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The 1987 roe herring charter vessel monitoring and sampling program

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ABSTRACT

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Twelve charter vessels made 397 sample sets on the British Columbia coast in order for fishery managers to assess the stock abundance, recruitment and state of sexual maturity of the Pacific herring (Clupea harengus pallasi). These data were used to determine the location, timing and estimated duration of the 1987 commercial roe herring fishery openings.

In addition, laboratory samples were retained after each sample set for Fisheries Research Branch scientists as part of the data base for the computer modelling system used to estimate the escapement and predict the available surplus for the 1987/1988 Pacific herring fishery. Field data, including hydroacoustic stock estimates and onboard field analysis data are contained in this report.

Key words: Pacific herring (Clupea harengus pallasi), charter vessels, stock abundance, sexual maturity, roe yield, standard length.

RÉSUMÉ

Armstrong, R.W., 1987. The 1987 roe herring charter vessel monitoring and sampling program. Can. Ind. Rep. Fish. Aquat. Sci. 181: p.

Douze bateaux affrétés ont recueilli 397 séries d'échantillons sur la côte de la Colombie-Britiannique pour permettre aux gestionnaires des pêches d'évaluer l'importance des stocks, le recrutement et la maturité sexuelle du hareng du Pacifique (Clupea harengus pallasi). Ces données ont servi à déterminer l'emplacement, la date et la durée approximative des périodes d'ouverture de la pêche commerciale du hareng plein.

En outre, après le prélèvement de chaque série d'échantillons, on a conservé, à l'intention des scientifiques de la Direction de la recherche sur les pêches, des échantillons pour analyse en laboratoire qui seront intégrés à la base de données pour le système de modélisation informatisé utilisé pour évaluer le nombre de rescapés et prédire les surplus disponibles pour la pêches du hareng du Pacifique en 1987-1988. Le présent rapport renferme des données recueillies sur le terrain, notamment des estimations hydroacoustique des stocks, et des données d'analyses faites à bord.

Mots-clés: hareng du Pacifique (Clupea harengus pallasi), bateaux affrétés, importance des stocks, maturité sexuelle, production d'oeufs, longueur standard.

INTRODUCTION

In 1987, 12 herring seiners were chartered for the roe herring test fishing program to provide pre-fishery herring stock information for fishery managers and research scientists.

The charter program objectives were as follows:

1. In-season management

   a) to estimate the overall herring biomass in each fishing location and to identify a fishable stock to meet the Fixed Quota requirement,

   b) to determine roe yields,

   c) to determine if the available herring size (length and weight) was suitable for a herring fishery,

   d) to determine roe quality, ie. incidence of abnormal roe,

   e) to provide updated information on the rate of maturity based on roe yield, abundance and behavior, allowing the fishing fleet to remain in protected anchorages i.e. in some cases up to 48 hours notice was given to the gillnet fleet.

   f) to ensure "on the grounds" input from Industry via the charter vessel masters,

   g) to use charter vessels as training platforms for Department of Fisheries and Oceans (DFO) field staff.

2. Research

   a) to obtain biological samples for the Fisheries Research Branch (FRB) from as many herring spawning stocks as possible. The resulting information is used to forecast the stock strength and potential catch for the following year.

In order to fulfill the above objectives, it is mandatory that the fishing master be an experienced and successful herring fisherman who is ready and able to pass on his experience to the DFO staff, and who is respected by seine and gillnet fishermen participating in the commercial fishery.

HISTORICAL REVIEW OF THE ROE HERRING CHARTER PROGRAM

Successful management of roe herring fisheries depends on the manager getting timely and accurate information on stock movement, abundance and sexual maturity.

Before 1980, seine vessels were only chartered for the period preceeding fishery openings and could participate in the commercial fishery. This meant that just when the fishery managers most urgently needed the information on roe

yield and abundance, they lost one of their key sources of data. This may have resulted in lost opportunities and lost revenue to Industry.

These vessels were not chartered for the entire fishing season strictly because the cost of buying an experienced and successful fisherman out of the roe herring fishery was prohibitive, especially during the late 1970 boom years. An estimated cost of chartering 11 seine vessels was in excess of $1,000,000. The dramatic increase in value of roe herring, combined with the Industry requirement of a minimum roe yield of 10%, increased the need for timely and accurate information on stock movement, abundance and sexual maturity.

During the "Bonanza Year" of 1979, million dollar seine sets were made and cash buyers were paying up to $5,000/ton on the fishing grounds. This activity resulted in additional pressure on the resource and fishery managers, thus further confirming that test vessels were required throughout the roe fishery season.

The present chartering system is the result of consultation with fisheries staff and representatives from the Industry. It was decided that Industry would get involved in providing in-season management information through the charter vessel masters. Seiners with experienced skippers would be chartered to conduct test fishing throughout the fishing season under authority of Section 4 of the Fisheries Act and Section 3 of the Fisheries Development Act. The charter seiners would carry out the test fishing operation and would be given permission to catch a specified quantity of roe herring in tons/day for the duration of the charter. As part of the Charter Agreement, the charter seiner would not participate in the roe herring fishery during the year of the charter.

In this way, the charter program was paid out of the resource, Industry was involved during the fishing season in developing the fisheries through the charter vessel masters, and a number of seiners were bought out of the open fishery thereby reducing fleet size.

This report summarizes the seine set data, roe yield information and length frequency distribution data collected from the 12 charter seiners. In order to simplify data tabulation, interpretation and comparison with previous years, all tonnage is given in short tons (907.18 kg), the distances are shown in nautical miles (1.85 km) and herring length is given in centimeters. The present report is one of a series of publications by the DFO aimed at providing the annual summary of roe herring monitoring and sampling program.

METHODS AND MATERIALS

In 1987, 12 herring seine vessels were chartered for the roe herring fishery on the B.C. coast.

As in previous years, the charter vessels were used to assess the herring stocks in each area by echo sounding for biomass estimates and by seining for biological samples to determine recruitment and roe yield. The normal procedure was to cover the fishing grounds hydroacoustically and obtain seine samples from a cross-section of the herring schools in each location.

Invitations to tender were mailed to all licenced roe herring seiners, and 12 charter vessels were selected (Table 1). The selection was based on a combination of low bids (tons of roe herring per day) and a point rating system which takes into account the experience of the vessel master and the condition of the vessel and equipment. Twelve vessels were chartered for a minimum of 26 days and one vessel for 30 days with provisions made in the Tendering Agreement for extensions of up to 5 days, if required. Bids from the successful vessels ranged between 3.25 tons/day and 4.99 tons/day for a total tonnage requirement of 1,312.79. The overall average bid for the twelve charters was 109 tons, a near record low when compared to the average seine quota; the bid ratio was 1.56 times the average seine quota (Table 4).

The actual payment was 1,375.59 tons including extensions (Tables 1 and 2). Four charter vessels were given extensions during 1987; no extensions exceeded five days. The actual tonnage caught for payment was 1,549.71 tons. This represents an average excess catch of 14.5 tons per vessel or 174 tons. All herring caught in excess of the tendered amount were sold at the same rate paid to the respective charter vessel and the monies forwarded to the Receiver General of Canada. The total value of the excess catch was $255,389.54; the average rate paid per ton was $1,468/ton.

The charter timing was set to ensure that the charter vessel was available prior to and during the major spawnings in each area (Table 3). The 12 vessels were assigned to the five herring management areas (Fig. 1) as follows:

Licence Area 1 - Queen Charlotte Islands - 2 vessels
Licence Area 2 - Prince Rupert - 1.5 vessels[a]
Licence Area 3 - Central Coast - 2 vessels
Licence Area 4 - Strait of Georgia - 3.5 vessels[a]
Licence Area 5 - West Coast Vancouver Island - 3 vessels

The charter vessels were assigned to specific sampling locations within each management area and were given general directions by the fishery manager on where samples were required in each district. Each set location was recorded by Statistical Area (Fig. 2) and herring section (Figs. 3 and 4; Table 5). The onboard direction on sampling procedure was given by the DFO fishery officer, technician or biologist assigned to the vessel.

Specific sampling instructions, similar to those used in previous years, were placed onboard each vessel (Appendix Table 1).

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[a] One charter vessel was used for both the Prince Rupert and Strait of Georgia areas (13 days duration in each area).

Table 1. Roe herring charter payment summary, B.C., 1987.

Tender Vessel	Charter bid (tons) Daily Rate	Charter (26 days)	Total Payment (tons)
1) Royal Viking	4.19	108.94	108.94
2) Karenora II	4.60	119.60	119.60
3) Semidi	4.05	105.30	105.30
4) Fisher Lassie II	3.30	85.80	102.30(5)[a]
5) Kynoc	3.25	84.50	100.75(5)
6) Seabound	4.70	122.20	141.00(4)
7) Franciscan No. I	3.95	102.70	102.70
8) Argent Fisher	4.99	129.74	129.74
9) Westview No. I	3.985	103.61	103.61
10) C. Venture No. I	4.50	117.00	117.00
11) Vampy	3.75	112.50[a]	123.75(3)
12) Elling K	4.65	120.90	120.90
TOTAL	49.92	1312.79	1375.59
Mean	(4.16)	(109.40)	
		TOTAL CATCH	1549.71
		TOTAL EXCESS	174.12

[a] Number in parenthesis indicates charter extension in days.

Table 2. Roe herring charter payment catch information, 1987.

Date	License Area	Catch Location	Catch (Tons)
Mar. 22 & 23	Q.C.I.	Lower Juan Perez Sd.	339.16
Mar. 31	Pr. Rupert	Chatham Sound	2.72
Apr. 2 & 3	Pr. Rupert	Kitkatla Inlet	315.09
Mar. 26 & 27	Central Coast	Spiller Ch. & Dundivan Inlet	179.35
Mar. 27 & 28		East Higgins Pass.	310.84[a]
Mar. 15, 16 & 18	W.C.V.I.	Barkley Sound	402.55
TOTALS - Catch			1,549.71
- Payment			1,375.59
- Excess			174.12

[a] The East Higgins Pass. herring along with excess herring from other locations were used as payment for the Strait of Georgia vessels; they were caught and pumped by the Central Coast charter vessels.

Table 3. Roe herring charter vessels by location and time period, B.C., 1987.

Vessel	Fishing Master	Location	Charter Timing	Charter Duration (days)
Royal Viking	R. Holkestad	QCI[a]	Mar 14-Apr 8	26
Karenora II	D. Smith	QCI	Mar 8-Apr 2	26
Semidi	T. Pallant	Pr. Rupert	Mar 16-Apr 10	26
Fisher Lassie II	V. Wilson	Central Coast	Mar 2-Apr 1	31
Kynoc	B. Wilson	Central Coast	Mar 10-Apr 9	31[d]
Seabound	M. Aleksich	SG/JS[b] Pr. Rupert	Feb 27-Mar 15 Mar 20-Apr 1	30[d]
Franciscan No. I	J. Brajcich	SG/JS	Feb 23-Mar 20	26
Argent Fisher	J. Malatestinic	SG/JS	Feb 23-Mar 20	26
Westview No. I	A. Salo	SG/JS	Feb 23-Mar 20	26
C Venture No. I	M. Carr	WCVI[c]	Feb 23-Mar 20	26
Vampy I	B. Fergusson	WCVI	Feb 27-Apr 2	33[d]
Elling K	F. Leland	WCVI	Feb 23-Mar 20	26

[a] Queen Charlotte Islands.

[b] Strait of Georgia/Johnstone Strait.

[c] West Coast Vancouver Island.

[d] Includes the extentions above the tendered duration.

Table 4. Comparison between the seine quota and charter payment requirement, 1980-1987 (values expressed in short tons, except where indicated).

Year	Roe Herring Quota	Seine Quota (Ave)[h] [no vessels]	Charter Bid (Ave) [no vessels]	Payment	Catch	Bid & Seine Quota Comparison Ratio[a]
1980	35,000	19,250 (79) [244]	1,086 (136) [8][b]	1,116	1,187	$\frac{136}{79} = 1.72$
1981*	30,000	16,500 (69) [240]	1,761 (147) [12][c]	1,761	2,107	$\frac{147}{69} = 2.13$
1982	35,000	19,250 (81) [239]	1,941 (149)[d] [13]	1,989	2,138	$\frac{149}{81} = 1.84$
1983	30,900	16,995 (71) [240]	1,490 (124) [12+2][e,f]	1,555/ 1,679[f]	1,886	$\frac{124}{71} = 1.75$
1984	34,502	18,976 (79) [240]	1,445 (120) [12][e]	1,511	1,628	$\frac{120}{79} = 1.52$
1985	20,723	11,398 (47) [241]	1,026 (93) [11][e]	1,033	1,212	$\frac{93}{47} = 1.98$
1986	13,666	7,516 (31) [241]	799 (72) [11][e]	871	1,050	$\frac{72}{31} = 2.32$
1987	30,449	16,747 (70) [240]	1,313 (109) [12][g]	1,376	1,550	$\frac{109}{70} = 1.56$

[a] Ratio of the average charter bid and average seine quota by year.

[b] 1980 - 20-day charters except for 27-day charter in the Central Coast.

[c] 1981 & 1982 - 26 days South Coast
- 27 days North Coast.

[d] Includes special research charter in Barkley Sound.

[e] 1983-1986 - 26 days for all charters.

[f] Includes special fall 1982 charter in the North Coast.

[g] 1987 - 26 day charters except 30 days for the Area 24 charter.

[h] Average projected catch per seine vessel.

* 1981 - 1st year of area licencing.

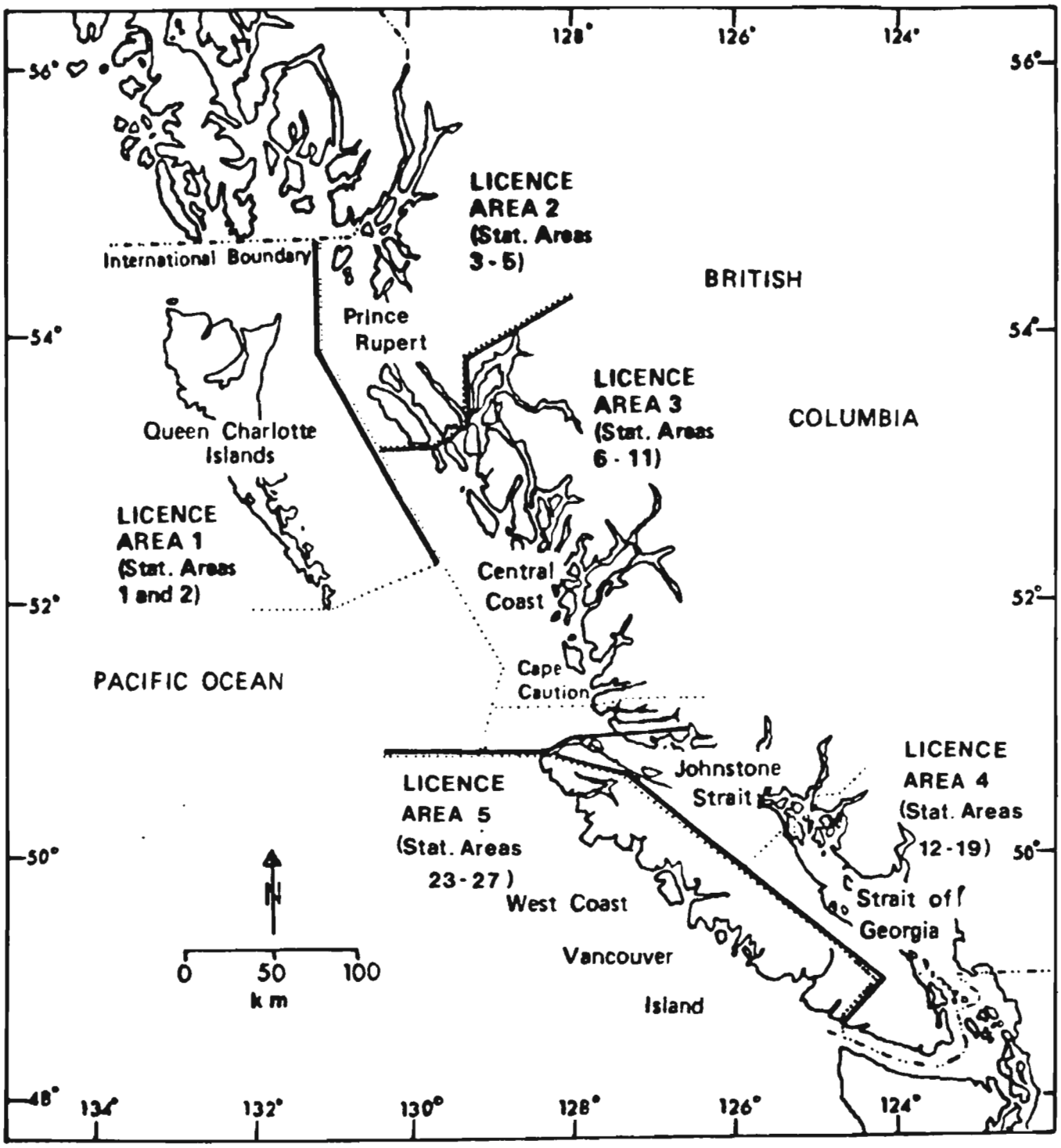

Fig. 1. Herring management divisions (dotted lines) and 1987 roe herring Licence Areas 1–5 (solid lines).

Onboard Sampling Procedure

Seine sample sets were made on all large bodies of herring, and samples of approximately 90 kg (200 lb) were brought aboard from the set using a small meshed dipnet or brailer. A Wheelhouse and Sample Log sheet, which doubles as a length measurement data sheet, was completed after every set (Appendix Figs. 1a & 1b). Another random sample of approximately 18 kg (40 lb) was taken from the same set for further laboratory analysis at FRB. Samples were also retained for special FRB research studies in selected locations along the coast.

The onboard data sheets and sampling procedures are described below.

1. Onboard data records

i) Daily log

The daily log covers all activities of the charter vessel while assessing the herring stocks. This includes a summary of discussions with the vessel master on fish movement and behaviour patterns. The daily logs from the previous year are also placed aboard the charter vessels as a reference for past fish behavior and distribution patterns in a particular location.

ii) Wheelhouse and Sample Log

This data sheet is completed after every set, including water hauls, and provides a record of the seine set including biomass estimates and roe yield information (Appendix Figs. 1a and 1b). Information from this data sheet is reported to the District Management Coordinator by radio telephone. In 1985 the Wheelhouse and Sample Log was revised to include more information.

iii) Onboard sampling

a) Herring measurement

Standard length measurements (Appendix Fig. 2) obtained from a random sample of 100 herring are recorded directly on a Wheelhouse and Sample Log (Appendix Figs. 1a and 1b). The herring below a "cutoff" length (predetermined from past year's age/length data) are judged to be recruiting herring (Appendix Table 2). These small herring are less desireable due to their smaller gonads and therefore, lower roe yield.

In addition, changes in the percentage of herring below the "cutoff" length could indicate a change in stock composition and may be important in setting fishery boundaries.

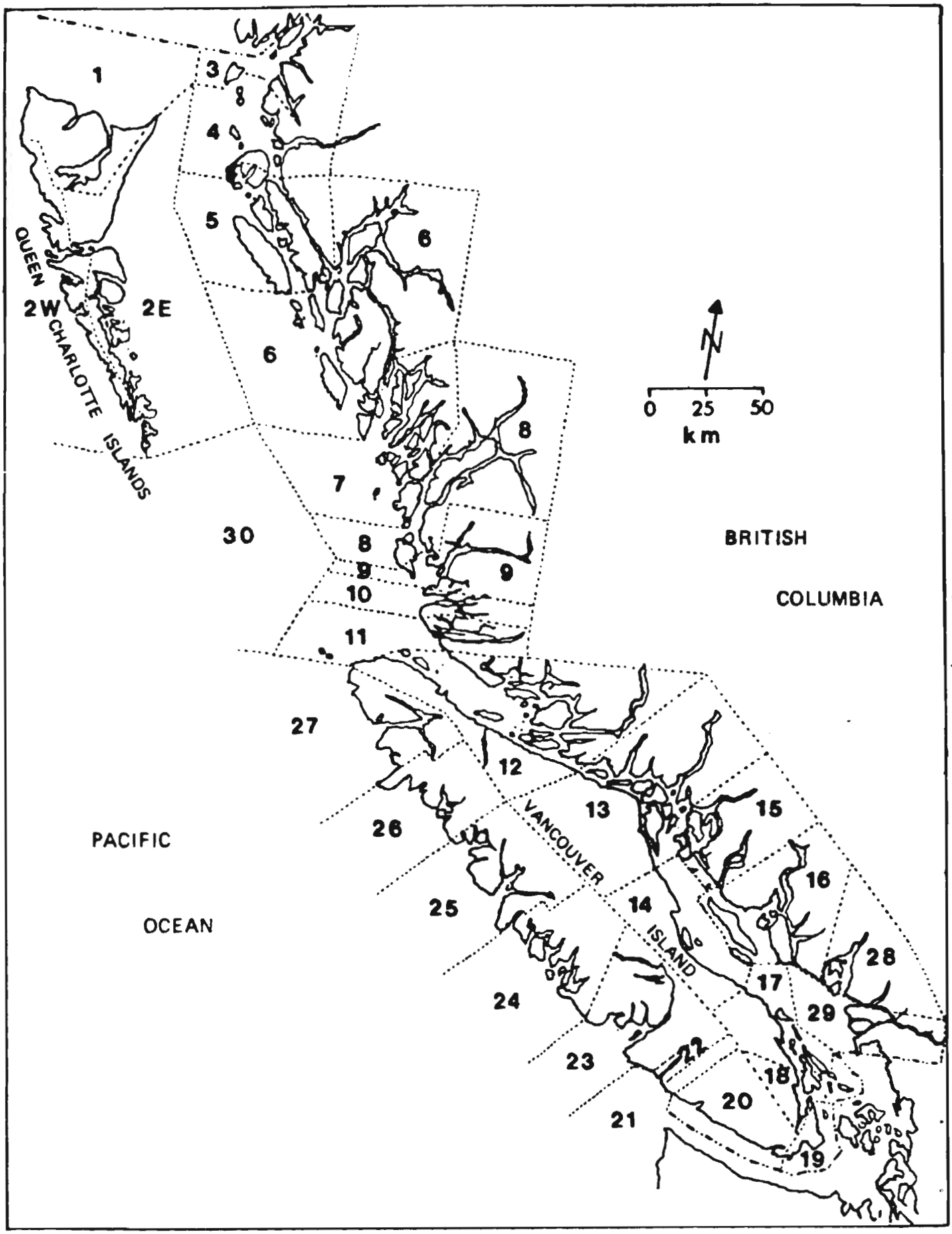

Fig. 2. Statistical Areas in British Columbia.

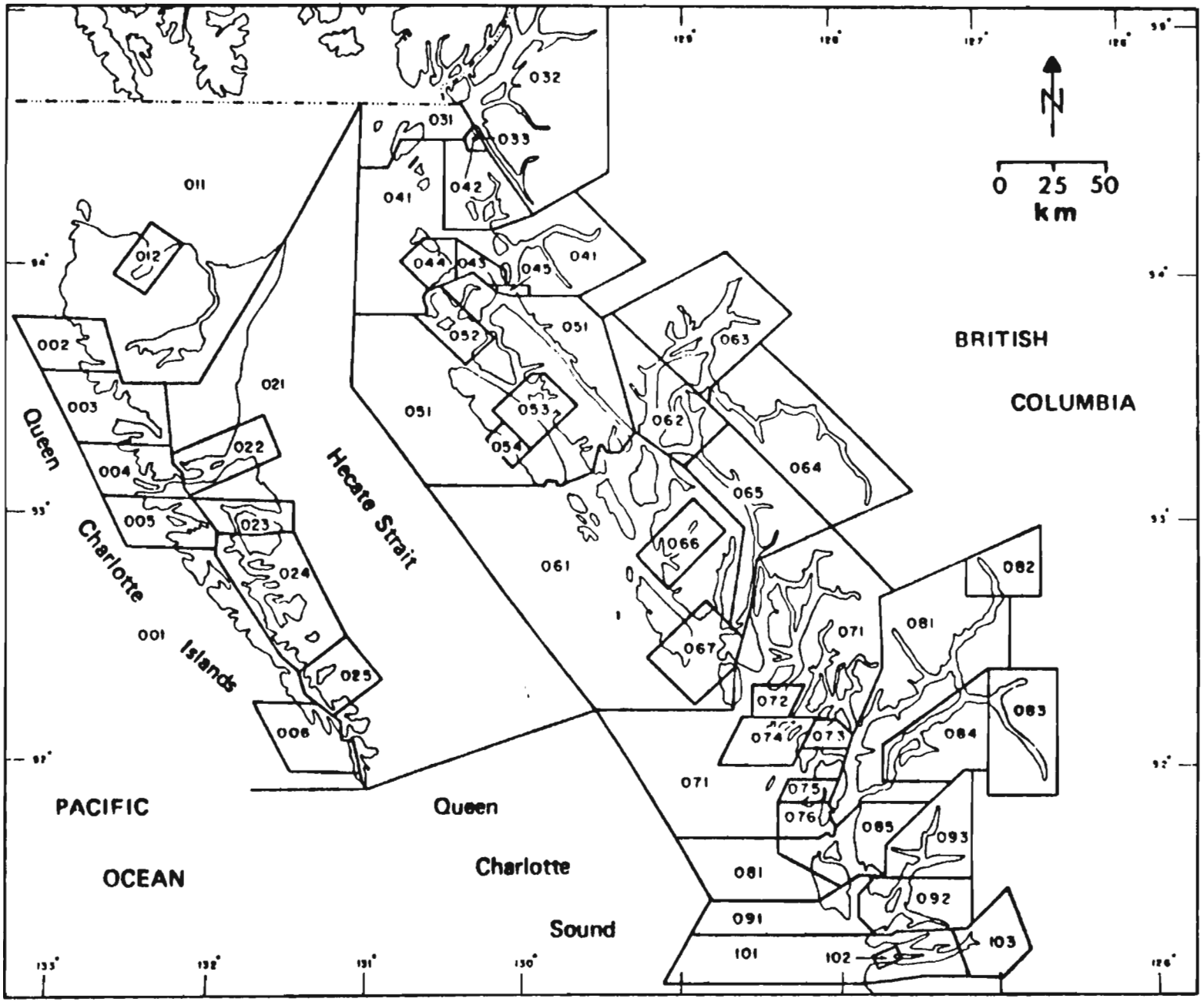

Fig. 3. Herring sections in northern British Columbia.

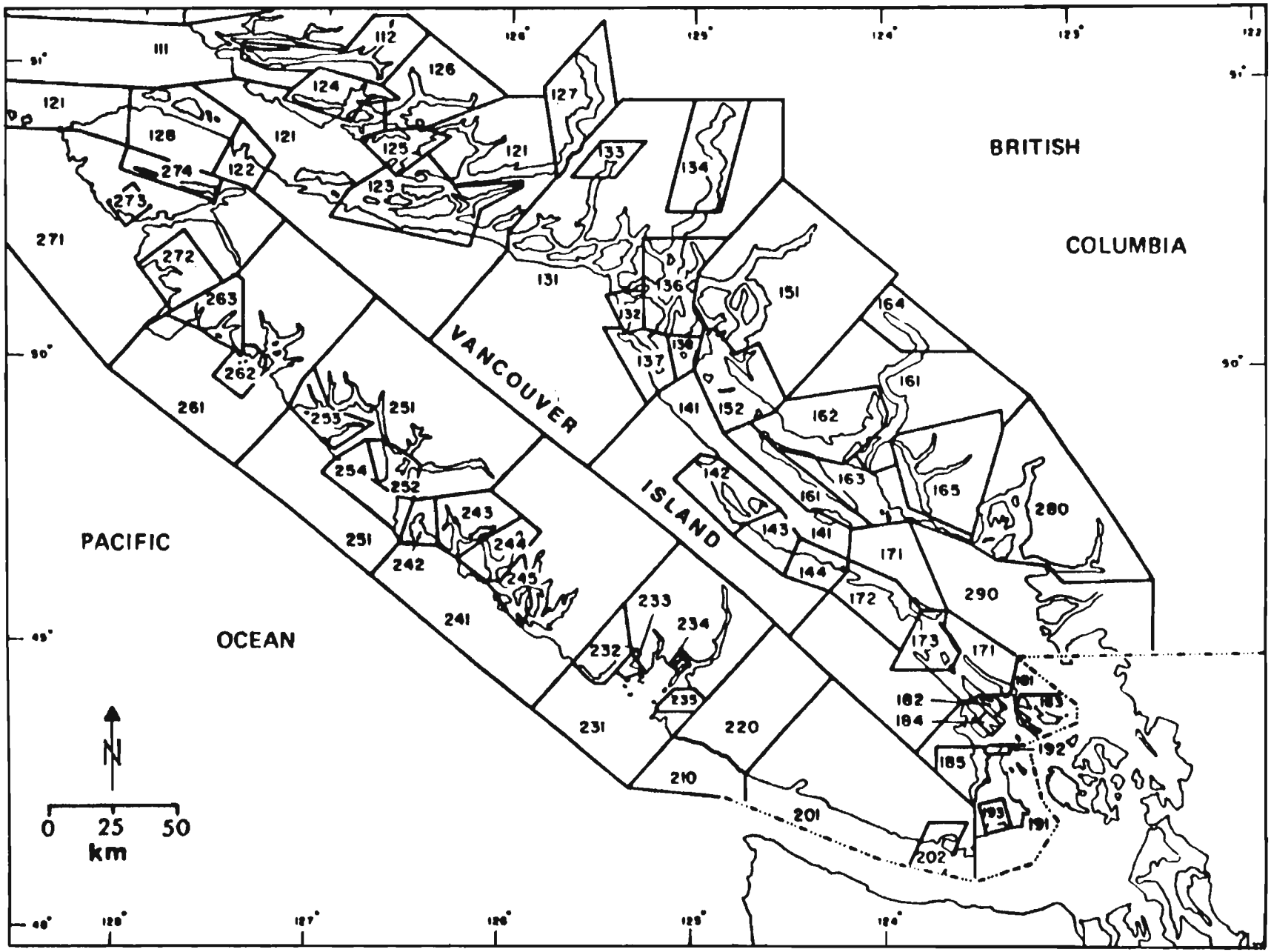

Fig. 4. Herring sections in southern British Columbia.

Table 5. Herring divisions and sections in British Columbia.

