

The 1984 Roe Herring Charter Vessel Monitoring and Sampling Program

R.W. Armstrong

Field Services Branch
Department of Fisheries and Oceans
Nanaimo, B.C. V9T 1K3



September, 1985

Canadian Industry Report of
Fisheries and Aquatic Sciences
No. 165



Fisheries
and Oceans

Pêches
et Oceans

Canada

Canadian Industry Report of Fisheries and Aquatic Sciences

These reports contain the results of research and development that are useful to industry for either immediate or future application. Industry Reports are directed primarily towards individuals in the primary and secondary sectors of the fishing and marine industries. No restriction is placed on subject matter and the series reflects the board interests and policies of the Department of Fisheries and Oceans, namely, fisheries management, technology and development, ocean sciences, and aquatic environments relevant to Canada.

Industry Reports may be cited as full publications. The correct citation appears above the abstract of each report. Each report will be abstracted in *Aquatic Sciences and Fisheries Abstracts* and will be indexed annually in the Department's index to scientific and technical publications.

Numbers 1-91 in this series were issued as Project Reports of the Industrial Development Branch, Technical Reports of the Industrial Development Branch, and Technical Reports of the Fisherman's Service Branch. Numbers 92-110 were issued as Department of Fisheries and the Environment, Fisheries and Marine Service Industry Reports. The current series name was changed with report number 111.

Details on the availability of Industry Reports in hard copy may be obtained from the issuing establishment on the front cover.

Rapport canadien à l'industrie sur les sciences halieutiques et aquatiques

Ces rapports contiennent les résultats des recherches et des progrès qui peuvent être utiles à l'industrie pour des applications soit immédiates, soit futures. Ils sont préparés à l'intention principalement des membres des secteurs primaire et secondaire de l'industrie des pêches et de la mer. Il n'y a aucune restriction quant au sujet; de fait, la série reflète la vaste gamme des intérêts et des politiques du Ministère des Pêches et des Océans, notamment gestion des pêches, techniques et développement, sciences océaniques et environnements aquatiques, au Canada.

Les Rapports destinés à l'industrie peuvent être considérés comme des publications complètes. Le titre exact paraît au haut du résumé de chaque rapport, qui sera publié dans la revue *Aquatic Sciences and Fisheries Abstracts* et qui figurera dans l'index annuel des publications scientifiques et techniques du Ministère.

Les numéros de 1 à 91 de cette série ont été publiés à titre de rapports sur les travaux de la Direction du développement industriel, de rapports techniques de la Direction du développement industriel, et de rapports techniques de la Direction des services aux pêcheurs. Les numéros 92 à 110 ont été publiés à titre de Rapports à l'industrie du Service des pêches et de la mer, Ministère des Pêches et de l'Environnement. Le nom de la série a été changé à partir du rapport numéro 111.

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

Canadian Industry Report of
Fisheries and Aquatic Sciences 165
September 1985

THE 1984 ROE HERRING
CHARTER VESSEL MONITORING AND
SAMPLING PROGRAM

BY

R.W. Armstrong

Field Services Branch
Department of Fisheries and Oceans
3225 Stephenson Point Road
Nanaimo, B.C. V9T 1K3

© Minister of Supply and Services Canada 1985
Cat. No. Fs 97-14/ 165 ISSN 0704-3694

Correct citation for this publication:

Armstrong, R.W. 1985. The 1984 roe herring charter vessel monitoring and sampling program. Can. Ind. Rep. Fish. Aquat. Sci. 165 : 86 p.

CONTENTS

	Page
List of Figures.....	iii
List of Tables.....	iii
List of Appendices.....	v
Abstract/Résumé.....	vi
Introduction.....	1
Historical review of the roe herring charter program	1
Methods and materials.....	2
Results.....	13
Acknowledgements.....	13
Appendix Tables.....	78
Appendix Figures.....	84

LIST OF FIGURES**Figure**

1. Herring divisions 1-6 and 1984 management areas A-C.....	6
2. Statistical Areas in British Columbia.....	7
3. Herring sections in northern British Columbia.....	8
4. Herring sections in southern British Columbia.....	9

LIST OF TABLES**Table**

1. Roe herring charter payment summary, B.C., 1984.....	4
---	---

TABLE	Page
2. Roe herring charter vessels by location and time period, B.C., 1984.....	5
3. Herring divisions and sections in British Columbia.....	10
4. Number of seine sets and roe tests by charter vessel, B.C., 1984.....	14
5. Seine set data and roe yield information from charter vessel "Christav", Stat. Areas 2E and 3, 1984.....	15
6. Length frequency distribution of herring from charter vessel "Christav", Stat. Areas 2E and 3, 1984.....	18
7. Seine set data and roe yield information from charter vessel "Bernice C", Stat. Area 2W, 1984.....	20
8. Length frequency distribution of herring from charter vessel "Bernice C", Stat. Area 2W, 1984.....	21
9. Seine set data and roe yield information from charter vessel "Bold Contender", Stat. Areas 3-5, 1984.....	22
10. Length frequency distribution of herring from charter vessel "Bold Contender", Stat. Areas 3-5, 1984.....	25
11. Seine set data and roe yield information from charter vessel "Fisher Lassie II", Stat. Areas 6-8, 1984.....	28
12. Length frequency distribution of herring from charter vessel "Fisher Lassie II", Stat. Areas 6-8, 1984.....	31
13. Seine set data and roe yield information from charter vessel "Marine Star", Stat. Areas 6 and 7, 1984.....	34
14. Length frequency distribution of herring from charter vessel "Marine Star", Stat. Areas 6 and 7, 1984.....	37
15. Seine set data and roe yield information from charter vessel "Westview No. I", Stat. Areas 15 - 18, 1984.....	40
16. Length frequency distribution of herring from charter vessel "Westview No. I", Stat. Areas 15 - 18, 1984.....	45
17. Seine set data and roe yield information from charter vessel "Pacific Quest", Stat. Areas 13 - 17, 1984.....	49
18. Length frequency distribution of herring from charter vessel "Pacific Quest", Stat. Areas 13 - 17, 1984.....	53

TABLE	Page
19. Seine set data and roe yield information from charter vessel "Sarah Margaret", Stat. Area 17, 1984.....	56
20. Length frequency distribution of herring from charter vessel "Sarah Margaret", Stat. Area 17, 1984.....	59
21. Seine set data and roe yield information from charter vessel "Abraxas Provider", Stat. Areas 14 - 17, 1984.....	62
22. Length frequency distribution of herring from charter vessel "Abraxas Provider", Stat. Areas 14 - 17, 1984.....	66
23. Seine set data and roe yield information from charter vessel "Ocean Horizon", Stat. Area 23, 1984.....	69
24. Length frequency distribution of herring from charter vessel "Ocean Horizon", Stat. Area 23, 1984.....	72
25. Seine set data and roe yield information from charter vessel "Pacific Ocean", Stat. Areas 23 and 24, 1984.....	74
26. Length frequency distribution of herring from charter vessel "Pacific Ocean", Stat. Areas 23 and 24, 1984.....	75
27. Seine set data and roe yield information from charter vessel "Nita Maria", Stat. Area 25, 1984.....	76
28. Length frequency distribution of herring from charter vessel "Nita Maria", Stat. Area 25, 1984.....	77

LIST OF APPENDICES

Appendix Table

1. Onboard sampling instructions.....	78
2. The 1984 roe herring cutoff lengths used to separate age 3 herring from older fish.....	80
3. Instructions for estimating percent roe yield by volume.....	81
4. Instructions for estimating percent roe yield by weight.....	82
5. Formula used to adjust roe yields assuming a 50:50 male/female sex ratio.....	83

Appendix Figure

1a. Wheelhouse and Sample Log - roe yield by volume.....	84
1b. Wheelhouse and Sample Log - roe yield by weight.....	85
2. Standard length measurement used for measuring herring	86

ABSTRACT

Armstrong, R.W., 1985. The 1984 roe herring charter vessel monitoring and sampling program. Can. Ind. Rep. Fish. Aquat. Sci. 165: 86 p.

Twelve charter vessels made 366 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 1984 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 1984/1985 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., 1985. The 1984 roe herring charter vessel monitoring and sampling program. Can. Ind. Rep. Fish. Aquat. Sci. 165: 86 p.

Douze bateaux affrétés ont recueilli 366 séries d'échantillons sur la côte de la Colombie-Britannique pour permettre aux gestionnaires des pêches d'évaluer l'importance des stocks, le recrutement et al 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 1984.

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 feront partie de 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 1984-1985. Le présent rapport renferme des données recueillies sur le terrain, notamment une estimation 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 1984, 12 herring seiners were chartered for the roe herring test fishing operation 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 measure incoming year class strength and compare it with predicted returns,
- f) to ensure "on the grounds" input from Industry via the charter vessel masters and
- g) to use 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 preceding fishery openings and could participate in the commercial fishery. This meant that just when the fishery managers most urgently needed the information on roe

yields and abundance, they lost one of their key sources of data. This may have resulted in lost fishing opportunities and lost revenue to the 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 12 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 more 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 26-day 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 1984, 12 herring seine vessels were chartered for the roe herring fishery on the B.C. coast. 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 estimate recruitment and roe yield. The normal procedure was to hydroacoustically sound the fishing grounds and then 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. All vessels were chartered for a minimum of 26 days with provisions made for extensions of up to 5 days, if required. Bids for the successful vessels ranged between 3.9 tons/day and 5.0 tons/day for a total tonnage requirement of 1,511.6 including a total of 14 days extension (Table 1). The actual tonnage caught for payment was 1,628.86 tons. This represents an excess catch of 7.8%. All fish caught in excess of the tendered amount were sold at the Union agreed price of \$800.00 per ton and the monies forwarded to the Receiver General of Canada. The total value of the excess catch was \$94,192.80.

The charter timing was set to ensure that the charter vessel was available prior to and during the major spawnings in each area (Table 2). The 12 vessels were assigned to the three herring management areas (Fig. 1) as follows:

Area A (North of Cape Caution) - 5 vessels

Area B (Strait of Georgia - Johnstone Strait) - 4 vessels

Area C (West Coast Vancouver Island) - 3 vessels

The charter vessels were assigned to specific sampling locations within each management area and were given by the fishery manager general directions 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 3). 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).

Onboard Sampling Procedure

Seine sample sets were made on all large bodies of herring, and samples of about 68 kg (150 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 & b). 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

Table 1. Roe herring charter payment summary, B.C., 1984.

Vessel	Charter bid (tons)		Total payment (tons)	Total catch (tons)	Excess (tons)
	Daily rate	Charter (26 days)			
Christav	5.0	130.0	130.0	140.0835	10.0835
Bernice C.	4.9	127.4	147.0(4) ^a	148.7785	1.7785
Bold Contender	4.25	110.5	119.5(2) ^a	119.0	0
Fisher Lassie II	4.9	127.4	127.4	274.0125 ^b	29.6125
Marine Star	4.5	117.0	117.0	0	0
Westview No. I	4.75	123.5	142.5(4) ^a	143.4125	0.9125
Pacific Quest	4.8	124.8	144.0(4) ^a	144.0	0
Abraxas Provider	4.5	117	117.0	129.8695	3.8695
Sarah Margaret	4.5	117	117.0	130.763	13.763
Ocean Horizon	4.75	123.5	123.5	239.9025 ^c	14.4825
Pacific Ocean	4.8	124.8	124.8	168.039	43.239
Nita Maria	3.9	101.9	101.92	0	0
Total	55.6	1,444.8	1,511.62	1,628.861	117.741(7.8%)

^a Number in parenthesis indicates charter extension in days.

^b Fisher Lassie II and Marine Star charter payment catch combined.

^c Ocean Horizon and Nita Maria charter payment catch combined.

Table 2. Roe herring charter vessels by location and time period, B.C., 1984.

