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Catch rates, size composition, and sex ratio of Pacific ocean perch (*Sebastodes alutus*) caught in the eastern North Pacific Ocean (Vancouver Island, B.C., to Southeastern Alaska) by the *G. B. Reed*, August - October 1966

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TECHNICAL REPORT NO. 16

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TECHNICAL REPORT NO. 16

CATCH RATES, SIZE COMPOSITION, AND SEX RATIO OF PACIFIC OCEAN PERCH (*Sebastodes alutus*) CAUGHT IN THE EASTERN NORTH PACIFIC OCEAN (VANCOUVER ISLAND, B. C., TO SOUTHEASTERN ALASKA) BY THE G.B. REED, AUGUST-OCTOBER 1966

by

S. J. Westrheim

FISHERIES RESEARCH BOARD OF CANADA

Biological Station, Nanaimo, B. C.

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INTRODUCTION

In 1963, investigation began at the Nanaimo Biological Station into the distribution, abundance, and biology of Pacific ocean perch (Sebastodes alutus) in the northeast Pacific Ocean. During the summers of 1963, 1964, and 1965, the areas from Cape Blanco, Oregon, to La Pérouse Bank (southwest Vancouver Island, B.C.) and Dixon Entrance to Unalaska Island, Alaska, were explored (Westrheim, MS 1965 and MS 1966A). Winter surveys have been conducted in the British Columbia (1963-65) and Gulf of Alaska (1965) areas (Westrheim, MS 1966B).

This report summarizes the results of the 1966 summer cruise of the G.B. Reed. Primary purpose of the cruise was to investigate the remaining unexplored areas--west coasts of Vancouver Island and the Queen Charlotte Islands--and augment the information collected during previous cruises to Queen Charlotte Sound, Dixon Entrance, and Southeastern Alaska.

METHODS

Fishing operations

The 1966 summer groundfish cruise of the G.B. Reed extended from August 24 to October 2. Regions scouted and fished were the west coast of Vancouver Island, Queen Charlotte Sound, Dixon Entrance, west coast of Queen Charlotte Islands, and off the outer coast of Southeastern Alaska--Forrester Island and Sitka Sound (Fig. 1).

Scouting and fishing techniques were the same as those reported for previous cruises (Westrheim, 1965). Trawling time, for usable hauls, ranged from 7 to 50 min, but was most frequently 30 min. Hauls deemed unusable were those for which the gear malfunctioned or snagged on the bottom causing a loss of catch or foreshortening the haul.

The same type of trawl net used in 1965 was also used in 1966--complete with a 1.5-inch mesh codend liner to retain juvenile ocean perch (Harling and Westrheim, 1966).

Catch processing

Catch processing procedures in 1966 were unchanged from those used in 1965 (Westrheim, MS 1966A). Ocean perch were measured fork length to the nearest lower centimeter, and the length frequencies were grouped into 2-cm intervals.

Detailed records by haul are contained in Appendix Tables I-III. (Appendix Tables IV, V, and VI contain previously unreported data on ocean perch size composition by haul by sex for cruise nos. 63-6, 63-7, and 64-8, respectively.)

Hydrographic observations

Bathythermograph casts were made at the end of each haul primarily to determine bottom temperature. At depths beyond the range of this instrument (>150 fm), reversing thermometers were used to determine the bottom temperature.

Detailed records by haul are contained in Appendix Table I.

RESULTS

General

A total of 64 hauls was completed during the cruise. Total catch of ocean perch from the 49 usable hauls was 75,746 lb for 23.5 hr trawling over a depth range of 37 to 232 fm (Appendix Table I). Explorations have been divided into 5 regions and 11 areas within these regions. Relatively high mean catch rates (lb/hr) per 20-fm interval were achieved in all regions except Dixon Entrance (Table I). Maximum mean catch rate per 20-fm interval was 24,470 lb/hr, off Rennell Sound (W Queen Charlotte Islands) in the 120- to 139-fm depth interval. Of special interest was the abundance of ocean perch in unusually deep water (for summer surveys), 180-219 fm, southwest of Langara Island (W Queen Charlotte Islands).

Size composition of ocean perch (per 20-fm depth interval) differed sharply between regions north and south of Dixon Entrance. No modal size larger than 34 cm was encountered in catches north of Dixon Entrance (Table III). South of Dixon Entrance, principal modes were all greater than 34 cm except for one small catch off Vancouver Island (Tables I-III).

Sex ratios, per 20-fm interval, ranged from 13 to 67% males, but showed no particular pattern among or within areas (Tables I-III).

Bottom temperatures (°C), taken at the end of each haul, ranged from 5.0 to 8.3 and varied inversely with depth and latitude.

West Vancouver Island Region (Fig. 7 and 8)[1]

Sixteen usable hauls were completed in this region (Table I). Mean catch rates per 20-fm depth interval for ocean perch ranged from 0 to 6510 lb/hr. Sounder scouting extended from the area southwest of Estevan Point to, and including, the bank west of Triangle Island. No appreciable aggregations of ocean perch were detected.

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[1]Figures extracted from cruise report, and are not in numerical order for this report.

Off La Pérouse Bank, one usable haul (66-2-45) was completed in the 80- to 99-fm interval to collect additional specimens of a tentative new rockfish species discovered in abundance here in 1965 (haul no. 65-3-54). In 1966, the ocean perch catch rate was 3320 lb/hr; principal modal size 44 cm; and per cent males, 13 (Appendix Table I). Similar results were obtained in 1965 (Westrheim, MS 1966A).

Off Estevan Point, 9 usable hauls were completed, 7 of these along a trackline perpendicular to the shore. Mean catch rates per 20-fm interval ranged from 460 lb/hr at 220-239 fm to 6510 lb/hr at 120-139 fm. Size composition was multimodal (juveniles and large females) at 100-139 fm, and unimodal (34 or 36 cm) at 140-239 fm. Sex ratio was 29% males at 100-119 fm, but fluctuated from 35 to 52% males at greater depths.

In the Quatsino Sound-Cape Palmerston area, 4 usable hauls were completed--2 each at the 80- to 99- and 100- to 119-fm intervals. Mean catch rate was 350 lb/hr at 80-99 fm and 2500 lb/hr at 100-119 fm. Size composition was multimodal (juveniles and large females) at both depth intervals--principal mode, 44 cm. Sex ratio was 40% males at 80-99 fm and 42% at 100-119 fm.

West of Triangle Island, substantial schools of rockfish were detected, but no ocean perch were found in the catches of the 2 usable hauls completed (100-119 fm) on this bank. Principal rockfish species caught were S. sp. (nova?), S. proriger, and S. zacentrus. Rough bottom made trawling difficult.

Bottom temperatures in the West Vancouver Island region ranged from 5.4°C at 220-239 fm to 7.2°C at 80-99 fm.

Queen Charlotte Sound Region (Fig. 2 and 6)

Seventeen usable hauls were completed in this region (Table II). Ocean perch mean catch rates per 20-fm interval ranged from 0 to 5370 lb/hr. Sounder-scouting was conducted along the east coast of Moresby Island but no appreciable aggregations of ocean perch, or other rockfishes, were detected.

Fifteen usable hauls were completed on the south slope of Goose Island Ground along 3 parallel tracklines each extending to the maximum depth of the gully. Catch rates ranged from 0 lb/hr at 40-59 fm to 5370 lb/hr at 140-159 fm, and generally increased with depth. Size composition was multimodal at all depths--principal mode, 36 or 38 cm. Sex ratio varied from 45 to 52% males and exhibited no trend with depth.

Two usable hauls were completed on the east coast of Moresby Island. Catch rates were 5150 lb/hr and 5270 lb/hr, respectively at 120-139 and 140-159 fm. Size composition was multimodal and the principal mode was 38 or 40 cm. Sex ratio was 63% males at 120-139 fm and 54% at 140-159 fm.