SECTION		SECTION		SECTION		SECTION	
Number	Name	Number	Name	Number	Name	Number	Name
Queen Charlotte Islands		**Central Coast (cont'd)**		**Strait of Georgia**		**West Coast Vancouver Island**	
011	Other Area 1	085	Kwakshua Channel	152	Lund	232	Macoah Pass
012	Naden Harbour	084	Burke Channel	162	Stillwater	233	Mayne Bay
006	Louscoone Inlet	091	Other Area 9	142	Baynes Sound	210	Area 21
001	Other Area 2W	092	Rivers Inlet Mouth	143	Qualicum	218	Offshore Area 21
002	Port Louis	093	Rivers Inlet Head	144	French Creek	220	Nitinat Lake
003	Rennell Sound	101	Other Area 10	172	Nanoose Bay	231	Other Area 23
004	Cartwright Sound	102	Takush Harbour	173	Yellow Point	234	Useless Inlet
005	Englefield Bay	103	Smith Inlet Head	182	Ganges Harbour	235	Bamfield Inlet
023	Cumshewa Inlet	061	Other Area 6	183	Plumper Sound	238	Offshore Area 23
025	Skincuttle Inlet	062	Promise Island	290	Boundary Bay	244	Whitepine Cove
021	Other Area 2E	063	Kitimat Arm	136	Other Area 13 Gulf	245	Meares Island
022	Skidegate Inlet	064	Gardner Canal	137	Heriot Bay	241	Other Area 24
024	Laskeek Bay	065	Princess Royal Channel	138	Marina Island	242	Hesquiat Harbour
North Coast		066	Surf Inlet	141	Other Area 14	243	Sydney Inlet
033	Port Simpson	071	Other Area 7	151	Other Area 15	248	Offshore Area 24
042	Big Bay	081	Other Area 8	161	Other Area 16	252	West Nootka
043	Malacca Passage	082	Kimsquit Bay	163	Pender Harbour	254	Bajo Point
044	Edye Passage	083	Bentinck Arms	164	Queens Reach	253	Nuchatlitz Inlet
045	Gibson Group	**Johnstone Strait**		165	Sechelt Inlet	272	Brooks Bay
052	Kitkatla Channel	123	Cracroft Island	171	Other Area 17	273	Winter Harbour
031	Other Area 3	124	Watson Island	181	Other Area 18	251	Other Area 25
032	Portland Inlet	125	Eden Island	184	Fulford Harbour	261	Other Area 26
041	Other Area 4	126	Kingcome Inlet	185	Saanich Inlet	262	Clanninick Cove
051	Other Area 5	127	Knight Inlet	191	Other Area 19	263	Checleset Bay
053	Anger Island	111	Other Area 11	192	Tsehum Harbour	271	Other Area 27
054	Foul Bay	112	Nugent Sound	193	Victoria Harbour	274	Holberg Inlet
Central		121	Other Area 12	201	Other Area 20		
067	Kitasu Bay	122	Beaver Harbour	202	Sooke Inlet		
072	Powell Anchorage	128	Goletas Channel	280	Howe Sound		
073	Gunboat Passage	131	Other Area 13 Strait				
074	Thompson Bay	132	Kanish Bay				
075	McNaughton Group	133	Loughborough Inlet				
076	Kildidt Sound	134	Bute Inlet				

2. Roe yield

During the 1987 roe herring fishery, two methods of determining roe yield were used:

a) Volumetric method - this is the commonly used method which consists of filling a standard 18 l (4 imp. gal.) bucket level to the top with herring, stripping the ripe female roe into a calibrated volumetric cylinder and recording the percentage off the scale (Appendix Table 3).

b) Weight method - this was used in the Strait of Georgia - the actual weight of the herring sample and roe is used to calculate the roe yield (Appendix Table 4).

In this report, the roe yield information tables give volume and adjusted volume or weight and adjusted weight depending on the area sampled. The adjusted roe yield values assume a 50:50 male/female sex ratio and the formula used for this adjustment is shown in Appendix Table 5. Generally, the herring population will have a 50:50 male/female sex ratio. However, this may not be true in all cases. For example, if the stocks are in a declining phase, two-year-old males may recruit to the spawning stock, rendering males the dominant sex; males breaking off from the main school just prior to spawning could be another factor affecting the overall sex ratio. Therefore, a 50:50 male/female sex ratio should be assumed with caution.

3. Laboratory samples

After each set, a biological sample containing a minimum of 100 herring was placed in a plastic bucket, sealed and either frozen or iced down for delivery to FRB for further analysis. During 1987, additional FRB samples were retained from preselected locations along the coast for determining herring fecundity and the Gonosomatic Index (GSI) used in predicting the rate of herring maturation.

RESULTS

During the 1987 roe herring charter program, the 12 charter seiners made 397 seine sample sets for an average of 33 sets per vessel (Table 6). A total of 884 roe tests were carried out onboard the charter vessels and 275 samples were retained for the FRB laboratory (Table 6). Approximately 100 samples were also retained for special research studies, i.e. Gonosomatic Index and fecundity studies. In 1987, the roe yields for both the seine and gillnet fisheries were generally good, ranging between 10-14% for seines and 12% plus for gillnets (Table 7). Hydroacoustic biomass estimates, roe yield information, sea surface water temperatures and length frequency distributions of herring are shown for each seine sample set in Tables 8-33. Also included are results from samples obtained from spawn-on-kelp fishing operations, herring ball samples and gillnet test fishing samples.

Table 6. Number of seine sets, roe tests and biological samples by charter vessel, B.C., 1987.

Location (Stat. Area)	Charter Vessel	No. of Sets	No. of Roe Tests	No. of Biological Samples Retained[a]
QCI (2W & 2E)	Royal Viking	19	59	15
QCI (2E)	Karenora II	27	71	19
Prince Rupert (3-5)	Semidi	31	107	24
Prince Rupert/split (3-5)	Seabound	24	60	18
Central Coast (6-8)	Fisher Lassie II	32	49	26
Central Coast (6-8)	Kynoc	34	67	28
Strait of Georgia/Split (14, 15 & 17)	Seabound	42	71	28
Strait of Georgia (14, 17 & 18)	Fransiscan No. I	30	67	24
St. of Georgia (13, 14, 15, & 17)	Argent Fisher	39	62	25
Strait of Georgia (13-17)	Westview No. I	39	63	25
WCVI (23)	C. Venture No. I	44	104	33
WCVI (23-24)	Vampy I	23	69	19
WCVI (25-27)	Elling K	13	35	11
	Total	397	884	295
	Average/Vessel	33	74	25
	Range/Vessel	13-44	35-107	11-33

[a] In addition to the biological samples, 100 samples were retained for special research studies.

Table 7. Seine and Gillnet roe herring openings and catch, B.C., 1987

Licence Area	Location (sub-area)	Date/Time (duration)	Quota (tons)	Hailed catch (seiners)	Est. Roe Yield % (ave.)
		SEINE			
Queen Charlotte Islands	Burnaby Straits (2-13)	Mar 20/1032-1421 (3 hr 49 min)	**1555**	**2061** (30)	(13)
Prince Rupert	Kitkatla Inlet (5-4, 5-5, 5-9)	Mar 31/1118-1908 (7 hr 50 min)	**1700**	819	(12)
	(5-4)	Apr 1/1003-1009 (6 min)		578	
	(5-4)	Apr 1/1300-1308 (8 min)		595	
				1992 (33)[a]	
Central Coast	Lower Spiller & Seaforth Ch. area (7-12, 7-13)	Mar 25/1216-1740 (5 hr 24 min)	**2861**	**2673** (49)	(14)
Strait of Georgia	Powell R. to Lund (15-2)	Mar 14/1403-2000 (5 hr 57 min)	**2928**	2282	(10)
		Mar 15/0802-1115 (3 hr 13 min)		1150	
				3432 (33)	
West Coast Vancouver Island	Barkley Sound (23-9, 23-10)	Mar12/1201-1456 (2 hr 55 min)	**7703**	**15143** (96)	(12)
		Total Seine	**16,747**	**25,301**	

[a] The final hails from vessels leaving the grounds at Kitkatla was 2118, thus, the total catch could be 126 tons more, or 25,427 tons.

Table 7 (cont'd). Roe herring openings and catch, B.C., 1987

Licence Area	Location (sub-area)	Date/Time (duration)	Quota (tons)	Hailed catch (punts)	Est. Roe Yield % (ave.)
		GILLNET			
Prince Rupert	Big Bay (4-5, 4-7, 4-8, 4-14)	Mar 24/0800-1600 (8 hr)	**4300**	2858 (509)	(13+)
	Big Bay (4-5, 4-7, 4-8, 4-14)	Mar 25/0730-1330 (6 hr)		503 (509)	
	Big Bay (3-4, 4-5, 4-6, 4-7, 4-8, 4-14)	Mar 29/1000-1800 (10 hr)		701 (509)	
	N. Porcher I. (4-9)	Apr 2/1000-1330 (3 hr 30 min)		607 (436)	
				4469	
Central Coast	Kitasu Bay (6-18)	Mar 30/0900-1800 (9 hr)	**800**	373 (60)	(12+)
	Powell Anch. (7-9)			388 (23)	
	Stryker Bay (7-18)			218 (17)	
				979	
Strait of Georgia	Hornby/Denman (14-7, 14-9, 14-10, 14-11)	Mar 9/1030-1800 (7 hr 30 min)	**5942**	1625	(12+)
	Hornby/Denman/Qualicum (14-4, 14-5, 14-7, 14-9, 14-10, 4-11)	Mar 17/0800-1700 (9 hr)		300 (130)	
	Yellow Point (17-4, 17-5, 17-7, 17-16)			1644 (371)	
	Hornby/Denman/Qualicum (14-1, 14-4, 14-5, 14-7, 14-9, 14-10, 14-11)	Mar 18/0800-2000 (12 hr)		492 (65)	
	Yellow Point			2579 (430)	
	Same areas opened as March 17.			**6640**	
West Coast Vancouver Island	Esperanza/Nuchatlitz (25-13)	March 12/0800-1815 (10 hr 15 min)	**2660**	**2810**	(12+)
		Total Gillnet	**13,702**	**14,898**	

The sampling frequency and distribution was generally acceptable in 1987 but more effort would have improved the coverage in the following locations.

1. Northern West Coast Vancouver Island (Stat. areas 25-27). The charter vessel was involved in the pre-fishery assessment for the gillnet fishery longer than anticipated, therefore, the sampling effort in other locations was reduced. For 1988, a fourth vessel will be considered for the West Coast Vancouver Island area.

2. Southern Central Coast, Queen Charlotte Sound and Johnstone Strait areas (Stat. areas 9-12). The herring stocks in these areas are considered minor stocks and have had limited coverage in the past by Central Coast and Strait of Georgia vessels if time allowed; no samples were collected in 1987. For 1988, an attempt will be made to improve the coverage.

Table 8. Seine set data and roe yield information. ROE HERRING CHARTER SEINER " ROYAL VIKING ", STAT. AREAS 2E & 2W, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage In Loc.	Tonnage Set On	Tonnage Est. Catch	Temp. (C)	Test No.	Sex Ratio M No.	Sex Ratio M %	Sex Ratio F No.	Sex Ratio F %	Roe Yield % Vol.	Roe Yield % Adj. Vol.	Roe Grade (Pcs) #1	Roe Grade (Pcs) #2	Roe Grade (Pcs) #3	Spn Out	Juv. or Imm.	Average Length (cm)
002 (2W)	1	Port Louis - (N.E. of Benson Rock)	13/03/87	1300	400	150	100	7.8	1	105	57	79	43	7.0	8.1	57	13	9			18.0
									2	98	57	73	43	5.5	6.4	44	9	20	1		
									3	102	60	67	40	5.8	7.3	43	12	12	3		
003 (2W)	2	Shields Bay (Inside Dawson Hd.)	14/03/87	1905	300/400	100+	50/75	8.0	1	72	49	74	51	6.0	5.9	42	4	28	3		19.3
									2	82	56	65	44	2.0	2.3	19	10	36	7		
									3	80	56	64	44	2.0	2.3	17	11	36	5		
003 (2W)	3	Head of Seal Inlet	15/03/87	1015	500	200+	75		1	75	52	68	48	9.0	9.4	54	1	13			19.1
									2	78	52	71	48	10.0	10.4	59	2	10			
									3	97	59	67	41	7.0	8.5	50	6	11			
005 (2W)	4	Inskip Channel - (E of Hastings Pt.)	16/03/87	1100		50	0	8.1		Water Haul											
005 (2W)	5	Inskip Channel - (W. of Leopold Is.)	16/03/87	1240	Set not representative		5		1	42	48	46	52	10.0	9.6	27	5	14			
005 (2W)	6	Inskip Channel - (W. of Leopold Is.)	16/03/87	1915	600+	300+	200	8.1	1	57	59	40	41	8.0	9.8	31	3	6			21.6
									2	49	51	48	49	9.0	9.2	30	10	8			
									3	55	56	44	44	7.0	8.0	23	9	12			
024 (2E)	7	Juan Perez Sound - (Btwn Newberry Pt. & All Alone Stone)	19/03/87	1105	300/400	200	0			Water Haul											
024 (2E)	8	3/4 m. E. of Newberry Point	19/03/87	1150		100+	50	8.0	1	38	46	44	54	14.0	13.0	41	1	2	2		22.7
									2	43	49	45	51	14.0	13.7	40	0	5			
									3	45	53	40	47	12.0	12.8	36	1	3			
024 (2E)	9	1/4 m. W. of Newberry Point	19/03/87	1900	300/400	300	250+	8.0	1	34	43	46	57	12.0	10.5	37	2	7	2		22.8
									2	47	47	53	53	11.5	10.8	40	7	6	2		
									3	43	48	47	52	14.0	13.5	43	1	3			
									4	48	52	45	48	12.0	12.5	38	2	5			
									5	45	47	51	53	12.0	11.3	44	0	7	2		
025 (2E)	10	Juan Perez Sd.- (N. of Kat Island)	20/03/87	0625		200	15/20	8.0	1	56	53	50	47	12.0	12.8	41	2	7			22.1
									2	55	59	39	41	10.0	12.2	31	2	6	1		
									3	56	56	44	44	12.5	14.2	42	0	2			
									4	55	55	46	45	12.0	13.3	41	0	5			

Table 8 (cont'd) Seine set data and roe yield information. ROE HERRING CHARTER SEINER " ROYAL VIKING ", STAT. AREAS 2E & 2W, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage In Loc.	Tonnage Set On	Tonnage Est. Catch	Temp. (C)	Test No.	Sex Ratio M No.	Sex Ratio M %	Sex Ratio F No.	Sex Ratio F %	Roe Yield % Vol.	Roe Yield % Adj. Vol.	Roe Grade (Pcs) #1	Roe Grade (Pcs) #2	Roe Grade (Pcs) #3	Spn Out	Juv. or Imm.	Average Length (cm)
024 (2E)	11	1/2 m. W. of Newberry Point	21/03/87	1915	1000	200	100+	8.0	1	35	55	45	45	13.0	14.4	37	1	7	2		23.0
									2	45	52	41	48	10.5	10.9	32	2	7			
									3	36	46	42	54	14.0	13.0	37	2	3	2		
									4	42	53	37	47	12.0	12.8	32	1	4	2		
									5	36	44	45	56	13.0	11.6	39	1	5	1		
025 (2E)	12	Burnaby Strait - (Centre Islet)	22/03/87	0930		300	30/40	8.0	1	40	48	43	52	13.8	13.3	41	1	1			22.8
									2	36	41	51	59	13.3	11.3	46	1	4	1		
									3	48	48	53	52	15.0	14.4	48	3	2			
025 (2E)	13	Juan Perez Sound - (Kat Island)	23/03/87	1050		85	85	8.5	1	37	43	50	57	15.0	13.2	48	1	1			22.6
				Charter Payment Test 1-5 (Begin pumping)					2	40	46	47	54	15.0	13.9	47	0	0			
									3	37	43	49	57	14.5	12.7	47	2	0			
									4	40	43	54	57	15.5	13.6	54	0	0			
									5	41	52	38	48	12.0	12.5	37	0	1			
				Test 6-8 (Mid pumping)					6	43	49	45	51	14.0	13.7	44	1	0			
									7	47	49	49	51	14.5	14.2	46	3	0			
									8	44	51	43	49	14.0	14.3	42	1	0			
				Test 9-11 (End pumping)					9	38	44	49	56	14.5	12.9	48	1	0			
									10	44	51	42	49	13.0	13.3	40	2	0	1		
									11	43	48	47	52	14.0	13.5	46	1	0			
003 (2W)	14	Rennell Sd - (Dawson Hd.)	27/03/87	1035		50	0	8.1	Water Haul												
003 (2W)	15	Rennell Sound - (Clapp Basin)	27/03/87	1105	800+	30	30	8.5	1	63	51	61	49	12.0	12.2	60	1	0			19.7
									2	77	57	57	43	11.0	12.8	57	0	0	1		
									3	55	47	62	53	14.5	13.7	62	0	0			
005 (2W)	16	Inskip Channel	31/03/87	0700	825	250	250	8.4	1	40	50	40	50	14.5	14.5	40	0	0			24.1
									2	32	44	41	56	16.0	14.3	41	0	0			
									3	32	41	46	59	15.0	12.7	46	0	0			
024 (2E)	17	Atli Inlet - (1 mi. S. Dodge Pt.)	03/04/87	0700	300+	Flip-pers		8.5	1	30	43	40	57	0.0	0.0	0	0	40	31		22.4
									2	28	40	42	60	0.0	0.0	2	0	40	29		
									3	44	54	38	46	0.0	0.0	1	1	36	23		
024 (2E)	18	Selwyn Inlet	03/04/87	2010	1000	300	300	8.5	1	30	42	41	58	12.5	10.8	41	0	0			22.2
									2	28	41	40	59	11.5	9.7	40	0	0			
									3	44	47	49	53	12.5	11.8	49	0	0			
024 (2E)	19	Selwyn Inlet	06/04/87	1330		100	75	8.5	1	36	40	53	60	14.5	12.1	53	0	0			22.4
									2	29	33	59	67	16.5	12.3	58	1	0			
									3	36	37	61	63	16.5	13.1	57	4	0			

Table 9. Length frequency distribution of herring. ROE HERRING CHARTER SEINER " ROYAL VIKING ", STAT. AREAS 2E & 2W, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Biol. Sample No.	Length Frequency (cm) 12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	24 25	25 26	26 27	27 28	Sample Size	Average Length (cm)	Cutoff (cm)	% Below Cutoff
002 (2W)	1	Port Louis - N.E. of Benson Rock	13/03/87	1300	1				5	32	30	4	12	13	2			1		1		100	18.0	20.0	83
003 (2W)	2	Shields Bay - Inside Dawson Head	14/03/87	1905	2		1			5	14	15	27	31	5							98	19.3	20.0	62
003 (2W)	3	Head of Seal Inlet	15/03/87	1015	3				3	15	16	10	18	22	14		1		1			100	19.1	20.0	62
005 (2W)	4	Inskip Channel-E. of Hastings Pt.	16/03/87	1100			Water Haul																		
005 (2W)	5	Inskip Channel-W. of Leopold Is.	16/03/87	1240			Set not representative																		
005 (2W)	6	Inskip Channel-W. of Leopold Is.	16/03/87	1915	4						6	10	13	18	19	5	5	10	9	5		100	21.6	20.0	29
024 (2E)	7	Btw Newberry Pt. & All Alone Stone	19/03/87	1105			Water Haul																		
024 (2E)	8	3/4 m. E. of Newberry Point	19/03/87	1150	5						1	2	3	6	12	29	36	8	3			100	22.7	19.0	3
024 (2E)	9	1/4 m. W. Newberry Point	19/03/87	1900	6						3		2	4	12	31	28	17	3			100	22.8	19.0	3
025 (2E)	10	Juan Perez Sd.-N. of Kat Island	20/03/87	0625	7					2	3	2	5	15	15	24	20	8	5			99	22.1	19.0	7
024 (2E)	11	1/2 m. W. of Newberry Point	21/03/87	1915	8						1		3	3	9	27	39	12	4	1		99	23.0	19.0	1
025 (2E)	12	Burnaby Strait-Centre Island	22/03/87	0930	9					1	2		4	2	7	31	34	15	2	1		99	22.8	19.0	4
025 (2E)	13	Juan Perez Sound-Kat Island	23/03/87	1050	10		Charter Payment				2	1	5	5	10	36	29	9	3			100	22.6	19.0	3
003 (2W)	14	Rennell Sd.-across from Dawson Hd.	27/03/87	1035			Water Haul																		
003 (2W)	15	Rennell Sd.-Clapp Basin	27/03/87	1105	11				2	13	13	13	16	24	6	1	1	2	8	1		100	19.7	20.0	57
005 (2W)	16	Inskip Channel	31/03/87	0700	12							3	1	3	7	6	10	33	32	5		100	24.1	20.0	4
024 (2E)	17	Atli Inlet-1 m. S. Dodge Pt.	03/04/87	0700	13						5	3	12	10	8	17	19	17	6	4		101	22.4	19.0	9
024 (2E)	18	Selwyn Inlet	03/04/87	2010	14								5	13	24	34	20	4	1			101	22.2	19.0	0
024 (2E)	19	Selwyn Inlet	03/04/87	1330	15							1	3	11	20	29	26	7	3			100	22.4	19.0	1

Table 10. Seine set data and roe yield information. ROE HERRING CHARTER SEINER " KARENORA II ", STAT. AREA 2E, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage			Temp. (C)	Test No.	Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Spn Out	Juv. or Imm.	Average Length (cm)
					In Loc.	Set On	Est. Catch			M No.	%	F No.	%	Vol.	Adj. Vol.	#1	#2	#3			
024 (2E)	1	Juan Perez Sd - (NW side Huxley Is.)	08/03/87	0826		200	0	7.0		Water Haul											
025 (2E)	2	Huxley Island - (Burnaby Strait)	08/03/87	0955		100	0	7.0		Water Haul											
024 (2E)	3	Juan Perez Sd - (Newberry Point)	08/03/87	1924	1000	200	150	7.5	1	26	33	54	67	1.0	0.7	4	4	46			23.2
									2	35	44	44	56	1.0	0.9	4	5	35			
024 (2E)	4	Juan Perez Sd - (W Huxley Is.)	10/03/87	1543	300	75	75	7.5	1	41	53	36	47	6.0	6.4	17	6	13			23.3
									2	35	46	41	54	5.0	4.6	17	5	19			
									3	35	44	45	56	6.0	5.4	21	9	15			
025 (2E)	5	Juan Perez Sd - (Kat Island)	11/03/87	0852	500	250	200	7.5	1	44	54	38	46	7.0	7.6	20	4	14			23.3
									2	40	48	44	52	5.5	5.3	19	8	17			
									3	33	43	43	57	7.5	6.6	22	7	14			
024 (2E)	6	Juan Perez Sd - (W Huxley Is.)	12/03/87	1930	110	110	40	8.0	1	42	55	34	45	3.0	3.3	9	10	15			23.3
									2	35	44	45	56	5.5	4.9	16	8	21			
									3	37	43	49	57	7.0	6.1	21	7	21			
									4	47	54	40	46	4.0	4.3	13	2	25			
024 (2E)	7	Juan Perez Sd - All Alone Stone	15/03/87	1832	1000	300	250	8.2	1	48	54	41	46	6.0	6.5	20	10	11		1	23.2
									2	41	46	49	54	8.0	7.4	28	12	9		2	
									3	40	47	45	53	7.0	6.6	26	7	12			
									4	44	54	37	46	9.0	9.8	26	8	3			
									5	37	43	49	57	9.0	7.9	32	3	14			
025 (2E)	8	Burnaby Strait - (SE Section Is.)	16/03/87	0743	100	20	20	8.0	1	39	46	46	54	9.0	8.3	32	10	4			22.9
									2	40	49	42	51	8.0	7.8	26	6	10			
									3	44	51	42	49	7.5	7.7	24	7	11			
									4	48	52	44	48	9.0	9.4	31	5	8			
024 (2E)	9	W. of Sedgwick Bay	17/03/87	1230	700	250	0			Water Haul											
024 (2E)	10	Head of Sedgwick Bay	17/03/87	1810	100	100	0			Water Haul											

Table 10 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER " KARENDRA II ", STAT. AREA 2E, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage			Temp. (C)	Test No.	Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Spn Out	Juv. or Imm.	Average Length (cm)
					In Loc.	Set On	Est. Catch			M No.	%	F No.	%	Vol.	Adj. Vol.	#1	#2	#3			
024 (2E)	11	Head of Sedgwick Bay	17/03/87	1843	800	250	250	8.0	1	50	53	44	47	5.0	5.3	23	7	14			22.5
									2	50	58	36	42	6.0	7.1	21	9	6			
									3	42	48	46	52	7.0	6.7	21	13	12			
025 (2E)	12	Burnaby Strait - (SE Section Is.)	18/03/87	0726	2000	300-350	300-350	8.0	1	43	51	42	49	11.5	11.7	37	4	1			23.2
									2	34	41	49	59	13.0	11.0	45	3	1			
									3	36	46	43	54	14.0	13.0	40	1	2			
									4	48	56	38	44	11.3	12.8	34	1	3			
									5	49	52	45	48	12.0	12.5	42	2	1			
024 (2E)	13	Juan Perez Sd - (Monument Rock)	18/03/87	2010		skimmer	75	8.2	1	42	55	34	45	10.3	11.4	31	0	3			23.6
									2	42	49	44	51	11.5	11.3	38	2	4			
									3	49	56	38	44	9.0	10.2	31	3	4			
									4	37	43	49	57	12.5	11.0	41	4	4			
									5	49	56	39	44	11.0	12.5	35	0	4		1	
024 (2E)	14	Juan Perez Sd - (All Alone Stone)	19/03/87	1842		150	50-60	8.0	1	42	50	42	50	12.0	12.0	38	2	2	1		23.0
									2	54	63	32	37	9.0	12.2	28	1	3	3		
									3	45	51	43	49	13.0	13.3	37	2	4	1		
									4	42	48	46	52	13.0	12.5	42	2	2	2		
									5	49	56	38	44	12.5	14.2	35	1	2	2		
025 (2E)	15	Juan Perez Sd - (Outside Park Is.)	20/03/87	0500		skimmer	50	8.0	1	44	56	35	44	11.0	12.5	32	3	2	1		23.1
									2	42	54	36	46	10.5	11.4	33	1	4	2		
									3	30	41	44	59	13.0	11.0	40	0	0	3		
									4	39	50	39	50	13.0	13.0	38	1	1	2		
									5	34	44	43	56	14.0	12.5	40	2	3	6		
024 (2E)	16	Juan Perez Sd - (Huxley Island)	21/03/87	1230		50-60	0			Water Haul											
025 (2E)	17	Center Island	22/03/87	1110		200-250	180		1	34	41	48	59	14.5	12.3	48	0	2			22.3
							Charter Payment		2	46	50	46	50	13.0	13.0	43	1	1			
									3	46	49	47	51	15.0	14.7	46	0	1			
									4	53	58	39	42	12.0	14.3	38	0	2			
									5	41	44	53	56	14.5	12.9	51	0	0			
									6	39	45	48	55	15.5	14.1	48	0	0			
									7	41	45	51	55	14.8	13.5	46	1	4			
									8	38	44	48	56	15.0	13.4	46	0	2			
									9	45	49	46	51	13.5	13.2	42	2	1			
									10	56	58	41	42	11.5	13.7	39	1	1			

Table 10 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER " KARENORA II ", STAT. AREA 2E, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage			Temp. (C)	Test No.	Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Spn Out	Juv. or Imm.	Average Length (cm)
					In Loc.	Set On	Est. Catch			M No.	%	F No.	%	Vol.	Adj. Vol.	#1	#2	#3			
025 (2E)	18	Poole Inlet	26/03/87	1110	40	10	10		1	48	56	38	44	11.0	12.5	38	0	0	1		23.2
									2	46	55	38	45	13.0	14.4	38	0	0	2		
024 (2E)	19	Selwyn Inlet - (Kilmington Point)	27/03/87	1456		75	0			Water Haul											
024 (2E)	20	Selwyn Inlet - (Kilmington Point)	27/03/87	1730	500	150	150		1	52	54	44	46	11.0	12.0	41	3	0			22.0
									2	35	39	55	61	14.5	11.9	55	0	2			
									3	48	45	58	55	13.8	12.5	54	2	2			
023 (2E)	21	Cumshewa Inlet - (Conglomerate Pt.)	28/03/87	1635	350	200	200		1	48	52	44	48	12.5	13.0	42	2	0			22.6
									2	49	56	39	44	12.0	13.6	37	2	0			
023 (2E)	22	Cumshewa Inlet - (W Kitson Point)	29/03/87	0817	350	50	7		1	57	58	41	42	11.0	13.1	41	0	0			22.3
									2	50	54	42	46	12.0	13.0	42	0	0			
025 (2E)	23	Burnaby Strait - (Inside Section Is.)	30/03/87	1024		75	75		1	44	49	45	51	14.0	13.7	44	0	1			22.4
									2	44	49	46	51	15.0	14.7	45	1	0	1		
									3	52	53	47	47	13.5	14.4	45	0	2			
024 (2E)	24	Sedgwick Bay - (Inside Sedgwick Pt.)	31/03/87	0650	325	50	0			Water Haul											
024 (2E)	25	Head of Sedgwick Bay	31/03/87	1638		200	0			Water Haul											
024 (2E)	26	Head of Sedgwick Bay	31/03/87	1859	300-400	150	75		1	54	53	47	47	12.0	12.8	45	2	0	1		21.8
									2	51	50	50	50	13.0	13.0	48	2	0			
024 (2E)	27	E side of Sedgwick Bay	01/04/87	1910	500-600	50	50	8.0	1	45	49	47	51	14.3	14.0	42	2	3			22.3
									2	41	42	57	58	15.5	13.4	53	4	0			
									3	42	41	60	59	15.0	12.7	55	3	2			