Vessel	Fishing master	Location	Charter timing	Charter duration (days) ^a
Christav	G. Stava	QCI ^b	Mar. 6 - 31	26
Bernice C.	W. Cadwallader	QCI	Mar. 1 - Apr. 4	30
Bold Contender	J. Hougan	Prince Rupert	Mar. 10 - Apr. 6	28
Fisher Lassie II	V. Wilson	Central Coast	Mar. 1 - 26	26
Marine Star	B. Wilson	Central Coast	Mar. 6 - 31	26
Westview I	M. Aleksich	SG/JSC ^c	Feb. 20 - Mar. 23	30
Pacific Quest	J. Polonio	SG/JS	Feb. 16 - Mar. 16	30
Sarah Margaret	L. Dusman	SG/JS	Feb. 20 - Mar. 16	26
Abraxis Provider	D. Houston	SG/JS	Feb. 20 - Mar. 16	26
Ocean Horizon	J. Reid	WCVI ^d	Feb. 24 - Mar. 20	26
Pacific Ocean	A. Sorenson	WCVI	Feb. 24 - Mar. 20	26
Nita Maria	R. Webber	WCVI	Feb. 24 - Mar. 20	26

^a The charter duration was 26 days; however, the vessels Bernice C., Bold Contender, Westview No. I and Pacific Quest had their charter duration extended.

^b Queen Charlotte Island.

^c Strait of Georgia - Johnstone Strait.

^d West Coast Vancouver Island.

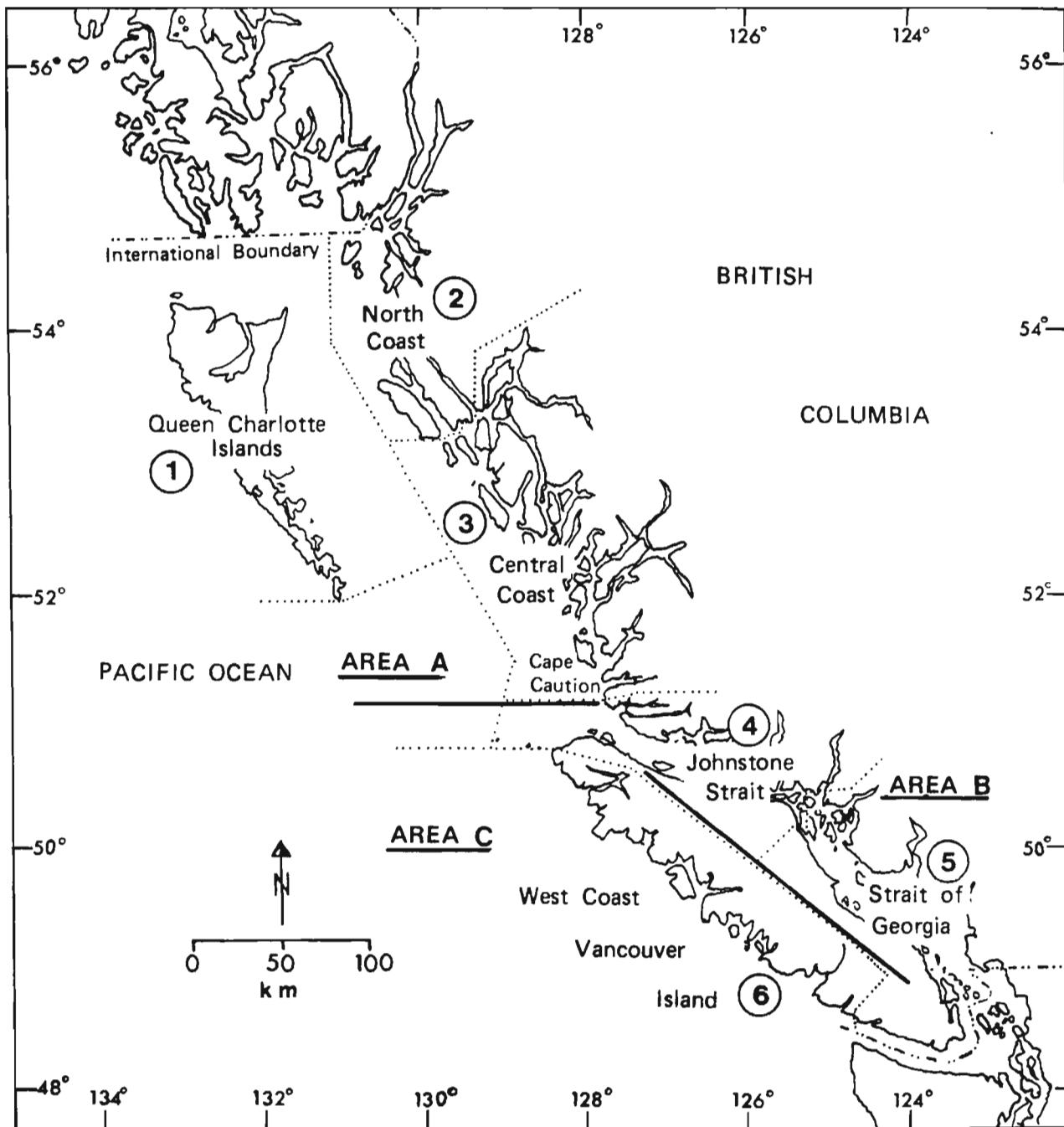


Fig. 1. Herring divisions 1 - 6 (circled numbers , dotted lines) and 1984 management areas A - C (solid lines).

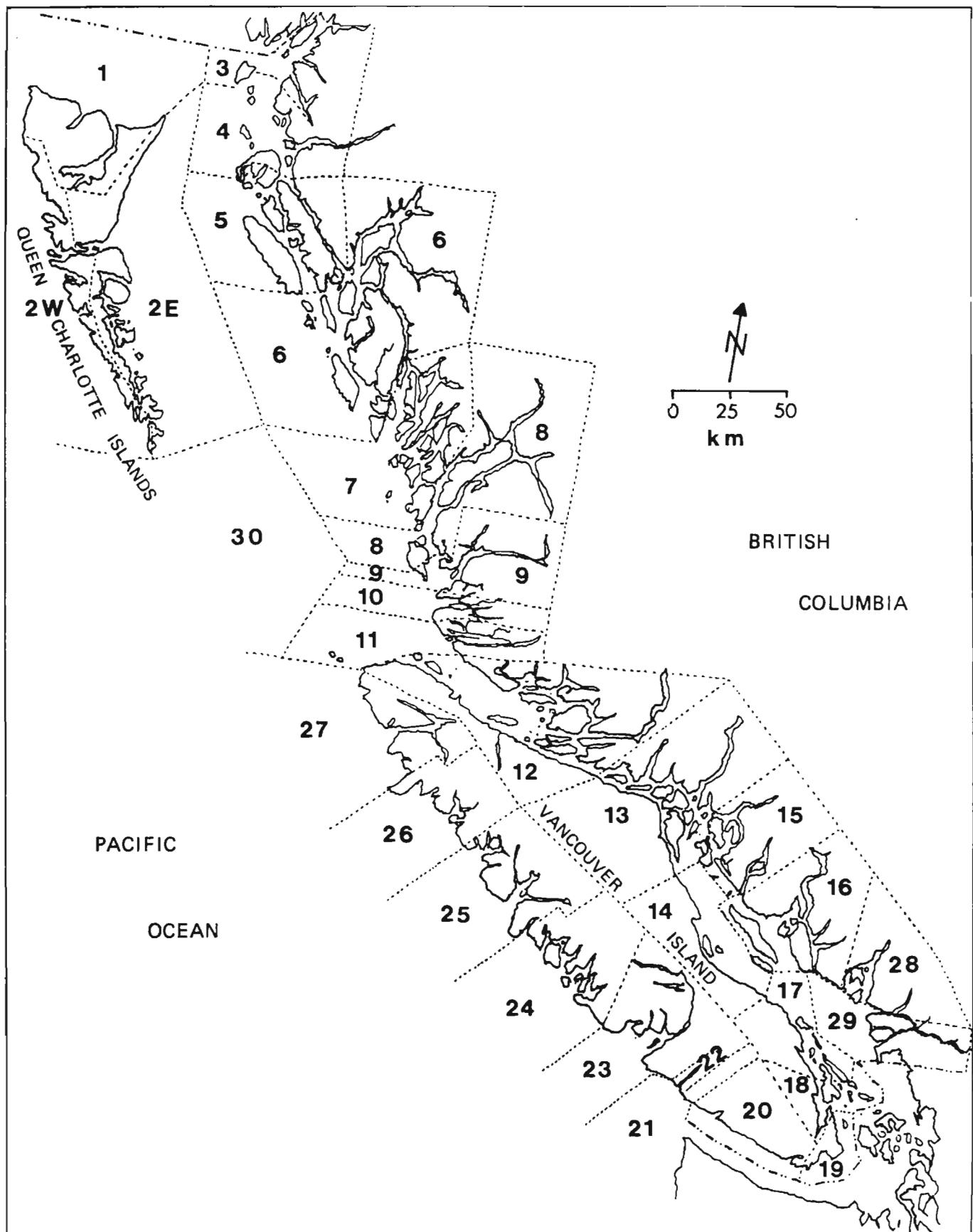


Fig. 2. Statistical Areas in British Columbia.

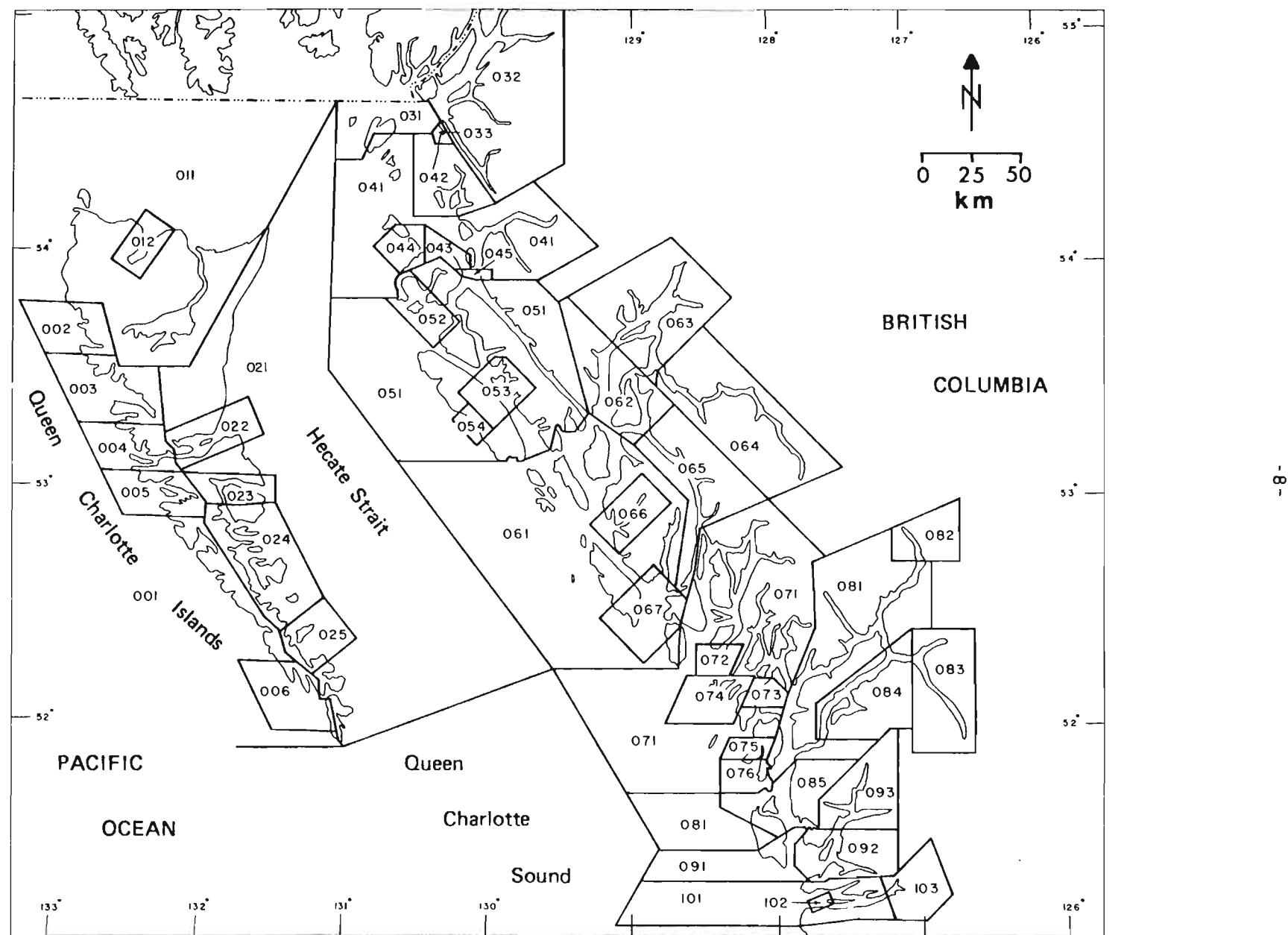


Fig. 3. Herring sections in northern British Columbia.

