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RESULTS OF SPINY DOGFISH (SQUALUS ACANTHIAS) TAGGING
IN THE STRAIT OF GEORGIA IN 1979

by

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ABSTRACT

Beamish, R. J., M. S. Smith, V. Egan, D. Brown, and G. McFarlane. 1981.
Results of spiny dogfish (Squalus acanthias) tagging in the Strait of
Georgia in 1979. Can. Data Rep. Fish. Aquat. Sci. 262: 73 p.

A total of 4,542 dogfish were tagged and released in the Strait of
Georgia in 1979. Petersen disc tags were used to tag 3,214 fish and a
modified design of the Petersen disc to tag 1,328 fish. Forty-one live
dogfish were transported from Campbell River to the Pacific Biological
Station for a study of tag performance and fish mortality.

Key words: Spiny dogfish, tagging, Strait of Georgia.

RÉSUMÉ

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Georgia in 1979. Can. Data Rep. Fish. Aquat. Sci. 262: 73 p.

Un total de 4542 aiguillats ont été étiquetés et relâchés dans le
détroit de Géorgie en 1979. Pour 3214 poissons, on a utilisé le disque de
Peterson tandis que pour les 1328 autres, on s'est servi d'une version
modifiée du disque. Quarante et un aiguillats vivants ont été transportés
de la rivière Campbell à la Station de biologie du Pacifique de façon que
l'on puisse étudier le résultat de l'étiquetage et la mortalité des
poissons.

Mots clés: Aiguillat, étiquetage, détroit de Géorgie.

INTRODUCTION

This is the second report of the dogfish tagging program carried out in the Strait of Georgia as part of a cooperative effort between students and staff of Campbell River Senior Secondary School, Southgate Secondary School, and staff of the Groundfish Program at the Pacific Biological Station, Nanaimo. The first report was published as Fisheries and Marine Service Data Report No. 141, and summarized the 1978 results. The primary objective in 1979 remained unchanged, namely, to examine growth and movements of dogfish in the Strait of Georgia. In addition, as part of a study to develop a long-term tag for dogfish, 1,328 fish were tagged with a modified Petersen disc.

A summary of 1978 tag returns for 1979 is also included in this report.

MATERIALS AND METHODS

Tagging was concentrated in three main areas; the Campbell River area, the Central Strait area off Sechelt Peninsula and Lasqueti Island; and the Gulf Islands area off Valdes Island (Detwiller Point).

Tagging in the Campbell River area was carried out by staff and students from Campbell River School District and staff of the Pacific Biological Station, while tagging in the other areas was carried out by staff of the Biological Station alone.

Dogfish were caught on a longline anchored to the bottom in depths that varied from 9-113 m in the Campbell River area and 100-183 m in the central Strait-Valdes Island areas. The "soak" time varied between sets, soak time being defined as the time between the first hook going overboard as the longline goes out and the first hook coming aboard on the retrieve. The range of soak times was 40-95 min in the Campbell River area sets and 90-225 min in other area sets. Retrieval always began at the end of the line that was set first.

Seven modifications were introduced in the 1979 Campbell River program: (1) hooks were all the same size; (2) barbs were pinched down with pliers on all hooks used; (3) dogfish were anesthetized prior to measurement and tagging; (4) some fish were randomly selected and re-measured to check on accuracy of measurements; (5) forty-one dogfish were transported to the Pacific Biological Station from the tagging area for studies on tag performance and fish mortality; (6) a greater effort was made to handle fish carefully; and (7) the amount of bleeding and behaviour of fish was noted upon release.

The type of hook used was a "Mustad" No. 2 halibut hook quality 9401 with 3.3-mm diameter wire, 93 mm from the tip of the eye to the base of the hook and 30 mm from the front of the shaft to the tip of the hook (gape). This was the same hook used in 1978 referred to as the larger hook in the hook size experiment (Brown et al. 1979). All hooks were fastened on gangions approximately 55 cm long which were snapped on the longline about 2 m apart as the line was set. Thawed herring chunks were used as bait in all sets.

Tagging in the Campbell River area was carried out by student teams under the guidance of a teacher. On each tagging day, eight students and one teacher went aboard the commercial fishing vessel INVADER I. Two teams of three students measured, sexed, and tagged dogfish and recorded data; one student handled fish, taking them from the commercial fisherman at the stern and putting them into a fiberglass tank containing approximately 150 L of water to which had been added 25 g of the anaesthetic tricaine methane sulfonate (MS222). The dogfish were kept in the anesthetic until they showed signs of lethargy and then passed to one of the two tagging teams. One student recorded hook data at the stern as the longline came in.

Measurements were made by placing the dogfish in a wood measuring trough equipped with a meter stick in the bottom. Each fish was measured from the tip of the snout to the tip of the upper lobe of the caudal fin when depressed in a line horizontal with the body. Measurements were made to the nearest cm. Remeasurements were made on 27 fish selected randomly from 6 sets to establish the accuracy of measurements taken. Tagging and data collection procedures were similar for other areas except that the whole operation was handled by 1 three-man team aboard the commercial fishing vessel OCEAN VIKING.

A pair of Petersen discs was attached to each dogfish in the Campbell River area and modified Petersen discs to each fish captured at other sites. The Petersen disc tags were bright yellow with the following message: (Side 1) REWARD Pac. Biological Station, Nanaimo, B.C. Canada DF410000. (Side 2) FREEZE FISH NOTE WHEN AND WHERE CAUGHT CALL COLLECT (604) 758-5202. Two discs, one on each side of the dogfish, were placed just below the anterior base of the first dorsal fin and fastened with a titanium wire that was secured on each side by bending the wire 180° to form a small circle, with the free end of the wire resting under the portion of the wire that projected from the hole in the disc (Fig. 1). The importance of establishing the correct amount of tension on the discs is noted under "Results and Discussion". The modified Petersen discs are a pair of plastic plates which are elongate in shape, measuring 6.5 by 19.3 mm and 1.1 mm thick (Fig. 2). A hole is drilled through each tag 2.5 mm from each end. The plates are attached by two titanium wires using the same procedures described for the Petersen discs. Each modified design carried basically the same message as the Petersen discs except that part of the caption i.e. "FREEZE FISH" was inadvertently left out. Dogfish captured in the first five sets off Valdes Island were tagged using 7.6-cm titanium pins which were inserted in the same manner as the wire but required looping the pin on only 1 side.

Data recorded for each fish included the tag number, sex, length, condition of hook wound and the amount of bleeding. The hook wound and

amount of bleeding were recorded as being slight (S), moderate (M), or excessive (E). Notes were kept on the condition of fish when released, whether they dived out of sight, or showed signs of other problems such as balance, swimming aimlessly on surface, etc. (Appendix Table 1).

Forty-one fish were tagged and transported to the Pacific Biological Station between May 9 and 16, 1979 for a study of tag performance and fish mortality. All fish were tagged and transported on the day of capture; 15 on May 9, 5 on May 14, and 21 on May 16 and all were assessed as to hook wound and amount of bleeding.

As part of the publicity campaign, "TAGGED DOGFISH" posters, identical to those used in 1978 were given wide distribution. Posters were maintained in marinas, government docks, major fishing companies, and were again sent to the B.C. Ministry of Environment and 2 fishing agencies in western Washington. Letters describing the study were sent to all fishermen who were likely to come in contact with tagged dogfish.

RESULTS AND DISCUSSION

Between April 23 and May 18, 1979 and November 26-30, 1979 a total of 4,542 dogfish were tagged of which 3,214 were tagged with Petersen discs (Fig. 1a, b) and 1,328 with a modified Petersen disc design (Fig. 2a, b). Locations of tagging sites are indicated by the triangles in Fig. 3. Of the fish tagged with Petersen discs, 1,822 were tagged at Marina Island, 196 at Smelt Bay, 855 at Cape Mudge Reef and 336 at Oyster Bay, respectively. Of the fish tagged with the modified design, 88 were tagged at Detwiller Point, 337 south of Thrasher Rock, 300 off the Sechelt Peninsula, and 603 north of Lasqueti Island. All 88 fish tagged off Detwiller Point and the first 310 fish tagged south of Thrasher Rock were tagged using 7.6-cm titanium pins specially manufactured for this program. The location of the sets, and information regarding tags and catch data are included in Tables 1, 2, 3, and 4. Species caught incidentally during the study are presented in Table 5.

Dogfish ranged in length from 43-118 cm (Tables 6-11; Fig. 4a, b, 5). Males ranged in length from 46-103 cm with a mean size of 79 cm and females ranged in lengths from 43-118 cm with a mean length of 86 cm. A total of 2,215 males (49%) and 2,324 females (51%) were tagged, (4 unknowns). Females predominated in the Marina Island/Smelt Bay location (63%). This compared to 79% females in the same area in 1978. However, males predominated in the Oyster Bay area, 68%, which was similar to the 70% males in 1978. In the Cape Mudge Reef sets, predominantly males (80%) were captured (Table 8). Females predominated in the catch off Valdes Island and Sechelt Peninsula, 76% and 89%, respectively. Males predominated (68%) in the catches north of Lasqueti Island (Table 11).

Eighty-three percent of the males and 73% of the females in all areas were equal to or larger than the minimum commercial length of 71 cm in 1979.

Catch per unit effort (C.P.U.E.) varied between 126 and 292 dogfish per 1000 hooks for areas fished (Table 12). The C.P.U.E. for dogfish larger than the commercial size limit (71 cm) also varied, with the majority of smaller fish being tagged in the Campbell River area (Table 12).

The average time required to set and haul one complete set of gear was 152 min (Tables 1, 2) an average of 125 min for Campbell River sets and 178 min for other area sets.

A total of 979 hooks (5%) caught species other than dogfish. Sunflower star was the incidental species most often captured (Table 5).

RECAPTURES

A total of 32 dogfish tagged during 1979 were recaptured prior to December 31, 1979, all from the spring tagging study in the Campbell River area. Sixteen fish were recaptured in the Strait of Georgia, 3 in Juan de Fuca Strait, 1 north of Cape Scott and 9 were recaptured north of the tagging area. Three fish were recovered in the processing plant and recovery location is not known (Fig. 3). Two other recaptures were reported but no corroborating information (tags not returned to Biological Station) was received. Twelve fish were recaptured by longline, 11 by trawl, 2 by salmon gillnet, 1 by troll, and 3 by sports fisheries. Whole fish were returned in 20 instances, however 1 of these returns had no recapture information.

The longest net distance travelled was 272 km and the maximum time at large for 1979 was 230 days, (Table 13). All whole fish returned were larger than the minimum commercial size limit. Of the 12 recaptures for which only tags were returned 8 were larger than the commercial size limit at time of release.

An additional 15 dogfish tagged in 1978 with both Petersen discs and Floy anchor tags were recaptured in 1979 (Fig. 6; Table 14). One tagged dogfish recovery was reported but not confirmed. A description of the tags and tagging procedure in that year appears in Brown et al. (1979). Six individuals were recaptured by longline, 3 by salmon gillnet, 3 by sports fisheries, 2 by trawl, and 1 by jigging. Whole fish were returned in 10 of the recaptures and anchor tags were absent from 8 of these fish. Anchor tags were absent from all 5 of the recoveries where complete information, but not the whole fish, was provided.

The longest net distance travelled was 207 km and the maximum time at large for these fish was 558 days (Table 14). Eight of the whole fish returned were larger than the minimum commercial size limit. Of the 5 recaptures for which only tags were returned 3 were larger than the commercial size limit at the time of release.

All whole fish returned were examined for tag wounds. There was no obvious damage to the disc or the wire pins, however, where the disc appeared to have been loosely attached the edge had worn completely through

the skin, (Fig. 7). The open wounds did not appear to be infected. Growth of algae occurred on most tags.

Of the 41 fish transported to the Pacific Biological Station between May 9 and 16, 1979 for a study of tag retention and fish mortality, 10 had died as of December 31, 1979. There was no relationship between the condition rating ascribed to the fish at the time of tagging and death (Table 16). Of the 10 dead fish 2 had been noted as having excessive wounding, 2 as moderate, and 6 as slight. Although the fish mortality study is continuing, preliminary results have shown that only 3 of the deaths, i.e. those fish that died within 3 weeks of capture, could be attributed to injury at time of capture or subsequent handling of the fish. The remaining 7 deaths occurred between 4 and 8 mo. of capture and though no conclusions can be drawn as yet the culture problems associated with keeping dogfish are not new (Jones and Geen 1976). Of the fish remaining in the tank at time of writing, all hook wounds had healed and all fish were actively swimming and feeding (Fig. 8). As fish in the tank showed signs of abrasion caused by the Petersen discs, similar to the wounds observed on recaptured fish (Fig. 7), these discs were removed and the fish were retagged using the modified Petersen design.

Brown et al. (1979) indicated an error of +2 cm when measuring unanesthetized fish. In this study the random sampling of fish for remeasurement indicated that anesthetizing appeared to reduce the estimated error in measurement. Of the 32 fish selected for remeasurement, 21 showed no change, 5 were +1 and 2 were -1 cm, 1 was +2 and 1 was -2 cm (Table 15).

Since dogfish are believed to live to ages in excess of 60 yr (Wood et al. 1979), the observations of growth and movement during the first few years following tagging may not be representative of the results over the life of individual dogfish.

ACKNOWLEDGMENTS

This study was intended to provide scientific information to aid in the management of dogfish stocks as well as allow high school students to participate in the planning, execution and analysis of a practical biological research problem. The success of this study is a direct result of the participation and enthusiasm of the students of Campbell River Secondary and Southgate Secondary Schools. Teachers Bill Kennedy, Roger Lucas, and Bud Wilson supervised the student teams. Capt Hugh Watson of the INVADER I and Capt Dave Schuler of OCEAN VIKING assisted in the fishing operations. Ted Carter and Blake Covernton, who were supported by funds from the Province of British Columbia, Ministry of Environment assisted in the tagging operation.

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Table 1. Set location and catch data for Campbell River, April-May 1979.