Bottom temperatures in the Queen Charlotte Sound region ranged from 5.7°C at 140-159 fm to 7.0°C at 40-59 fm.

Dixon Entrance Region (Fig. 3)

The Canadian side of Dixon Entrance was sounder-scouted from Rose Point to Langara Island. No appreciable aggregations of ocean perch, or other rockfishes, were detected. Five usable hauls were completed (Table II). Mean catch rate per 20-fm interval ranged from 90 lb/hr at 120-139 fm to 1310 lb/hr at 80-99 fm. Size composition was usually unimodal and modal size increased with depth--24 and 16 cm at 60-79 fm, and 40 cm at 120-139 fm. Sex ratio was 47% males at 80-99 fm and 67% at 120-139 fm. Bottom temperature ranged from 5.8°C at 120-139 fm to 6.2°C at 60-79 fm.

West Queen Charlotte Islands Region (Fig. 5 and 6)

The entire west coast of the Queen Charlotte Islands was sounder-scouted, from Langara Island to Cape St. James. Throughout most of this region the continental shelf is narrow and the slope precipitous. Few aggregations of fish were detected by the sounder. Five usable hauls were completed and the mean catch rate per 20-fm interval ranged from 1 lb/hr to 24,470 lb/hr (Table III).

Along the west coast of Moresby Island no aggregations of fish were detected and no hauls attempted.

Off Rennell Sound (mid-Graham Island), a substantial aggregation of rockfish (principally S. alutus, S. proriger, and S. sp.) was located on a small ground (3 miles wide, 13 miles long). Very rough bottom inhibited trawling and only 2 usable hauls were completed. Ocean perch catch rates were 2310 lb/hr and 24,470 lb/hr, respectively, in the 100- to 119- and 120- to 139-fm intervals. Both size compositions were unimodal (40 cm) and no juvenile ocean perch were found in the catches. Sex ratios were 47 and 44% males, respectively, at the 100- to 119- and 120- to 139-fm depth intervals.

Off Langara Island (northwest Graham Island), sounder-scouting did not detect any substantial aggregations of fish. Only 3 usable hauls were completed, in part due to inclement weather, deck gear breakdown, and the presence of a floating mine. One haul, at 20-39 fm, yielded only 1 lb/hr of ocean perch, but the other 2 yielded satisfactory catch rates--15,270 lb/hr at 180-199 fm, and 4760 lb/hr at 200-219 fm. The latter two hauls are of special interest because of the unusual depth, for summer catches, and the failure of the sounder to detect the fish schools. Size composition of ocean perch in the two deep-water hauls was unimodal (36 cm) at 180-199 fm and bimodal (36 and 40 cm) at 200-219 fm. Neither contained juvenile fish. Sex ratio was 57% males at 180-199 fm and 45% at 200-219 fm.

Bottom temperatures in the west Queen Charlotte Islands region ranged from 5.0°C at 160-199 fm to 8.3°C at 40-59 fm.

Southeastern Alaska Region (Fig. 4)

Trackline fishing had been scheduled for the Forrester Island and Sitka Sound areas to augment information collected in 1965. However, inclement weather reduced operations to 6 usable hauls--5 off Forrester Island and 1 off Sitka Sound--all in the 100- to 119-fm depth interval (Table III).

Off Forrester Island, mean catch rate of ocean perch was 4230 lb/hr. Size composition was bimodal (26 and 34 cm), and sex ratio was 45% males.

Off Sitka Sound, ocean perch catch rate was 220 lb/hr. Size composition was bimodal (24 and 34 cm), and sex ratio was 45% males.

Bottom temperature in both areas was 5.7°C at 100-119 fm.

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Table I. Mean catch rate, modal size, mean length, mean sex ratio, and mean bottom temperature, by 20-fm depth interval for G.B. Reed ocean perch catches off west Vancouver Island, September 1966.

Depth range (fm)	Number of hauls	Mean catch rate[a] (lb/hr)	Modal size[b] (cm)	Mean length[c] (cm)	Mean sex ratio[d] (% males)	Mean bottom temp. (°C)
			SW La Pérouse Bank			
80-99	1	3,320	44;32;28	42.1	13	6.4
			Estevan Point			
100-119	3	3,760	44;18;34;24;12	38.3	29	7.0
120-139	2	6,510	42;24-26;18	40.1	51	6.8
140-159	1	1,060	34	36.8	37	6.8
160-179	1	1,520	36	36.4	52	6.5
180-199	0	..	..	..	..	..
200-219	1	720	36	37.4	35	6.0
220-239	1	460	36	36.9	46	5.4
			Quatsino Sound - Cape Palmerston			
80-99	2	350	44;24;18;12;36	30.5	40	7.2
100-119	2	2,560	44;18;24	38.0	42	6.9
			Triangle Island			
100-119	2	0	..	..	..	6.9

[a]Weighted to minutes trawled.

[b]In mean size composition weighted to catch rate

[c]Of mean size composition weighted to catch rate

[d]Weighted to catch rate

Table II. Mean catch rate, modal size, mean length, mean sex ratio, and mean bottom temperature, by 20-fm depth interval, for G.B. Reed ocean perch catches in Queen Charlotte Sound and Dixon Entrance, August-September 1966.

Depth range (fm)	Number of hauls	Mean catch rate[a] (lb/hr)	Modal size[b] (cm)	Mean length[c] (cm)	Mean sex ratio[d] (% males)	Mean bottom temp. (°C)
			Goose Island Ground			
40-59	1	0	..	..	..	7.0
60-79	2	1,580	36;22;16	30.3	52	6.1
80-99	2	670	36;40;26	36.7	45	5.9
100-119	4	3,080	38;22	31.9	49	5.9
120-139	4	3,750	38;24	36.6	50	6.0
140-159	2	5,370	38;26;22	37.7	46	6.0
			SE Moresby Island			
120-139	1	5,150	38-40;24-26	37.6	63	5.8
140-159	1	5,270	38;28	36.8	54	5.7
			Dixon Entrance			
60-79	1	400	24;16	24.1	..	6.2
80-99	1	1,310	34	34.3	47	6.0
100-119	1	280	NM[e]	..	..	..
120-139	2	90	40	39.3	67	5.8

[a]Weighted to minutes trawled
[b]In mean size composition weighted to catch rate
[c]Of mean size composition weighted to catch rate
[d]Weighted to catch rate
[e]Not measured

Table III. Mean catch rate, modal size, mean length, mean sex ratio, and mean bottom temperature, by 20-fm depth interval for G.B. Reed ocean perch catches off west Queen Charlotte Islands and southeast Alaska, September 1966.

Depth range (fm)	Number of hauls	Mean catch rate[a] (lb/hr)	Modal size[b] (cm)	Mean length[c] (cm)	Mean sex ratio[d] (% males)	Mean bottom temp. (°C)
			Rennell Sound			
100-119	1	2,310	40	40.2	47	6.0
120-139	1	24,470	40	40.2	44	5.8
			Langara Island			
20-39	1	1	NM[e]	..	..	..
40-59	0	..	..	..	..	8.3
60-79	0	..	..	..	..	7.1
160-179	0	..	..	..	..	5.0
180-199	1	15,270	36	38.5	57	5.0
200-219	1	4,760	40;36	39.5	45	..
			Forrester Island			
100-119	5	4,230	26;34	28.9	45	5.7
			Sitka Sound			
100-119	1	220	24;34	26.2	45	5.7

[a]Weighted to minutes trawled

[b]In mean size composition weighted to catch rate

[c]Of mean size composition weighted to catch rate

[d]Weighted to catch rate

[e]Not measured

Appendix Table I. Trawling log for G.B. Reed groundfish cruise no. 66-2, August-October 1966.

