

**Catches and Trawl Locations of the M/V
Southward Ho During a Rockfish
Exploration and Assessment Cruise to
Queen Charlotte Sound,
September 7-27, 1979**

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CATCHES AND TRAWL LOCATIONS OF THE M/V SOUTHWARD HO
DURING A ROCKFISH EXPLORATION AND ASSESSMENT
CRUISE TO QUEEN CHARLOTTE SOUND,
SEPTEMBER 7-27, 1979

by

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ABSTRACT

Nagtegaal, D. A. and S. P. Farlinger. 1980. Catches and trawl locations of the M/V SOUTHWARD HO during a rockfish exploration and assessment cruise to Queen Charlotte Sound, September 7-27, 1979. Can. Data Rep. Fish. Aquat. Sci. No. 216: 95 p.

During September, 1979 the Pacific Biological Station chartered the commercial trawler M/V SOUTHWARD HO to conduct an exploratory bottom trawl survey in Queen Charlotte Sound. This data report presents the general results with regard to haul locations, catch statistics and biological data collected. Most productive areas for rockfish were the Southeast Corner of Goose Island Bank and the Cape Scott Spit. The highest catch rates occurred in the 164-218 m depth range. No significant concentrations of rockfishes were discovered in areas unknown to the commercial industry.

Key words: Exploratory survey, Queen Charlotte Sound, rockfishes.

RÉSUMÉ

Nagtegaal, D. A. and S. P. Farlinger. 1980. Catches and trawl locations of the M/V SOUTHWARD HO during a rockfish exploration and assessment cruise to Queen Charlotte Sound, September 7-27, 1979. Can. Data Rep. Fish. Aquat. Sci. No. 216: 95 p.

En septembre 1979, la station de biologie du Pacifique a affrété un chalutier commercial, le SOUTHWARD HO, afin d'effectuer un chalutage exploratoire sur le fond dans le bassin Reine-Charlotte. Le présent rapport présente des données générales sur les points de relevage, les prises et certains aspects biologiques. On a relevé les plus fortes concentrations de scorpène à l'extrémité sud-est du banc des îles Goose et aux environs de la flèche du cap Scott. Les prises les plus abondantes ont été réalisées à des profondeurs de 164 à 218 m. On n'a découvert aucune concentration importante de scorpènes ailleurs que dans les secteurs déjà connus des pêcheurs commerciaux.

Mots-clés: levé exploratoire, bassin Reine-Charlotte, scorpènes.



INTRODUCTION

The Queen Charlotte Sound area has supported an active commercial rockfish fishery, which has been primarily directed at Pacific ocean perch (Sebastes alutus), since 1952. Over the last decade, however, the species composition of the catch has changed dramatically. While a decade ago most of the catch consisted of Pacific ocean perch, in 1978 only 28.7% of the total rockfish caught in Queen Charlotte Sound (Major Areas 5A + 5B) was S. alutus (Smith 1979). Before 1970 little interest was shown in other rockfish species and consequently a limited amount of biological data has been collected. The purpose of this survey was to estimate the biomass of all rockfishes and to collect biological data and samples.

This data report describes the general results of the bottom trawl survey conducted in Queen Charlotte Sound aboard the chartered commercial trawler M/V SOUTHWARD HO. Analysis of the 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 SOUTHWARD HO, a 34 m (113 ft) stern trawler. It was equipped for both midwater and bottom trawling. Detailed vessel specifications are listed in Appendix Table 1. Two sets of trawling gear were used during the survey: (i) a Skagen bottom trawl used with standard "V" doors and (ii) a Canadian Diamond VIII nylon, midwater trawl used with Süderkrüb doors. Gear specifications are contained in Appendix Tables 2 and 3.

FISHING LOCATIONS AND CATCH SAMPLING

Previous rockfish surveys in Queen Charlotte Sound have focused primarily on both Goose Island and Mitchell's gullies (Harling 1977; Westrheim 1972). Some exploratory work has also been done on the southwest slope of Goose Island Bank (Westrheim 1974). The intention of this cruise was to explore and perform an overall survey of the fishing regions in Queen Charlotte Sound including an area west of Triangle Island with particular attention being paid to shelf (<200 m) rockfish species. The study region was divided into nine areas based primarily on historical fishing localities and bathymetry (Fig. 1). These areas were delineated so that the research data could be compared with commercial catch statistics and do not reflect fish population boundaries.

Initially, the survey strategy involved sounding along a set of tracklines 20 microseconds (approx. 2.5 naut mi) apart beginning at Loran-C 13750 and moving westward. This pattern was followed to Loran-C 13510. Due to the geography of the fishing grounds it was decided to adopt the more

practical method of following particular depth contours within the survey area, to ensure that adequate coverage would be accomplished within the cruise period. Locations of tracklines are shown in Fig. 2. Along each trackline, trawl hauls were attempted in each 55 m stratum between 55 m and 275 m. In many cases where no suitable bottom trawl location was found the midwater net was used to determine species composition. Locations of trawl hauls are shown in Fig. 3. To facilitate biomass calculations, trawlable areas (Fig. 4) were outlined using these trawl locations. A total of 79 hauls were made, 20 midwater tows and the remaining 59 with bottom gear. Catch and bridge log information is contained in Appendix Table 4.

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 cell¹, emptied and reweighed to obtain the weight of the catch by difference; the catch was then subsampled to obtain species composition by weight. All salmon and halibut were promptly measured and released.

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. Maturity data was collected for many of the rockfish sampled. Length-weight data was collected for only two rockfish species, S. brevispinis and S. proriger, as time was limited. Basic sample size for rockfish species was 100 length/sex/double otoliths plus as many more length/sex measurements as were contained in the subsample. For other roundfish species only length/sex data was collected. Biological samples collected are listed in Table 1.

RESULTS

Sebastes flavidus and S. alutus were the dominant rockfish species encountered, comprising 26% and 21% of the total rockfish catch, respectively, while all Sebastes spp. accounted for only 43% of the total catch. A summary of the catch weights by major species is contained in Table 2. Rockfish mean catch rates (kg/hr) for all localities varied with depth; the highest catch rates occurred in the 164-218 m depth range. Individual rockfish species catch rates also varied with depth and locality (Fig. 5).

S. flavidus and S. paucispinis predominated in the catches at 54-108 m. A S. brevispinis / S. flavidus / S. paucispinis grouping occurred in 109-163 m, and the principal rockfish in 164-218 m was S. alutus. Only one haul was made in 219-272 m but results imply that S. alutus may be the major species in this depth range as well. Mean catch rates for all localities are contained in Table 3. Major areas of production for

¹Sea Weigh - Measurement Systems Incorporated, Seattle, Washington.

rockfish were the Southeast Corner of Goose Island Bank and the Cape Scott Spit. Midwater hauls west of Triangle Island produced primarily S. reedi. In the Southwest Slope area the principal species were S. proriger and S. reedi, also recorded in other surveys to this basically untrawlable region (Westrheim 1974). No significant concentrations of rockfishes were discovered in areas unknown to the commercial industry.

Maturity data was collected for most rockfish species. Slight variations within rockfish maturity stages were noted (Table 4). Most males were developing while many females were either spent or resting. A summary of rockfish maturities collected is presented in Table 5. S. alutus and S. reedi exhibited a sex ratio of approximately 40% males while the sex ratio for S. entomelas and S. flavidus was approximately 80% males. Samples of S. babcocki, S. brevispinis and S. proriger revealed a 1:1 sex ratio. Table 6 contains the species composition by haul.

For two species of rockfish length-weight data was collected. Each fish was measured to the nearest centimeter (fork length), and weighed to the nearest gram². The data by specimen is listed in Table 7. In determining preliminary length-weight relationships, no corrections were made for maturity stages or the amount of food in the stomach. Due to the limited amount of data collected males and females were combined. The length-weight curves were fitted by the exponential equation $W = aL^b$, expressed in logarithmic form: $\log W = \log a + b \log L$, where W = weight, L = length, a and b are constants. The values of the constants for the two species are contained in Table 8. Incorporating these values of a and b the mean weight at each centimeter was determined. The values for a were higher and b were lower than those presented in other rockfish length-weight studies (Phillips 1964, Westrheim and Snytko 1974). This is probably due to the small sample size and the limited sample size range. Consequently mean weights were not determined for the entire size range. Table 9 contains the calculated mean weights by centimeter.

MISCELLANEOUS ITEMS

1. Approximately 120 sablefish (Anoplopoma fimbria) were collected and maintained in live tanks for Dr. R. Beamish, Pacific Biological Station.
2. A discolored and infected specimen of S. entomelas was given to J. Bagshaw, of the Pacific Biological Station histology department, for analysis. Preliminary results indicate that the specimen had numerous benign tumors (fibroma).

²Weighed at sea with Digimetric model 30DK1 balance manufactured by Sybron corporation.

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Table 1. Biological samples collected on M/V SOUTHWARD HO rockfish cruise, September 7-27, 1979. (Numbers of fish sampled).

	L/S	L/S/O/Mat*	L/S/O/Mat/Wt*
<u>Sebastes alutus</u>	2,726	-	-
<u>S. babcocki</u>	15	100	-
<u>S. brevispinis</u>	360	376	100
<u>S. entomelas</u>	21	200	-
<u>S. flavidus</u>	576	300	-
<u>S. proriger</u>	1,148	100	100
<u>S. reedi</u>	140	200	-
Blackcod	241	100	-
Pacific cod	592	-	-
Pollock	799	-	-
Total	6,618	1,376	200

*Double otolith samples

Table 2. Summary of catch by major species. M/V SOUTHWARD HO rockfish cruise, September 7-27, 1979. (Common names in Appendix 5).

	Weight (kg)	Percent of total
Pollock	19,057	16.9
Arrowtooth flounder	13,834	12.3
<u>Sebastes flavidus</u>	12,757	11.3
<u>S. alutus</u>	10,523	9.3
Black cod	8,404	7.5
<u>S. brevispinis</u>	8,282	7.3
<u>S. reedi</u>	7,161	6.4
Pacific cod	5,561	4.9
Dogfish	3,997	3.5
<u>Sebastes proriger</u>	2,828	2.5
Dover sole	2,404	2.1
<u>S. paucispinis</u>	2,200	1.9
<u>S. entomelas</u>	2,061	1.8
English sole	1,685	1.5
Longnose skate	1,618	1.4
<u>S. babcocki</u>	1,526	1.3
Ratfish	1,520	1.3
Pacific halibut	1,489	1.3
Rex sole	1,139	1.0
Others*	4,597	4.5
Total	112,643	100.0

*Includes species with <1% of total catch.

Table 3. Mean CPUE (kg/hr) for all localities in Queen Charlotte Sound, M/V SOUTHWARD HO rockfish cruise, September 7-27, 1979.

Depth (m):	54-108	109-163	164-218	219-272
Rockfish:				
<u>Sebastes aleutianus</u>	-	7.4	5.7	-
<u>S. alutus</u>	-	56.8	576.7	1,754.6
<u>S. babcocki</u>	-	23.6	69.7	45.4
<u>S. brevispinis</u>	26.6	352.4	38.7	-
<u>S. diploproa</u>	-	-	3.0	-
<u>S. elongatus</u>	-	5.6	1.4	-
<u>S. entomelas</u>	44.6	0.4	-	-
<u>S. flavidus</u>	1,122.8	78.1	9.1	37.3
<u>S. helvomaculatus</u>	-	-	-	9.7
<u>S. paucispinis</u>	78.8	69.1	24.2	-
<u>S. pinniger</u>	7.7	21.8	12.8	-
<u>S. proriger</u>	-	15.8	67.6	-
<u>S. reedi</u>	-	-	1.4	-
<u>S. ruberrimus</u>	-	2.5	-	-
<u>Seb. alascanus</u>	2.8	1.7	16.5	92.4

Table 4. Description of rockfish maturity stages¹.

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)

¹Slightly 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 eggs are small and pinkish in color.

Table 5. Summary of rockfish maturities. M/V SOUTHWARD HO cruise, September 7-27, 1979.

SPECIES: S. brevispinis
 LOCALITY: Cape Scott
 DATE: 10/9/79
 HAUL: 10
 DEPTH (m): 157-157

CONDITION	MALE								FEMALE						
	1	9	8	8A	8B	8C	8D	8E	1	2	3	4	5	6	7
LENGTH (cm)															
40															
1										1					
2															
3	1									1					
4	1			1						2					2
5	2									1					1
6	1			1	3										2
7	2			2	2			1							3
8				2							1				4
9															4
50				2	2										2
1					1			1							5
2					4										2
3				2	2			2							2
4				1	3			2							6
5					3										6
6				1	1			1							2
7					1										2
8														1	
9															1
60															
1															
2															1
3															
4															
5															
SUB TOTAL	7			12	22			7		5	1			1	45
% MATURITY	14			26	46			14		10	2			2	86
TOTAL	48								52						
SEX RATIO	48%								52%						

Table 5 (cont'd)

SPECIES: S. brevispinis
 LOCALITY: Cape Scott
 DATE: 11/9/79
 HAUL: 14
 DEPTH (m): 150-154

CONDITION	MALE								FEMALE						
	1	9	8	8A	8B	8C	8D	8E	1	2	3	4	5	6	7
LENGTH (cm)															
40															
1															
2															
3								1							
4	1													1	
5				1											
6				5					1						1
7				2	1										
8	1			1				1						1	1
9				1	1									1	2
50				9	1			3						4	4
1				3										4	1
2				2	1			1						4	2
3				6				1						6	4
4								2						4	
5				1				3						2	
6				1				1							
7				1				1							
8															
9														2	
60															2
SUB TOTAL	2			33	4			14	1					29	17
% MATURITY	4			62	8			26	2					62	36
TOTAL	53								47						
SEX RATIO	53%								47%						

Table 5 (cont'd)

SPECIES: S. brevispinis
 LOCALITY: SE Corner
 DATE: 13/9/79
 HAUL: 26
 DEPTH (m): 113-119

CONDITION	MALE								FEMALE						
	1	9	8	8A	8B	8C	8D	8E	1	2	3	4	5	6	7
LENGTH (cm)															
40															
1	3														
2	1									2					1
3				1					1						1
4	1														4
5	2									1					1
6										1					3
7	1			2	1										1
8	1			3	2				1					1	3
9				4	1										1
50				3				1						1	2
1				6				1						2	1
2				7				1							3
3				1				1							1
4				3				2							2
5														2	2
6														1	2
7								1						1	1
8														1	2
9														2	
60														1	
1															
2				1											
3															
4															
5															
SUB TOTAL	9			31	4			7	2	4				12	31
% MATURITY	17			61	8			14	4	8				25	63
TOTAL	51								49						
SEX RATIO	51%								49%						

Table 5 (cont'd)

SPECIES: S. brevispinis
 LOCALITY: NE Edge
 DATE: 14/9/79
 HAUL: 42
 DEPTH (m): 139-141

CONDITION	MALE								FEMALE						
	1	9	8	8A	8B	8C	8D	8E	1	2	3	4	5	6	7
LENGTH (cm)															
40															
1	1														
2										1					
3															
4				1											
5					3									1	
6															
7					1										
8															
9				2											1
50					1			1							
1				2				4							
2								3						1	2
3				2				5						1	
4				1				6						1	1
5				2				2						2	1
6					1			2							5
7				1	1			1						3	1
8				2				1						2	2
9														2	1
60														1	
1															1
2															
3															
4															
5															
SUB TOTAL	1			13	7			25		1				14	15
% MATURITY	2			28	15			55		3				47	50
TOTAL	46								30						
SEX RATIO	60%								40%						

Table 5 (cont'd)

SPECIES: S. brevispinis
 LOCALITY: SW Corner
 DATE: 15/9/79
 HAUL: 44
 DEPTH (m): 115-121

CONDITION	MALE								FEMALE						
	1	9	8	8A	8B	8C	8D	8E	1	2	3	4	5	6	7
LENGTH (cm)															
45															
6															
7															
8															
9					1										
50					2			1							
1				3	1									5	1
2				1	1										1
3														1	1
4				3	2									1	
5				1	4			3							2
6				3	4			2						5	2
7				2	2			1						2	3
8				1				2						4	2
9				2										6	2
60				3										4	3
1				1				1						3	2
2														1	1
3														1	
4															
5															
SUB TOTAL				20	17			10						33	20
% MATURITY				43	36			21						62	38
TOTAL	47								53						
SEX RATIO	47%								53%						

Table 5 (cont'd)

SPECIES: S. babcocki
 LOCALITY: SW Corner
 DATE: 15/9/79
 HAUL: 45
 DEPTH (m): 132-121

CONDITION	MALE								FEMALE						
	1	9	8	8A	8B	8C	8D	8E	1	2	3	4	5	6	7
LENGTH (cm)															
30															
1															
2															
3										1					
4					1					1					
5										1					
6										1					
7					1			1		2					
8					2					3				1	1
9				1						3					
40					2					1					
1	1				1					2					
2					7										
3					1	3				1	2			4	
4					2	1					1				
5								1			4			2	1
6					3	4								1	
7					1	3					2				
8						1					2				
9					1	3					2			1	
50					1	2					2				
1						1					1			2	1
2					1	1					1			1	
3														1	1
4															2
5															
6															1
SUB TOTAL	1			1	24	19		2		16	17			13	7
% MATURITY	2			2	51	40		5		30	32			25	13
TOTAL	47								53						
SEX RATIO	47%								53%						

Table 5 (cont'd)

SPECIES: S. entomelas
 LOCALITY: Mitchell's Gully
 DATE: 23/9/79
 HAUL: 64
 DEPTH (m): 179-164

CONDITION	MALE								FEMALE						
	1	9	8	8A	8B	8C	8D	8E	1	2	3	4	5	6	7
LENGTH (cm)															
40															
1															
2															
3															
4															
5					1										
6					1										
7					5										
8					16										
9				1	8										1
50					18										1
1					15										2
2					12										1
3					3										4
4					1										5
5					1										1
6															3
7															
8															
9															
60															
SUB TOTAL				1	81										18
% MATURITY				1	99										100
TOTAL					82										18
SEX RATIO					82 %										18 %