Set no.	Date	Area	Depth (m)	Time PDT	Duration of set (min)			No. of dogfish	No. of incidental catch
					First hook aboard	Last hook aboard			
1	April 23	Marina Is.	9-73	0935	37	100	50	23	
2	April 23	Marina Is.	73	1150	30	90	73	8	
3	April 23	Marina Is.	55	1350	40	100	73	8	
4	April 24	Marina Is.	64	0905	50	110	60	4	
5	April 24	Marina Is.	73	1100	45	120	78	9	
6	April 24	Marina Is.	46	1315	45	105	26	8	
7	April 26	Smelt Bay	112	0915	55	115	99	0	
8	April 26	Smelt Bay	113	1120	50	120	103	0	
9	April 26	Marina Is.	37	1340	55	155	172	2	
10	April 30	Marina Is.	27	0910	45	140	155	11	
11	April 30	Marina Is.	27	1135	50	155	130	15	
12	May 1	Marina Is.	18	0855	50	110	67	34	
13	May 1	Marina Is.	27	1055	60	120	76	57	
14	May 1	Marina Is.	40	1315	45	115	128	12	
15	May 2	Marina Is.	33	0900	40	90	38	14	
16	May 2	Marina Is.	40	1045	50	110	75	13	
17	May 2	Marina Is.	40	1245	60	115	106	14	
18	May 8	Oyster Bay	62	0850	45	105	56	14	
19	May 8	Oyster Bay	66	1040	75	140	89	11	
20	May 8	Oyster Bay	66	1305	75	130	65	11	

Table 1 (cont'd)

Set no.	Date	Area	Depth (m)	Time PDTa	Duration of set (min)			No. of dogfish	No. of incidental catch
					First hook aboard	Last hook aboard			
21	May 9	Oyster Bay	93	0855	65	140	90	3	
22	May 9	Oyster Bay	64	1130	65	125	45	38	
23	May 10	Plumper Bay	13	1015	60	105	5	9	
24	May 11	Cape Mudge	37	0850	55	120	81	35	
25	May 11	Cape Mudge	15	1100	70	130	20	110	
26	May 11	Cape Mudge	55	1315	80	135	22	12	
27	May 14	Cape Mudge	29	0840	70	135	74	38	
28	May 14	Cape Mudge	77	1100	65	110	29	21	
29	May 14	Cape Mudge	49	1305	90	135	10	17	
30	May 15	Cape Mudge	24	0815	65	140	70	101	
31	May 15	Marina Is.	37	1115	70	160	152	13	
32	May 15	Marina Is.	33	1405	50	95	53	27	
33	May 16	Cape Mudge	29	0820	60	175	112	49	
34	May 16	Marina Is.	27	1155	70	145	96	20	
35	May 16	Marina Is.	46	1420	50	135	118	7	
36	May 17	Cape Mudge	35	0805	70	190	187	4	
37	May 17	Marina Is.	18	1215	60	120	110	7	
38	May 17	Marina Is.	26	1425	50	70	31	3	
39	May 18	Cape Mudge	33	0820	55	175	161	15	
40	May 18	Cape Mudge	-	1140	50	130	94	34	

apacific Daylight Time--first hook overboard.

Table 2. Set location and catch data in Central Strait of Georgia and off Valdes Island (1979).

Set no.	Date	Area	Depth (m)	Time PST ^a	Duration of set (min)			No. of dogfish caught	No. of incidental catch
					First hook aboard	Last hook aboard			
1	Nov. 26	Detwiller Pt. Valdes Is.	82-121	1150	70	105	48	9	
2	Nov. 26	Detwiller Pt. Valdes Is.	119-73	1400	75	115	41	21	
3	Nov. 27	S. of Thrasher Rk.	119-157	0725	100	140	41	15	
4	Nov. 27	S. of Thrasher Rk.	146-183	0750	165	230	129	9	
5	Nov. 27	S. of Thrasher Rk.	110-137	1010	210	255	87	6	
6	Nov. 27	S. of Thrasher Rk.	180-97	1215	195	230	98	16	
7	Nov. 28	N. of Thormanby Is.	113	0730	100	110	58	11	
8	Nov. 28	N. of Thormanby Is.	115-73	0825	130	145	44	21	
9	Nov. 28	N. of Thormanby Is.	110-165	1000	120	150	79	3	
10	Nov. 28	N. of Thormanby Is.	146-154	1125	150	185	101	5	
11	Nov. 28	N. of Thormanby Is.	106-102	1235	190	225	35	3	
12	Nov. 29	N. of Lasqueti Is.	117-135	0735	85	120	147	4	
13	Nov. 29	N. of Lasqueti Is.	132-157	0800	250	285	138	11	
14	Nov. 29	N. of Lasqueti Is.	-	1145	205	240	146	8	
15	Nov. 30	N. of Lasqueti Is.	123-135	0735	55	90	131	1	
16	Nov. 30	N. of Lasqueti Is.	132-128	0750	190	225	116	5	

^aPacific Standard Time--first hook overboard.

Table 3. Summary of dogfish tagged and tag numbers used from Campbell River, April and May, 1979.

Set no.	Number tagged			Type of wire	Petersen disc tag nos. a	Location of release
	M	F	T			
1	10	40	50	Titanium	DF42600-DF42625	off south end of Marina Island, Sutil Channel.
2	19	52	71	"	DF42700-DF42723	"
3	15	56	71	"	DF42626-DF42660	"
4	13	47	60	"	DF42724-DF42759	"
					DF42661-DF42699	"
					DF42760-DF42792	"
					DF42793-DF42799	"
					DF42900-DF42924	"
5	13	63	76	"	DF43000-DF43028	"
					DF43029-DF43062	"
					DF42925-DF42966	"
6	0	26	26	"	DF43063-DF43068	"
					DF42967-DF42987	"
7	46	50	96	"	DF42988-DF42999	off Smelt Bay, Cortes Island.
					DF43069-DF43099	"
					DF43200-DF43205	"
					DF43100-DF43146	"
8	33	67	100	"	DF43206-DF43253	"
					DF43147-DF43199	"
9	96	46	143	"	DF43254-DF43299	off south end of Marina Island, Sutil Channel.
					DF43300-DF43399	"
10	90	64	154	"	DF43400-DF43488	"
					DF43500-DF43564	"
11	61	69	130	"	DF43489-DF43499	"
					DF43565-DF43599	"
					DF43600-DF43684	"
12	32	35	67	"	DF43685-DF43699	"
					DF43700-DF43720	"
					DF43800-DF43830	"

Table 3 (cont'd)

Set no.	Number tagged			Type of wire	Petersen disc tag nos. a	Location of release
	M	F	T			
13	50	26	76	Titanium	DF43721-DF43761	off south end of Marina Island,
					DF43831-DF43866	Sutil Channel.
14	71	55	126	"	DF43762-DF43799	"
					DF43867-DF43899	
					DF43900-DF43936	
15	20	18	38	"	DF44000-DF44018	"
					DF44019-DF44040	
16	28	45	73	"	DF43937-DF43952	"
					DF43953-DF43991	
17	35	66	101	"	DF44041-DF44074	"
					DF44500-DF44531	
					DF44075-DF44099	
					DF43992-DF43999	
					DF44100-DF44139	
18	39	17	56	"	DF44140-DF44169	off Oyster Bay, Vancouver Island.
					DF44532-DF44558	
19	58	29	88	"	DF44170-DF44216	"
					DF44559-DF44599	
20	42	23	65	"	DF44300-DF44332	"
					DF44217-DF44248	
21	65	19	84	"	DF44249-DF44292	"
					DF44333-DF44374	
22	26	17	43	"	DF44374-DF44399	"
					DF44600-DF44603	
					DF44293-DF44299	
					DF44400-DF44405	

Table 3 (cont'd)

Set no.	Number tagged			Type of wire	Petersen disc tag nos. ^a	Location of release
	M	F	T			
23	4	1	5	Titanium	DF44406-DF44408 DF44604-DF44605	Plumper Bay, Discovery Passage.
24	54	26	81	"	DF44409-DF44449	off Cape Mudge, Quadra Island.
25	1	19	20	"	DF44606-DF44646 DF44450-DF44467	"
26	20	2	22	"	DF44647-DF44648	"
27	61	9	70	"	DF44649-DF44670 DF44468-DF44499	"
28	13	16	29	"	DF44671-DF44709 DF44800	"
29	9	1	10	"	DF44710-DF44723 DF44801-DF44815	"
30	51	19	70	"	DF44724-DF44725 DF44816-DF44823 DF44726-DF44760 DF44824-DF44858	"
31	57	95	152	"	DF44761-DF44799 DF44859-DF44935	off south end of Marina Island, Sutil Channel.
32	14	39	53	"	DF45310-DF45346 DF44936-DF44962 DF45347-DF45372	"
33	99	13	112	"	DF44963-DF45117 DF46373-DF45429	off Cape Mudge, Quadra Island.

Table 3 (cont'd)

Set no.	Number tagged			Type of wire	Petersen disc tag nos. ^a	Location of release
	M	F	T			
34	6	90	96	Titanium	DF45430-DF45475 DF45518-DF45567 DF45476-DF45499 DF45568-DF45662	off south end of Marina Island, Sutil Channel. "
35	20	98	118	"		"
36	171	16	187	"	DF45663-DF45839 DF45900-DF45909	off Cape Mudge, Quadra Island.
37	6	104	110	"	DF45840-DF45881 DF45910-DF45977	off south end of Marina Island, Sutil Channel. "
38	7	24	31	"	DF45882-DF45899 DF45978-DF45999	"
39	142	19	161	"	DF46200-DF46281 DF46000-DF46078 DF46079-DF46099 DF46120-DF46139 DF46100-DF46114 DF46282-DF46299 DF45991-DF45999 DF42865, DF42985, DF43170, DF43582, DF43860, DF44007, DF44079, DF44098, DF44502, DF44508	off Cape Mudge, Quadra Island.
40	71	22	93	"		"
Total	1668	1543	3214			

^aDoes not include unused tags.

Table 4. Summary of dogfish tagged in Central Strait of Georgia and Valdes Island, November, 1979.

Sets no.	Number tagged			Type of wire	Modified Petersen disc tag nos. ^a	Location of release
	M	F	T			
1	14	34	48	Titanium pins	DF59, 000-DF59, 049	off Detwiller Point, Valdes Island.
2	2	38	40	"	DF59, 050-DF59, 089	"
3	5	34	39	"	DF59, 090-DF59, 128	South of Thrasher Rock
4	48	76	124	"	DF59, 129-DF59, 252	"
5	18	68	86	"	DF59, 253-DF59, 338	"
6	17	71	88	Titanium wire	DF59, 339-DF59, 427	"
7	7	46	53	from DF59, 400	DF59, 428-DF59, 481	North of Thormanby Island.
8	5	38	43	Titanium wire	DF59, 483-DF59, 525	"
9	6	72	78	"	DF59, 526-DF59, 603	"
10	12	79	91	"	DF59, 604-DF59, 694	"
11	4	31	35	"	DF59, 695-DF59, 729	"
12	85	47	132	"	DF59, 730-DF59, 863	North of Lasqueti Island.
13	84	39	123	"	DF59, 864-DF59, 987	"
14	76	42	118	"	DF59, 988-DF60, 107	"
15	87	36	123	"	DF60, 108-DF60, 231	"
16	77	30	107	"	DF60, 232-DF60, 338	"
Total	547	781	1328			

^aDoes not include unused tags.

Table 5. Incidental catch.

	Campbell River	Central Str. of Georgia and Valdes Island	Total
Hooks fished	11,818	7,000 ^a	19,018 ^a
Dogfish	3,279	1,439	4,718
Bait returns	3,340	-	-
Copper rockfish	5		5
Quillback rockfish	49		49
Silvergrey rockfish		1	1
Greenstriped rockfish		5	5
Yellowtail rockfish		2	2
Red snapper	38	45	83
Lingcod	16	14	14
Blackcod		5	5
Pacific cod		4	4
Hake		7	7
Ratfish	93	61	154
Greenling	1		1
Skate	13	3	16
Octopus		1	1
Basket starfish	2	b	2
Long rayed starfish	101	b	101
Leather starfish	1	b	1
Mottled starfish	1	b	1
Shortspine starfish	5	b	5
Sunflower starfish	455	b	455
Unidentified starfish	48	b	48
Sponge	1		1
Seapen	2		2
Total incidental species	831	148	979

^aEstimate.

^bNo records kept of incidental catches of starfish.

Table 6. Length frequency of tagged dogfish by set, Campbell River, April-May, 1979.

Total length (cm)	Set no.											
	1			2			3			4		
	M	F	T	M	F	T	M	F	T	M	F	T
43												
4												
5					1	1						
6												
7												
8												
9												
50				1	1	2						
1								1	1			
2					1	1	1	3	4		1	1
3		1	1		1	1						
4		3	3	1	1	2	1	1	2			
5				1	1	2	1		1			
6		1	1		1	1				1	1	2
7					2	2		1	1		4	4
8				1		1	1	2	3	1		1
9	1		1	1		1	1	4	5	1	2	3
60	1	1	2					1	1		1	1
1					1	1		1	1			
2				3	3	6	1	3	4	1	2	3
3	1		1		2	2	1		1	2	2	4
4		2	2	1	1	2	2		2			
5		2	2				1	1	2		1	1
6				1	2	3	1		1	1	4	5
7								1	1	1		1
8		1	1		1	1				1		1
9				2	1	3					1	1
70		1	1					1	1			
1	1		1		1	1		1	1			
2					2	2	1		1		1	1
3				1		1		1	1			
4		1	1	1		1	1	1	2			
5												
6		1	1	1		1		1	1			
7								1	1			
8	1		1							1		1
9				2		2		1	1		1	1

Table 6 (cont'd)

Total length (cm)	Set no.											
	1			2			3			4		
	M	F	T	M	F	T	M	F	T	M	F	T
80											1	1
1	1		1				1		1			
2							1	2	3			
3		1	1		1	1				1		1
4				1	1	2		2	2			
5	1		1		3	3						
6					2	2		1	1	1		1
7		1	1		1	1		2	2		1	1
8				1	2	3						
9	2		2		1	1					2	2
90	1	1	2								3	3
1		1	1					1	1		1	1
2		3	3		2	2		1	1	1		1
3								1	1		1	1
4		4	4								1	1
5		3	3		3	3		3	3		1	1
6		1	1		1	1						
7		1	1		2	2						
8											1	1
9		1	1		3	3		2	2		3	3
100		1	1		1	1		3	3		1	1
1								1	1		2	2
2		2	2					1	1			
3		2	2					3	3		3	3
4					1	1		1	1		2	2
5		2	2		1	1		3	3			
6					1	1					2	2
7								1	1			
8		1	1					1	1			
9								1	1			
110					1	1						
1												
2											1	1
3		1	1									
4					1	1						
5												
6												
7												
8					1	1						
9												
unknown												
Total	10	40	50	19	52	71	15	56	71	13	47	60

