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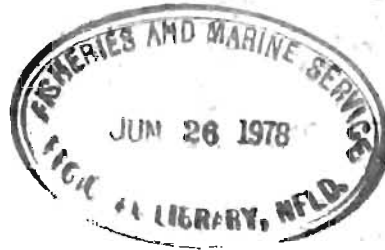


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**Industrial Development Program
Explorations for Dover Sole
(*Microstomus pacificus*) off Northwestern
British Columbia, January 1978**

W. R. Harling, R. M. Wallis, and N. Sigmund

Department of Fisheries and the Environment
Fisheries and Marine Service
Resource Services Branch
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March 1978

**Fisheries & Marine Service
Industry Report No. 99**



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Les numéros de 1 à 91 de cette série ont été publiés à titre de rapports sur les travaux de la Direction du développement industriel, de rapports techniques de la Direction du développement industriel, et de rapports techniques de la Direction des services aux pêcheurs. Le nom de la série a été changé à partir du rapport numéro 92.

La page couverture porte le nom de l'établissement auteur où l'on peut se procurer les rapports sous couverture cartonnée.

ERRATA SHEET

INDUSTRY REPORT NO. 99

Footnotes to Appendix Table 2

Area: Q.C.I. = west coast Queen Charlotte Islands.

Time Start: Pacific Standard Time.

Depth (fm): Depth in fathoms at beginning and end of haul.

Depth interval: Midpoint of 20-fm interval where longest duration of hauling occurred - 290 = 280-299 fm; 310 = 300-319 fm; etc.

Type of gear: See Appendix Table 1.

Total catch: Estimated weight as net was lifted aboard vessel expressed in pounds.

Catch total: Adjusted estimate of weight (in pounds) based on landed weight of commercial species and estimated weight aboard vessel of discards by species. All commercial species weight estimates by haul have been adjusted to landed weights by species or group.

T = trace = less than 1 lb.

Other (any group): All species whose catch did not exceed 25 lb in any single haul.

Flatfish: Dover sole (Microstomus pacificus); halibut (Hippoglossus stenolepis); petrale sole (Eopsetta jordani); rex sole (Glyptocephalus zachirus); turbot (Atheresthes stomias).

Other flatfish: Deepsea sole (Embassichthys bathybius).

Rockfish (fishermen's name in parentheses): S. aleutianus (rougheye); alutus (perch); borealis (Big red beggars); brevispinis (silvergray); crameri (- -); Seb. alascanus (idiots).

Other rockfish: S. aurora; babcocki; ciliatus; helvomaculatus; proriger; variegatus; Seb. altivelis.

Roundfish: Blackcod (Anoplopoma fimbria); Pacific cod (Gadus macrocephalus); walleye pollock (Theragra chalcogramma).

Other roundfish: Lingcod (Ophiodon elongatus); eelpout (Zoarcidae); ragfish (Icosteidae); rattail (Macrouridae); liparid (Cyclopteridae); viperfish (Chauliodontidae).

Fisheries and Marine Service

Industry Report 99

March 1978

INDUSTRIAL DEVELOPMENT PROGRAM EXPLORATIONS FOR DOVER SOLE

(MICROSTOMUS PACIFICUS) OFF NORTHWESTERN

BRITISH COLUMBIA, JANUARY 1978

by

W. R. Harling¹, R. M. Wallis², and N. Sigmund²



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ABSTRACT

Harling, W. R., R. M. Wallis, and N. Sigmund. 1978. Industrial Development Program explorations for Dover sole (Microstomus pacificus) off north-western British Columbia, January 1978. Fish. Mar. Serv. Ind. Rep.

99: 19 p.

Catch rates off Frederick Island (1L5-3200 @ 290-350 fm) averaged 10,000 lb/hr. No commercial concentrations of Dover sole were located south of 1L5-3215 to Rennell Sound at any depth fished. Bad weather and time constraints prevented exploration northward from 1L5-3100 along the outer slope.

Key words: Dover sole, stock assessment, spawning population.