Table 5 (cont'd)

SPECIES: S. entomelas
 LOCALITY: SW Corner
 DATE: 23/9/79
 HAUL: 65
 DEPTH (m): 184-227

CONDITION	MALE								FEMALE						
	1	9	8	8A	8B	8C	8D	8E	1	2	3	4	5	6	7
LENGTH (cm)															
33	1														
4															
5															
6															
7															
8															
9															
40	1														
1															
2															
3															
4					1										
5					3										
6					2										
7					3										
8					2										
9					21										
50					14										
1					25										
2					7										
3					2										2
4				1	5										
5					1									1	1
6					1									1	
7															
8														1	1
9															1
SUB TOTAL	2			1	89									3	5
% MATURITY	2			1	97									37	63
TOTAL	92								8						
SEX RATIO	92%								8 %						

Table 5 (cont'd)

SPECIES: S. flavidus
 LOCALITY: NE Corner
 DATE: 14/9/79
 HAUL: 40
 DEPTH (m): 135-150

CONDITION	MALE								FEMALE						
	1	9	8	8A	8B	8C	8D	8E	1	2	3	4	5	6	7
LENGTH (cm)															
35															
6															
7					1										
8										1					
9					2			1		1					
40					4										
1				1	2										
2				1	5					4	2			1	
3		1			2										
4				1	7					1					
5				2	1						3			1	
6				3	4						1				
7		1		3	3						1			1	
8				4	10					1				3	1
9				2	1									4	1
50					2										
1				1							2			1	1
2					1										
3														1	
4														1	
5															
SUB TOTAL		2		18	46			1		8	9			13	3
% MATURITY		3		27	69			1		24	27			40	9
TOTAL				67										33	
SEX RATIO				67%										33%	

Table 5 (cont'd)

SPECIES: S. flavidus
 LOCALITY: SW Corner
 DATE: 22/9/79
 HAUL: 63
 DEPTH (m): 106-86

	MALE								FEMALE						
CONDITION	I	9	8	8A	8B	8C	8D	8E	I	2	3	4	5	6	7
LENGTH (cm)															
37	1														
8															
9	1														
40	1									2					
1					2										
2					3										
3					3			1							
4					10										1
5					19					1				1	1
6					13										2
7				1	13										4
8					8									1	1
9					3									1	3
50															1
1															1
2															1
3															
4															
5															
SUB TOTAL	3			1	74			1		3				3	15
% MATURITY	4			1	94			1		14				14	72
TOTAL	79								21						
SEX RATIO	79 %								21 %						

Table 5 (cont'd)

SPECIES: S. proriger
 LOCALITY: Cape Scott
 DATE: 10/9/79
 HAUL: 10
 DEPTH (m): 157-157

CONDITION	MALE								FEMALE						
	1	9	8	8A	8B	8C	8D	8E	1	2	3	4	5	6	7
LENGTH (cm)															
20															
1															
2					1										
3															
4															
5					3					1					
6					6				1	2					
7					11					2					
8					9					6					
9					10					4					
30					3					3					
1					3					6					1
2					3					8					2
3										5					1
4										2					2
5										1					1
6										1					
7															
8															
9															1
40															
1															1
2															
3															
4															
5															
SUB TOTAL					49				1	41					9
% MATURITY					100				2	80					18
TOTAL					49									51	
SEX RATIO					49 %									51 %	

Table 5 (cont'd)

SPECIES: S. proriger
 LOCALITY: Cape Scott
 DATE: 11/9/79
 HAUL: 12
 DEPTH (m): 186-185

CONDITION	MALE								FEMALE							
	1	9	8	8A	8B	8C	8D	8E	1	2	3	4	5	6	7	
LENGTH (cm)																
20																
1																
2																
3																
4																
5																
6					1				1							
7					1											
8				1	9					1						
9				3	5					3						
30				2	3			1			1			1		
1				2	1					2					3	
2					3					3	1			1	2	
3					1						2			2	4	
4								1			1			2	10	
5											1			7	7	
6														2	4	
7										1				1		
8																
9																
40														2		
1																
2															1	
3																
4																
5																
SUB TOTAL				8	24			2	1	10	6			18	31	
% MATURITY				23	71			6	1	15	10			27	47	
TOTAL					34											
SEX RATIO					34%											

Table 6. Size composition of species sampled. M/V SOUTHWARD HO rockfish cruise, September 7-27, 1979.

S. alutus

Date Haul # Length (cm)	9/9/79 4		10/9/79 9		11/9/79 18			12/9/79 20		12/9/79 25	
	M	F	M	F	M	F	U	M	F	M	F
10	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-	-	-
18	-	2	-	1	2	2	3	-	-	-	-
19	-	0	-	1	1	2	5	-	-	-	-
20	-	0	-	0	1	1	1	-	-	-	-
21	-	0	-	0	2	0	-	-	-	-	-
22	-	0	-	0	2	1	-	-	-	-	-
23	-	0	-	0	1	0	-	-	-	-	-
24	-	1	-	0	3	1	-	-	-	-	-
25	-	0	1	0	0	1	-	-	-	1	-
26	-	0	0	0	10	7	-	-	-	0	-
27	-	0	0	0	5	5	-	-	-	1	-
28	-	0	0	1	3	1	-	-	-	0	1
29	-	0	0	0	3	4	-	-	-	0	0
30	1	0	0	1	5	3	-	-	-	1	1
31	1	0	0	0	4	3	-	-	-	2	0
32	0	0	0	0	1	2	-	1	-	2	0
33	1	0	1	0	3	3	-	0	-	6	1
34	0	1	2	1	4	3	-	0	-	4	3
35	2	0	5	0	6	1	-	1	-	7	2
36	1	2	3	2	3	2	-	1	1	5	3
37	2	2	7	0	2	2	-	4	0	9	4
38	4	3	8	1	1	1	-	9	5	11	5
39	2	1	16	0	0	1	-	9	4	11	3
40	3	2	9	1	0	2	-	11	7	13	7
41	1	4	14	2	1	2	-	10	7	15	4
42	1	4	17	2	1	2	-	4	12	5	6
43	2	11	10	3	1	1	-	2	21	7	6
44	0	24	6	13	1	7	-	1	30	1	19
45	0	25	3	16	-	4	-	-	30	1	17
46	0	34	1	14	-	4	-	-	18	-	12
47	0	29	1	16	-	3	-	-	9	-	6
48	1	10	-	8	-	-	-	-	2	-	4
49	-	2	-	5	-	-	-	-	-	-	1
50	-	2	-	2	-	-	-	-	-	-	-
51	-	1	-	-	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-	-	-
Total	22	157	104	90	67	71	9	53	146	102	105
Depth(m)	179-186		98-115		184-193			197-195		210-215	

Table 6 cont'd.

S. alutus

Date Haul # Length (cm)	13/9/79 32		13/9/79 33		14/9/79 45		16/9/79 49		16/9/79 50	
	M	F	M	F	M	F	M	F	M	F
10	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-	-
18	-	-	2	-	-	-	1	-	-	-
19	-	-	1	-	-	-	2	-	-	-
20	-	-	0	-	-	-	0	-	-	-
21	-	-	0	-	-	-	0	-	-	-
22	-	-	0	-	-	-	0	-	-	-
23	-	-	0	-	-	-	0	1	-	-
24	-	1	1	1	-	-	0	0	-	-
25	1	1	3	2	-	-	0	0	1	-
26	2	2	3	1	-	-	2	1	1	2
27	3	0	3	0	-	-	2	1	2	0
28	1	0	3	2	-	-	4	0	2	3
29	1	0	0	2	1	-	2	0	4	3
30	0	1	4	3	1	-	3	1	0	1
31	0	0	4	7	1	1	3	0	3	2
32	0	1	7	3	3	1	2	2	4	5
33	2	1	11	12	6	3	6	0	10	3
34	11	3	19	8	6	2	5	3	5	9
35	15	6	31	8	20	7	7	4	11	4
36	14	8	29	9	14	9	14	6	16	7
37	12	19	22	19	29	4	16	5	11	11
38	7	10	19	16	11	3	6	6	5	11
39	4	7	13	11	13	10	11	7	7	10
40	5	3	10	4	11	9	4	5	8	7
41	2	5	8	3	7	15	6	8	7	13
42	2	2	5	3	4	13	2	4	2	8
43	0	4	2	0	10	9	2	8	-	8
44	0	3	2	4	4	16	-	8	-	7
45	0	7	-	3	1	8	-	8	-	8
46	2	5	-	2	-	10	-	5	-	5
47	1	2	-	2	-	2	-	2	-	3
48	-	1	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	-	-
Total	87	92	202	125	142	122	100	85	99	130
Depth(m)	204-221		197-201		131-120		210-210		223-204	

Table 6 cont'd.

S. alutus

Date Haul # Length (cm)	16/9/79 51		16/9/79 53		24/9/79 71		Totals			
	M	F	M	F	M	F	M	F	U	T
10	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-
17	-	-	2	-	-	-	3	-	-	3
18	-	-	2	-	-	-	7	5	3	15
19	2	-	3	-	-	-	9	3	5	17
20	1	1	0	-	-	-	2	2	1	5
21	0	0	0	-	-	-	2	0	-	2
22	0	0	0	-	-	-	2	1	-	3
23	1	0	0	-	-	-	2	1	-	3
24	2	2	0	-	-	-	6	6	-	12
25	7	6	1	-	-	-	15	10	-	25
26	11	4	1	-	-	-	30	17	-	47
27	9	5	1	-	-	-	27	11	-	38
28	11	3	0	-	-	-	24	11	-	35
29	6	9	0	-	-	-	17	18	-	35
30	5	2	0	-	-	-	20	13	-	33
31	7	5	0	-	-	-	25	18	-	43
32	5	1	0	-	1	1	28	16	-	44
33	10	6	0	-	0	0	56	29	-	85
34	16	9	0	-	0	1	72	43	-	115
35	7	4	0	-	0	1	112	37	-	149
36	4	19	0	-	2	2	106	70	-	176
37	13	19	0	-	1	0	128	85	-	213
38	1	11	1	1	1	2	84	75	-	159
39	1	8	4	1	0	2	91	65	-	156
40	4	9	5	2	0	0	83	58	-	141
41	2	11	5	2	5	2	83	78	-	161
42	0	7	10	3	4	1	57	67	-	124
43	1	9	4	7	4	6	45	93	-	138
44	1	15	4	15	2	12	22	173	-	195
45	0	18	3	13	2	27	10	184	-	194
46	0	13	1	28	-	24	4	174	-	178
47	0	5	3	16	-	15	5	110	-	115
48	0	1	-	8	-	11	1	45	-	46
49	1	2	-	2	-	4	1	14	-	15
50	-	-	-	-	-	0	-	4	-	4
51	-	-	-	-	-	0	-	1	-	1
52	-	-	-	-	-	0	-	0	-	0
53	-	-	-	-	-	0	-	0	-	0
54	-	-	-	-	-	1	-	1	-	1
55	-	-	-	-	-	-	-	-	-	-
Total	128	204	50	98	22	112	1,179	1,538	9	2,726
Depth(m)	204-202		192-177		221-204					

Table 6 cont'd.

S. babcocki

Date Haul # Length (cm)	14/9/79		
	45		
	M	F	T
20	-	-	-
21	-	-	-
22	-	1	1
23	-	0	0
24	-	0	0
25	-	0	0
26	-	0	0
27	-	0	0
28	-	0	0
29	-	0	0
30	-	0	0
31	-	0	0
32	-	0	0
33	-	2	2
34	1	0	1
35	0	1	1
36	1	0	1
37	2	3	5
38	3	4	7
39	4	3	7
40	4	2	6
41	2	3	5
42	7	1	8
43	5	7	12
44	3	3	6
45	1	8	9
46	7	1	8
47	4	1	5
48	1	3	4
49	3	3	6
50	3	4	7
51	1	4	5
52	2	2	4
53	-	2	2
54	-	2	2
55	-	0	0
56	-	1	1
57	-	-	-
58	-	-	-
59	-	-	-
60	-	-	-
Total	54	61	115
Depth(m)	131-120		

Table 6 cont'd.

S. brevispinis

Date Haul # Length (cm)	10/9/79 10		11/9/79 14		12/9/79 23		13/9/79 26		14/9/79 42	
	M	F	M	F	M	F	M	F	M	F
40	-	-	-	-	-	-	-	-	-	-
41	-	1	-	-	-	-	2	1	-	-
42	-	0	1	-	-	2	3	2	-	1
43	1	1	1	-	-	0	2	2	1	0
44	2	5	2	1	-	0	2	5	1	1
45	2	3	2	0	-	0	3	3	3	1
46	5	2	6	2	2	0	1	4	1	0
47	7	3	3	0	0	0	5	2	1	0
48	2	4	3	2	0	2	6	6	0	0
49	0	5	2	3	1	0	5	2	2	2
50	3	4	12	9	2	2	5	3	2	0
51	1	5	4	8	4	4	11	4	5	0
52	4	2	4	6	4	6	9	3	3	2
53	5	3	8	10	3	7	2	1	7	1
54	5	6	2	4	5	6	6	2	7	2
55	3	5	3	2	5	6	2	4	4	3
56	3	2	2	1	4	12	1	3	3	6
57	1	2	2	1	1	5	1	4	3	3
58	-	1	-	0	2	4	-	3	1	5
59	-	1	-	2	-	0	-	3	0	3
60	-	0	-	2	-	1	-	1	1	0
61	-	0	-	-	-	1	-	-	-	1
62	-	1	-	-	-	0	-	-	-	-
63	-	-	-	-	-	0	-	-	-	-
64	-	-	-	-	-	0	-	-	-	-
65	-	-	-	-	-	0	-	-	-	-
66	-	-	-	-	-	1	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-
Total	44	56	57	53	33	59	66	58	45	31
Depth(m)	157-157		149-153		124-122		113-118		138-140	

Table 6 cont'd.

S. brevispinis

Date Haul # Length (cm)	14/9/79 43		15/9/79 44		Total		
	M	F	M	F	M	F	T
40	-	-	-	-	-	-	-
41	-	-	-	-	2	2	4
42	-	-	-	-	4	5	9
43	-	-	-	-	5	3	8
44	-	-	-	-	7	12	19
45	-	1	-	-	10	8	18
46	-	0	-	-	16	8	24
47	1	0	-	-	17	5	22
48	1	1	-	-	12	15	27
49	1	1	1	-	12	13	25
50	1	1	3	-	28	19	47
51	7	0	4	6	36	27	63
52	6	1	2	1	32	21	53
53	7	3	0	2	32	27	59
54	9	7	5	1	39	28	67
55	9	7	9	3	35	30	65
56	8	7	9	5	30	36	66
57	5	9	5	6	18	30	48
58	3	4	4	9	10	26	36
59	6	3	2	9	8	21	29
60	1	0	4	7	6	11	17
61	-	2	2	5	2	9	11
62	-	1	-	2	-	4	4
63	-	0	-	1	-	1	1
64	-	1	-	-	-	1	1
65	-	-	-	-	-	0	0
66	-	-	-	-	-	1	1
67	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-
Total	66	49	50	57	361	363	724
Depth(m)	131-128		115-120				

Table 6 cont'd.

S. entomelas

Date Haul # Length (cm)	23/9/79 64		23/9/79 65		Total		
	M	F	M	F	M	F	T
	30	-	-	-	-	-	-
31	-	-	-	-	-	-	-
32	-	-	-	-	-	-	-
33	-	-	1	-	1	-	1
34	-	-	0	-	0	-	0
35	-	-	0	-	0	-	0
36	-	-	0	-	0	-	0
37	-	-	0	-	0	-	0
38	-	-	1	-	1	-	1
39	-	-	0	-	0	-	0
40	-	-	1	-	1	-	1
41	-	-	0	-	0	-	0
42	-	-	0	-	0	-	0
43	-	-	0	-	0	-	0
44	-	-	1	-	1	-	1
45	1	-	4	-	5	-	5
46	1	-	2	-	3	-	3
47	6	-	3	-	9	-	9
48	17	-	4	-	21	-	21
49	11	1	20	-	31	1	32
50	20	1	18	-	38	1	39
51	16	2	25	-	41	2	43
52	12	1	11	-	23	1	24
53	4	4	4	2	8	6	14
54	1	5	6	0	7	5	12
55	1	1	1	3	2	4	6
56	-	3	1	1	1	4	5
57	-	-	-	1	-	1	1
58	-	-	-	2	-	2	2
59	-	-	-	1	-	1	1
60	-	-	-	-	-	-	-
61	-	-	-	-	-	-	-
62	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-
64	-	-	-	-	-	-	-
65	-	-	-	-	-	-	-
Total	90	18	103	10	193	28	221
Depth(m)	201-173		219-241				

Table 6 cont'd.

S. flavidus

Date Haul # Length (cm)	10/9/79 11		14/9/79 40		15/9/79 47		22/9/79 63		23/9/79 64	
	M	F	M	F	M	F	M	F	M	F
30	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-
32	-	-	-	-	-	-	-	-	-	-
33	-	-	-	-	-	-	-	-	-	1
34	-	-	-	-	-	-	-	-	1	0
35	-	-	-	-	-	-	-	-	0	1
36	-	1	1	-	-	-	-	-	0	0
37	-	0	1	-	-	-	1	-	1	0
38	1	0	3	2	1	-	0	-	0	0
39	0	0	4	0	1	-	2	-	0	1
40	1	1	5	1	1	1	1	2	0	0
41	3	4	7	1	0	1	3	1	1	0
42	6	2	7	8	1	1	5	2	5	0
43	6	2	3	0	2	0	6	0	2	1
44	13	3	8	3	10	0	11	1	5	1
45	14	5	3	5	11	6	27	2	16	4
46	18	2	9	2	15	3	23	3	19	0
47	19	6	10	4	20	12	15	7	27	2
48	20	1	20	6	15	10	10	3	18	1
49	7	1	8	4	15	5	4	4	14	0
50	9	1	2	0	7	4	-	3	6	3
51	2	-	1	3	1	5	-	1	1	3
52	1	-	1	1	1	2	-	1	-	0
53	-	-	-	1	0	1	-	-	-	1
54	-	-	-	1	0	2	-	-	-	1
55	-	-	-	-	0	-	-	-	-	-
56	-	-	-	-	0	-	-	-	-	-
57	-	-	-	-	1	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-
Total	120	29	93	42	102	53	108	30	116	20
Depth(m)	106-100		135-149		122-131		109-109		201-173	

Table 6 cont'd.