Table 6 (cont'd)

Total length (cm)	Set no.											
	5			6			7			8		
	M	F	T	M	F	T	M	F	T	M	F	T
43		1	1									
4												
5												
6												
7								1	1			
8												
9	1		1				1	1	2		1	1
50												
1											1	1
2							1		1		2	2
3					1	1	1		1	1	2	3
4		1	1							1	3	4
5		2	2							1	5	6
6							3	1	4	1	4	5
7		1	1					2	2	3	4	7
8		1	1					2	2	2	3	3
9		1	1				1	4	5	1	2	3
60	3		3				1	1	2	1	8	9
1	1	1	2				1	3	4		5	5
2	1	2	3				3	2	5	1	4	5
3							2	2	4		2	2
4		1	1				2	1	3	1	1	2
5		2	2				2	1	3		1	1
6		1	1				2	5	7	1		1
7								1	1			
8		1	1				2	3	5	4	1	5
9		2	2					2	2	1	1	2
70	1		1				1	7	8		3	3
1		2	2				1	1	2		2	2
2		1	1					1	1		1	1
3		2	2					1	1		1	1
4		1	1				1		1	1		1
5		1	1								2	2
6							1	2	3		4	4
7	1	1	2				1	1	2	1		1
8							1		1		1	1
9	1	2	3				2		2	1		1

Table 6 (cont'd)

Total length (cm)	Set no.											
	5			6			7			8		
	M	F	T	M	F	T	M	F	T	M	F	T
80	2	1	3				1		1	1	1	2
1		1	1				2	1	3	2		2
2								1	1			
3							3		3	1		1
4	1		1				3		3	2		2
5	1	2	3				3		3	2		2
6							1		1	1		1
7		1	1					1	1	1	1	2
8		2	2							1		1
9												
90		1	1		1	1	1		1			
1							1		1	2		2
2		1	1									
3		1	1									
4		1	1		2	2	1		1			
5		1	1									
6		2	2		1	1					1	1
7		3	3		1	1						
8		2	2		2	2		1	1			
9		1	1		1	1						
100		3	3		2	2						
1					2	2						
2		1	1		2	2		1	1			
3		2	2		3	3						
4		2	2		2	2						
5		4	4		2	2						
6					1	1						
7		2	2									
8		1	1		1	1						
9					1	1						
110		1	1		1	1						
1												
2												
3												
4												
5												
6												
7												
8												
9												
unknown												
Total	13	63	76	0	26	26	46	50	96	33	67	100

Table 6 (cont'd)

Total length (cm)	Set no.											
	9			10			11			12		
	M	F	T	M	F	T	M	F	T	M	F	T
43												
4												
5												
6												
7												
8												
9												
50												
1												
2											1	1
3					1	1		1	1	2	1	3
4				1		1		2	2		2	2
5					1	1	1		1	2	1	3
6												
7				1	2	3		2	2	1	1	2
8				1	1	2	1	2	3	1		1
9					3	3	1	1	2		4	4
60					3	3	1	3	4	1	1	2
1						1	1		1			
2				2	3	5		1	1	1	2	3
3				1	2	3		1	1		1	1
4					4	4	1	1	2	2	2	4
5					2	2	1	3	4		1	1
6				1	4	5	1	4	5		1	1
7				2	3	5		5	5			
8				1	1	2	1		1			
9				1	1	2	2		2			
70				1		1	1	1	2			
1					1	1	3		3		2	2
2	1		1		1	1				1	1	2
3				1	1	2	1		1			
4	2		2				1	2	3			
5								1	1			
6	2		2	1	2	3					1	1
7	2	1	3	1		1		1	1	2	1	3
8	4	1	5	3	1	4	2	1	3		3	3
9	5	1	6	1	1	2	1		1			

Table 6 (cont'd)

Total length (cm)	Set no.											
	9			10			11			12		
	M	F	T	M	F	T	M	F	T	M	F	T
80	2		2	7	1	8		1	1			
1	6	1	7	4	2	6		2	2	3	1	4
2	6		6	4	2	6	6	2	8	1	1	2
3	3	1	4	4	1	5	2	1	3	1	1	2
4	9		9	10		10	9	4	13		1	1
5	5	1	6	6	2	8	3		3	1		1
6	11	1	12	5	1	6	4	1	5	1		1
7	9	1	10	10	2	12	2		2	2		2
8	8	1	9	4	2	6	5	1	6	2		2
9	4	2	6	4	1	5	2		2	2	1	3
90	5	1	6	9		9	4	1	5	2		2
1	7	3	10	1	1	2		4	4			
2	2	1	3	2	1	3	2	1	3	1		1
3	1	1	2		1	1	2	1	3	1		1
4	1	1	2		1	1		2	2	2	2	4
5	1		2		3	3		2	2			
6		4	4		1	1		2	2		2	2
7		3	3		1	1		3	3			
8		4	4					1	1			
9		3	3					2	2			
100		4	4					1	1			
1		2	2		1	1		1	1			
2												
3		3	3					1	1			
4												
5		1	1	1		1						
6					1	1						
7		2	2					1	1			
8								1	1			
9												
110												
1												
2		1	1									
3												
4												
5								1	1			
6												
7												
8												
9												
unknown			1									
Total	96	46	143	90	64	154	61	69	130	32	35	67

Table 6 (cont'd)

Total length (cm)	Set no.											
	13			14			15			16		
	M	F	T	M	F	T	M	F	T	M	F	T
43												
4												
5												
6												
7												
8				1		1				1		1
9					1	1						
50				1		1					4	4
1				1		1				1		1
2					1	1		2	2		1	1
3					2	2				1		1
4				2		2					1	1
5					3	3				1	2	3
6				3	1	4				2		2
7					2	2		1	1	1	3	4
8				2	1	3	1		1	2	2	4
9										1	2	3
60				2		2		2	2		3	3
1	1		1								2	2
2		1	1		3	3					2	2
3	1	1	2		1	1				1	1	2
4	1		1		2	2	1	1	2	2	2	4
5	2		2		2	2						
6		2	2	2	3	5						
7	1	1	2	1	5	6				2	1	3
8				2	2	4		1	1		2	2
9	1	4	5	1	1	2				1	2	3
70					3	3	1		1		1	1
1	1	2	3		1	1						
2	2	2	4		1	1	2		2			
3				2		2	1		1			
4							1	1	2		1	1
5	1		1				1		1		2	2
6				2	4	6					1	1
7		1	1								1	1
8	1		1	3		3		1	1	1	1	2
9	2		2	1	1	2	1		1			

Table 6 (cont'd)

Total length (cm)	Set no.											
	13			14			15			16		
	M	F	T	M	F	T	M	F	T	M	F	T
80	2		2	5	1	6	1		1	2		2
1	1	2	3	1	3	4	1		1			
2	7		7	3	1	4	1		1			
3	2		2	4	1	5	1		1		1	1
4	3		3	6	2	8		1	1	3	1	4
5	8		8	7		7				2		2
6	4	2	6	2		2	2		2	1	1	2
7	4		4	4		4	3		3	1		1
8	1		1	4	1	5	1		1		1	1
9	2	1	3	2		2				1	1	2
90	1		1	1	1	2						
1	1		1	3	1	4				1		1
2				1		1						
3				1		1			1	1		1
4									1	1		
5		1	1		1	1						
6							1		1		1	1
7		1	1		1	1						
8				1		1						
9		1	1								1	1
100					1	1						
1												
2									1	1		
3						1	1		2	2		
4		1	1									
5									1	1		
6		1	1						1	1		
7												
8												
9		1	1						1	1		
110												
1												
2		1	1									
3												
4												
5												
6												
7												
8												
9												
unknown												
Total	50	26	76	71	55	126	20	18	38	28	45	73

Table 6 (cont'd)

Total length (cm)	Set no.											
	17			18			19			20		
	M	F	T	M	F	T	M	F	T	M	F	T
43												
4												
5												
6	1		1							1		1
7							1	1	2			
8	1		1							1		1
9		1	1									
50	1	3	4	1		1	1		1		1	1
1		1	1				1	1	2	1	1	2
2		2	2				2	1	3			
3	1	1	2				1	2	3			
4		2	2				1		1	1		1
5							1	1	2	1		1
6		5	5				1		1	1		1
7	2	1	3	1		1	2		2		1	1
8		3	3					1	1		1	1
9	1	2	3	1		1	2		2	1		1
60		4	4	2		2	2	1	3			
1		4	4	3		3	2	1	3	1		1
2	1	2	3	1		1						
3		3	3	1		1	2		2			
4		4	4									
5		2	2		2	2	1	2	3	1		1
6							2	1	3			
7	1	3	4	1	1	2	1		1			
8		1	1				1		1			
9	1	1	2				1		1	1		1
70	1		1				1		1			
1		3	3				2		2	1	1	2
2	1		1	1		1	1		1			
3	1	1	2				1		1		1	1
4		2	2							1		1
5	1	2	3	1		1	1		1	1		1
6	1	1	2	1		1				1		1
7							1		1	3		3
8	2	1	3	3	1	4	2	1	3	5		5
9	2		2				1		1	2		2

Table 6 (cont'd)

Total length (cm)	Set no.											
	17			18			19			20		
	M	F	T	M	F	T	M	F	T	M	F	T
80	2		2	1		1	1		1	1		1
1	2		2				4		4	1		1
2				1		1	2		2	4		4
3				3		3	1		1	2	1	3
4	2	1	3	4		4	1		1	2		2
5	1		1				2		2	2		2
6	2	2	4	3		3	3		3	1		1
7	3		3	1		1	3		3	2		2
8	2		2	2		2	1		1			
9							1		1	1		1
90	2	1	3	3		3		2	2	2		2
1		1	1	2	1	3	2		2			
2										1	2	3
3		1	1									
4							1		1		2	2
5		2	2		1	1				2		2
6				1	1	2	1		1			
7				1		1					1	1
8		1	1							1	1	1
9								1	1			
100					2	2		3	3		1	1
1					2	2		1	1		3	3
2					3	3		2	2			
3								1	1		1	1
4											1	1
5					1	1		1	1			
6												
7		1	1		1	1						
8					1	1		2	2			
9								1	1			
110		1	1					1	1			
1								1	1			
2											2	2
3												
4												
5												
6												
7												
8												
9												
unknown									1			
Total	35	66	101	39	17	56	58	29	88	42	23	65

Table 6 (cont'd)

Total length (cm)	Set no.											
	21			22			23			24		
	M	F	T	M	F	T	M	F	T	M	F	T
43												
4												
5												
6												
7												
8												
9				1		1						
50		1	1	1		1						
1		1	1		1	1						
2	1	1	2									
3												
4					1	1						
5	1		1									
6		2	2		1	1						
7		1	1	1		1						
8	1		1	2		2						
9	1	1	2									
60	1	4	5	1		1						
1	1		1									
2	1		1				1		1			
3	7	1	8									
4	1		1	2		2						
5	1		1									
6	4		4									
7	3	1	4									
8	5		5	1		1						
9	4		4									
70	4		4	1		1						
1	1	3	4									
2	4	1	5	1	1	2						
3	2	1	3	1		1						
4				1		1						
5	1		1	1		1				1		1
6	2		2	2		2						
7	2		2							2		2
8	2		2									
9	1		1	1		1				2		2

Table 6 (cont'd)

Total length (cm)	Set no.											
	21			22			23			24		
	M	F	T	M	F	T	M	F	T	M	F	T
80	1		1							1		1
1	2		2							1		1
2	2		2		1	1				3		3
3	3		3	3		3				2		2
4	1		1	1		1				6		6
5										5		5
6										3		3
7	2		2	1		1	2		2	7		7
8				1	1	2				5		5
9	1		1	2		2	1		1	3		3
90					1	1				4		4
1				1	1	2				2		2
2	1		1							3	1	4
3	1		1							1	1	2
4											1	1
5		1	1		1	1				2		2
6										1		1
7												
8												
9											1	1
100					1	1					3	3
1					1	1					2	2
2					1	1					1	1
3												
4											1	1
5					2	2					2	2
6								1	1		3	3
7											3	3
8											2	2
9											1	1
110					1	1					1	1
1											2	2
2											1	1
3					2	2						
4												
5												
6												
7												
8												
9												
unknown												1
Total	65	19	84	26	17	43	4	1	5	54	26	81

Table 6 (cont'd)

Total length (cm)	Set no.											
	25			26			27			28		
	M	F	T	M	F	T	M	F	T	M	F	T
43												
4												
5												
6												
7												
8												
9												
50												
1												
2												
3												
4												
5												
6												
7												
8												
9												
60												
1												
2												
3												
4								1			1	
5												
6												
7												
8												
9												
70												
1												
2												
3												
4												
5												
6												
7												
8								2			2	
9								1			1	

Table 6 (cont'd)

Total length (cm)	Set no.											
	25			26			27			28		
	M	F	T	M	F	T	M	F	T	M	F	T
80							1		1	2		2
1				2		2						
2				2		2	2		2	1		1
3				4		4	4		4			
4							4		4	1		1
5				3		3	4		4	1		1
6				3		3	8		8	3		3
7				2		2	9		9			
8	1		1	2		2	7		7		1	1
9							2		2	2		2
90				2		2	4		4	2		2
1							5		5			
2							1		1			
3							1	1	2			
4							1		1			
5							1	1	2	1		1
6							2		2		1	1
7					1	1	1		1		1	1
8		2	2					2	2			
9											1	1
100		1	1					1	1			
1		4	4									
2		1	1		1	1						
3		1	1					1	1		1	1
4		1	1					1	1			
5		1	1					1	1		2	2
6		3	3								4	4
7		2	2								1	1
8		2	2								1	1
9											1	1
110								1	1			
1											2	2
2												
3		1	1									
4												
5												
6												
7												
8												
9												
unknown												
Total	1	19	20	20	2	22	61	9	70	13	16	29

Table 6 (cont'd)

