-	-	-	-	-	-	-	-
	15	-	-	-	-	-	-	-	-	-
	16	-	-	-	-	-	-	-	-	-
	17	-	-	-	-	-	-	-	-	-
	18	-	-	-	-	-	-	-	-	-
	19	-	-	-	-	-	-	-	-	-
	20	-	-	-	-	-	-	-	-	-
	21	-	-	-	-	-	-	-	-	-
	22	-	-	-	-	-	-	-	-	-
	23	-	-	-	-	-	-	-	-	-
	24	-	-	-	-	-	-	-	-	-
	25	-	-	-	-	-	-	-	-	-
	26	-	-	-	-	-	-	-	-	-
	27	-	-	-	-	-	-	-	-	-
	28	-	-	-	-	-	-	-	-	-
	29	-	-	-	-	-	-	-	-	-
	30	-	-	-	-	-	-	-	-	-
	31	-	-	-	-	-	-	-	-	-
	32	-	-	-	-	-	-	-	-	-
	33	-	-	-	-	-	-	-	-	-
	34	1	-	1	2	-	2	-	-	-
	35	1	-	1	0	-	0	-	-	-
	36	1	-	1	2	1	3	-	-	-
	37	12	1	13	4	1	5	2	-	2
	38	18	3	21	4	2	6	2	-	2
	39	20	5	25	6	3	9	4	1	5
	40	15	9	24	21	1	22	16	6	22
	41	7	16	23	9	6	15	14	9	23
	42	6	18	24	18	5	23	12	13	25
43	0	17	17	9	5	14	8	15	23	
44	1	3	4	5	13	18	3	26	29	
45	-	2	2	1	35	36	1	33	34	
46	-	1	1	0	19	19	-	22	22	
47	-	0	0	0	13	13	-	12	12	
48	-	-	-	1	7	8	-	4	4	
49	-	-	-	-	0	0	-	-	-	
50	-	-	-	-	1	1	-	-	-	
51	-	-	-	-	-	-	-	-	-	
52	-	-	-	-	-	-	-	-	-	
Total	82	75	157	82	112	194	62	141	203	
Depth (m)	402-340			265-274			305-329			

Appendix Table 4 (cont'd).

S. alutus

Haul no.	34			39			45				52		
	♂	♀	T	♂	♀	T	♂	♀	U	T	♂	♂	T
10	-	-	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	1	1	-	-	-
18	-	-	-	-	-	-	-	-	0	0	-	-	-
19	-	-	-	-	-	-	-	-	1	1	-	-	-
20	-	-	-	-	-	-	-	-	1	1	-	-	-
21	-	-	-	-	-	-	1	3	2	6	-	-	-
22	-	-	-	-	-	-	0	2	2	4	-	-	-
23	-	-	-	-	-	-	1	3	2	6	-	-	-
24	-	-	-	-	-	-	0	2	1	3	-	-	-
25	-	-	-	-	-	-	2	1	0	3	-	-	-
26	-	-	-	-	-	-	1	1	2	4	-	-	-
27	-	-	-	-	-	-	0	4	-	4	-	-	-
28	-	-	-	-	-	-	2	6	-	8	-	-	-
29	-	-	-	-	-	-	5	1	-	6	-	-	-
30	-	-	-	-	-	-	5	3	-	8	-	-	-
31	-	-	-	-	-	-	0	1	-	1	-	-	-
32	-	-	-	-	-	-	2	1	-	3	-	-	-
33	-	-	-	-	-	-	4	2	-	6	-	-	-
34	2	-	2	-	-	-	6	3	-	9	-	-	-
35	0	-	0	2	-	2	8	7	-	15	1	-	1
36	0	1	1	6	-	6	5	10	-	15	0	-	0
37	6	2	8	12	4	16	6	6	-	12	2	1	3
38	18	5	23	24	9	33	2	5	-	7	8	5	13
39	8	8	16	33	19	52	0	1	-	1	22	8	30
40	24	11	35	26	26	52	3	0	-	3	38	9	47
41	5	20	25	19	30	49	4	0	-	4	22	9	31
42	8	21	29	5	28	33	0	1	-	1	11	16	27
43	5	28	33	1	11	12	3	4	-	7	3	14	17
44	2	27	29	0	9	9	0	5	-	5	2	23	25
45	1	18	19	1	2	3	0	3	-	3	-	12	12
46	-	12	12	-	-	-	1	3	-	4	-	10	10
47	-	5	5	-	-	-	-	3	-	3	-	4	4
48	-	3	3	-	-	-	-	2	-	2	-	2	2
49	-	0	0	-	-	-	-	-	-	-	-	-	-
50	-	1	1	-	-	-	-	-	-	-	-	-	-
Total:	79	162	241	129	138	267	61	83	12	156	109	113	222
Depth (m)	329-334			380-374			310-245				248-257		