S. flavidus

Date Haul # Length (cm)	23/9/79 65		Total		
	M	F	M	F	T
30	-	-	-	-	-
31	-	-	-	-	-
32	-	-	-	-	-
33	-	-	-	1	1
34	1	-	1	0	1
35	1	-	0	1	1
36	0	2	1	1	2
37	1	3	3	0	3
38	2	1	6	2	8
39	7	5	8	1	9
40	7	1	8	7	15
41	13	4	15	10	25
42	18	7	26	14	40
43	19	8	26	8	34
44	23	5	54	9	63
45	14	3	84	26	110
46	5	4	102	17	119
47	0	4	110	39	149
48	0	2	106	26	132
49	1	0	62	17	79
50	-	1	29	15	44
51	-	0	5	16	21
52	-	1	3	6	9
53	-	-	1	3	4
54	-	-	0	5	5
55	-	-	0	0	0
56	-	-	0	1	1
57	-	-	1	-	1
58	-	-	-	-	-
59	-	-	-	-	-
60	-	-	-	-	-
Total	112	51	651	225	876
Depth(m)	219-241				

Table 6 cont'd.

S. proriger

Date Haul # Length (cm)	10/9/79 10		11/9/79 12		11/9/79 15		11/9/79 18		22/9/79 61	
	M	F	M	F	M	F	M	F	M	F
20	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-
24	-	-	1	-	-	-	-	-	-	-
25	3	1	0	-	3	1	-	-	2	-
26	7	2	0	1	1	1	4	-	2	-
27	12	1	3	0	6	0	7	-	5	-
28	9	6	17	1	11	2	6	2	17	-
29	11	4	12	3	26	5	9	1	41	4
30	3	3	14	2	24	4	11	6	42	5
31	3	6	9	13	15	8	9	6	33	10
32	3	10	5	11	10	9	2	7	19	16
33	-	6	2	17	14	7	2	10	4	15
34	-	3	1	19	9	9	2	8	3	13
35	-	2	-	19	1	6	1	6	0	6
36	-	1	-	9	1	4	-	2	0	5
37	-	0	-	1	-	3	-	-	1	6
38	-	0	-	0	-	1	-	-	-	8
39	-	1	-	0	-	-	-	-	-	3
40	-	0	-	2	-	-	-	-	-	1
41	-	1	-	0	-	-	-	-	-	0
42	-	-	-	1	-	-	-	-	-	1
43	-	-	-	-	-	-	-	-	-	-
44	-	-	-	-	-	-	-	-	-	-
45	-	-	-	-	-	-	-	-	-	-
46	-	-	-	-	-	-	-	-	-	-
47	-	-	-	-	-	-	-	-	-	-
48	-	-	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-
Total	51	47	64	99	121	60	53	48	169	93
Depth(m)	157-157		186-184		188-193		184-193		217-208	

Table 6 cont'd.

S. proriger

Date Haul # Length (cm)	24/9/79 70		24/9/79 72		Total		
	M	F	M	F	M	F	T
20	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-
24	2	-	-	-	3	0	3
25	2	-	-	-	10	2	12
26	18	2	-	-	32	6	38
27	42	2	-	-	75	3	78
28	33	6	-	-	93	17	110
29	13	8	4	-	116	25	141
30	23	7	12	-	129	27	156
31	10	3	22	-	101	46	147
32	5	10	17	1	61	64	125
33	7	14	10	2	39	71	110
34	3	17	4	5	22	74	96
35	-	15	0	3	2	57	59
36	-	2	1	16	2	39	41
37	-	2	-	33	1	45	46
38	-	0	-	40	-	49	49
39	-	1	-	59	-	64	64
40	-	1	-	41	-	45	45
41	-	2	-	21	-	24	24
42	-	0	-	-	-	2	2
43	-	1	-	-	-	1	1
44	-	1	-	-	-	1	1
45	-	1	-	-	-	-	-
46	-	-	-	-	-	-	-
47	-	-	-	-	-	-	-
48	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-
Total	158	94	70	221	686	662	1,348
Depth(m)	164-164		179-186				

Table 6 cont'd.

S. reedi

Date Haul # Length (cm)	21/9/79 57		22/9/79 59		Total		
	M	F	M	F	M	F	T
	30	-	-	-	-	-	-
31	-	-	-	-	-	-	-
32	-	-	-	-	-	-	-
33	-	-	1	-	1	-	1
34	-	-	0	-	0	-	0
35	-	-	0	-	0	-	0
36	-	-	2	-	2	-	2
37	4	2	3	3	7	5	12
38	3	1	2	1	5	2	7
39	6	7	5	5	11	12	23
40	9	8	10	8	19	16	35
41	10	14	11	3	21	17	38
42	10	12	7	7	17	19	36
43	9	15	9	14	18	29	47
44	6	19	9	12	15	31	46
45	0	8	2	17	2	25	27
46	0	11	4	20	4	31	35
47	1	5	0	12	1	17	18
48	-	3	1	6	1	9	10
49	-	-	-	2	-	2	2
50	-	-	-	1	-	1	1
51	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-
53	-	-	-	-	-	-	-
54	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-
Total Depth(m)	58 248-237	105	66 237-224	111	124	216	340

Table 6 cont'd.

Blackcod

Date Haul # Length (cm)	13/9/79 28		25/9/79 74		Total		
	M	F	M	F	M	F	T
	25	-	-	-	-	-	-
26	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-
28	-	-	-	1	-	1	1
29	-	-	-	0	-	0	0
30	-	-	-	0	-	0	0
31	-	-	-	0	-	0	0
32	-	-	-	0	-	0	0
33	-	-	1	0	1	0	1
34	-	-	1	3	1	3	4
35	-	-	4	3	4	3	7
36	-	-	14	8	14	8	22
37	-	-	6	7	6	7	13
38	-	-	7	11	7	11	18
39	-	1	6	13	6	14	20
40	1	0	8	7	9	7	16
41	3	0	7	7	10	7	17
42	4	5	7	7	11	12	23
43	6	9	3	8	9	17	26
44	2	11	1	16	3	27	30
45	7	12	0	10	7	22	29
46	8	15	0	13	8	28	36
47	4	14	0	1	4	15	19
48	7	11	1	0	8	11	19
49	3	14	1	1	4	15	19
50	3	8	-	0	3	8	11
51	1	2	-	1	1	3	4
52	1	4	-	-	1	4	5
53	1	-	-	-	1	-	1
54	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-
Total	51	106	67	117	118	223	341
Depth(m)	120-124		118-138				

Table 6 cont'd.

Pacific cod

Date Haul # Length (cm)	10/9/79 6		10/9/79 10		13/9/79 30		Total		
	M	F	M	F	M	F	M	F	T
	25	-	-	-	-	-	-	-	-
26	-	-	-	-	1	-	1	-	1
27	-	-	-	1	0	1	0	2	2
28	1	1	-	0	0	0	1	1	2
29	1	1	1	2	1	1	3	4	7
30	2	0	5	0	1	8	8	8	16
31	2	0	3	2	4	3	9	5	14
32	2	2	3	3	5	2	10	7	17
33	2	4	1	3	9	5	12	12	24
34	1	5	8	3	7	9	16	17	33
35	3	3	6	9	9	10	18	22	40
36	4	6	9	7	5	17	18	30	48
37	5	4	5	6	5	10	15	20	35
38	6	4	7	10	6	6	19	20	39
39	3	3	8	6	4	8	16	17	33
40	0	0	6	10	0	4	6	14	20
41	2	4	4	9	1	0	7	13	20
42	1	2	6	4	2	1	9	7	16
43	3	0	2	4	-	0	5	4	9
44	0	0	4	2	-	0	4	2	6
45	0	1	1	4	-	0	1	5	6
46	0	0	0	3	-	1	0	4	4
47	2	1	5	2	-	-	7	3	10
48	0	3	3	5	-	-	3	8	11
49	3	4	2	3	-	-	5	7	12
50	2	0	3	6	-	-	5	6	11
51	1	2	5	9	-	-	6	11	17
52	3	3	3	5	-	-	6	8	14
53	4	4	7	7	-	-	11	11	22
54	3	5	7	5	-	-	10	10	20
55	4	0	3	1	-	-	7	1	8
56	5	5	3	3	-	-	8	8	16
57	1	4	3	3	-	-	4	7	11
58	3	2	2	2	-	-	5	4	9
59	3	4	-	-	-	-	3	4	7

Table 6 cont'd.

Pacific cod

Date Haul # Length (cm)	10/9/79 6		10/9/79 10		13/9/79 30		Total		
	M	F	M	F	M	F	M	F	T
60	0	0	-	-	-	-	0	0	0
61	2	7	-	-	-	-	2	7	9
62	1	3	-	-	-	-	1	3	4
63	1	2	-	-	-	-	1	2	3
64	0	0	-	-	-	-	0	0	0
65	1	0	-	-	-	-	1	0	1
66	0	1	-	-	-	-	0	1	1
67	1	2	-	-	-	-	1	2	3
68	1	1	-	-	-	-	1	1	2
69	-	0	-	-	-	-	-	0	0
70	-	0	-	-	-	-	-	0	0
71	-	1	-	-	-	-	-	1	1
72	-	2	-	-	-	-	-	2	2
73	-	1	-	-	-	-	-	1	1
74	-	1	-	-	-	-	-	1	1
75	-	2	-	-	-	-	-	2	2
76	-	0	-	-	-	-	-	0	0
77	-	1	-	-	-	-	-	1	1
78	-	0	-	-	-	-	-	0	0
79	-	1	-	-	-	-	-	1	1
80	-	-	-	-	-	-	-	-	-
Total	79	102	125	139	60	86	265	327	592
Depth(m)	91-128		157-157		131-135				

Table 6 cont'd.

Walleye pollock

Date Haul # Length (cm)	10/9/79 7		20/9/79 54		20/9/79 55		20/9/79 56		Total		
	M	F	M	F	M	F	M	F	M	F	T
25	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-
29	-	-	-	-	-	-	-	-	-	-	-
30	1	-	-	-	-	-	-	-	1	-	1
31	0	-	-	-	-	-	-	-	0	-	0
32	0	-	-	-	-	-	-	-	0	-	0
33	0	-	-	-	-	-	-	-	0	-	0
34	1	-	1	1	-	-	-	-	2	1	3
35	0	-	0	0	-	-	-	-	0	0	0
36	0	-	0	2	-	-	-	-	0	2	2
37	1	-	0	0	-	-	1	-	2	0	2
38	0	-	0	1	2	-	0	1	2	2	4
39	0	-	0	0	1	2	2	1	3	3	6
40	1	-	1	1	1	2	0	2	3	5	8
41	1	-	1	2	1	0	1	1	4	3	7
42	0	1	0	1	1	0	0	2	1	4	5
43	0	1	1	0	2	1	1	2	4	4	8
44	5	0	4	0	3	0	3	0	15	0	15
45	0	0	6	2	8	4	1	1	15	7	22
46	2	1	5	1	12	3	10	3	29	8	37
47	1	0	16	5	11	5	11	8	39	18	57
48	4	3	14	10	13	9	15	4	46	26	72
49	10	4	15	4	16	5	6	8	47	21	68
50	5	11	11	10	11	14	7	6	34	41	75
51	9	7	7	6	14	5	6	12	36	30	66
52	4	15	10	6	9	12	1	6	24	39	63
53	5	14	4	6	8	7	2	5	19	32	51
54	6	12	0	5	4	14	2	11	12	42	54
55	1	11	0	1	0	14	1	9	2	35	37
56	1	20	1	4	0	5	-	9	2	38	40
57	2	14	-	2	0	4	-	3	2	23	25
58	1	14	-	2	0	5	-	4	1	25	26
59	0	8	-	0	0	0	-	2	0	10	10
60	0	7	-	1	1	1	-	1	1	10	11
61	0	10	-	-	-	0	-	1	0	11	11
62	1	3	-	-	-	0	-	-	1	3	4
63	0	4	-	-	-	2	-	-	0	6	6
64	0	0	-	-	-	0	-	-	0	0	0
65	0	0	-	-	-	0	-	-	0	0	0
66	1	1	-	-	-	0	-	-	1	1	2
67	-	-	-	-	-	0	-	-	-	0	0
68	-	-	-	-	-	0	-	-	-	0	0
69	-	-	-	-	-	0	-	-	-	0	0
70	-	-	-	-	-	1	-	-	-	1	1
Total	63	161	97	73	118	115	70	102	348	451	799
Depth(m)	149-146		197-197		192-193		188-175				

Table 7. Length-weight samples collected during M/V
SOUTHWARD HO cruise, September 7-27, 1979.

Haul no.: 10
Date: 10/9/79
Location: Cape Scott Spit
S. proriger

Length (cm)	Sex	Condition	Weight (gr)
25	1	8B	194
25	1	8B	190
25	2	2	208
25	1	8B	194
26	1	1	225
26	2	2	235
26	2	2	197
26	1	8B	241
26	1	8B	212
26	1	8B	276
26	1	8B	232
26	1	8B	266
26	1	8B	234
27	1	8B	289
27	1	8B	257
27	2	2	304
27	1	8B	258
27	1	8B	259
27	1	8B	269
27	2	2	241
27	1	8B	272
27	1	8B	245
27	1	8B	254
27	1	8B	250
27	1	8B	266
28	2	2	254
28	2	2	291
28	2	2	308
28	1	8B	284
28	1	8B	307
28	1	8B	313
28	2	2	308

Table 7 (cont'd)

Haul no.: 10
Date: 10/9/79
Location: Cape Scott Spit
S. proriger

Length (cm)	Sex	Condition	Weight (gr)
28	1	8B	266
28	2	2	276
28	1	8B	272
28	2	2	307
28	1	8B	313
28	1	8B	342
28	1	8B	268
28	1	8B	294
29	1	8B	351
29	1	8B	304
29	1	8B	332
29	2	2	335
29	1	8B	333
29	1	8B	338
29	1	8B	333
29	1	8B	287
29	2	2	381
29	1	8B	324
29	1	8B	346
29	2	2	293
29	1	8B	340
29	2	2	310
30	1	8B	297
30	1	8B	314
30	1	8B	393
30	2	2	390
30	2	2	367
30	2	2	366
31	2	2	396
31	2	2	390
31	2	2	385

Table 7 (cont'd)

Haul no.: 10
Date: 10/9/79
Location: Cape Scott Spit
S. proriger

Length (cm)	Sex	Condition	Weight (gr)
31	2	2	382
31	2	2	433
31	2	6	459
31	2	2	402
31	1	8B	400
31	1	8B	392
31	1	8B	469
32	2	6	440
32	2	2	420
32	1	8B	442
32	2	2	463
32	2	2	461
32	2	2	460
32	2	6	450
32	1	8B	497
32	2	2	442
32	2	2	429
32	2	2	406
32	2	2	473
32	1	8B	387
33	2	6	591
33	2	2	470
33	2	2	458
33	2	2	525
33	2	2	502
33	2	2	458
34	2	6	586
34	2	6	533
34	2	2	528
34	2	2	557
35	2	6	636
35	2	2	580
36	2	2	602
39	2	6	793
41	2	6	894

Table 7 (cont'd)

Haul no.: 10
Date: 10/9/79
Location: Cape Scott Spit
S. brevispinis

Length (cm)	Sex	Condition	Weight (gr)
41	2	2	1024
43	1	1	1417
43	2	2	1232
44	2	7	1237
44	1	8A	1210
44	2	2	1188
44	1	1	1109
44	2	2	1155
44	2	7	1168
45	1	1	1408
45	2	7	1180
45	2	2	1575
45	1	1	1289
46	2	7	1276
46	1	8B	1398
46	1	8A	1503
46	2	7	1552
46	1	8B	1606
46	1	8B	1368
46	1	1	1717
47	2	7	1428
47	1	1	1451
47	1	8B	1439
47	1	8A	1498
47	1	1	1347
47	1	8B	1635
47	1	8A	1433
47	1	8E	1549
47	2	7	1531
47	2	7	1457
48	2	7	1622
48	2	7	1645

Table 7 (cont'd)

Haul no.: 10
Date: 10/9/79
Location: Cape Scott Spit
S. brevispinis

Length (cm)	Sex	Condition	Weight (gr)
48	2	7	1619
48	1	8A	1630
48	2	3	1575
48	1	8A	1567
48	2	7	1490
49	2	7	1657
49	2	7	1590
49	2	7	1510
49	2	7	1620
50	1	8B	1794
50	1	8B	1739
50	1	8A	2028
50	2	7	2185
50	1	8A	1698
50	2	7	1680
51	1	8E	1937
51	2	7	2185
51	2	7	1907
51	1	8B	1864
51	2	7	2034
51	2	7	1850
51	2	7	1848
52	1	8B	1980
52	2	7	1894
52	1	8B	2241
52	1	8B	2024
52	2	7	1826
52	1	8B	2604
53	2	7	2011
53	1	8B	2388
53	2	7	1958
53	1	8A	2018

Table 7 (cont'd)

Haul no.: 10
Date: 10/9/79
Location: Cape Scott Spit
S. brevispinis

Length (cm)	Sex	Condition	Weight (gr)
53	1	8A	2360
53	1	8B	2230
53	1	8E	2233
53	1	8E	2650
54	1	8E	2143
54	2	7	2607
54	2	7	2170
54	2	7	2473
54	1	8B	2782
54	1	8A	2419
54	2	7	2112
54	2	7	2614
54	1	8B	2404
54	1	8E	2255
54	1	8B	1882
54	2	7	2380
55	2	7	2289
55	2	7	2543
55	1	8B	2323
55	2	7	2554
55	1	8B	2417
55	2	7	1757
55	2	7	2533
55	2	7	2134
55	1	8B	2999
56	1	8E	2732
56	1	8A	2405
56	2	7	3145
56	1	8B	2516
56	2	7	1479
57	2	7	2621
57	2	7	2859
57	1	8B	3068
58	2	6	3159
59	2	7	3564
62	2	7	3152

Table 8. Parameters for length-weight relationships.