Total length (cm)	Set no.											
	29			30			31			32		
	M	F	T	M	F	T	M	F	T	M	F	T
43												
4												
5												
6												
7												
8												
9												
50												
1								1	1	1		1
2												
3												
4												
5												
6								1	1			
7								1	1			
8												
9							2		2			
60												
1								1	1		1	1
2							2	1	3			
3							1	2	3	1		1
4												
5								1	1		1	1
6										1	2	3
7												
8							2	4	6		2	2
9												
70												
1							1	2	3			
2								1	1	1		1
3							2	1	3		2	2
4							3		3			
5							1	1	2	1	1	2
6								2	2		1	1
7					1	1	2	1	3	1	1	2
8				2		2	2		2			
9							3		3			

Table 6 (cont'd)

Total length (cm)	Set no.											
	29			30			31			32		
	M	F	T	M	F	T	M	F	T	M	F	T
80				1		1	1		1	3		3
1							3	2	5		1	1
2	1		1	1		1	6	3	9			
3	2		2	3		3	6	1	7	1		1
4	1		1	4		4	1	2	3			
5	2		2	4		4	6	3	9	1		1
6	1		1	6		6	2	4	6		2	2
7				1	1	2	2	3	5			
8	1		1	6		6	1	6	7	2		2
9				3		3	1	3	4		2	2
90				5	1	6	4	1	5		2	2
1				1		1	1	2	3		1	1
2				7		7						
3	1		1	4		4	1	3	4			
4				1		1		2	2		1	1
5				1	1	2		7	7			
6					1	1		4	4			
7					1	1		2	2		4	4
8				1	1	2		4	4		2	2
9					2	2		2	2			
100								3	3		4	4
1								5	5		1	1
2					2	2		1	1		3	3
3		1	1		1	1		2	2			
4								3	3		2	2
5								1	1		1	1
6												
7					1	1		2	2			
8								1	1			
9					1	1					1	1
110								1	1			
1					1	1						
2					1	1						
3					2	2					1	1
4												
5												
6												
7					1	1						
8								1	1			
9												
unknown												
Total	9	1	10	51	19	70	57	95	152	14	39	53

Table 6 (cont'd)

Total length (cm)	Set no.											
	33			34			35			36		
	M	F	T	M	F	T	M	F	T	M	F	T
43												
4												
5												
6												
7												
8												
9												
50								2	2			
1												
2												
3								1	1			
4								1	1			
5					5	5		2	2			
6					1	1	2	3	5		1	1
7					2	2						
8					1	1		1	1			
9					1	1		2	2	1		1
60					2	2		1	1	1		1
1								2	2			
2					1	1		3	3			
3					1	1		1	1		2	2
4								4	4			
5				1		1		1	1		2	2
6					1	1	2	3	5	2		2
7							1	4	5		1	1
8							2	3	5	4	1	5
9								2	2	4		4
70					2	2		2	2	5		5
1							1	1	2	4	1	5
2					1	1	1		1	3	2	5
3								2	2	6	1	7
4	1		1		2	2		1	1	6		6
5					1	1		5	5	5		5
6							3	2	5	6	1	7
7	3		3		1	1		1	1	5		5
8	3		3	1		1	1		1	8		8
9	5		5				1		1	6		6

Table 6 (cont'd)

Total length (cm)	Set no.											
	33			34			35			36		
	M	F	T	M	F	T	M	F	T	M	F	T
80	6	1	7							11		11
1	6		6				1	2	3	5		5
2	8		8	1	2	3	1	1	2	14		14
3	3		3		3	3		3	3	12		12
4	10		10	2		2		2	2	8	1	9
5	3		3		1	1	1	1	2	10		10
6	6		6	1	1	2		1	1	9	1	10
7	8		8		1	1	3	2	5	11	1	12
8	11		11		4	4		1	1	4		4
9	7		7		4	4		2	2	7		7
90	2		2					1	1	6		6
1	4	2	6		1	1		6	6	2		2
2	5		5		4	4		3	3	3		3
3	5		5		1	1		2	2	2		2
4	2		2		4	4		2	2	1		1
5					5	5		2	2			
6					6	6		3	3		1	1
7		1	1		4	4						
8		1	1		3	3						
9					3	3		4	4			
100					2	2		4	4			
1		2	2		3	3		1	1			
2					7	7		2	2			
3	1	1	2					2	2			
4					3	3						
5		1	1		2	2						
6		2	2		3	3						
7								1	1			
8		2	2									
9					1	1						
110												
1												
2												
3												
4												
5												
6												
7												
8												
9												
unknown												
Total	99	13	112	6	90	96	20	98	118	171	16	187

Table 6 (cont'd)

Total length (cm)	Set no.											
	37			38			39			40		
	M	F	T	M	F	T	M	F	T	M	F	T
43												
4												
5												
6												
7												
8		1	1									
9												
50												
1		1	1									
2		3	3		1	1						
3		4	4									
4		4	4		3	3						
5		2	2					1	1			
6		4	4		1	1						
7		4	4		1	1		1	1			
8		7	7		1	1				1	1	
9	1	2	3					1	1			
60		5	5		1	1	1		1		1	1
1	1	4	5	2		2	1		1		1	1
2		5	5		2	2		1	1		1	1
3		6	6				1		1	1		1
4		2	2		2	2				1		1
5								1	1		1	1
6		1	1				2	1	3	3		3
7		2	2				1	2	3	4		4
8		2	2				1	1	2	1		1
9		4	4					1	1	1	2	3
70	1	2	3				1	1	2			
1		1	1				4	1	5	1	1	2
2	1		1				2		2	2	1	3
3							2		2	2		2
4	1	2	3				4		4	2	1	3
5		1	1				4		4	3	3	6
6		2	2				8	1	9	1	1	2
7							6		6	1		1
8				1		1	11		11		1	1
9							10		10	4		4

Table 6 (cont'd)

Total length (cm)	Set no.											
	37			38			39			40		
	M	F	T	M	F	T	M	F	T	M	F	T
80							8		8	9		9
1		1	1				5		5	3		3
2		3	3		1	1	8	1	9	2		2
3				2		2	12		12	5		5
4	1	1	2	1		1	5		5	3		3
5		3	3		2	2	9		9	4		4
6		4	4				8		8	9		9
7		2	2		1	1	5		5	4		4
8		2	2				7		7			
9		1	1				4		4	1		1
90					1	1	4		4	1	1	2
1		1	1				2		2	1		1
2		1	1	1		1	3		3	1	1	2
3		1	1				1	1	2	1	2	3
4		2	2				1	1	2			
5					1	1						
6		3	3		1	1	1		1			
7		3	3		1	1						
8												
9		1	1		2	2						
100												
1		2	2		1	1						
2												
3								1	1			
4								1	1			
5								1	1			
6											1	1
7												
8		1	1									
9		1	1		1	1					1	1
110												
1												
2											1	1
3												
4												
5												
6												
7												
8												
9												
unknown												
Total	6	104	110	7	24	31	142	19	161	71	22	93

Table 7. Length frequency of dogfish, Campbell River, April-May, 1979.

Total length (cm)	Total tagged			Total untagged			Total caught		
	M	F	T	M	F	T	M	F	T
43		1	1					1	1
44									
45		1	1					1	1
46	2		2	1		1	3		3
47	1	2	3		1	1	1	3	4
48	4	1	5		1	1	4	2	6
49	3	4	7				3	4	7
50	6	12	18				6	12	18
51	5	9	14				5	9	14
52	5	20	25				5	20	25
53	7	18	25		1	1	7	19	26
54	8	25	33				8	25	33
55	10	26	36	1		1	11	26	37
56	14	28	42	1	3	4	15	31	46
57	12	37	49	1		1	13	37	50
58	14	30	44				14	30	44
59	18	32	50		1	1	18	33	51
60	18	43	61	1	2	3	19	45	64
61	15	28	43	1		1	16	28	44
62	19	44	63		1	1	19	45	64
63	23	31	54				23	31	54
64	18	30	48		1	1	18	31	49
65	10	29	39				10	29	39
66	26	35	61		1	1	26	36	62
67	19	31	50				19	31	50
68	28	27	55	1		1	29	27	56
69	21	25	46		1	1	21	26	47
70	20	26	46	1		1	21	26	47
71	21	26	47				21	26	47
72	26	18	44		1	1	26	19	45
73	23	15	38				23	15	38
74	27	15	42				27	15	42
75	23	20	43				23	20	43
76	31	27	58				31	27	58
77	34	13	47				34	13	47
78	62	13	75				62	13	75
79	56	7	63	4		4	60	7	67
80	72	7	79	2	1	3	74	8	82
81	57	19	76	1		1	58	19	77
82	88	21	109	1		1	89	21	110
83	90	16	106	2		2	92	16	108
84	105	19	124	2		2	107	19	126
85	97	18	115				97	18	115
86	101	24	125				101	24	125
87	102	22	124	4		4	106	22	128
88	80	25	105	3	1	4	83	26	109
89	55	21	76				55	21	76

Table 7 (cont'd)

Total length (cm)	Total tagged			Total untagged			Total caught		
	M	F	T	M	F	T	M	F	T
90	65	20	85	1	1	2	66	21	87
1	39	28	67				39	28	67
2	35	22	57	1		1	36	22	58
3	24	20	44		2	2	24	22	46
4	11	30	41	1		1	12	30	42
5	6	43	49				6	43	49
6	7	37	44	1	1	2	8	38	46
7	2	35	37		1	1	2	36	38
8	2	28	30		3	3	2	31	33
9		35	35		1	1		36	36
100		42	42		1	1		43	43
1		37	37		2	2		39	39
2		32	32		3	3		35	35
3	1	33	34		1	1	1	34	35
4		22	22		1	1		23	23
5		31	31					31	31
6		24	24		1	1		25	25
7		18	18					18	18
8		17	17					17	17
9		13	13					13	13
110		9	9					9	9
1		6	6					6	6
2		8	8					8	8
3		7	7					7	7
4		1	1					1	1
5		1	1					1	1
6									
7		1	1					1	1
8		2	2					2	2
9									
unknown			3						3
Total	1668	1543	3214	31	34	65	1699	1577	3279

Table 8. Length frequency of tagged dogfish by area, Campbell River 1979.

Total length (cm)	Oyster Bay			Cape Mudge			Marina Island/Smelt Bay		
	M	F	T	M	F	T	M	F	T
43								1	1
4									
5								1	1
6	1		1				1		1
7	1	1	2					1	1
8	1		1				3	1	4
9	1		1				2	4	6
50	3	2	5				3	10	13
1	2	4	6				3	5	8
2	3	2	5				2	18	20
3	1	2	3				6	16	22
4	2	1	3				6	24	30
5	3	1	4		1	1	7	24	31
6	2	3	5		1	1	12	24	36
7	4	2	6		1	1	8	34	42
8	3	2	5		1	1	11	27	38
9	5	1	6	1	1	2	12	30	42
60	6	5	11	2	1	3	10	37	47
1	7	1	8	1	1	2	7	26	33
2	2		2		2	2	16	42	58
3	10	1	11	2	2	4	11	28	39
4	3		3	2		2	13	30	43
5	3	4	7		4	4	7	21	28
6	6	1	7	7	1	8	13	33	46
7	5	2	7	5	3	8	9	26	35
8	7		7	6	2	8	15	25	40
9	6		6	5	3	8	10	22	32
70	6		6	6	1	7	8	25	33
1	4	4	8	9	3	12	8	19	27
2	7	2	9	7	3	10	12	13	25
3	4	2	6	10	1	11	9	12	21
4	2		2	13	1	14	12	14	26
5	5		5	13	3	16	5	17	22
6	5		5	15	3	18	11	22	33
7	6		6	17	1	18	11	12	23
8	12	2	14	26	1	27	24	10	34
9	5		5	28		28	23	7	30
80	4		4	39	1	40	29	6	35
1	7		7	22		22	29	18	47
2	9	1	10	42	1	43	37	19	56
3	12	1	13	47		47	31	15	46
4	9		9	42	1	43	54	18	72
5	4		4	45		45	48	18	66
6	7		7	56	1	57	36	25	61
7	9		9	47	2	49	44	20	64
8	4	1	5	44	1	45	32	23	55
9	5		5	29		29	20	21	41

Table 8 (cont'd)

Total length (cm)	Oyster Bay			Cape Mudge			Marina Island/Smelt Bay		
	M	F	T	M	F	T	M	F	T
90	5	3	8	30	2	32	31	15	46
1	5	2	7	17	2	19	17	24	41
2	2	2	4	23	2	25	10	18	28
3	1		1	16	5	21	6	16	22
4	1	2	3	6	2	8	4	26	30
5		5	5	5	2	7	1	36	37
6	2	1	3	4	3	7	1	33	34
7	1	1	2	1	4	5		30	30
8		1	1	1	6	7	1	21	22
9		1	1		4	4		30	30
100		7	7		5	5		30	30
1		7	7		8	8		22	22
2		6	6		5	5		21	21
3		2	2	1	7	8		24	24
4		1	1		4	4		17	17
5		4	4		8	8	1	19	20
6					13	13		10	10
7		1	1		7	7		10	10
8		3	3		7	7		7	7
9		1	1		4	4		8	8
110		2	2		2	2		5	5
1		1	1		5	5			
2		2	2		3	3		3	3
3		2	2		3	3		2	2
4								1	1
5								1	1
6									
7					1	1			
8								2	2
9									
Total	230	105	335	692	162	854	742	1275	2017

Table 9. Length frequency of tagged dogfish by set, Central Strait of Georgia and Valdes Island, November, 1979.