Appendix Table 4 (cont'd).

S. alutus

Haul no:	53			54			55			
	♂	♀	T	♂	♀	T	♂	♀	U	T
10										
11	-	-	-	-	-	-	-	-	1	1
12	-	-	-	-	-	-	-	-	2	2
13	-	-	-	-	-	-	-	-	14	14
14	-	-	-	-	-	-	2	2	21	25
15	-	-	-	-	-	-	5	10	27	42
16	-	-	-	-	-	-	2	4	15	21
17	-	-	-	-	-	-	1	4	9	14
18	-	-	-	-	-	-	5	5	5	15
19	-	-	-	-	-	-	2	7	6	15
20	-	-	-	-	-	-	6	9	2	17
21	-	-	-	-	-	-	5	9	1	15
22	-	-	-	-	-	-	12	9	0	21
23	-	-	-	-	-	-	10	8	0	18
24	-	-	-	-	-	-	1	13	3	17
25	-	-	-	-	-	-	4	8	1	13
26	-	-	-	-	-	-	2	4	-	6
27	-	-	-	-	-	-	2	2	-	4
28	-	-	-	-	-	-	0	0	-	0
29	-	-	-	-	-	-	1	0	-	1
30	-	-	-	-	-	-	2	0	-	2
31	-	-	-	-	-	-	1	1	-	2
32	-	-	-	-	-	-	1	2	-	3
33	-	-	-	-	-	-	1	1	-	2
34	-	-	-	-	-	-	6	4	-	10
35	-	-	-	-	-	-	9	3	-	12
36	6	-	6	1	-	1	3	2	-	5
37	30	-	30	3	-	3	1	3	-	4
38	56	1	57	3	-	3	0	1	-	1
39	59	9	68	29	-	29	6	1	-	7
40	23	16	39	52	3	55	5	0	-	5
41	8	21	29	61	4	65	9	0	-	9
42	2	16	18	28	7	35	10	2	-	12
43	1	7	8	11	14	25	13	3	-	16
44	1	4	5	5	8	13	7	2	-	9
45	-	1	1	1	5	6	7	1	-	8
46	-	2	2	-	1	1	1	2	-	3
47	-	-	-	-	4	4	-	-	-	-
48	-	-	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-
Total:	186	77	263	194	46	240	142	122	107	371
Depth (m)	307-393			246-237			212-274			

Appendix Table 4 (cont'd).

S. alutus

Haul no:	60			61			66		
	♂	♀	T	♂	♀	T	♂	♀	T
10	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	1	0	1
20	-	-	-	-	-	-	0	0	0
21	0	1	1	0	1	1	0	1	1
22	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	1	0	1
24	0	0	0	0	0	0	0	0	0
25	1	0	1	0	0	0	0	2	2
26	0	0	0	0	0	0	0	0	0
27	0	0	0	1	0	1	0	0	0
28	0	0	0	0	0	0	0	0	0
29	1	0	1	1	2	3	0	0	0
30	0	0	0	0	0	0	0	0	0
31	1	1	2	1	0	1	4	1	5
32	4	1	5	2	0	2	6	1	7
33	4	2	6	4	2	6	11	5	16
34	12	7	19	5	2	7	20	7	27
35	25	20	45	11	4	15	18	11	29
36	17	15	32	10	3	13	13	10	23
37	14	14	28	22	3	25	7	3	10
38	10	10	20	14	7	21	3	4	7
39	3	7	10	14	8	22	1	0	1
40	4	1	5	13	4	17	1	0	1
41	6	0	6	11	11	22	2	1	3
42	6	5	11	2	21	23	0	1	1
43	5	7	12	1	21	22	5	2	7
44	0	17	17	4	18	22	0	4	4
45	0	14	14	1	11	12	2	11	13
46	0	10	10	0	6	6	1	20	21
47	0	10	10	0	1	1	0	20	20
48	0	5	5	-	-	-	0	6	6
49	-	-	-	-	-	-	0	4	4
50	-	-	-	-	-	-	0	0	0
51	-	-	-	-	-	-	0	0	0
52	-	-	-	-	-	-	0	1	1
Total:	113	147	260	117	125	242	96	115	211
Depth (m)	283-274			332-336			235-223		