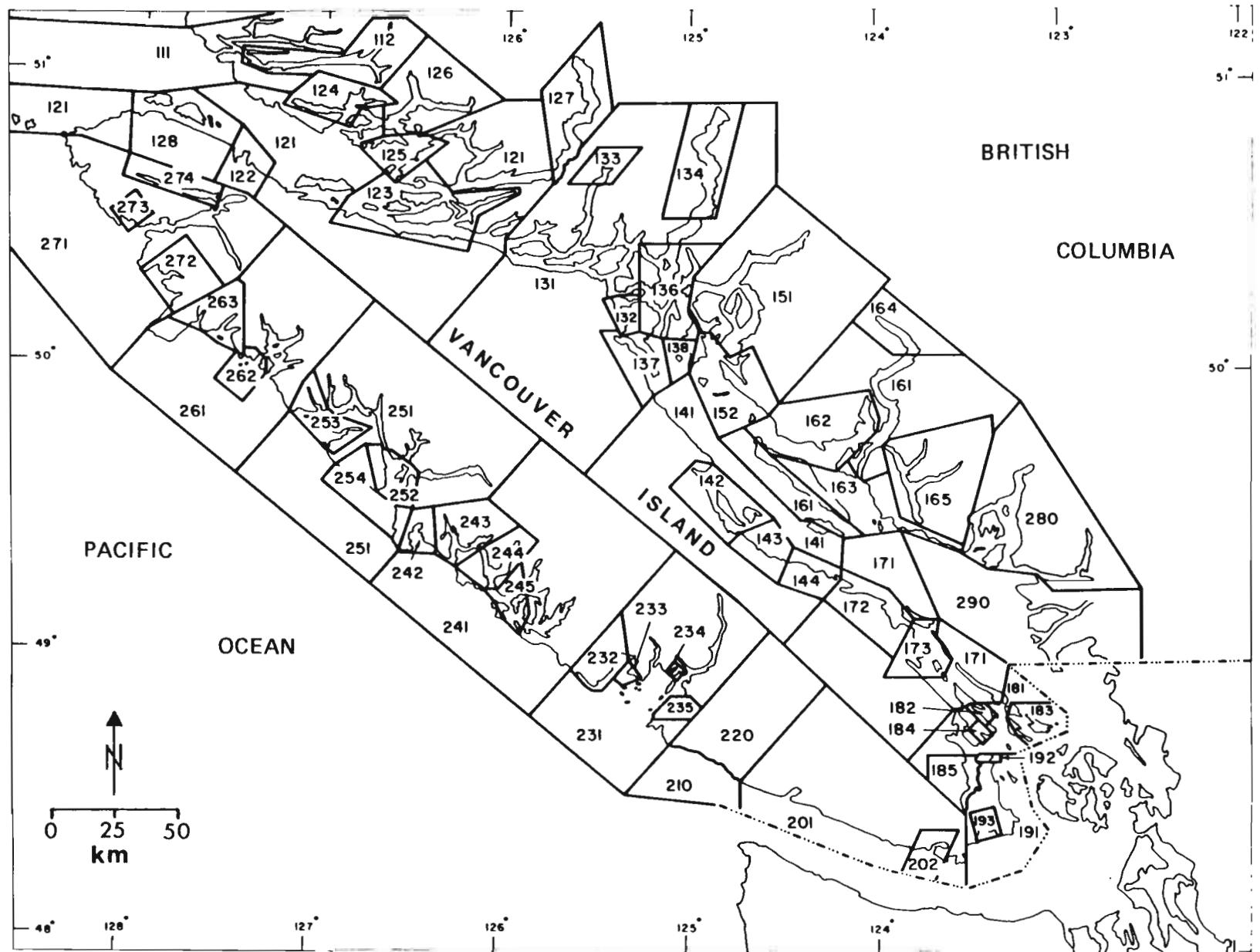


Fig. 4. Herring sections in southern British Columbia.

Table 3. Herring divisions and sections in British Columbia.

DIVISION		SECTION		DIVISION		SECTION	
Code	Name	Code	Name	Code	Name	Code	Name
1	Queen Charlotte Islands	011	Other Area 1	3	Central (cont'd)	091	Other Area 9
		012	Naden Harbour			092	Rivers Inlet Mouth
		006	Louscoone Inlet			093	Rivers Inlet Head
		001	Other Area 2W			101	Other Area 10
		002	Port Louis			102	Takush Harbour
		003	Rennell Sound			103	Smith Inlet Head
		004	Cartwright Sound			061	Other Area 6
		005	Englefield Bay			062	Promise Island
		023	Cumshewa Inlet			063	Kitimat Arm
		025	Skincuttle Inlet			064	Gardner Canal
		021	Other Area 2E			065	Princess Royal Channel
		022	Skidegate Inlet			066	Surf Inlet
		024	Laskeek Bay			071	Other Area 7
2	North Coast	033	Port Simpson	4	Johnstone Strait	081	Other Area 8
		042	Big Bay			082	Kimsquit Bay
		043	Malacca Passage			083	Bentinck Arms
		044	Edye Passage			123	Cracroft Island
		045	Gibson Group			124	Watson Island
		052	Kitkatla Channel			125	Eden Island
		031	Other Area 3			126	Kingcome Inlet
		032	Portland Inlet			127	Knight Inlet
		041	Other Area 4			111	Other Area 11
		051	Other Area 5			112	Nugent Sound
		053	Anger Island			121	Other Area 12
		054	Foul Bay			122	Beaver Harbour
		067	Kitasu Bay			128	Goletas Channel
3	Central	072	Powell Anchorage			131	Other Area 13 Strait
		073	Gunboat Passage			132	Kanish Bay
		074	Thompson Bay			133	Loughborough Inlet
		075	McNaughton Group			134	Bute Inlet
		076	Kildidt Sound				
		085	Kwakshua Channel				
		084	Burke Channel				

Table 3. Herring divisions and sections in British Columbia (cont'd).

DIVISION		SECTION		DIVISION		SECTION	
Code	Name	Code	Name	Code	Name	Code	Name
5	Strait of Georgia	152	Lund	6	West Coast of Vancouver Island	232	Macoah Pass
		162	Stillwater			233	Mayne Bay
		142	Baynes Sound			210	Area 21
		143	Qualicum			218	Offshore Area 21
		144	French Creek			220	Nitinat Lake
		172	Nanoose Bay			231	Other Area 23
		173	Yellow Point			234	Useless Inlet
		182	Ganges Harbour			235	Bamfield Inlet
		183	Plumper Sound			238	Offshore Area 23
		290	Boundary Bay			244	Whitepine Cove
		136	Other Area 13 Gulf			245	Meares Island
		137	Heriot Bay			241	Other Area 24
		138	Marina Island			242	Hesquiat Harbour
		141	Other Area 14			243	Sydney Inlet
		151	Other Area 15			248	Offshore Area 24
		161	Other Area 16			252	West Nootka
		163	Pender Harbour			254	Bajo Point
		164	Queens Reach			253	Nuchatlitz Inlet
		165	Sechelt Inlet			272	Brooks Bay
		171	Other Area 17			273	Winter Harbour
		181	Other Area 18			251	Other Area 25
		184	Fulford Harbour			261	Other Area 26
		185	Saanich Inlet			262	Clanninick Cove
		191	Other Area 19			263	Checleset Bay
		192	Tsehum Harbour			271	Other Area 27
		193	Victoria Harbour			274	Holberg Inlet
		201	Other Area 20				
		202	Sooke Inlet				
		280	Howe Sound				

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.

iii) Onboard sampling

a) Herring measurement

Standard length measurements (Appendix Fig. 2) obtained from a random sample of 50 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 desirable due to having smaller gonads and thus giving lower roe yields. 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.

2. Roe yield

During the 1984 roe herring fishery, two methods of determining roe yield were used:

- a) Volumetric method - this is the commonly used method and 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 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 table 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 1984, 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 1984 roe herring charter program, the 12 charter seiners made 366 seine sample sets for an average of 30.5 sets per vessel (Table 4). A total of 715 roe tests were carried out onboard the charter vessels and 284 samples were retained for the FRB laboratory (Table 4). Samples were also retained for special research studies, i.e. Gonosomatic Index and fecundity studies. Hydroacoustic biomass estimates, roe yield information, sea surface water temperatures and length frequency distributions of herring were also recorded for each seine sample set (Tables 5-28). In 1984, roe maturities of the fish caught ranged between 10.0% and 13.6%.

ACKNOWLEDGEMENTS

The author would like to thank the charter vessel masters and crews for their "above the call of duty" effort during the test fishery. In addition to obtaining samples and providing biomass estimates, the charter vessel masters were part of the management team and were directly involved in management decisions for the commercial fishery openings, and they did an admirable job.

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 organized the sampling equipment, to Dennis Chalmers and Lloyd Webb who reviewed the text and to Alice Fedorenko who edited and prepared the report for publication. A special thanks is extended to Shiela Dawe for tabulating the data from the raw data sheets and to Valerie Rogers and the staff of the SEP Information/Processing Center for typing the drafts.

Table 4. Number of seine sets and roe tests by charter vessel, B.C., 1984.