Table 11. Length frequency distribution of herring. ROE HERRING CHARTER SEINER "KARENORA II", STAT. AREAS 2E, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Biol. Sample No.	Length Frequency (cm) 12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	24 25	25 26	26 27	27 28	Sample Size	Average Length (cm)	Cutoff (cm)	% Below Cutoff
024 (2E)	1	Juan Perez Sd-NW side Huxley Is.	08/03/87	0826		Water				Haul															
025 (2E)	2	Huxley Island-Burnably Stralt	08/03/87	0955		Water				Haul															
024 (2E)	3	Juan Perez Sd-Newberry Point	08/03/87	1924	1							2	3	9	28	30	20	8				100	23.2	19.0	0
024 (2E)	4	Juan Perez Sd-W. Huxley Island	10/03/87	1543	2								4	8	21	42	19	6				100	23.3	19.0	0
025 (2E)	5	Juan Perez Sd-Kat Island	11/03/87	0852	3							1	4	9	28	31	18	6	3			100	23.3	19.0	0
024 (2E)	6	Juan Perez Sd-W. Huxley Island	12/03/87	1930	4							2	4	8	22	35	23	5	1			100	23.3	19.0	0
024 (2E)	7	Juan Perez Sd-All Alone Stone	15/03/87	1832	5						2		1	9	34	31	15	8				100	23.2	19.0	2
025 (2E)	8	Burnaby Strait-SE Section Is.	16/03/87	0743	6							4	6	13	25	34	14	4				100	22.9	19.0	0
024 (2E)	9	W. of Sedgwick Bay	17/03/87	1230		Water				Haul															
024 (2E)	10	Head of Sedgwick Bay	17/03/87	1810		Water				Haul															
024 (2E)	11	Head of Sedgwick Bay	17/03/87	1843	7							6	6	21	38	29	6	2	1			109	22.5	19.0	0
025 (2E)	12	Burnaby Strait-SE Section Is.	18/03/87	0726	8							2	2	8	33	28	19	6	2			100	23.2	19.0	0
024 (2E)	13	Juan Perez Sd-Monument Rock	18/03/87	2010	9							2	2	3	21	39	22	9	2			100	23.6	19.0	0
024 (2E)	14	Juan Perez Sd-All Alone Stone	19/03/87	1842	10								9	9	31	32	13	6				100	23.0	19.0	0
025 (2E)	15	Juan Perez Sd-Outside Park Is.	20/03/87	0500	11					1		1	4	6	34	35	16	2	1			100	23.1	19.0	1
024 (2E)	16	Juan Perez Sd-Huxley Island	21/03/87	1230	12	Water				Haul															
025 (2E)	17	Center Island	22/03/87	1110		Charter payment				2	2	5	9	16	30	26	4	3	1			98	22.3	19.0	4
025 (2E)	18	Poole Inlet	26/03/87	1110	13						1	3	1	8	23	40	20	4				100	23.2	19.0	1
024 (2E)	19	Selwyn Inlet-Killmington Point	27/03/87	1456	14	Water				Haul															
024 (2E)	20	Selwyn Inlet-Killmington Point	27/03/87	1730					1	1		9	16	18	28	18	7	1				100	22.0	19.0	2
023 (2E)	21	Cumshewa Inlet-Conglomerate Pt.	28/03/87	1635	15							4	6	16	28	28	8	9				100	22.6	19.0	0
023 (2E)	22	Cumshewa Inlet-W. Kitson Point	29/03/87	0817	16						1	6	10	21	28	20	12	1				99	22.3	19.0	1
025 (2E)	23	Burnaby Strait-Inside Section Is	30/03/87	1024	17				1	5	1	3	6	14	21	33	11	3				98	22.4	19.0	7
024 (2E)	24	Sedgwick Bay-Inside Sedgwick Pt.	31/03/87	0650		Water				Haul															
024 (2E)	25	Head of Sedgwick Bay	31/03/87	1638		Water				Haul															
024 (2E)	26	Head of Sedgwick Bay	31/03/87	1859	18					1	7	6	6	9	11	29	19	9	1			98	21.8	19.0	14
024 (2E)	27	East side of Sedgwick Bay	01/04/87	1910	19						1	2	4	11	20	30	18	10	4			100	22.3	19.0	3

Table 12. Seine set data and roe yield information. ROE HERRING CHARTER SEINER " SEMIDI ", STAT. AREA 3-5, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage			Temp. (C)	Test No.	Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Spn	Juv. or Imm.	Average Length (cm)
					In Loc.	Set On	Est. Catch			M No.	%	F No.	%	Vol.	Adj. Vol.	#1	#2	#3	Out		
034 (3)	1	Port Simpson - (Grassy Point)	16/03/87	1040	3000	100	30	7.0	1	45	49	46	51	0.5	0.5	4	8	34	2	3	21.7
									2	49	50	49	50	1.0	1.0	5	12	32	1		
									3	48	51	47	49	1.0	1.0	4	11	32			
034 (3)	2	Port Simpson - (Grassy Point)	16/03/87	1930	3000	500/600	100	7.0	1	49	47	55	53	0.9	0.8	3	12	40	1	7	21.1
									2	46	43	60	57	0.9	0.8	3	2	55	7	6	
									3	53	47	59	53	0.9	0.8	3	1	55	5	8	
052 (5)	3	Browning Entrance - (Willis Bay)	18/03/87	1320	1000	350/400	120	7.7	1	65	55	53	45	1.0	1.1	6	5	42			20.8
									2	62	52	58	48	0.5	0.5	2	6	50			
									3	64	51	62	49	1.0	1.0	3	10	49			
052 (5)	4	Browning Entr. - (off Viscount Pt.)	19/03/87	0840		200	0	7.4		Water Haul											
052 (5)	5	Browning Entr. - (Inside Goschen Pt.)	19/03/87	1030	800	400	200	7.6	1	52	50	52	50	2.0	2.0	11	19	22			21.4
									2	79	65	42	35	1.0	1.4	8	13	21			
									3	53	50	53	50	4.0	4.0	15	15	23			
052 (5)	6	Kitkatla Inlet - (W. of Snass Pt.)	19/03/87	1330	500	300	150	7.2	1	54	57	41	43	3.5	4.1	16	17	8			21.3
									2	62	57	47	43	4.5	5.2	20	13	14			
									3	57	48	63	52	5.0	4.8	21	25	17			
052 (5)	7	Kitkatla Inlet - (E. of Wilcox Grp.)	21/03/87	0740	600		150	7.2	1	78	66	41	34	3.0	4.4	17	19	5			20.6
									2	56	49	58	51	5.5	5.4	28	24	6			
									3	62	55	51	45	6.0	6.7	26	19	6			
052 (5)	8	Kitkatla Inlet (Winter Rocks)	21/03/87	1415	250	100	Few lbs.	8.0	1	64	64	36	36	5.0	6.9	21	12	3			21.7
						Set not representative			2	68	65	37	35	4.0	5.7	22	14	1			
051 (5)	9	Browning Entrance (Barren Rock)	22/03/87	0830	1200	200	0	7.0		Water Haul											
051 (5)	10	Browning Entrance (Prager Island)	22/03/87	1215	1200	350	80	7.5	1	68	54	59	46	3.5	3.8	17	19	23	1		21.1
									2	72	58	53	42	4.0	4.8	17	13	23			
									3	68	52	64	48	2.0	2.1	15	14	35			
052 (5)	11	South of Kitkatla Creek	25/03/87	0830		30	4	6.5	1	73	62	45	38	6.0	7.9	25	13	7			20.5
									2	56	50	57	50	6.0	6.0	32	23	2			
									3	56	46	66	54	8.0	7.4	45	16	5			
052 (5)	12	Kitkatla Inlet (Absalom Island)	25/03/87	1545	500	150	0	7.3		Water Haul											

Table 12 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER " SEMIDI ", STAT. AREA 3-5, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage			Temp. (C)	Test No.	Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Spn	Juv. or Imm.	Average Length (cm)
					In Loc.	Set On	Est. Catch			M No.	%	F No.	%	Vol.	Adj. Vol.	#1	#2	#3	Out		
052 (5)	13	N.of Absalom Is. (off Porcher Penn.)	25/03/87	1630	500	150+	15	7.0	1	76	61	49	39	6.5	8.3	32	10	7			20.8
									2	60	49	62	51	8.5	8.3	45	14	3			
									3	62	46	72	54	9.0	8.3	46	23	3			
052 (5)	14	Kitkatla Inlet (Gravel Pit)	26/03/87	0530		500	80	7.0	1	55	45	68	55	13.0	11.8	63	3	2			20.3
									2	59	48	64	52	10.0	9.6	52	8	4	1		
									3	60	48	64	52	10.5	10.1	53	6	5	1		
									4	61	49	64	51	10.5	10.3	54	8	2			
052 (5)	15	Kitkatla Inlet (Porcher Penn.)	27/03/87	0610	1000+	175	175	7.0	1	59	53	52	47	12.5	13.3	46	2	4			21.1
									2	61	50	62	50	12.0	12.0	56	2	4			
									3	61	50	62	50	9.5	9.5	56	5	1			
									4	60	47	67	53	10.0	9.4	54	6	7			
052 (5)	16	Dries Inlet	27/03/87	0920	1000+	500/600	200	7.5	1	67	53	60	47	10.0	10.6	55	3	2			20.9
									2	66	53	59	47	11.5	12.2	58	1	0			
									3	70	54	59	46	11.5	12.5	57	1	1			
									4	62	53	56	47	11.0	11.7	54	2	0			
052 (5)	17	Btw Kitkatla Creek & Gurd Is.	28/03/87	0840		250	0			Water Haul											
052 (5)	18	Kitkatla Inlet (Gravel Pit)	28/03/87	1225		125	90	7.5	1	63	53	55	47	9.0	9.6	50	4	1	1		20.2
									2	73	50	72	50	11.0	11.0	65	3	4			
									3	70	54	60	46	8.5	9.2	50	7	3			
									4	57	43	76	57	11.5	10.1	59	11	6			
									5	72	50	72	50	9.0	9.0	58	11	3			
052 (5)	19	Kitkatla Inlet (Off Nubble Point)	28/03/87	1620		200	40	8.0	1	68	51	66	49	6.5	6.6	60	2	4			20.3
									2	70	52	65	48	10.0	10.4	58	5	2			
									3	74	53	66	47	9.5	10.1	53	9	4	1		
									4	75	52	69	48	11.0	11.5	59	7	3			
									5	66	46	77	54	10.5	9.7	59	14	4			
052 (5)	20	Kitkatla Inlet (N. of Gurd Point)	29/03/87	0830		200/300	3/4	8.0	1	68	52	63	48	9.5	9.9	54	6	3			20.1
									2	81	58	59	42	9.0	10.7	54	2	3			
									3	69	50	70	50	11.0	11.0	61	5	4			
									4	59	50	58	50	9.0	9.0	46	8	4			
									5	77	55	62	45	10.0	11.1	57	2	3			
052 (5)	21	Btn Snass Point & Winter Rocks	29/03/87	1115			0			Water Haul											

Table 12 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER " SEMIDI ", STAT. AREA 3-5, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage In Loc.	Tonnage Set On	Tonnage Est. Catch	Temp. (C)	Test No.	Sex Ratio M No.	Sex Ratio M %	Sex Ratio F No.	Sex Ratio F %	Roe Yield % Vol.	Roe Yield % Adj. Vol.	Roe Grade (Pcs) #1	Roe Grade (Pcs) #2	Roe Grade (Pcs) #3	Spn Out	Juv. or Imm.	Average Length (cm)
052 (5)	22	Off Kitkatla Creek	29/03/87	1230		150	10	7.5	1	71	55	57	45	11.0	12.2	56	0	1			20.2
									2	67	82	15	18	13.0	36.1	12	1	2			
									3	62	47	70	53	12.0	11.3	66	3	1			
									4	55	40	81	60	11.0	9.2	71	10	0			
									5	91	59	63	41	8.0	9.8	51	11	1			
052 (5)	23	Kitkatla Inlet (Gravel Pit)	30/03/87	0815	200	150	50	7.5	1	53	56	42	44	9.5	10.8	39	0	3			21.5
									2	57	51	55	49	12.0	12.2	53	2	0			
									3	58	53	51	47	13.0	13.8	49	1	1			
									4	55	49	58	51	13.0	12.7	52	4	2			
									5	57	50	56	50	12.5	12.5	53	2	1			
052 (5)	24	Kitkatla Inlet (Porcher Penn.)	30/03/87	1200	1500	200+	75	7.5	1	68	56	53	44	11.0	12.5	51	0	2	1		
									2	70	55	58	45	10.5	11.7	56	0	2		1	
									3	57	49	60	51	13.0	12.7	59	1	0	1	1	
									4	66	54	57	46	12.5	13.6	55	0	2		1	
									5	75	59	52	41	11.5	14.0	52	0	0	1	2	
052 (5)	25	Kitkatla Inl. (Porcher Penn. shore)	31/03/87	0730		40	40		1	54	52	50	48	11.0	11.5	48	1	1			20.9
									2	64	50	64	50	12.0	12.0	59	3	2		1	
									3	59	46	69	54	14.5	13.4	64	2	3		5	
									4	62	49	64	51	14.0	13.7	61	1	2		5	
									5	70	53	62	47	10.0	10.6	56	4	2		3	
052 (5)	26	Kitkatla Inlet (Robert Island)	01/04/87	1920		2	5	8.0		No Sample Taken											
052 (5)	27	Kitkatla Inlet (N.W. of Gurd Pt.)	02/04/87	0700				8.0	1	45	44	58	56	12.0	10.7	58	0	0			20.9
									2	54	47	62	53	12.0	11.3	62	0	0			
		Charter Payment Fish Test #1 (Begin pumping)							3	60	46	70	54	14.5	13.4	70	0	0			
									4	55	42	75	58	15.0	12.9	74	1	0			
052 (5)	27	Kitkatla Inlet (N.W. of Gurd Pt.)	02/04/87	0700				8.0	1	67	51	64	49	12.5	12.8	64	0	0			
									2	66	49	69	51	11.0	10.8	68	1	0			
		Charter Payment Fish Test #2 (Mid pumped)							3	59	45	72	55	11.0	10.0	71	1	0			
									4	80	58	58	42	10.5	12.5	58	0	0			
									5	79	61	51	39	10.0	12.8	49	1	1			
052 (5)	27	Kitkatla Inlet (N.W. of Gurd Pt.)	02/04/87	0700				8.0	1	62	51	60	49	13.0	13.3	59	1	0			
									2	74	58	54	42	11.0	13.1	54	0	0			
		Charter Payment Fish Test #3 (End pumped)							3	59	47	67	53	14.0	13.2	66	0	1			

Table 12 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER " SEMIDI ", STAT. AREA 3-5, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage In Loc.	Tonnage Set On	Tonnage Est. Catch	Temp. (C)	Test No.	Sex Ratio M No.	Sex Ratio M %	Sex Ratio F No.	Sex Ratio F %	Roe Yield % Vol.	Roe Yield % Adj. Vol.	Roe Grade (Pcs) #1	Roe Grade (Pcs) #2	Roe Grade (Pcs) #3	Spn Out	Juv. or Imm.	Average Length (cm)
052 (5)	28	Kitkatla Inlet (N.W. of Gurd Pt.)	02/04/87	1650			5			No Sample Taken											
052 (5)	29	Kitkatla Inlet (N.W. of Gurd Pt.)	03/04/87	0630			10			No Sample Taken											
052 (5)	30	Kitkatla Inlet (Absalon Island)	03/04/87	1130	Charter payment fish		18	7.8	1	57	48	61	52	11.5	11.1	60	1	0	3		20.9
									2	72	58	52	42	11.0	13.1	52	0	0			
									3	41	41	59	59	11.0	9.3	53	2	4	3		
									4	48	42	65	58	12.0	10.3	59	4	2	2		
									5	75	59	53	41	11.0	13.4	53	0	0			
									6	66	56	52	44	9.0	10.2	51	0	1	1		
									7	72	51	68	49	12.0	12.2	66	1	1			
052 (5)	31	Kitkatla Inlet (N.W. Gurd Pt.)	03/04/87	1450	Charter payment fish		75	7.8	1	62	50	62	50	12.5	12.5	62	0	0			20.8
									2	59	46	68	54	12.0	11.1	66	2	0			
									3	69	57	52	43	12.0	14.0	52	0	0			
									4	74	56	57	44	10.0	11.4	53	4	0			
									5	67	50	66	50	13.5	13.5	66	0	0	1		
									6	59	49	62	51	15.0	14.7	62	0	0			
052 (5)		Kitkatla Inlet (Snass Pt.-Winter Rocks)	21/03/87	1330	(Dipnet sample-Herring ball)				1	73	59	51	41	5.0	6.1	28	19	4			20.8
									2	62	52	57	48	4.0	4.2	33	17	7			
052 (5)		Kitkatla Inlet (Snass Pt.)	24/03/87	1200	(Dipnet sample-Herring ball)			7.5	1	56	54	47	46	8.0	8.7	35	7	5			21.0
									2	59	54	50	46	10.0	10.9	38	12	0			
									3	55	50	54	50	12.0	12.0	40	12	2			
									4	57	52	52	48	8.0	8.3	31	16	5			

Table 13. Length frequency distribution of herring. ROE HERRING CHARTER SEINER " SEMIDI ", STAT. AREAS 3-5, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Biol. Sample No.	Length Frequency (cm) 12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	24 25	25 26	26 27	27 28	Sample Size	Average Length (cm)	Cutoff (cm)	% Below Cutoff
034 (3)	1	Port Simpson - Grassy Point	16/03/87	1040	1					1	3	6	8	10	23	22	20	6				99	21.7	18.5	5
034 (3)	2	Port Simpson - Grassy Point	16/03/87	1930	2				2	2	4	4	11	17	19	24	11	1			1	96	21.1	18.5	9
052 (5)	3	Browning Entrance - Willis Bay	18/03/87	1320	3							12	28	14	21	16	8	1	1			101	20.8	18.5	1
052 (5)	4	Browning Entr. - off Viscount Pt.	19/03/87	0840		Water Haul																			
052 (5)	5	Browning Entr.- Inside Goschen Pt.	19/03/87	1030	4							13	15	14	14	26	9	9				100	21.4	18.5	9
052 (5)	6	Kitkatla Inlet - W. of Snass Pt.	19/03/87	1330	5						3	11	19	10	14	20	18	2	1	2		100	21.3	18.5	6
052 (5)	7	Kitkatla Inlet - E. of Wilcox Grp.	21/03/87	0740	6					1	5	14	25	11	14	20	8	2				100	20.6	18.5	11
052 (5)	8	Kitkatla Inlet - Winter Rocks	21/03/87	1415	7	Set not representative						11	19	11	5	24	24	5	3			102	21.7	18.5	11
051 (5)	9	Browning Entrance - Barren Rock	22/03/87	0830		Water Haul																			
051 (5)	10	Browning Entrance - Prager Island	22/03/87	1215	8					1	1	9	22	14	19	18	14	3				101	21.1	18.5	3
052 (5)	11	South of Kitkatla Creek	25/03/87	0830	9						3	21	23	19	5	20	7	1				99	20.5	18.5	11
052 (5)	12	Kitkatla Inlet - Absalom Island	25/03/87	1545		Water Haul																			
052 (5)	13	N.of Absalom Is.-off Porcher Penn.	25/03/87	1630	10				1	1	4	17	11	14	22	15	15	1				101	20.8	18.5	9
052 (5)	14	Kitkatla Inlet - Gravel Pit	26/03/87	0530	11					1	5	17	19	25	15	15	3					100	20.3	18.5	15
052 (5)	15	Kitkatla Inlet - Porcher Penn.	27/03/87	0610	12						4	10	17	11	21	23	12	1	1			100	21.1	18.5	8
052 (5)	16	Dries Inlet	27/03/87	0920	13					1	2	14	16	18	19	17	10	3				100	20.9	18.5	10
052 (5)	17	Btw Kitkatla Creek & Gurd Is.	28/03/87	0840		Water Haul																			
052 (5)	18	Kitkatla Inlet - Gravel Pit	28/03/87	1225	14						12	18	19	18	14	14	4	1				100	20.2	18.5	20
052 (5)	19	Kitkatla Inlet - off Nubble Pt.	28/03/87	1620	15					2	6	20	25	12	10	21	5					101	20.3	18.5	16
052 (5)	20	Kitkatla Inlet - N. of Gurd Pt.	29/03/87	0830	16					1	7	23	29	11	9	11	7	2				100	20.1	18.5	15
052 (5)	21	Btw Snass Point & Winter Rocks	29/03/87	1115		Water Haul																			
052 (5)	22	Off Kitkatla Creek	29/03/87	1230	17					3	5	25	20	9	11	13	6	3	1			96	20.2	18.5	21
052 (5)	23	Kitkatla Inlet - Gravel Pit	30/03/87	0815	18						3	5	19	9	18	26	17	2	1			100	21.5	18.5	6
052 (5)	24	Kitkatla Inlet - Porcher Penn.	30/03/87	1200	19						1	14	21	17	18	13	12	4				100	20.9	18.5	6
052 (5)	25	Kitkatla Inlet -Porcher Penn Shore	31/03/87	0730	20						3	19	21	11	15	16	10	3	3			101	20.9	18.5	11
052 (5)	26	Kitkatla Inlet - Robert Island	01/04/87	1920		No Sample Taken																			
052 (5)	27	Kitkatla Inlet - N.W. of Gurd Pt.	02/04/87	0700	21	#1 Charter Payment					14	23	12	20	21	7	3					100	20.9	18.5	5
052 (5)	27	Kitkatla Inlet - N.W. of Gurd Pt.	02/04/87	0700	22	#2 Charter Payment																			
052 (5)	27	Kitkatla Inlet - N.W. of Gurd Pt.	02/04/87	0700	23	#3 Charter Payment																			
052 (5)	28	Kitkatla Inlet - N.W. of Gurd Pt.	02/04/87	1650		No Sample Taken																			
052 (5)	29	Kitkatla Inlet - N.W. of Gurd Pt.	03/04/87	0630		No Sample Taken																			
052 (5)	30	Kitkatla Inlet - Absalon Island	03/04/87	1130	Charter payment fish						4	10	29	16	15	18	7	2				101	20.9	18.5	9
052 (5)	31	Kitkatla Inlet - N.W. Gurd Pt.	03/04/87	1450	24 Charter payment fish						3	15	25	13	13	19	8	2	2			100	20.8	18.5	11
052 (5)		Kitkatla Inl.-Snass Pt-Winter Rks.	21/03/87	1330	Dipnet sample-herr bait					1	6	10	21	19	16	12	11	2	2			100	20.8	18.5	8
052 (5)		Kitkatla Inlet - Snass Pt	24/03/87	1200	Dipnet sample-herr bait					1	4	12	14	9	22	28	5	2				97	21.0	18.5	11

Table 14. Seine set data and roe yield information. ROE HERRING CHARTER SEINER " SEABOUND ", STAT. AREAS 3 - 5, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage			Temp. (C)	Test No.	Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Spn	Juv. or Imm.	Average Length (cm)
					In Loc.	Set On	Est. Catch			M No.	%	F No.	%	Vol.	Adj. Vol.	#1	#2	#3	Out		
042 (4)	1	Off Mist Isle	20/03/87	0840		200	65	7.5	1	45	54	38	46	4.3	4.7	15	10	13	1		20.8
									2	49	54	42	46	4.2	4.6	18	13	11	3		
									3	41	49	42	51	3.1	3.0	13	8	21	2		
									4	56	51	54	49	4.5	4.6	27	6	21	3		
042 (4)	2	Pearl Harbour	20/03/87	1025	2500	500	150	7.4	1	63	63	37	37	4.8	6.5	21	9	7			21.9
									2	46	48	50	52	7.0	6.7	29	8	13	1		
									3	60	56	48	44	7.0	8.0	32	6	10	1		
033 (3)	3	Stuneun Bay	20/03/87	1240		300	300	7.3	1	50	45	61	55	0.5	0.5	4	20	37	12		21.0
									2	43	38	70	62	0.0	0.0	0	23	47	12		
									3	55	44	69	56	0.5	0.4	2	18	49	9		
033 (3)	4	Flewin Point	21/03/87	1100	600	150	75	8.1	1	69	57	52	43	0.5	0.6	8	16	28	4		20.8
									2	64	57	49	43	4.0	4.7	21	14	14	3		
									3	50	46	58	54	6.0	5.6	33	12	13	4		
									4	46	40	70	60	2.0	1.7	16	13	41	6		
042 (4)	5	Big Bay	21/03/87	1430		50	10	7.5	1	42	43	55	57	10.0	8.8	40	12	3	1		21.2
									2	55	53	48	47	8.0	8.5	34	11	3			
									3	56	49	58	51	9.0	8.8	41	10	7	2		
042 (4)	6	Pearl Harbour	22/03/87	0500	1000	200	40	7.6	1	43	43	56	57	3.8	3.3	14	19	23	6		21.3
									2	46	43	60	57	5.3	4.6	25	11	24	6		
									3	42	36	74	64	4.1	3.2	24	21	29	5		
033 (3)	7	Stuneun Bay	22/03/87	1340			0	7.7		Water Haul											
042 (4)	8	Big Bay	23/03/87	0725		100	10	7.6	1	50	54	42	46	7.0	7.6	36	2	4	7		21.8
									2	49	49	52	51	9.0	8.8	45	3	4	9		
									3	47	42	65	58	5.0	4.3	54	7	4	5		
042 (4)	9	Off Burntcliff Is.	23/03/87	1240		50	0	7.7		Water Haul											
042 (4)	10	Pearl Harbour	23/03/87	1330		150	100	7.8	1	39	43	52	57	12.8	11.2	44	2	6	1		20.6
									2	52	49	55	51	11.5	11.3	41	7	7			
									3	69	51	66	49	11.0	11.2	56	5	5			
									4	49	62	30	38	8.0	10.5	25	3	2			
									5	45	53	40	47	1.0	1.1	34	3	3	1		
042 (4)	11	Pearl Harbour	25/03/87	0610		10	5	7.5	1	69	50	68	50	8.5	8.5	52	3	13	3		20.2
									2	84	55	68	45	7.5	8.3	50	11	7	5		
									3	69	51	66	49	6.0	6.1	52	9	5	6		
052 (5)	12	Off Freeman Pass	27/03/87	0945		70	0	7.5		Water Haul											

Table 14 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER " SEABOUND ", STAT. AREAS 3 - 5, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage In Loc.	Tonnage Set On	Tonnage Est. Catch	Temp. (C)	Test No.	Sex Ratio M No.	Sex Ratio M %	Sex Ratio F No.	Sex Ratio F %	Roe Yield % Vol.	Roe Yield % Adj. Vol.	Roe Grade (Pcs) #1	#2	#3	Spn Out	Juv. or Imm.	Average Length (cm)
052 (5)	13	N. of Freeman Pass	27/03/87	1055		40	5	7.5	1	40	40	60	60	13.0	10.8	51	4	5	1		22.0
									2	54	53	48	47	11.0	11.7	41	2	5			
									3	64	60	43	40	10.5	13.1	37	2	4			
									4	37	55	30	45	12.3	13.7	28	1	1	1		
									5	45	43	59	57	14.5	12.7	56	0	3			
043 (4)	14	Hunt Inlet	28/03/87	1800		40	0	7.6		Water Haul											
043 (4)	15	Island Point	28/03/87	2015		40	2	7.6	1	67	51	64	49	12.0	12.2	57	3	4	2		21.2
									2	54	43	71	57	12.5	11.0	61	6	4	2		
									3	52	48	56	52	11.0	10.6	51	4	1	3		
043 (4)	16	Off Alice Island	29/03/87	0915		250	70	7.6	1	61	47	69	53	12.0	11.3	62	1	6			19.9
									2	67	48	72	52	12.0	11.5	68	2	2	2		
									3	46	48	50	52	11.9	11.4	45	2	3			
									4	63	53	57	47	8.5	9.0	46	8	3			
042 (4)	17	Mist Island	30/03/87	0725		500	80	7.7	1	74	56	57	44	9.5	10.8	52	2	3			20.4
									2	53	41	77	59	12.0	10.2	76	1	0	2		
									3	59	46	70	54	11.0	10.2	60	5	5			
042 (4)	18	Off Finlayson Island	30/03/87	0910			0	7.5		Water Haul											
042 (4)	19	Off Finlayson Island	30/03/87	0955		150	150	7.4	1	52	43	68	57	12.0	10.5	62	3	3	2		20.7
									2	64	53	56	47	10.0	10.6	53	3	0	7		
									3	64	55	53	45	11.0	12.2	47	5	1			
									4	70	59	48	41	10.0	12.2	45	2	1	9		
									5	61	54	51	46	10.0	10.9	49	1	1	8		
033 (3)	20	Cunningham Pass	30/03/87	1405		25	15	7.7	1	54	44	69	56	6.0	5.4	52	4	13		53	18.4
042 (4)	21	Pearl Harbour	31/03/87	0645		15	0.25	7.6	1	88	54	75	46	9.0	9.8	70	3	2	4		19.0
										Set not representative											
042 (4)	22	South of Tugwell Is.	31/03/87	1025		150	0	7.6		Water Haul											
042 (4)	23	South of Tugwell Is.	31/03/87	1100		500	0	7.6		Water Haul											
042 (4)	24	Off Digby Island	31/03/87	1150		400	45	7.7	1	52	47	59	53	12.0	11.3	54	1	4			20.3
					Charter Payment (2.72 tons)				2	68	59	48	41	10.0	12.2	45	1	2	4		
									3	48	47	55	53	11.0	10.4	48	3	4			
									4	55	48	59	52	11.0	10.6	56	2	1			
042 (4)		Trenham Point	22/03/87	0900	(Dipnet Sample)				1	47	45	58	55	11.5	10.5	47	5	6	1		21.9
									2	57	52	52	48	9.5	9.9	43	4	5	3		
									3	46	42	63	58	13.5	11.6	59	5	3	2		