Appendix Table 4 (cont'd).

S. alutus

Haul no:	67			68			Total			
	♂	♀	T	♂	♀	T	♂	♀	U	T
10	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	0	0	1	1
12	-	-	-	-	-	-	0	0	6	6
13	-	-	-	-	-	-	2	3	21	26
14	-	-	-	-	-	-	8	8	39	50
15	-	-	-	-	-	-	14	19	43	76
16	-	-	-	-	-	-	3	6	15	24
17	-	-	-	-	-	-	2	5	13	20
18	-	-	-	-	-	-	7	6	7	20
19	-	-	-	-	-	-	4	7	7	18
20	-	-	-	-	-	-	6	10	3	19
21	-	-	-	-	-	-	6	14	3	23
22	-	-	-	-	-	-	12	12	3	27
23	-	-	-	-	-	-	12	14	2	28
24	-	-	-	-	-	-	2	15	4	21
25	-	-	-	-	-	-	8	14	1	23
26	-	-	-	-	-	-	3	6	2	11
27	-	-	-	-	-	-	3	6	0	9
28	-	-	-	-	-	-	3	6	0	9
29	-	-	-	-	-	-	8	4	1	13
30	-	-	-	-	-	-	7	4	0	11
31	-	-	-	-	-	-	7	6	0	13
32	-	-	-	-	-	-	18	9	0	27
33	-	-	-	-	-	-	27	18	0	45
34	2	-	2	-	-	-	62	29	1	92
35	0	-	0	-	-	-	84	56	0	140
36	1	2	3	3	1	4	82	61	0	143
37	11	2	13	2	0	2	149	59	0	208
38	23	2	25	14	3	17	219	68	0	287
39	27	2	29	19	5	24	276	93	0	369
40	35	12	47	27	18	45	340	132	0	472
41	26	14	40	18	18	36	259	170	0	429
42	11	19	30	5	29	34	150	230	0	380
43	3	19	22	3	22	25	93	219	0	312
44	1	5	6	2	13	15	52	212	0	264
45	1	6	7	2	9	11	23	190	0	213
46	-	2	2	-	2	2	7	134	0	141
47	-	1	1	-	-	-	1	77	0	78
48	-	-	-	-	-	-	2	40	0	42
49	-	-	-	-	-	-	0	8	0	8
50	-	-	-	-	-	-	0	4	0	4
51	-	-	-	-	-	-	0	1	0	1
52	-	-	-	-	-	-	0	2	0	2
Total	141	86	227	95	120	215	1961	1977	167	4105
Depth (m)	228-228			347-371						

Appendix Table 4 (cont'd). S. brevispinis

Haul no:	15			59			Total		
	♂	♀	T	♂	♀	T	♂	♀	T
35	-	-	-	-	-	-	-	-	-
36	-	-	-	-	-	-	-	-	-
37	-	-	-	-	-	-	-	-	-
38	-	-	-	-	-	-	-	-	-
39	-	-	-	1	-	1	1	0	1
40	-	-	-	0	-	0	0	0	0
41	-	1	1	0	-	0	0	1	1
42	1	1	2	0	-	0	1	1	2
43	0	0	0	2	2	4	2	2	4
44	1	1	2	2	1	3	3	2	5
45	1	3	4	4	2	6	5	5	10
46	4	1	5	7	3	10	11	4	15
47	2	2	4	5	3	8	7	5	12
48	3	3	6	12	8	20	15	11	26
49	4	6	10	9	4	13	13	10	23
50	9	4	13	13	6	19	22	10	32
51	7	5	12	12	4	16	19	9	28
52	6	9	15	6	8	14	12	17	29
53	8	2	10	7	2	9	15	4	19
54	3	3	6	4	4	8	7	7	14
55	3	3	6	3	0	3	6	3	9
56	1	-	1	-	0	0	1	0	1
57	1	-	1	-	0	0	1	0	1
58	-	-	-	-	0	0	0	0	0
59	-	-	-	-	0	0	0	0	0
60	-	-	-	-	2	2	0	2	2
61									
62									
Total	54	44	98	87	49	136	141	93	234
Depth (m)	298-285			232-285					