Haul No.[a]	Depth[b] (fm)	Duration (min)	Total catch (lb)	Ocean perch (lb)	Other species[c]	(lb)	Bottom temp. (°C)	(fm)	Remarks
					Goose Island Ground				
1	120	30	2,800	1,825	..	..	6.0	120	..
2	120-112	32	2,300	1,705	..	..	5.8	101	..
3	90-103	31	1,000	651	..	..	..	..	..
4	135-140	30	2,300	1,315	..	..	6.0	136	..
5	120-119	30	2,300	1,542	..	..	5.6	118	..
6	106-98	30	1,300	841	..	..	5.9	93	..
7	79-74	30	1,800	1,427	..	..	5.9	72	..
8	62-49	30	3,100	0	Pacific cod	2,481	7.0	44	..
9	148-151	31	5,400	3,866	..	..	6.0	155	..
10	124-130	30	3,600	2,816	..	..	5.9	123	..
11	106-108	30	3,100	2,451	..	..	6.0	110	..
12	82-88	30	1,900	31	..	..	5.9	89	..
13	158-159	30	1,800	1,501	..	..	5.9	148	..
42	70-72	25	2,500	22	..	..	6.2	70	Loran out
43	101-107	35	2,600	1,524	..	..	6.1	107	Loran out
					Dixon Entrance				
14	92-112	32	680	151	..	..	5.7	127	..
15	136	30	650	16	..	..	5.8	137	..
16*	88-84	7	380	50	..	..	5.9	96	Snag. Net torn
17*	82	2	0	..	..	..	..	..	x-doors
18	77-74	30	2,700	201	Turbot	1,134	6.2	78	..
19	93-102	30	1,600	656	..	..	6.0	96	..
20	124-126	30	910	74	..	..	5.9	122	..

Appendix Table I (continued)

Haul No.[a]	Depth[b] (fm)	Duration (min)	Total catch (lb)	Ocean perch (lb)	Other species[c]	(lb)	Bottom temp. (°C)	(fm)	Remarks
					Forrester Island				
21	120-119	30	2,200	748	Pacific pollock	1,119	5.5	119	..
22	111-108	30	5,500	5,004	..	..	5.7	108	..
23	116-113	31	490	120	..	..	5.7	113	..
24	118-117	50	5,300	3,775	..	..	5.7	115	..
25	110-115	34	3,100	2,688	..	..	5.6	109	..
					Sitka Sound				
26	117-110	28	740	103	..	..	5.7	107	..
27*	106	2	15	5	..	..	5.8	104	Snag. No damage
28*	108-109	22	170	31	..	..	5.6	109	Snag
					Langara Island				
29*	196-200	63	E5,000	E4,500	..	..	4.9	188	Net opened at surface
30	37-40	22	220	<1	..	..	8.3	41	..
31	186-182	45	12,700	11,451	..	..	5.0	179	..
32	202-204	21	2,100	1,665	..	..	5.1	185	Snag. No damage
33*	60-58	4	60	0	..	..	7.1	64	Snag. No damage
					Rennell Sound				
34*	113	3	170	100	..	..	5.9	109	Snag. Net torn
35	118-114	10	11,800	385	*S. proriger*	4,392	6.0	109	Snag at knockout
					S. sp.	6,665			
36*	104	1	250	36	..	..	6.1	110	Snag. No damage
37*	108-107	4	120	64	..	..	6.1	110	Snag. Wing torn
38	120-122	7	5,500	2,855	*S.* sp.	2,293	5.8	123	Snag. Stbd. sweep broken
					SE Moresby Island				
39	120-137	30	3,000	2,576	..	..	5.8	119	..
40	152-162	30	3,100	2,634	..	..	5.7	143	..
41*	193-188	26	380	99	..	..	5.0	183	Snag. Net torn

Appendix Table I (continued)

Haul No.[a]	Depth[b] (fm)	Duration (min)	Total catch (lb)	Ocean perch (lb)	Other species[c]	(lb)	Bottom temp. (°C)	(fm)	Remarks
					La Pérouse Bank				
44*	94-95	5	1,400	99	..	..	6.1	92	Snag. No damage
45	100-94	30	11,200	1,658	S. entomelas	1,790	6.6	90	..
					S. paucispinis	1,198			
					S. sp.	5,283			
46*	82-84	15	3,100	524	..	..	6.5	85	Snag. Net torn
					Estevan Point				
47*	122	17	1,300	450	..	..	6.8	148	x-doors
48	136-127	30	3,200	905	S. diploproa	1,600	6.8	134	..
49	102-98	28	2,600	653	..	..	7.0	104	..
50	146-144	19	1,500	334	..	..	6.5	138	..
51	180-178	30	2,100	762	..	..	6.5	176	..
52	204-201	30	1,400	359	..	..	6.0	205	..
53	232	30	1,100	228	..	..	5.4	230	..
54	112-116	44	2,500	599	..	..	6.9	120	..
55	122-124	30	7,400	5,607	..	..	6.8	120	..
56	109-107	30	7,400	5,147	..	..	6.9	106	..
					Quatsino Sound				
57	116-104	30	2,100	1,150	..	..	7.0	101	..
58*	82-83	10	250	<1	..	..	7.3	80	Snag. Wing torn
59*	92-111	6	680	421	..	..	7.1	113	Snag. No damage
					Cape Palmerston				
60	96-91	15	3,100	84	..	..	7.1	89	..
61	94	40	1,700	235	..	..	6.8	102	Snag, at tow's end
62	104-116	30	3,800	1,405	..	..	6.7	118	..

Appendix Table I (continued)

Haul No.[a]	Depth[b] (fm)	Duration (min)	Total catch (lb)	Ocean perch (lb)	Other species[c]	(lb)	Bottom temp. (°C)	(fm)	Remarks
					Triangle Island				
63	102-104	7	12,100	0	S. proriger	1,288	6.9	102	Snag. Headrope broken
					S. zacentrus	1,101			
					S. sp.	8,591			
64	102-101	10	E14,200	0	S. proriger	1,302	6.8	104	Snag. Net torn 2/3 catch brought aboard
					S. zacentrus	1,056			
					S. sp.	11,307			

[a]Asterisked hauls omitted from analysis

[b]Depth at beginning and ending of haul

[c]Other species: (Includes all which amount to at least 1,000 lb per haul)

Pacific cod	Gadus macrocephalus
Pacific pollock	Theragra chalcogrammus
Turbot	Atheresthes stomias
S. diploproa	Splitnose rockfish
S. entomelas	Widow rockfish
S. paucispinis	Bocaccio
S. proriger	Redstripe rockfish
S. zacentrus	Sharpchin rockfish
S. sp.	Nova?

Appendix Table II. Size composition of Pacific ocean perch (numbers caught per hour trawling), by haul, for G.B. Reed groundfish cruise no. 66-2. (Modal frequencies are underlined.)