Table 15. Length frequency distribution of herring. ROE HERRING CHARTER SEINER " SEABOUND ", STAT. AREAS 2 - 5, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Biol. Sample No.	Length Frequency (cm) 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 / 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	Sample Size	Average Length (cm)	Cutoff (cm)	% Below Cutoff
042 (4)	1	Off Mist Isle	20/03/87	0840	1	3 1 19 14 12 20 22 7 2	100	20.8	18.5	9.0
042 (4)	2	Pearl Harbour	20/03/87	1025	2	1 3 7 13 19 37 20	100	21.9	18.5	2.0
033 (3)	3	Stuneun Bay	20/03/87	1240	3	4 10 18 15 20 23 9 1	100	21.0	18.5	8.0
033 (3)	4	Flewin Point	21/03/87	1100	4	1 2 6 12 11 18 19 16 15	100	20.8	18.5	15.0
042 (4)	5	Big Bay	21/03/87	1430	5	1 1 12 12 13 19 33 9 1	101	21.2	18.5	5.9
042 (3)	6	Pearl Harbour	22/03/87	0500	6	1 1 8 16 15 20 23 15 1	100	21.3	18.5	4.0
033 (3)	7	Stuneun Bay	22/03/87	1340		Water Haul				
042 (4)	8	Big Bay	23/03/87	0725	7	1 13 10 28 28 15 5	100	21.8	18.5	0.0
042 (4)	9	Off Burntcliff Island	23/03/87	1240		Water Haul				
042 (4)	10	Pearl Harbour	23/03/87	1330	8	1 8 15 16 13 20 19 6 1 1	100	20.6	18.5	12.0
042 (4)	11	Pearl Harbour	25/03/87	0610	9	2 11 17 18 17 9 6 2 1	100	20.2	18.5	19.0
052 (5)	12	Off Freeman Pass	27/03/87	0945		Water Haul				
052 (5)	13	North of Freeman Pass	27/03/87	1055	10	1 4 9 13 21 18 24 6 2 2	100	22.0	18.5	1.0
043 (4)	14	Hunt Inlet	28/03/87	1800		Water Haul				
043 (4)	15	Island Point	28/03/87	2015	11	1 4 9 17 16 11 22 17 3	100	21.2	18.5	7.0
043 (4)	16	Off Alice Island	29/03/87	0915	12	3 29 28 21 9 5 5	100	19.9	18.5	15.0
042 (4)	17	Mist Island	30/03/87	0725	13	2 8 19 14 14 21 13 9 1	101	20.4	18.5	21.8
042 (4)	18	Off Finlayson	30/03/87	0910		Water Haul				
042 (4)	19	Off Finlayson Island	30/03/87	0955	14	7 13 20 11 18 24 7	100	20.7	18.5	11.0
033 (3)	20	Cunningham Pass	30/03/87	1405	15	2 4 6 12 17 24 13 10 7 5	100	18.4	18.5	53.0
042 (4)	21	Pearl Harbour	31/03/87	0645	16	5 4 17 30 20 10 7 4 2 1	100	19.0	18.5	35.0
042 (4)	22	South of Tugwell Island	31/03/87	1025		Water Haul				
042 (4)	23	South of Tugwell Island	31/03/87	1100		Water Haul				
042 (4)	24	Off Digby Island	31/03/87	1150	17	Charter payment 3 6 20 18 10 23 14 5 1	100	20.3	18.5	22.0
042 (4)		Trenham Point	22/03/87	0900	18	(Dipnet sample) 6 15 5 14 31 25 4	100	21.9	18.5	2.0

Table 16. Seine set data and roe yield information. ROE HERRING CHARTER SEINER " FISHER LASSIE II ", STAT. AREAS 6 - 8, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage			Temp. (C)	Test No.	Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Spn	Juv. or Imm.	Average Length (cm)
					In Loc.	Set On	Est. Catch			M No.	M %	F No.	F %	Vol.	Adj. Vol.	#1	#2	#3	Out		
074 (7)	1	Dundivan Inlet	02/03/87	1915	2500	150	150	6.5	1	45	42	63	58	0.0	0.0	0	0	63		21	20.5
085 (8)	2	Kwakshua Bluffs	04/03/87	2025	4000	500+	75+	7.2	1	81	53	73	47	0.0	0.0						19.9
076 (7)	3	Head of Stewart Inl.	05/03/87	1500		300	0			Water Haul											
076 (7)	4	Mouth of Spitfire Channel East	05/03/87	1600	1000	200	25	7.6	1	55	44	71	56	0.9	0.8	1	0	70			20.6
									2	71	55	58	45	0.9	1.0	1	2	55		2	
074 (7)	5	West Waskeslu	06/03/87	1930	2500	600	200	7.8	1	37	43	49	57	0.0	0.0	0	1	48		1	22.3
									2	48	52	45	48	0.0	0.0	0	1	44			
074 (7)	6	East Waskeslu	07/03/87	0515	2700	800	250	7.6	1	45	50	45	50	0.0	0.0	0	0	45			22.0
074 (7)	7	Dundivan Inlet	07/03/87	1915	3000	1000	500	8.0	1	48	45	59	55	0.0	0.0	0	1	58		5	21.2
072 (7)	8	Lambard Inlet	08/03/87	1030	400	200	0			Water Haul											
072 (7)	9	Lambard Inlet	08/03/87	1420	400	400	300	7.8	1	35	42	49	58	0.0	0.0	0	0	49		1	22.9
077 (7)	10	East side of Higgins Passage	08/03/87	1800	700	400	200	7.9	1	58	54	50	46	0.0	0.0	0	1	49		1	21.4
078 (7)	11	Klemtu Pass	10/03/87	1135	1000	1000	300	6.4	1	68	51	65	49	0.0	0.0	0	0	65	17		19.6
067 (6)	12	Kitasu Bay	10/03/87	1545	1000	400	30	7.4	1	53	47	59	53	0.0	0.0	0	0	59			21.9
067 (6)	13	Kitasu Bay	11/03/87	0550	1500	1000	350	7.2	1	49	43	64	57	0.0	0.0	1	3	60	2		21.9
067 (6)	14	Thistle Passage	11/03/87	0915	300	300	0	6.8		Water Haul											
074 (7)	15	Dundivan Inlet	12/03/87	2005	1000	400	50	7.5	1	35	39	54	61	0.0	0.0	1	3	50	1		22.9
074 (7)	16	1/4 m. W. of Idol Pt.	13/03/87	0504	4000	600	200	7.4	1	35	37	60	63	0.0	0.0	1	0	59			22.2
072 (7)	17	Berry Inlet	13/03/87	0737	1000	500	300	7.5	1	51	50	52	50	0.0	0.0	2	4	46	3		22.4
072 (7)	18	Powell Anchorage	13/03/87	1236	700	500	300	7.7	1	34	35	62	65	1.0	0.8	7	6	49			22.6
									2	40	43	52	57	0.9	0.8	3	6	43			
077 (7)	19	East Higgins Passage	13/03/87	1537		300	100	7.8	1	55	53	49	47	0.0	0.0	2	3	44			21.8
									2	56	53	49	47	0.0	0.0	2	4	43			

Table 16 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER " FISHER LASSIE II ", STAT. AREAS 6 - 8, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage			Temp. (C)	Test No.	Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Spn Out	Juv. or Imm.	Average Length (cm)
					In Loc.	Set On	Est. Catch			M No.	%	F No.	%	Vol.	Adj. Vol.	#1	#2	#3			
067 (6)	20	Kitasu Bay	14/03/87	2005	1000	500	200	7.9	1	48	41	68	59	1.0	0.8	9	8	51		3	21.5
									2	66	59	45	41	2.0	2.4	0	3	42		2	
067 (6)	21	Swindle Island shoreline	15/03/87	1235	1500	200	0	7.6		Water Haul											
072 (7)	22	Powell Anchorage	16/03/87	1917	300	50	15	7.7	1	33	43	44	57	4.0	3.5	14	9	21			23.4
									2	31	39	48	61	6.0	4.9	17	13	18			
									3	25	32	53	68	5.0	3.7	15	14	24		2	
075 (7)	23	Cultus Sound	17/03/87	1945	200	100	75	7.9	1	43	40	64	60	9.0	7.5	43	5	16			20.5
									2	60	41	88	59	12.0	10.2	60	11	17			
									3	49	41	70	59	9.0	7.6	49	5	16			
075 (7)	24	West side of McNaughton Group	18/03/87	0548	300	200	150	7.8	1	68	47	77	53	3.0	2.8	15	2	60		1	19.5
									2	71	47	79	53	3.0	2.8	23	7	49		3	
									3	85	54	72	46	2.0	2.2	21	6	45		1	
076 (7)	25	S.E. entrance to Spitfire Channel	18/03/87	1434	200	200	0	7.5		Water Haul											
076 (7)	26	N.E. shore of Manley Island	18/03/87	1620	400/500	400	0	7.6		Water Haul											
076 (7)	27	N.E. shore of Manley Island	18/03/87	2022	400/500	300	100	7.5	1	68	57	51	43	8.0	9.3	37	5	9		2	20.5
									2	57	46	67	54	8.0	7.4	38	16	13		4	
									3	73	53	66	47	10.0	10.6	46	8	12		2	
085 (8)	28	Kwakshua Channel	19/03/87	1955	2500	skimmer	40/50	7.5	1	92	62	57	38	0.3	0.3	3	3	51		1	20.5
									2	101	65	55	35	0.3	0.4	3	0	52		1	
									3	100	63	58	37	0.0	0.0	1	4	53		1	
072 (7)	29	Spiller Channel	20/03/87	1550		200	50	7.9	1	62	55	50	45	6.5	7.2	21	4	25			21.9
									2	45	42	62	58	8.5	7.3	22	6	34		2	
									3	65	58	48	42	6.3	7.4	19	1	28		2	
072 (7)	30	Spiller Channel	20/03/87	1843	2000	500	500	7.8	1	41	44	52	56	13.0	11.6	41	5	6			22.5
									2	29	41	42	59	9.0	7.6	29	5	8			
									3	33	40	50	60	10.0	8.3	33	10	7			
067 (6)	31	Kitasu Bay	23/03/87	2120	1000/1200	skimmer	10	7.8	1	59	57	45	43	8.0	9.3	27	3	15			21.5
									2	58	52	53	48	9.0	9.4	38	4	11			
									3	49	45	59	55	10.0	9.1	38	5	16			
067 (6)	32	Kitasu Bay	24/03/87	0523	800/900	500	300	7.7	1	69	56	54	44	8.0	9.1	41	3	10			21.5
									2	65	56	51	44	7.0	8.0	33	5	13			
									3	64	54	54	46	9.0	9.8	40	1	13			

Table 17. Length frequency distribution of herring. ROE HERRING CHARTER SEINER " FISHER LASSIE II ", STAT. AREAS 6 - 8, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Biol. Sample No.	Length Frequency (cm)																				Sample Size	Average Length (cm)	Cutoff (cm)	% Below Cutoff
						12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	24 25	25 26	26 27	27 28	28 29							
074 (7)	1	Dundivan Inlet	02/03/87	1915	1				1	9	9	10	16	15	12	7	9	10	2							100	20.5	18.5	23
085 (8)	2	Kwakshua Bluffs	04/03/87	2025	2				1	2	9	15	18	27	19	7										98	19.9	18.5	16
076 (7)	3	Head of Stewart Inlet	05/03/87	1500					Water				Haul																
076 (7)	4	Mouth of Spitfire Channel East	05/03/87	1600	3						3	18	16	22	22	9	7	2	1							100	20.6	18.5	8
074 (7)	5	West Waskeslu	06/03/87	1930	4			1		2	3	1	12	5	12	20	24	11	9							100	22.3	18.5	8
074 (7)	6	East Waskeslu	07/03/87	0515	5					1	2	4	9	15	19	13	21	11	4	1						100	22.0	18.5	5
074 (7)	7	Dundivan Inlet	07/03/87	1915	6					2	6	9	15	19	13	13	9	10	4							100	21.2	18.5	12
072 (7)	8	Lambard Inlet	08/03/87	1030					Water				Haul																
072 (7)	9	Lambard Inlet	08/03/87	1420	7							2	2	6	12	25	32	13	8							100	22.9	18.5	0
077 (7)	10	East side of Higgins Passage	08/03/87	1800	8				1	1	2	2	3	26	33	23	8		1							100	21.4	18.5	5
078 (7)	11	Klemtu Pass	10/03/87	1135	9				3	5	9	20	22	18	16	5	1		1							100	19.6	18.5	26
067 (6)	12	Kitasu Bay	10/03/87	1545	10							4	7	18	21	25	16	7	1		1					100	21.9	18.5	0
067 (6)	13	Kitasu Bay	11/03/87	0550	11							1	13	18	21	26	12	4	3		1	1				100	21.9	18.5	0
067 (6)	14	Thistle Passage	11/03/87	0915					Water				Haul																
074 (7)	15	Dundivan Inlet	12/03/87	2005	12							3	1	6	19	23	24	16	6	2						100	22.9	18.5	1
074 (7)	16	1/4 m. west of Idol Point	13/03/87	0504	13							5	6	13	21	25	13	13	4							100	22.2	18.5	2
072 (7)	17	Berry Inlet	13/03/87	0737	14						1	2	4	14	19	18	28	11	3							100	22.4	18.5	1
072 (7)	18	Powell Anchorage	13/03/87	1236	15							3	6	10	16	20	24	16	4	1						100	22.6	18.5	2
077 (7)	19	East Higgins Passage	13/03/87	1537	16						1	3	5	14	29	30	15	2	1							100	21.8	18.5	2
067 (6)	20	Kitasu Bay	14/03/87	2005	17						3	5	9	23	21	20	14	2	3							100	21.5	18.5	5
067 (6)	21	Swindle Island shoreline	15/03/87	1235					Water				Haul																
072 (7)	22	Powell Anchorage	16/03/87	1917	18								1	4	14	15	33	21	12							100	23.4	18.5	0
075 (7)	23	Cultus Sound	17/03/87	1945	19					4	5	14	20	18	14	13	9	3								100	20.5	18.5	14
075 (7)	24	West side of McNaughton Group	18/03/87	0548	20					3	12	21	30	18	9	6	1									100	19.5	18.5	22
076 (7)	25	S.E. entrance to Spitfire Channel	18/03/87	1434					Water				Haul																
076 (7)	26	N.E. shore of Manley Island	18/03/87	1620					Water				Haul																
076 (7)	27	N.E. shore of Manley Island	18/03/87	2022	21				1	3	4	5	20	25	29	9	4									100	20.5	18.5	10
085 (8)	28	Kwakshua Channel	19/03/87	1955	22					3	6	18	24	22	15	6	5	1								100	20.1	18.5	14
072 (7)	29	Spiller Channel	20/03/87	1550	23						3	12	15	6	8	15	20	14	5	2						100	21.9	18.5	7
072 (7)	30	Spiller Channel	20/03/87	1843	24						2	2	5	10	17	23	17	17	5	2						100	22.5	18.5	4
067 (6)	31	Kitasu Bay	23/03/87	2120	25					1	1	4	13	12	26	25	16	2								100	21.5	18.5	3
067 (6)	32	Kitasu Bay	24/03/87	0523	26							6	14	16	21	29	10	3	1							100	21.5	18.5	2

Table 18. Seine set data and roe yield information. ROE HERRING CHARTER SEINER " KYNOC ", STAT. AREAS 6 - 9, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage			Temp. (C)	Test No.	Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Spn Out	Juv. or Imm.	Average Length (cm)
					In Loc.	Set On	Est. Catch			M No.	M %	F No.	F %	Vol.	Adj. Vol.	#1	#2	#3			
076 (7)	1	Kildidt Sound (Serpent Group)	10/03/87	1545	1000/1200	200+	0	7.5		Water Haul											
076 (7)	2	Kildidt Sound (Serpent Group)	10/03/87	1635		200+	75+	7.5	1	53	46	63	54	2.0	1.9	11	3	49		4	20.7
									2	76	60	51	40	1.0	1.3	5	7	39		3	
085 (8)	3	Kwakshua Channel	10/03/87	1915	4000+	400+	150+	7.0	1	65	56	52	44	0.0	0.0						20.2
093 (9)	4	McPhee Bay (Rivers Inlet)	11/03/87	1650			0	8.0		Water Haul											
074 (7)	5	E. of Waskeslu	12/03/87	2120		200+		7.7	1	42	44	54	56	1.0	0.9	7	1	46		1	21.9
									2	57	55	47	45	0.9	1.0	5	4	38		1	
074 (7)	6	Clarie Island	13/03/87	1935	1000+	100+	100+	7.8	1	50	53	45	47	1.5	1.6	10	5	30		1	21.9
									2	54	51	52	49	4.0	4.1	8	4	40			
074 (7)	7	Stryker Bay	13/03/87	2135	1200+		150+	7.0	1	37	38	60	62	3.0	2.4	11	3	46		2	22.2
									2	45	48	49	52	2.0	1.9	7	3	39			
074 (7)	8	Houghton Island-SE	14/03/87	1925		25	10	7.8		No Information											
074 (7)	9	Houghton Island	14/03/87	2030		100	0	7.8		Water Haul											
074 (7)	10	Dundivan Inlet	16/03/87	1420	3000/4000	500	300/400	7.5	1	50	48	55	52	1.0	1.0	6	6	43			22.4
									2	43	47	48	53	0.5	0.5	2	2	44		1	
077 (7)	11	East Higgins Pass	18/03/87	0110	2500	150	75	7.8	1	48	47	55	53	6.0	5.7	28	6	21			22.0
									2	59	60	39	40	4.0	5.0	18	5	16			
									3	57	56	44	44	3.8	4.3	15	7	22			
									4	52	53	47	47	4.3	4.6	17	9	21			
074 (7)	12	Stryker Bay	18/03/87	2150	1500/2150	125	75	8.1	1	60	50	61	50	7.0	7.0	34	8	19		2	21.1
									2	56	50	57	50	7.5	7.5	30	8	19		2	
									3	60	54	52	46	8.3	9.0	31	11	10		1	
067 (6)	13	Kitasu Bay	19/03/87	2050	2000		10	7.8	1	59	51	57	49	0.5	0.5	3	5	49			21.1
									2	53	45	65	55	0.5	0.5	3	6	56			
077 (7)	14	East of Higgins Pass	20/03/87	1945	3500/4000	500	300	7.8	1	54	52	50	48	7.0	7.3	31	8	11			21.5
									2	48	45	59	55	7.8	7.1	32	10	17			
									3	63	59	44	41	4.5	5.5	23	6	15			
									4	54	45	67	55	6.3	5.7	30	9	28			

Table 18 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER " KYNOC ", STAT. AREAS 6 - 9, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage In Loc.	Tonnage Set On	Tonnage Est. Catch	Temp. (C)	Test No.	Sex Ratio M No.	Sex Ratio M %	Sex Ratio F No.	Sex Ratio F %	Roe Yield % Vol.	Roe Yield % Adj. Vol.	Roe Grade (Pcs) #1	Roe Grade (Pcs) #2	Roe Grade (Pcs) #3	Spn Out	Juv. or Imm.	Average Length (cm)
074 (7)	15	Stryker Island	21/03/87	1400	1500+	400	250	8.4	1	39	41	57	59	14.0	11.9	51	4	2			22.6
									2	49	54	41	46	11.0	12.0	35	0	6			
									3	39	42	54	58	14.0	12.1	48	3	3		1	
									4	44	46	52	54	14.5	13.4	47	4	1			
072 (7)	16	Spiller 1/4 m. (above Neekis)	22/03/87	0525			5			No Information											14.7
072 (7)	17	Outside Foote Islet	22/03/87	2100			0.1	8.0		Juvenile herring											
072 (7)	18	Spiller Channel	23/03/87	0950		100	0	7.8		Water Haul											
072 (7)	19	Foote Islet (Spiller)	23/03/87	1100		50	40	7.8	1	52	53	47	47	14.5	15.4	45	0	2		7	22.2
									2	47	51	46	49	12.5	12.8	38	5	3		5	
									3	46	46	54	54	14.0	13.0	43	3	8	1	13	
									4	37	38	61	62	15.5	12.5	55	1	5	6	4	
077 (7)	20	E. Higgins Pass	23/03/87	2045		400/500	15/20	8.1	1	63	55	52	45	10.0	11.1	42	1	9	1	1	21.2
									2	57	49	59	51	10.0	9.8	43	3	13			
									3	64	56	50	44	9.0	10.2	38	4	8	1		
074 (7)	21	Dennison Point	24/03/87	1930	1800/2000	300	150	8.2	1	32	38	52	62	15.5	12.5	45	3	4			22.5
									2	45	53	40	47	15.5	16.5	40	0	0	1		
									3	47	49	48	51	15.2	14.9	44	0	4			
074 (7)	22	Dundivan Inlet	24/03/87	2110	500		50	8.1	1	50	52	46	48	11.5	12.0	39	0	7		3	21.1
									2	67	55	54	45	13.0	14.4	46	1	7	1	3	
									3	54	48	59	52	12.5	12.0	47	1	11		5	
									4	53	52	48	48	14.0	14.6	43	1	4			
072 (7)	23	Berry Inlet	26/03/87	1320			0			Purse line broke											
072 (7)	24	Foote Islet	26/03/87	1900			75/80	Test #1	1	37	42	52	58	15.0	12.9	47	1	4		1	22.1
		(Spiller)	Charter Payment fish		Test #2 (Mid pump)				2	47	53	41	47	12.0	12.8	37	1	3		5	22.2
					Test #3 (End pump)				3	51	55	41	45	13.5	15.0	39	0	2		2	21.9
074 (7)	25	Dundivan	26/03/87	2035				7.7	1	45	39	70	61	16.0	13.1	64	3	3			21.2
			Charter Payment fish						2	74	64	42	36	10.0	13.9	34	3	5			
072 (7)	26	Foote Islet	27/03/87	0545			10/15			No Information											22.6
072 (7)	27	Spiller Channel	27/03/87	0755		Charter Payment			1	38	48	42	52	14.0	13.5	41	0	1			21.6
									2	37	49	38	51	14.5	14.2	38	0	0		1	

Table 18 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER " KYNOC ", STAT. AREAS 6 - 9, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage In Loc.	Tonnage Set On	Tonnage Est. Catch	Temp. (C)	Test No.	Sex Ratio M No.	Sex Ratio M %	Sex Ratio F No.	Sex Ratio F %	Roe Yield % Vol.	Roe Yield % Adj. Vol.	Roe Grade (Pcs) #1	Roe Grade (Pcs) #2	Roe Grade (Pcs) #3	Spn Out	Juv. or Imm.	Average Length (cm)
077 (7)	28	E. of Higgins Pass	27/03/87	2000		120	120	8	1	57	51	55	49	12.0	12.2	53	0	2			21.3
		Charter payment for Strait of Georgia vessels							2	57	49	59	51	12.3	12.1	51	1	7			
									3	50	46	59	54	12.0	11.1	52	2	5			
077 (7)	29	E. of Higgins Pass	28/03/87	0455		175	175	8.0	1	53	48	57	52	12.0	11.5	49	3	5			20.0
									2	53	48	58	52	12.0	11.5	54	0	4			
									3	76	60	51	40	10.0	12.5	39	4	8			
									4	63	50	63	50	11.3	11.3	50	6	7			
067 (6)	30	Kitasu Bay (1 mi. from Wilby Point)	28/03/87	1645	3000+		50		1	48	41	69	59	12.0	10.2	59	5	5	5		21.3
									2	67	61	42	39	10.5	13.5	38	2	2	7	1	
									3	64	57	48	43	11.0	12.8	46	0	2	4		
									4	58	59	40	41	9.5	11.6	33	4	3	4		
067 (6)	31	Trahey Inlet	29/03/87	2050	400	skim		0.1		Juv. Herring - No Information											14.8
078 (7)	32	Klemtu Pass	30/03/87	1745		10	5			Juvenile herring											
074 (7)	33	Lockhart Bay	02/04/87	1645		5	5	8.1	1	51	46	59	54	14.5	13.4	55	3	1	7		21.4
085 (8)	34	Kwakshua Channel	03/04/87	1945		15/20	5	8.8		No Information											17.4
067 (6)		Kitasu Bay	29/03/87		Gillnet test					No Roe Test Information											22.8
067 (6)		Wilby Point shore	30/03/87	Raven Spirit/Morning Iale Vessel-Gillnet test					1	2		56	98	13.5	6.9	56	0	0	2		22.7
				Test 1 & 2 - Wilby Point					2	3		63	97	15.5	8.0	63	0	0	3		
				Test 3 - 5 - E.Side Marvin Island					3	6		45	94	13.0	6.9	44	1	0			
									4	10		35	90	9.5	5.3	35	0	0			
									5	12		37	88	10.5	6.0	37	0	0	6		
067 (6)		Kitasu Bay	30/03/87	Raven Spirit/Morning Isle Vessel-Gillnet test					1	2		49	98	14.0	7.1	49	0	0	2		
				Test 1 & 2 - W. Marvin Island					2	4		48	96	15.0	7.8	48	0	0	2		
				Test 3 - 5 - Outer Parsons					3	6		49	94	11.5	6.1	49	0	0	15		
									4	8		45	92	11.0	6.0	45	0	0	11		
									5	10		44	90	10.0	5.6	44	0	0	19		
067 (6)		Wilby Pt. shoreline (Kitasu Bay)	29/03/87	Raven Spirit Vessel-Gillnet test					1	47	57	36	43	10.0	11.6	36	0	0	5		
									2	48	60	32	40	9.5	11.9	32	0	0	6		
									3	55	63	32	37	9.5	12.8	32	0	0	2		
067 (6)		Inside Marvin Is. (Kitasu Bay)	29/03/87	Raven Spirit Vessel-Gillnet test					1	47	53	41	47	11.5	12.2	41	0	0	2		
									2	44	48	47	52	12.5	12.0	47	0	0			
									3	50	55	41	45	12.5	13.9	40	0	1			

Table 19. Length frequency distribution of herring. ROE HERRING CHARTER SEINER " KYNOC ", STAT. AREAS 6 - 9, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Biol. Sample No.	Length Frequency (cm) 12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	24 25	25 26	26 27	27 28	Sample Size	Average Length (cm)	Cutoff (cm)	% Below Cutoff
076 (7)	1	Kildidt Sound - Serpent Group	10/03/87	1545				Water Haul																	
076 (7)	2	Kildidt Sound - Serpent Group	10/03/87	1635	1				1	1	3	8	14	32	23	11	7					100	20.7	18.5	8
085 (8)	3	Kwakshua Channel	10/03/87	1915	2					1	6	11	24	29	15	8	2					96	20.2	18.5	14
093 (9)	4	McPhee Bay - Rivers Inlet	11/03/87	1650				Water Haul																	
074 (7)	5	E. of Weskeslu	12/03/87	2120	3				3	1	6	9	7	3	13	11	19	18	6	1		97	21.9	18.5	15
074 (7)	6	Clarie Island	13/03/87	1935	4					2	3	9	12	7	9	19	20	13	4	1		99	21.9	18.5	3
074 (7)	7	Stryker Bay	13/03/87	2135	5					1	1	3	8	13	16	18	22	11	5			98	22.2	18.5	3
074 (7)	8	Houghton Island - SE	14/03/87	1925				No Information																	
074 (7)	9	Houghton Island	14/03/87	2030				Water Haul																	
074 (7)	10	Dundivan Inlet	16/03/87	1420	6				1	2	4	5	4	7	18	11	15	24	9	1		101	22.4	18.5	12
077 (7)	11	East Higgins Pass	18/03/87	0110	7					1	2		5	12	30	26	17	5	2			100	22.0	18.5	3
074 (7)	12	Stryker Bay	18/03/87	2150	8					1	4	11	16	15	16	18	14	5	1			101	21.1	18.5	11
067 (6)	13	Kitasu Bay	19/03/87	2050	9			1		2	2	7	12	16	20	21	9	4				94	21.1	18.5	6
077 (7)	14	East of Higgins Pass	20/03/87	1945	10						1	8	10	14	20	34	12	3				102	21.5	18.5	6
074 (7)	15	Stryker Island	21/03/87	1400	11						3	3	2	7	16	26	22	12	9			100	22.6	18.5	3
072 (7)	16	Spiller 1/4 m. above Neekis	22/03/87	0525	12	1	9	22	14	3	1											50	14.7	18.5	100
072 (7)	17	Outside Foote Islet	22/03/87	2100				Juvenile herring																	
072 (7)	18	Spiller Channel	23/03/87	0950	13				Water Haul																
072 (7)	19	Foote Islet - Spiller	23/03/87	1100	14					1		2	3	9	11	15	21	17	14	5	1	99	22.2	18.5	4
077 (7)	20	E. Higgins Pass	23/03/87	2045	15						1	4	5	10	17	28	22	9	2			98	21.2	18.5	7
074 (7)	21	Dennison Point	24/03/87	1930	16								2	6	13	17	20	24	17	4		103	22.5	18.5	1
074 (7)	22	Dundivan Inlet	24/03/87	2110	17			1	3	2	5	6	8	8	8	9	14	17	13	2		96	21.1	18.5	14
072 (7)	23	Berry Inlet	26/03/87	1320					Purse line broke																
072 (7)	24	Foote Islet - Spiller	26/03/87	1900	18	Charter payment				1			1	8	6	13	9	8	8	4		58	22.1	18.5	4
			Charter payment (Mid pumped)					2	1			1	1	4	1	5	13	11	6	2	2	49	22.2	18.5	8
			Charter payment (End pumped)					1	1			2	3	2	2	14	6	9	7	3		50	21.9	18.5	8
074 (7)	25	Dundivan	26/03/87	2035	19 Ch payment			1		3	3	14	8	7	8	15	8	6	6	1		80	21.2	18.5	13
072 (7)	26	Foote Islet	27/03/87	0545	20	Charter payment				1	1	1	2	2	11	5	14	8	4			49	22.6	18.5	4
072 (7)	27	Spiller Channel	27/03/87	0755	21				1	2	1	2	10	9	10	18	25	14	10	4		106	21.6	18.5	10
077 (7)	28	East of Higgins Pass	27/03/87	2000	22	Charter payment				3	2	5	14	12	28	22	12	1	1			100	21.3	18.5	8
077 (7)	29	East of Higgins Pass	28/03/87	0455	23	Charter pymt		7		5	7	19	17	20	26	18	3					122	20.0	18.5	24
067 (6)	30	Kitasu Bay - 1 mi. from Wilby	28/03/87	1645	24					2	5	6	16	19	25	20	18	3	2			116	21.3	18.5	9
067 (6)	31	Trahey Inlet	29/03/87	2050	25		9	33	14	4		1										61	14.8	18.5	100
078 (7)	32	Klemtu Pass	30/03/87	1745	26			Juvenile herring																	
074 (7)	33	Lockhart Bay	02/04/87	1645	27						2	14	10	15	19	13	17	8	2			100	21.4	18.5	10
085 (8)	34	Kwakshua Channel	03/04/87	1945	28		2	10	18	18	18	11	9	9	4				1			100	17.4	18.5	72
067 (6)		Kitasu Bay	29/03/87								Gillnet test			3	16	35	35	3	2			94	22.8	18.5	0
067 (6)		Wilby Point shore	30/03/87	Raven Spirit/Morning Isle vessel-Gillnet test										1	9	23	12	5				50	22.7	18.5	100
067 (6)		Kitasu Bay	30/03/87	Raven Spirit/Morning Isle vessel-Gillnet test - no information																					
067 (6)		Wilby Point shoreline -Kitasu Bay	29/03/87	Raven Spirit Vessel - Gillnet test - no information																					
067 (6)		Inside Marvin Island - Kitasu Bay	29/03/87	Raven Spirit Vessel - Gillnet test - no information																					