RÉSUMÉ

Harling, W. R., R. M. Wallis, and N. Sigmund. 1978. Industrial Development Program explorations for Dover sole (Microstomus pacificus) off north-western British Columbia, January 1978. Fish. Mar. Serv. Ind. Rep.

99: 19 p.

Le rythme des prises au large de l'île Frederick (1L5-3200 à 290-350 brasses) s'élevait en moyenne à 10 100 lb.h⁻¹. On n'a pas pu déterminer au sud de 1L5-3215 et jusqu'au détroit Rennell de concentrations de soles "Dover" (Microstomus pacificus) qui auraient pu se prêter à une pêche commerciale et ce, à n'importe quelle profondeur. Le mauvais temps et un calendrier chargé nous ont empêchés de poursuivre notre exploration au nord de 1L5-3100, le long de la pente externe.

Mots clés: sole "Dover" (Microstomus pacificus), évaluation des stocks, population reproductrice.

INTRODUCTION

In February 1977, an exploratory trawling program was conducted in Dixon Entrance and off the northwest coast of Graham Island in search of winter concentrations of Dover sole. Significant concentrations were discovered west of Langara and Frederick Islands (Loran bearing 1L5-3200 @ 300 fm) but the geographic distribution of this stock was not determined at that time. An additional survey, sponsored by the Industrial Development Program, was conducted in January 1978 to determine the geographic and benthic distribution of the stock. This report presents the results of that survey.

MATERIALS AND METHODS

The M.V. ARCTIC HARVESTER, under long-term charter to the Department of Fisheries, was used for the survey and fished a modified Engel high-opening bottom trawl. Specifications of the vessel and gear are contained in Appendix Table 1.

Information on location, species composition, and biological sampling was recorded for each haul.

The effective fishing period was considerably reduced because of inclement weather and by gear damage on rough bottom.

Charts of the west coast Queen Charlotte Islands show few soundings while depth contours and information on bottom type are not provided. In order to reduce net damage and increase fishing time, sounder scouting along selected 1L5 Loran A lines (20 microsecond intervals) was conducted during evenings and early mornings. Scouting tracklines and depth contours are shown in Fig. 1.

RESULTS

A total of 18 trawl hauls, 15 of which were deemed usable, were completed over a depth range of 170-430 fm (Fig. 1). Marketable species were retained and sold as a part of production-level tests of refrigerated seawater (R.S.W.) equipment.

Following is a summary of the total catch by principal species:

Species/Group	Weight (lb)	%
Dover sole	45,000 ^b	66.2
Rockfish	6,688 ^b	9.8
Sablefish	5,670 ^b	8.3
Pacific ocean perch	2,828 ^b	4.2

Species/Group	Weight (lb)	%
Halibut ^a	1,695(74)	2.5
Petrale sole	820	1.2
Other	5,305	7.8
Total	68,006	100.0

^aNumber of fish in parentheses.

^bLanded weights at processing plant. Estimated weights by haul for these species have been adjusted to total the landed weights.

Detailed records by haul are contained in Appendix Table 2.

Biological information was collected on five species. Following is a summary of the collections:

Species	Length			Otoliths
	M	F	U	
Dover sole	865	251	-	-
<u>S. alutus</u>	271	347	-	618
<u>S. aleutianus</u>	161	130	-	177
Petrale sole	146	31	-	-
Halibut	-	-	74	-

Size composition by haul is contained in Appendix Table 3 and 4.

Fishing was initiated in the same area where the greatest concentrations of Dover sole were encountered in 1977 (270°W magnetic of Frederick Island @ 300 fm). Dover sole catch rates ranged from 171 lb/hr (430 fm) to 18,758 lb/hr (290 fm). Following is the catch rate by haul from this area:

Haul no.	Depth interval	Lb/hr	% M
2	290	18,758	73.6
3	330	421	-
4	330	8,475	78.8
5	350	15,548	85.6
6	370	1,755	73.3
7	430	171	-

Mean percentage males was almost identical to the previous year (77.8% vs 78.6%). Size composition was also similar.