Fork length (cm)	Haul Number															
	1	2	3	4	5	6	7	9	10	11	13	18	19	20	21	22
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	4	..	..	..	..
2	..	..	..	..	..	..	16	..	..	..	..	14	..	..	..	..
4	..	..	..	..	..	3	21	..	..	10	..	20	..	..	..	..
6	..	..	..	..	..	22	248	..	..	10	..	36	..	..	..	..
8	..	12	2	..	..	22	74	13	..	164	..	18	..	..	17	18
20	56	31	0	..	84	86	58	0	76	599	..	70	..	..	43	143
2	91	25	7	..	66	143	301	27	86	532	..	138	23	..	142	161
4	70	31	30	5	137	124	253	13	140	358	..	168	23	2	180	572
6	63	49	35	0	72	95	148	53	32	68	..	134	13	0	325	465
8	77	19	20	0	54	105	21	13	32	77	..	30	33	0	226	232
30	28	31	15	5	18	60	26	27	43	97	6	30	69	0	148	554
2	56	31	37	15	60	127	69	160	173	193	29	22	148	0	244	1,412
4	168	99	64	36	66	181	322	414	259	570	75	12	248	6	217	2,573
6	294	210	144	72	173	234	528	867	777	909	377	2	232	2	177	2,109
8	461	426	87	262	383	212	353	1,294	885	764	620	0	89	14	38	536
40	468	432	121	390	424	111	148	800	690	203	365	4	51	30	20	36
2	245	247	119	262	239	38	63	360	270	97	127	24	36	8	8	..
4	77	117	47	175	108	13	84	227	97	68	41	4	8	10	3	..
6	42	31	12	15	18	..	5	13	22	..	..	..	15	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
50	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	2,196	1,791	740	1,237	1,902	1,576	2,738	4,281	3,582	4,719	1,640	732	988	72	1,788	8,811

Appendix Table II (continued)

Fork length (cm)	Haul Number															
	23	24	25	26	28	29	31	32	34	35	38	39	40	41	43	44
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	14	..	..	..	..	..	..	..	..	..	..	..
4	..	..	28	4	11	..	..	..	..	..	..	10	..	..	73	..
6	..	8	19	2	11	..	..	..	..	..	..	0	..	..	248	..
8	4	17	38	6	11	..	..	..	..	..	..	10	..	..	68	..
20	0	161	235	17	25	..	..	..	..	..	..	38	..	..	102	..
2	2	305	781	49	38	..	..	..	..	..	..	38	..	..	131	..
4	4	551	2,250	105	38	..	..	..	..	..	..	48	10	..	112	..
6	23	1,671	4,019	67	38	..	..	..	..	..	..	48	20	..	49	..
8	37	925	1,421	39	14	7	..	..	..	..	..	38	61	..	44	..
30	145	526	151	9	8	14	27	..	..	..	..	0	41	..	92	..
2	182	789	85	24	5	69	27	36	..	..	..	38	203	..	121	..
4	145	721	56	30	..	97	603	118	..	31	87	96	436	..	321	..
6	75	356	9	13	..	208	2,248	461	20	87	782	346	934	9	219	..
8	23	51	..	6	..	595	2,165	344	140	217	2,390	894	944	16	214	40
40	12	..	..	..	..	755	1,809	660	400	298	4,303	894	365	48	199	79
2	2	..	..	..	..	436	1,233	606	380	286	2,869	327	254	32	126	132
4	2	..	..	..	..	69	466	244	160	155	1,217	77	61	7	117	66
6	..	..	..	..	..	..	27	9	20	6	..	..	20	..	15	79
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	40
50	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	656	6,081	9,092	371	213	2,250	8,605	2,478	1,120	1,080	11,648	2,902	3,349	112	2,251	436

Appendix Table II (continued)

Fork length (cm)	Haul Number																
	45	46	47	48	49	50	51	52	53	54	55	56	57	59	60	61	62
6	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	0	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	0	..	..	..	..	1	..	..	..	..	..	..	..
2	..	..	..	..	51	..	..	..	..	0	..	..	2	10	36	6	..
4	..	..	..	3	24	..	..	..	..	1	..	..	18	0	16	2	..
6	..	..	..	13	180	..	..	..	..	8	..	..	53	10	16	5	..
8	..	..	..	33	343	..	..	..	..	23	..	57	129	10	32	10	..
20	..	..	..	13	26	..	..	..	..	3	..	19	34	0	16	0	16
2	..	..	..	0	6	..	..	..	..	3	..	19	22	20	8	5	32
4	..	..	..	23	17	..	..	..	..	15	21	115	27	10	36	11	53
6	..	..	8	23	13	3	..	..	..	23	21	77	25	0	16	5	53
8	12	..	0	13	6	0	..	..	..	18	0	0	2	0	16	2	16
30	0	..	4	3	6	0	2	..	..	8	21	38	4	0	12	0	11
2	23	8	4	43	4	51	61	6	2	14	210	57	4	10	8	2	16
4	6	8	53	30	11	171	239	54	66	30	294	210	39	30	16	6	43
6	17	4	144	70	6	133	341	142	98	50	462	77	52	100	20	6	59
8	35	16	251	120	9	101	210	110	72	71	1,449	134	61	140	8	3	69
40	261	48	209	280	24	85	104	86	30	72	1,701	440	139	220	12	2	213
2	366	256	125	217	101	63	41	24	22	83	714	651	204	460	28	18	149
4	389	300	27	80	201	19	2	4	..	45	126	1,072	221	330	20	36	272
6	134	96	11	7	79	..	..	..	..	16	21	1,072	148	300	4	32	219
8	..	4	..	..	4	..	..	..	..	1	..	153	35	50	4	16	53
50	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	5
Total	1,243	740	836	971	1,113	626	1,000	426	290	485	5,040	4,193	1,219	1,700	324	169	1,279

Appendix Table III. Size composition of Pacific ocean perch (numbers sampled), by haul, by sex, for G.B. Reed groundfish cruise no 66-2. (Modal frequencies are underlined.)

Fork length (cm)	Haul Number																					
	1		2		3		4		5		6		7		9		10		11		13	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	1	0	4	..	..	..	..	..	1	..	..
6	..	..	..	..	..	..	..	..	..	..	5	2	28	19	..	..	..	..	1	0	..	..
8	..	..	2	..	..	1	..	..	..	..	5	2	6	8	..	1	..	..	7	10	..	..
20	3	5	2	3	..	0	..	..	6	8	16	11	5	6	..	0	1	6	29	33	..	..
2	10	3	1	3	2	1	..	..	7	4	23	22	29	28	1	1	7	1	25	30	..	..
4	6	4	3	2	6	6	1	..	12	11	19	20	32	16	1	0	9	4	16	21	..	..
6	5	4	3	5	10	4	0	..	7	5	15	15	13	15	1	3	1	2	3	4	..	..
8	5	6	1	2	4	4	0	..	5	4	15	18	3	1	0	1	1	2	6	2	..	..
30	1	3	3	2	3	3	0	1	2	1	14	5	4	1	1	1	4	0	4	6	..	1
2	5	3	0	5	8	7	2	1	7	3	22	18	10	3	10	2	10	6	11	9	3	2
4	16	8	10	6	12	14	5	2	7	4	34	23	37	24	20	11	19	5	38	21	11	2
6	27	15	27	7	35	23	12	2	21	8	40	34	58	42	38	27	45	27	55	39	47	18
8	37	29	46	23	26	9	31	20	44	20	28	39	33	34	46	51	48	34	36	43	68	39
40	27	40	37	33	22	27	43	33	30	41	15	20	8	20	16	44	21	43	7	14	23	40
2	9	26	5	35	7	41	18	33	6	34	2	10	1	11	3	24	5	20	4	6	..	22
4	0	11	..	19	0	19	1	33	..	18	1	3	1	15	..	17	2	7	..	7	..	7
6	2	4	..	5	1	4	..	3	..	3	..	..	..	1	..	1	..	2	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
50	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	153	161	140	150	136	163	113	128	154	164	254	243	270	249	137	184	173	159	242	246	152	131

Appendix Table III (continued)