	<u>S. brevispinis</u>	<u>S. proriger</u>
a	90.577	16.8535
b	1.0616	1.1071
r	.9164	.9662
Se	.0489	.0357

Length-weight equation: $W = aL^b$
W = weight of fish (gr)
L = length of fish (cm)
a = y intercept (weight at zero length)
b = slope
r = correlation coefficient
Se = standard error of the estimate

Table 9. Calculated mean weights by centimeter interval using length-weight equation (Table 8).

<u>S. brevispinis</u>			<u>S. proriger</u>		
Length (cm)	Mean weight (gr)	No. of fish	Length (cm)	Mean weight (gr)	No. of fish
40	991	-	15	78	-
41	1052	1	16	86	-
42	1117	-	17	95	-
43	1186	2	18	105	-
44	1259	6	19	117	-
45	1337	4	20	129	-
46	1420	7	21	143	-
47	1507	10	22	158	-
48	1600	7	23	175	-
49	1699	4	24	194	-
50	1804	6	25	215	4
51	1915	7	26	238	9
52	2033	6	27	263	13
53	2158	8	28	292	15
54	2291	12	29	323	14
55	2433	9	30	358	6
56	2583	5	31	395	10
57	2742	3	32	438	13
58	2911	1	33	485	6
59	3091	1	34	537	4
60	3281	-	35	595	2
61	3484	-	36	659	1
62	3699	1	37	729	-
63	3927	-	38	808	-
64	4169	-	39	894	1
65	4426	-	40	990	-
			41	1096	1
			42	1214	-
			43	1343	-
			44	1488	-
			45	1647	-

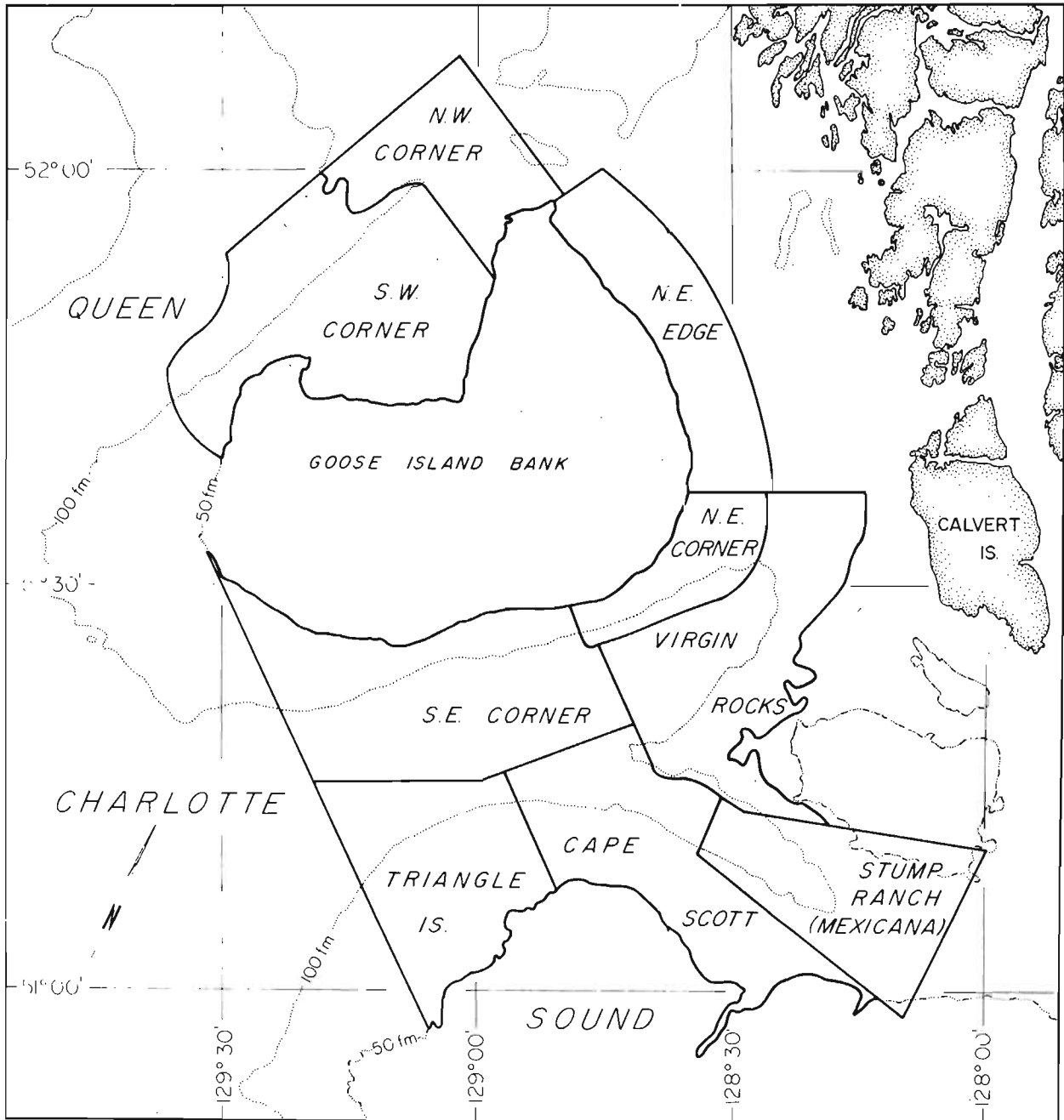


Fig. 1. Fishing locality designations in Queen Charlotte Sound.

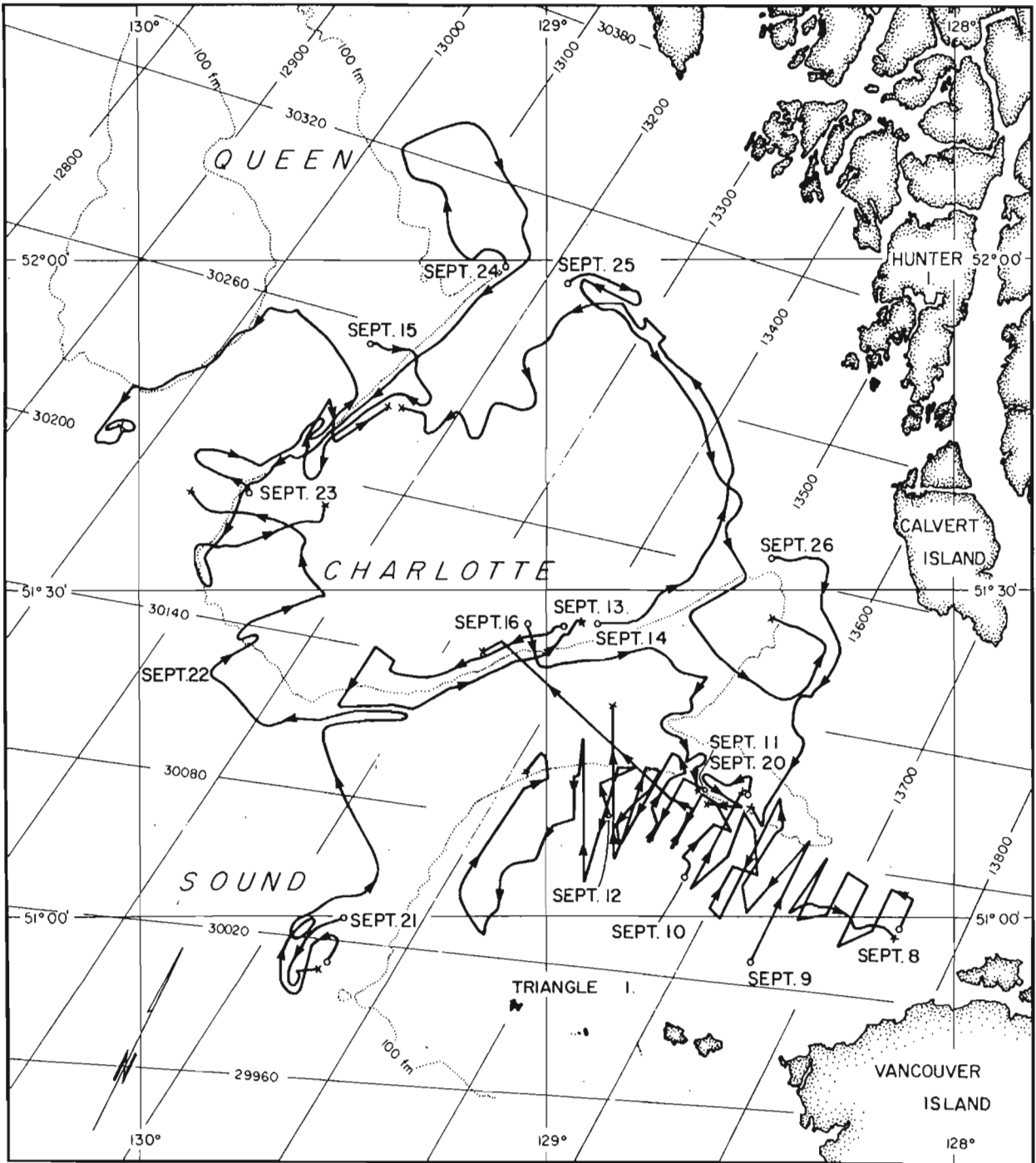


Fig. 2. Locations of tracklines; M/V SOUTHWARD HO, September 7-27, 1979.

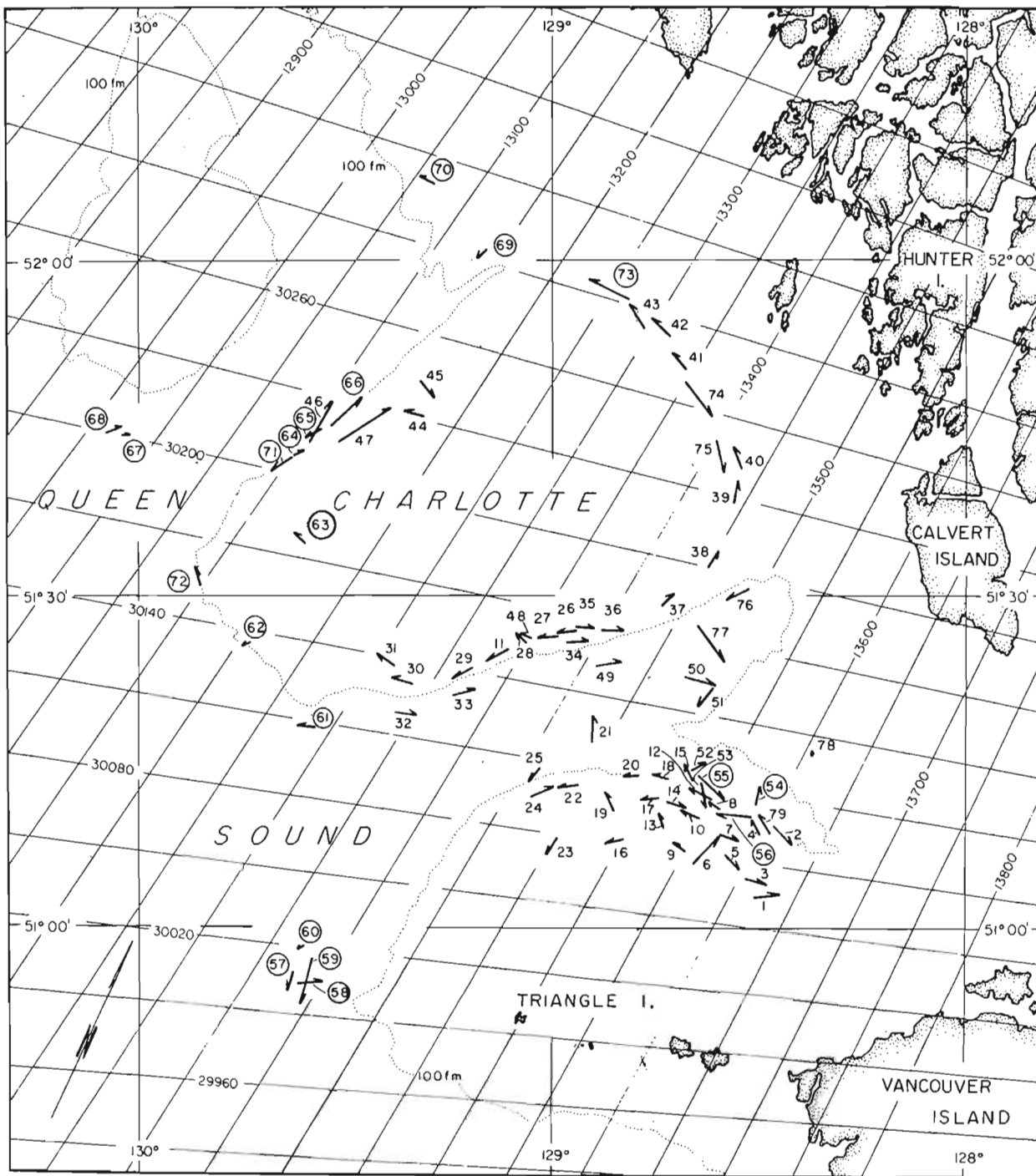


Fig. 3. Locations of hauls made by M/V SOUTHWARD HO, September 7-27, 1979. Circle denotes midwater haul.

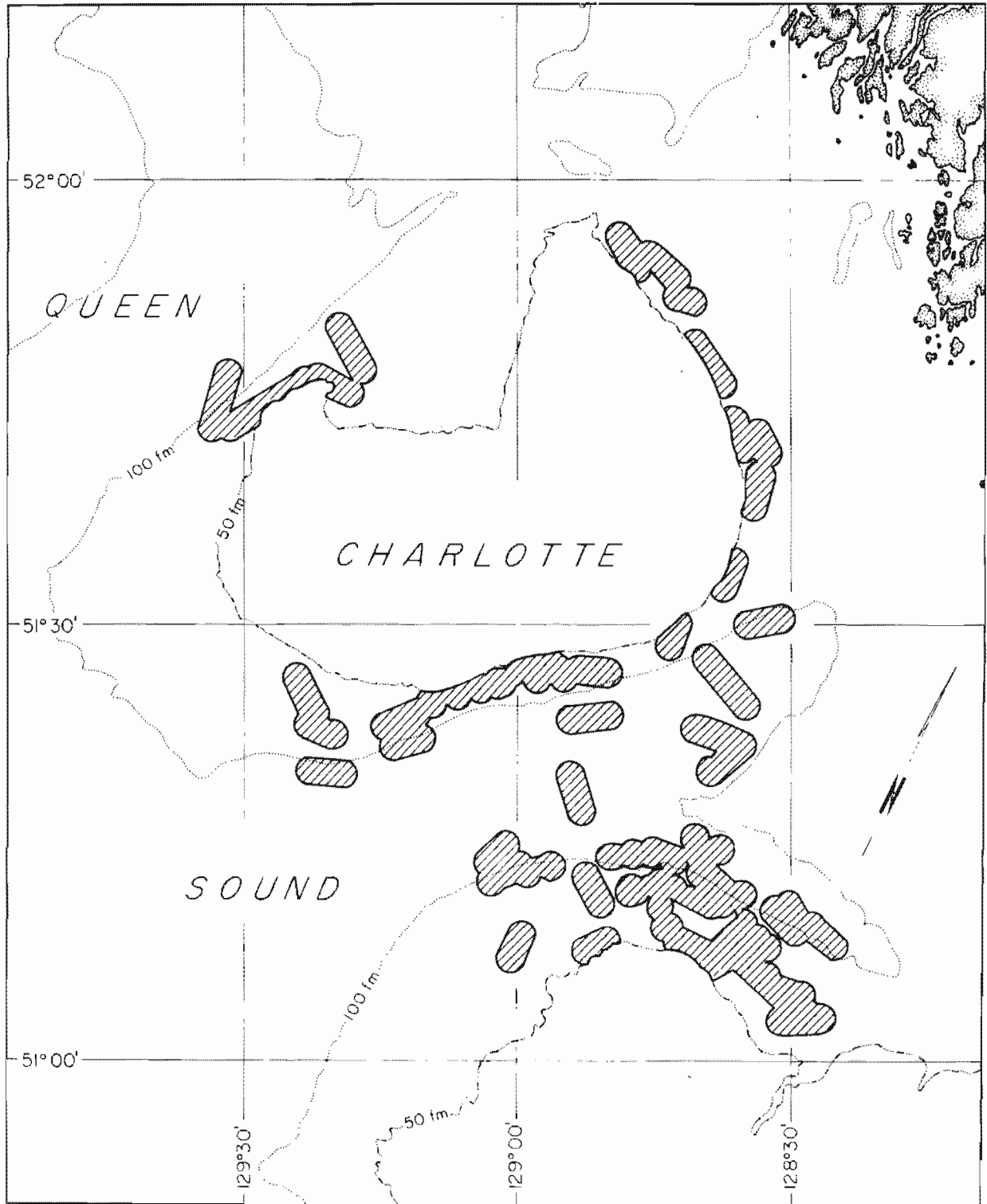


Fig. 4. Trawlable areas in Queen Charlotte Sound as estimated on M/V SOUTHWARD HO rockfish cruise, September 7-27, 1979.