Statistical Area	Charter vessel	No. of sets	No. of roe tests	No. of biological samples retained
2E	Christav	34	68	23
2W	Bernice C.	14	14	6
3-5	Bold Contender	35	54	27
6-10	Fisher Lassie II	36	64	31
6-10	Marine Star	27	79	24
12-18	Westview I	61	119	50
12-18	Pacific Quest	39	80	35
12-18	Sarah Margaret	36	69	32
12-18	Abraxas Provider	44	73	24
23	Ocean Horizon	25	68	22
24	Pacific Ocean	11	22	8
25-27	Nita Maria	4	5	2
Total		366	715	284
Average		30.5	60	24
Range		4-61	5-119	2-50

Table 5. Seine set data and roe yield information. ROE HERRING CHARTER SEINER "CHRISTAV", STAT. AREAS 2E AND 3, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage			Temp (°C)	Test No.	Sex Ratio		Roe Yield %		Roe Grade (Pcs)			Spnd. out	Juv. or immat.		
					In loc.	Set on	Est. catch			M No.	F No.	Vol.	Adj. vol.	#1	#2	#3				
025 (2E)	1	Between Huxley I. & Newberry Pt.	06/03/84	0730	150- 200	50-60	7.9	1	53	52	48	48	10.0	10.53	36	3	9			
									2	53	54	46	46	11.0	11.83	36	1	9		
									3	43	45	52	55	12.0	10.97	45	-	7		
024 (2E)	2	1 mi N. of Werner Pt.	06/03/84	1820	3600+	200+	8.0	1	70	51	68	49	3.5	3.55	18	7	43			
									2	82	59	58	41	2.0	2.42	12	2	44		
									3	80	59	56	41	3.0	3.64	14	4	38		
024 (2E)	3	Hoskins Islets	06/03/84	1955		50	8.1	1	63	56	50	44	2.0	2.26	8	2	40			
									2	54	42	76	58	2.0	1.71	13	3	60		
									3	61	54	52	46	3.5	3.80	15	3	34		
025 (2E)	4	1 mi N. of Kat I.	07/03/84	0845	1500	600- 700	15	8.0	1	41	37	70	63	12.5	9.90	57	2	11		
									2	57	58	42	42	10.5	12.38	36	2	4		
									3	51	49	54	51	12.0	11.67	42	3	9		
025 (2E)	5	Newberry Pt.	07/03/84	1815	300+	300+	8.0	1	50	49	53	51	10.0	9.71	35	1	17	15		
									2	61	62	38	38	6.5	8.46	27	2	9		
									3	47	45	57	55	10.5	9.58	40	2	15		
024 (2E)	6	1 mi E.S.E. of All Alone Stone	08/03/84	0820	200+	200+	8.1	1	57	55	46	45	5.0	5.59	22	8	16			
									2	58	53	52	47	8.5	8.99	34	3	15		
									3	55	53	49	47	6.0	6.37	27	4	18		
024 (2E)	7	Marco Rock	08/03/84	1730	200- 300	0	8.1	-	Water haul											
024 (2E)	8	Werner Pt.	08/03/84	1815	600- 700	100- 200	8.1	1	58	50	57	50	6.0	6.05	25	7	25			
									2	59	48	64	52	5.5	5.29	24	3	37		
									3	70	55	58	45	6.0	6.62	28	4	26		
025 (2E)	9	Newberry Pt.	09/03/84	1015	4000	200- 300	20	8.1	1	51	49	54	51	7.5	7.30	29	3	22		
									2	71	61	45	39	4.0	5.15	19	1	25		
									3	72	60	48	40	7.5	9.38	33	2	13		
025 (2E)	10	W. Side of Huxley I.	10/03/84	0955	80	10	8.3	1	60	47	68	53	6.5	6.12	28	2	38			
									2	68	55	55	45	5.5	6.15	22	6	27		
									3	66	52	61	48	5.0	5.21	26	6	29		
025 (2E)	11	1 mi N. of Park I.	10/03/84	1100	200- 300	0	8.2	-	Water haul									1		
025 (2E)	12	1/2 mi S. of Newberry Pt.	10/03/84	1220	4000- 4500	500- 600	200+	8.2	1	59	48	63	52	8.0	7.75	37	6	20		
									2	63	52	59	48	7.5	7.75	36	5	18		
									3	74	56	57	44	7.0	8.05	35	4	18		

Table 5 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER "CHRISTAV", STAT. AREAS 2E AND 3, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage			Sex Ratio			Roe Yield %		Roe Grade (Pcs)			Juv. Spnd. out or immat.			
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No. %	F No. %	Vol.	Adj. vol.	#1	#2	#3			
025 (2E)	13	Dolomite Pt.	11/03/84	0705	100	10-20	8.1	1	55	52	50	48	12.0	12.61	36	2	12	1	
									2	54	51	52	49	10.5	10.69	40	-	12	
									3	43	40	65	60	13.5	11.21	49	3	13	
025 (2E)	14	E. Side of Kat I.	11/03/84	1440	4000	60-70	0	8.1	-	Water haul									
025 (2E)	15	W. Side of Section I.	11/03/84	1640	600- 700	300+	8.2	1	61	54	51	46	9.0	9.89	43	2	6	1	
									2	55	48	60	52	10.0	9.58	45	5	10	
									3	62	53	54	47	10.0	10.73	42	4	8	
025 (2E)	16	1 mi SE. of Kat I.	12/03/84	0715	500- 600	200+	8.1	1	55	50	56	50	10.5	10.40	41	4	11	1	
									2	60	53	53	47	11.0	11.72	42	3	8	
									3	61	53	55	47	10.0	10.55	40	1	14	
025 (2E)	17	W. Side of Section I.	12/03/84	0940	100	0	8.1	-	Water haul										
025 (2E)	18	1/2 mi NE Park I.	12/03/84	1010	100	0	8.1	-	Water haul									1	
025 (2E)	19	1/2 mi S. Section I.	12/03/84	1055	500	50	8.1	1	55	49	58	51	12.5	12.18	46	4	8	1	
									2	72	55	58	45	10.0	11.21	43	8	7	
									3	61	52	56	48	12.5	13.05	53	-	3	
025 (2E)	20	1/2 mi N. of Huxley I.	13/03/84	1040	5500	400	200	8.1	1	72	63	42	37	9.5	12.91	35	1	6	1
									2	74	62	45	38	9.0	11.90	38	3	4	
									3	65	59	46	41	11.0	13.29	41	2	3	
025 (2E)	21 ¹	W. Side Alder I.	15/03/84	1100	400- 500	30	8.2	1	60	48	66	52	13.5	12.88	59	3	4	1	
									2	61	52	57	48	12.0	12.42	50	3	4	
									3	58	49	61	51	13.0	12.67	54	2	5	
025 (2E)	22 ¹	SW. Side Alder I.	15/03/84	1315	100- 200	50-60	8.3	1	42	41	60	59	15.0	12.76	56	4	-	1	
									2	48	48	53	52	13.5	12.86	46	2	5	
									3	50	46	58	54	14.0	13.04	50	1	7	
025 (2E)	23	W. Side Koga Islet	16/03/84	0805	100	5	8.2	-	No information										
025 (2E)	24 ¹	1/2 mi NW. Section I.	16/03/84	0925	75	-	8.2	-	Water haul										
025 (2E)	25	SW. Side of Alder I.	16/03/84	1700	75	75	8.2	1	53	49	55	51	12.0	11.79	48	2	5	1	
									2	59	56	47	44	10.0	11.29	41	1	5	
									3	58	55	47	45	12.0	13.39	43	1	3	

Table 5 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER "CHRISTAV", STAT. AREAS 2E AND 3, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage			Sex Ratio			Roe Yield %		Roe Grade (Pcs)			Juv. Spnd. or out immat.			
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No. %	F No. %	Vol.	Adj. vol.	#1	#2	#3			
025 (2E)	26	1/2 mi W. Koga Islet	17/03/84	0725	75-	5	8.1	-	No Information										
					100														
025 (2E)	27	1/2 mi W. Section I.	17/03/84	0820	50	30	8.1	1	63	53	55	47	9.0	9.66	44	4	7		
								2	70	58	50	42	11.0	13.19	48	1	1		
								3	65	55	54	45	11.0	12.11	48	2	4		
								4	73	57	54	43	7.0	8.24	34	3	17		
033 (3)	28	1 mi S. of Gordon Pt.	20/03/84	1015	200-	-	7.1	1	72	49	75	51	2.0	1.96	22	4	49		
					300														
033 (3)	29	1 mi S. of Gordon Pt.	20/03/84	1400	4000	100	20	7.3	1	68	42	93	58	7.5	6.49	50	11	32	
								2	88	54	76	46	5.5	5.94	35	6	35		
								3	90	53	81	47	5.5	5.80	35	13	33		
033 (3)	30	E. Side of Birnie I.	21/03/84	0840	50-	<1	7.1	-	No Information									1	
					70													17	
024 (2E)	31	N. Shore Atli Inlet	23/03/84	1715	200-	115	8.1	1	67	48	72	52	14.0	13.51	69	2	1		
					300			2	62	47	70	53	14.0	13.21	65	1	4		
								3	69	45	84	55	14.0	12.75	79	1	4		
024 (2E)	32	Kilmington Pt.	25/03/84	1100	No information														
024 (2E)	33	Selwyn Inlet			No information														
024 (2E)	34	Selwyn Inlet	25/03/84	1850	1500-	300-	300-	7.9	1	53	44	67	56	14.0	12.54	64	-	3	
					2000	400	400		2	60	48	66	52	14.0	13.36	61	-	5	
								3	50	43	67	57	14.5	12.65	65	1	1		

Seine Opening

Management sub-area 2-13 (west side of Burnaby Island) opened on March 12 for 51 minutes for a hauled catch of 5,100 tons with an estimated roe yield of 11-12%.

Gillnet Opening

Management sub-area 2-14 (Poole Inlet) opened on March 14th for a hauled catch of 591 tons with an estimated roe yield of 12%.

¹Charter herring for the Christav and Bernice C.

Table 6. Length frequency distribution of herring. ROE HERRING CHARTER SEINER "CHRISTAV", STAT. AREAS 2E AND 3, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Biol. sample No.	Length Frequency (cm)																			Average length (cm)	Cutoff (cm)	% Below cutoff	
						/	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	/	Sample size				
						13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	/	13					
025 (2E)	1	Between Newberry Pt. & Huxley I.	06/03/84	0730	1																				50	22.7	19.0	0
024 (2E)	2	1 mi N. of Werner Pt.	06/03/84	1820	2																				49	20.7	19.0	18
024 (2E)	3	Hoskins Islets	06/03/84	1955	3																				49	21.5	19.0	10
025 (2E)	4	1 mi N. of Kat I.	07/03/84	0845	4																				51	21.4	19.0	2
025 (2E)	5	Newberry Pt.	07/03/84	1815	5																				50	20.9	19.0	0
024 (2E)	6	1 mi E. SE. of All Alone Stone	08/03/84	0820	6																				50	20.6	19.0	8
024 (2E)	7	Marco Rock	08/03/84	1730	-																				-	-	-	-
024 (2E)	8	Werner Pt.	08/03/84	1815	7																				51	21.7	19.0	14
025 (2E)	9	Newberry Pt.	09/03/84	1015	8																				50	22.3	19.0	4
025 (2E)	10	W. Side of Huxley I.	10/03/84	0955	9																				49	21.1	19.0	6
025 (2E)	11	1 mi N. of Park I.	10/03/84	1100	-																				-	-	-	-
025 (2E)	12	1/2 mi S. of Newberry Pt.	10/03/84	1220	10																				49	21.4	19.0	8
025 (2E)	13	Dolomite Pt.	11/03/84	0705	11																				51	21.7	19.0	4
025 (2E)	14	E. Side of Kat I.	11/03/84	1440	-																				-	-	-	-
025 (2E)	15	W. Side of Section I.	11/03/84	1640	12																				52	21.6	19.0	12
025 (2E)	16	1 mi SE. of Kat I.	12/03/84	0715	13																				51	21.9	19.0	6
025 (2E)	17	W. Side of Section I.	12/03/84	0940	-																				1	21.8	19.0	1