Fishing effort was then directed southward towards Rennell Sound (ranging from 250-430 fm). No concentrations of Dover sole (>50 lb/hr) were encountered in any haul south of 54°N latitude (1L5-3220). Percentage males remained >75%.

Three hauls were made at the southwest end of the gully off Langara Island to determine abundance of petrale sole and to check for Dover sole. No significant concentrations of petrale or Dover sole were discovered.

The only remaining unfished and unexplored area is the western edge (>270 fm) of Langara Spit (commonly called the whaleback) from 54°05'N latitude northward. Time limitations precluded exploration of the area during this cruise.

A representative from the Vancouver laboratory froze whole blackcod from various depths and areas during the cruise for later analysis at the laboratory. Specimens were chosen by colour and firmness to determine possible differences in quality.

Additional specimens of blackcod were also held in R.S.W. (in the round, dressed head on, dressed head off) for quality comparisons.

PERSONNEL

Name	Agency	Dates
N. Sigmund i/c	Industrial Development Program	January 5-16
M. Yamamoto	Vancouver Laboratory	"
W. R. Harling	Pacific Biological Station	"
R. M. Wallis	" " "	"

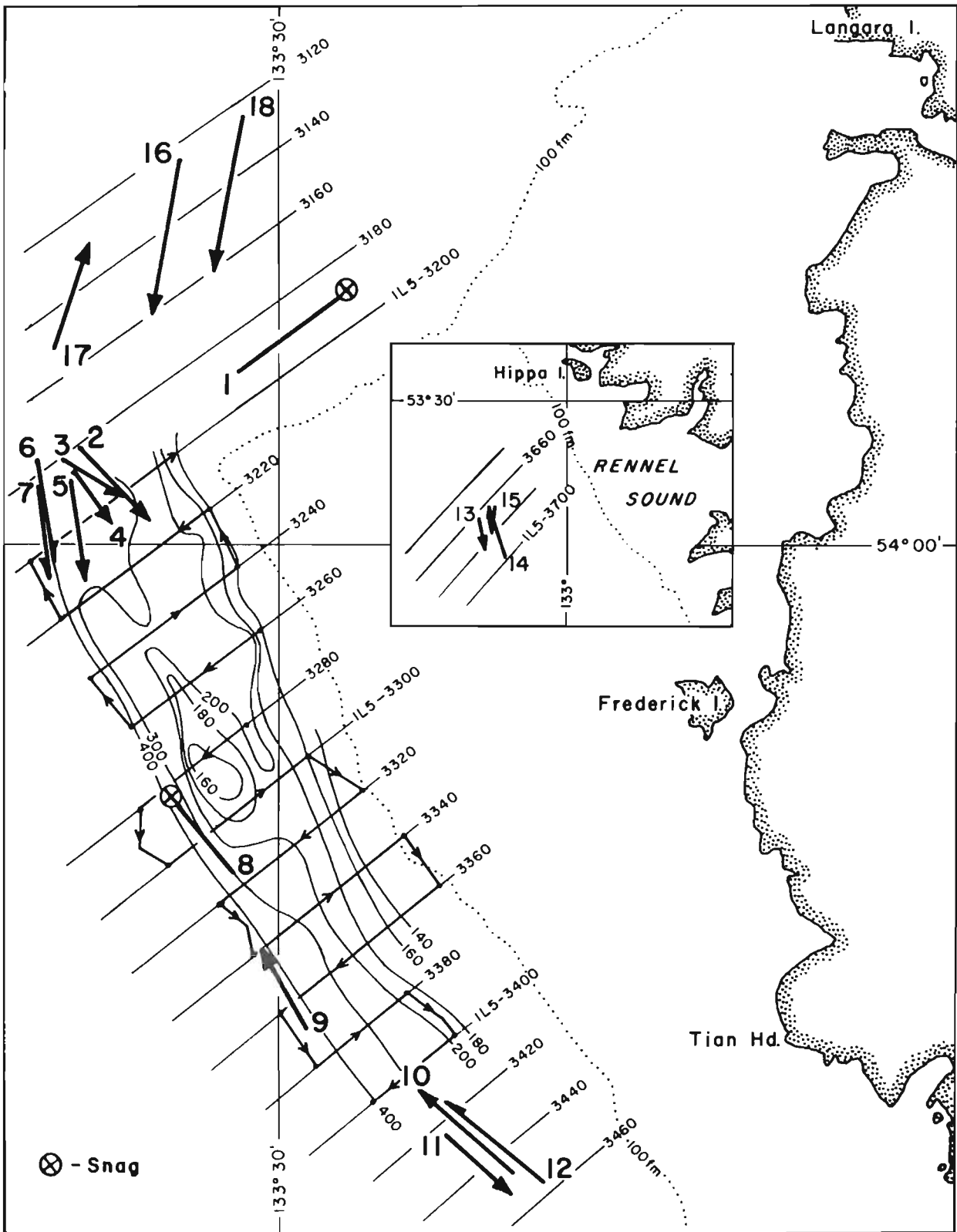


Fig. 1. Location of trawl hauls and trackline soundings completed off westcoast Graham Island during I.D.P.-sponsored, exploratory fishing cruise - January 4-16, 1978.

Appendix Table 1. Description of M.V. ARCTIC HARVESTER and modified Engel net.

The vessel: Length 147 ft
Beam 30 ft 6 in
Tonnage: 338 gt
Type: stern ramp trawler
Horsepower: 975 bhp