Appendix Table 4 (cont'd).

S. crameri

Haul no:	1			15			72			73			Total		
	♂	♀	T	♂	♀	T	♂	♀	T	♂	♀	T	♂	♀	T
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	1	-	1	-	-	-	1	0	1
24	-	-	-	-	-	-	0	-	0	-	-	-	0	0	0
25	-	-	-	-	-	-	7	2	9	-	-	-	7	2	9
26	-	-	-	-	-	-	6	10	16	-	1	1	6	11	17
27	-	4	4	-	-	-	2	16	18	2	17	19	4	37	41
28	-	2	2	-	-	-	3	20	23	2	36	38	5	58	63
29	-	11	11	-	-	-	2	17	19	-	26	26	2	54	56
30	-	18	18	-	-	-	-	20	20	-	36	36	-	74	74
31	-	28	28	-	-	-	-	23	23	-	32	32	-	83	83
32	-	21	21	-	1	1	-	15	15	-	18	18	-	55	55
33	-	22	22	-	2	2	-	8	8	-	7	7	-	39	39
34	-	13	13	-	6	6	-	6	6	-	1	1	-	26	26
35	-	5	5	-	12	12	-	2	2	-	-	-	-	19	19
36	-	-	-	-	30	30	-	-	-	-	-	-	-	30	30
37	-	-	-	-	41	41	-	-	-	-	-	-	-	41	41
38	-	-	-	-	41	41	-	-	-	-	-	-	-	41	41
39	-	-	-	-	6	6	-	-	-	-	-	-	-	6	6
40	-	-	-	-	4	4	-	-	-	-	-	-	-	4	4
<b>Total</b>	0	124	124	0	143	143	21	139	160	4	174	178	25	580	605
<b>Depth (m)</b>	250-296			298-285			234-241			239-232					

Appendix Table 4 (cont'd).

S. proriger

Haul no:	16			33			36			37		
	♂	♀	T	♂	♀	T	♂	♀	T	♂	♀	T
25	-	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-	-
29	1	-	1	-	-	-	-	-	-	-	-	-
30	0	-	0	-	-	-	-	-	-	3	-	3
31	2	2	4	1	-	1	-	-	-	0	-	0
32	3	4	7	4	-	4	5	-	5	2	-	2
33	4	4	8	12	2	14	13	-	13	8	-	8
34	1	5	6	16	1	17	18	-	18	17	-	17
35	4	4	8	17	7	24	18	3	21	12	1	13
36	1	12	13	1	14	15	8	16	24	8	3	11
37	0	9	9	2	32	34	1	15	16	2	7	9
38	1	19	20	-	16	16	3	18	21	-	10	10
39	-	18	18	-	8	8	0	12	12	-	9	9
40	-	24	24	-	8	8	0	4	4	-	17	17
41	-	15	15	-	0	0	0	3	3	-	7	7
42	-	13	13	-	1	1	1	-	1	-	8	8
43	-	5	5	-	-	-	-	-	-	-	1	1
44	-	1	1	-	-	-	-	-	-	-	-	-
45	-	-	-	-	-	-	-	-	-	-	-	-
46	-	-	-	-	-	-	-	-	-	-	-	-
47	-	-	-	-	-	-	-	-	-	-	-	-
48	-	-	-	-	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-
Total	17	135	152	53	89	142	67	71	138	52	63	115
Depth (m)	223-219			277-281			223-224			206-197		

Table 4 (cont'd).