Fork length (cm)	Haul Number																							
	18*		19		20		21		22		23		24		25		26		28		29		31	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	1	..	..	..	..	..	..	..	..	x**		..	..	..	..	..	..	..	..	..	..	..	..
10	x**		..	..	..	..	..	..	..	..	0	0	..	..	..	..	..	..	..	..	..	..	..	..
2	5	2	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	4	1	..	..	..	..
4	7	3	..	..	..	..	..	..	..	..	2	0	..	..	2	1	1	1	2	2	..	..	..	..
6	6	12	..	..	..	..	..	..	..	..	7	5	..	1	0	2	0	1	3	1	..	..	..	..
8	4	5	..	..	..	..	3	3	..	1	8	11	2	0	2	2	0	3	2	2	..	..	..	..
20	20	15	..	..	..	..	7	8	3	5	44	31	8	11	9	16	1	7	7	2	..	..	..	..
2	24	45	3	6	..	..	21	28	4	5	42	52	20	16	51	32	11	12	8	6	..	..	..	..
4	59	25	6	3	..	1	32	30	15	17	43	32	33	32	124	115	30	19	7	7	..	..	..	..
6	32	45	1	4	..	0	54	58	8	18	20	19	99	98	215	212	13	18	9	5	..	..	..	..
8	6	9	5	8	..	0	38	40	3	10	7	5	53	56	74	77	10	8	1	4	1	..	..	..
30	10	5	15	12	..	0	18	33	16	15	3	3	27	35	10	6	3	1	3	..	1	1	1	..
2	7	4	26	32	..	0	33	41	48	31	..	1	48	45	3	6	6	5	2	..	3	7	1	..
4	3	3	45	52	2	1	35	40	55	89	..	1	41	44	5	1	2	12	..	..	9	5	17	5
6	0	1	45	46	0	1	22	39	40	78	..	..	13	29	..	1	..	6	..	..	22	8	52	30
8	0	0	15	20	6	1	4	9	8	22	..	..	..	6	..	..	..	3	..	..	70	16	41	38
40	2	0	12	8	14	1	1	6	1	1	..	..	..	..	..	..	..	..	..	..	87	22	46	20
2	11	1	7	7	2	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	46	17	18	27
4	1	1	1	2	..	5	..	1	..	..	..	..	..	..	..	..	..	..	..	..	6	4	2	15
6	..	..	1	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
50	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	197	177	182	205	24	12	278	338	201	292	177	160	344	373	495	471	77	96	48	30	245	80	178	136

*Extrapolated from stratified sample (10 fish per cm interval)
**Two fish not sexed

Appendix Table III (continued)

Fork length (cm)	Haul Number																									
	32		34		35		38		39		40		41		43		44		45		46		47		48	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	1	..	..	..	..	..	7	8	..	..	..	..	..	..	..	..	..	1
6	..	..	..	..	..	..	..	..	0	..	..	..	..	..	25	26	..	..	..	..	..	..	..	..	3	1
8	..	..	..	..	..	..	..	..	0	1	..	..	..	..	4	10	..	..	..	..	..	..	..	..	3	7
20	..	..	..	..	..	..	..	..	3	1	..	..	..	..	8	13	..	..	..	..	..	..	..	..	4	0
2	..	..	..	..	..	..	..	..	2	2	..	..	..	..	10	17	..	..	..	..	..	..	..	..	0	0
4	..	..	..	..	..	..	..	..	3	2	..	1	..	..	14	9	..	..	..	..	..	..	..	..	6	1
6	..	..	..	..	..	..	..	..	2	3	1	1	..	..	4	6	..	..	..	..	..	..	2	..	7	0
8	..	..	..	..	..	..	..	..	2	2	4	2	..	..	1	8	..	..	1	1	..	..	0	..	3	1
30	..	..	..	..	..	..	..	..	0	0	3	1	..	..	10	9	..	..	0	0	..	..	0	1	0	1
2	3	1	..	..	..	..	..	..	2	2	10	10	..	..	13	12	..	..	2	2	1	1	1	0	9	4
4	11	2	..	..	3	2	2	..	6	4	30	13	..	..	37	29	..	..	0	1	1	1	8	6	7	2
6	36	15	..	1	13	1	13	5	34	2	64	28	3	1	25	20	..	..	2	1	0	1	26	12	13	8
8	21	17	7	0	24	11	33	22	69	24	46	47	5	2	27	17	2	1	3	3	2	2	45	21	27	9
40	35	38	17	3	28	20	54	45	56	37	16	20	15	6	16	25	4	2	7	38	1	11	30	25	43	41
2	17	50	11	8	12	34	13	53	10	24	5	20	6	8	8	18	3	7	12	51	1	63	4	29	20	45
4	1	26	1	7	1	24	2	26	..	8	..	6	..	3	1	23	..	5	1	66	..	75	1	6	1	23
6	..	1	..	1	..	1	..	..	..	..	..	2	..	..	..	3	..	6	..	23	..	24	1	2	..	2
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	1	..	..	..	..
50	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	124	150	36	20	81	93	117	151	190	112	179	151	29	20	210	253	9	24	28	186	6	179	118	102	146	146

Appendix Table III (continued)

Fork length (cm)	Haul Number																									
	49		50		51		52		53		54		55		56		57		59		60		61		62	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
6	x***		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	x		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10	x		..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	x		..	..	..	..	..	..	..	..	0	..	..	..	..	..	..	..	..	1	4	5	2	2	..	..
4	x		..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	0	2	2	0	1	..	..
6	x		..	..	..	..	..	..	..	..	2	4	..	..	..	..	1	1	..	1	3	1	3	0	..	..
8	x		..	..	..	..	..	..	..	..	13	4	..	..	2	1	2	2	..	1	5	3	3	3	..	..
20	x		..	..	..	..	..	..	..	..	2	0	..	..	1	0	0	0	..	0	2	2	0	0	..	3
2	x		..	..	..	..	..	..	..	..	2	0	..	..	0	1	0	1	2	0	0	2	2	1	3	3
4	x		..	..	..	..	..	..	..	..	9	2	1	..	3	3	2	1	1	0	5	4	2	5	5	5
6	x		1	..	..	..	..	..	..	..	8	9	0	1	2	2	3	1	0	0	2	2	3	0	4	6
8	2	1	0	..	..	..	..	..	..	..	8	5	0	0	0	0	0	0	0	0	2	2	1	0	3	0
30	1	2	0	..	..	1	3	..	1	..	3	3	0	0	2	0	1	0	0	0	2	1	0	0	1	1
2	1	1	11	5	20	10	13	14	24	9	6	4	0	1	2	1	1	0	1	0	1	1	1	0	3	0
4	1	4	32	22	77	40	38	33	24	25	12	10	6	4	5	6	6	3	2	1	4	0	2	2	4	4
6	2	1	15	27	98	69	18	37	17	19	18	19	9	5	3	1	9	3	8	2	2	3	3	1	8	3
8	1	3	13	19	50	53	2	41	1	14	30	22	21	1	7	0	13	1	11	3	2	0	1	1	7	6
40	1	10	1	26	10	41	..	12	..	11	19	34	49	20	18	5	21	11	18	4	2	1	1	0	26	14
2	4	43	..	20	..	20	..	2	..	..	5	56	33	48	17	17	36	11	33	13	2	5	6	5	16	12
4	..	94	..	6	..	1	..	..	..	..	3	30	3	31	5	51	5	46	6	27	..	5	2	20	13	38
6	..	37	..	..	..	..	..	..	..	..	..	12	..	6	1	55	1	33	..	30	..	1	..	20	..	41
8	..	2	..	..	..	..	..	..	..	..	..	1	..	1	..	8	..	8	..	5	..	1	..	10	..	10
50	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Total	13	198	73	125	255	235	74	139	67	78	142	215	122	118	68	151	102	122	82	88	40	41	32	72	93	147

***All fish not sexed

Appendix Table IV. Pacific ocean perch size composition (numbers sampled), by haul, by sex, for G.B. Reed groundfish cruise no. 63-6, July 2-August 5, 1963. (Modal frequencies are underlined.)