Trawl warps: 1,000 fm of 1-in wire

The net: Modified Engel, high-opening, bottom trawl
18-cm mesh in belly and wings
Headrope: 96 ft
Footrope: 145 ft (60 ft of bobbins)
5 only 21-in banded-steel bobbins along $\frac{1}{2}$ -in drag along chain center
10 only 18-in rubber half-eggs along each wing
1 only 18-in banded-steel bobbin on wing ends
Iron spacers and lancasters throughout
7/8-in wire on wings
65 only 8-in floats
150-ft double bridles
30-ft single bridles
1,020-kg (ea) Polyvalent trawl doors.

APPENDIX TABLE 2. FISHING LOG FOR I.D.P.-SPONSORED EXPLORATORY GROUND FISH
 CRUISE 78-1, JANUARY 4-16, 1978. M.V. ARCTIC HARVESTER
 (SEE FOOTNOTES AT END OF TABLE FOR EXPLANATION OF TERMS)

HAUL NO.	1	2	3	4	5	6
DATE	JAN. 8	JAN. 9	JAN. 8	JAN. 10	JAN. 10	JAN. 10
AREA	QCI	QCI	QCI	QCI	QCI	QCI
TIME START	0847	0925	1508	0906	1148	1437
DURATION (MIN)	30	55	57	59	65	69
START N. LAT. (DEG)	054	054	054	054	054	054
(MIN)	04.6	02.6	02.2	01.9	01.7	02.3
W. LONG. (DEG)	133	133	133	133	133	133
(MIN)	31.8	39.0	39.7	39.3	39.5	40.9
DIRECTION (DEG.TRUE)	060	140	120	140	180	140
FINISH N. LAT. (DEG)	054	054	054	054	053	053
(MIN)	06.9	05.0	01.2	05.0	58.9	59.5
W. LONG. (DEG)	133	133	133	133	133	133
(MIN)	26.5	35.7	36.8	37.5	38.7	40.2
DISTANCE TRAVELLED	4.0	2.8	2.0	1.8	2.8	2.8
DEPTH (FATHOMS)	190-205	290-290	321-300	330-340	353-352	368-340
DEPTH INTERVAL (FM)	190	290	330	330	350	370
WATER TEMP. (DEG.C)						
SURFACE	..	..	..	..	..	..
BOTTOM	..	..	..	..	..	..
DEPTH (FM)	..	..	..	..	..	..
TYPE OF GEAR	9	9	9	9	9	9
TOTAL CATCH	..	20000	400	10000	20000	3000
REMARKS	NET TORN UNUSABLE	USABLE	USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 2 CONTINUED