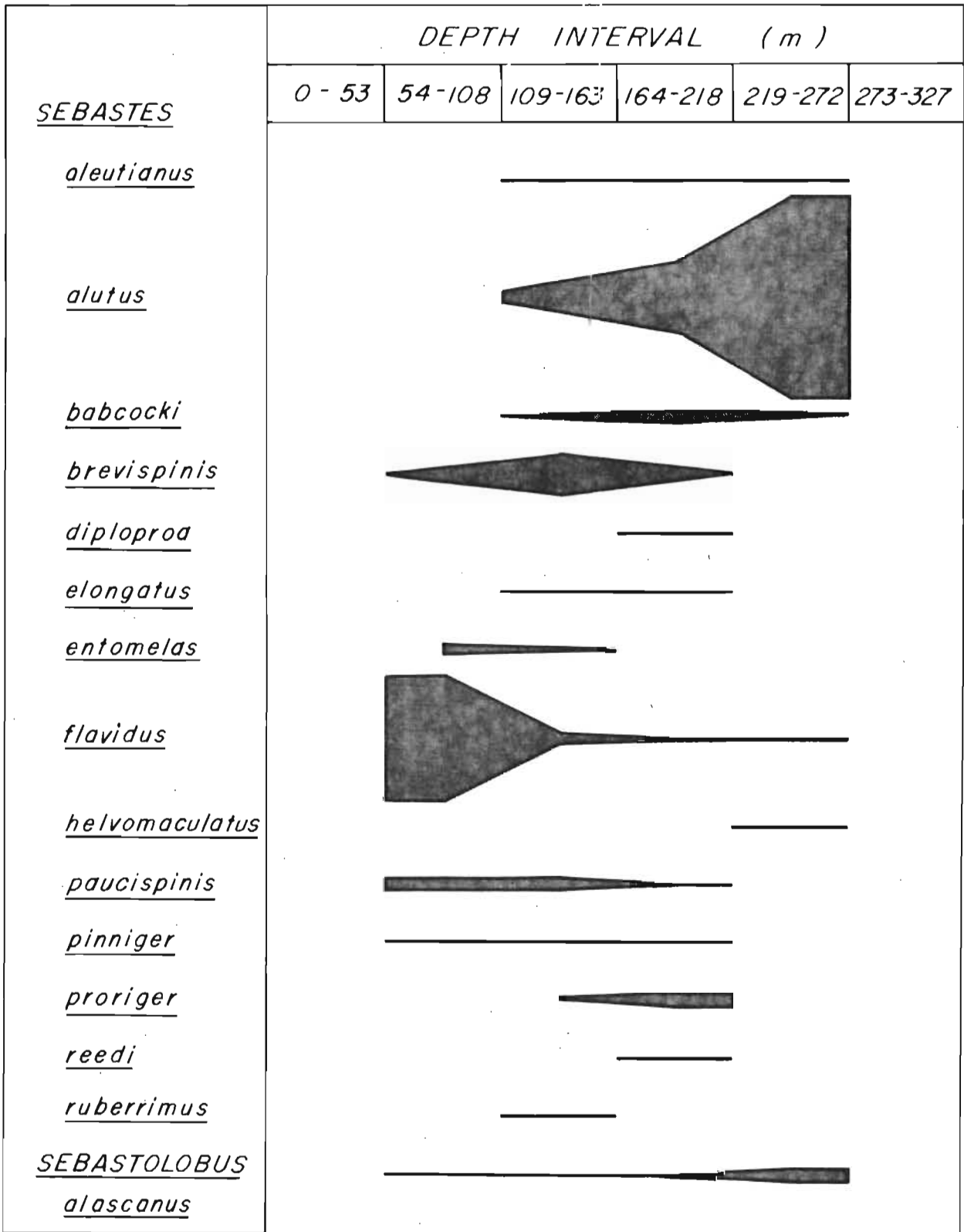


Fig. 5. Schematic illustration of the relative abundance of important rockfishes in Queen Charlotte Sound.

Appendix Table 1. Vessel specifications for the M/V SOUTHWARD HO.

Skipper: Fred Kohse Landing port: Vancouver

Overall Length: 34 m (113 ft) Horsepower: 1125

Crew (total): 6 Approx. payload: 227 t (500,000 lb)

Fish Storage: RSW

Electronic Aids:

Sounder: Ekolite, Kelvin Hughes Sonar: Sonovision

Radio: (2) CB radios, (1) VHF Ray-Jefferson, (2) SSB Ray-Jefferson

Radar: (2) Kelvin Hughes, (1) Furuno Autopilot: Wagner

Loran: Internav, Northstar 6000 Net sounder: Kelvin Hughes

Trawl Gear: double gear

Winches: double

Cable: (double) Length: 914 m (500 fm) Diameter: 1.9 cm (.75")

Net Reel: (2) Standard Hydraulic trawl

Appendix Table 2. Net dimensions and characteristics for the Diamond VIII, midwater trawl.

VESSEL NAME SOUTHWARD HO VESSEL TYPE Stern trawler OBSERVATION PERIOD September 7-27, 1979

TRAWL DOORS

Shape rectangular
 Type Söderkrüb
 Dimensions 1.7 m. x 3.0 m.
 Weight 590 kg.

FLOATS

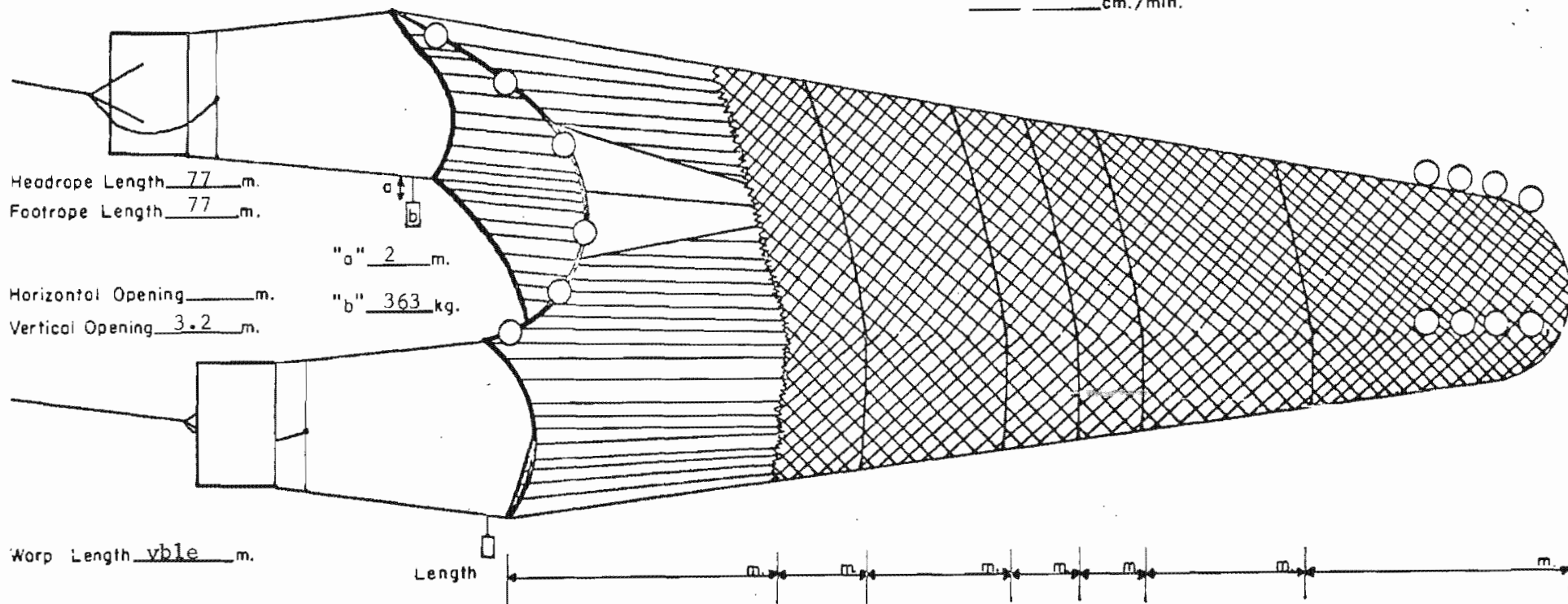
Number 40
 Size 20 cm.
 Shape spherical
 Material plastic

FISH FINDER

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

NET RECORDER

Name Kelvin Hughes
 Model No. _____
 Frequency _____ kc.



WINGS

(mesh or line)
 Mesh Size 81 cm.
 Line Spacing _____ cm.
 Line Thickness _____ cm.
 Material _____
 Height of Wings _____ m.

MESH SIZE

81 cm. 53 cm. 41 cm. 20 cm. 20 cm. 12 cm. 8.9 cm.

Mesh Material

Nylon

CODEND

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

Appendix Table 3. Net dimensions and characteristics for the Skagen trawl.

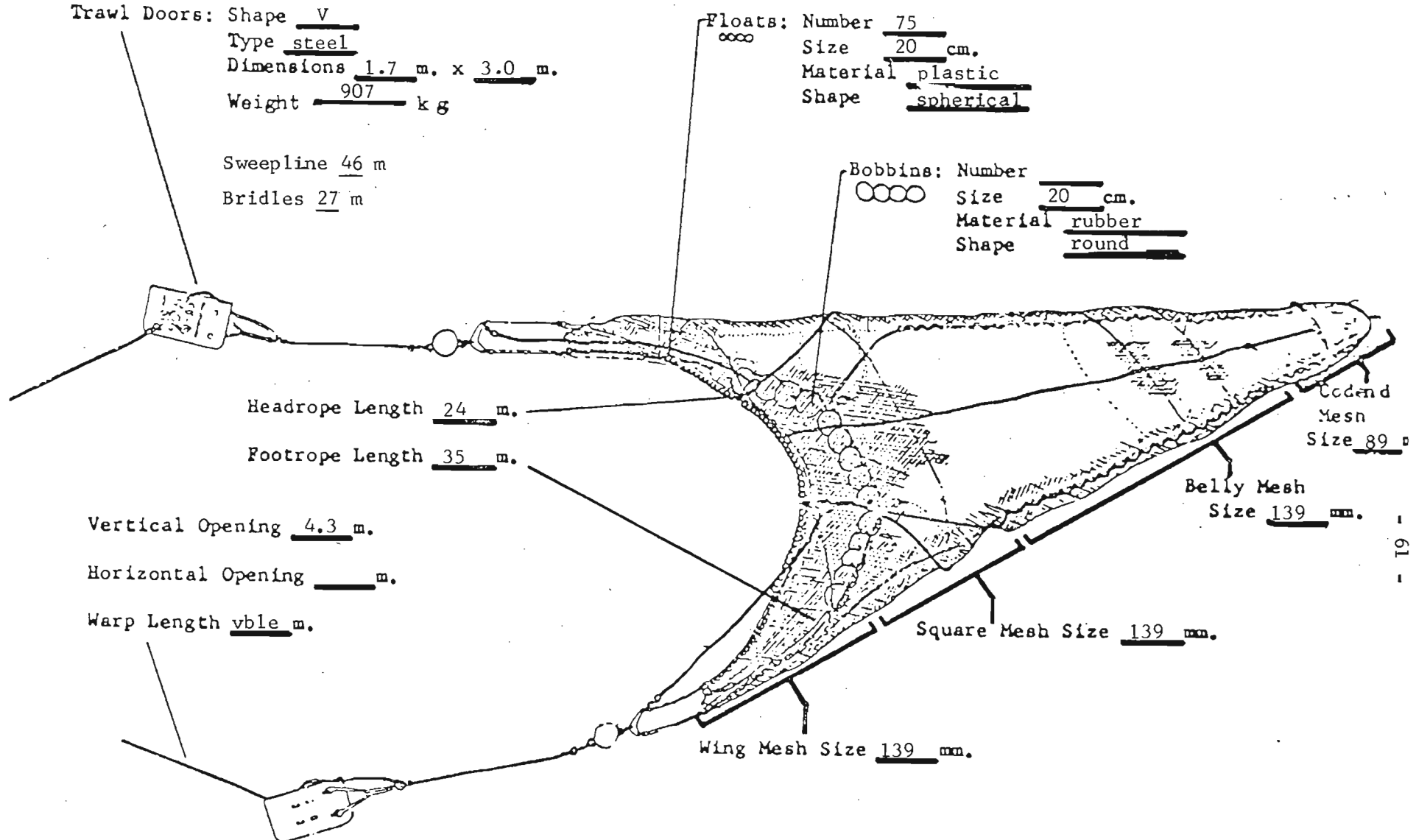
Vessel SOUTHWARD HO Observation Period September 7-27, 1979

Trawl Doors: Shape V
 Type steel
 Dimensions 1.7 m. x 3.0 m.
 Weight 907 kg

Floats: Number 75
 Size 20 cm.
 Material plastic
 Shape spherical

Sweepline 46 m
 Bridles 27 m

Bobbins: Number
 Size 20 cm.
 Material rubber
 Shape round



Headrope Length 24 m.
 Footrope Length 35 m.

Vertical Opening 4.3 m.
 Horizontal Opening m.
 Warp Length vble m.

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

Net Recorder
 Name
 Model Number
 Frequency kc.

Appendix Table 4. Fishing log for M/V SOUTHWARD HO rockfish cruise, September 7-27, 1979.

Haul Number	1	2	3	4	5
Date	Sept 9	Sept 9	Sept 9	Sept 9	Sept 9
Area	GIG	GIG	GIG	GIG	GIG
Start time (PST)	1102	1258	1551	1712	1743
Duration	30	30	30	30	30
Start N. Lat. (Deg)	051	051	051	051	051
(Min)	03.0	08.1	05.1	09.1	07.2
W. Long. (Deg)	128	128	128	128	128
(Min)	30.5	25.0	31.1	29.2	34.9
Direction (Deg.true)	114	297	110	325	119
Finish N. Lat. (Deg)	051	051	051	051	051
(Min)	03.2	09.3	04.5	10.4	05.9
W. Long. (Deg)	128	128	128	128	128
(Min)	26.9	27.7	29.1	31.3	33.0
Haul distance	1.7	1.5	1.8	1.6	1.6
Depth (Meters)	113-109	181-182	124-124	179-186	128-124
Water Temp. (Deg.C)					
Surface	13.5	13.5	14.0	14.2	14.0
Bottom	-	-	-	-	-
Depth	-	-	-	-	-
Type of gear	9	9	9	9	9
Total catch (kg)	1217	1149	515	984	644
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 4 cont'd.

Haul Number	1	2	3	4	5
Date	Sept 9	Sept 9	Sept 9	Sept 9	Sept 9
Area	GIG	GIG	GIG	GIG	GIG
Total catch (kg)	1217	1149	515	984	644
Arrowtooth flounder	550	149	171	87	79
Dover sole	13	17	-	-	39
English sole	238	4	18	-	70
Flathead sole	-	4	Tr	-	2
Pacific halibut	6	-	9	-	38
Petrале sole	18	-	24	11	37
Rex sole	18	13	19	4	19
Rock sole	9	-	-	-	-
Other flatfish	-	-	-	Tr	Tr
Subtotal	852	187	241	102	284
<u>S. aleutianus</u>	-	-	-	-	-
<u>S. alutus</u>	-	56	5	376	-
<u>S. babcocki</u>	-	30	-	Tr	-
<u>S. brevispinis</u>	-	-	-	7	39
<u>S. diploproa</u>	-	-	-	-	-
<u>S. elongatus</u>	-	-	3	-	-
<u>S. entomelas</u>	-	-	-	-	-
<u>S. flavidus</u>	-	-	-	Tr	10
<u>S. paucispinis</u>	-	17	-	11	15
<u>S. pinniger</u>	-	-	-	-	41
<u>S. proriger</u>	-	Tr	-	Tr	-
<u>S. reedi</u>	-	-	-	-	-
<u>S. ruberrimus</u>	-	-	-	-	-
<u>S. zacentrus</u>	-	Tr	-	-	-
<u>Seb. alascanus</u>	-	Tr	-	-	-
Other rockfish	-	-	-	-	-
Subtotal	-	103	8	394	105
Lingcod	-	-	-	-	12
Pacific cod	35	9	18	11	8
Pacific herring	-	-	1	Tr	-
Sablefish	26	90	12	25	46
Walleye pollock	Tr	657	3	336	81
Other roundfish	-	-	-	-	Tr
Subtotal	61	756	34	372	147
Black skate	-	-	-	Tr	-
Longnose skate	-	-	64	18	15
Ratfish	286	43	61	65	50
Spiny dogfish	18	60	43	33	43
Other selachii	-	-	-	-	-
Subtotal	304	103	168	116	108
Invertebrates	Tr	Tr	64	-	-

Appendix Table 4 cont'd.

Haul Number	6	7	8	9	10
Date	Sept 10	Sept 10	Sept 10	Sept 10	Sept 10
Area	GIG	GIG	GIG	GIG	GIG
Start time (PST)	0729	0915	1041	1212	1335
Duration	30	30	30	30	33
Start N. Lat. (Deg)	051	051	051	051	051
(Min)	06.5	09.2	11.8	07.7	10.8
W. Long. (Deg)	128	128	128	128	128
(Min)	39.2	34.9	35.1	40.4	38.5
Direction (Deg.true)	309	134	294	294	294
Finish N. Lat. (Deg)	051	051	051	051	051
(Min)	09.2	08.1	12.2	08.4	11.5
W. Long. (Deg)	128	128	128	128	128
(Min)	34.9	32.9	37.0	42.4	40.9
Haul distance	1.8	1.5	1.4	1.4	1.5
Depth (Meters)	91-128	149-146	186-179	98-115	157-157
Water Temp. (Deg.C)					
Surface	13.0	15.0	15.0	15.0	15.0
Bottom	-	-	-	-	-
Depth	-	-	-	-	-
Type of gear	9	9	9	9	9
Total catch (kg)	970	1598	1647	2313	1248
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 4 cont'd.