Total length (cm)	Set no.											
	1			2			3			4		
	M	F	T	M	F	T	M	F	T	M	F	T
49												
50												
1												
2												
3												
4												
5												
6												
7												
8												
9												
60												
1										1		1
2										1		1
3												
4												
5										1	1	2
6												
7												
8												
9												
70										1		1
1	1		1									
2												
3										1		1
4											1	1
5										1		1
6										1		1
7	2		2							3		3
8										1		1
9										2		2
80										5		5
1	1		1							3		3
2	1		1				2		2	4		4
3										3		3
4	1		1							6		6
5										5		5
6							1		1	3	1	4
7	1		1							1		1
8	1		1				1		1	3		3
9	1		1							1	1	2

Table 9 (cont'd)

Total length (cm)	Set no.											
	1			2			3			4		
	M	F	T	M	F	T	M	F	T	M	F	T
90	2		2	1		1				1	1	2
1				1		1						
2	1		1				1		1			
3					2	2					1	1
4	1		1									
5	1	1	2		1	1					1	1
6		2	2		1	1			1	1	3	3
7		4	4						1	1	2	2
8					1	1			2	2	3	3
9					1	1			1	1	4	4
100					4	4			2	2	3	3
1		5	5		1	1					2	2
2		1	1		5	5			1	1	4	4
3		2	2		2	2			5	5	4	4
4		1	1		2	2			4	4	8	8
5		3	3		1	1					4	4
6		2	2		5	5			4	4	11	11
7		3	3		1	1			4	4	3	3
8		3	3		2	2			2	2	2	2
9		1	1		1	1					5	5
110		2	2						1	1	5	5
1		1	1		2	2					2	2
2		1	1						3	3	2	2
3		1	1						1	1	2	2
4					1	1			1	1		
5					3	3						
6		1	1		1	1			1	1		
7												
8					1	1						
9												
unknown												
Total	14	34	48	2	38	40	5	34	39	48	76	124

Table 9 (cont'd)

Total length (cm)	Set no.											
	5			6			7			8		
	M	F	T	M	F	T	M	F	T	M	F	T
49												
50												
1												
2												
3												
4												
5												
6												
7												
8												
9												
60												
1												
2									1	1		
3												
4												
5									1	1		
6												
7									2	2		
8									2	2		
9				1		1			1	1		
70									1	1		
1												
2												
3									1	1		
4				1		1	1	2	3	1		1
5				1	1	2					1	1
6							1	1	2	1		1
7				2		2						
8	1		1	1		1	1			1		
9				2		2		1	1			
80	1		1								1	1
1	1		1	3		3	2		2	1		1
2	3		3	1		1				1		1
3	1		1									
4	1		1				1	2	3			
5				1		1		1	1			
6	2		2				1		1			
7	3	1	4	2		2					1	1
8	2		2	1		1						
9				1	1	2					1	1

Table 9 (cont'd)

Total length (cm)	Set no.											
	5			6			7			8		
	M	F	T	M	F	T	M	F	T	M	F	T
90												
1	1		1					1	1		1	1
2	1		1					1	1		2	2
3								2	2		1	1
4		1	1		1	1		1	1			
5		2	2		4	4		2	2			
6		4	4					1	1		1	1
7					6	6		2	2		4	4
8		4	4		3	3		1	1		3	3
9		2	2		2	2		3	3		1	1
100					3	3		2	2		3	3
1		5	4		5	5		5	5		2	2
2		2	2		3	3		1	1		3	3
3		5	4		3	3		2	2		2	2
4		7	7		2	2					3	3
5		2	2		4	4		1	1			
6		6	6		5	5		2	2		2	2
7		5	5		2	2					3	3
8		5	5		6	6		1	1			
9		4	4		5	5					1	1
110		2	2		5	5		1	1		1	1
1		4	4		1	1						
2		2	2		4	4						
3		4	4		1	1		1	1		2	2
4		1	1		3	3						
5												
6					1	1						
7												
8												
9												
unknown	1		1									
Total	18	68	86	17	71	88	7	46	53	5	38	43

Table 9 (cont'd)

Total length (cm)	Set no.											
	9			10			11			12		
	M	F	T	M	F	T	M	F	T	M	F	T
49												
50												
1												
2												
3												
4												
5												
6												
7										1		1
8												
9												
60												
1										1		1
2												
3										1	1	2
4											1	1
5					1	1						
6												
7												
8					1	1				1	2	3
9											1	1
70										2	1	3
1										2	1	3
2										2		2
3										3		3
4		1	1		2	2				2	2	4
5					2	2				6	1	7
6	1		1				1		1	2		2
7		1	1							10	2	12
8										7	2	9
9				1		1				5	1	6
80	1		1		1	1				4	2	6
1	1		1	1	1	1		1	1	2	1	3
2				1	1	2	1		1	12	4	16
3	1		1	2	1	3		1	1	8	3	11
4				5	2	7				2	1	3
5	1	1	2		4	4		1	1	2	1	3
6		1	1	1	3	4	1		1	1	3	4
7					1	1	1		1	4	2	6
8					3	3				2		2
9				1	2	3				2	1	3

Table 9 (cont'd)

Total length (cm)	Set no.											
	9			10			11			12		
	M	F	T	M	F	T	M	F	T	M	F	T
90		1	1		3	3				1	1	2
1		2	2		3	3		1	1		3	3
2		1	1		4	4		1	1			
3		1	1		1	1					1	1
4		2	2		2	2		2	2			
5					2	2		2	2		1	1
6		1	1		3	3		2	2		1	1
7		2	2		4	4					1	1
8		1	1		2	2		2	2		1	1
9		7	7		4	4		3	3		1	1
100		5	5		1	1		2	2			
1		6	6		2	2		1	1			
2		9	9		3	3		3	3			
3		5	5		2	2					1	1
4		4	4		1	1		2	2		1	1
5		4	4		5	5		3	3			
6		2	2		2	2		1	1			
7		7	7		1	1		1	1			
8		4	4		1	1		1	1			
9		1	1		3	3					2	2
110		2	2		3	3						
1								1	1			
2					2	2						
3		1	1		1	1						
4												
5												
6												
7												
8												
9												
unknown	1		1									
Total	6	72	78	12	79	91	4	31	35	85	47	132

Table 9 (cont'd)

Total length (cm)	Set no.											
	13			14			15			16		
	M	F	T	M	F	T	M	F	T	M	F	T
49							1		1			
50												
1												
2										1		1
3												
4												
5										2		2
6												
7				1		1				1		1
8							1		1			
9							1		1			
60											1	1
1										1		1
2							1		1	2		2
3							1		1	2		2
4											1	1
5							1		1	1		1
6					1	1	2		2			
7				1		1	1	1	2	1		1
8				1		1	3		3	1		1
9										1		1
70	1		1	1		1		1	1	2		2
1	4	1	5	3		3	1	1	2			
2				5		5	2	1	3	1		1
3	2		2	3		3	5		5	1		1
4	1		1	2		2	5		5	5		5
5	2		2	6	3	9	1	2	3	9	1	10
6	1	1	2	2		2	8	4	12	6	2	8
7	7	1	8	3		3	5		5	10		10
8	5		5	4	1	5	5	4	9	3	2	5
9	4	2	6	4	1	5	3	1	4	3	2	5
80	5	3	8	3		3	5		5	3	1	4
1	10	2	12	8		8	2	1	3	3	4	7
2	9	3	12	6	1	7	5	1	6	2		2
3	4	1	5	9	3	12	11		11	2		2
4	3	3	6	3		3	5	2	7	2	1	3
5	5	1	6	2	1	3	5	1	6	4		4
6	7	2	9	3	1	4	2	2	4	3		3
7	3	1	4	2	1	3	2	1	3	1		1
8	4	3	7	2	1	3		1	1	2	1	3
9	3	1	4	1	1	2	2		2	1		1

Table 9 (cont'd)

Total length (cm)	Set no.											
	13			14			15			16		
	M	F	T	M	F	T	M	F	T	M	F	T
90	1	2	3		1	1					1	1
1				1	2	3	1	1	2			
2	1		1		2	2		1	1		1	1
3		1	1		1	1					2	2
4	1	2	3		1	1					1	1
5	1	1	2									
6		1	1		4	4					2	2
7					2	2		1	1	1	2	3
8		1	1		1	1					1	1
9		1	1		2	2		2	2		1	1
100		1	1		2	2		2	2		1	1
1		1	1		2	2						
2		1	1		2	2		2	2			
3					1	1		1	1		1	1
4		1	1		1	1						
5		1	1					2	2			
6					1	1					1	1
7												
8					1	1						
9					1	1						
110												
1												
2												
3												
4												
5												
6												
7												
8												
9												
unknown												
Total	84	39	123	76	42	118	87	36	123	77	30	107

Table 10. Length frequency of dogfish, Central Strait of Georgia and Valdes Island, November, 1979.

Total length (cm)	Total tagged			Total untagged			Total caught		
	M	F	T	M	F	T	M	F	T
49	1		1				1		1
50									
1									
2	1		1				1		1
3					1	1		1	1
4									
5	2		2		1	1	2	1	3
6									
7	3		3		1	1	3	1	4
8	1		1	1		1	2		2
9	1		1				1		1
60		1	1					1	1
1	3		3				3		3
2	4	1	5				4	1	5
3	4	1	5		1	1	4	2	6
4		2	2	1		1	1	2	3
5	3	3	6				3	3	6
6	2	1	3				2	1	3
7	3	3	6	1		1	4	3	7
8	6	5	11	2		2	8	5	13
9	2	2	4	2		2	4	2	6
70	7	3	10	1	1	2	8	4	12
1	11	3	14	4		4	15	3	18
2	10	1	11	1		1	11	1	12
3	15	1	16	4	1	5	19	2	21
4	18	8	26	2		2	20	8	28
5	26	11	37	2	2	4	28	13	41
6	24	8	32	4	2	6	28	10	38
7	42	4	46	1		1	43	4	47
8	28	9	37	6		6	34	9	43
9	24	8	32	1	1	2	25	9	34
80	28	7	35	10		10	38	7	45
1	38	9	47	6	1	7	44	10	54
2	48	10	58	5	1	6	53	11	64
3	41	9	50	3		3	44	9	53
4	29	11	40	5	2	7	34	13	47
5	25	11	36	4	1	5	29	12	41
6	25	13	38	4	1	5	29	14	43
7	20	8	28	1	1	2	21	9	30
8	18	9	27	4		4	22	9	31
9	13	8	21	1		1	14	8	22

Table 10 (cont'd)

Total length (cm)	Total tagged			Total untagged			Total caught		
	M	F	T	M	F	T	M	F	T
90	6	10	16				6	10	16
1	4	14	18		1	1	4	15	19
2	4	13	17	2	2	4	6	15	21
3		13	13		1	1		14	14
4	2	13	15				2	13	15
5	2	17	19		1	1	2	18	20
6		27	27		1	1		28	28
7	1	31	32				1	31	32
8		26	26					26	26
9		35	35		1	1		36	36
100		31	31					31	31
1		37	37		3	3		40	40
2		40	40		2	2		42	42
3		36	36					36	36
4		37	37	1		1	1	37	38
5		30	30		1	1		31	31
6		44	44		1	1		45	45
7		30	30					30	30
8		28	28					28	28
9		24	24					24	24
110		22	22					22	22
1		11	11					11	11
2		14	14					14	14
3		14	14					14	14
4		6	6					6	6
5		3	3					3	3
6		4	4					4	4
7									
8		1	1					1	1
9									
unknown	2		2				2		2
Total	547	781	1328	79	32	111	626	813	1439

Table 11. Length frequency of tagged dogfish by area, Central Strait of Georgia and Valdes Island, November, 1979.

Total length (cm)	S. of Thrasher Rk. ^a sets 1-6			N. of Thormanby Is. sets 7-11			N. of Lasqueti Is. sets 12-16		
	M	F	T	M	F	T	M	F	T
49							1		1
50									
1									
2							1		1
3									
4									
5							2		2
6									
7							3		3
8							1		1
9							1		1
60								1	1
1	1		1				2		2
2	1		1		1	1	3		3
3							4	1	5
4								2	2
5	1	1	2		2	2	2		2
6							2	1	3
7					2	2	3	1	4
8					3	3	6	2	8
9	1		1		1	1	1	1	2
70	1		1		1	1	6	2	8
1	1		1				10	3	13
2							10	1	11
3	1		1		1	1	14		14
4	1	1	2	2	5	7	15	2	17
5	2	1	3		3	3	24	7	31
6	1		1	4	1	5	19	7	26
7	7		7		1	1	35	3	38
8	3		3	1		1	24	9	33
9	4		4	1	1	2	19	7	26
80	6		6	2	1	3	20	6	26
1	8		8	5	1	6	25	8	33
2	11		11	3	1	4	34	9	43
3	4		4	3	2	5	34	7	41
4	8		8	6	4	10	15	7	22
5	6		6	1	7	8	18	4	22
6	6	1	7	3	4	7	16	8	24
7	7	1	8	1	2	3	12	5	17
8	8		8		3	3	10	6	16
9	3	2	5	1	3	4	9	3	12

Table 11 (cont'd)

Total length (cm)	S. of Thrasher Rk. ^a sets 1-6			N. of Thormanby Is. sets 7-11			N. of Lasqueti Is. sets 12-16		
	M	F	T	M	F	T	M	F	T
90	4	1	5		4	4	2	5	7
1	2		2		8	8	2	6	8
2	3		3		9	9	1	4	5
3		3	3		5	5		5	5
4	1	2	3		7	7	1	4	5
5	1	9	10		6	6	1	2	3
6		11	11		8	8		8	8
7		13	13		12	12	1	6	7
8		13	13		9	9		4	4
9		10	10		18	18		17	7
100		12	12		13	13		6	6
1		18	18		16	16		3	3
2		16	16		19	19		5	5
3		21	21		11	11		4	4
4		24	24		10	10		3	3
5		14	14		13	13		3	3
6		33	33		9	9		2	2
7		18	18		12	12			
8		20	20		7	7		1	1
9		16	16		5	5		3	3
110		15	15		7	7			
1		10	10		1	1			
2		12	12		2	2			
3		9	9		5	5			
4		6	6						
5		3	3						
6		4	4						
7									
8		1	1						
9									
unknown	1		1	1		1			
Total	104	321	425	34	266	300	409	194	603

^aIncludes 2 sets off Detwiller Point.

Table 12. Catch per unit effort of dogfish by areas fished.

Area	No. of dogfish	C.P.U.E. dogfish/ 1000 hooks	C.P.U.E. dogfish > 70 cm/ 1000 hooks
Marina Island	2017	292	190
Oyster Bay	335	223	138
Cape Mudge Reef	854	259	240
Valdes Island (Detwiller Pt. and south of Thrasher Rock)	444	148	146
Sechelt Peninsula (North of Thormanby Island)	317	126	123
Lasqueti Island	678	271	250

Table 13. Recoveries from 1979 Campbell River tagging.