HAUL NO.	1	2	3	4	5	6
DATE	JAN. 8	JAN. 9	JAN. 8	JAN. 10	JAN. 10	JAN. 10
AREA	QCI	QCI	QCI	QCI	QCI	QCI
CATCH TOTAL	0	17739	392	8861	17637	2809
FLATFISH						
DOVER SOLE	..	17195	132	8334	16844	2018
HALIBUT	11	..	..
PETRALE SOLE
REX SOLE	..	5	..	..	..	..
TURBOT	..	100	100	200	100	100
OTHERS
ROCKFISH						
S. ALEUTIANUS	..	228	57	..	..	..
S. ALUTUS
S. BOREALIS	114	114
S. BREVISPINIS
S. CRAMERI
SEB. ALASCANUS	..	11	23	11	57	57
SEB. ALTIVELIS
OTHERS
OTHER ROUND FISH						
BLACKCOD	..	200	80	300	500	500
PACIFIC COD
PACIFIC POLLOCK
RATTAIL	3	20	20
OTHERS	..	T	T	..	..	..
SELACHII						
DOGFISH
RATFISH
SKATES
OTHERS	2	..
INVERTEBRATES						
SQUID	2	..	T
LOLIGO
OTHERS

APPENDIX TABLE 2 CONTINUED

HAUL NO.	7	8	9	10	11	12
DATE	JAN. 10	JAN. 11	JAN. 12	JAN. 12	JAN. 12	JAN. 12
AREA	QCI	QCI	QCI	QCI	QCI	QCI
TIME START	1815	0916	0830	1150	1400	1627
DURATION (MIN)	70	56	55	60	60	78
START N. LAT. (DEG)	054	053	053	053	053	054
(MIN)	01.6	51.2	46.9	43.0	44.2	42.8
W. LONG. (DEG)	133	133	133	133	133	133
(MIN)	40.8	32.1	28.7	19.3	21.6	17.9
DIRECTION (DEG.TRUE)	160	280	315	330	118	320
FINISH N. LAT. (DEG)	053	053	053	053	053	054
(MIN)	59.1	53.3	49.1	45.3	42.5	45.0
W. LONG. (DEG)	133	133	133	133	133	133
(MIN)	40.3	35.0	30.8	23.7	22.5	22.4
DISTANCE TRAVELLED	2.5	2.8	2.5	3.3	2.4	3.5
DEPTH (FATHOMS)	397-437	320-310	433-415	313-305	356-358	277-280
DEPTH INTERVAL (FM)	430	310	430	310	350	270
WATER TEMP. (DEG.C)						
SURFACE	..	..	..	..	..	..
BOTTOM	..	..	..	..	..	..
DEPTH (FM)	..	..	..	..	..	..
TYPE OF GEAR	9	9	9	9	9	9
TOTAL CATCH	1200	1200	1000	1500	3000	2500
REMARKS	NET TORN USABLE	NET TORN UNUSABLE	USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 2 CONTINUED

HAUL NO.	7	8	9	10	11	12
DATE	JAN. 10	JAN. 11	JAN. 12	JAN. 12	JAN. 12	JAN. 12
AREA	QCI	QCI	QCI	QCI	QCI	QCI
CATCH TOTAL	1215	1357	976	1409	3160	2794
FLATFISH						
DOVER SOLE	175	44	..	26	44	9
HALIBUT	..	22	..	105	..	10
PETRALE SOLE	..	..	..	..	..	..
REX SOLE	..	..	..	T	..	..
TURBOT	..	150	5	20	50	100
OTHERS	..	..	..	..	1	..
ROCKFISH						
S. ALEUTIANUS	..	1141	11	342	8	2281
S. ALUTUS	..	..	..	..	..	..
S. BOREALIS	..	..	..	342	..	11
S. BREVISPINIS	..	..	..	..	..	..
S. CRAMERI	..	..	..	..	..	..
SEB. ALASCANUS	T	T	T	114	57	228
SEB. ALTIVELIS	T	..	..	..	1500	..
OTHERS	..	..	..	..	..	..
OTHER ROUND FISH						
BLACKCOD	1040	..	900	400	1500	150
PACIFIC COD	..	..	..	..	..	..
PACIFIC PULLOCK	..	..	..	..	..	..
RATTAIL	T	T	30	10	T	..
OTHERS	..	..	..	..	..	..
SELACHII						
DOGFISH	..	..	..	..	..	T
RATFISH	..	..	..	..	..	..
SKATES	..	..	..	..	..	..
OTHERS	..	..	..	..	..	..
INVERTEBRATES						
SQUID	..	T	..	50	T	5
LOLIGO	..	..	30	..	..	..
OTHERS	..	..	..	..	..	..