Table 20. Seine set data and roe yield information. ROE HERRING CHARTER SEINER " SEABOUND ", STAT. AREAS 14, 15, 17, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage In Loc.	Tonnage Set On	Tonnage Est. Catch	Temp. (C)	Test No.	Sex Ratio M No.	Sex Ratio M %	Sex Ratio F No.	Sex Ratio F %	Roe Yield % Vol.	Roe Yield % Adj. Vol.	Roe Grade (Pcs) #1	Roe Grade (Pcs) #2	Roe Grade (Pcs) #3	Spn Out	Juv. or Imm.	Average Length (cm)
152 (15)	1	Frolander Bay (Malaspina Strait)	27/02/87	1610	200	100	25	7.7	1	42	51	41	49	0.0	0.0	0	0	41			20.7
					Herring feeding on Euphasids				2	34	40	51	60	0.0	0.0	0	0	51			
152 (15)	2	Myrtle Point (Malaspina Strait)	28/02/87	1050	2000	250	50		1	56	60	37	40	0.0	0.0	0	2	35			20.5
					Herring feeding on Euphasids				2	44	49	45	51	0.0	0.0	0	2	43			
152 (15)	3	Albian Point (Malaspina Strait)	01/03/87	0720	1000	250	10	7.1	1	55	61	35	39	0.0	0.0	0	1	34	1		20.5
					Herring feeding on Euphasids				2	45	51	44	49	0.0	0.0	0	4	40	2		
									3	46	49	47	51	0.0	0.0	0	2	45	1		
152 (15)	4	Black Point (Malaspina Strait)	01/03/87	1205	3000	200	30	7.2	1	45	52	41	48	0.0	0.0	0	3	38	1		20.9
					Herring feeding on Euphasids				2	46	53	40	47	0.8	0.9	3	0	37			
									3	48	55	40	45	0.0	0.0	0	2	38			
152 (15)	5	Myrtle Rocks (Malaspina Strait)	02/03/87	1010	400	75	0	7.3		Water Haul											
152 (15)	6	Myrtle Point (Malaspina Strait)	02/03/87	1140	400	350	0	7.5		Water Haul											
152 (15)	7	Myrtle Point (Malaspina Strait)	02/03/87	1345	400	75	0	7.5		Water Haul											
152 (15)	8	Myrtle Point (Malaspina Strait)	02/03/87	1440	3500	400	300	7.5	1	39	49	41	51	0.0	0.0	1	3	37		9	20.1
									2	36	41	52	59	0.0	0.0	1	3	48		3	
									3	51	57	38	43	0.0	0.0	0	2	36		4	
152 (15)	9	Stillwater (Malaspina Strait)	03/03/87	0630	3500	150	75	7.2	1	39	51	37	49	0.0	0.0	1	6	30		7	18.1
									2	46	50	46	50	1.5	1.5	6	5	35		15	
152 (15)	10	Stillwater (Malaspina Strait)	03/03/87	1800	1500	150	80	7.2	1	38	42	52	58	0.0	0.0	0	7	45		3	20.0
									2	38	50	38	50	0.0	0.0	3	4	31		2	
152 (15)	11	Grief Point (Westview)	04/03/87	0720	800	450	0	7.5		Water Haul											
152 (15)	12	Westview Ferry Dock	04/03/87	1430	450	75	75	7.2	1	41	57	31	43	2.8	3.3	6	3	22		7	21.3
									2	42	59	29	41	0.5	0.6	2	1	26		6	
152 (15)	13	3/4 m. W Black Point (Malaspina St.)	04/03/87	1720	3000	550	4	7.2	1	44	55	36	45	1.4	1.6	5	2	29		9	20.4
									2	46	49	47	51	1.1	1.1	4	2	41		4	
152 (15)	14	1/2 m. W of Mill (Powell River)	05/03/87	0615	500	350 skim	10	7.1		No Information											

Table 20 (cont'd) Seine set data and roe yield information. ROE HERRING CHARTER SEINER " SEABOUND ", STAT. AREAS 14, 15, 17, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage			Temp. (C)	Test No.	Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Spn Out	Juv. or Imm.	Average Length (cm)
					In Loc.	Set On	Est. Catch			M No.	%	F No.	%	Vol.	Adj. Vol.	#1	#2	#3			
152 (15)	15	Westview Ferry Dock	05/03/87	0730	1000+	400	0	7.2		Water Haul											
152 (15)	16	1/2 m. SE Kelly Pt.	06/03/87	0615	5500	skimmer	1	7.4	1	17	16	92	84	0.0	0.0	0	2	90		2	19.6
					Set not representative				2	15	14	93	86	0.4	0.2	1	1	91		10	
152 (15)	17	1/2 m. SW Black Pt. Westview	06/03/87	0900	3500	350	40	7.0	1	47	58	34	42	2.1	2.5	8	2	24		2	21.0
									2	32	39	51	61	3.7	3.0	12	6	33		1	
									3	38	46	45	54	3.8	3.5	13	5	27			
152 (15)	18	Hulks - (East end) (Powell River)	06/03/87	1630	300	80	30	8.2	1	47	55	38	45	4.7	5.2	5	9	24		3	20.5
									2	46	55	38	45	3.8	4.2	18	11	9		4	
									3	55	65	30	35	1.7	2.4	5	9	16		3	
152 (15)	19	W. End of Breakwater (Westview)	07/03/87	0620	700/800	150	50	7.8	1	51	52	47	48	2.3	2.4	10	3	34		2	19.8
									2	49	50	49	50	3.1	3.1	12	6	31		2	
									3	53	54	46	46	3.1	3.4	12	2	32		2	
152 (15)	20	5/8 m S Myrtle Rocks (Malaspina St.)	07/03/87	0830	2000	475	200	7.8	1	41	40	61	60	2.5	2.1	13	4	44		4	19.8
									2	34	34	66	66	2.2	1.7	9	4	53		2	
									3	42	42	59	58	1.9	1.6	8	8	43		5	
142 (14)	21	1 m. East of Longbeak Point	07/03/87	1230	800	80	20	8.2	1	33	41	47	59	5.1	4.3	18	6	23	13		20.8
									2	31	42	43	58	4.8	4.1	16	8	19	14		
									3	31	41	45	59	5.1	4.3	18	6	21	9	1	
142 (14)	22	1 1/2 m. NW Collishaw Point	07/03/87	1430	300	150	0	7.8		Water Haul											
152 (15)	23	1/3 m. N. of Harwood Island	08/03/87	0615	200	30	2	7.8		No Information											
152 (15)	24	1 1/4 m. SE Sliammon	08/03/87	0730	2000	100+	10	7.4	1	55	51	53	49	3.1	3.2	15	5	33		9	19.5
									2	52	54	45	46	1.6	1.7	8	4	33		18	
									3	53	51	51	49	4.0	4.1	18	4	29		8	
152 (15)	25	Hurtado Point	08/03/87	1515	250	250	0	8.1		Water Haul											
152 (15)	26	Hurtado Point	08/03/87	1600	450	300	60	8.1	1	45	55	37	45	5.6	6.2	21	3	13		16	20.4
									2	41	50	41	50	5.1	5.1	24	5	12		14	
									3	43	52	40	48	4.5	4.7	20	2	18		11	
																(32 spnd out,& only 9 imm.s in test #3)					
152 (15)	27	Sliammon Point	09/03/87	0745	100	100	20	8.0	1	31	40	46	60	1.7	1.4	6	11	29	26		20.3
									2	27	33	55	67	1.6	1.2	5	8	42	16		
									3	50	51	48	49	0.5	0.5	2	11	35	24		
172 (17)	28	1/2 m. West of Malaspina Point	10/03/87	1240	200/300	30	0			Water Haul											

Table 20 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER " SEABOUND ", STAT. AREAS 14, 15, 17, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage In Loc.	Tonnage Set On	Tonnage Est. Catch	Temp. (C)	Test No.	Sex Ratio M No.	Sex Ratio M %	Sex Ratio F No.	Sex Ratio F %	Roe Yield % Vol.	Roe Yield % Adj. Vol.	Roe Grade (Pcs) #1	Roe Grade (Pcs) #2	Roe Grade (Pcs) #3	Spn Out	Juv. or Imm.	Average Length (cm)
172 (17)	29	Outside Descanso Bay	10/03/87	1400	200/300	50	50	8.4	1	22	51	21	49	2.5	2.6	12	2	7	57		21.0
									2	23	50	23	50	2.7	2.7	14	0	9	49		
173 (17)	30	Northumberland Ch (Gabriola Shore)	10/03/87	1540	15,000+	60	20	8.4	1	77	59	53	41	1.6	2.0	10	5	38		5	18.7
									2	69	56	55	44	2.4	2.7	17	3	35		12	
173 (17)	31	Northumberland Ch (Mid Channel)	0/03/87	1930	15,000	skimmer	150	8.3	1	73	57	56	43	1.2	1.4	9	0	47	14	1	18.8
									2	73	60	49	40	1.1	1.4	7	4	38	16	1	
									3	66	52	60	48	1.3	1.4	9	5	46	11	2	
173 (17)	32	SE tip DeCourcy Is. Pylades Ch.	12/03/87	0850	100	5	5	8.3	1	60	59	41	41	9.4	11.5	37	2	2		3	20.5
									2	49	53	43	47	11.5	12.2	40	1	2	1	1	
									3	52	53	47	47	11.5	12.2	43	3	1			
									4	46	48	50	52	12.0	11.5	47	1	2		1	
									5	44	47	49	53	11.9	11.2	44	5	0	2		
172 (17)	33	Outside Descanso Bay	12/03/87	1450	400/500	100	100	8.4	1	28	51	27	49	4.9	5.0	19	0	8	45	1	20.8
									2	23	37	39	63	7.1	5.6	30	1	8	34		
									3	30	60	20	40	3.0	3.8	14	1	5	53		
173 (17)	34	1/2 m. SW of Carlos Island	12/03/87	1745	800/1000	125	125		1	31	41	44	59	5.1	4.3	30	0	14	36	1	20.3
									2	31	51	30	49	4.6	4.7	20	1	9	40	1	
									3	26	42	36	58	6.2	5.3	27	0	9	45		
173 (17)	35	Pylades Channel False Narrows	13/03/87	0645	60	60	0.01	8.3		Water Haul											
172 (17)	36	Neck Point	13/03/87	1945	300/500	5	5	8.4	1	19	53	17	47	2.6	2.8	11	0	6	69	1	20.7
172 (17)	37	1/4 m. E of Southey Island	14/03/87	0635	700+	300	30	8.3	1	38	49	40	51	12.9	12.6	39	1	0	3		21.2
									2	42	54	36	46	11.2	12.2	35	0	1	1		
									3	37	48	40	52	11.4	11.0	38	0	2	4		
									4	47	63	28	37	9.0	12.2	26	0	2	3		
172 (17)	38	Inside Gerald Island	14/03/87	1040	700	150	0	8.0		Water Haul											
172 (17)	39	Off west end of Gerald Island	14/03/87	1140	700/1000	125	0	8.0		Water Haul											
143 (14)	40	NW side of Mistaken Island	14/03/87	1405	1000+	250	0	8.2		Water Haul											
172 (17)	41	NW tip Gerald Island	14/03/87	1525	1000+	150	0.01	8.2	1	33	65	18	35	4.0	5.7	17	0	1	57		20.6
172 (17)	42	1/2 m. off Schooner Cove	15/03/87	0645	300	100	0	8.4		Water Haul											

Table 21. Length frequency distribution of herring. ROE HERRING CHARTER SEINER " SEABOUND ", STAT. AREAS 14, 15, 17, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Biol. Sample No.	Length Frequency (cm) 12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	27-28	Sample Size	Average Length (cm)	Cutoff (cm)	% Below Cutoff
152 (15)	1	Frolander Bay - Malaspina Strait	27/02/87	1610	1						1	4	25	31	25	10	4					100	20.7	19.0	5
152 (15)	2	Myrtle Point - Malaspina Strait	28/02/87	1050	2						1	9	18	41	20	8	1					98	20.5	19.0	10
152 (15)	3	Albian Point - Malaspina Strait	01/03/87	0720	3						1	13	25	22	26	12	1					100	20.5	19.0	14
152 (15)	4	Black Point - Malaspina Strait	01/03/87	1205	4						2	2	18	38	24	11	6	1				102	20.9	19.0	4
152 (15)	5	Myrtle Rocks - Malaspina Strait	02/03/87	1010				Water Haul																	
152 (15)	6	Myrtle Point - Malaspina Strait	02/03/87	1140				Water Haul																	
152 (15)	7	Myrtle Point - Malaspina Strait	02/03/87	1345				Water Haul																	
152 (15)	8	Myrtle Point - Malaspina Strait	02/03/87	1440	5			1	2		2	14	27	29	16	7	2					100	20.1	19.0	19
152 (15)	9	Stillwater - Malaspina Strait	03/03/87	0630	6	4	1		1	7	31	27	20	6	2							99	18.1	19.0	72
152 (15)	10	Stillwater - Malaspina Strait	03/03/87	1800	7				7	4	1	10	16	32	17	12	1					100	20.0	19.0	22
152 (15)	11	Grief Point - Westview	04/03/87	0720				Water Haul																	
152 (15)	12	Westview Ferry Dock	04/03/87	1430	8								7	29	41	20	3					100	21.3	19.0	0
152 (15)	13	3/4 m. W Black Point-Malaspina St.	04/03/87	1720	9				1	1	1	12	18	36	21	8	2					100	20.4	19.0	15
152 (15)	14	1/2 m. W of Mill - Powell River	05/03/87	0615				No Information																	
152 (15)	15	Westview Ferry Dock	05/03/87	0730				Water Haul																	
152 (15)	16	1/2 m. SE Kelly Point	06/03/87	0615	10				3		2	17	40	29	9							100	19.6	19.0	15
						Sample not representative																			
152 (15)	17	1/2 m. SW Black Point - Westview	06/03/87	0900	11				1			6	9	31	32	15	6					100	21.0	19.0	7
152 (15)	18	Hulks - (East end) - Powell River	06/03/87	1630	12	1			1			6	26	30	22	12	2					100	20.5	19.0	7
152 (15)	19	W. End of Breakwater - Westview	07/03/87	0620	13		1		4	3	1	16	23	33	11	5	2	1				100	19.8	19.0	25
152 (15)	20	5/8 m S Myrtle Rocks-Malaspina St.	07/03/87	0830	14				2	2	2	20	28	26	17	2	1					100	19.8	19.0	26
142 (14)	21	1 m. E. of Longbeak Point	07/03/87	1230	15						1	5	23	30	24	12	2	3				100	20.8	19.0	6
142 (14)	22	1 1/2 m. NW Collishaw Point	07/03/87	1430				Water Haul																	
152 (15)	23	1/3 m. N. of Harwood Island	08/03/87	0615	16			No Information																	
152 (15)	24	1 1/4 m. SE Sliammon	08/03/87	0730	17		1	3	6	3		15	24	31	10	6	1					100	19.5	19.0	28
152 (15)	25	Hurtado Point	08/03/87	1515				Water Haul																	
152 (15)	26	Hurtado Point	08/03/87	1600	18					3	1	6	29	29	25	7	1					101	20.4	19.0	10
152 (15)	27	Sliammon Point	09/03/87	0745	19						1	10	32	32	17	6		2				100	20.3	19.0	11
172 (17)	28	1/2 m. West of Malaspina Point	10/03/87	1240				Water Haul																	
172 (17)	29	Outside Descanso Bay	10/03/87	1400	20			1	1	1	1	8	16	17	24	19	10	2				100	21.0	19.0	12
173 (17)	30	Northumberland Ch - Gabriola Shore	10/03/87	1540	21			1	4	6	12	37	24	12	3	1						100	18.7	19.0	60
173 (17)	31	Northumberland Ch - Mid Ch.	10/03/87	1930	22		1	2	3	3	21	35	13	12	5	4		1				100	18.8	19.0	65
173 (17)	32	SE tip DeCourcy Is.-Pylades Ch.	12/03/87	0850	23			1	1	2	3	13	16	22	19	16	6	1				100	20.5	19.0	20
172 (17)	33	Outside Descanso Bay	12/03/87	1450	24							6	24	26	24	19	1					100	20.8	19.0	6
173 (17)	34	1/2 m. SW of Carlos Island	12/03/87	1745	25				2	4	5	12	14	23	26	14						100	20.3	19.0	23
173 (17)	35	Pylades Channel - False Narrows	13/03/87	0645				Water Haul																	
172 (17)	36	Neck Point	13/03/87	1945	26						3	4	28	22	26	13	4					100	20.7	19.0	7
172 (17)	37	1/4 m. E of Southey Island	14/03/87	0635	27						2	3	14	18	34	21	8					100	21.2	19.0	5
172 (17)	38	Inside Gerald Island	14/03/87	1040				Water Haul																	
172 (17)	39	Off west end of Gerald Island	14/03/87	1140				Water Haul																	
143 (14)	40	NW side of Mistaken Island	14/03/87	1405				Water Haul																	
172 (17)	41	NW tip Gerald Island	14/03/87	1525	28					1	1	4	24	32	41	4	1					108	20.6	19.0	6
172 (17)	42	1/2 m. off Schooner Cove	15/03/87	0645				Water Haul																	

Table 22. Seine set data and roe yield information. ROE HERRING CHARTER SEINER " FRANCISCAN NO.1 ", STAT. AREAS 14, 17, 18, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage			Temp. (C)	Test No.	Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Spn	Juv. or Imm.	Average Length (cm)
					In Loc.	Set On	Est. Catch			M No.	%	F No.	%	Vol.	Adj. Vol.	#1	#2	#3	Out		
173 (17)	1	Northumberland Channel	23/02/87	1810	8,000 / 10,000	150	150	7.5	1	84	59	59	41	0.0	0.0	0	0	59		16	
									2	72	55	59	45	0.0	0.0	0	0	59		18	
173 (17)	2	Northumberland Channel	23/02/87	2035	8,000 / 10,000	2,000	150 / 200	7.1	1	51	57	38	43	0.0	0.0	0	0	38			20.9
									2	44	51	43	49	0.0	0.0	0	1	42		2	
172 (17)	3	Nanoose Bay - Inside	25/02/87	0510	300	300	75 / 100	7.3	1	43	48	47	52	0.0	0.0	0	1	46		2	20.8
									2	44	51	42	49	0.0	0.0	0	1	41			
173 (17)	4	Northumberland Channel	26/02/87	1745	18,000 / 20,000		200 / 300	7.8	1	43	53	38	47	0.0	0.0	0	0	38		1	20.6
									2	43	47	48	53	0.0	0.0	0	2	46		4	
173 (17)	5	Northumberland Channel	27/02/87	0600	20,000 / 25,000	skimmer	25 / 30	7.4	1	65	51	62	49	0.0	0.0	0	0	62		5	18.9
									2	64	53	56	47	0.0	0.0	0	0	56		9	
183 (18)	6	Plumper Sound	27/02/87	1935	1,000	skimmer	10 / 15	7.8	1	49	57	37	43	0.0	0.0	0	0	37			21.0
									2	43	51	41	49	0.0	0.0	0	0	41			
173 (17)	7	Trincomali Channel	01/03/87	0540	100 / 200	skimmer	10	7.8	1	93	60	63	40	6.3	7.9	58	4	1		16	18.2
									2	80	53	71	47	4.7	5.0	43	20	8		11	
									3	109	52	99	48	4.5	4.7	60	12	27		17	
181 (18)	8	Enterprise Reef	01/03/87	0630	700 / 800	skimmer	20 / 30	7.7	1	44	47	49	53	0.0	0.0	0	0	49		1	20.7
									2	43	46	50	54	0.0	0.0	0	1	49	2		
173 (17)	9	Northumberland Channel	02/03/87	1820	20,000+	skimmer	200+	7.5	1	41	47	46	53	0.9	0.8	4	6	36		2	20.7
									2	44	49	45	51	0.0	0.0	1	4	40		1	
									3	34	41	49	59	1.3	1.1	3	5	41		3	
173 (17)	10	Northumberland Channel	04/03/87	1755	12,000	skimmer	40	8.2	1	46	48	50	52	2.0	1.9	7	5	38		2	20.1
									2	39	46	45	54	4.1	3.8	9	4	32		1	
									3	54	53	48	47	0.8	0.8	5	10	33		3	
173 (17)	11	Northumberland Channel	05/03/87	0445	20,000	skimmer	50 / 75	8.2	1	46	46	55	54	3.2	2.9	11	4	40			20.6
									2	47	49	49	51	2.5	2.5	9	5	35		2	
									3	42	42	58	58	2.7	2.3	10	4	44		1	

Table 22 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER " FRANCISCAN NO.1 ", STAT. AREAS 14, 17, 18, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage In Loc.	Tonnage Set On	Tonnage Est. Catch	Temp. (C)	Test No.	Sex Ratio M No.	Sex Ratio M %	Sex Ratio F No.	Sex Ratio F %	Roe Yield % Vol.	Roe Yield % Adj. Vol.	Roe Grade (Pcs) #1	Roe Grade (Pcs) #2	Roe Grade (Pcs) #3	Spn Out	Juv. or Imm.	Average Length (cm)
173 (17)	12	Stuart Channel	05/03/87	1900		30/40	1	8.2	1	47	47	53	53	4.9	4.6	17	4	32		3	20.1
									2	61	56	48	44	2.0	2.2	8	4	36		4	
173 (17)	13	Northumberland Channel	06/03/87	1915	10,000	skimmer	30	8.2	1	64	58	47	42	2.7	3.2	13	3	31		10	19.1
									2	61	56	47	44	1.7	1.9	10	3	34		13	
									3	82	65	45	35	2.0	2.9	10	4	31		9	
173 (17)	14	Northumberland Channel	06/03/87	2130	10,000+	skimmer	200+	8.2	1	41	51	40	49	5.7	5.8	19	4	17		1	21.2
									2	50	60	34	40	4.7	5.8	17	5	12			
									3	33	41	48	59	5.8	4.9	20	10	18			
143 (14)	15	Northwest Bay	07/03/87	0930	3 schools	100	0	8.3		Water Haul											
143 (14)	16	Mistaken Island	07/03/87	1630	1,000	150	0	8.5		Water Haul											
143 (14)	17	Northwest Bay	08/03/87	0540	1,000	500	200	8.2	1	31	50	31	50	4.8	4.8	20	5	6	31	2	21.4
									2	32	53	28	47	5.1	5.4	19	2	7	37	2	
									3	32	46	38	54	4.2	3.8	20	4	14	20	2	
									4	44	37	75	63	5.5	4.4	31	23	21	41		
172 (17)	18	Neck Point	08/03/87	1035		80	10		1	50	50	50	50	6.8	6.8	32	1	17	1	4	20.1
									2	57	57	43	43	5.6	6.5	25	4	14	5	1	
									3	67	58	48	42	5.0	6.0	26	2	20	2		
172 (17)	19	Neck Point	08/03/87	1210		80/100	0	7.8		Water Haul											
173 (17)	20	Northumberland Channel	08/03/87	1830	10,000	skimmer	150/200	8.2	1	63	53	57	47	0.9	0.9	5	3	49		12	19.2
									2	51	43	68	57	3.7	3.2	17	4	47	4	5	
									3	50	42	70	58	1.3	1.1	8	3	59	1	18	
173 (17)	21	Northumberland Channel	08/03/87	1930	10,000	skimmer	100/125	8.2	1	54	48	58	52	2.9	2.7	15	3	40	4	2	20.2
									2	64	60	42	40	1.3	1.7	7	1	34	1	2	
									3	65	64	37	36	1.0	1.4	5	2	30	3	1	
173 (17)	22	Northumberland Channel	10/03/87	1929	15,000		150	8.3	1	51	55	41	45	4.5	5.0	16	2	23	4	3	20.0
									2	48	55	40	45	4.8	5.4	19	4	17	6	2	
									3	50	51	48	49	4.2	4.2	19	4	25	5	2	
172 (17)	23	Icarus Point - south	12/03/87	0715	150	70	0	7.9		Water Haul											

Table 22 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER " FRANCISCAN NO.1 ", STAT. AREAS 14, 17, 18, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage In Loc.	Tonnage Set On	Tonnage Est. Catch	Temp. (C)	Test No.	Sex Ratio M No.	Sex Ratio M %	Sex Ratio F No.	Sex Ratio F %	Roe Yield % Vol.	Roe Yield % Adj. Vol.	Roe Grade (Pcs) #1	Roe Grade (Pcs) #2	Roe Grade (Pcs) #3	Spn Out	Juv. or Imm.	Average Length (cm)
173 (17)	24	Northumberland Channel	12/03/87	1900	12,000 / 15,000	1,500	150		1	61	55	49	45	3.3	3.7	18	2	29	7		19.7
									2	41	43	54	57	6.9	6.1	28	5	21	8	2	
									3	60	54	51	46	3.1	3.4	18	6	27	7	2	
									4	54	50	55	50	5.3	5.3	25	7	23	6		
173 (17)	25	Pylades Channel	13/03/87	0945	200	100	0	8.0		Water Haul											
181 (18)	26	Swanson Channel	13/03/87	1853	700 / 800	30	2	8.1	1	32	43	42	57	0.7	0.6	4	3	35	31	2	19.9
									2	28	42	39	58	1.2	1.1	7	2	30	42		
									3	32	48	34	52	0.3	0.3	3	1	30	39	1	
173 (17)	27	Northumberland Channel	14/03/87	1008	12,000 / 15,000	2,000 / 3,000	100 / 150	8.2	1	61	54	52	46	1.5	1.7	11	1	40	16		18.9
									2	52	47	59	53	2.7	2.5	12	4	43	17	1	
									3	52	53	46	47	4.0	4.3	17	3	26	18	2	
									4	50	45	60	55	2.4	2.2	12	7	41	21	2	
173 (17)	28	Stuart Channel	14/03/87	1115	100	150	50	8.3	1	66	53	59	47	5.7	6.1	31	4	24	5		19.0
									2	63	53	55	47	5.5	5.9	31	3	21	6	1	
									3	57	52	52	48	3.9	4.1	22	5	25	11	1	
									4	58	47	66	53	6.2	5.8	34	3	29	5		
173 (17)	29	Stuart Channel	15/03/87	0627	2,000	50 / 60	25	8.4	1	59	46	70	54	6.2	5.7	42	6	22	4	1	18.8
									2	77	55	63	45	6.9	7.7	45	5	13	1		
172 (17)	30	1/4 m. west Winchelsea Island	15/03/87	1230		150	0	8.4		Water Haul											

Table 23. Length frequency distribution of herring. ROE HERRING CHARTER SEINER " FRANCISCAN NO.1 ", STAT. AREAS 14, 17, 18, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Biol. Sample No.	Length Frequency (cm) 12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	24 25	25 26	26 27	27 28	Sample Size	Average Length (cm)	Cutoff (cm)	% Below Cutoff
173 (17)	1	Northumberland Channel	23/02/87	1810	1		1		6	7	20	43	14	6		3						100	18.3	19.0	77
173 (17)	2	Northumberland Channel	23/02/87	2035	2						3	6	15	24	34	13	4	1				100	20.9	19.0	9
172 (17)	3	Nanoose Bay - inside	25/02/87	0510	3						1	13	17	20	27	14	8					100	20.8	19.0	14
173 (17)	4	Northumberland Channel	26/02/87	1745	4				1		4	18	15	15	22	19	6					100	20.6	19.0	23
173 (17)	5	Northumberland Channel	27/02/87	0600	5				2	5	19	36	19	13	2	2			2			100	18.9	19.0	62
183 (18)	6	Plumper Sound	27/02/87	1935	6				2			12	14	22	24	14	8	3	1			100	21.0	19.0	14
173 (17)	7	Trincomali Channel	01/03/87	0540	7		1	9	11	16	12	13	15	8	9	3	3					100	18.2	19.0	62
181 (18)	8	Enterprise Reef	01/03/87	0630	8					1	6	7	16	24	23	21	2					100	20.7	19.0	14
173 (17)	9	Northumberland Channel	02/03/87	1820	9					1	7	5	19	20	30	10	8					100	20.7	19.0	13
173 (17)	10	Northumberland Channel	04/03/87	1755	10				1	1	9	14	23	23	14	10	3	2				100	20.1	19.0	25
173 (17)	11	Northumberland Channel	05/03/87	0445	11						1	12	20	24	26	13	3					99	20.6	19.0	13
173 (17)	12	Stuart Channel	05/03/87	1900	12				Sample	Is	not	representative													
173 (17)	13	Northumberland Channel	06/03/87	1915	13				1	6	16	28	21	19	11	1						103	19.1	19.0	50
173 (17)	14	Northumberland Channel	06/03/87	2130	14						2	8	15	16	27	19	10	1	2			100	21.2	19.0	10
143 (14)	15	Northwest Bay	07/03/87	0930			Water		Haul																
143 (14)	16	Mistaken Island	07/03/87	1630			Water		Haul																
143 (14)	17	Northwest Bay	08/03/87	0540	15							2	12	29	21	25	10	2				101	21.4	19.0	2
172 (17)	18	Neck Point	08/03/87	1035	16						12	19	15	29	12	7	5	1				100	20.1	19.0	31
172 (17)	19	Neck Point	08/03/87	1210			Water		Haul																
173 (17)	20	Northumberland Channel	08/03/87	1830	17				2	1	20	30	18	15	8	6						100	19.2	19.0	53
173 (17)	21	Northumberland Channel	08/03/87	1930	18					2	2	21	25	20	16	7	4	2	1			100	20.2	19.0	25
173 (17)	22	Northumberland Channel	10/03/87	1929	19				1	4	5	16	22	28	13	8	3					100	20.0	19.0	25
172 (17)	23	Icarus Point - south	12/03/87	0715			Water		Haul																
173 (17)	24	Northumberland Channel	12/03/87	1900	20				1	4	5	30	19	21	14	4		2				100	19.7	19.0	40
173 (17)	25	Pylades Channel	13/03/87	0945			Water		Haul																
181 (18)	26	Swanson Channel	13/03/87	1853	21				2	1	8	19	17	33	10	7	3					100	19.9	19.0	30
173 (17)	27	Northumberland Channel	14/03/87	1008	22				3	3	20	33	20	12	4	4	1					100	18.9	19.0	59
173 (17)	28	Stuart Channel	14/03/87	1115	23			1	4	4	14	31	21	14	8	3						100	19.0	19.0	54
173 (17)	29	Stuart Channel	15/03/87	0627	24			1	1	6	18	31	23	14	5	1						100	18.8	19.0	57
172 (17)	30	1/4 m. west Winchelsea Island	15/03/87	1230			Water		Haul																