Haul Number	6	7	8	9	10
Date	Sept 10	Sept 10	Sept 10	Sept 10	Sept 10
Area	GIG	GIG	GIG	GIG	GIG
Total catch (kg)	970	1598	1647	2313	1248
Arrowtooth flounder	60	70	114	48	121
Dover sole	Tr	-	-	-	-
English sole	50	12	-	26	11
Flathead sole	-	6	Tr	-	16
Pacific halibut	24	4	-	5	36
Petrale sole	13	-	-	63	-
Rex sole	17	6	3	5	-
Rock sole	13	-	-	-	-
Other flatfish	-	-	-	-	-
Subtotal	177	98	117	147	154
<u>S. aleutianus</u>	-	-	-	-	-
<u>S. alutus</u>	-	12	450	-	-
<u>S. babcocki</u>	-	-	6	-	-
<u>S. brevispinis</u>	53	93	-	32	605
<u>S. diploproa</u>	-	-	-	-	-
<u>S. elongatus</u>	-	-	-	-	-
<u>S. entomelas</u>	-	-	-	-	-
<u>S. flavidus</u>	-	46	6	-	-
<u>S. paucispinis</u>	73	58	Tr	53	132
<u>S. pinniger</u>	-	12	Tr	16	16
<u>S. proriger</u>	-	29	24	-	147
<u>S. reedi</u>	-	-	-	-	-
<u>S. ruberrimus</u>	-	-	-	-	-
<u>S. zacentrus</u>	-	-	-	-	-
<u>Seb. alascanus</u>	-	-	-	-	-
Other rockfish	-	-	-	-	-
Subtotal	126	250	486	101	900
Lingcod	33	-	-	37	-
Pacific cod	494	Tr	30	1432	21
Pacific herring	-	-	-	-	-
Sablefish	27	46	132	550	84
Walleye pollock	7	1093	798	-	-
Other roundfish	Tr	-	-	4	-
Subtotal	561	1139	960	2023	105
Black skate	3	Tr	18	Tr	-
Longnose skate	60	-	18	26	89
Ratfish	-	35	30	-	-
Spiny dogfish	43	76	18	16	-
Other selachii	-	-	-	-	-
Subtotal	106	111	84	42	39
Invertebrates	-	-	-	-	-

Appendix Table 4 cont'd.

Haul Number	11	12	13	14	15
Date	Sept 10	Sept 11	Sept 11	Sept 11	Sept 11
Area	GIG	GIG	GIG	GIG	GIG
Start time (PST)	2017	0655	0920	1026	1142
Duration	30	30	30	30	29
Start N. Lat. (Deg)	051	051	051	051	051
(Min)	26.0	12.0	09.4	12.0	14.1
W. Long. (Deg)	129	128	128	128	128
(Min)	06.3	37.0	43.6	43.1	29.3
Direction (Deg.true)	234	314	314	134	319
Finish N. Lat. (Deg)	051	051	051	051	051
(Min)	24.9	13.9	10.7	11.2	15.6
W. Long. (Deg)	129	128	128	128	128
(Min)	9.4	39.7	44.6	40.9	40.5
Haul distance	1.6	1.6	1.4	1.5	1.4
Depth (Meters)	106-100	186-184	91- 96	149-153	188-193
Water Temp. (Deg.C)					
Surface	14.0	-	14.0	14.0	14.0
Bottom	-	-	-	-	-
Depth	-	-	-	-	-
Type of gear	9	9	9	9	9
Total catch (kg)	4862	1168	331	628	881
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 4 cont'd.

Haul Number	11	12	13	14	15
Date	Sept 10	Sept 11	Sept 11	Sept 11	Sept 11
Area	GIG	GIG	GIG	GIG	GIG
Total catch (kg)	4862	1168	331	628	881
Arrowtooth flounder	39	215	8	66	62
Dover sole	Tr	-	-	Tr	24
English sole	Tr	-	1	-	-
Flathead sole	-	9	Tr	3	4
Pacific halibut	35	-	33	3	-
Petrale sole	13	-	9	-	4
Rex sole	Tr	Tr	1	3	-
Rock sole	39	-	162	8	-
Other flatfish	Tr	-	-	-	-
Subtotal	126	224	214	83	94
<u>S. aleutianus</u>	-	4	-	-	-
<u>S. alutus</u>	-	61	-	-	31
<u>S. babcocki</u>	-	-	-	-	7
<u>S. brevispinis</u>	-	13	-	290	52
<u>S. diploproa</u>	-	-	-	-	-
<u>S. elongatus</u>	-	-	-	-	10
<u>S. entomelas</u>	156	-	-	3	-
<u>S. flavidus</u>	3930	9	Tr	22	-
<u>S. paucispinis</u>	104	-	-	82	14
<u>S. pinniger</u>	-	-	-	14	-
<u>S. proriger</u>	-	267	-	5	266
<u>S. reedi</u>	-	-	-	-	7
<u>S. ruberrimus</u>	-	-	-	-	-
<u>S. zacentrus</u>	-	-	-	-	-
<u>Seb. alascanus</u>	-	-	-	-	-
Other rockfish	-	-	Tr	-	Tr
Subtotal	4190	354	Tr	416	387
Lingcod	13	-	30	-	-
Pacific cod	65	26	4	66	17
Pacific herring	-	-	5	-	-
Sablefish	52	48	-	49	62
Walleye pollock	377	482	-	-	283
Other roundfish	-	-	-	Tr	-
Subtotal	507	556	39	115	362
Black skate	-	4	1	-	-
Longnose skate	39	4	55	14	10
Ratfish	-	13	8	Tr	7
Spiny dogfish	-	13	14	-	21
Other selachii	-	-	-	-	-
Subtotal	39	34	78	14	38
Invertebrates	-	-	-	-	-

Appendix Table 4 cont'd.

Haul Number	16	17	18	19	20
Date	Sept 11	Sept 11	Sept 11	Sept 12	Sept 12
Area	GIG	GIG	GIG	GIG	GIG
Start time (PST)	1446	1721	1846	0624	0802
Duration	30	34	59	36	35
Start N. Lat. (Deg)	051	051	051	051	051
(Min)	08.5	12.4	14.1	11.0	14.5
W. Long. (Deg)	128	128	128	128	128
(Min)	50.1	44.5	43.1	50.9	47.4
Direction (Deg.true)	239	274	304	314	289
Finish N. Lat. (Deg)	051	051	051	051	051
(Min)	07.8	12.0	14.6	12.9	14.4
W. Long. (Deg)	128	128	128	128	128
(Min)	52.1	47.4	45.3	52.3	49.4
Haul distance	1.6	1.6	3.1	1.9	1.6
Depth (Meters)	91-93	157-149	184-193	120-117	197-195
Water Temp. (Deg.C)					
Surface	15.0	15.0	-	14.0	14.5
Bottom	-	-	-	-	-
Depth	-	-	-	-	-
Type of gear	9	9	9	9	9
Total catch (kg)	157	287	733	1330	662
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 4 cont'd.

Haul Number	16	17	18	19	20
Date	Sept 11	Sept 11	Sept 11	Sept 12	Sept 12
Area	GIG	GIG	GIG	GIG	GIG
Total catch (kg)	157	287	733	1330	662
Arrowtooth flounder	11	27	44	120	110
Dover sole	-	-	-	-	-
English sole	9	12	-	-	-
Flathead sole	1	Tr	Tr	-	13
Pacific halibut	14	-	-	35	11
Petrале sole	2	4	Tr	80	8
Rex sole	3	31	Tr	-	11
Rock sole	33	Tr	-	-	-
Other flatfish	6	74	Tr	-	Tr
Subtotal	79	-	44	235	153
<u>S. aleutianus</u>	-	-	6	-	-
<u>S. alutus</u>	-	-	110	5	40
<u>S. babcocki</u>	-	-	17	-	185
<u>S. brevispinis</u>	-	26	17	250	67
<u>S. diploproa</u>	-	-	-	-	-
<u>S. elongatus</u>	-	-	6	-	-
<u>S. entomelas</u>	-	-	-	-	-
<u>S. flavidus</u>	-	-	-	-	-
<u>S. paucispinis</u>	-	3	-	18	105
<u>S. pinniger</u>	-	-	122	-	13
<u>S. proriger</u>	-	1	-	5	3
<u>S. reedi</u>	-	-	-	-	-
<u>S. ruberrimus</u>	-	-	-	-	-
<u>S. zacentrus</u>	-	-	-	-	Tr
<u>Seb. alascanus</u>	-	-	-	-	-
Other rockfish	-	Tr	-	-	-
Subtotal	-	30	278	278	413
Lingcod	23	14	Tr	-	Tr
Pacific cod	1	-	17	272	11
Pacific herring	1	-	-	27	Tr
Sablefish	-	13	84	-	19
Walleye pollock	Tr	6	220	Tr	3
Other roundfish	-	-	-	5	-
Subtotal	25	33	321	304	33
Black skate	-	-	-	5	5
Longnose skate	37	119	32	54	29
Ratfish	-	16	17	219	16
Spiny dogfish	16	15	41	85	13
Other selachii	-	-	-	-	-
Subtotal	53	150	90	363	63
Invertebrates	-	-	Tr	150	-

Appendix Table 4 cont'd.

Haul Number	21	22	23	24	25
Date	Sept 12	Sept 12	Sept 12	Sept 12	Sept 12
Area	GIG	GIG	GIG	GIG	GIG
Start time (PST)	0950	1155	1400	1738	1907
Duration	37	36	33	37	38
Start N. Lat. (Deg)	051	051	051	051	051
(Min)	17.7	13.6	08.7	12.6	15.2
W. Long. (Deg)	128	128	128	128	129
(Min)	53.9	56.3	59.3	02.7	01.3
Direction (Deg.true)	351	274	229	059	249
Finish N. Lat. (Deg)	051	051	051	051	051
(Min)	19.8	13.2	07.1	13.5	13.8
W. Long. (Deg)	128	128	128	128	129
(Min)	54.0	58.9	00.5	59.4	03.0
Haul distance	1.9	1.7	1.8	1.9	1.7
Depth (Meters)	230-235	157-151	124-122	155-157	210-215
Water Temp. (Deg.C)					
Surface	15.0	16.0	16.0	17.0	-
Bottom	-	-	-	-	-
Depth	-	-	-	-	-
Type of gear	9	9	9	9	9
Total catch (kg)	1391	162	594	1068	2799
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 4 cont'd.

Haul Number	21	22	23	24	25
Date	Sept 12	Sept 12	Sept 12	Sept 12	Sept 12
Area	GIG	GIG	GIG	GIG	GIG
Total catch (kg)	1391	162	594	1068	2799
Arrowtooth flounder	40	27	14	311	196
Dover sole	91	2	-	-	-
English sole	-	1	10	-	-
Flathead sole	Tr	-	-	-	8
Pacific halibut	-	-	3	124	-
Petrale sole	-	3	14	-	-
Rex sole	6	6	10	8	23
Rock sole	-	-	-	-	-
Other flatfish	Tr	-	-	-	-
Subtotal	137	39	51	443	227
<u>S. aleutianus</u>	Tr	-	-	-	-
<u>S. alutus</u>	1082	11	5	-	1268
<u>S. babcocki</u>	28	-	-	-	30
<u>S. brevispinis</u>	Tr	9	241	3	113
<u>S. diploproa</u>	-	-	-	-	-
<u>S. elongatus</u>	-	4	33	5	-
<u>S. entomelas</u>	-	-	-	-	-
<u>S. flavidus</u>	23	-	-	3	15
<u>S. paucispinis</u>	-	-	24	21	30
<u>S. pinniger</u>	-	-	-	-	-
<u>S. proriger</u>	-	-	Tr	3	-
<u>S. reedi</u>	-	-	-	-	-
<u>S. ruberrimus</u>	-	-	Tr	-	-
<u>S. zacentrus</u>	Tr	Tr	-	Tr	-
<u>Seb. alascanus</u>	57	Tr	-	-	-
Other rockfish	6	-	-	-	-
Subtotal	1196	24	303	35	1456
Lingcod	-	9	2	18	-
Pacific cod	-	9	84	44	60
Pacific herring	-	Tr	-	-	-
Sablefish	6	26	14	75	392
Walleye pollock	40	-	-	-	475
Other roundfish	-	-	-	-	-
Subtotal	46	44	100	137	927
Black skate	-	-	-	-	-
Longnose skate	6	11	75	50	91
Ratfish	6	30	12	103	30
Spiny dogfish	-	14	53	100	68
Other selachii	-	-	-	-	-
Subtotal	12	55	140	253	189
Invertebrates	-	-	-	200	-

Appendix Table 4 cont'd.

Haul Number	26	27	28	29	30
Date	Sept 13	Sept 13	Sept 13	Sept 13	Sept 13
Area	GIG	GIG	GIG	GIG	GIG
Start time (PST)	0641	0800	0900	1025	1141
Duration	32	32	32	30	30
Start N. Lat. (Deg)	051	051	051	051	051
(Min)	27.6	27.1	26.6	24.2	22.7
W. Long. (Deg)	128	128	129	129	129
(Min)	56.3	58.9	03.5	11.2	20.1
Direction (Deg.true)	244	235	239	249	284
Finish N. Lat. (Deg)	051	051	051	051	051
(Min)	27.1	26.3	25.7	23.1	23.4
W. Long. (Deg)	128	129	129	129	129
(Min)	58.9	01.6	06.5	14.0	22.9
Haul distance	1.7	1.7	1.5	1.5	1.6
Depth (Meters)	113-118	120-126	120-124	113-128	131-135
Water Temp. (Deg.C)					
Surface	15.5	-	-	15.5	-
Bottom	-	-	-	-	-
Depth	-	-	-	-	-
Type of gear	9	9	9	9	9
Total catch (kg)	1638	926	3024	1233	340
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 4 cont'd.

Haul Number	26	27	28	29	30
Date	Sept 13	Sept 13	Sept 13	Sept 13	Sept 13
Area	GIG	GIG	GIG	GIG	GIG
Total catch (kg)	1638	926	3024	1233	340
Arrowtooth flounder	386	317	285	136	102
Dover sole	7	20	-	-	-
English sole	79	40	36	2	18
Flathead sole	Tr	-	-	-	-
Pacific halibut	8	16	21	550	40
Petrале sole	-	3	14	2	21
Rex sole	105	89	43	-	17
Rock sole	20	-	-	Tr	25
Other flatfish	Tr	-	-	-	-
Subtotal	605	485	399	690	223
<u>S. aleutianus</u>	-	-	-	-	-
<u>S. alutus</u>	Tr	10	-	-	2
<u>S. babcocki</u>	-	-	-	-	-
<u>S. brevispinis</u>	811	40	164	12	9
<u>S. diploproa</u>	-	-	-	-	-
<u>S. elongatus</u>	-	-	-	-	4
<u>S. entomelas</u>	-	-	-	-	-
<u>S. flavidus</u>	-	20	107	-	-
<u>S. paucispinis</u>	-	13	29	-	-
<u>S. pinniger</u>	-	-	21	-	-
<u>S. proriger</u>	-	-	-	-	-
<u>S. reedi</u>	-	-	-	-	-
<u>S. ruberrimus</u>	-	-	-	-	-
<u>S. zacentrus</u>	-	-	-	-	-
Seb. alascanus	-	-	-	-	-
Other rockfish	-	-	-	-	-
Subtotal	811	83	321	12	15
Lingcod	-	Tr	14	107	5
Pacific cod	143	40	328	239	19
Pacific herring	-	-	Tr	-	Tr
Sablefish	52	208	1763	103	5
Walleye pollock	-	-	121	-	1
Other roundfish	Tr	Tr	-	-	-
Subtotal	195	248	2226	449	30
Black skate	7	Tr	7	-	-
Longnose skate	-	60	-	82	35
Ratfish	-	-	-	-	-
Spiny dogfish	20	50	71	-	37
Other selachii	-	-	-	-	-
Subtotal	27	110	78	82	72
Invertebrates	-	-	-	-	-

Appendix Table 4 cont'd.

Haul Number	31	32	33	34	35
Date	Sept 13	Sept 13	Sept 13	Sept 13	Sept 13
Area	GIG	GIG	GIG	GIG	GIG
Start time (PST)	1255	1450	1620	1857	2015
Duration	40	37	38	30	31
Start N. Lat. (Deg)	051	051	051	051	051
(Min)	24.2	20.2	21.7	26.5	27.0
W. Long. (Deg)	129	129	129	128	128
(Min)	23.1	22.6	13.8	57.5	55.4
Direction (Deg.true)	346	075	128	064	045
Finish N. Lat. (Deg)	051	051	051	051	051
(Min)	29.5	20.0	22.3	26.6	27.0
W. Long. (Deg)	129	129	129	128	128
(Min)	24.9	19.3	10.5	54.7	57.6
Haul distance	2.1	1.7	2.2	1.6	1.6
Depth (Meters)	131-128	204-221	197-201	149-149	115-117
Water Temp. (Deg.C)					
Surface	16.0	-	16.0	-	-
Bottom	-	-	-	-	-
Depth	-	-	-	-	-
Type of gear	9	9	9	9	9
Total catch (kg)	347	985	4437	730	375
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 4 cont'd.