Tag number	Release			Recovery			Location (no. on map) Fig. 3	Min. distance travelled (km)	Days at large	Method of capture
	Date	Length (cm)	Sex	Date	Length (cm)	Whole fish returned				
DF44038	May 02	73	M	~May 21	-	no	1	13.3	15-20	salmon troll
DF43417	Apr 30	95	F	Jun 09	93.0 ^a	yes	2	55.6	40	sport
DF44200	May 08	87	M	Jul 16	-	yes	3	tagging area	69	sport
DF43425	Apr 30	85	M	Jul 21	83	yes	4	272	82	trawl
DF44893	May 15	51	F	Aug 08	-	no	5	242	92	salmon gillnet
DF42923	Apr 24	103	F	Aug 29	-	no	6	5.9	127	sport
DF43358	Apr 26	107	F	Sep 24	107	yes	7	17.6	151	longline
DF45920	May 17	85	F	~Sep 30	-	no	8	39.8	~150	longline
DF44721	May 14	111	F	Oct 13	109	yes	9	67.7	152	longline
DF45538	May 16	83	F	Oct 27	84	yes	10	27.8	164	longline
DF43262	Apr 26	74	M	Oct 31	74	yes	11	37.0	189	trawl
DF45931	May 17	86	F	Nov 09	86	yes	12	125	176	longline
DF45509	May 16	97	F	Nov 11	98	yes	13	134	179	longline
DF42626	Apr 23	99	F	Nov 11	101	yes	14	260	202	trawl
DF42781	Apr 23	95	F	Nov 12	95	yes	15	39	203	salmon gillnet
DF43831	May 01	106	F	~Nov 15	-	no	-*	-	~199	-
DF46102	May 18	90	M	~Nov 15	-	no	-*	-	~181	-
DF43292	Apr 26	84	M	Nov 19	85	yes	16	176	208	longline
DF45547	May 16	88	F	Nov 20	86	yes	17	233	188	trawl
DF44766	May 15	96	F	Nov 21	95	yes	18	97	190	longline
DF44132	May 02	65	F	Nov 22	-	no	19	35	204	trawl
DF44293	May 09	83	M	Nov 22	-	no	20	33	197	trawl
DF42967	Apr 24	103	F	Nov 24	103	yes	21	165	214	longline
DF43703	May 01	87	M	Nov 28	86	yes	22	166	211	longline
DF44841	May 15	86	M	Nov 30	84	yes	23	171	199	longline
DF42777	Apr 23	109	F	Dec 01	-	no	24	134	222	longline
DF45438	May 16	65	M	Dec 03	-	no	25	35	201	trawl
DF43801	May 01	89	F	Dec 03	-	no	26	35	217	trawl
DF45607	May 16	68	F	Dec 3-8	-	no	27	35	233	trawl
DF44463	May 11	106	F	Dec 3-8	105	yes	28	28	208	trawl
DF43037	Apr 24	85	F	Dec 3-8	85	yes	29	28	225	trawl
DF43326	Apr 26	103	F	Dec 10	103	yes	-*	-	230	-

*These recaptures were recovered in the processing plant and recovery location is not known.

Table 14. Recoveries from 1978 tagging program, January 1-December 31, 1979.

Tag number	Release 1978				Recovery 1979				Min. distance travelled (km)	Whole fish returned	Days at large		
	Petersen disc	Anchor	Date	Length (cm)	Sex	Date	Tags present					Location (no. on map) Fig. 6	Method of recapture
							Discs	Anchor					
DF41214	X01999	May 24	85	M	Jan 24	yes	yes	84	16	longline	yes	23	245
DF42476	X03231	Jun 1	107	F	Mar 3	yes	no	107	17	trawl	yes	70	273
DF42879	X03325	Jun 1	100	F	Apr 24	yes	unknown	-	18	sport	yes	22	328
DF42263	X03631	Jun 3	59	F	Jul 8	yes	unknown	-	19	salmon gillnet	no	52	401
DF42138	X03475	Jun 2	68	M	Jul 14	yes	no	66.2	20	sport	yes	157	408
DF41876	X02957	May 31	56	F	Jul 22	yes	unknown	-	21	salmon gillnet	no	37	418
DF42500	X03703	Jun 3	84	F	Jul 29	yes	unknown	-	22	salmon gillnet	no	185	422
DF42838	X03298	Jun 1	111	F	Aug -	yes	unknown	-	23	cod live bait	no	127	~451
DF41673	X02582	May 28	105	F	Oct 8	yes	no	105	24	longline	yes	164	498
DF42482	X03228	Jun 1	107	F	Oct 16	yes	unknown	-	25	longline	no	207	503
DF41621	X02430	May 28	106	F	Nov 5	yes	no	-	26	sport	yes	135	526
DF41169	X02069	May 17	73	M	Nov 26	yes	no	74.1	27	longline	yes	120	558
DF42183	X03520	Jun 2	66	F	Nov 27	yes	yes	67.3	28	longline	yes	69	543
DF41841	X02640	May 31	74	M	Nov 29-30	yes	no	74	29	longline	yes	176	549
DF42097	X03584	Jun 2	116	F	Dec 3-8	yes	no	116	30	trawl	yes	35	551

Table 15. Remeasurements of tagged fish, Campbell River, 1979.

Set no.	Tag number	Original length	Remeasurement	Change from orig.
33	DF 45380	91	91	-
	44981	89	89	-
	45501	84	84	-
	45426	103	102	-1
34	45525	88	88	-
	45449	86	86	-
	45549	100	100	-
	45468	88	88	-
35	45582	102	102	-
	45494	56	56	-
36	45904	87	87	-
	45907	76	76	-
	45838	84	85	+1
	45837	91	92	+1
	45906	76	77	+1
	45909	87	88	+1
38	45989	90	90	-
	45990	85	85	-
	45988	60	60	-
39	46215	76	76	-
	46223	76	74	-2
	46038	75	75	-
	46044	69	71	+2
	46244	84	83	-1
	46268	92	92	-
	46274	83	84	+1
	46281	90	90	-

Table 16. Fish transported to Pacific Biological Station for tag retention and fish mortality study.

Set	Tag number	Sex	Length	Condition ^a	Condition ^b
					Dec. 31, 1979
22 (May 9, 1979)	DF 44402	F	100	M	D
	44404	F	56	S	D
	44405	F	110	M	H
	44384	F	113	S	D
	44390	F	113	E	H
	44391	F	102	S	H
	44392	M	76	M	H
	44393	M	83	M	H
	44394	M	75	S	D
	44395	F	101	M	H
	44897	M	70	M	H
	44398	F	72	M	H
	44399	M	89	M	D
	44600	M	60	S	H
	44603	M	88	S	D
29 (May 14, 1979)	DF 44819	M	82	M	H
	44820	M	83	S	H
	44821	M	88	S	H
	44822	M	85	E	H
	44823	M	93	S	D
35 (May 16, 1979)	DF 45609	F	89	S	H
	45618	F	91	M	H
	45619	F	58	M	H
	45622	F	100	E	D
	45627	F	69	S	H
	45628	F	82	M	H
	45629	F	63	S	H
	45630	F	75	S	H
	45631	F	69	S	H
	45635	F	91	E	H
	45636	F	91	S	H
	45640	F	74	E	H
	45641	F	54	M	H
	45643	F	93	S	H
	45650	F	85	M	H
	45647	F	66	hook in gullet	D
	45656	F	91	M	H
	45657	F	102	S	H
	45658	F	55	S	H
45661	M	81	S	D	
45662	M	76	M	H	

^aS = slight; M = moderate; E = Excessive.

^bD = dead before Dec. 31, 1979; H = healthy as of Dec. 31, 1979.

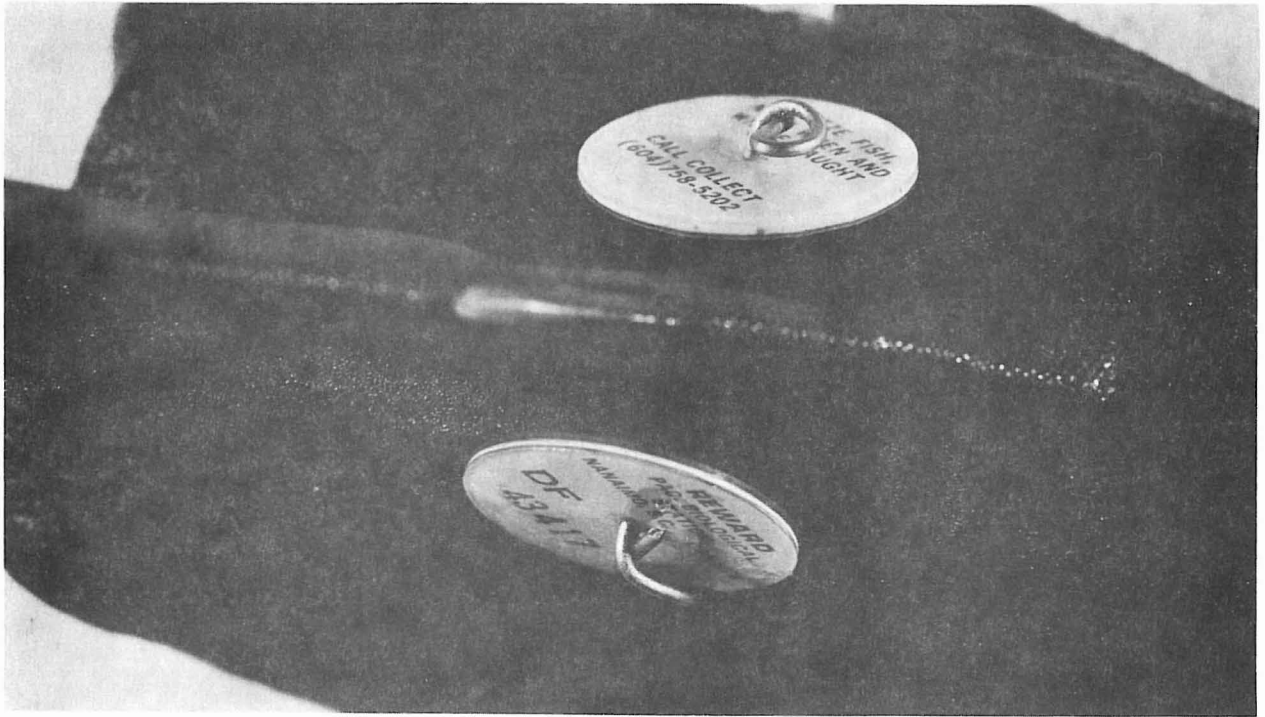


Fig. 1a. Petersen disc--top view.



Fig. 1b. Petersen disc--side view.

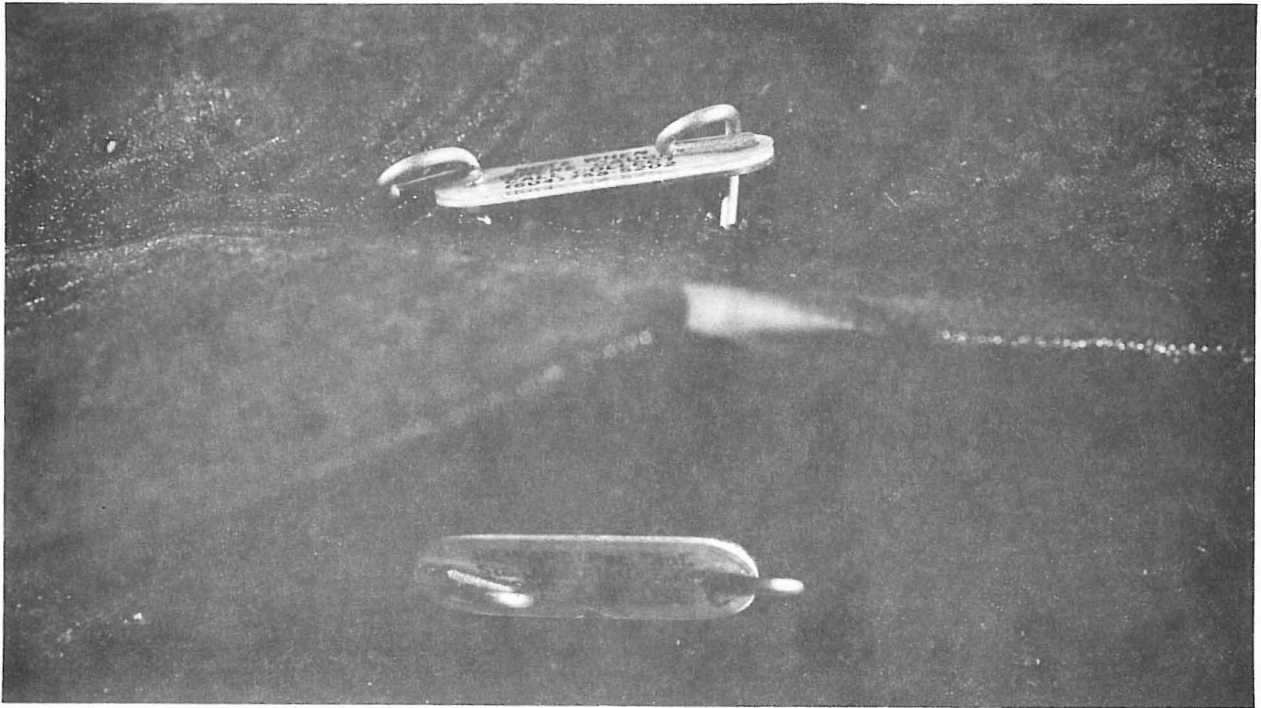


Fig. 2a. Modified Petersen disc design--top view.



Fig. 2b. Modified Petersen disc design--side view.