Table 6 (cont'd). Length frequency distribution of herring. ROE HERRING CHARTER SEINER "CHRISTAV", STAT. AREAS 2E AND 3, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Biol. sample No.	Length Frequency (cm)																		Average length (cm)	Cutoff (cm)	% Below cutoff	
						/	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					
025 (2E)	18	1/2 mi NE. Park I.	12/03/84	1010	-	Water haul																		-	-	-	-
025 (2E)	19	1/2 mi S. of Section I.	12/03/84	1055	14		1		1	1	12	5	1	15	9	3	1	1						50	21.7	19.0	6
025 (2E)	20	1/2 mi NE. of Huxley I.	13/03/84	1040	15					1	5	9	8	2	12	16	3	1						57	21.7	19.0	11
025 (2E)	21	W. Side of Alder I.	15/03/84	1100	16						1	12	8	2	12	12	4							51	21.8	19.0	2
025 (2E)	22	SW. Side of Alder I.	15/03/84	1315	17						1	6	5	6	13	16	4	2						53	22.3	19.0	2
025 (2E)	23	W. Side Koga Islet	16/03/84	0805	-	No information																		-	-	-	-
025 (2E)	24	1/2 mi NW Section I.	16/03/84	0925	-	No information																		-	-	-	-
025 (2E)	25	SW. Side of Alder I.	16/03/84	1700	18						3	4	4	6	8	16	6	3						50	22.5	19.0	6
025 (2E)	26	1/2 mi W. of Koga Islet	17/03/84	0725	-	No information																		-	-	-	-
025 (2E)	27	1/2 mi W. of Section I.	17/03/84	0820	19					2	4	12	7	6	7	9	2	1						50	21.2	19.0	12
033 (3)	28	1 mi S. of Gordon Pt.	20/03/84	1015	-	No information																		-	-	-	-
033 (3)	29	1 mi S. of Gordon Pt.	20/03/84	1400	20					4	7	8	8	7	5	7	2	1	1					50	20.0	18.0	22
033 (3)	30	E. Side of Birnie I.	21/03/84	0840	21				1	1	3	11	16	11	4	4			1					52	18.8	18.0	31
024 (2E)	31	N. Shore Atli Inlet	23/03/84	1715	22					4	10	15	31	7	9	14	8	2						100	20.1	19.0	29
024 (2E)	32	Kilmington Pt.	25/03/84	1100	-	No information																		-	-	-	-
024 (2E)	33	Selwyn Inlet				No information																					
024 (2E)	34	Selwyn Inlet	25/03/84	1850	23					1	7	9	7	10	6	10								50	21.0	19.0	16

Table 7. Seine set data and roe yield information. ROE HERRING CHARTER SEINER "BERNICE C", STAT. AREA 2W, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage			Sex Ratio			Roe Yield %		Roe Grade (Pcs)			Spnd. out	Juv. or immat.	
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No. %	F No. %	Vol.	Adj. vol.	#1	#2	#3		
002 (2W)	1	Port Louis	03/03/84	0912			200- 300	0	-	-								
002 (2W)	2	N. of Taylor Shoal	03/03/84	0958	200		20- 30	0	-	-								
002 (2W)	3	1 mi N. Taylor Shoal	03/03/84	1215			100	200	7.5	1	33 50	33 50	10.0	10.0	31	2	-	
002 (2W)	4	Off Steel Creek	04/03/84	0955			500- 600+	30	30	7.5	1	44 56	35 44	12.0	13.54	31	3	1
003 (2W)	5	Outside Richardson Head	05/03/84	1556	250	200	60	8.0	1	25 35	47 65	0.5	0.38	2	1	44		
003 (2W)	6	1/2 mi N. of Lauder I.	06/03/84	1140			150- 200	50- 60	40	7.5	1	43 54	36 46	0.0	-	-	1	35
006 (2W)	7	Flamingo Inlet	11/03/84	1535	50-60		20- 30	-	8.3	-							120-	
006 (2W)	8	Flamingo Inlet	11/03/84	1600	50-60		20- 30	-	8.3	-								
006 (2W)	9	Flamingo Inlet	11/03/84	1700	100	30	20	8.3	1	35 38	58 62	14.0	11.22	48	3	7	4	
									2	38 44	49 56	11.0	9.77	40	-	9	3	
									3	39 41	57 59	14.0	11.78	48	2	7	3	
025 (2W)	10	Off Kingfisher Cove	12/03/84	1805	1200	500	200	8.3	1	62 56	49 44	9.0	10.20	38	2	9		
									2	55 51	53 49	9.5	9.67	43	-	10		
									3	54 48	59 52	10.5	10.06	47	4	8		
005 (2W)	11	Opposite Hastings Pt.	17/03/84	1000			10	10	7.9	-								
005 (2W)	12	Opposite Sangster Pt.	19/03/84	0810			20- 30	0	7.5	-								
005 (2W)	13	Inside Sangster Pt.	19/03/84	0845			20- 30	0	7.5	-								
003 (2W)	14	Off Richardson Head	21/03/84	0817			50	0	-	-								

No commercial fishery openings in Area 2W.

Charter payment herring taken by "Christav" in 2E.

Table 8. Length frequency distribution of herring. ROE HERRING CHARTER SEINER "BERNICE C", STAT. AREA 2W, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Biol.	Length Frequency (cm)																		Sample size	Average length (cm)	Cutoff (cm)	X Below cutoff
					sample No.	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28					
					No.	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28						
002 (2W)	1	Port Louis	03/03/84	0912	-	Water haul																		-	-	-	-
002 (2W)	2	N. of Taylor Shoal	03/03/84	0958	-	Water haul																		-	-	-	-
002 (2W)	3	1 mi N. Taylor Shoal	03/03/84	1215	1																			51	23.9	20.0	2
002 (2W)	4	Off Steel Creek	04/03/84	0955	2																			51	23.8	20.0	0
003 (2W)	5	Outside Richardson Head	05/03/84	1556	3																			51	23.9	20.0	0
003 (2W)	6	1/2 mi N. of Lauder I.	06/03/84	1140	4																			51	24.1	20.0	0
006 (2W)	7	Flamingo Inlet	11/03/84	1535	-	Water haul																		-	-	-	-
006 (2W)	8	Flamingo Inlet	11/03/84	1600	-	Water haul																		-	-	-	-
006 (2W)	9	Flamingo Inlet	11/03/84	1700	5																			50	22.5	20.0	18
025 (2W)	10	Off Kingfisher Cove	12/03/84	1805	6																			52	21.1	20.0	31
005 (2W)	11	Opposite Hastings Pt.	17/03/84	1000	-																			-	-	-	-
005 (2W)	12	Opposite Sangster Pt.	19/03/84	0810	-	Water haul																		-	-	-	-
005 (2W)	13	Inside Sangster Pt.	19/03/84	0845	-	Water haul																		-	-	-	-
003 (2W)	14	Off Richardson Head	21/03/84	0817	-	Water haul																		-	-	-	-

Table 9. Seine set data and roe yield information. ROE HERRING CHARTER SEINER "BOLD CONTENDER", STAT. AREAS 3 - 5, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage					Sex Ratio					Roe Yield %			Roe Grade (Pcs)		
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No.	%	F No.	%	Vol.	Adj. vol.	#1	#2	#3		
052 (5)	1	Kitkatla Inlet	12/03/84	0700	0.5	0.5	0.25	6.5	1	75	55	61	45	0	-	-	2	59	6	
									2	64	50	63	50	0	-	-	1	62	3	
033 (3)	2	Grassy Pt.	12/03/84	1755	25	25	-	6.5	-	Water haul										
033 (3)	3	Grassy Pt.	13/03/84	0715	400	70	70	7.0	1	71	54	60	46	0	-	-	15	45		
									2	54	48	59	52	2.5	2.39	19	12	28		
									3	58	50	59	50	2.0	1.98	13	7	39		
032 (3)	4	Steamer Pass	13/03/84	1430	500+	200	150	7.9	1	99	60	65	40	0	-	1	1	63	9	
									2	113	64	63	36	0	-	-	2	61	3	
032 (3)	5	Emma Pass	14/03/84	0610	100	50	0	-	-	Water haul										
033 (3)	6	Grassy Pt.	15/03/84	0915	500	50	0	-	-	Water haul										
032 (3)	7	Steamer Pass	15/03/84	1355	1000	150	2	6.6	1	85	40	128	60	0	-	-	-	128	13	
									2	89	44	115	56	0	-	-	-	115	35	
033 (3)	8	Birnie I.	15/03/84	1755	2700	500	0	6.6	-	Water haul										
033 (3)	9	Birnie I.	15/03/84	1840	2700	250	10	6.9	1	84	55	69	45	0.5	0.55	9	4	56	18	
									2	104	63	61	37	0.25	0.34	5	1	55	29	
033 (3)	10	Grassy Pt.	16/03/84	0810	3200	500	150	7.1	1	60	54	52	46	5.0	5.39	22	5	25		
									2	63	58	45	42	3.5	4.20	15	2	28		
033 (3)	11	Middle of Port Simpson Bay	16/03/84	1000	2700	150	0	6.5	-	Water haul										
033 (3)	12	Middle of Port Simpson Bay	16/03/84	1040	2700	200	200	7.2	1	69	56	55	44	5.5	6.19	27	10	18		
									2	75	57	57	43	5.0	5.79	31	8	18		
052 (5)	13	Kitkatla Gravel Pit	17/03/84	0910		2	15	7.1	1	57	48	61	52	11.5	11.12	53	5	3		
									2	75	61	47	39	9.5	12.34	42	3	2		
052 (5)	14	Kitkatla	19/03/84	0655	500	25	25	6.9	1	73	61	47	39	8.5	10.84	42	4	1		
									2	75	57	56	43	8.0	9.37	41	4	11		
052 (5)	15	Kitkatla	19/03/84	1020	300	40	40	7.2	1	62	52	57	48	9.5	9.92	47	3	7		
									2	70	54	59	46	9.75	10.67	45	4	10		
052 (5)	16	Kitkatla - Snass Pt.	20/03/84	0730		75	75	6.9	1	58	50	59	50	11.5	11.41	56	2	1		
									2	84	62	52	38	10.0	13.09	47	4	1		

Table 9 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER "BOLD CONTENDER", STAT. AREAS 3 - 5, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage			Sex Ratio			Roe Yield %		Roe Grade (Pcs)			Juv. Spnd. out or Immat.			
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No. %	F No. %	Vol.	Adj. vol.	#1	#2	#3			
052 (5)	17	Kitkatla	20/03/84	1100		70	0	6.8	-	Water haul									
052 (5)	18	Kitkatla - W. of Gurd I.	20/03/84	1220	300	125	125	7.3	1	72	52	66	48	8.0	8.37	45	7	14	
								2	74	53	65	47	10.0	10.68	54	3	8		
								3	63	48	69	52	10.0	9.56	55	3	11		
052 (5)	19	Kitkatla	21/03/84	0730		150	80	7.0	1	59	45	71	55	12.0	10.99	65	1	5	
								2	76	56	60	44	10.0	11.34	54	5	1		
052 (5)	20	Kitkatla - N. of Gurd Pt.	21/03/84	0845		20	20	7.2	1	60	49	63	51	11.0	10.74	60	2	1	
								2	74	54	62	46	10.0	10.96	55	4	3		
033 (3)	21	Cunningham Pass	23/03/84	1540	300	150	0.15	7.5	1	79	45	96	55	0	0	3	2	91	18
033 (3)	22	Cunningham Pass	23/03/84	1730		100	0	-	-	Water haul									
033 (3)	23	Cunningham Pass	23/03/84	1845		150	100	7.5	1	75	52	68	48	10.0	10.50	58	4	6	1
								2	75	48	81	52	10.5	10.12	66	3	12	2	
								3	69	47	77	53	12.5	11.86	66	8	3	3	
033 (3)	24	Port Simpson - Bennie I.	24/03/84	1015		15	10	7.4	1	79	44	101	56	0.5	0.45	6	-	95	20
042 (4)	25	Pearl Harbour	24/03/84	1455	150-	75	75	7.6	1	81	51	78	49	9.0	9.16	58	7	13	
					200			2	69	45	83	55	10.0	9.16	68	9	6		
042 (4)	26	Off Big Bay	27/03/84	0520		100	15	6.8	1	76	44	96	56	0.5	0.45	8	24	64	5
								2	67	39	104	61	0	-	3	25	76	11	
052 (5)	27 ¹	Kitkatla	28/03/84	0915		75	75	7.4	1	67	51	64	49	10.5	10.74	62	2	-	1
								2	66	51	63	49	10.5	10.76	62	-	1		
052 (5)	28 ¹	Kitkatla	28/03/84	1250		40	5	7.6	1	66	54	56	46	10.5	11.44	56	-	-	
								2	52	44	66	56	14.0	12.52	66	-	-		
052 (5)	29 ¹	Kitkatla	28/03/84	1600		40	40	7.7	1	62	50	61	50	11.5	11.59	60	-	1	
								2	79	59	55	41	10.0	12.20	55	-	-		
043 (4)	30	Hunts Inlet	01/04/84	1915	1000	100	100	8.3	1	62	42	84	58	13.0	11.30	81	3	-	
								2	75	47	85	53	12.0	11.30	78	5	2		
043 (4)	31	Hunts Inlet	03/04/84	0700	3000	50	50	7.9	1	86	55	69	45	9.5	10.67	68	-	1	

Table 9 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER "BOLD CONTENDER", STAT. AREAS 3 - 5, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage				Sex Ratio				Roe Yield %			Roe Grade (Pcs)		
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No. %	F No. %	Vol.	Adj. vol.	#1	#2	#3		
052 (5)	32	Willis Bay	03/04/84	1430	1000	150	150	7.9	1	68 No. %	56 No. %	54 No. %	44 No. %	11.5 13.0	12.98 11.55	52 79	- -	2 1
052 (5)	33	Willis Bay	04/04/84	1130	3000	60	25	7.6	1	71 No. %	45 No. %	87 No. %	55 No. %	11.75 10.0	10.66 10.27	80 65	2 4	5 6
052 (5)	34	Freeman Pass	04/04/84	1450	500+	100	10	7.8	1	94 No. %	61 No. %	60 No. %	39 No. %	9.5 34	12.18 8.25	59 54	- 1	1 2
052 (5)	35	N. of Shakes I.	05/04/84	1120			50	Insufficient catch for sample										41

Seine Opening

Management sub-area 5-5 (Kitkatla) opened on March 21 for 1 hour and 45 minutes for a hauled catch of 1835 tons with roe yields from 10.4 to 12% (a few small catches were as low as 9.3%).