Fork length (cm)	Haul Number																			
	37		40		41		44		49		50		51		53		54		56	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	0	..	..	..	3	..	..	..	..	..	..	..	..	..	..
6	2	1	..	..	2	0	3	..	8	4	..	..	..	..	4	1	1	..	1	..
8	39	23	50	27	46	27	24	26	30	15	3	..	1	..	45	27	1	4	1	2
30	65	61	101	81	92	75	75	71	50	62	6	9	3	5	79	61	17	7	14	10
2	13	17	29	30	31	44	26	34	25	27	1	2	3	3	25	27	2	9	14	12
4	1	3	2	3	6	3	4	10	10	9	3	1	18	8	5	0	6	5	27	18
6	0	1	..	1	..	2	10	5	16	15	8	4	22	21	3	4	8	4	40	25
8	2	1	..	..	..	..	4	2	20	40	12	8	47	34	5	2	14	7	44	14
40	..	..	..	..	..	..	0	2	3	9	3	3	4	7	1	2	2	3	16	16
2	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	2	..	1	..	1
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
50	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	122	107	182	142	177	153	147	150	162	185	36	27	98	78	167	78	51	40	157	98

Appendix Table IV (continued)

Fork length (cm)	Haul Number															
	57		61		62		63		64		65		67		68	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	..
20	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	1
2	..	..	..	1	..	..	..	..	..	..	2	..	..	..	0	1
4	..	..	10	12	..	1	1	1	..	..	5	1	..	..	1	1
6	..	..	18	15	..	2	1	2	..	..	4	11	1	..	0	2
8	..	..	23	21	4	3	6	11	1	..	5	4	0	1	3	4
30	..	..	16	27	11	16	12	13	6	4	11	15	2	1	5	6
2	..	2	20	15	25	19	22	24	7	14	15	12	3	3	4	3
4	5	1	40	28	45	55	60	48	47	49	43	29	14	7	4	2
6	4	3	30	43	30	39	47	91	82	85	36	35	11	23	5	13
8	19	7	10	14	12	12	25	47	44	62	13	17	14	15	3	7
40	4	13	..	10	5	17	22	26	12	43	8	12	4	19	1	2
2	..	2	..	4	..	1	1	4	3	8	1	6	1	2	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
50	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	32	28	167	191	132	165	197	267	202	265	143	142	50	71	28	42

Appendix Table V. Pacific ocean perch size composition (numbers sampled), by sex, by haul, for G.B. Reed groundfish cruise no. 63-7, August 20-September 22, 1963.

Fork length (cm)	Haul Number																							
	3*		4		5		6		7		54		55		57		58		59		60		61	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	2	0	..	..	..	..	..	..	..	1	..	..	1	5	..	..	..	..	..	..	..	..	..	..
4	2	1	..	..	..	..	..	..	2	0	..	..	30	20	..	..	..	..	..	..	..	..	4	1
6	8	2	2	2	..	1	2	1	18	6	..	..	84	42	2	..	2	..	1	2	..	..	13	8
8	6	5	6	8	13	9	16	24	72	76	10	10	73	58	22	8	29	21	26	18	7	4	17	14
30	7	9	15	9	16	18	34	30	40	56	33	33	27	37	82	54	104	104	83	76	50	41	50	36
2	3	5	11	6	8	13	14	24	12	18	20	23	15	9	35	59	35	62	19	23	24	38	25	21
4	7	3	23	20	18	23	22	27	1	6	30	23	8	2	10	8	9	9	8	17	24	21	39	8
6	22	11	14	18	14	27	10	28	1	1	21	13	1	1	7	2	4	6	5	6	11	19	12	10
8	23	9	5	10	15	21	7	17	..	1	10	11	..	2	7	2	2	3	2	3	3	7	11	5
40	6	5	2	13	8	14	2	9	..	4	3	8	..	..	1	3	1	1	..	1	2	..	1	2
2	..	2	3	3	..	8	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
50	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	86	54	81	89	92	134	107	160	146	169	127	122	239	176	166	136	186	206	144	146	121	130	172	105

*Not included in Appendix Table III, MR No. 867.

Appendix Table V (continued)

Fork length (cm)	Haul Number																			
	62		63		64		65		66		67		68		69		70		71	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	1	..
2	..	..	..	..	..	1	1	..	..	..	..	..	2	..	..	..	8	4	0	..
4	..	..	..	..	..	3	3	1	..	..	1	..	0	..	..	..	10	3	0	1
6	5	1	4	..	10	1	14	9	..	..	10	..	5	4	3	..	32	20	14	7
8	30	15	32	16	62	18	25	17	4	2	28	7	10	6	17	9	32	43	71	45
30	108	72	108	104	73	63	62	39	14	12	81	61	18	6	40	29	15	20	171	137
2	37	31	39	51	38	30	32	34	6	11	30	41	32	7	26	14	9	9	112	76
4	6	8	19	18	20	28	19	14	12	6	11	13	74	9	54	8	13	10	127	28
6	3	0	7	6	12	12	6	5	11	6	1	3	30	10	28	8	15	13	37	8
8	..	1	4	2	2	8	8	3	1	5	1	1	11	6	10	0	3	5	12	4
40	..	..	1	2	0	4	1	..	..	..	1	1	2	..	1	1	1	..	1	1
2	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
50	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	189	128	215	199	218	168	171	122	48	42	164	127	184	48	179	69	141	127	546	307

Appendix Table VI. Pacific ocean perch size composition (numbers sampled), by sex, by haul, for G.B. Reed groundfish cruise no. 64-8, July 27-August 22, 1964. (Modal frequencies are underlined.)

Fork length (cm)	Haul Number															
	7		12		13		16		17		31		35		36	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..
2	..	..	..	..	..	..	..	..	1	1	..	..	..	1	0	..
4	2	..	1	1	1	1	1	..	12	4	..	..	1	1	1	..
6	5	1	3	2	10	5	4	1	14	6	5	2	4	4	0	1
8	19	14	10	4	37	16	12	4	42	18	18	14	12	8	3	2
30	26	25	19	12	88	67	55	35	88	70	15	28	13	11	10	8
2	68	77	25	24	38	60	16	27	17	17	5	7	5	1	12	11
4	119	133	29	31	2	2	5	6	4	4	2	4	10	0	27	13
6	39	71	18	34	..	2	3	1	2	3	..	2	7	7	51	19
8	11	31	7	15	..	2	1	..	1	1	..	4	4	2	22	18
40	2	9	1	1	..	..	..	..	..	..	..	1	..	1	4	10
2	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	3
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
50	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	291	362	113	125	176	155	97	74	181	124	45	62	56	37	131	85

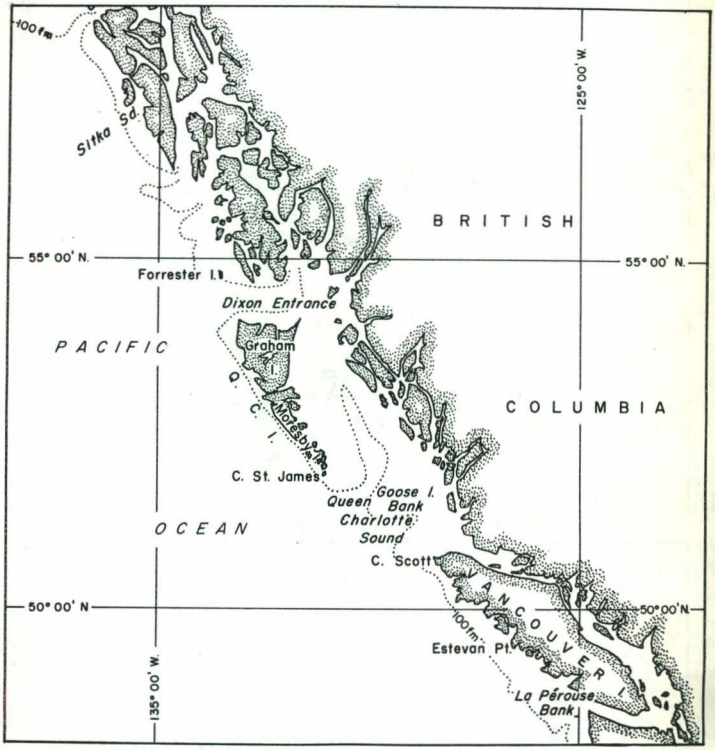

Fig. 1. Fishing areas for G.B. Reed groundfish cruise no. 66-2, August-October 1966.