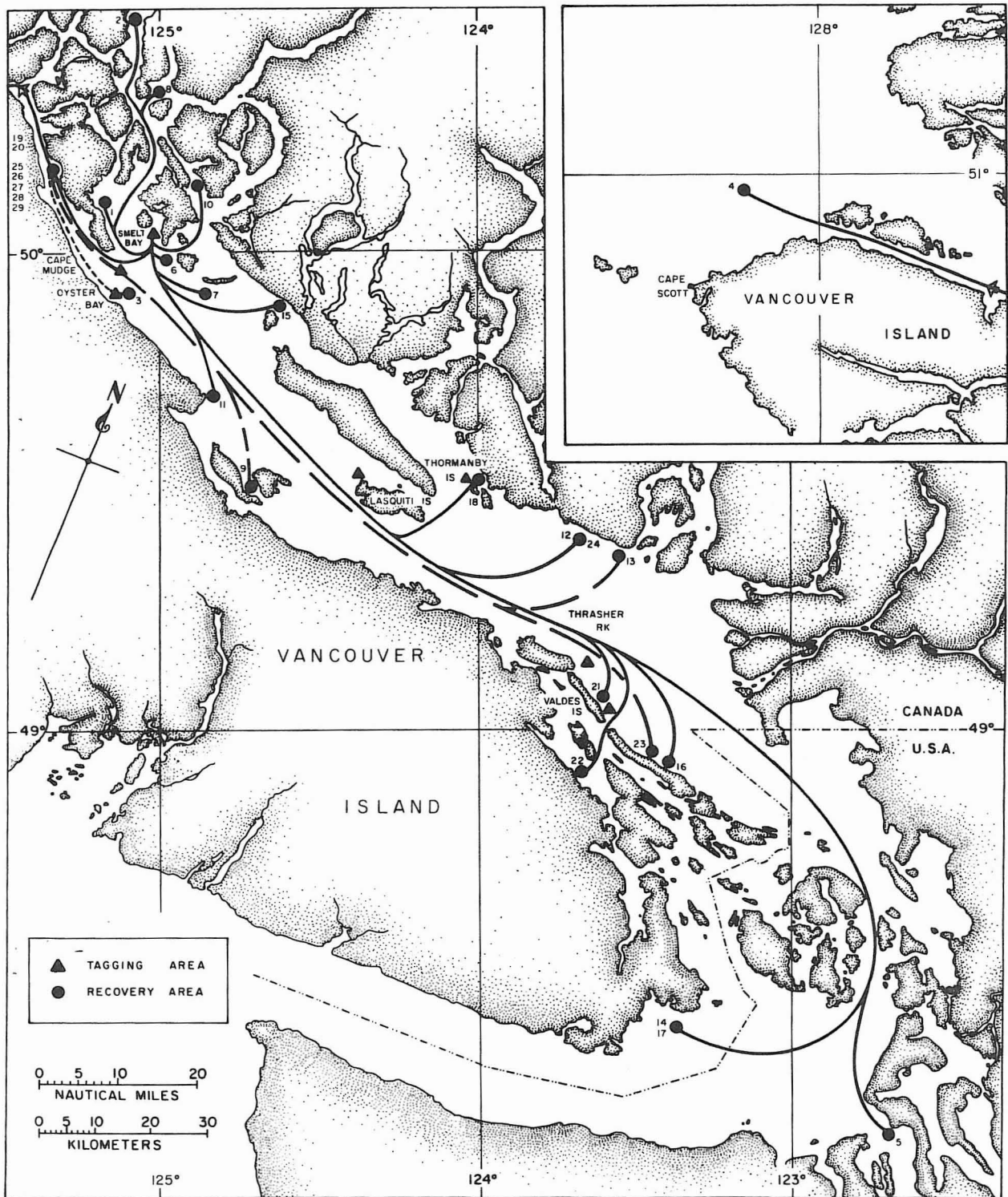
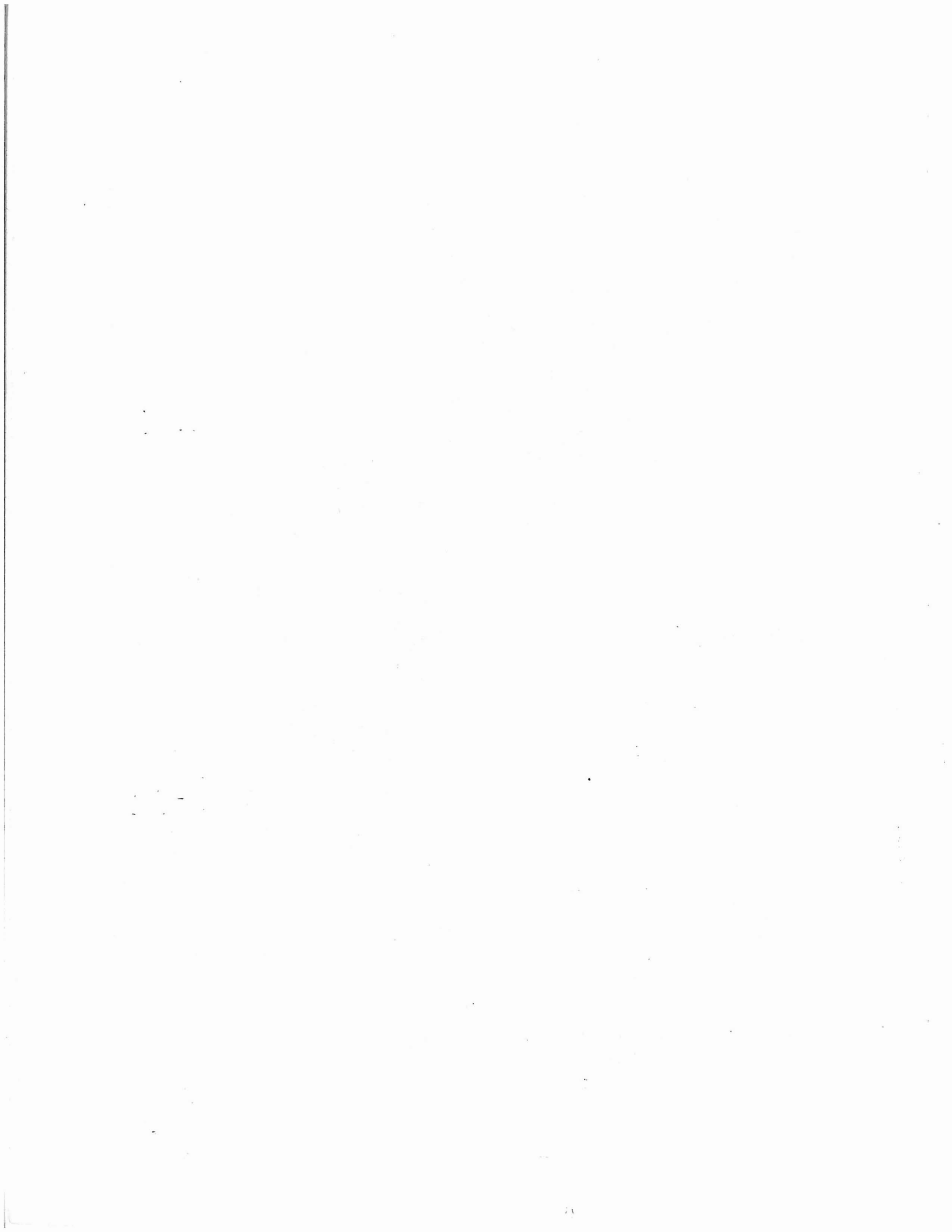


Fig. 3. Tag release and recovery locations, 1979. Numbers identify individual fish recovery locations presented in Table 13.



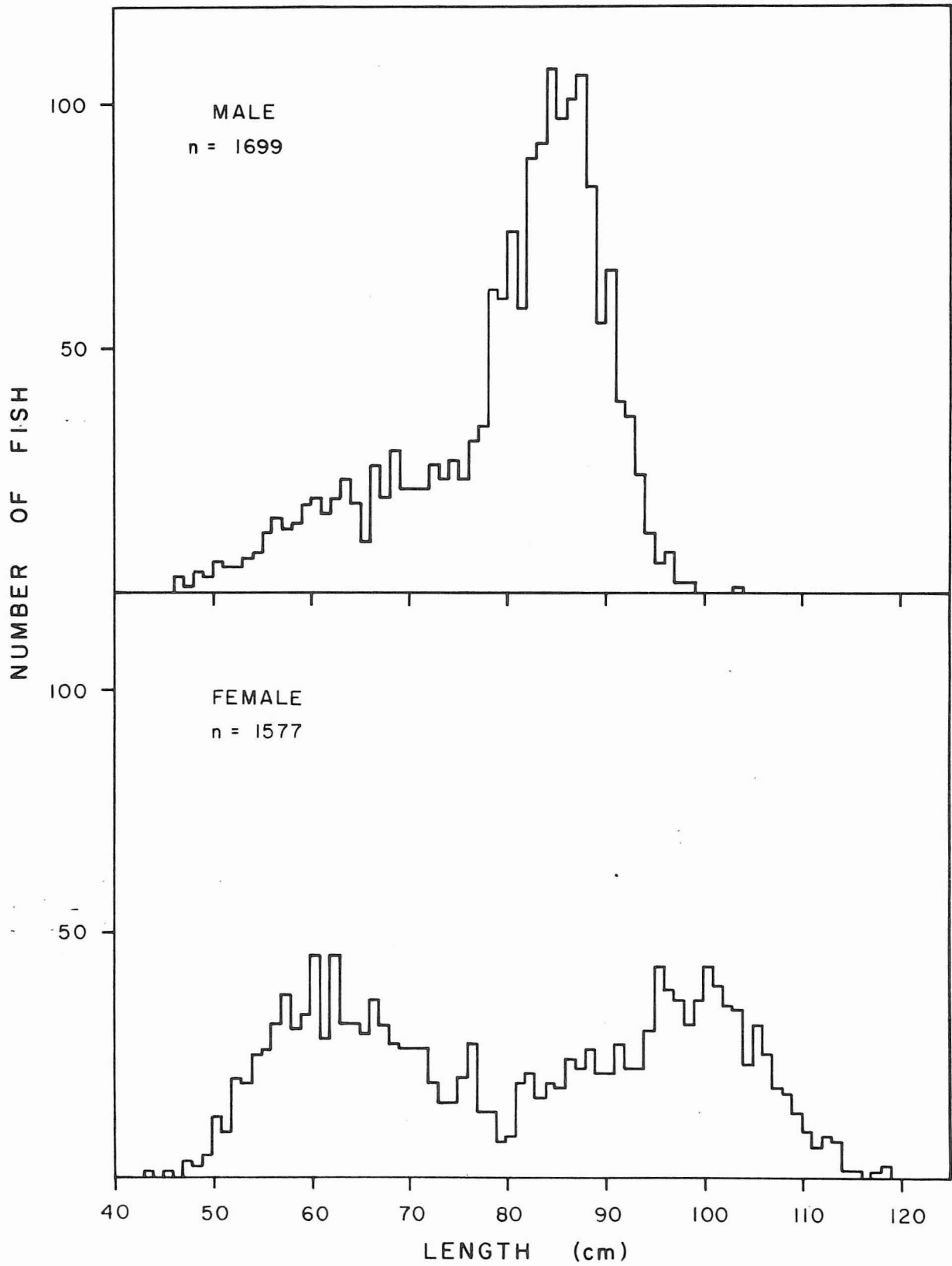


Fig. 4a. Length frequency of male and female dogfish captured from Campbell River area.

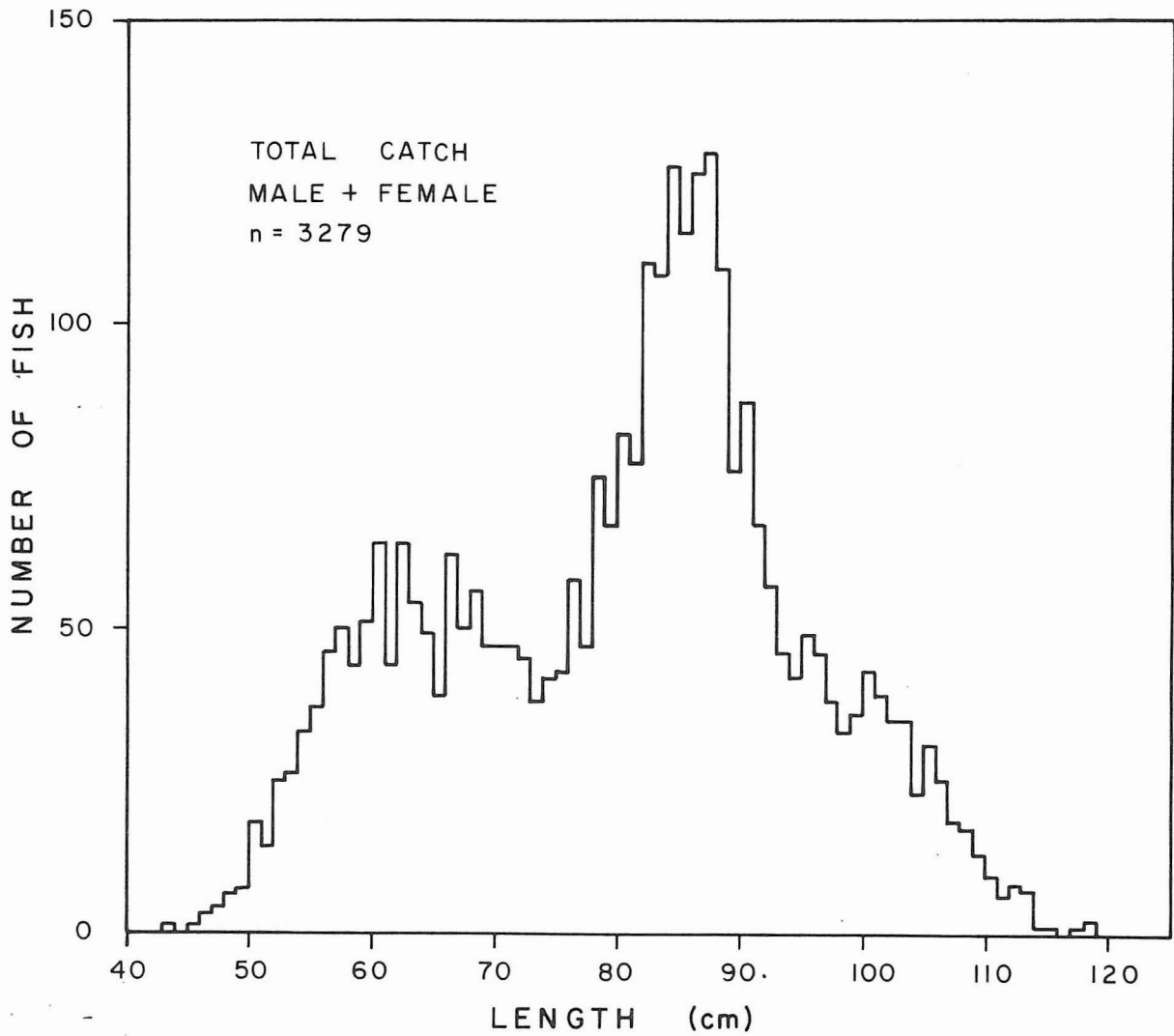


Fig. 4b. Length frequency of total catch of dogfish captured from Campbell River area.