Table 24. Seine set data and roe yield information. ROE HERRING CHARTER SEINER " ARGENT FISHER ", STAT. AREAS 13, 14, 15, 17, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage In Loc.	Tonnage Set On	Tonnage Est. Catch	Temp. (C)	Test No.	Sex Ratio M No.	Sex Ratio M %	Sex Ratio F No.	Sex Ratio F %	Roe Yield % Vol.	Roe Yield % Adj. Vol.	Roe Grade (Pcs) #1	Roe Grade (Pcs) #2	Roe Grade (Pcs) #3	Spn Out	Juv. or Imm.	Average Length (cm)
142 (14)	1	Ships Point (Lower Baynes Sound)	23/02/87	2020	1000/1500	skimmer	150	7.6	1	41	51	40	49	0.0	0.0	0	0	40		2	21.0
142 (14)	2	Metcalf Bay (Lower Baynes Sound)	24/02/87	0540	2500	skimmer	350/400	7.0	1	36	43	48	57	0.0	0.0	0	0	48		2	21.3
152 (15)	3	S. Westview Dock	24/02/87	1301		500	250	7.6	1	47	52	43	48	0.0	0.0	0	0	43		1	20.7
152 (15)	4	Westview Ferry Dock	25/02/87	0610	4000	300	300	7.3	1	38	41	54	59	0.0	0.0	0	0	54		1	20.7
142 (14)	5	Lambert Channel	25/02/87	1612	1500	220	190	7.5	1	34	40	51	60	0.0	0.0	0	0	51			21.0
142 (14)	6	Metcalf Bay (Lower Baynes Sound)	26/02/87	0535	6000	skimmer	100	7.5	1	35	41	51	59	0.0	0.0	0	4	47			20.8
142 (14)	7	Maude Reef (Lambert Channel)	27/02/87	0948		200	0	7.5		Water Haul											
142 (14)	8	Chrome Island (Lambert Channel)	27/02/87	1615	400	200	100	7.6	1	44	54	38	46	0.0	0.0	1	2	35			21.2
									2	45	56	36	44	0.0	0.0	0	3	33			
142 (14)	9	Ships Point (Lower Baynes Sound)	28/02/87	0715	6000	350/400	300	7.3	1	44	55	36	45	0.0	0.0	1	6	29			21.1
									2	51	61	33	39	0.0	0.0	2	7	24			
142 (14)	10	Upper Baynes Sound	28/02/87	1050	6000	150	100	7.0	1	20	25	61	75	0.0	0.0	1	2	38			20.7
									2	35	40	52	60	0.0	0.0	0	5	47			
142 (14)	11	Heron Rocks (Lambert Channel)	02/03/87	0753		200	0	7.4		Water Haul											
142 (14)	12	Heron Rocks (Lambert Channel)	02/03/87	0847	1000	200	0	7.4		Water Haul											
142 (14)	13	Norris Rocks	02/03/87	1055	1000	500	0	7.4		Water Haul											
142 (14)	14	Norris Rocks	02/03/87	1130			0	7.4		Water Haul											
142 (14)	15	Shingle Spit	03/03/87	0545	500	250	5	7.5	1	32	50	32	50	3.9	3.9	14	7	11			21.0
									2	30	36	54	64	6.3	4.9	21	10	23			
									3	42	52	39	48	5.7	5.9	18	12	9			
142 (14)	16	Ships Point (Lower Baynes Sound)	05/03/87	1050	600/700	150	0			Water Haul											
142 (14)	17	Metcalf Bay (Lower Baynes Sound)	05/03/87	1400	1000/2000	250	0			Water Haul											

Table 24 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER " ARGENT FISHER ", STAT. AREAS 13, 14, 15, 17, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage			Temp. (C)	Test No.	Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Spn	Juv. or Imm.	Average Length (cm)
					In Loc.	Set On	Est. Catch			M No.	%	F No.	%	Vol.	Adj. Vol.	#1	#2	#3	Out		
142 (14)	18	Repulse Point (Lower Baynes Sd.)	05/03/87	1540	1000	200	40	8.0	1	45	49	46	51	5.9	5.8	18	4	24		1	20.4
									2	43	51	42	49	5.0	5.1	17	5	20			
									3	34	40	52	60	6.5	5.4	22	11	19		1	
142 (14)	19	Tralee Point	06/03/87	1220	200	100	0	7.9		Water Haul											
142 (14)	20	North of Whaling Station Bay	06/03/87	1335	750	350	0	7.9		Water Haul											
142 (14)	21	Tralee Point	06/03/87	1550	2000	350/400		8.0	1	43	54	37	46	6.3	6.8	20	10	7			
142 (14)	22	Phipps Point	07/03/87	0440		60/70	20	8.1	1	36	50	36	50	8.2	8.2	24	8	4	5		21.1
									2	41	51	39	49	9.6	9.8	32	3	4	4		
									3	42	51	40	49	8.9	9.1	30	6	4	1		
142 (14)	23	St. John's Point	07/03/87	0845	600	100	0	8.0		Water Haul											
142 (14)	24	St. John's Point	07/03/87	0930	1000+	300	90	8.0	1	36	44	45	56	7.6	6.8	25	6	14	6		20.7
									2	40	49	41	51	4.7	4.6	19	4	18	12		
									3	36	47	40	53	6.7	6.3	24	3	13	13		
142 (14)	25	Just off Fillongley Park	07/03/87	1245		300	few lbs	8.1	1	47	71	19	29	5.3	9.1	16	2	1	10		22.0
										Sample not representative											
142 (14)	26	1 m. N. of Hornby Is.	07/03/87	1540	1000	350	300	8.5	1	42	53	37	47	9.3	9.9	30	2	5			21.3
									2	46	58	34	42	6.3	7.5	22	4	8	4		
									3	33	40	49	60	10.0	8.3	36	5	8	4		
									4	37	49	39	51	8.6	8.4	27	7	5	4		
143 (14)	27	Northwest Bay	10/03/87	0520	500	150	90	8.5	1	43	49	44	51	4.8	4.7	22	4	18	7		20.2
									2	38	54	33	46	3.9	4.2	16	4	13	36		
143 (14)	28	Nuttal Bay	10/03/87	0830	200	200	0	8.2		Water Haul											
172 (17)	29	1 m. S. of Maude Is.	11/03/87	0615	200	60	60	8.3	1	7	30	16	70	1.9	1.4	8	1	7	74		20.7
									2	13	46	15	54	3.7	3.4	13	0	2	67	1	
135 (13)	30	Just E. of Hyacinthe Point	12/03/87	0515	2000/3000	skimmer	40	7.8	1	58	52	54	48	2.6	2.7	11	13	30		5	18.8
									2	57	50	56	50	3.6	3.6	18	6	32		3	

Table 24 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER " ARGENT FISHER ", STAT. AREAS 13, 14, 15, 17, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage			Temp. (C)	Test No.	Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Spn Out	Juv. or Imm.	Average Length (cm)
					In Loc.	Set On	Est. Catch			M No.	%	F No.	%	Vol.	Adj. Vol.	#1	#2	#3			
152 (15)	31	1/4 m. N. of Powell River Mill	13/03/87	1135	1000+	100+	0	8.3		Water Haul											
152 (15)	32	1/2 m. NW of Powell River Mill	13/03/87	1305		40	7/8	8.4	1	39	40	59	60	10.4	8.7	43	7	9	2		19.4
									2	46	44	58	56	3.1	2.8	38	13	7	4		
									3	49	50	49	50	8.6	8.6	39	5	5	5		
									4	41	44	53	56	10.3	9.2	45	4	4	6		
152 (15)	33	Off Entrance to Scuttle Bay	13/03/87	1640	100	80	80	8.2	1	35	40	52	60	13.3	11.1	51	1	0	3		20.5
									2	58	64	32	36	7.5	10.4	30	1	1	4		
									3	38	45	46	55	10.3	9.4	43	3	0	9		
									4	35	42	48	58	11.7	10.1	46	2	0	4		
									5	36	43	47	57	12.3	10.8	44	3	0	6		
152 (15)	34	NW of Atrevida Reef Buoy	14/03/87	0740	400	300	200	7.9	1	41	43	54	57	9.8	8.6	41	5	8	9		19.8
									2	48	51	47	49	8.8	9.0	37	5	5	4		
									3	51	50	50	50	7.6	7.6	36	5	9	10		
									4	41	42	56	58	8.3	7.2	34	10	12	4		
									5	43	41	61	59	8.8	7.5	39	10	12	4		
152 (15)	35	East Side of Mystery Reef	14/03/87	1120		175	160	8.1	1	29	39	45	61	10.3	8.4	44	0	1			19.8
									2	41	47	46	53	11.7	11.0	45	1	0	1		
									3	41	42	56	58	12.6	10.9	55	1	0			
									4	53	54	45	46	10.1	11.0	40	5	0	1		
									5	51	52	48	48	10.3	10.7	44	0	4	2		
142 (14)	36	Phippe Point	15/03/87	1910		skimmer	20	8.5		Spawned Out											19.6
142 (14)	37	Lambert Channel (Chrome Island)	16/03/87	0600	200	100	30	8.3	1	48	57	36	43	8.7	10.1	35	0	1	9		21.1
									2	45	54	39	46	10.7	11.6	39	0	0	10		
									3	43	53	38	47	8.7	9.3	37	1	0	12		
173 (17)	38	Stuart Channel (Yellow Point)	19/03/87	1210	300	25/30	4	8.7	1	35	47	39	53	3.8	3.6	26	7	6	51		19.0
									2	24	35	45	65	6.0	4.6	30	9	6	64		
173 (17)	39	Northumberland Channel	19/03/87	1922	2500	L.skimmer	35	8.3	1	34	49	36	51	4.1	4.0	19	2	15	54		19.2
									2	32	52	29	48	4.4	4.6	16	1	12	62		

Table 25. Length frequency distribution of herring. ROE HERRING CHARTER SEINER " ARGENT FISHER ", STAT. AREAS 13, 14, 15, 17, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Biol. Sample No.	Length Frequency (cm) 12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	27-28	Sample Size	Average Length (cm)	Cutoff (cm)	% Below Cutoff
142 (14)	1	Ships Point - Lower Baynes Sound	23/02/87	2020	1		1			1	1	5	9	28	33	18	5					101	21.0	19.0	8
142 (14)	2	Metcalf Bay - Lower Baynes Sound	24/02/87	0540	2							2	14	23	31	21	8					99	21.3	19.0	2
152 (15)	3	S. Westview Dock	24/02/87	1301	3							3	30	27	28	8	4		1			101	20.7	19.0	3
152 (15)	4	Westview Ferry Dock	25/02/87	0610	4				1			9	21	32	22	12	5	1				103	20.7	19.0	10
142 (14)	5	Lambert Channel	25/02/87	1612	5						4	9	12	19	28	22	5	1				100	21.0	19.0	13
142 (14)	6	Metcalf Bay - Lower Baynes Sound	26/02/87	0535	6						4	7	18	22	31	16	3					101	20.8	19.0	11
142 (14)	7	Maude Reef - Lambert Channel	27/02/87	0948				Water Haul																	
142 (14)	8	Chrome Island - Lambert Channel	27/02/87	1615	7							3	16	29	30	11	5	3	3			100	21.2	19.0	3
142 (14)	9	Ships Point - Lower Baynes Sound	28/02/87	0715	8			1		2		3	12	31	24	16	8	3				100	21.1	19.0	6
142 (14)	10	Upper Baynes Sound	28/02/87	1050	9						2	8	15	31	33	10	1					100	20.7	19.0	10
142 (14)	11	Heron Rocks - Lambert Channel	02/03/87	0753				Water Haul																	
142 (14)	12	Heron Rocks - Lambert Channel	02/03/87	0847				Water Haul																	
142 (14)	13	Norris Rocks	02/03/87	1055				Water Haul																	
142 (14)	14	Norris Rocks	02/03/87	1130				Water Haul																	
142 (14)	15	Shingle Spit	03/03/87	0545	10						2	3	13	25	38	16	3					100	21.0	19.0	5
142 (14)	16	Ships Point	05/03/87	1050				Water Haul																	
142 (14)	17	Metcalf Bay - Lower Baynes Sound	05/03/87	1400				Water Haul																	
142 (14)	18	Repulse Point - Lower Baynes Sd.	05/03/87	1540	11				1	3	1	12	19	28	27	6	3					100	20.4	19.0	17
142 (14)	19	Tralee Point	06/03/87	1220				Water Haul																	
142 (14)	20	North of Whaling Station Bay	06/03/87	1335				Water Haul																	
142 (14)	21	Tralee Point	06/03/87	1550				Sample not representative																	
142 (14)	22	Phipps Point	07/03/87	0440	12							5	13	29	30	16	6	1				100	21.1	19.0	5
142 (14)	23	St. John's Point	07/03/87	0845				Water Haul																	
142 (14)	24	St. John's Point	07/03/87	0930	13						1	10	19	27	28	10	2	3				100	20.7	19.0	11
142 (14)	25	Just off Fillongley Park	07/03/87	1245		Sample not representative						2	10	14	13	7	4					50	22.0	19.0	0
142 (14)	26	1 mi. North Hornby Island	07/03/87	1540	14							5	9	24	32	22	6	2				100	21.3	19.0	5
143 (14)	27	Northwest Bay	10/03/87	0520	15				1		6	10	6	8	10	5	3		1			50	20.2	19.0	34
143 (14)	28	Nuttal Bay	10/03/87	0830				Water Haul																	
172 (17)	29	1 mi. S. of Maude Island	11/03/87	0615	16						4	9	23	24	19	16	4		1			100	20.7	19.0	13
135 (13)	30	Just E. of Hyacinthe Point	12/03/87	0515	17					3	16	41	32	6	2							100	18.8	19.0	60
152 (15)	31	1/4 m. N. of Powell River Mill	13/03/87	1135				Water Haul																	
152 (15)	32	1/2 m. NW of Powell River Mill	13/03/87	1305	18				3	3	6	23	35	19	8	2	1					100	19.4	19.0	29
152 (15)	33	Off Entrance to Scuttle Bay	13/03/87	1640	19				1	1	1	8	18	33	27	8	2					99	20.5	19.0	29
152 (15)	34	NW of Atrevida Reef Buoy	14/03/87	0740	20						8	25	24	27	13	5						102	19.8	19.0	33
152 (15)	35	East Side Mystery Reef	14/03/87	1120	21			1	3	2	2	11	21	31	11	2	2					86	19.8	19.0	22
142 (14)	36	Phipps Point	15/03/87	1910	22			3	2	1	6	16	27	22	18	2						97	19.6	19.0	28
142 (14)	37	Lambert Channel (Chrome Island)	16/03/87	0600	23							6	16	27	25	20	5	1				100	21.1	19.0	6
173 (17)	38	Stuart Channel - Yellow Point	19/03/87	1210	24		1	3	6	3	14	21	20	14	12	4	1					99	19.0	19.0	48
173 (17)	39	Northumberland Channel	19/03/87	1922	25					6	19	24	21	15	13	1	1					100	19.2	19.0	49

Table 26. Seine set data and roe yield information. ROE HERRING CHARTER SEINER " WESTVIEW NO.1 ", STAT. AREAS 13 - 15, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage In Loc.	Tonnage Set On	Tonnage Est. Catch	Temp. (C)	Test No.	Sex Ratio M No.	Sex Ratio M %	Sex Ratio F No.	Sex Ratio F %	Roe Yield % Vol.	Roe Yield % Adj. Vol.	Roe Grade (Pcs) #1	Roe Grade (Pcs) #2	Roe Grade (Pcs) #3	Spn Out	Juv. or Imm.	Average Length (cm)
143 (14)	1	Centre of N.W. Bay	28/02/87	0610		100	50	7.2	1	39	42	53	58	0.0	0.0	0	7	46			20.1
									2	46	48	49	52	0.0	0.0	0	2	47			
142 (14)	2	Baynes Sound (Ships Point)	02/03/87	0647	5000	300	200	7.2	1	49	57	37	43	2.0	2.3	7	5	25		2	20.8
									2	46	54	39	46	2.8	3.0	11	7	21		1	
									3	35	41	50	59	5.0	4.2	16	5	29		1	
142 (14)	3	Red Can Buoy (S. Baynes Sound)	03/03/87	0702	1500	50	0	7.6		Water Haul											
142 (14)	4	Red Can Buoy (S. Baynes Sound)	03/03/87	0822	1500	250	200	7.7	1	45	44	57	56	2.0	1.8	8	4	45		1	19.8
									2	59	53	52	47	0.7	0.8	2	3	47			
									3	54	51	52	49	1.0	1.0	4	3	45		4	
142 (14)	5	Hornby Island Ferry Landing	05/03/87	1450	50	50	20	7.9	1	51	47	58	53	1.8	1.7	10	6	42		11	18.9
									2	43	38	69	62	1.7	1.4	7	10	52		5	
									3	55	47	61	53	1.8	1.7	8	3	50		7	
142 (14)	6	South of Ford Cove	05/03/87	1720	1500	300	150	8.0	1	47	51	45	49	3.7	3.8	14	0	31			20.2
									2	43	50	43	50	4.3	4.3	13	5	25			
									3	45	48	49	52	2.8	2.7	11	10	28			
142 (14)	7	Hornby Island Ferry Landing	06/03/87	0545		40	0.5	8.0	1	24	46	28	54	1.4	1.3	4	5	19			
									2	25	45	30	55	0.9	0.8	3	6	21			
142 (14)	8	1/4 m. north of Chrome Is. light	06/03/87	0830		400	0	8.0		Water Haul											
142 (14)	9	1/4 m. north of Chrome Is. light	06/03/87	0925		200	0	8.0		Water Haul											
142 (14)	10	Ford Cove	06/03/87	1135	1000	250	150	8.0	1	45	56	35	44	7.6	8.6	25	4	6	1		21.2
									2	42	53	37	47	7.0	7.4	24	4	9	1		
									3	39	48	43	52	7.4	7.1	26	8	9	1		
									4	41	52	38	48	7.5	7.8	22	8	8	3		
142 (14)	11	Tribune Bay	06/03/87	1800		50	0			Water Haul											
142 (14)	12	1 m. NW of Phipps Pt.	06/03/87	2035		L.skimmer	1		1	45	58	32	42	6.2	7.4	22	4	6	10		21.1
									2	41	53	37	47	9.2	9.8	31	3	3	7		
									3	50	65	27	35	6.8	9.7	22	3	2	9		

Table 26 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER " WESTVIEW NO.1 ", STAT. AREAS 13 - 15, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage In Loc.	Tonnage Set On	Tonnage Est. Catch	Temp. (C)	Test No.	Sex Ratio M No.	Sex Ratio M %	Sex Ratio F No.	Sex Ratio F %	Roe Yield % Vol.	Roe Yield % Adj. Vol.	Roe Grade (Pcs) #1	Roe Grade (Pcs) #2	Roe Grade (Pcs) #3	Spn Out	Juv. or Imm.	Average Length (cm)
142 (14)	13	Lambert Channel (Ford Cove)	07/03/87	0529	2000+	skimmer	0	8.4		Water Haul - Not Split											
142 (14)	14	Lambert Channel (Shingle Spit)	07/03/87	1145		60	15		1	32	40	48	60	4.4	3.7	18	9	21	22		20.1
									2	33	41	48	59	1.1	0.9	7	3	38	21		
									3	33	42	46	58	2.8	2.4	10	9	27	21		
142 (14)	15	Lambert Channel (Flingley Park)	07/03/87	1430	80	80	60	9.1	1	33	38	53	62	9.5	7.6	41	8	4	8		21.2
									2	43	53	38	47	6.6	7.0	23	4	11	5		
									3	38	51	37	49	7.9	8.0	26	5	6	8		
142 (14)	16	Baynes Sound (Ship Penn.)	08/03/87	0625	1000	skimmer	5	7.7		Sample not representative											
152 (15)	17	Grief Point	08/03/87	1335		50	40	8	1	32	33	65	67	0.3	0.2	2	8	55	6		19.7
									2	40	38	65	62	0.6	0.5	3	6	56	5		
									3	34	33	70	67	0.8	0.6	4	8	58	3		
152 (15)	18	Myrtle Creek	08/03/87	1445	1000	150	10	8	1	37	36	65	64	0.7	0.5	3	6	56	3		19.8
									2	27	26	77	74	1.5	1.0	8	8	61	2		
152 (15)	19	Myrtle Point	09/03/87	1026		150	0			Water Haul											
135 (13)	20	West side of Breton Island	10/03/87	0550		skimmer		8.1		Juvenile herring											
135 (13)	21	West side of Marina Island	10/03/87	0430	500	400	0	8.4		Water Haul											
135 (13)	22	West side of Marina Island	10/03/87	1000	500	250	0			Water Haul											
135 (13)	23	West side of Marina Island	10/03/87	1040		150	0	8.4		Water Haul											
135 (13)	24	West side of Marina Island	10/03/87	1230			0	8.3		Water Haul											
135 (13)	25	1/2 m. E. of Mariot Island	10/03/87	1930	1200	skimmer	25	8.1	1	21	24	67	76	5.5	3.6	21	5	41		5	19.3
									2	58	53	51	47	2.2	2.3	10	5	36		4	
									3	56	51	54	49	3.3	3.4	14	8	32		9	
135 (13)	26	1/4 m. N. of Rebecca Spit	11/03/87	0640		skimmer	5	7.9	1	37	37	64	63	4.8	3.8	18	6	40		3	19.9
									2	53	51	51	49	5.4	5.5	21	3	27		4	
									3	53	47	59	53	2.8	2.6	11	2	46		2	

Table 26 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER " WESTVIEW NO.1 ", STAT. AREAS 13 - 15, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage In Loc.	Tonnage Set On	Tonnage Est. Catch	Temp. (C)	Test No.	Sex Ratio M No.	Sex Ratio M %	Sex Ratio F No.	Sex Ratio F %	Roe Yield % Vol.	Roe Yield % Adj. Vol.	Roe Grade (Pcs) #1	Roe Grade (Pcs) #2	Roe Grade (Pcs) #3	Spn Out	Juv. or Imm.	Average Length (cm)
135 (13)	27	Breton Islands	11/03/87	0730	3500	400	300	7.9	1	43	47	49	53	6.9	6.5	27	5	17		7	20.1
									2	51	55	42	45	5.1	5.7	19	8	15		3	
									3	45	47	51	53	6.5	6.1	26	4	21		2	
135 (13)	28	1/4 m. N.W. Herlot Island	12/03/87	0555		skimmer	40	8.7	1	49	46	58	54	6.4	5.9	27	7	24		2	19.7
									2	42	40	63	60	6.8	5.6	29	13	21		1	
									3	45	44	57	56	7.7	6.9	30	8	19		4	
135 (13)	29	West side Breton Island	12/03/87	0800	2000	50	60	8.0	1	61	59	42	41	2.5	3.0	10	5	27		37	18.4
									2	43	43	57	57	5.5	4.8	21	5	31		38	
									3	48	49	50	51	5.5	5.4	20	6	24		36	
142 (14)	30	Mid channel (Lambert Channel)	13/03/87	1630		100	60	8.4	1	7	70	3	30	0.4	0.7	1	0	2	107		19.1
142 (14)	31	Lambert Channel	13/03/87	1815		70	70	8.3	1	12	48	13	52	4.0	3.8	12	1	0	74		19.9
									2	8	36	14	64	4.2	3.2	12	0	2	78		
152 (15)	32	West Sliammon	14/03/87	0645	80	40	1	8.1	1	22	39	35	61	1.3	1.0	6	18	11	67	24	18.4
152 (15)	33	South of Powell River Mill	14/03/87	1145	50	50	0	8.0		W a t e r H a u l											
152 (15)	34	East side of Mystery Reef	15/03/87	0545	350	150	40	8.1	1	29	34	57	66	12.0	9.1	50	4	3	11		20.2
									2	51	56	40	44	8.4	9.5	38	1	1	8		
									3	45	49	47	51	10.9	10.7	43	1	3	6		
									4	38	40	58	60	12.6	10.5	54	1	3	5		
									5	34	36	60	64	11.6	9.0	52	3	5	5		
152 (15)	35	1/2 m. south of Lund	18/03/87	0505	500	50	35	8.2		S p a w n e d o u t											18.8
135 (13)	36	Rebecca Spit	18/03/87	1120	400+	75	0	8.4		W a t e r H a u l											
135 (13)	37	Rebecca Spit	18/03/87	1200	1000	200	200	8.5	1	32	38	53	62	6.7	5.4	35	3	15	29		19.3
									2	41	43	54	57	6.4	5.6	39	6	9	25		
143 (14)	38	Qualicum	18/03/87	2111	1300	40	20	8.5		S p a w n e d o u t											20.3
143 (14)	39	2 m. N. of Qualicum	19/03/87	1615		250	50	8.5		S p a w n e d o u t											20.2
143 (14)		Cape Lazo	02/03/87	1545	(Herring Ball Sample)	5	0.075		1	40	47	46	53	0.5	0.5	2	7	37			20.8
									2	42	48	46	52	1.68	1.6	5	1	40			
143 (14)		N.W. Bay	06/03/87	1115	(Dipnet Sample-by vessel, Bajo Reef)				1	30	34	57	66	12.2	9.2	41	6	10			21.1

Table 27. Length frequency distribution of herring. ROE HERRING CHARTER SEINER " WESTVIEW NO.1 ", STAT. AREAS 13 - 15, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Biol. Sample No.	Length Frequency (cm) 12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	24 25	25 26	26 27	27 28	Sample Size	Average Length (cm)	Cutoff (cm)	% Below Cutoff
143 (14)	1	Centre of N.W. Bay	28/02/87	0610	1			1		3	9	15	17	20	20	10	5					100	20.1	19.0	28
142 (14)	2	Baynes Sound - Ships Point	02/03/87	0647	2						2	11	21	16	24	24	1	2				101	20.8	19.0	13
142 (14)	3	Red Can Buoy - S. Baynes Sound	03/03/87	0702					Water Haul																
142 (14)	4	Red Can Buoy - S. Baynes Sound	03/03/87	0822	3				2	1	10	17	25	23	14	6	1					99	19.8	19.0	30
142 (14)	5	Hornby Island Ferry Landing	05/03/87	1450	4				2	4	19	33	23	9	9							99	18.9	19.0	59
142 (14)	6	South of Ford Cove	05/03/87	1720	5						8	13	22	28	17	9	1	2				100	20.2	19.0	22
142 (14)	7	Hornby Island Ferry Landing	06/03/87	0545					Sample is not representative																
142 (14)	8	1/4 m. north of Chrome Is. light	06/03/87	0830					Water Haul																
142 (14)	9	1/4 m. north of Chrome Is. light	06/03/87	0925					Water Haul																
142 (14)	10	Ford Cove	06/03/87	1135	6						1	2	8	41	28	20	6	1				107	21.2	19.0	3
142 (14)	11	Tribune Bay	06/03/87	1800					Water Haul																
142 (14)	12	1 m. northwest of Phipps Pt.	06/03/87	2035	7						1	4	14	29	29	16	5	2	1			101	21.1	19.0	5
142 (14)	13	Lambert Channel - Ford Cove	07/03/87	0529					Water Haul																
142 (14)	14	Lambert Channel - Shingle Point	07/03/87	1145	8					1	1	19	25	32	15	5	2					100	20.1	19.0	21
142 (14)	15	Lambert Channel - Ellongley Park	07/03/87	1430	9						1	4	14	25	34	15	5	3				101	21.2	19.0	5
142 (14)	16	Baynes Sound - Ship Penn.	08/03/87	0625	10				Sample is not representative																
152 (15)	17	Grief Point	08/03/87	1335	11				2	4	2	15	35	30	13	1						102	19.7	19.0	23
152 (15)	18	Myrtle Creek	08/03/87	1445	12					3	2	14	38	32	13							102	19.8	19.0	19
152 (15)	19	Myrtle Point	09/03/87	1026					Water Haul																
135 (13)	20	West side of Breton Island	10/03/87	0550					Juvenile herring																
135 (13)	21	West side of Marina Island	10/03/87	0430					Water Haul																
135 (13)	22	West side of Marina Island	10/03/87	1000					Water Haul																
135 (13)	23	West side of Marina Island	10/03/87	1040					Water Haul																
135 (13)	24	West side of Marina Island	10/03/87	1230					Water Haul																
135 (13)	25	1/2 m. E. of Harlot Island	10/03/87	1930	13		1	2	3	6	8	24	20	16	15	5	1					101	19.3	19.0	44
135 (13)	26	1/4 m. N. of Rebecca Spit	11/03/87	0640	14				1	1	5	19	30	26	9	8	1					100	19.9	19.0	26
135 (13)	27	Breton Islands	11/03/87	0730	15						4	17	29	28	18	5	2					103	20.1	19.0	20
135 (13)	28	1/4 m. N.W. Harlot Island	12/03/87	0555	16			1		1	1	25	34	24	9	3						98	19.7	19.0	29
135 (13)	29	West side Breton Island	12/03/87	0800	17	1	3	8	14	15	14	25	27	16	18	4						145	18.4	19.0	55
142 (14)	30	Mid channel - Lambert Channel	13/03/87	1630	18			1		1	18	28	31	18	2	2	1					102	19.1	19.0	47
142 (14)	31	Lambert Channel	13/03/87	1815	19					1	8	18	23	30	10	10						100	19.9	19.0	27
152 (15)	32	West Sliammon	14/03/87	0645	20		1	2	11	7	18	33	16	19	3							110	18.4	19.0	65
152 (15)	33	South of Powell River Mill	14/03/87	1145					Water Haul																
152 (15)	34	East side of Mystery Reef	15/03/87	0545	21				2	2	3	12	38	39	27	7	1	1	1			133	20.2	19.0	14
152 (15)	35	1/2 m. South of Lund	18/03/87	0505	22		1	1	6	6	16	23	23	18	4	2	1					101	18.8	19.0	52
135 (13)	36	Rebecca Spit	18/03/87	1120					Water Haul																
135 (13)	37	Rebecca Spit	18/03/87	1200	23		1	1	1	5	5	21	39	16	11							100	19.3	19.0	34
143 (14)	38	Qualicum	18/03/87	2111	24					1	2	14	23	34	19	8	1					102	20.3	19.0	17
143 (14)	39	2 m. North of Qualicum	19/03/87	1615	25				1	1	9	13	25	15	20	11	3	2				100	20.2	19.0	24
141 (14)		Cape Lazo	02/03/87	1545	(Herring Ball Sample)						3	4	20	30	23	18	2					100	20.8	19.0	7
143 (14)		N.W. Bay	06/03/87	1115	(Dipnet Sample - Bajo Reef)						1	5	4	12	12	14	2					50	21.1	19.0	12