Gillnet Opening

Management sub-areas 4-5, 4-7 and 4-8 (Port Simpson) opened on March 26 for a hauled catch of 2,000 tons with roe yields up to 18%.

¹Charter payment herring.

Table 10. Length frequency distribution of herring. ROE HERRING CHARTER SEINER "BOLD CONTENDER", STAT. AREAS 3 - 5, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Biol. sample No.	Length Frequency (cm)																		Average length (cm)	Cutoff (cm)	% Below cutoff		
						/	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28					
							13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	size					
052 (5)	1	Kitkatla Inlet	12/03/84	0700	1							2	2	6	7	21	5	5	1					49	19.2	18.0	20	
033 (3)	2	Grassy Pt.	12/03/84	1755	-																			-	-	-	-	
033 (3)	3	Grassy Pt.	13/03/84	0715	2										1	2	11	8	12	11	5			50	21.1	18.0	2	
032 (3)	4	Steamer Pass	13/03/84	1430	3										6	5	7	10	16	1	2	2	1		50	19.5	18.0	22
032 (3)	5	Emma Pass	14/03/84	0610	-																			-	-	-	-	
033 (3)	6	Grassy Pt.	15/03/84	0915	-																			-	-	-	-	
032 (3)	7	Steamer Pass	15/03/84	1355	4							2	8	14	14	8	4							50	17.1	18.0	76	
033 (3)	8	Birnie I.	15/03/84	1755	-																			-	-	-	-	
033 (3)	9	Birnie I.	15/03/84	1840	5										4	4	13	9	4	4	8	3	1		50	18.9	18.0	42
033 (3)	10	Grassy Pt.	16/03/84	0810	6											1	3	4	7	13	17	4	1		50	21.5	18.0	2
033 (3)	11	Middle of Port Simpson Bay	16/03/84	1000	-																			-	-	-	-	
033 (3)	12	Middle of Port Simpson Bay	16/03/84	1040	7											1	3	4	5	17	11	7	1		49	21.5	18.0	2
052 (5)	13	Kitkatla Gravel Pit	17/03/84	0910	8											2	6	5	8	12	12	2	3		50	21.1	18.0	4
052 (5)	14	Kitkatla	19/03/84	0655	9											1	3	9	3	10	13	10	1		50	21.5	18.0	2
052 (5)	15	Kitkatla	19/03/84	1020	10											3	5	6	10	10	8	5	3		50	21.1	18.0	6
052 (5)	16	Kitkatla - Snass Pt.	20/03/84	0730	11											1	6	6	5	12	11	8	1		50	21.3	18.0	2
052 (5)	17	Kitkatla	20/03/84	1100	-																			-	-	-	-	

Table 10 (cont'd). Length frequency distribution of herring. ROE HERRING CHARTER SEINER "BOLD CONTENDER", STAT. AREAS 3 - 5, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Length Frequency (cm)																				Sample size	Average length (cm)	Cutoff (cm)	% Below cutoff
					Biol. sample No.	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						
052 (5)	18	Kitkatla - W. of Gurd I.	20/03/84	1220	12							2	8	12	6	9	12		2					51	20.6	18.0	4	
052 (5)	19	Kitkatla	21/03/84	0730	13							1	10	8	9	12	8	1	1					50	20.6	18.0	2	
052 (5)	20	Kitkatla - N. of Gurd Pt.	21/03/84	0845	14							2	6	7	9	17	4	5						50	20.8	18.0	4	
033 (3)	21	Cunningham Pass	23/03/84	1540	15							2	10	15	8	8	3	3	1	1				51	18.3	18.0	53	
033 (3)	22	Cunningham Pass	23/03/84	1730	-							Water haul												-	-	-	-	
033 (3)	23	Cunningham Pass	23/03/84	1845	16							1	4	15	9	7	6	5	1		2			50	20.0	18.0	10	
033 (3)	24	Port Simpson - Bennie I.	24/03/84	1015	17							1	11	9	13	9	4	2	1					50	18.4	18.0	42	
042 (4)	25	Pearl Harbour	24/03/84	1455	18							1	6	12	13	5	8	5						50	19.7	18.0	14	
042 (4)	26	Off Big Bay	27/03/84	0520	19							3	9	15	12	6		3	2					50	19.1	18.0	24	
052 (5)	27	Kitkatla	28/03/84	0915	20							2	7	7	7	8	15	4						50	21.0	18.0	4	
052 (5)	28	Kitkatla	28/03/84	1250	21							1		4	9	2	10	14	8	2				50	21.5	18.0	2	
052 (5)	29	Kitkatla	28/03/84	1600	22							5	8	10	9	8	6	3	1					50	20.3	18.0	10	
043 (4)	30	Hunts Inlet	01/04/84	1915	23							1	11	10	10	6	8	2	2					50	20.5	18.0	24	
043 (4)	31	Hunts Inlet	03/04/84	0700	24							2	5	12	12	2	10	5	2					50	19.8	18.0	14	
052 (5)	32	Willis Bay	03/04/84	1430	25							1	2	12	16	4	9	4	2					50	20.0	18.0	6	

Table 10 (con'd). Length frequency distribution of herring. ROE HERRING CHARTER SEINER "BOLD CONTENDER", STAT. AREAS 3 - 5, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Length Frequency (cm)																		Average length (cm)	Cutoff (cm)	% Below cutoff	
					Biol. sample No.	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					
						/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/					
052 (5)	33	Willis Bay	04/04/84	1130	26																		50	19.4	18.0	16
052 (5)	34	Freeman Pass	04/04/84	1450	27																		50	20.4	18.0	10
052 (5)	35	N. of Shakes I.	05/04/84	1120	-																		-	-	-	-
						Insufficient catch for sample																				

Table 11. Seine set data and roe yield information. ROE HERRING CHARTER SEINER "FISHER LASSIE II", STAT. AREAS 6 - 8, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage			Sex Ratio			Roe Yield %		Roe Grade (Pcs)			Juv. Spnd. out or immat.						
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No. %	F No. %	Vol.	Adj. vol.	#1	#2	#3						
074 (7)	1	Hose Pt. (Seaforth Ch.)	01/03/84	1625	200+	150- 200+		7.3	-	Water haul												
074 (7)	2	Boddy Passage	01/03/84	1900		3000	600+	7.0	1	34	36	61	64	0.0	-	-	1	60				
074 (7)	3	Stryker Bay	02/03/84	0443	300+	300+	40+	6.2	1	38	40	57	60	0.0	-	-	-	-	57			
085 (8)	4	Kwakshua Channel	02/03/84	1927	3000	2000	350+	6.6	1	83	54	72	46	0.0	-	-	1	71		2		
072 (7)	5	Berry Inlet	03/03/84	1655	200+	50+	50+	7.4	1	64	56	51	44	0.0	-	-	3	48				
074 (7)	6	W. Waskeslu Passage	03/03/84	1910	1000+	1000+	25+	7.4	1	48	45	59	55	0.0	-	1	8	50				
074 (7)	7	E. Waskeslu Passage	03/03/84	2100	600- 700+	600- 700+	150+	7.4	1	53	50	54	50	0.0	-	1	2	51		1		
067 (6)	8	Kitasu Bay	04/03/84	1810		100	30+	7.5	1	33	33	66	67	0.0	-	1	2	63		2	8	
067 (6)	9	E. Higgins Passage	05/03/84	1605	600+	300+	250+	7.8	1	62	55	50	45	1.0	1.12	9	4	37				
074 (7)	10	Dundivan Inlet	05/03/84	2000	500+	500+	200+	7.8	1	46	45	56	55	0.0	-	-	2	54				
073 (7)	11	Gunboat Passage	06/03/84	1910	40-50	25+	25+	7.0	-	58	46	69	54	0.0	-	3	2	64				
074 (7)	12	Raymond Pass to Norman Morrison Bay	08/03/84	1810	100+	25+	20-25+	7.9	1	41	41	58	59	0.0	-	4	1	53				
074 (7)	13	Hose Pt.	08/03/84	1945	200+	150+	60	7.8	1	40	40	60	60	1.5	1.25	6	4	50				
074 (7)	14	W. Waskeslu Passage	09/03/84	2000	600+	200	15+	7.8	1	46	46	53	54	4.0	3.74	19	15	19				
074 (7)	15	W. Waskeslu Passage	10/03/84	0535						2	54	56	43	44	5.0	5.64	22	4	17			
074 (7)	16	Raymond-Claire	10/03/84	2110	1300+	600+	200+	7.8	1	53	54	45	46	2.0	2.18	12	8	25				
										2	71	62	44	38	1.75	2.28	8	2	34			
										3	55	54	47	46	2.0	2.17	9	3	35			

Table 11 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER "FISHER LASSIE II", STAT. AREAS 6 - 8, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage			Sex Ratio			Roe Yield %		Roe Grade (Pcs)			Spnd. out	Juv. or Immat.		
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No. %	F No. %	Vol.	Adj. vol.	#1	#2	#3			
072 (7)	29	Mathleson Channel	18/03/84	0733	1500	100	-	1	47	51	46	49	12.0	12.12	44	-	2	11	
									2	47	46	55	54	15.0	13.91	52	-	3	9
									3	38	42	53	58	15.0	12.89	50	-	3	18
074 (7)	30	Stryker Bay	19/03/84	0533	500- 600	300+	125+	-	1	54	50	53	50	14.0	14.14	52	-	1	
									2	77	57	59	43	10.5	12.10	49	3	7	
									3	72	58	53	42	13.0	15.33	51	-	2	
074 (7)	31	Head Thompson Bay	19/03/84	1415	600+	300+	80+	8.3	1	36	38	58	62	15.2	12.32	58	-	-	
									2	37	37	62	63	16.5	13.18	59	-	3	
									3	56	58	41	42	16.0	18.91	39	-	2	1
074 (7)	32	Stryker Bay	20/03/84	0525	150- 200	75+	40-50+	-	1	52	46	60	54	13.0	12.13	52	-	8	
									2	68	53	60	47	12.1	12.90	52	-	8	
									3	53	46	63	54	12.2	11.23	54	1	8	
074 (7)	33	E. Waskeslu	20/03/84	1300		400+	200+	7.9	1	31	3	50	62	12.0	9.72	48	-	2	
074 (7)	34 ¹	E. Waskeslu	21/03/84	0530	600+	300+	80-90+	7.8	1	45	40	67	60	14.2	11.87	62	-	5	100
									2	43	42	59	58	14.5	12.54	57	1	1	
									3	51	49	54	51	14.3	13.91	53	-	1	
067 (6)	35 ¹	E. Higgins	23/03/84	0630		25	25	7.6	1	54	48	59	52	13.1	12.55	58	-	1	
									2	53	47	59	53	14.3	13.57	57	-	2	
									3	62	53	54	47	11.2	12.02	52	-	2	
074 (7)	36 ¹	Fingal Point E.	23/03/84	1930	350- 400	50+	8.1	1	63	51	61	49	13.5	13.72	61	-	-		
									2	70	52	65	48	12.5	12.99	65	-	-	
									3	70	55	58	45	11.5	12.69	56	-	2	

Seine Opening

Management sub-area 7-3 (east Higgins Pass) opened on March 16 for 4 hours and 10 minutes for a hauled catch of 3,100 tons. The area was opened again on March 17 for 35 minutes for a catch of 810 tons; the overall seine catch was 3,900 tons with roe yields of 11-12%.