Haul Number	31	32	33	34	35
Date	Sept 13	Sept 13	Sept 13	Sept 13	Sept 13
Area	GIG	GIG	GIG	GIG	GIG
Total catch (kg)	347	985	4437	730	375
Arrowtooth flounder	14	256	1174	76	108
Dover sole	1	35	398	50	1
English sole	13	-	11	52	22
Flathead sole	-	8	65	8	1
Pacific halibut	12	4	-	-	3
Petrале sole	31	-	-	-	-
Rex sole	23	15	Tr	21	51
Rock sole	79	-	-	-	8
Other flatfish	-	Tr	-	Tr	-
Subtotal	173	318	1648	207	194
<u>S. aleutianus</u>	-	-	Tr	-	-
<u>S. alutus</u>	-	221	1604	-	-
<u>S. babcocki</u>	-	31	54	-	-
<u>S. brevispinis</u>	-	8	65	-	43
<u>S. diploproa</u>	-	-	-	-	-
<u>S. elongatus</u>	-	-	-	-	-
<u>S. entomelas</u>	-	-	-	-	4
<u>S. flavidus</u>	-	-	-	21	-
<u>S. paucispinis</u>	-	19	54	-	6
<u>S. pinniger</u>	-	-	129	8	2
<u>S. proriger</u>	-	-	-	-	-
<u>S. reedi</u>	-	8	-	-	-
<u>S. ruberrimus</u>	-	-	-	-	-
<u>S. zacentrus</u>	-	-	-	-	-
<u>Seb. alascanus</u>	-	-	-	-	-
Other rockfish	-	-	-	-	-
Subtotal	-	287	1906	29	55
Lingcod	8	-	-	-	-
Pacific cod	17	-	11	29	18
Pacific herring	Tr	-	-	-	-
Sablefish	6	159	646	34	64
Walleye pollock	3	132	172	340	1
Other roundfish	2	-	-	Tr	-
Subtotal	36	291	829	403	83
Black skate	-	-	-	5	12
Longnose skate	65	-	54	44	6
Ratfish	Tr	-	-	-	6
Spiny dogfish	73	89	Tr	42	19
Other selachii	-	Tr	-	-	-
Subtotal	138	89	54	91	43
Invertebrates	-	-	-	-	-

Appendix Table 4 cont'd.

Haul Number	36	37	38	39	40
Date	Sept 14	Sept 14	Sept 14	Sept 14	Sept 14
Area	GIG	GIG	GIG	GIG	GIG
Start time (PST)	0630	0755	0923	1107	1232
Duration	34	30	37	33	38
Start N. Lat. (Deg)	051	051	051	051	051
(Min)	27.0	29.0	52.5	08.2	42.0
W. Long. (Deg)	128	128	128	128	128
(Min)	53.0	43.5	35.2	34.0	32.5
Direction (Deg.true)	081	016	374	009	349
Finish N. Lat. (Deg)	051	051	051	051	051
(Min)	26.8	30.3	34.2	40.3	43.4
W. Long.(Deg)	128	128	128	128	128
(Min)	50.0	42.5	36.0	33.2	33.6
Haul distance	1.8	1.4	1.4	1.8	2.0
Depth (Meters)	109-120	102-95	107-115	128-133	135-149
Water Temp. (Deg.C)					
Surface	15.0	15.0	15.5	-	15.5
Bottom	-	-	-	-	-
Depth	-	-	-	-	-
Type of gear	9	9	9	9	9
Total catch (kg)	970	1077	839	775	1851
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 4 cont'd.

Haul Number	36	37	38	39	40
Date	Sept 14	Sept 14	Sept 14	Sept 14	Sept 14
Area	GIG	GIG	GIG	GIG	GIG
Total catch (kg)	970	1077	839	775	1851
Arrowtooth flounder	323	38	169	-	50
Dover sole	18	8	-	53	72
English sole	40	304	54	Tr	-
Flathead sole	-	4	-	57	14
Pacific halibut	8	4	5	-	10
Petrale sole	11	8	18	-	-
Rex sole	85	380	12	18	Tr
Rock sole	29	19	6	-	-
Other flatfish	Tr	8	6	-	Tr
Subtotal	514	773	270	128	146
<u>S. aleutianus</u>	-	-	-	-	-
<u>S. alutus</u>	-	-	-	-	-
<u>S. babcocki</u>	-	-	-	113	36
<u>S. brevispinis</u>	26	8	-	-	151
<u>S. diploproa</u>	-	-	-	3	-
<u>S. elongatus</u>	-	-	21	-	22
<u>S. entomelas</u>	-	-	-	-	Tr
<u>S. flavidus</u>	-	-	-	14	568
<u>S. paucispinis</u>	48	46	42	-	65
<u>S. pinniger</u>	121	11	-	-	14
<u>S. proriger</u>	-	-	-	-	65
<u>S. reedi</u>	-	-	-	-	-
<u>S. ruberrimus</u>	-	-	-	-	50
<u>S. zacentrus</u>	-	-	-	-	Tr
<u>Seb. alascanus</u>	-	-	-	-	-
Other rockfish	-	-	-	-	-
Subtotal	195	65	63	130	971
Lingcod	-	11	82	-	Tr
Pacific cod	114	Tr	97	195	29
Pacific herring	-	-	-	-	-
Sablefish	33	114	118	241	108
Walleye pollock	-	-	15	18	496
Other roundfish	-	-	-	-	-
Subtotal	147	125	312	454	633
Black skate	Tr	-	-	-	-
Longnose skate	-	49	-	Tr	-
Ratfish	59	8	73	42	Tr
Spiny dogfish	55	57	121	21	101
Other selachii	-	-	-	-	-
Subtotal	114	114	194	63	101
Invertebrates	-	-	-	-	-

Appendix Table 4 cont'd.

Haul Number	41	42	43	44	45
Date	Sept 14	Sept 14	Sept 14	Sept 15	Sept 15
Area	GIG	GIG	GIG	GIG	GIG
Start time (PST)	1450	1609	1755	0636	0850
Duration	34	35	35	60	33
Start N. Lat. (Deg)	051	051	051	051	051
(Min)	51.7	53.2	54.0	46.0	49.4
W. Long. (Deg)	128	128	128	129	129
(Min)	41.0	42.8	47.0	18.5	18.9
Direction (Deg.true)	310	296	290	000	220
Finish N. Lat. (Deg)	051	051	051	051	051
(Min)	51.7	54.9	56.2	46.5	47.8
W. Long. (Deg)	128	128	128	129	129
(Min)	42.7	45.5	48.6	21.3	17.0
Haul distance	1.8	1.9	2.0	2.5	1.8
Depth (Meters)	138-138	138-140	131-128	115-120	131-120
Water Temp. (Deg.C)					
Surface	-	16.0	-	13.0	-
Bottom	-	-	-	-	-
Depth	-	-	-	-	-
Type of gear	9	9	9	9	9
Total catch (kg)	845	5112	5621	1859	2544
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 4 cont'd.

Haul Number	41	42	43	44	45
Date	Sept 14	Sept 14	Sept 14	Sept 15	Sept 15
Area	GIG	GIG	GIG	GIG	GIG
Total catch (kg)	845	5112	5621	1859	2544
Arrowtooth flounder	62	441	565	23	51
Dover sole	10	25	-	-	152
English sole	10	Tr	14	-	-
Flathead sole	56	Tr	27	-	-
Pacific halibut	-	30	11	41	18
Petrale sole	-	-	-	-	-
Rex sole	6	Tr	Tr	-	Tr
Rock sole	-	-	-	31	-
Other flatfish	Tr	Tr	-	-	Tr
Subtotal	144	496	617	95	221
<u>S. aleutianus</u>	-	-	-	-	131
<u>S. alutus</u>	-	-	-	-	950
<u>S. babcocki</u>	-	-	-	-	384
<u>S. brevispinis</u>	72	353	1466	1387	-
<u>S. diploproa</u>	-	-	-	-	-
<u>S. elongatus</u>	-	-	-	-	-
<u>S. entomelas</u>	-	-	-	Tr	-
<u>S. flavidus</u>	46	290	121	-	-
<u>S. paucispinis</u>	20	50	135	247	-
<u>S. pinniger</u>	-	-	94	-	20
<u>S. proriger</u>	6	25	-	-	-
<u>S. reedi</u>	-	-	-	-	-
<u>S. ruberrimus</u>	-	-	-	-	-
<u>S. zacentrus</u>	-	-	-	-	-
<u>Seb. alascanus</u>	-	-	-	-	30
Other rockfish	-	-	-	-	-
Subtotal	144	718	1816	1634	1515
Lingcod	-	13	-	-	-
Pacific cod	39	290	430	8	141
Pacific herring	-	-	-	-	-
Sablefish	6	871	444	15	172
Walleye pollock	358	2320	2125	15	101
Other roundfish	-	-	-	-	-
Subtotal	403	3494	2999	38	414
Black skate	3	-	-	-	10
Longnose skate	3	38	Tr	-	61
Ratfish	56	25	14	Tr	20
Spiny dogfish	92	341	175	92	303
Other selachii	-	-	-	-	-
Subtotal	154	404	189	92	394
Invertebrates	-	-	-	-	Tr

Appendix Table 4 cont'd.

Haul Number	46	47	48	49	50
Date	Sept 15	Sept 15	Sept 16	Sept 16	Sept 16
Area	GIG	GIG	GIG	GIG	GIG
Start time (PST)	1144	1933	0630	0945	1134
Duration	63	97	60	40	48
Start N. Lat. (Deg)	051	051	051	051	051
(Min)	43.8	43.8	26.2	23.8	22.8
W. Long. (Deg)	129	129	129	128	128
(Min)	33.4	31.6	03.0	54.0	40.5
Direction (Deg.true)	035	065	235	065	105
Finish N. Lat. (Deg)	051	051	051	051	051
(Min)	47.5	46.9	25.7	24.0	21.8
W. Long. (Deg)	129	129	129	128	128
(Min)	31.6	23.1	06.5	49.8	35.2
Haul distance	3.4	5.2	2.5	2.0	2.5
Depth (Meters)	232-241	122-131	102-122	210-210	223-204
Water Temp. (Deg.C)					
Surface	13.0	14.0	15.0	15.0	15.5
Bottom	-	-	-	-	-
Depth	-	-	-	-	-
Type of gear	9	9	9	9	9
Total catch (kg)	262	1026	1037	1117	1820
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 4 cont'd.

Haul Number	46	47	48	49	50
Date	Sept 15	Sept 15	Sept 16	Sept 16	Sept 16
Area	GIG	GIG	GIG	GIG	GIG
Total catch (kg)	262	1026	1037	1117	1820
Arrowtooth flounder	103	123	112	457	444
Dover sole	-	-	-	223	176
English sole	8	9	8	-	-
Flathead sole	-	-	-	22	78
Pacific halibut	3	333	4	-	-
Petrale sole	5	-	-	-	Tr
Rex sole	9	3	8	4	-
Rock sole	13	45	8	-	Tr
Other flatfish	-	-	Tr	-	-
Subtotal	141	513	140	706	698
<u>S. aleutianus</u>	-	-	-	Tr	7
<u>S. alutus</u>	-	-	Tr	322	825
<u>S. babcocki</u>	-	-	-	4	35
<u>S. brevispinis</u>	11	27	278	-	-
<u>S. diploproa</u>	-	-	-	-	-
<u>S. elongatus</u>	-	-	-	-	-
<u>S. entomelas</u>	-	Tr	Tr	-	-
<u>S. flavidus</u>	1	303	175	-	-
<u>S. paucispinis</u>	-	9	-	-	-
<u>S. pinniger</u>	19	21	29	-	-
<u>S. proriger</u>	-	-	-	-	-
<u>S. reedi</u>	-	-	-	-	-
<u>S. ruberrimus</u>	-	-	-	-	-
<u>S. zacentrus</u>	-	-	-	-	-
<u>Seb. alascanus</u>	-	-	-	15	71
Other rockfish	-	-	-	-	-
Subtotal	31	360	482	341	938
Lingcod	-	12	25	-	-
Pacific cod	3	36	158	-	7
Pacific herring	-	Tr	-	-	-
Sablefish	-	24	141	48	78
Walleye pollock	3	-	21	-	-
Other roundfish	Tr	-	Tr	-	-
Subtotal	6	72	345	48	85
Black skate	Tr	Tr	12	4	-
Longnose skate	-	Tr	25	11	21
Ratfish	19	18	-	-	-
Spiny dogfish	65	63	33	7	78
Other selachii	-	-	-	-	-
Subtotal	84	81	70	22	99
Invertebrates	-	-	-	-	-

Appendix Table 4 cont'd.

Haul Number	51	52	53	54	55
Date	Sept 16	Sept 16	Sept 16	Sept 20	Sept 20
Area	GIG	GIG	GIG	GIG	GIG
Start time (PST)	1410	1657	1800	1323	1632
Duration	35	26	45	25	23
Start N. Lat. (Deg)	051	051	051	051	051
(Min)	21.6	14.5	13.2	12.3	14.3
W. Long. (Deg)	128	128	128	128	128
(Min)	35.4	39.7	39.2	30.0	39.0
Direction (Deg.true)	215	055	155	005	114
Finish N. Lat. (Deg)	051	051	051	051	051
(Min)	20.2	15.0	11.0	13.6	12.2
W. Long. (Deg)	128	128	128	128	128
(Min)	38.6	37.2	37.1	29.6	35.2
Haul distance	1.9	1.2	2.4	1.3	1.6
Depth (Meters)	204-202	193-201	192-177	197-197	192-193
Water Temp. (Deg.C)					
Surface	16.0	16.0	-	15.0	15.0
Bottom	-	-	-	-	-
Depth	-	-	-	-	-
Type of gear	9	9	9	23	23
Total catch (kg)	954	1031	2435	984	2812
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 4 cont'd.

Haul Number	51	52	53	54	55
Date	Sept 16	Sept 16	Sept 16	Sept 20	Sept 20
Area	GIG	GIG	GIG	GIG	GIG
Total catch (kg)	954	1031	2435	984	2812
Arrowtooth flounder	96	375	407	19	42
Dover sole	42	19	-	-	-
English sole	-	-	-	-	-
Flathead sole	65	Tr	9	-	-
Pacific halibut	-	-	5	-	-
Petrale sole	-	-	-	-	-
Rex sole	Tr	4	-	-	-
Rock sole	-	-	-	-	-
Other flatfish	-	-	-	-	-
Subtotal	203	398	421	19	42
<u>S. aleutianus</u>	Tr	-	-	-	-
<u>S. alutus</u>	534	98	696	180	83
<u>S. babcocki</u>	31	42	-	-	-
<u>S. brevispinis</u>	-	-	54	Tr	33
<u>S. diploproa</u>	-	-	-	-	-
<u>S. elongatus</u>	-	Tr	-	-	-
<u>S. entomelas</u>	-	-	-	26	100
<u>S. flavidus</u>	-	-	9	49	108
<u>S. paucispinis</u>	-	-	-	-	-
<u>S. pinniger</u>	-	-	-	-	-
<u>S. proriger</u>	-	-	18	-	25
<u>S. reedi</u>	-	-	-	-	-
<u>S. ruberrimus</u>	-	-	-	-	-
<u>S. zacentrus</u>	-	-	-	-	-
<u>Seb. alascanus</u>	15	Tr	Tr	-	-
Other rockfish	-	-	-	-	-
Subtotal	580	134	777	255	349
Lingcod	Tr	-	-	-	-
Pacific cod	8	-	-	-	-
Pacific herring	-	Tr	-	-	-
Sablefish	62	199	569	-	-
Walleye pollock	12	180	361	706	2421
Other roundfish	-	-	-	4	-
Subtotal	82	379	930	710	2421
Black skate	4	4	9	-	-
Longnose skate	19	12	36	-	-
Ratfish	8	8	63	-	-
Spiny dogfish	58	96	199	Tr	-
Other selachii	-	-	-	-	-
Subtotal	89	120	307	Tr	-
Invertebrates	-	-	-	-	-

Appendix Table 4 cont'd.

Haul Number	56	57	58	59	60
Date	Sept 20	Sept 21	Sept 21	Sept 22	Sept 22
Area	GIG	GIG	GIG	GIG	GIG
Start time (PST)	1900	0710	0921	0615	1157
Duration	60	60	52	95	19
Start N. Lat. (Deg)	051	050	050	050	050
(Min)	10.3	56.6	54.8	57.6	59.0
W. Long. (Deg)	128	129	129	129	129
(Min)	31.1	37.3	36.7	34.6	35.9
Direction (Deg.true)	254	239	084	180	225
Finish N. Lat. (Deg)	051	050	050	050	050
(Min)	11.1	54.7	55.9	53.6	58.7
W. Long. (Deg)	128	129	129	129	129
(Min)	36.3	37.8	32.5	36.3	36.7
Haul distance	3.6	2.6	2.8	5.1	1.0
Depth (Meters)	188-175	248-237	237-226	237-224	254-257
Water Temp. (Deg.C)					
Surface	15.0	15.0	15.5	-	14.5
Bottom	-	-	-	-	-
Depth	-	-	-	-	-
Type of gear	23	23	23	23	23
Total catch (kg)	2430	5288	0	2232	156
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 4 cont'd.