Table 28. Seine set data and roe yield information. ROE HERRING CHARTER SEINER " C VENTURE ", STAT. AREA 23, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage In Loc.	Tonnage Set On	Tonnage Est. Catch	Temp. (C)	Test No.	Sex Ratio M No.	Sex Ratio M %	Sex Ratio F No.	Sex Ratio F %	Roe Yield % Vol.	Roe Yield % Adj. Vol.	Roe Grade (Pcs) #1	Roe Grade (Pcs) #2	Roe Grade (Pcs) #3	Spn Out	Juv. or Imm.	Average Length (cm)
232 (23)	1	Chrow Island	23/02/87	1130		400	250	9.2	1	42	46	49	54	0.0	0.0	0	0	49			22.9
232 (23)	2	Toquart Bay	23/02/87	1635	400	140	100	9.0	1	74	65	39	35	0.0	0.0	0	0	39			21.2
									2	60	52	56	48	0.0	0.0	0	6	50			
232 (23)	3	Sechart Channel	23/02/87	1800		150	60	8.5	1	38	43	51	57	0.0	0.0	0	0	51			22.4
232 (23)	4	Peacock Channel	24/02/87	0855	500	150	120	7.2	1	54	56	42	44	0.0	0.0	0	1	41			22.1
232 (23)	5	Sechart Channel	25/02/87	0850	6000	700	30	8.5	1	47	47	52	53	0.0	0.0	0	3	49			21.2
									2	50	49	53	51	0.0	0.0	0	0	53			
232 (23)	6	Mayne Bay	25/02/87	1500	1000	300	150	8.5	1	50	51	49	49	0.0	0.0	0	3	46			21.9
									2	41	45	51	55	0.0	0.0	1	2	48			
232 (23)	7	Chrow Island	26/02/87	1030	3000	700	150	7.6	1	38	43	50	57	0.0	0.0	1	2	47			22.8
232 (23)	8	Peacock Channel	27/02/87	0900	3000 / 4000	400	100	8.2	1	63	57	48	43	0.9	1.0	3	6	39			21.6
									2	64	57	48	43	1.0	1.2	5	5	38			
232 (23)	9	Mayne Bay	28/02/87	1415	500	60	35	8.2	1	56	60	37	40	3.0	3.8	11	7	19			22.5
									2	46	52	42	48	3.8	4.0	16	5	21			
232 (23)	10	Sechart Channel	28/02/87	1635		150	0			Water Haul											
233 (23)	11	Sechart Channel (Swale Rock)	28/02/87	1705	2500	200	200	7.9	1	68	61	43	39	1.0	1.3	5	8	30			21.1
									2	54	50	53	50	1.0	1.0	9	9	35			
232 (23)	12	Chrow Island	01/03/87	0800	6000	100	60	7.4	1	47	48	50	52	4.0	3.8	16	4	30			22.2
									2	51	54	43	46	1.5	1.6	7	5	31			
									3	55	59	38	41	2.0	2.4	10	4	24			
232 (23)	13	Forbes Island	01/03/87	0945	2000	200	100	7.2	1	60	58	43	42	0.0	0.0	1	4	38		1	22.2
									2	62	62	38	38	0.0	0.0	1	3	34			
232 (23)	14	Pinnacle Rock	02/03/87	0900	7500	200	0	8.2		Water Haul											

Table 28 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER " C VENTURE ", STAT. AREA 23, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage In Loc.	Tonnage Set On	Tonnage Est. Catch	Temp. (C)	Test No.	Sex Ratio M No.	Sex Ratio M %	Sex Ratio F No.	Sex Ratio F %	Roe Yield % Vol.	Roe Yield % Adj. Vol.	Roe Grade (Pcs) #1	Roe Grade (Pcs) #2	Roe Grade (Pcs) #3	Spn Out	Juv. or Imm.	Average Length (cm)
232 (23)	15	Pinnacle Rock	02/03/87	0935	7500	300	0	8.2		Water Haul											
233 (23)	16	Swale Rock (Imperial Eagle Channel)	02/03/87	1045	7500			8.5		Water Haul											
232 (23)	17	Imperial Eagle Channel	02/03/87	1300	5000/7000	300/400	80	8.5	1	49	45	61	55	4.5	4.1	23	12	26		1	21.7
									2	66	55	53	45	3.5	3.9	18	3	32			
									3	49	46	58	54	4.0	3.7	21	11	26			
233 (23)	18	Swale Rock (Imperial Eagle Channel)	03/03/87	1300	7500	200	0	8.0		Water Haul											
233 (23)	19	Off Swale Rock	03/03/87	1400		70	0	8.0		Water Haul											
233 (23)	20	Imperial Eagle Channel	03/03/87	1505		200	0	8.0		Water Haul											
233 (23)	21	Swale Rock	03/03/87	1705	Set not representative		0.5	8.5	1	82	44	103	56	1.5	1.3	14	8	81			
232 (23)	22	Shears Islands	04/03/87	0915	400		0	7.8		Water Haul											
232 (23)	23	Page Island	05/03/87	0925		60/70	35/40	8.4	1	69	56	55	44	4.3	4.8	23	8	24			21.5
									2	67	53	60	47	6.0	6.4	23	5	32			
									3	82	59	56	41	4.0	4.9	25	2	29		2	
232 (23)	24	Begg Island	05/03/87	1630		100	40/50	8.7	1	57	59	40	41	5.5	6.7	19	5	16			22.0
									2	47	46	55	54	7.3	6.7	27	9	19			
									3	48	48	52	52	8.3	7.9	35	7	10			
233 (23)	25	Mouth of Sechart Channel	06/03/87	0930	1500/2000	400	150	8.2	1	55	43	72	57	6.5	5.7	38	6	28			21.1
									2	57	42	78	58	10.0	8.6	48	8	22			
									3	55	40	81	60	8.8	7.3	41	6	34			
									4	63	47	72	53	8.5	8.0	38	6	28			
233 (23)	26	Folger Island	06/03/87	1420	2000+	400	10	8.8	1	61	53	54	47	9.0	9.6	41	3	10			21.8
									2	57	54	49	46	7.3	7.9	35	4	10			
									3	53	50	54	50	8.0	8.0	31	8	15			
233 (23)	27	Off Sandford Island	06/03/87	1635	250	160	125	8.5	1	34	38	56	62	12.0	9.7	43	8	5			22.4
									2	34	38	55	62	14.0	11.3	48	1	6			
									3	40	43	52	57	12.0	10.5	44	1	7			
233 (23)	28	Mouth of Sechart Channel	07/03/87	0745		400	10/15	7.5	1	76	48	83	52	6.3	6.0	45	4	34			
									2	70	49	72	51	8.0	7.8	39	8	25		1	
						Set not representative			3	76	52	71	48	7.0	7.3	38	6	27		1	

Table 28 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER " C VENTURE ", STAT. AREA 23, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage			Temp. (C)	Test No.	Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Spn	Juv. or Imm.	Average Length (cm)
					In Loc.	Set On	Est. Catch			M No.	%	F No.	%	Vol.	Adj. Vol.	#1	#2	#3	Out		
233 (23)	29	Mouth of Sechart Channel	07/03/87	0935		125	0	8.0		Water Haul											
232 (23)	30	Gibraltar Island	07/03/87	1025	2000/2500	400/500	40	8.2	1	49	49	52	51	12.0	11.8	42	2	8			22.1
									2	52	51	50	49	10.0	10.2	38	6	6			
									3	36	37	61	63	14.0	11.1	50	4	7			
									4	43	42	59	58	12.0	10.3	45	3	11			
232 (23)	31	Coaster Channel	07/03/87	1207		200	70	8.0	1	40	41	58	59	15.0	12.7	52	3	3		1	22.6
									2	59	58	43	42	10.8	12.8	40	1	2			
									3	41	40	61	60	14.0	11.7	52	4	5			
									4	51	50	50	50	12.3	12.3	45	2	3		1	
232 (23)	32	Sechart Channel	07/03/87	1435		70	0	8.7		Water Haul											
232 (23)	33	Pinkerton Islands	07/03/87	1520		120	60	8.8	1	59	48	63	52	11.5	11.1	45	3	15			20.8
									2	60	50	59	50	10.0	10.0	40	6	13			
									3	61	46	72	54	9.0	8.3	46	2	24			
									4	45	37	78	63	12.5	9.9	50	8	20			
232 (23)	34	Gibraltar Island	08/03/87	1600	1500	400/500	40	8.8	1	56	51	54	49	11.8	12.0	43	1	10			22.0
									2	50	43	67	57	14.3	12.5	52	4	11			
									3	62	55	51	45	10.0	11.1	38	1	12			
232 (23)	35	Newcombe Channel	09/03/87	1916		100	60/70	8.7	1	74	56	59	44	9.0	10.2	43	3	13			20.1
									2	66	50	66	50	10.3	10.3	51	4	11			
									3	65	47	72	53	13.3	12.5	61	3	8			
									4	83	51	81	49	12.5	12.8	65	7	9			
									5	83	53	73	47	11.0	11.7	61	2	10			
232 (23)	36	Forbes Island	11/03/87	0752	4000/5000	140	80	8.5	1	60	50	59	50	12.0	12.0	50	3	6			21.0
									2	59	49	61	51	13.0	12.7	53	2	6			
									3	56	47	63	53	14.5	13.7	52	3	8			
									4	49	42	68	58	15.0	12.9	61	1	6			
									5	64	51	61	49	12.0	12.2	53	2	6			
232 (23)	37	Peacock Channel	11/03/87	1036	500	125	125	8.7	1	70	55	58	45	12.0	13.3	51	2	5			21.9
									2	53	45	65	55	14.8	13.4	58	1	6			
									3	56	47	63	53	15.0	14.2	57	2	4			
									4	72	55	58	45	13.0	14.4	51	1	6			
									5	75	56	59	44	14.3	16.2	55	1	3			

Table 28 (cont'd). Sales set data and roe yield information. ROE HERRING CHARTER SEINER " C VENTURE ", STAT. AREA 23, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage In Loc.	Tonnage Set On	Tonnage Est. Catch	Temp. (C)	Test No.	Sex Ratio M No.	Sex Ratio M %	Sex Ratio F No.	Sex Ratio F %	Roe Yield % Vol.	Roe Yield % Adj. Vol.	Roe Grade (Pcs) #1	Roe Grade (Pcs) #2	Roe Grade (Pcs) #3	Spn Out	Juv. or Imm.	Average Length (cm)
232 (23)	38	Toquart Bay	12/03/87	0944		70	70	8.5	1	54	48	58	52	14.3	13.7	58	0	0			20.9
									2	68	54	58	46	12.5	13.6	51	0	7			
									3	58	48	62	52	14.3	13.7	55	1	6			
									4	61	50	60	50	13.0	13.0	55	1	4			
232 (23)	39	West side Stopper Island	14/03/87	1010	1000	15	15	8.6	1	67	54	57	46	13.8	14.9	56	0	1			21.7
									2	64	49	66	51	14.0	13.7	62	3	1			
									3	61	49	63	51	14.3	14.0	62	0	1			
232 (23)	40	Larkin Island	15/03/87	1536	4000/5000	180	80		1	59	46	69	54	14.5	13.4	65	1	3			
					Charter payment fish				2	59	46	68	54	13.5	12.5	64	1	3			
									3	78	57	59	43	10.8	12.6	53	0	6			
					Pump tests Set #40				1	59	55	49	45	13.0	14.4	49	0	0			
					(Begin pumping)				2	59	48	65	52	14.3	13.8	62	1	2			
					(Mid pumped)				3	63	48	67	52	14.3	13.8	64	3	0			
					(End pumped)				4	74	50	74	50	14.0	14.0	66	1	7		1	
232 (23)	41	North of Stopper Island	15/03/87	2015	4000/5000		20		1	60	50	59	50	14.0	14.0	56	0	3			
					Charter payment fish				2	58	46	67	54	14.5	13.4	62	1	4			
232 (23)	42	Stopper Island	18/03/87	0910		100		75	1	61	50	60	50	12.0	12.0	57	2	1		2	21.5
					Pumping test #1 (Begin Pumping) test #2 (Mid pumped)				2	46	38	76	62	16.0	12.9	74	1	1	2		
					Charter payment fish				1	45	42	62	58	12.0	10.3	59	2	1			
									2	56	51	53	49	11.8	12.0	47	3	3		2	
									3	68	54	57	46	14.0	15.2	53	1	3		3	
232 (23)	43	Btn Stopper and St. Innes	18/03/87	1255		100	40		1	40	38	64	62	14.0	11.3	61	0	3			21.0
					Charter payment fish			(Begin pumping)	2	53	49	56	51	14.5	14.2	56	0	0	1		
								(Mid pumped)	3	48	43	63	57	14.5	12.7	58	1	4			
								(End pumped)	4	50	45	60	55	14.3	13.0	59	1	0			
232 (23)	44	Stopper Island	18/03/87	1510		150	80		1	68	48	73	52	13.0	12.5	69	1	3	1	3	19.9
					Charter payment fish				2	62	46	72	54	12.5	11.6	68	2	2	1		
					Test #3 (Begin pumping)				3	74	52	67	48	11.0	11.5	59	1	7		1	
					Test #4 (Mid pumped)				4	78	55	63	45	10.0	11.1	55	2	6	1	1	
					Test #5 (End pumped)				5	63	50	64	50	13.0	13.0	60	0	4	1	1	

Table 29. Length frequency distribution of herring. ROE HERRING CHARTER SEINER " C VENTURE ", STAT. AREAS 23, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Biol. Sample No.	Length Frequency (cm) 12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	24 25	25 26	26 27	27 28	Sample Size	Average Length (cm)	Cutoff (cm)	% Below Cutoff
232 (23)	1	Chrow Island	23/02/87	1130	1								3	9	11	25	35	11	5	1		100	22.9	19.0	0
232 (23)	2	Toquart Bay	23/02/87	1635	2						5	12	11	16	15	24	15	1	1			100	21.2	19.0	0
232 (23)	3	Sechart Channel	23/02/87	1800	3						1	0	2	20	16	25	23	10	3	1		101	22.4	19.0	1
232 (23)	4	Peacock Channel	24/02/87	0855	4						1	3	5	11	26	28	18	6	2			100	22.1	19.0	4
232 (23)	5	Sechart Channel	25/02/87	0850	5			1		1	5	6	7	19	29	22	8	1	1			100	21.1	19.0	13
232 (23)	6	Mayne Bay	25/02/87	1500	6						5	5	10	8	19	22	20	6	5			100	21.9	19.0	10
232 (23)	7	Chrow Island	26/02/87	1030	7						1		3	5	19	31	20	12	5	2	1	99	22.8	19.0	1
232 (23)	8	Peacock Channel	27/02/87	0900	8						3	7	8	12	26	22	18	4				100	21.6	19.0	10
232 (23)	9	Mayne Bay	28/02/87	1415	9						2	3	2	6	22	24	23	13	5			100	22.5	19.0	10
232 (23)	10	Sechart Channel	28/02/87	1635			Water Haul																		
233 (23)	11	Sechart Channel - Swale Rock	28/02/87	1705	10				1		7	7	12	19	22	16	11	2	3			100	21.1	19.0	15
232 (23)	12	Chrow Island	01/03/87	0800	11					1	2	7	8	8	12	22	18	16	5	1		100	22.2	19.0	10
232 (23)	13	Forbes Island	01/03/87	0945	12					1		6	5	6	24	25	19	7	7			100	22.2	19.0	7
232 (23)	14	Pinnacle Rock	02/03/87	0900			Water Haul																		
232 (23)	15	Pinnacle Rock	02/03/87	0935			Water Haul																		
233 (23)	16	Swale Rock - Imperial Eagle Ch.	02/03/87	1045			Water Haul																		
232 (23)	17	Imperial Eagle Channel	02/03/87	1300	13						2	5	12	14	32	23	20	4	1		1	114	21.7	19.0	6
233 (23)	18	Swale Rock - Imperial Eagle Ch.	03/03/87	1300			Water Haul																		
233 (23)	19	Off Swale Rock	03/03/87	1400			Water Haul																		
233 (23)	20	Imperial Eagle Ch.	03/03/87	1505			Water Haul																		
233 (23)	21	Swale Rock	03/03/87	1705			Sample is not representative																		
232 (23)	22	Shears Islands	04/03/87	0915			Water Haul																		
232 (23)	23	Page Island	05/03/87	0925	14					1	5	5	7	18	22	20	16	5	1			100	21.5	19.0	11
232 (23)	24	Begg Island	05/03/87	1630	15						1	10	5	8	18	27	22	6	3			100	22.0	19.0	11
233 (23)	25	Mouth of Sechart Channel	06/03/87	0930	16					1	6	11	8	19	22	19	9	2	3			100	21.1	19.0	18
233 (23)	26	Folger Island	06/03/87	1420	17							4	5	21	23	34	6	5	2			100	21.8	19.0	4
233 (23)	27	Off Sundford Island	06/03/87	1635	18						1	3	3	7	22	30	22	10	2			100	22.4	19.0	4
233 (23)	28	Mouth of Sechart Channel	07/03/87	0745	19			Sample is not representative																	
233 (23)	29	Mouth of Sechart	07/03/87	0935			Water Haul																		
232 (23)	30	Gibraltar Island	07/03/87	1025	20							2	6	14	27	20	22	6	3			100	22.1	19.0	2
232 (23)	31	Coaster Channel	07/03/87	1207	21						1	1	2	7	14	36	25	10	4			100	22.6	19.0	2
232 (23)	32	Sechart Channel	07/03/87	1435			Water Haul																		
232 (23)	33	Pinkerton Islands	07/03/87	1520	22				1	3	9	13	7	14	18	21	11	4				101	20.8	19.0	26
232 (23)	34	Gibraltar Island	08/03/87	1600	23						5	6	7	8	14	29	13	13	2	1		98	22.0	19.0	11
232 (23)	35	Newcombe Channel	09/03/87	1916	24				1	4	16	20	8	16	8	18	6	1	2			100	20.1	19.0	41
232 (23)	36	Forbes Island	11/03/87	0752	25					2	8	12	9	15	17	19	13	3	2			100	21.0	19.0	22
232 (23)	37	Peacock Channel	11/03/87	1036	26					1	3	8	5	10	19	28	14	8	3	1		100	21.9	19.0	12
232 (23)	38	Toquart Bay	12/03/87	0944	27					2	7	18	8	11	23	15	11	3	2			100	20.9	19.0	27
232 (23)	39	West side Stopper Island	14/03/87	1010	28						2	5	7	20	18	27	18	2	1			100	21.7	19.0	7
232 (23)	40	Larkin Island	15/03/87	1536	29	Charter payment - No Information																			
232 (23)	41	North of Stopper Island	15/03/87	2015	30	Charter payment - No Information																			
232 (23)	42	Stopper Island	18/03/87	0910	31	Charter payment					2	8	14	9	22	25	12	6	1			99	21.5	19.0	10
232 (23)	43	Btn Stopper and St. Innes	18/03/87	1255	32	Charter payment	1	7	9	12	14	23	22	11	1	1						101	21.0	19.0	17
232 (23)	44	Stopper Island	18/03/87	1510	33	Charter payment	5	12	16	15	19	18	13	1								99	19.9	19.0	33

Table 30. Seine set data and roe yield information. ROE HERRING CHARTER SEINER " VAMPY I ", STAT. AREAS 23 & 24, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage In Loc.	Tonnage Set On	Tonnage Est. Catch	Temp. (C)	Test No.	Sex Ratio M No.	Sex Ratio M %	Sex Ratio F No.	Sex Ratio F %	Roe Yield % Vol.	Roe Yield % Adj. Vol.	Roe Grade (Pcs) #1	Roe Grade (Pcs) #2	Roe Grade (Pcs) #3	Spn Out	Juv. or Imm.	Average Length (cm)
243 (24)	1	Sydney Inlet	28/02/87	0800	400/500	50	0	7.3		Water Haul											
243 (24)	2	Sydney Inlet	28/02/87	0835	800/1000	100	75	7.3	1	37	41	54	59	1.0	0.8	6	22	26			22.3
									2	47	50	47	50	0.0	0.0	4	6	37			
244 (24)	3	Outside Matilda Inlet	28/02/87	1850	500/700	200	100	7.4	1	55	63	33	37	0.0	0.0	1	4	28		1	22.8
243 (24)	4	Mid Channel Sydney Inlet	01/03/87	0900	800/1000	200	200	7.6	1	51	52	47	48	1.0	1.0	7	9	31		1	22.4
244 (24)	5	Outside Matilda Inlet	02/03/87	1905	800/1000	150	75	7.9	1	41	46	48	54	3.0	2.8	9	3	36			23.1
232 (23)	6	Chrow Island	06/03/87	1131	1500	150	150	9.5	1	75	52	69	48	7.0	7.3	32	12	25			21.3
									2	74	56	59	44	6.2	7.0	27	7	25			
									3	63	51	61	49	10.5	10.7	40	6	15			
									4	75	54	63	46	6.0	6.5	30	8	25	1		
232 (23)	7	Chrow Island	06/03/87	1855	2000	skimmer	50	9.1	1	43	36	76	64	9.0	7.0	40	5	31			21.0
									2	71	57	53	43	7.1	8.3	29	3	21			
									3	53	41	75	59	8.0	6.8	30	9	36	1		
232 (23)	8	Begg Isle	07/03/87	0815	2000+	200+	125	8.0	1	76	62	46	38	6.1	8.0	27	8	11			21.5
									2	56	50	57	50	9.8	9.8	41	7	9			
									3	64	52	58	48	8.3	8.6	36	6	16			
232 (23)	9	Chrow Island	07/03/87	1510	2000	450+	200+	9.0	1	50	50	50	50	12.0	12.0	40	5	5			22.1
									2	53	54	46	46	10.0	10.9	32	8	6	1		
									3	56	53	50	47	10.8	11.5	38	4	8			
									4	58	56	46	44	12.0	13.6	35	3	8			
232 (23)	10	Btn Forbes and Chrow Islands	07/03/87	1720	2000	200+	200	9.1	1	54	59	37	41	8.5	10.4	28	2	7			22.3
									2	61	58	45	42	9.5	11.3	31	3	11			
									3	60	56	47	44	11.0	12.5	37	1	9			
									4	52	50	51	50	12.5	12.5	43	2	6			
									5	57	53	51	47	11.0	11.7	35	2	14			
232 (23)	11	Begg Island	08/03/87	0700	2000	800/1000	200	8.5	1	69	63	41	37	9.0	12.2	35	2	4			21.6
									2	74	60	50	40	11.5	14.4	40	1	9			
									3	73	62	44	38	9.0	11.8	35	1	8			
									4	67	63	40	37	9.5	12.8	34	3	3			
									5	60	57	45	43	10.0	11.6	37	2	6			
232 (23)	12	Forbes Island	08/03/87	0855	2000/3000	100	40	8.5	1	50	49	52	51	9.5	9.3	37	3	12			21.7
									2	50	52	46	48	9.0	9.4	30	5	11			
									3	59	57	44	43	9.2	10.7	31	4	9			
									4	62	61	40	39	7.0	9.0	26	4	10			
									5	55	54	46	46	8.5	9.2	35	7	4			
232 (23)	13	Btn Forbes and Chrow Island	08/03/87	1250	2000/3000	25	0	9.2		Water Haul											

Table 30 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER " VANPY I ", STAT. AREAS 23 & 24, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage In Loc.	Tonnage Set On	Tonnage Est. Catch	Temp. (C)	Test No.	Sex Ratio M No.	Sex Ratio M %	Sex Ratio F No.	Sex Ratio F %	Roe Yield % Vol.	Roe Yield % Adj. Vol.	Roe Grade (Pcs) #1	Roe Grade (Pcs) #2	Roe Grade (Pcs) #3	Spn Out	Juv. or Imm.	Average Length (cm)
232 (23)	14	Btn Forbes and Chrow Island	08/03/87	1320	2000/3000	75	75	9.2	1	49	54	42	46	10.5	11.4	36	1	5			21.8
									2	53	53	47	47	11.5	12.2	42	3	2			
									3	46	46	55	54	13.5	12.5	48	2	5			
									4	50	46	58	54	13.8	12.8	45	4	9			
									5	44	47	49	53	13.5	12.7	42	4	3			
232 (23)	15	1 mi. E. of St. Innes Island	08/03/87	1510		50	30	8.9	1	62	47	69	53	10.7	10.1	50	6	13			20.6
									2	66	52	62	48	9.5	9.9	41	7	14			
									3	53	43	69	57	11.5	10.1	50	3	16			
									4	74	58	54	42	8.7	10.4	44	3	7			
232 (23)	16	Btn Forbes and Chrow Island	08/03/87	2230		skimmer	300	8.9	1	47	48	50	52	13.5	13.0	46	2	2			22.1
									2	44	49	46	51	14.0	13.7	45	1	0			
									3	48	46	56	54	14.4	13.3	50	4	2			
									4	42	45	52	55	15.0	13.6	48	4	0	1		
232 (23)	17	Btn Food Islet and Forbes Island	09/03/87	1011		30/50	20	8.8	1	89	60	60	40	8.1	10.1	44	8	8			20.3
									2	95	62	59	38	8.2	10.8	53	1	5			
									3	74	51	72	49	12.0	12.2	54	6	12			
									4	70	48	75	52	10.0	9.6	54	4	17	1		
232 (23)	18	Food Islet	09/03/87	1855		skimmer	20	8.6	1	65	51	62	49	10.0	10.2	50	4	8			20.3
									2	77	51	75	49	10.0	10.2	57	3	15	1		
									3	83	57	62	43	10.0	11.6	50	2	10	2		
232 (23)	19	1 mi. S. of Forbes Island	11/03/87	1000		50	0	8.4	Water Haul												
232 (23)	20	Btn David and St. Innes Island	11/03/87	1102	500	75	75	8.5	1	66	55	53	45	12.8	14.2	50	2	1			21.7
									2	54	48	59	52	15.0	14.4	56	2	1			
									3	58	50	57	50	14.2	14.2	52	1	4			
									4	50	47	57	53	14.5	13.7	54	1	2			
									5	53	47	59	53	14.0	13.2	52	1	6			
232 (23)	21	E. of Forbes Light	11/03/87	1248		200	0		Water Haul												
232 (23)	22	Spilling and Stopper Islands	12/03/87	0939		50		8.5	1	64	55	52	45	11.0	12.2	45	2	5			21.8
									2	67	56	53	44	11.2	12.7	49	1	3			
									3	55	48	60	52	14.0	13.5	53	1	6			
									4	46	41	65	59	15.2	12.9	59	3	3			
									5	61	55	49	45	12.0	13.3	44	4	1			
232 (23)	23	E. of Stopper Island	16/03/87	0430	3000/5000	120	100		1	50	47	57	53	15.0	14.2	54	0	3			
					Charter Payment Test 1 & 2 (Net)				2	48	41	70	59	14.8	12.5	64	2	4		1	
					Test 3 (Begin pumping)				3	53	46	63	54	15.5	14.4	59	1	3			
					Test 4 (Mid pumped)				4	56	50	57	50	15.0	15.0	57	0	0		1	
					Test 5 (End pumped)				5	48	42	66	58	14.3	12.3	64	1	1			

Table 31. Length frequency distribution of herring. ROE HERRING CHARTER SEINER " VANPY I ", STAT. AREAS 23 & 24 , 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Biol. Sample No.	Length Frequency (cm) 12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	24 25	25 26	26 27	27 28	Sample Size	Average Length (cm)	Cutoff (cm)	% Below Cutoff
243 (24)	1	Sydney Inlet	28/02/87	0800				Water			Haul														
243 (24)	2	Sydney Inlet	28/02/87	0835	1						3	2	4	12	16	29	16	12	5	1		100	22.3	19.0	5
244 (24)	3	Outside Matilda Inlet	28/02/87	1850	2							1	1	8	16	39	26	9	8			108	22.8	19.0	1
243 (24)	4	Mid Channel - Sydney Inlet	01/03/87	0900	3						3	6	5	6	12	25	24	13	5			99	22.4	19.0	9
244 (24)	5	Outside Matilda Inlet	02/03/87	1905	4							1	2	5	12	27	26	21	7	2		103	23.1	19.0	1
232 (23)	6	Chrow Island	06/03/87	1131	5			Sample is not representative																	
232 (23)	7	Chrow Island	06/03/87	1855	6						5	18	14	11	16	17	11	4	1	2		99	21.0	19.0	23
232 (23)	8	Begg Isle	07/03/87	0815	7					1	4	10	6	16	17	26	10	9	2			101	21.5	19.0	15
232 (23)	9	Chrow Island	07/03/87	1510	8					1	1	12	2	5	21	24	21	7	6			100	22.1	19.0	14
232 (23)	10	Btn Forbes & Chrow Islands	07/03/87	1720	9						1	7	3	10	16	29	23	8	1	3		101	22.3	19.0	8
232 (23)	11	Begg Island	08/03/87	0700	10				2		2	6	5	11	36	21	9	5	3			100	21.6	19.0	10
232 (23)	12	Forbes Island	08/03/87	0855	11						2	7	8	11	22	27	16	5	1			99	21.7	19.0	9
232 (23)	13	Btn Forbes & Chrow Island	08/03/87	1250				Water			Haul														
232 (23)	14	Btn Forbes & Chrow Island	08/03/87	1320	12						1	7	6	13	27	23	16	6	3			102	21.8	19.0	8
232 (23)	15	1 mi. E. of St. Innes Island	08/03/87	1510	13					2	7	14	14	21	20	12	6	3	1			100	20.6	19.0	23
232 (23)	16	Btn Forbes & Chrow Island	08/03/87	2230	14							5	6	8	26	30	17	10				102	22.1	19.0	5
232 (23)	17	Btn Food Islet & Forbes Island	09/03/87	1011	15					8	13	17	5	13	18	12	10	4				100	20.3	19.0	38
232 (23)	18	Food Islet	09/03/87	1855	16					2	14	19	8	16	14	14	8	3				98	20.3	19.0	36
232 (23)	19	1 mi. S. of Forbes Island	11/03/87	1000				Water			Haul														
232 (23)	20	Btn David & St. Innes Island	11/03/87	1102	17						5	9	6	12	20	19	18	8	3			100	21.7	19.0	14
232 (23)	21	E. of Forbes Light	11/03/87	1248				Water			Haul														
232 (23)	22	Spilling & Stopper Islands	12/03/87	0939	18					1	4	7	5	12	19	19	21	6	3			97	21.8	19.0	12
232 (23)	23	E. of Stopper Island	16/03/87	0430	19			No Information																	