S. proriger

Haul no:	67			74			Total		
	♂	♀	T	♂	♀	T	♂	♀	T
25	-	-	-	-	-	-	-	-	-
26	-	-	-	2	-	2	2	0	2
27	-	-	-	3	-	3	3	0	3
28	-	-	-	1	1	2	1	1	2
29	-	-	-	2	0	2	3	0	3
30	1	-	1	7	1	8	11	1	12
31	0	-	0	5	3	8	8	5	13
32	6	-	6	6	9	15	26	13	39
33	21	1	22	9	5	14	67	12	79
34	32	2	34	6	3	9	90	11	101
35	19	4	23	-	12	12	70	31	101
36	4	19	23	-	2	2	22	66	88
37	1	20	21	-	5	5	6	88	94
38	1	14	15	-	1	1	5	78	83
39	-	12	12	-	-	-	0	59	59
40	-	5	5	-	-	-	0	58	58
41	-	6	6	-	-	-	0	31	31
42	-	4	4	-	-	-	1	26	27
43	-	4	4	-	-	-	-	10	10
44	-	1	1	-	-	-	-	2	2
45	-	1	1	-	-	-	-	1	1
46	-	-	-	-	-	-	-	-	-
47	-	-	-	-	-	-	-	-	-
48	-	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-
Total	85	93	178	41	42	83	315	493	808
Depth (m)	228-228			305-281					

Appendix Table 4 (cont'd).

		<u>S. reedi</u>											
Haul no:		25			32			33			37		
		♂	♀	T	♂	♀	T	♂	♀	T	♂	♀	T
Length (cm)	30	-	-	-	-	-	-	-	-	-	-	-	-
	31	-	-	-	-	-	-	-	-	-	-	-	-
	32	-	-	-	-	-	-	-	-	-	-	-	-
	33	-	-	-	-	-	-	-	-	-	-	-	-
	34	1	-	1	-	-	-	2	-	2	1	-	1
	35	1	3	4	3	-	3	6	6	12	0	1	1
	36	4	7	11	5	2	7	4	7	11	0	0	0
	37	10	10	20	7	5	12	4	15	19	1	0	1
	38	15	15	30	7	9	16	5	15	20	5	5	10
	39	6	11	17	4	3	7	11	20	31	2	3	5
	40	3	3	6	13	15	28	20	15	35	5	8	13
	41	5	5	10	11	7	18	11	16	27	6	17	23
	42	2	9	11	8	9	17	20	19	39	15	30	45
	43	2	6	8	9	13	22	14	16	30	6	26	32
	44	1	3	4	4	6	10	3	5	8	2	32	34
	45	-	-	-	3	2	5	2	5	7	2	22	24
	46	-	-	-	-	-	-	3	8	11	1	6	7
47	-	-	-	-	-	-	-	1	1	-	1	1	
48	-	-	-	-	-	-	-	-	-	-	-	-	
49	-	-	-	-	-	-	-	-	-	-	-	-	
50	-	-	-	-	-	-	-	-	-	-	-	-	
Total		50	72	122	74	71	145	105	148	253	46	151	197
Depth (m)		230-237			230-223			277-281			206-197		

Appendix Table 4 (cont'd).

S. reedi

Haul no:	69			70			Totals		
	♂	♀	T	♂	♀	T	3	3	4
30	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-
32	-	-	-	-	-	-	-	-	-
33	-	-	-	-	-	-	-	-	-
34	-	-	-	-	-	-	4	0	4
35	-	-	-	1	1	2	11	11	22
36	-	-	-	3	1	4	16	17	33
37	2	0	2	1	0	1	25	30	55
38	0	0	0	2	2	4	34	46	80
39	2	1	3	2	1	3	27	39	66
40	4	1	5	11	1	12	56	43	99
41	25	2	27	19	6	25	77	53	130
42	39	7	46	39	7	46	123	81	204
43	36	14	50	27	15	42	94	90	184
44	30	9	39	12	18	30	52	73	125
45	9	5	14	6	7	13	22	41	63
46	2	0	2	2	3	5	8	17	25
47	1	0	1	1	0	1	2	2	4
48	0	0	0	-	-	-	0	0	0
49	0	0	0	-	-	-	0	0	0
50	0	1	1	-	-	-	0	1	1
Total	150	40	190	126	62	188	551	544	1095
Depth (m)	325-363			351-343			41		

Appendix Table 4 (cont'd).