Gillnet Opening

Management sub-areas 6-18 (Kitasoo Bay), 7-9 (Powell Anchorage-Cecilia Island-Reid Pass) and 7-19 (S.E. Princess Alice Island) opened on March 26 for 45 hours for a hauled catch of 3,848 tons with roe yields of 13.5 - 15%.

¹Charter payment herring.

Table 12. Length frequency distribution of herring. ROE HERRING CHARTER SEINER "FISHER LASSIE II", STAT. AREAS 6 - 8, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Biol. sample No.	Length Frequency (cm)																				Average length (cm)	Cutoff (cm)	% Below cutoff	
						12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	Sample size						
						13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	Sample size							
074 (7)	1	Hose Pt. (Seaforth Ch.)	01/03/84	1625	-	Water haul																				-	-	-	
074 (7)	2	Boddy Passage	01/03/84	1900	1						1	1	4	2	1	12	18	8	3						50	21.8	18.5	12	
074 (7)	3	Stryker Bay	02/03/84	0443	2									2	6	9	23	8	2							50	22.2	18.5	0
085 (8)	4	Kwakshua Channel	02/03/84	1927	3					3	1	3	4	13	11	10	5								50	19.9	18.5	20	
072 (7)	5	Berry Inlet	03/03/84	1655	4			1		2				1	7	17	12	7	2						49	21.6	18.5	6	
074 (7)	6	W. Waskesiu Passage	03/03/84	1910	5						2	1	5	9	13	16	4								50	21.4	18.5	4	
074 (7)	7	E. Waskesiu Passage	03/03/84	2100	6						1		2	4	1	11	19	12	1						51	22.0	18.5	4	
067 (6)	8	Kitasoo Bay	04/03/84	1810	7						1		1	5	6	19	9	3	2	3					49	21.7	18.5	2	
067 (6)	9	E. Higgins Passage	05/03/84	1605	8						1	2	1	3	12	14	10	6	1						50	21.3	18.5	6	
074 (7)	10	Dundivan Inlet	05/03/84	2000	9						1		3	4	7	22	11	1	1						50	22.2	18.5	2	
073 (7)	11	Gunboat Passage	06/03/84	1910	10						1	1	5	13	9	12	7	2							50	20.5	18.5	6	
074 (7)	12	Raymond Pass to Norman Morrison Bay	08/03/84	1810	11						1	2	1	5	9	11	15	5	2						51	21.4	18.5	6	
074 (7)	13	Hose Pt.	08/03/84	1945	12						1		1	3	2	10	8	10	12	3						50	21.7	18.5	4
074 (7)	14	W. Waskesiu Passage	09/03/84	2000	13						1	2	2	1	4	11	8	18	3						50	22.1	18.5	6	
074 (7)	15	W. Waskesiu Passage	10/03/84	0535	-	Water haul																				-	-	-	
074 (7)	16	Raymond - Claire	10/03/84	2110	14					1			4	6	10	18	9	5	1						54	22.2	18.5	2	

Table 12 (cont'd). Length frequency distribution of herring. ROE HERRING CHARTER SEINER "FISHER LASSIE II", STAT. AREAS 6 - 8, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Biol. sample No.	Length Frequency (cm)																			Average length (cm)	Cutoff (cm)	% Below cutoff
						12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	Sample size				
						13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	28					
074 (7)	17	Raymond Passage (W. Side)	11/03/84	0630	-	Water haul																			-	-	-
074 (7)	18	Dundivan Pt.	11/03/84	0750	15					1	1			3	6	27	7	5						50	22.4	18.5	4
073 (7)	19	McLaughlin Bay	11/03/84	1230	16					2	1	8	4	10	13	7	3	1	1					50	19.8	18.5	26
074 (7)	20	Stryker Bay	11/03/84	1915	17					1	1	1		4	3	9	14	13	2		1		49	22.0	18.5	6	
071 (7)	21	Spiller - Foot Islet	12/03/84	1640	18					1	1	1	3	2	2	11	19	7	2	1				50	21.7	18.5	8
074 (7)	22	Louise Channel	13/03/84	1435	-	Water haul																			-	-	-
074 (7)	23	Mouth of Stryker Bay	13/03/84	1600	19					2	1	3	4	4	4	15	9	6	2					50	20.9	18.5	12
074 (7)	24	W. Louise Channel	13/03/84	1700	20						2		5	5	11	18	9							50	21.8	18.5	4
074 (7)	25	W. Waskeslu	13/03/84	1935	21					1		3	1	7	9	12	16	2						51	22.0	18.5	8
071 (7)	26	Neekas Inlet	15/03/84	1555	22					2	2	1	3	6	12	14	10							50	21.5	18.5	8
067 (6)	27	E. Higgins N. Shore	16/03/84	0615	23						2		1	2	18	19	7	2						51	22.0	18.5	4
072 (7)	28	Walter Islet	17/03/84	1410	-	Water haul																			-	-	-
072 (7)	29	Mathieson Channel	18/03/84	0733	24						1		2	9	6	18	12	2						50	22.1	18.5	2
074 (7)	30	Stryker Bay	19/03/84	0533	25						1	3		5	11	14	11	6						51	22.2	18.5	4
074 (7)	31	Head Thompson Bay	19/03/84	1415	26					3	3		1	2	10	13	13	5						50	22.0	18.5	12
074 (7)	32	Stryker Bay	20/03/84	0525	27					5	1	4	4	4	11	10	10	2						51	21.2	18.5	16

Table 12 (cont'd). Length frequency distribution of herring. ROE HERRING CHARTER SEINER "FISHER LASSIE II", STAT. AREAS 6 - 8, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Length Frequency (cm)																		Sample size	Average length (cm)	Cutoff (cm)	% Below cutoff
					Biol. No.	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 No.																					
074 (7)	33	E. Waskesiu	20/03/84	1300	28						1	4	3	2	7	12	19	1					49	22.0	18.5	10
074 (7)	34	E. Waskesiu	21/03/84	0530	29						2	5	5	3	7	17	11						50	21.4	18.5	14
067 (6)	35	E. Higgins	23/03/84	0630	30						1	1	3	5	4	13	20	3					50	21.3	18.5	10
074 (7)	36	Fingal Pt. E.	23/03/84	1930	31						1	2	1	1	7	10	16	12					50	21.8	18.5	8

Table 13. Seine set data and roe yield information. ROE HERRING CHARTER SEINER "MARINE STAR", STAT. AREAS 6 AND 7, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage				Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Juv. Spnd. out or Immat.					
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No.	M %	F No.	F %	Vol.	Adj. vol.	#1	#2	#3					
074 (7)	1	Boddy Pass	07/03/84	0550	400+	200+	100+	7.4	1	65	62	39	38	0	-	-	3	36					
076 (7)	2	Spider Anchorage	07/03/84	1225		40+		7.8	-	No Information													
067 (6)	3	Kitasu Bay	08/03/84	2030	3000	skimmer & flipper	200	7.8	1	59	56	46	44	5.0	5.71	22	6	18					
067 (6)	4	W. Higgins Pass	09/03/84	1125	400- 500	250	140	8.0	1	58	59	40	41	5.5	6.74	19	6	15					
									2	51	53	46	47	5.5	5.80	23	9	14					
									3	65	61	41	39	6.0	7.75	24	6	11					
067 (6)	5	E. Higgins Pass	10/03/84	1230	400- 500	75-80	-	7.7	-	Water haul													
071 (7)	6	Klemtu Pass	10/03/84	1640	600	300- 350	75-80	7.8	1	85	60	57	40	-	-	-	6	51	4				
067 (6)	7	E. Higgins Pass	11/03/84	0710	800- 1000	300- 350	200- 250	7.5	1	64	59	44	41	5.5	6.76	23	8	13					
									2	62	55	50	45	7.0	7.85	35	6	9					
									3	56	49	59	51	8.0	7.80	36	4	19	34-				
067 (6)	8	Kipp I.	12/03/84	1021	400- 500	75-80	-	8.1	-	Water haul													
067 (6)	9	Kipp I.	12/03/84	1125	400 500	200	120	8.1	1	59	56	46	44	10.5	11.99	40	3	3					
									2	54	51	51	49	11.0	11.32	41	5	5					
									3	56	55	46	45	10.5	11.64	41	1	4					
067 (6)	10	Wilby Pt.	12/03/84	1555	800	200	80	8.2	1	48	48	51	52	9.5	9.22	37	7	7					
									2	56	50	56	50	5.5	5.50	27	3	26					
									3	71	59	50	41	4.0	4.84	15	4	31					
067 (6)	11	Parsons Anchorage	12/03/84	2030	2500	300	40	-	1	65	53	58	47	10.0	10.59	41	2	15					
									2	60	52	55	48	9.0	9.41	35	4	16					
									3	54	43	72	57	9.5	8.32	40	17	15					
067 (6)	12	E. Higgins Pass	15/03/84	0600	1500- 2000	200	160	8.0	1	56	49	58	51	10.5	10.31	45	4	9					
									2	59	54	50	46	10.0	10.89	42	2	6					
									3	51	47	57	53	12.0	11.36	48	3	6					
067 (6)	13	E. Higgins Pass	15/03/84	1021	1500- 2000	50	15	7.9	1	70	63	41	37	10.0	13.55	38	3	-					
									2	61	58	44	42	10.5	12.53	39	2	3					
									3	62	58	44	42	9.5	11.45	35	7	2					

Table 13 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER "MARINE STAR", STAT. AREAS 6 AND 7, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage				Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Spnd. out	Juv. or Immat.
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No.	F %	No.	Vol.	Adj. vol.	#1	#2	#3		
067 (6)	14	E. Higgins Pass	16/03/84	0641	1500- 2000	150	90	7.9	1	62	51	59	49	12.0	12.30	52	2	5	
									2	53	48	58	52	13.0	12.43	54	3	1	
									3	62	52	58	48	11.0	11.39	48	2	8	
									4	67	59	47	41	10.0	12.14	40	3	4	
067 (6)	15	Kipp I.	18/03/84	1350	1000	65	25	-	1	55	50	54	50	13.0	13.13	51	1	2	
									2	44	42	62	58	14.0	11.97	59	-	3	
									3	59	54	50	46	11.0	11.98	45	4	1	
067 (6)	16	Parsons Anchorage	18/03/84	1624	350- 400	25-30	25-30	8.0	1	57	46	68	54	14.5	13.33	64	2	2	
									2	54	44	70	56	13.5	11.95	58	6	6	
									3	66	54	56	46	13.0	14.16	52	3	1	
072 (7)	17	Bend Pt.	19/03/84	1044	1000- 1500	400	200	7.9	1	43	44	55	56	15.0	13.37	54	-	1	2
									2	46	46	53	54	15.0	14.02	52	-	1	
									3	55	49	57	51	15.5	15.23	57	-	-	
074 (7)	18 ¹	Waskesiu Pass	20/03/84	0832	500- 600	100	100(60)	7.9	1	54	51	51	49	14.0	14.40	49	1	1	1 35 ¹
									2	49	47	55	53	15.0	14.18	54	1	-	
									3	63	60	42	40	13.5	16.88	41	1	-	
									4	55	49	57	51	15.0	14.73	55	2	-	
									Pump start	77	63	46	37	11.0	14.71	42	3	1	
									Pump mid	77	60	51	40	12.0	15.08	48	3	-	
									Pump end	60	55	49	45	12.0	13.33	45	3	1	
									1	57	55	47	45	12.0	13.27	39	8	-	
074 (7)	19 ¹	W. Waskesiu Pass	20/03/84	1618	500- 600	20	20	-	2	51	47	57	53	14.0	13.26	45	12	-	1
									3	51	47	57	53	15.0	14.20	50	7	-	
									1	62	48	67	52	14.5	13.97	64	3	-	
075 (7)	20	Cultus Anchorage	21/03/84	1300	200	50	25	-	2	62	49	65	51	14.0	13.67	63	2	-	2
									1	32	39	50	61	13.5	11.07	48	-	2	17
									2	38	39	59	61	15.5	12.75	58	-	1	
072 (7)	21	Powell Anchorage	23/03/84	1945	500- 700	20	8-9	-	3	45	44	57	56	14.5	12.97	56	-	1	17
									1	32	39	50	61	13.5	11.07	48	-	2	
									2	38	39	59	61	15.5	12.75	58	-	1	