APPENDIX TABLE 2 CONTINUED

HAUL NO.	13	14	15	16	17	18
DATE	JAN. 13	JAN. 13	JAN. 13	JAN. 14	JAN. 14	JAN. 14
AREA	QCI	QCI	QCI	QCI	QCI	QCI
TIME START	0914	1216	1412	0832	1300	1530
DURATION (MIN)	72	65	60	80	60	90
START N. LAT. (DEG)	053	053	053	054	054	054
(MIN)	22.0	19.3	22.8	10.2	05.3	11.4
W. LONG. (DEG)	133	133	133	133	133	133
(MIN)	10.0	06.8	08.6	34.8	40.2	31.7
DIRECTION (DEG.TRUE)	140	335	130	190	020	170
FINISH N. LAT. (DEG)	053	053	053	054	054	054
(MIN)	19.7	22.5	21.1	06.1	08.0	07.3
W. LONG. (DEG)	133	133	133	133	133	133
(MIN)	09.2	09.4	08.3	35.8	38.6	33.0
DISTANCE TRAVELLED	2.4	3.5	1.7	4.2	2.9	4.3
DEPTH (FATHOMS)	327-320	245-270	230-250	192-200	180-180	202-202
DEPTH INTERVAL (FM)	330	250	250	190	170	210
WATER TEMP. (DEG.C)						
SURFACE	..	..	..	..	..	..
BOTTOM	..	..	..	..	..	..
DEPTH (FM)	..	..	..	..	..	..
TYPE OF GEAR	9	9	9	9	9	9
TOTAL CATCH	200	..	1000	2000	3000	2000
REMARKS	USABLE	UNUSABLE	USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 2 CONTINUED

HAUL NO.	13	14	15	16	17	18
DATE	JAN. 13	JAN. 13	JAN. 13	JAN. 14	JAN. 14	JAN. 14
AREA	QCI	QCI	QCI	QCI	QCI	QCI
CATCH TOTAL	230	0	1289	2694	3170	2275
FLATFISH						
DOVER SOLE	9	..	13	132	..	26
HALIBUT	..	..	..	15	1532	..
PETRALE SOLE	..	..	..	600	20	200
REX SOLE	..	..	T	250	..	100
TURBOT	..	..	6	350	100	50
OTHERS	..	..	..	..	..	..
ROCKFISH						
S. ALEUTIANUS	..	..	1141	11	..	114
S. ALUTUS	..	..	34	798	855	1141
S. BOREALIS	22	..	57	86	285	..
S. BREVISPINIS	..	..	3	46	114	..
S. CRAMERI	..	..	..	46	..	114
SEB. ALASCANUS	114	..	34	285	114	228
SEB. ALTIVELIS	..	..	..	..	..	..
OTHERS	..	..	1	T	..	2
OTHER ROUND FISH						
BLACKCOD	40	..	..	..	..	60
PACIFIC COD	..	..	..	..	30	..
PACIFIC POLLOCK	..	..	..	25	..	40
RATTAIL	T	..	..	..	..	..
OTHERS	T	..	..	..	20	..
SELACHII						
DOGFISH	..	..	..	20	..	120
RATFISH	..	..	..	20	100	50
SKATES	30	..	..	..	..	10
OTHERS	..	..	..	..	..	..
INVERTEBRATES						
SQUID	..	..	..	10	..	20
LOLIGO	..	..	..	..	..	..
OTHERS	..	..	..	..	..	..