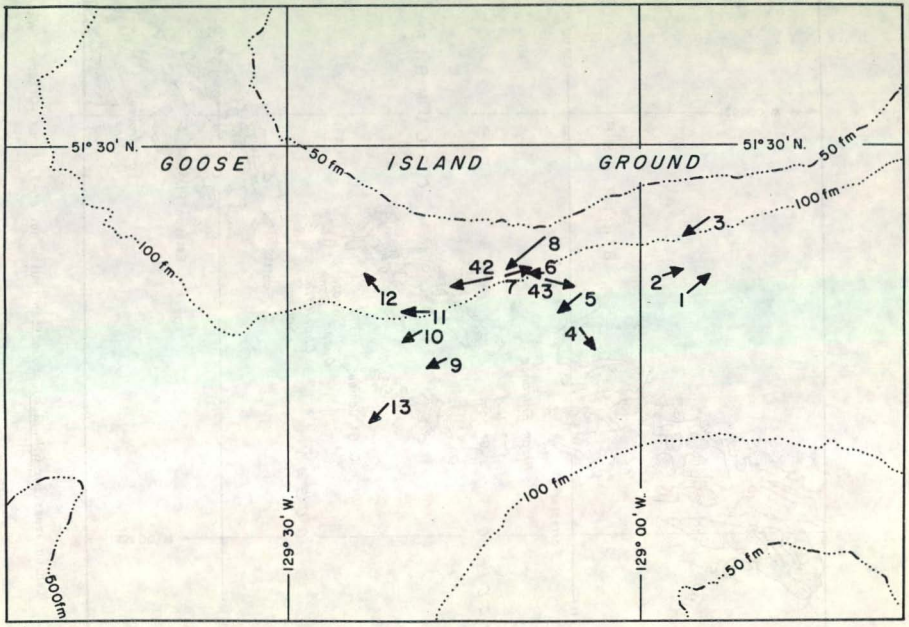

Fig. 2. Chart of southeast Queen Charlotte Sound showing location of trawl hauls completed during G.B. Reed groundfish cruise no. 66-2.

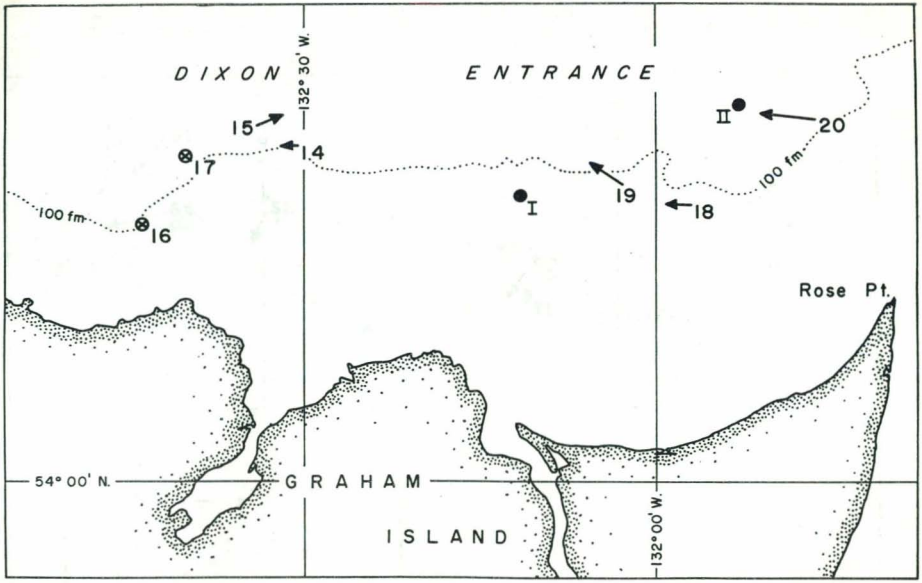

Fig. 3. Chart of Dixon Entrance showing location of trawl hauls completed during G.B. Reed groundfish cruise no. 66-2. (Solid circles indicate location of Digby dredge hauls.)

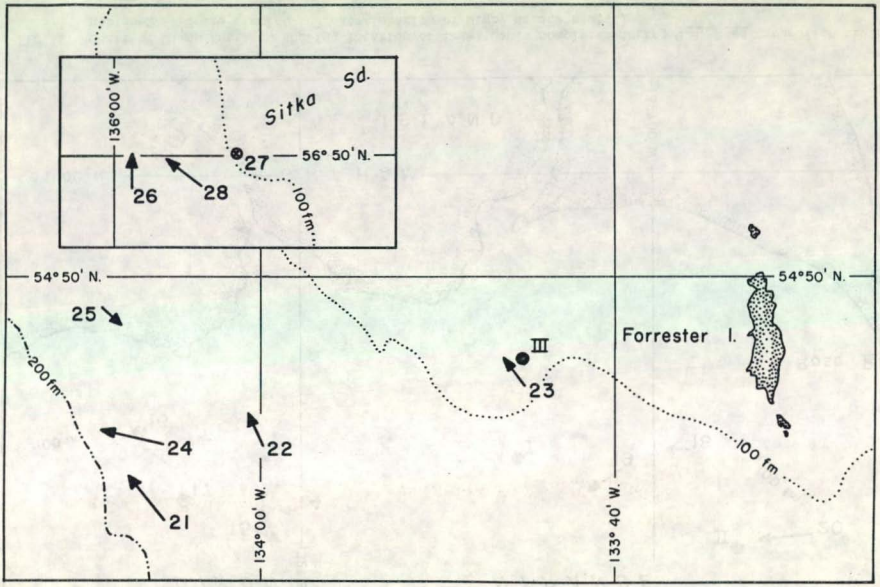

Fig. 4. Chart of Forrester Island and Sitka Sound (insert) showing trawl hauls completed during G.B. Reed groundfish cruise no. 66-2. (Solid circles indicate location of Digby dredge hauls.)