Table 32. Seine set data and roe yield information. ROE HERRING CHARTER SEINER " ELLING K ", STAT. AREAS 25 - 27, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Tonnage			Temp. (C)	Test No.	Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Spn	Juv. or Imm.	Average Length (cm)
					In Loc.	Set On	Est. Catch			M No.	%	F No.	%	Vol.	Adj. Vol.	#1	#2	#3	Out		
253 (25)	1	Nuchatlitz Inlet	24/02/87	1150		100/150	0	8.6		Water Haul											
253 (25)	2	Off Ensanada Islet	24/02/87	1227			0	8.6		Water Haul											
253 (25)	3	Off Ensanada Islet	24/02/87	1600	500	150	100	8.6	1	47	49	48	51	8.0	7.8	31	2	15			21.7
									2	48	47	55	53	5.5	5.2	24	11	20			
									3	30	34	59	66	12.8	9.7	43	8	8	1		
									4	44	44	56	56	10.0	8.9	38	7	11			
253 (25)	4	Nuchatlitz Reef	25/02/87	0840	1500	600	200/300	8.6	1	40	42	55	58	10.0	8.6	35	8	12			21.6
									2	53	51	51	49	9.0	9.2	36	9	6			
									3	59	56	46	44	8.3	9.4	28	5	13			
253 (25)	5	Nuchatlitz Reef	27/02/87	0720	2000/2500	300	200		1	55	59	39	41	8.5	10.4	30	1	8			22.2
									2	42	46	50	54	11.0	10.2	43	2	5			
									3	39	44	49	56	13.0	11.6	45	1	3			
									4	40	43	54	57	13.5	11.8	44	1	9			
253 (25)	6	Off Rosa Harbour	28/02/87	0740	500	500	100	8.2	1	25	30	57	70	16.0	11.4	50	0	7			23.1
									2	40	49	42	51	12.0	11.8	34	2	6			
									3	39	49	40	51	12.5	12.3	35	1	4			
									4	26	32	56	68	16.0	11.8	47	3	6			
252 (25)	7	East of Nootka Light	01/03/87	0950	300	100	70	7.2	1	59	44	76	56	0.9	0.8	5	3	68			20.8
									2	56	42	78	58	0.9	0.8	2	1	75			
253 (25)	8	Btn Centre Island and Rosa Harbour	06/03/87	0810	300/350	150/200	1	8.5	1	126	59	88	41	1.0	1.2	17	18	53		4	17.7
									2	119	59	82	41	1.0	1.2	13	13	56	3		
253 (25)	9	Rosa Harbour	06/03/87	1220	300/350	75/100	25	8.5	1	85	57	63	43	4.0	4.7	28	4	31	2		20.0
									2	81	49	86	51	4.0	3.9	27	8	51	5		
									3	77	46	89	54	5.0	4.6	33	17	39	3		
253 (25)	10	Double Island	08/03/87	0750	500	200	200	8.4	1	38	46	45	54	15.0	13.9	44	1	0			22.5
									2	39	45	47	55	15.0	13.6	45	0	2			
									3	51	56	40	44	12.0	13.6	39	0	1			
272 (27)	11	Inside McDougal Is.	15/03/87	1055	300	50	50	9.5	1	32	44	41	56	15.2	13.6	41	0	0	5		22.9
									2	24	34	47	66	17.0	12.9	47	0	0	8		
									3	38	45	46	55	16.0	14.5	46	0	0	8		
273 (27)	12	Mathews Island (Forward Inlet)	16/03/87	1657	200	100	2	9.0	1	82	63	49	37	7.0	9.5	38	7	4	4		
									2	90	69	41	31	7.5	12.1	33	5	3	2		
									3	87	65	47	35	7.2	10.3	38	7	2	5		
273 (27)	13	Winter Harbour	12/03/87	0600	1000+	80	80	8.7	1	49	51	47	49	15.0	15.3	47	0	0			21.3
									2	41	39	64	61	19.0	15.6	64	0	0			
									3	40	36	71	64	20.0	15.6	71	0	0		1	
									4	49	48	54	52	15.5	14.9	54	0	0		1	

Table 33. Length frequency distribution of herring. ROE HERRING CHARTER SEINER " ELLING K ", STAT. AREAS 25 - 27, 1987.

Section (Area)	Set No.	Location	D /M /Y	Time	Biol. Sample No.	Length Frequency (cm) 12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	24 25	25 26	26 27	27 28	Sample Size	Average Length (cm)	Cutoff (cm)	% Below Cutoff
253 (25)	1	Nuchatlitz Inlet	24/02/87	1150			Water Haul																		
253 (25)	2	Off Ensenada Islet	24/02/87	1227			Water Haul																		
253 (25)	3	Off Ensenada Islet	24/02/87	1600	1						4	1	9	15	25	27	15	4				100	21.7	19.0	5
253 (25)	4	Nuchatlitz Reef	25/02/87	0840	2						4	7	6	15	25	21	21	3				102	21.6	19.0	11
253 (25)	5	Nuchatlitz Reef	27/02/87	0720	3					1	2	1	2	8	17	36	25	4				96	22.2	19.0	4
253 (25)	6	Off Rosa Harbour	28/02/87	0740	4									3	13	28	38	18	1			101	23.1	19.0	0
252 (25)	7	East of Nootka Light	01/03/87	0950	5						6	8	16	22	21	18	8					99	20.8	19.0	14
253 (25)	8	Btn Centre Island & Rosa Harbour	06/03/87	0810	6			2	14	18	32	18	5	4	5	1	1					100	17.7	19.0	84
253 (25)	9	Rosa Harbour	06/03/87	1220	7					2	12	18	13	24	20	8	2					99	20.0	19.0	33
253 (25)	10	Double Island	08/03/87	0750	8							1	2	12	18	29	26	10	2			100	22.5	19.0	1
272 (27)	11	Inside McDougal Island	15/03/87	1055	9								1	4	15	34	32	11	4			101	22.9	19.0	0
273 (27)	12	Mathews Island - Forward Inlet	16/03/87	1657	10		Sample is not representative																		
273 (27)	13	Winter Harbour	12/03/87	0600	11				1	2	7	5	6	11	22	25	14	3	1			97	21.3	19.0	15

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Appreciation is expressed to the fishery officers, technicians and biologists who ensured that sampling guidelines were followed and the data recorded in a concise manner. Thanks are also extended to Jim Mitchell who monitored the charter payment catch and did an excellent job, to Alvin Sewid who helped organize the sampling equipment, and to Dennis Chalmers, Sue Farlinger, Lloyd Webb, Greg Savard, John Lewis, Lauri Gordon and Lorena Rosenfeld who reviewed the report. Thanks is also extended to Matt Palmer and Milja Salapura for their help in tabulating the data from raw data sheets and to Shelley Doering for typing the text.

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Appendix Table 1. Onboard sampling instructions.

1. Selection of sample sites

   (a) A list of priority sites will be supplied to charter masters by the district Herring Management Coordinator.

   (b) While the onboard Fisheries Service representative is in charge of all charter operations, consultation with the vessel master is necessary to determine if it is possible to set in any given location at any given time.

2. Number of sample sets

   (a) For each important fishing location, secure 1 or 2 sample sets per visit. (e.g. from Mayne Bay secure one set in the evening and one in the morning, then travel to another location). Each major location should be resampled at regular intervals.

To achieve a balanced number of samples from all areas, the following is a general guideline for the frequency of sample collection. The areas of the coast have been split into two groups as follows:

Major Areas		Minor Areas
2E	Cumshawa/Juan Perez/Skincuttle	2W - sample each inlet as
3/4	Port Simpson/Big Bay	frequently as possible.
5		4 - north end Porcher I.
6		8
7		9/10
14		12
15/16		13
17	north and south	18
23		26
24		
25		
27		

Where possible, obtain 3 or 4 samples per week from each major area and 1 or 2 samples per week from each minor area. It is important that sampling continue throughout the charter period, as fish are available, because age composition generally changes through the spawning season. It must be remembered that spawned out herring are just as important as unspawned herring in determining biological characteristics of different herring stocks.

   (b) If it is evident from echosounding that few fish are present in the major fishing location, immediately go on to the next site.

   (c) Try not to make large sets if the vessel master is confident a good cross section of available fish can be taken in a smaller set.

Appendix Table 1 (cont'd).

(d) Do not set twice on immature (young herring) stocks unless doubt exists that the first set was not representative of stocks in that location.

(e) Whether or not fish are caught, complete the Wheelhouse and Sample Log after each set; also, note the set in the Daily Log (Black Book).

3. Taking a random sample from the pursed seine

(a) Dry up the seine only as necessary to obtain samples; push the dip net or brailer vertically deep into the seine, then pull up quickly through a "BOIL" of fish so as to give no advantage to larger, faster fish.

(b) Assure yourself of enough fish by taking at least 5 sample buckets from each set.

(c) After obtaining a representative sample, immediately release the remaining fish to minimize scale damage.

(d) Mix the herring in the 5 sample buckets by pouring the herring back and forth in the 5 buckets.

(e) After the herring are measured, fill one sample bucket with a random sample of herring, place one completed shipping/sample lable inside on top of the fish and affix the other to the bucket handle. If sampling is delayed, cover the fish with a tarp to prevent loss to birds.

For the 1987 roe herring season, two types of sample bucket labels were used:

1. Black-printed label for the normal biological sample retained after every set.

2. Red-printed label for special samples ie. GSI, fecundity or abnormal herring encountered.

(f) Keep samples refrigerated or in a frozen state.

(g) Caution the vessel master to instruct the crew not to throw any fish overboard until D.F.O. samples have been processed.

4. Processing onboard charter vessel samples

(a) Sample for roe yield using standard volumetric or weight method as detailed in the 1987 SAMPLING GUIDELINES included with the ROE SAMPLE KIT.

Appendix Table 1 (cont'd).

(b) Measurement of fish in sample:

i) Sub-sample from the 5 sample buckets by measuring 20 herring from each bucket - do not pick out fish individually.

ii) In order to complete the 100 fish measurement the sampler should pour approximately 20 herring from each bucket directly onto the sampling table. As the herring are being poured another sampler can count the required 100 fish for the sample; if there are not enough herring to make up for the shortfall pour additional herring onto the sampling table from the sample buckets; if more than enough simply stop counting at 100 and remove the excess.

(c) Measure the fish

i) Tack the waterproof Wheelhouse and Sample Log to the measuring board.

ii) Record the "cut off" on the Wheelhouse and Sample Log and pencil in the appropriate "cut off" line on the measuring sheet; record the % below the cut off.(Appendix Fig. 1A & 1B)

iii) Before measuring a fish, use a sharp knife to remove scales from the tail section. This is very important since the length measurement goes to the end of the silvery colour on the skin of the fish and not to the end of the scales which cover the silvery colour on the skin.

iv) Measure 100 fish, each from the tip of the lower jaw to the end of the silvery colour on the tail. Every fish length should be recorded by marking the interval it falls into. (Appendix Fig. 2).

(d) Biological (Laboratory) Samples

The biological samples will be stored aboard the charter vesesl for the 26 day charter duration. This means extra care has to be taken to insure the samples are refrigerated. Although, the charter vessels are required to have a minimum of 36 cubic feet of freezer space, as well as, 5 tons of ice, 36 cubic feet is not enough space to freeze the 30-40 samples expected to be accummulated after 26 days.

As the samples are for laboratory analysis and not for human consumption there is a fair amount of flexibility on how they can be treated. The following procedure is recommended:

Rotate the samples from freezer to ice and back to the freezer after 4 or 5 days and repeat. For example, initially freeze the samples for two days and store the frozen samples in ice and refreeze after 4 or 5 days. This of course requires a lot of organization, therefore, the Vessel Master should designate a crew member to look after the samples.

Appendix Table 2. The 1987 roe herring cutoff lengths used to separate age 3 herring from older fish.

Statistical Area	Cutoff length
NORTH COAST	
Area 2E	190 mm
2W	200 mm
3 - 5	185 mm
6 - 10	185 mm
STRAIT OF GEORGIA	
Areas 14 - 18	190 mm
WEST COAST VANCOUVER ISLAND	
23	190 mm
24	190 mm
25	190 mm
27	190 mm

NOTE: It should be noted that these cutoff lengths are used as reference points only in order to compare different test samples. They are derived from the average lengths of three-year-old fish from previous years and may or may not reflect the average length this year. In addition, there can be a considerable overlap in size between fish of different ages, so there is no definite length that can be used to separate the two groups of fish. Generally, these cutoff lengths provide additional information on size distribution of the stocks.

An example of the usefulness of these cutoff lengths would be when comparing test sets made at the same location on different days. A large difference in the percentage of fish below the cutoff length may indicate that two different stocks of fish are present or that new fish have moved into the area. This is additional information used to determine the overall stock status.

Appendix Table 3. Instructions for estimating percent roe yield by volume.

This KIT contains:

- one clear plastic volumetric cylinder
- one 18 I (4 imp. gal.) bucket with lid
- instruction sheet with photographs of maturity stages

Determination of roe maturity:

1. Fill the roe test bucket with fish level to the top of the bucket using herring from the 5 buckets retained from the seine set.
2. Determine sex of all fish in the bucket (by stripping).
3. Record numbers of each sex on sampling sheet.
4. Strip all roe from females.
5. Record condition of all roe on sampling sheet.

   Condition 1 - acceptable by fishing companies for the Japanese market (bright yellow translucent eggs, few blood vessels) shown as **MATURE 1** in photograph appended to the ROE SAMPLE KIT.

   Condition 2 - may be 2-3 days from acceptability (unclear and pinkish in colour, becoming translucent, too many blood vessels) shown as **IMMATURE 2** in photograph appended to the ROE SAMPLE KIT.

   Condition 3 - may be 10 days from acceptability (very opaque with prominent blood vessels) shown as **IMMATURE 3** in photograph appended to the ROE SAMPLE KIT.

6. Deposit all Mature 1 roe into volumetric cylinder. Record the percent recovery from the scale on the side of the cylinder. Also record the number of females in conditions 1, 2 and 3, and record the number of males.
7. Repeat the above procedure with a second and third sample and average the results. If the results of the three samples are very different, further tests may be required.

Also important: Record the number of spawned out and juvenile/immature herring, and note gonad condition (running, firm, prominent blood vessels).

Appendix Table 4. Instructions for estimating percent roe yield by weight.

1. Place the plastic container on the scale and tare the scale.

2. Fill the container with 10 kg (22 lb) of herring from one of the 5 sample buckets retained from the seine set by pouring the herring into the container; make sure there is no water in the sample because the roe yield estimate may be effected.

3. Strip all roe from the females.

4. Record condition of all the roe on the sampling sheet:

   Condition 1 - acceptable by fishing companies for the Japanese market (bright yellow translucent eggs, few blood vessels) shown as **MATURE** in photograph appended to ROE SAMPLE KIT.

   Condition 2 - may be 2-3 days from acceptability (unclear and pinkish in colour, becoming translucent, too many blood vessels) shown as **IMMATURE 2** in photograph appended to ROE SAMPLE KIT.

   Condition 3 - may be 10 days from acceptability (very opaque with prominent blood vessels) shown as **IMMATURE 3** in photograph appended to ROE SAMPLE KIT.

5. Tare the scale and deposit all Mature 1 roe into the weighing container; record the weight. If the #1 roe weight is 870 g, the roe yield is 8.7%; if 950 g, the roe yield is 9.5%, etc.

6. Record the number of females with conditions 1, 2 and 3 maturity and record the number of males.

7. Repeat the above procedure with a second sample and average the results. If the results of the two samples are very different, a third test may be required.

   Also, record the number of spawned out and juvenile/immature herring.

   Important: Check the scale for accuracy periodically using a known weight.

Appendix Table 5. Instructions for estimating percent roe yield if concise sampling equipment is not available.

The technique was developed by S.W. Yip an employee of Canadian Fishing Company for fish packers to test for roe yield during a fishery when buying herring and is based on the number of mature females in a sample of 50. The technique will not be accurate if spawned out herring represents more than 10% and assumes the sex ratio is 50/50. Keeping these shortcomings in mind the technique can be used by DFO staff to estimate roe yield if more concise sampling equipment is not available.

Procedure:

1. Randomly obtain approximately 45 kg (100 lb) of herring from the set or load.

2. Using the same procedure outlined in Appendix Table I mix the herring by pouring the herring back and forth in several buckets to ensure a random sample.

3. Randomly strip herring and retain in a separate bucket until you have exactly 50 females; make sure an accurate count is made of the number of spawned out herring because the technique will not work if the spawned out herring represents more than 10%.

4. Separate herring with mature roe from herring with immature roe.

5. Count the herring with mature roe and useing the attached reference table record the % mature roe (roe yield).

6. Repeat the above procedure with a second sample and average the results. If the results are much different further tests may be required.

Important to remember, more than 10% spawned out herring and a disparity in the sex ratio can effect the results.

Appendix Table 5 (Cont'd)

Reference Table for Estimating Roe Yield
Using the Number of Mature Females

No. of Mature Females in 50 Females	% Mature Females in 50 Females	% Mature Roe in the Sample
30	60	6.5
31	62	6.8
32	64	7.3
33	66	7.5
34	68	7.7
35	70	8.0
36	72	8.3
37	74	8.5
38	76	8.8
39	78	9.2
40	80	9.5
41	82	10.0
42	84	10.5
43	86	11.0
44	88	11.5
45	90	12.0
46	92	12.6
47	94	13.1
48	96	13.6
49	98	14.2

Appendix Table 6. Formula used to adjust roe yields assuming a 50:50 male/female sex ratio.

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1. Determine the number of males and females in the roe test sample i.e. 42F, 56M.

2. Determine the % of females in the roe test sample i.e. 42.8% females.

3. Determine the % roe yield i.e. 9%.

   To convert the roe yield to a 50:50 male/female ratio, use the following formula:

$$\frac{\% \text{ roe} \times 50}{\% \text{ females}} \quad \text{i.e.} \quad \frac{9 \times 50}{42.8} = 10.51\%$$

In this example, the roe yield was actually 10.5% assuming a 50:50 male/female sex ratio for the herring stocks in the area.

This information is not to be passed to the Management Coordinator over the R.T. Make reference to the fact the sample is heavy on males or females, but do not adjust the roe yield.

This formula is for your own use only (for interest only).

Appendix. Figure 1a. New wheelhouse and sample log-roe yield by volume.

July, 1984

NEW WHEEL HOUSE & SAMPLE LOG

(To be completed after every set, including water hauls and charter payment sets)

SET INFORMATION

1. Vessel Kareana II 2. Captain D. Smith
3. Stat. Area 2E 4. a) Location Juan Perez SO. (All Alone Stone)
   b) Water Depth 65 fm.
5. Date: Day 19 Month 03 Year 1987
6. Set No 14 7. Sample No 03 8. Time Set 1842
9. Sample: a) is ✓ b) is not _____ representative
10. Est. Tons in school set on 150 11. In catch 50-60
12. Est. Tons in Location 500 13. Est. Tons in Stat Area ?
14. a) Wind Direction & Velocity S.W. - 5 b) sky 0 %clear
    c) other _____ d) Sea Surface Temperature 8.0°C
15. Herring School Behaviour Fast moving school

16. Incidence of other species Dogfish, Rockcod

17. Summary of On Board Size Measurements:
    a) Cutoff length used 190
    b) Measured 100
    c) Fish less than cutoff length 0 %
    d) Average Size 23.0 cm.

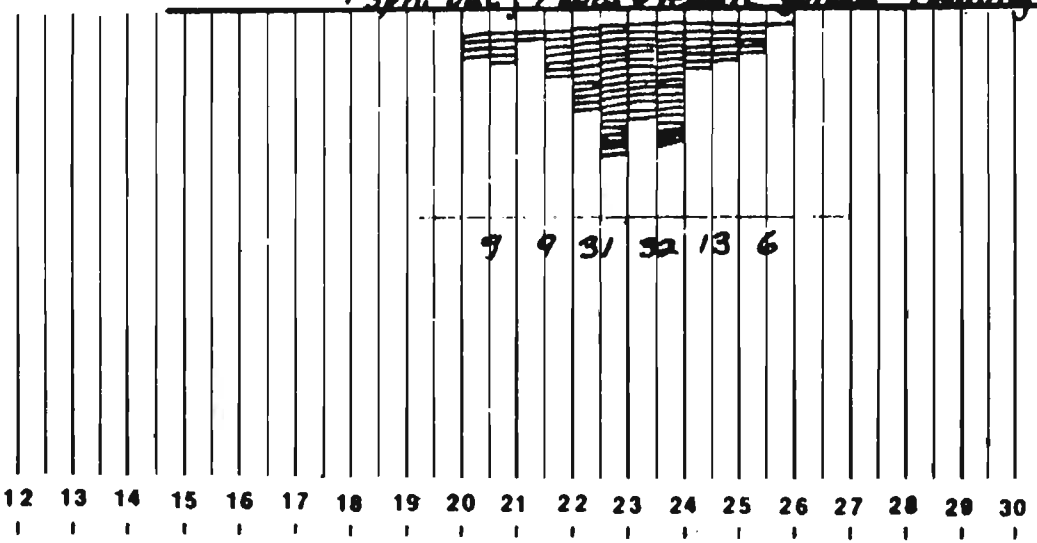
Comments re: HERRING SIZE
Large Herring; no herring under 20 cms.

ROE TEST INFORMATION

	Test 1	Test 2	Test 3	Test 4	Test 5
No. Females cond. 1 Roe a)	38	28	37	42	35
No. Females cond. 2 Roe b)	2	1	2	2	1
No. Females cond. 3 Roe c)	2	3	4	2	2
TOTAL FEMALES .....d)	42	32	43	46	38
NO. OF MALES .....e)	42	54	45	42	49
Spawned out .....f)	1	3	1	2	2
Juvenile/Immature .....g)					
ROE YIELD (VOL) .....h)	12.0%	9.0%	13.0%	13.0%	12.5%
Roe Yield (WT) .....i)	%	%	%	%	%
Total Sample Weight.....j)	gm	gm	gm	gm	gm
Total Roe Weight.....k)	gm	gm	gm	gm	gm

AVERAGE ROE YIELD: 11.9 %

20. Comments re: Maturity (gonad running or firm) spawning, bird and Sea Lion activity, etc.
9 spn. out, Males & female gonads ripening



IMPORTANT
Complete This Section

Reporting Officer
Steve Backus

Date Reported: DAY/MONTH/YEAR
14/03/87

Time: 2000

Reported to:
L. Enderud

DUBBAK WATERPROOF

Appendix. Figure 1(b). New wheelhouse and sample log-roe yield by weight.

July, 1984

NEW WHEEL HOUSE & SAMPLE LOG

(To be completed after every set, including water hauls and charter payment sets)

SET INFORMATION

1. Vessel Argent Fisher 2. Captain Joe Malatestinic
3. Stat. Area 15-2 4. a) Location E. Side Mystery Reef
   b) Water Depth 16 fms.
5. Date: Day 14 Month 03 Year 1987
6. Set No 35 7. Sample No 21 8. Time Set 1120
9. Sample: a) is V b) is not _____ representative
10. Est. Tons in school set on 175 11. In catch 160
12. Est. Tons in Location 1000 13. Est. Tons in Stat Area 1000
14. a) Wind Direction & Velocity N.W. 10 b) sky 10 %clear
    c) other _____ d) Sea Surface Temperature 8.1°C
15. Herring School Behaviour very fast school

16. Incidence of other species Dogfish

17. Summary of On Board Size Measurements:
    a) Cutoff length used 190
    b) Measured 86
    c) Fish less than cutoff length 22 %
    d) Average Size 19.83 cm.

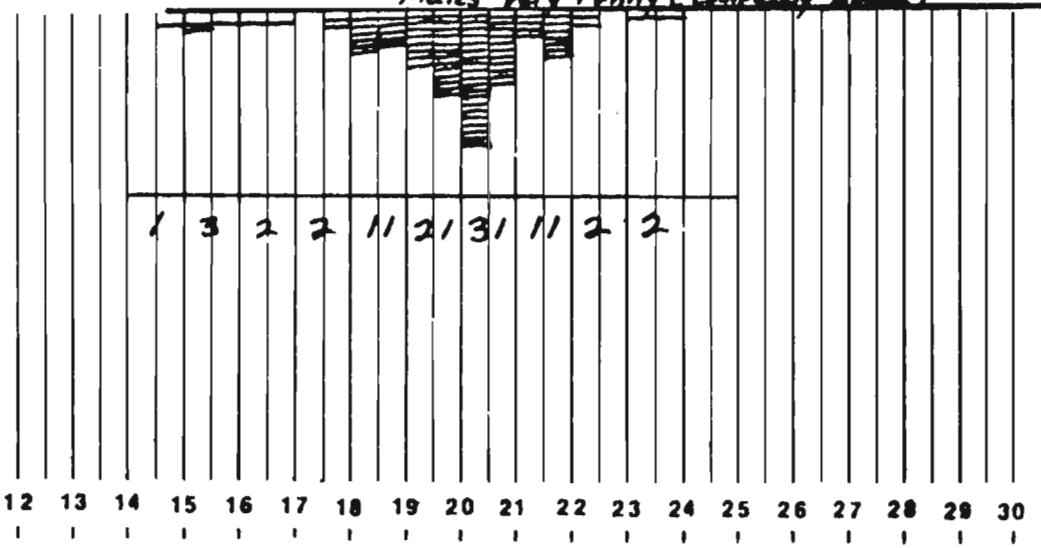
Comments re: HERRING SIZE
Small males in samples

ROE TEST INFORMATION

	Test 1	Test 2	Test 3	Test 4	Test 5
No. Females cond. 1 Roe a)	44	45	55	40	44
No. Females cond. 2 Roe b)	0	1	1	5	0
No. Females cond. 3 Roe c)	1	0	0	0	4
TOTAL FEMALES .....d)	45	46	56	45	48
NO. OF MALES .....e)	29	41	41	53	51
Spawned out .....f)	0	1	0	1	2
Juvenile/Immature .....g)					
ROE YIELD (VOL) .....h)	%	%	%	%	%
Roe Yield (WT) .....i)	10.27%	11.30%	12.60%	10.15%	10.25%
Total Sample Weight.....j)	gm	gm	gm	gm	gm
Total Roe Weight.....k)	gm	gm	gm	gm	gm

AVERAGE ROE YIELD: 10.99 %

20. Comments re: Maturity (gonad running or firm) spawning, bird and Sea Lion activity, etc.
Males very runny (completely loose)



IMPORTANT
Complete This Section

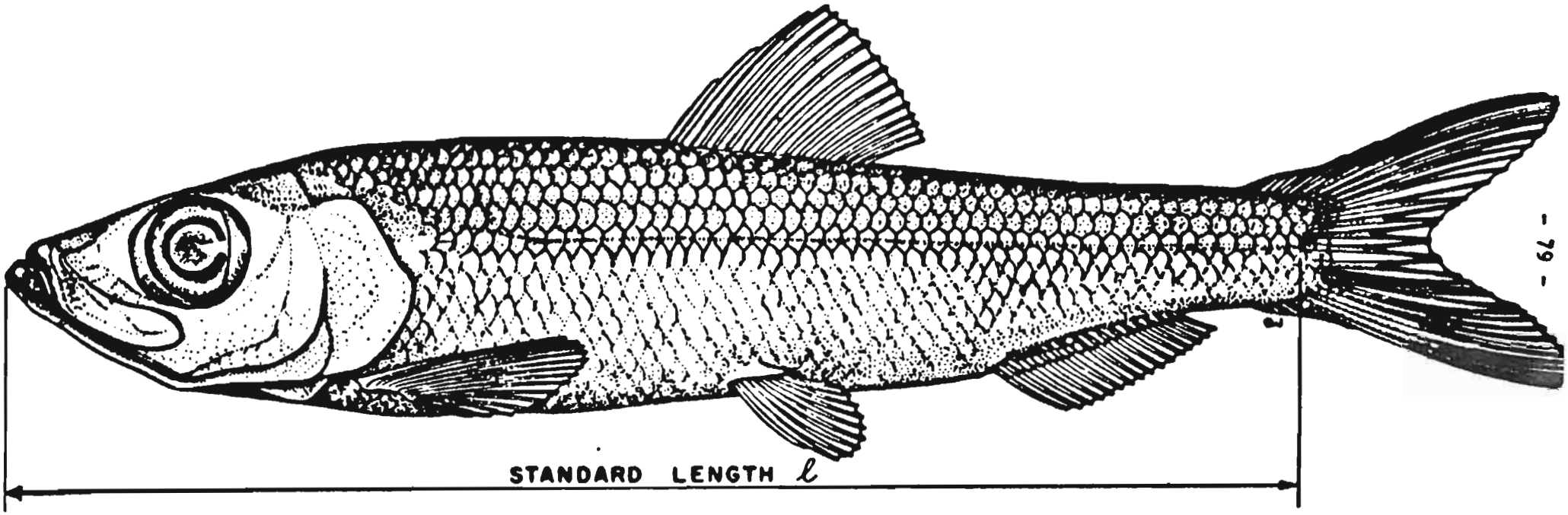
Reporting Officer
Sue Hahn

Date Reported: DAY/MONTH/YEAR
14/03/87

Time: 1200

Reported to:
J. Broome

DURABAK WATERPROOF



Appendix Fig. 2. The standard length measurement ℓ used for measuring herring. This length is defined as the distance from the anterior tip of the fish with the mouth closed, to the end of the silver skin on the caudal peduncle. It is important to scrape the scales off the peduncle area to find the end of the silvery portion of the skin.