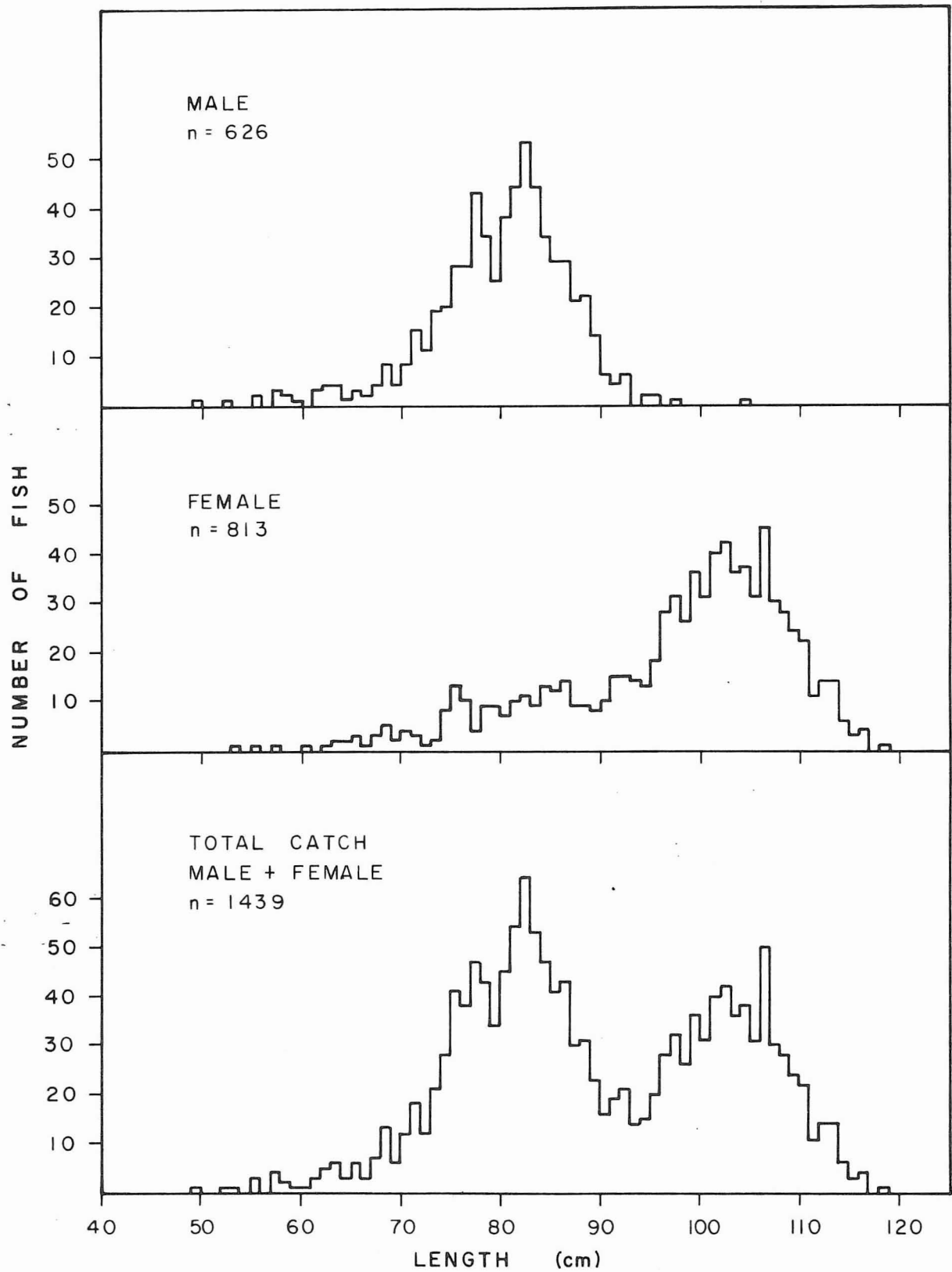


Fig. 5. Length frequency of dogfish captured from the central Strait of Georgia and off Valdes Island.

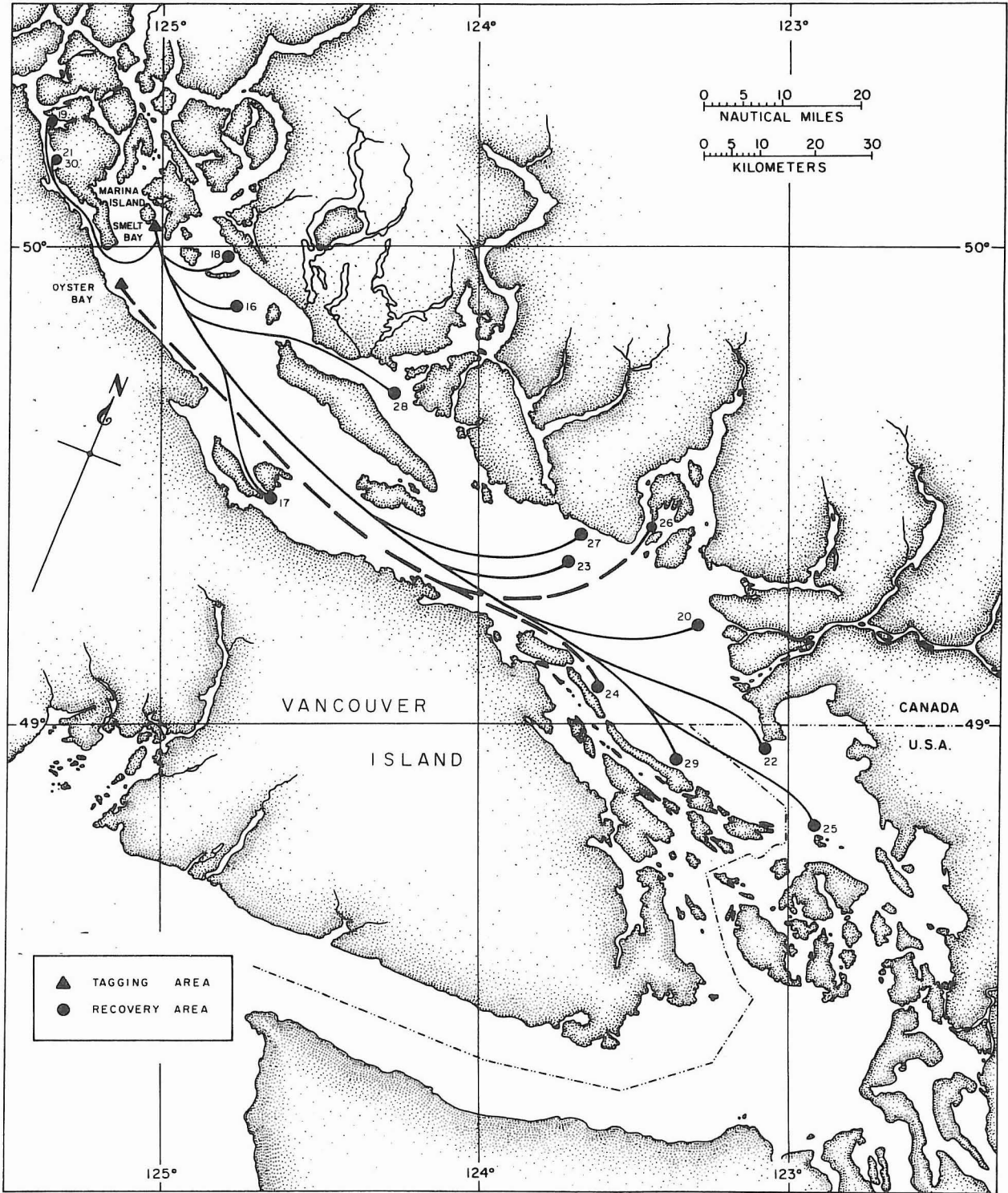


Fig. 6. Tag release 1978 and recovery location 1979. Numbers identify individual fish recovery locations presented in Table 14.

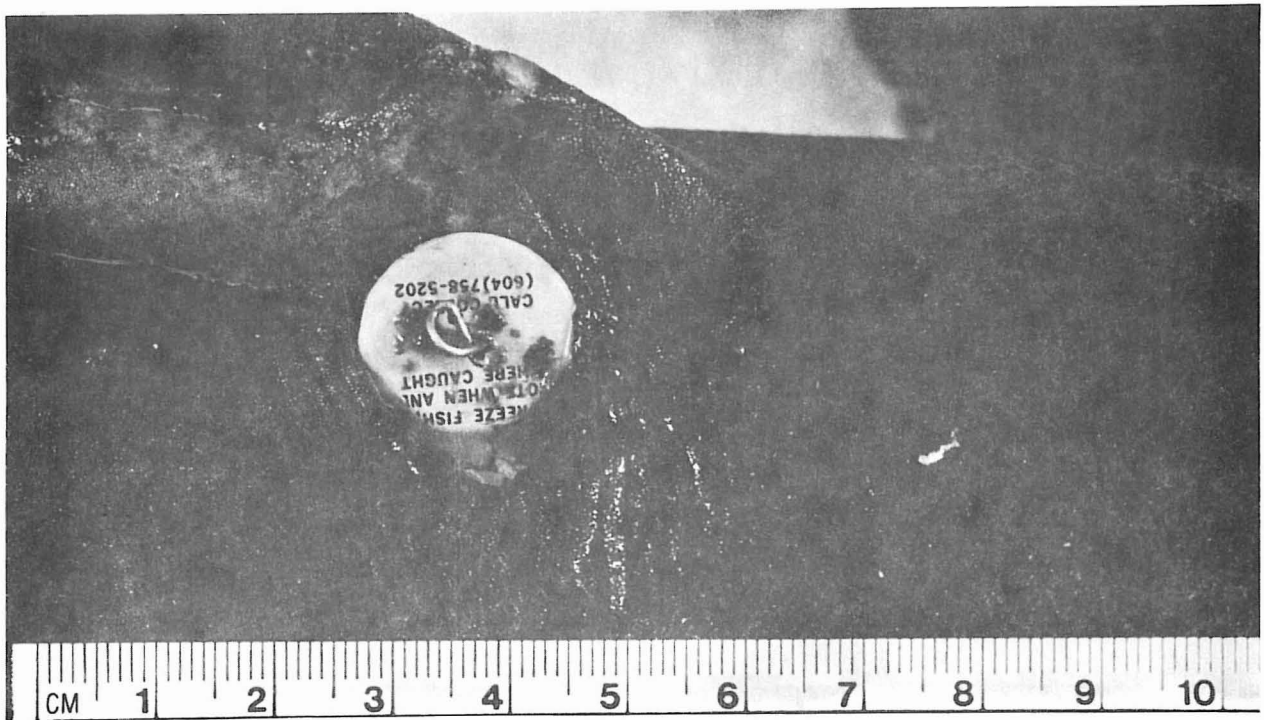


Fig. 7. Example of excessive wound caused by Petersen disc.

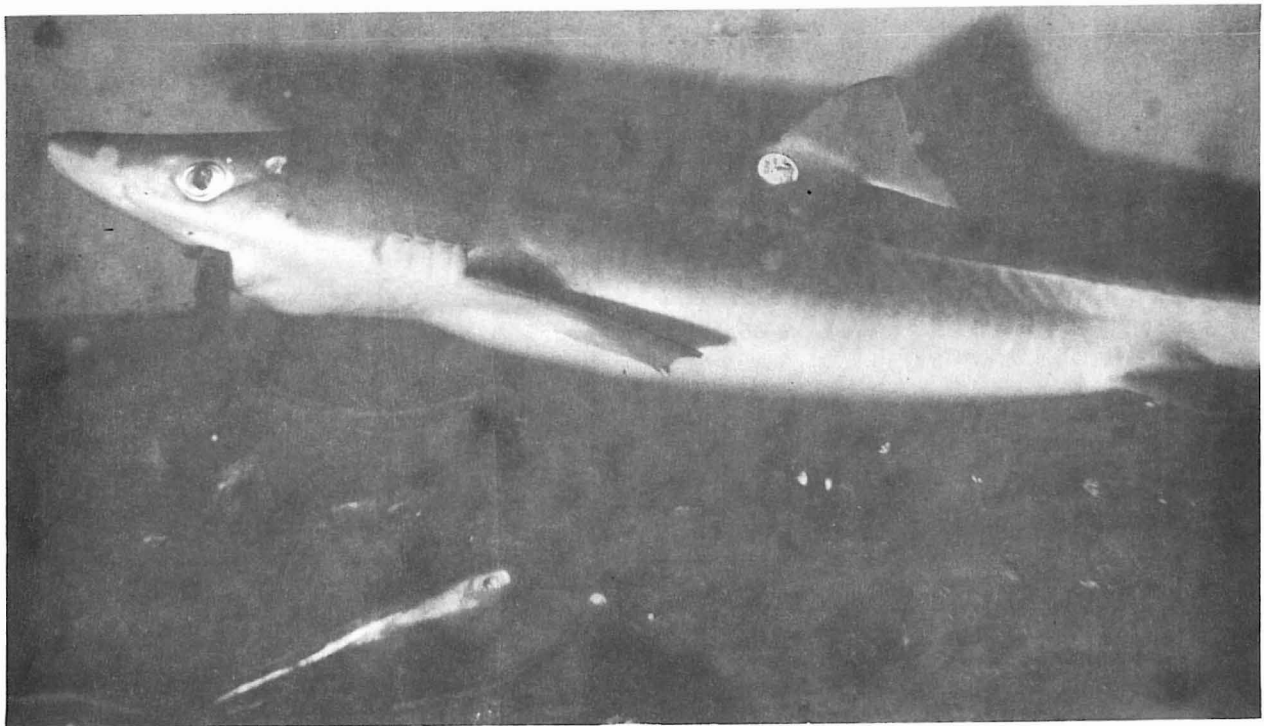


Fig. 8. Fish actively feeding in culture facilities at the Pacific Biological Station.

Appendix Table 1. Example of data collection and code sheet

Quality control standardization symbols

Bleeding: (time of return)	slight	S
	moderate	M
	excessive	E
Behavior:	dove out of sight	D
	problems with balance	B
	bellied up (upside down)	U
	aimless swimming	A
Last assessment:	eventually dove out of sight ..	D
	last seen on surface (top)	T
	died	C