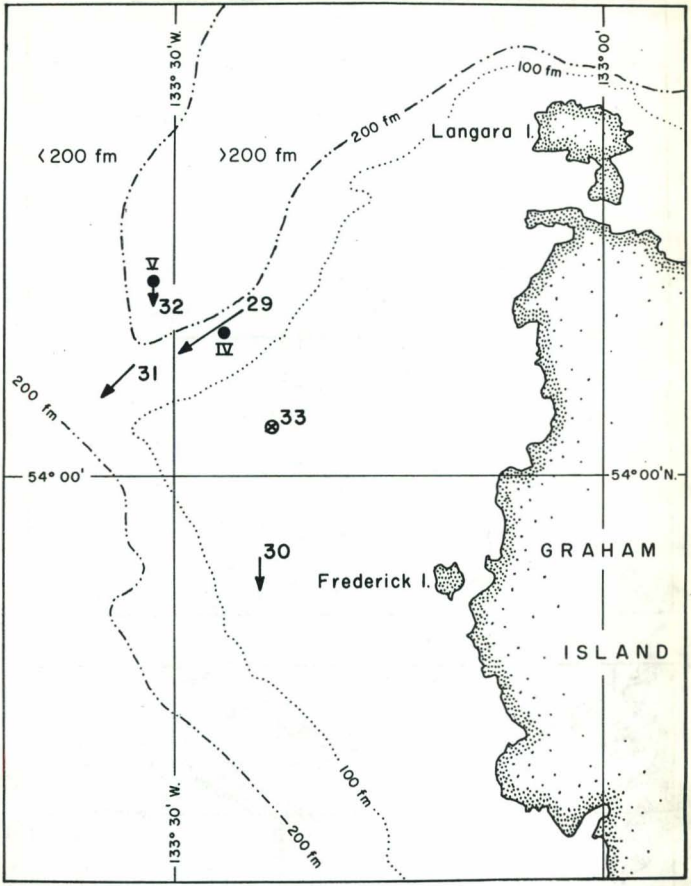

Fig. 5. Chart of northwest Graham Island showing trawl hauls completed during G.B. Reed groundfish cruise no. 66-2. (Solid circles indicate location of Digby dredge hauls.)

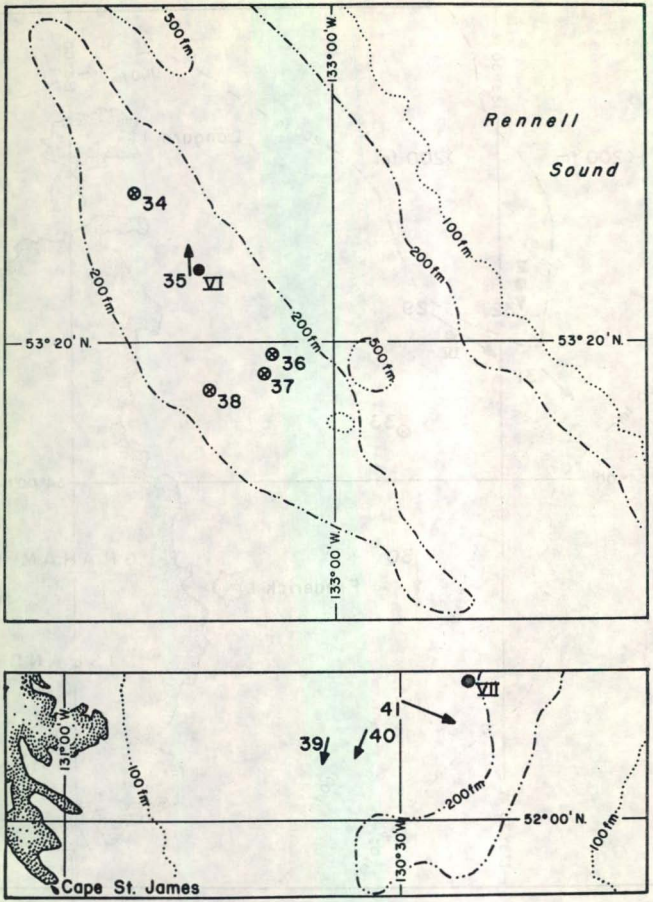

Fig. 6. Chart of west Graham Island and southeast Moresby Island (insert) showing location of trawl hauls completed during G.B. Reed groundfish cruise no. 66-2. (Solid circles indicate location of Digby dredge hauls.)

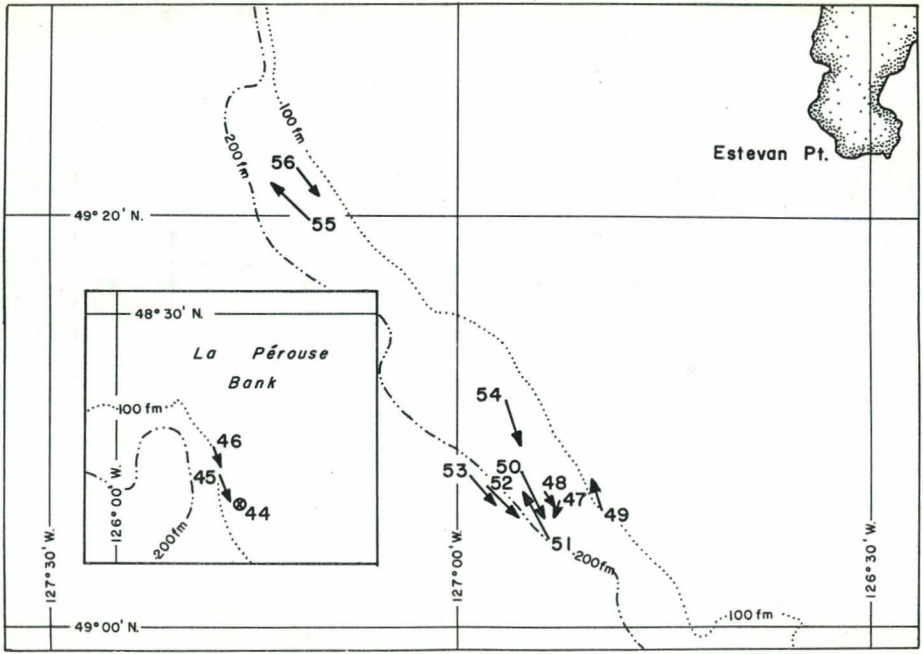

Fig. 7. Chart of Estevan Point and La Pérouse Bank (insert) areas off southwest Vancouver Island showing location of trawl hauls completed during G.B. Reed groundfish cruise no. 66-2.

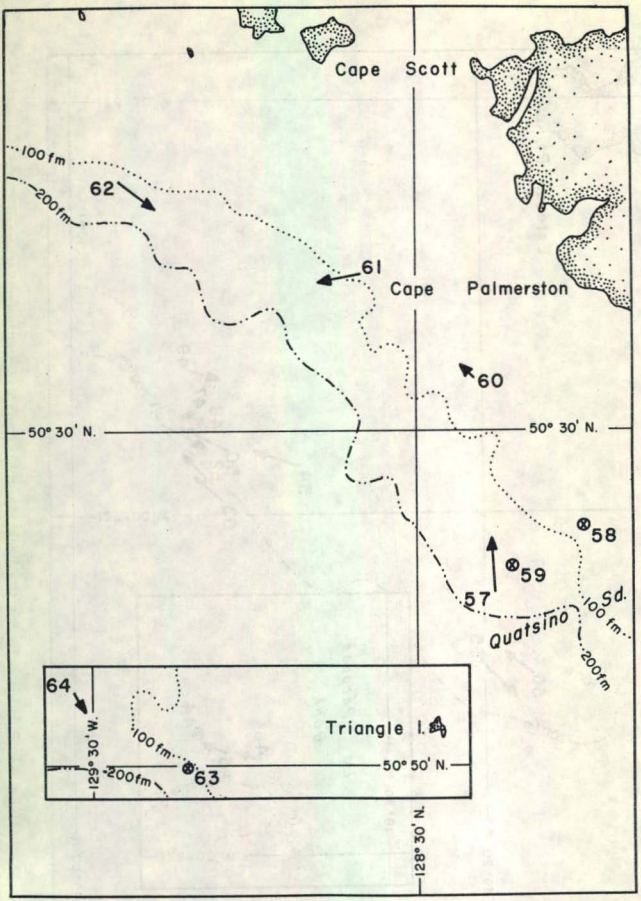

Fig. 8. Chart of Quatsino Sound, Cape Palmerston, and Triangle Island (insert) areas off northwest Vancouver Island showing location of trawl hauls completed during G.B. Reed groundfish cruise no. 66-2.