Appendix Table 3. Size composition by sex (no. sampled) and catch rate (no./hr) of Dover sole, by haul - I.D.P. explorations off west coast Queen Charlotte Islands, January 1978.

Total length ^a (cm)	Haul no.							
	2		4		5		6	
	M	F	M	F	M	F	M	F
32	-	-	-	-	1	-	-	-
33	1	-	-	-	0	-	-	-
34	1	-	1	-	0	-	-	-
35	2	-	0	-	2	-	1	-
36	6	-	2	-	6	-	1	-
37	9	-	1	-	4	-	1	-
38	6	-	5	-	9	1	0	-
39	14	-	5	-	18	0	4	-
40	23	2	9	-	18	0	6	1
41	26	4	18	-	15	5	5	1
42	20	7	23	3	18	3	8	1
43	32	5	24	1	28	1	16	1
44	31	5	25	3	24	5	8	1
45	29	9	17	2	22	0	13	3
46	19	6	18	3	21	4	4	5
47	16	7	13	5	9	4	6	5
48	8	8	8	6	8	1	6	2
49	7	7	3	4	3	4	2	4
50	5	5	0	3	1	2	2	5
51	1	6	2	6	0	1	2	1
52	-	3	0	5	0	2	-	0
53	-	5	0	2	1	1	-	0
54	-	2	0	2	-	0	-	1
55	-	0	1	1	-	0	-	-
56	-	4	-	0	-	0	-	-
57	-	2	-	0	-	1	-	-
58	-	1	-	0	-	-	-	-
59	-	1	-	0	-	-	-	-
60	-	1	-	1	-	-	-	-
61	-	1	-	-	-	-	-	-
62	-	0	-	-	-	-	-	-
63	-	0	-	-	-	-	-	-
64	-	0	-	-	-	-	-	-
65	-	0	-	-	-	-	-	-
66	-	1	-	-	-	-	-	-
Total	256	92	175	47	208	35	85	31
Lb/hr	18,758		8,475		15,548		1,755	
% ♂	73.6		78.8		85.6		73.3	

Appendix Table 3 (cont'd)

Total length ^a (cm)	Haul no.							
	10		11		13 & 15		16	
	M	F	M	F	M	F	M	F
32	-	-	-	-	-	-	-	-
33	-	-	-	-	1	-	-	-
34	-	-	-	-	0	-	-	-
35	-	-	3	-	1	-	-	-
36	1	-	3	-	4	-	3	-
37	2	-	2	-	1	1	2	-
38	1	-	8	-	2	1	9	-
39	2	1	3	-	8	0	8	1
40	0	0	2	1	2	3	4	1
41	1	0	1	0	5	1	8	5
42	3	0	0	0	1	0	12	1
43	1	0	0	1	3	0	8	2
44	1	0	0	1	0	1	2	1
45	1	0	1	1	1	1	6	3
46	0	0	3	2	1	0	3	2
47	1	0	1	-	-	0	1	3
48	-	0	-	-	-	1	3	5
49	-	0	-	-	-	-	0	1
50	-	1	-	-	-	-	1	1
51	-	1	-	-	-	-	-	0
52	-	-	-	-	-	-	-	0
53	-	-	-	-	-	-	-	1
54	-	-	-	-	-	-	-	0
55	-	-	-	-	-	-	-	0
56	-	-	-	-	-	-	-	0
57	-	-	-	-	-	-	-	1
58	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-
61	-	-	-	-	-	-	-	-
62	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-
64	-	-	-	-	-	-	-	-
65	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-
Total	14	3	27	6	30	9	70	28
Lb/hr	30		50		11		113	
% ♂	82.4		81.8		76.9		71.4	

^aMeasured to nearest centimeter.