S. zacentrus

Haul no:	1			72'			73			Total		
	♂	♀	T	♂	♀	T	♂	♀	T	♂	♀	T
15	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	1	0	1	1	0	1
19	-	-	-	1	0	1	1	1	2	2	1	3
20	2	-	2	2	1	3	4	0	4	8	1	9
21	3	-	3	7	1	8	7	0	7	17	1	18
22	3	-	3	13	5	18	10	0	10	26	5	31
23	2	-	2	25	6	31	27	1	28	54	7	61
24	7	-	7	37	9	46	37	5	42	81	14	95
25	18	-	18	56	11	67	50	6	56	124	17	141
26	20	2	22	49	12	61	42	20	62	111	34	145
27	23	5	28	34	9	43	19	8	27	76	22	98
28	25	9	34	7	4	11	6	6	12	38	19	57
29	15	11	26	5	5	10	3	7	10	23	23	46
30	12	15	27	0	1	1	0	0	0	12	16	28
31	0	13	13	-	-	-	0	1	1	0	14	14
32	0	5	5	-	-	-	-	-	-	0	5	5
33	1	8	9	-	-	-	-	-	-	1	8	9
34	-	3	3	-	-	-	-	-	-	0	3	3
35	-	2	2	-	-	-	-	-	-	0	2	2
36	-	1	1	-	-	-	-	-	-	0	1	1
37	-	-	-	-	-	-	-	-	-	-	-	-
38	-	-	-	-	-	-	-	-	-	-	-	-
39	-	-	-	-	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-	-	-	-	-
Total	131	74	205	236	64	300	207	55	262	574	193	767
Depth (m)	250-296			234-241			239-232					

Appendix Table 5. Scientific and common names of species captured.

Common name	Scientific name
<b>FLATFISH</b>	
Arrowtooth flounder	<u>Atheresthes stomias</u>
Dover sole	<u>Microstomus pacificus</u>
English sole	<u>Parophrys vetulus</u>
Pacific Halibut	<u>Hippoglossus stenolepis</u>
Petrable sole	<u>Eopsetta jordani</u>
Rex sole	<u>Glyptocephalus zachirus</u>
Slender sole	<u>Lyopsetta exilis</u>
<b>ROUNDFISH</b>	
Rougheye rockfish	<u>Sebastes aleutianus</u>
Pacific ocean perch	<u>S. alutus</u>
Redbanded rockfish	<u>S. babcocki</u>
Shortraker rockfish	<u>S. borealis</u>
Silvergray rockfish	<u>S. brevispinis</u>
Dusky rockfish	<u>S. ciliatus</u>
Darkblotched rockfish	<u>S. crameri</u>
Splitnose rockfish	<u>S. diploproa</u>
Greenstripe rockfish	<u>S. elongatus</u>
Widow rockfish	<u>S. entomealas</u>
Yellowtail rockfish	<u>S. flavidus</u>
Rosethorn rockfish	<u>S. helvomaculatus</u>
Black rockfish	<u>S. melanops</u>
Bocaccio	<u>S. paucispinis</u>
Canary rockfish	<u>S. pinniger</u>
Redstripe rockfish	<u>S. proriger</u>
Yellowmouth rockfish	<u>S. reedi</u>
Yelloweye rockfish	<u>S. ruberrimus</u>
Harlequin rockfish	<u>S. variegatus</u>
Sharpchin rockfish	<u>S. zacentrus</u>
Shortspine thornyhead or Idiot	<u>Sebastolobus alascanus</u>
Lingcod	<u>Ophiodon elongatus</u>
Pacific cod	<u>Gadus macrocephalus</u>
Prowfish	<u>Zaprora silenus</u>
Sablefish	<u>Anoplopoma fimbria</u>
Walleye pollock	<u>Theragra chalcogramma</u>
<b>SELACHII</b>	
Longnose skate	<u>Raja rhina</u>
Ratfish	<u>Hydrolagus colliei</u>
Spiny dogfish	<u>Squalus acanthias</u>
<b>INVERTEBRATE</b>	
Squid	<u>Gonatus magister</u>