Haul Number	56	57	58	59	60
Date	Sept 20	Sept 21	Sept 21	Sept 22	Sept 22
Area	GIG	GIG	GIG	GIG	GIG
Total catch (kg)	2430	5288	0	2232	156
Arrowtooth flounder	9	-	-	-	-
Dover sole	-	-	-	-	-
English sole	-	-	-	-	-
Flathead sole	-	-	-	-	-
Pacific halibut	-	-	-	-	-
Petrale sole	-	-	-	-	-
Rex sole	-	-	-	-	-
Rock sole	-	-	-	-	-
Other flatfish	-	-	-	-	-
Subtotal	9	-	-	-	-
<u>S. aleutianus</u>	-	-	-	-	-
<u>S. alutus</u>	184	Tr	-	10	7
<u>S. babcocki</u>	-	-	-	-	-
<u>S. brevispinis</u>	9	Tr	-	Tr	-
<u>S. diploproa</u>	-	-	-	-	-
<u>S. elongatus</u>	-	-	-	-	-
<u>S. entomelas</u>	-	272	-	58	-
<u>S. flavidus</u>	267	-	-	-	-
<u>S. paucispinis</u>	Tr	-	-	-	-
<u>S. pinniger</u>	-	-	-	-	-
<u>S. proriger</u>	Tr	136	-	135	26
<u>S. reedi</u>	-	4880	-	2029	97
<u>S. ruberrimus</u>	-	-	-	-	-
<u>S. zacentrus</u>	-	-	-	Tr	26
<u>Seb. alascanus</u>	-	-	-	-	-
Other rockfish	-	-	-	-	-
Subtotal	460	5288	-	2232	156
Lingcod	-	-	-	-	-
Pacific cod	-	-	-	-	-
Pacific herring	18	-	-	-	-
Sablefish	9	-	-	-	-
Walleye pollock	1934	-	-	-	-
Other roundfish	-	-	-	-	-
Subtotal	1961	-	-	-	-
Black skate	-	-	-	-	-
Longnose skate	-	-	-	-	-
Ratfish	-	-	-	-	-
Spiny dogfish	-	-	-	-	-
Other selachii	-	-	-	-	-
Subtotal	-	-	-	-	-
Invertebrates	-	-	-	-	-

Appendix Table 4 cont'd.

Haul Number	61	62	63	64	65
Date	Sept 22	Sept 22	Sept 22	Sept 23	Sept 23
Area	GIG	GIG	GIG	GIG	GIG
Start time (PST)	1613	1910	2132	0840	1051
Duration	32	17	23	25	55
Start N. Lat. (Deg)	051	051	051	051	051
(Min)	18.7	26.6	35.5	43.3	45.3
W. Long. (Deg)	129	129	129	129	129
(Min)	34.2	43.4	35.4	36.9	33.3
Direction (Deg.true)	279	195	315	020	200
Finish N. Lat. (Deg)	051	051	051	051	051
(Min)	18.9	26.1	35.6	43.6	44.7
W. Long. (Deg)	129	129	129	129	129
(Min)	36.4	44.4	37.3	35.1	35.0
Haul distance	1.7	0.9	1.4	1.1	2.9
Depth (Meters)	217-208	171-171	109-109	201-173	219-241
Water Temp. (Deg.C)					
Surface	15.0	15.0	-	14.5	15.0
Bottom	-	-	-	-	-
Depth	-	-	-	-	-
Type of gear	23	23	23	23	23
Total catch (kg)	536	133	250	2309	5806
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 4 cont'd.

Haul Number	61	62	63	64	65
Date	Sept 22	Sept 22	Sept 22	Sept 23	Sept 23
Area	GIG	GIG	GIG	GIG	GIG
Total catch (kg)	536	133	250	2309	5806
Arrowtooth flounder	-	7	-	-	-
Dover sole	-	-	-	-	-
English sole	-	-	-	-	-
Flathead sole	-	-	-	-	-
Pacific halibut	-	-	-	-	-
Petrale sole	-	-	-	-	-
Rex sole	-	-	-	-	-
Rock sole	-	-	-	-	-
Other flatfish	-	-	-	-	-
Subtotal	-	7	-	-	-
<u>S. aleutianus</u>	-	-	-	-	-
<u>S. alutus</u>	56	-	-	-	292
<u>S. babcocki</u>	-	-	-	-	-
<u>S. brevispinis</u>	3	6	-	-	24
<u>S. diploproa</u>	-	-	-	-	-
<u>S. elongatus</u>	-	-	-	-	-
<u>S. entomelas</u>	30	-	1	592	777
<u>S. flavidus</u>	-	-	231	1717	4227
<u>S. paucispinis</u>	-	-	4	Tr	-
<u>S. pinniger</u>	-	-	-	-	-
<u>S. proriger</u>	316	113	7	-	-
<u>S. reedi</u>	109	-	-	-	24
<u>S. ruberrimus</u>	-	-	-	-	-
<u>S. zacentrus</u>	13	7	-	-	-
Seb. alascanus	-	-	-	-	-
Other rockfish	-	-	-	-	-
Subtotal	527	126	243	2309	5344
Lingcod	-	-	-	-	-
Pacific cod	-	-	-	-	-
Pacific herring	Tr	Tr	2	Tr	-
Sablefish	-	-	-	-	-
Walleye pollock	9	-	-	-	462
Other roundfish	-	-	-	-	-
Subtotal	9	Tr	2	Tr	462
Black skate	-	-	-	-	-
Longnose skate	-	-	-	-	-
Ratfish	-	-	-	-	-
Spiny dogfish	-	-	5	-	-
Other selachii	-	-	-	-	-
Subtotal	-	-	5	-	-
Invertebrates	Tr	-	-	-	-

Appendix Table 4 cont'd.

Haul Number	66	67	68	69	70
Date	Sept 23	Sept 23	Sept 23	Sept 24	Sept 24
Area	GIG	GIG	GIG	GIG	GIG
Start time (PST)	1300	1942	2125	0705	0927
Duration	70	35	30	20	40
Start N. Lat. (Deg)	051	051	051	052	052
(Min)	46.0	45.2	45.3	01.5	07.3
W. Long. (Deg)	129	130	130	129	129
(Min)	31.3	02.7	03.9	09.2	16.2
Direction (Deg.true)	045	025	059	300	300
Finish N. Lat. (Deg)	051	051	051	052	052
(Min)	48.2	45.3	45.8	00.6	08.1
W. Long. (Deg)	129	130	130	129	129
(Min)	27.7	00.3	02.1	10.3	18.4
Haul distance	3.7	1.0	1.6	1.1	1.8
Depth (Meters)	223-215	259-259	232-230	170-170	164-164
Water Temp. (Deg.C)					
Surface	-	-	14.5	14.0	14.0
Bottom	-	-	-	-	-
Depth	-	-	-	-	-
Type of gear	23	23	23	23	23
Total catch (kg)	776	100	136	83	122
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 4 cont'd.

Haul Number	66	67	68	69	70
Date	Sept 23	Sept 23	Sept 23	Sept 24	Sept 24
Area	GIG	GIG	GIG	GIG	GIG
Total catch (kg)	776	100	136	83	122
Arrowtooth flounder	3	-	-	1	10
Dover sole	-	-	-	-	-
English sole	-	-	-	-	-
Flathead sole	-	-	-	-	-
Pacific halibut	-	-	-	-	-
Petrale sole	-	-	-	-	-
Rex sole	-	-	-	-	-
Rock sole	-	-	-	-	-
Other flatfish	-	-	-	-	-
Subtotal	3	-	-	1	10
<u>S. aleutianus</u>	-	-	-	-	-
<u>S. alutus</u>	184	4	1	34	-
<u>S. babcocki</u>	-	-	-	-	-
<u>S. brevispinis</u>	50	4	2	21	2
<u>S. diploproa</u>	-	-	-	-	-
<u>S. elongatus</u>	-	-	-	-	-
<u>S. entomelas</u>	12	15	2	-	-
<u>S. flavidus</u>	90	4	-	11	1
<u>S. paucispinis</u>	-	-	-	-	-
<u>S. pinniger</u>	16	-	2	-	-
<u>S. proriger</u>	Tr	58	122	7	97
<u>S. reedi</u>	-	-	3	-	-
<u>S. ruberrimus</u>	-	-	-	-	-
<u>S. zacentrus</u>	-	-	-	-	-
<u>Seb. alascanus</u>	-	-	-	-	-
Other rockfish	-	-	-	-	-
Subtotal	352	85	132	73	100
Lingcod	-	-	-	-	-
Pacific cod	-	-	-	-	-
Pacific herring	-	-	-	2	12
Sablefish	-	-	-	-	-
Walleye pollock	421	15	4	7	-
Other roundfish	-	-	-	-	-
Subtotal	421	15	4	9	12
Black skate	-	-	-	-	-
Longnose skate	-	-	-	-	-
Ratfish	-	-	-	-	-
Spiny dogfish	-	-	-	-	-
Other selachii	-	-	-	-	-
Subtotal	-	-	-	-	-
Invertebrates	-	Tr	-	-	-

Appendix Table 4 cont'd.

Haul Number	71	72	73	74	75
Date	Sept 24	Sept 24	Sept 25	Sept 25	Sept 25
Area	GIG	GIG	GIG	GIG	GIG
Start time (PST)	1458	1848	0700	1040	1215
Duration	60	44	90	60	60
Start N. Lat. (Deg)	051	051	051	051	051
(Min)	43.4	31.8	57.2	49.5	44.7
W. Long. (Deg)	129	129	128	128	128
(Min)	37.1	50.3	48.5	40.6	36.1
Direction (Deg.true)	235	345	330	145	160
Finish N. Lat. (Deg)	051	051	051	051	051
(Min)	41.9	33.3	59.0	46.7	41.9
W. Long. (Deg)	129	129	128	128	128
(Min)	40.1	51.0	54.2	37.1	34.9
Haul distance	3.2	2.3	4.8	3.6	2.9
Depth (Meters)	221-204	179-186	135-151	118-138	113-111
Water Temp. (Deg.C)					
Surface	15.5	15.0	-	14.0	-
Bottom	-	-	-	-	-
Depth	-	-	-	-	-
Type of gear	23	23	23	9	9
Total catch (kg)	940	989	145	1304	4275
Remarks	Usable	Usable	Usable	Usable	Usable

Appendix Table 4 cont'd.

Haul Number	71	72	73	74	75
Date	Sept 24	Sept 24	Sept 25	Sept 25	Sept 25
Area	GIG	GIG	GIG	GIG	GIG
Total catch (kg)	940	989	145	1304	4275
Arrowtooth flounder	4	-	8	311	2379
Dover sole	-	-	-	Tr	Tr
English sole	-	-	-	224	268
Flathead sole	-	-	-	12	17
Pacific halibut	-	-	-	13	-
Petrale sole	-	-	-	6	34
Rex sole	-	-	Tr	23	17
Rock sole	-	-	-	-	34
Other flatfish	-	-	-	-	-
Subtotal	4	-	8	589	2749
<u>S. aleutianus</u>	-	-	-	-	-
<u>S. alutus</u>	238	4	-	-	-
<u>S. babcocki</u>	-	-	-	-	-
<u>S. brevispinis</u>	37	-	63	230	737
<u>S. diploproa</u>	-	-	-	-	-
<u>S. elongatus</u>	-	-	-	-	17
<u>S. entomelas</u>	-	13	-	-	-
<u>S. flavidus</u>	160	34	55	12	-
<u>S. paucispinis</u>	-	47	5	81	486
<u>S. pinniger</u>	-	-	-	-	-
<u>S. proriger</u>	33	887	2	-	-
<u>S. reedi</u>	-	4	-	-	-
<u>S. ruberrimus</u>	-	-	-	-	-
<u>S. zacentrus</u>	-	Tr	-	-	-
<u>Seb. alascanus</u>	-	-	-	-	-
Other rockfish	-	-	-	-	-
Subtotal	468	989	125	323	1240
Lingcod	-	-	-	-	Tr
Pacific cod	-	-	-	173	235
Pacific herring	-	-	8	-	Tr
Sablefish	-	-	-	6	34
Walleye pollock	468	-	-	-	-
Other roundfish	-	-	-	-	Tr
Subtotal	468	-	8	179	269
Black skate	-	-	-	-	-
Longnose skate	-	-	-	40	-
Ratfish	-	-	-	-	17
Spiny dogfish	-	-	4	173	-
Other selachii	-	-	-	-	-
Subtotal	-	-	4	213	17
Invertebrates	-	-	Tr	-	-

Appendix Table 4 cont'd.

Haul Number	76	77	78	79
Date	Sept 25	Sept 25	Sept 26	Sept 26
Area	GIG	GIG	GIG	GIG
Start time (PST)	1530	1650	0815	1030
Duration	40	85	3	37
Start N. Lat. (Deg)	051	051	051	051
(Min)	30.6	27.9	16.7	09.2
W. Long. (Deg)	128	128	128	128
(Min)	31.0	38.9	22.0	28.5
Direction (Deg.true)	240	105	177	285
Finish N. Lat. (Deg)	051	051	051	051
(Min)	30.1	24.6	16.5	10.8
W. Long. (Deg)	128	128	128	128
(Min)	34.6	34.9	22.0	30.0
Haul distance	2.1	4.5	0.2	1.9
Depth (Meters)	186-188	201-208	89-89	182-193
Water Temp. (Deg.C)				
Surface	14.0	14.0	15.0	15.0
Bottom	-	-	-	-
Depth	-	-	-	-
Type of gear	9	9	9	9
Total catch (kg)	1412	3476	47	1360
Remarks	Usable	Usable	Usable	Usable

Appendix Table 4 cont'd.

Haul Number	76	77	78	79
Date	Sept 25	Sept 25	Sept 26	Sept 26
Area	GIG	GIG	GIG	GIG
Total catch (kg)	1412	3476	47	1360
Arrowtooth flounder	499	923	31	156
Dover sole	292	611	-	5
English sole	11	-	Tr	-
Flathead sole	69	136	8	5
Pacific halibut	-	-	-	-
Petrale sole	-	-	-	-
Rex sole	Tr	Tr	-	Tr
Rock sole	-	-	3	-
Other flatfish	Tr	-	-	-
Subtotal	871	1670	42	166
<u>S. aleutianus</u>	-	109	-	5
<u>S. alutus</u>	5	448	-	25
<u>S. babcocki</u>	117	489	-	-
<u>S. brevispinis</u>	53	-	-	-
<u>S. diploproa</u>	-	82	-	-
<u>S. elongatus</u>	-	-	-	-
<u>S. entomelas</u>	-	-	-	-
<u>S. flavidus</u>	-	-	-	66
<u>S. paucispinis</u>	-	-	-	20
<u>S. pinniger</u>	-	-	-	-
<u>S. proriger</u>	-	-	-	-
<u>S. reedi</u>	-	-	-	-
<u>S. ruberrimus</u>	-	-	-	-
<u>S. zacentrus</u>	-	-	-	-
<u>Seb. alascanus</u>	48	149	1	-
Other rockfish	Tr	-	-	-
Subtotal	223	1277	1	116
Lingcod	Tr	-	-	-
Pacific cod	-	-	-	20
Pacific herring	-	-	-	-
Sablefish	32	122	-	40
Walleye pollock	-	27	-	927
Other roundfish	Tr	-	-	-
Subtotal	32	149	-	987
Black skate	Tr	27	2	-
Longnose skate	-	41	Tr	-
Ratfish	-	27	-	10
Spiny dogfish	286	285	2	81
Other selachii	-	-	-	-
Subtotal	286	380	4	91
Invertebrates	-	-	-	-

FOOTNOTES TO APPENDIX TABLE 4.

Area: GIG = Goose Island Gully. General area only; for specific localities see Fig. 1

Time Start: Pacific Standard Time

Distance Travelled: Expressed in nautical miles

Depth (meters): Depth at start and finish of haul

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

Type of Gear: 09 = Skagen bottom trawl (for specifications see Appendix Table 3)

23 = Canadian Diamond VIII midwater trawl (for specifications see Appendix Table 2)

Total Catch: Expressed in kilograms. Asterisk denotes estimate.
Tr = Trace = <1 kg.

Other Fish: All species whose catch never exceeded 30 kg in any one haul

Other flatfish: curlfin sole (Pleuronichthys decurrens); Pacific sanddab (Citharichthys sordidus); sand sole (Psettichthys melanostictus); slender sole (Lyopsetta exilis); speckled sanddab (Citharichthys stigmaeus)

Other rockfish: S. crameri, S. helvomaculatus, S. melanops, S. variegatus

Other roundfish: chinook salmon (Oncorhynchus tshawytscha); eulachon (Thaleichthys pacificus); Pacific tomcod (Microgadus proximus); sturgeon poacher (Agonus acipenserinus)

Invertebrates: sponges, jellyfish, starfish, brittle stars, octopus, squid, pink shrimp, crabs, urchins

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

Common name	Scientific name
FLATFISH	
Arrowtooth flounder	<u>Atheresthes stomias</u>
Dover sole	<u>Microstomus pacificus</u>
English sole	<u>Parophrys vetulus</u>
Pacific halibut	<u>Hippoglossus stenolepis</u>
Petrale sole	<u>Eopsetta jordani</u>
Rex sole	<u>Glyptocephalus zachirus</u>
Slender sole	<u>Lyopsetta exilis</u>
ROUNDFISH	
Rougheye rockfish	<u>Sebastes aleutianus</u>
Pacific ocean perch	<u>Sebastes alutus</u>
Redbanded rockfish	<u>Sebastes babcocki</u>
Shortraker rockfish	<u>Sebastes borealis</u>
Silvergray rockfish	<u>Sebastes brevispinis</u>
Dusky rockfish	<u>Sebastes ciliatus</u>
Darkblotched rockfish	<u>Sebastes crameri</u>
Splitnose rockfish	<u>Sebastes diploproa</u>
Greenstripe rockfish	<u>Sebastes elongatus</u>
Widow rockfish	<u>Sebastes entomelas</u>
Yellowtail rockfish	<u>Sebastes flavidus</u>
Rosethorn rockfish	<u>Sebastes helvomaculatus</u>
Black rockfish	<u>Sebastes melanops</u>
Bocaccio	<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>
Shortspine thornyhead or Idiot	<u>Sebastolobus alascanus</u>
Lingcod	<u>Ophiodon elongatus</u>
Pacific cod	<u>Gadus macrocephalus</u>
Sablefish	<u>Anoplopoma fimbria</u>
Walleye pollock	<u>Theragra chalcogramma</u>
SELACHII	
Black skate	<u>Raja kincaidi</u>
Longnose skate	<u>Raja rhina</u>
Ratfish	<u>Hydrolagus colliei</u>
Spiny dogfish	<u>Squalus acanthias</u>
INVERTEBRATES	
Squid	<u>Gonatus magister</u>