Appendix Table 4. Size composition by sex (no. sampled) of incidental species by haul - I.D.P. explorations off west coast Queen Charlotte Islands, January 1978.

Fork length (cm)	Pacific ocean perch ^a							
	Haul no.							
	15		16		17		18	
	M	F	M	F	M	F	M	F
28	-	-	-	1	-	-	-	-
29	-	-	-	0	-	-	-	-
30	-	-	-	0	-	-	-	-
31	-	-	-	0	-	-	-	-
32	-	-	-	0	-	-	-	-
33	-	-	-	0	-	-	-	-
34	1	-	-	0	3	-	-	-
35	0	-	-	0	5	-	1	-
36	1	-	-	1	6	1	5	-
37	1	-	2	0	11	1	6	-
38	1	1	1	1	11	3	8	-
39	3	1	4	2	11	2	8	-
40	0	2	13	5	17	4	20	3
41	1	1	21	4	10	8	14	4
42	-	5	19	7	4	14	16	6
43	-	2	14	12	5	21	12	11
44	-	0	7	21	-	23	1	8
45	-	1	2	17	-	28	3	14
46	-	-	2	16	-	12	1	13
47	-	-	-	17	-	13	-	12
48	-	-	-	8	-	4	-	4
49	-	-	-	4	-	1	-	1
50	-	-	-	4	-	1	-	1
51	-	-	-	-	-	1	-	-
Total	8	13	85	120	83	137	95	77

Appendix Table 4 (cont'd)

Fork length (cm)	<u>S. aleutianus</u> (rougheye rockfish) ^a			
	Haul no.			
	12		15	
	M	F	M	F
38	-	-	-	1
39	-	-	-	2
40	-	-	2	1
41	-	-	7	2
42	1	1	4	5
43	2	2	6	3
44	3	4	9	5
45	4	5	19	8
46	5	6	24	13
47	7	8	14	12
48	8	10	10	4
49	11	10	4	6
50	2	6	4	4
51	2	5	3	1
52	1	2	1	1
53	2	1	0	0
54	1	0	1	1
55	1	1	-	-
56	0	-	-	-
57	2	-	-	-
58	0	-	-	-
59	1	-	-	-
Total	53	61	108	69

Appendix Table 4 (cont'd)

Fork length (cm)	Petrale sole ^b	
	Haul no. 16	
	M	F
36	1	-
37	3	-
38	1	-
39	3	-
40	20	-
41	13	-
42	15	1
43	15	2
44	22	3
45	17	2
46	13	1
47	8	3
48	5	4
49	2	1
50	3	2
51	4	4
52	1	3
53	-	0
54	-	1
55	-	2
56	-	0
57	-	2
Total	146	31

Appendix Table 4 (cont'd)

Fork length (cm)	Halibut ^b					
	Haul no.					
	4	8	10	12	16	17
50	-	-	-	-	-	1
55	-	-	-	-	-	1
60	-	-	-	-	1	10
65	-	-	1	-	0	9
70	-	-	0	-	0	9
75	1	2	0	1	1	4
80	-	-	0	-	-	10
85	-	-	0	-	-	7
90	-	-	0	-	-	3
95	-	-	0	-	-	1
100	-	-	1	-	-	1
105	-	-	0	-	-	0
110	-	-	0	-	-	0
115	-	-	0	-	-	0
120	-	-	0	-	-	0
125	-	-	0	-	-	0
130	-	-	0	-	-	2
135	-	-	1	-	-	1
140	-	-	-	-	-	3
145	-	-	-	-	-	1
150	-	-	-	-	-	0
155	-	-	-	-	-	0
160	-	-	-	-	-	0
165	-	-	-	-	-	1
170	-	-	-	-	-	0
175	-	-	-	-	-	0
180	-	-	-	-	-	0
185	-	-	-	-	-	0
190	-	-	-	-	-	0
195	-	-	-	-	-	0
200	-	-	-	-	-	1
Total	1	2	3	1	2	65

^aMeasured to nearest lower centimeter.

^bMeasured to nearest centimeter.