Table 13 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER "MARINE STAR", STAT. AREAS 6 AND 7, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage			Sex Ratio			Roe Yield %		Roe Grade (Pcs)			Juv. Spnd. out or immat.			
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No. %	F No. %	Vol.	Adj. vol.	#1	#2	#3			
067 (6)	22	Kitasu Bay	25/03/84	2008	Heavy Skimmer	50-60	-	1	63 No. %	51	60 No. %	49	12.0	12.30	54	-	6	3	
								2	62 No. %	54	52 No. %	46	10.5	11.51	46	3	3	3	
								3	56 No. %	50	57 No. %	50	12.5	12.40	54	1	2	1	
067 (6)	23	Kitasu Bay	26/03/84	0945	Wheelhouse and sample log missing								12.3	11.8					
067 (6)	24	E. Higgins	26/03/84	1540	700- 800	75-80	40	-	1	68 No. %	56	54 No. %	44	12.0	13.54	51	-	3	2
								2	66 No. %	52	61 No. %	48	12.7	13.28	55	1	5		
								3	60 No. %	49	62 No. %	51	13.5	13.29	59	1	2		
074 (7)	25	Dundivan Inlet	28/03/84	0600	250	50	25	7.9	1	35 No. %	38	58 No. %	62	14.5	11.62	53	2	3	5
								2	47 No. %	48	51 No. %	52	14.0	13.46	49	1	1	2	
								3	52 No. %	50	53 No. %	50	13.5	13.37	50	-	3	1	
074 (7)	26	Boddy Pass	29/03/84	0910	350- 400	75	40-45	8.1	1	66 No. %	62	41 No. %	38	13.5	17.62	41	-	-	1
								2	51 No. %	46	61 No. %	54	16.0	14.68	61	-	-	2	
								3	69 No. %	55	57 No. %	45	14.5	16.04	56	-	1		
074 (7)	27	Dundivan Inlet	30/03/84	1950	25+		-	-	1	58 No. %	50	57 No. %	50	14.0	14.11	56	1	-	1
								2	68 No. %	54	57 No. %	46	13.8	15.13	57	-	-	3	
067 (6)	GN	Weetoom Bay	11/03/84	1400		3	8.3	1	49 No. %	49	51 No. %	51	11.0	10.78	49	2	-	2	
						buckets		2	60 No. %	60	40 No. %	40	9.0	11.25	36	4	-	3	
								3	56 No. %	60	37 No. %	40	9.0	11.31	34	2	1	1	
067 (6)	GN	Inside Meade Pt.	11/03/84	1500	-	-	-	-	1	38 No. %	44	48 No. %	56	9.5	8.51	48	-	-	40
								2	39 No. %	61	25 No. %	39	6.5	8.31	24	1	-	28	
								3	37 No. %	45	46 No. %	55	9.0	8.12	43	2	1	24	
067 (6)	GN	Archer Island W.	11/03/84	1635	-	-	-	-	1	47 No. %	45	58 No. %	55	8.5	7.70	35	13	10	
								2	48 No. %	47	54 No. %	53	7.0	6.62	29	14	11		
								3	43 No. %	36	75 No. %	64	10.5	8.25	45	26	4		
067 OSPREY (6)	Aldrich Pt.		16/03/84	-	-	-	-	8.0	1	64 No. %	63	38 No. %	37	9.0	12.06	34	3	1	
								2	58 No. %	57	44 No. %	43	10.0	11.60	39	1	4		
067 WESTERN (6) BRAVE	Higgins Pass		16/03/84	-	-	-	-	8.0	1	60 No. %	49	62 No. %	51	12.5	12.30	52	2	8	1
067 FIDDLER (6)	Higgins Pass		16/03/84	-	-	-	-	8.0	1	48 No. %	44	62 No. %	56	14.0	12.41	57	2	3	
067 WESTERN (6) OCEAN	Higgins Pass		16/03/84	-	-	-	-	8.0	1	51 No. %	44	66 No. %	56	14.0	12.41	59	3	4	

Information on fishery (Table 11). ¹Charter payment herring.

Table 14. Length frequency distribution of herring. ROE HERRING CHARTER SEINER "MARINE STAR", STAT. AREAS 6 AND 7, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Biol. sample No.	Length Frequency (cm)																		Average length (cm)	Cutoff (cm)	% Below cutoff	
						12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28					
						13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	Sample size					
074 (7)	1	Boddy Pass	07/03/84	0550	1																			49	21.8	18.5	6
076 (7)	2	Spider Anchorage	07/03/84	1225	-																			6	21.0	18.5	33
067 (6)	3	Kitasu Bay	08/03/84	2030	2																			50	21.7	18.5	0
067 (6)	4	W. Higgins Pass	09/03/84	1125	3																			50	22.1	18.5	2
067 (6)	5	E. Higgins Pass	10/03/84	1230	-																			-	-	-	-
071 (7)	6	Klemtu Pass	10/03/84	1640	4	1	1		5	1	5	5	8	11	11	1		1						50	19.3	18.5	32
067 (6)	7	E. Higgins Pass	11/03/84	0710	5					1			2	7	17	14	8	1						50	21.8	18.5	2
067 (6)	8	Kipp I.	12/03/84	1021	-																			-	-	-	-
067 (6)	9	Kipp I.	12/03/84	1125	6								2	2	1	5	18	17	5					50	21.6	18.5	4
067 (6)	10	Wilby Pt.	12/03/84	1555	7								2	1	5	7	14	13	4	4				50	21.6	18.5	6
067 (6)	11	Parsons Anchorage	12/03/84	2030	8								1	4	2	6	6	14	13	5				51	21.1	18.5	10
067 (6)	12	E. Higgins Pass	15/03/84	0600	9								1	1	3	2	7	16	13	6	1			50	21.5	18.5	6
067 (6)	13	E. Higgins Pass	15/03/84	1021	10								2	1		3	4	15	16	7	2			50	21.7	18.5	6
067 (6)	14	E. Higgins Pass	16/03/84	0641	11								1			1	5	20	18	5				50	21.8	18.5	2
067 (6)	15	Kipp I.	18/03/84	1550	12								2		1	6	18	16	5	1				50	21.6	18.5	6
067 (6)	16	Parsons Anchorage	18/03/84	1624	13								1	2	1	1	2	5	19	16	3			50	21.3	18.5	10

Table 14 (cont'd). Length frequency distribution of herring. ROE HERRING CHARTER SEINER "MARINE STAR", STAT. AREAS 6 AND 7, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Biol. sample No.	Length Frequency (cm)																				% Below cutoff			
						/	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	/	Sample size					
						13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	/	/						
072 (7)	17	Bend Pt.	19/03/84	1044	14																				50	21.5	18.5	12	
074 (7)	18	Waskesiu Pass	20/03/84	0832	15																				50	21.8	18.5	6	
074 (7)	19	W. Waskesiu Pass	20/03/84	1618	16																				50	20.2	18.5	34	
075 (7)	20	Cultus Anchorage	21/03/84	1300	17																				49	20.2	18.5	27	
072 (7)	21	Powell Anchorage	23/03/84	1945	18																				49	20.7	18.5	20	
067 (6)	22	Kitasoo Bay	25/03/84	2008	19																				50	20.9	18.5	16	
067 (6)	23	Kitasoo Bay	26/03/84	0945	20	No information																				1 100			
067 (6)	24	E. Higgins	26/03/84	1540	21																					50	20.6	18.5	24
074 (7)	25	Dundlvan Inlet	28/03/84	0600	22																					50	22.0	18.5	8
074 (7)	26	Boddy Pass	29/03/84	0910	23																					50	20.5	18.5	26
074 (7)	27	Dundlvan Inlet	30/03/84	1950	24																					50	20.5	18.5	20
067 (6)	GN	Weetoom Bay	11/03/84	1400	-																					50	22.6	18.5	0
067 (6)	GN	Inside Meade Pt.	11/03/84	1500	-																					49	22.9	18.5	0
067 (6)	GN	Archer Islets W.	11/03/84	1635	-																					51	22.6	18.5	0
067 (6)	OSPREY	Aldrich Pt.	16/03/84	-	-																					50	21.7	18.5	4
067 (7) WESTERN BRAVE	Higgins Pass	16/03/84	-	-																						40	21.4	18.5	5

Table 14 (cont'd). Length frequency distribution of herring. ROE HERRING CHARTER SEINER "MARINE STAR", STAT. AREAS 6 AND 7, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Length Frequency (cm)																			Average length (cm)	Cutoff (cm)	% Below cutoff
					Biol. sample	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	Sample size				
					No.	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28					
067 FIDDLER		Higgins Pass	16/03/84	-	-						1	1	1	1	2	13	17	14					50	21.1	18.5	6
067 WESTERN (6)		Higgins Pass OCEAN	16/03/84	-	-						1	1	1	2	2	13	25	5					50	20.8	18.5	10

Table 15. Seine set data and roe yield information. ROE HERRING CHARTER SEINER "WESTVIEW I", STAT. AREAS 15 - 18, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage			Sex Ratio			Roe Yield %		Roe Grade (Pcs)			Juv. Spnd. out or immat.				
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No.	F No.	Wt.	Adj. wt.	#1	#2	#3				
162 (16)	1	Westview B.W.	20/02/84	2015	800	250	200	7.6	1	47	47	54	53	0	-	-	2	52	2	4
									2	36	38	58	62	0	-	-	1	57	2	
152 (15)	2	Hurtado Pt.	21/02/84	0600	500	80	70	7.8	1	28	29	68	71	0	-	-	3	65		
									2	40	43	53	57	0	-	-	-	-	53	
162 (16)	3	1 mi SE. of Westview	21/02/84	1515	500	60	1.5	7.8	1	42	43	56	57	0.1	0.09	1	-	55		1
									2	48	48	51	52	0.1	0.10	1	3	47		
152 (15)	4	Dinner Rock	22/02/84	0530	1000	100	0	7.4	-	Water haul										
152 (15)	5	1/3 mi SE. Powell River	22/02/84	1705	3000+	300	80	7.6	1	40	40	59	60	2.3	1.93	8	4	47	2	
									2	45	44	58	56	1.1	0.98	3	2	53	3	
162 (16)	6	Westview Ferry Dock	23/02/84	0550	3000+	500	45	7.5	1	40	42	55	58	1.6	1.38	9	5	41		
									2	42	46	49	54	1.8	1.67	8	4	37		
162 (16)	7	1/2 mi E. Grief Pt.	23/02/84	1055	5000+	300	0	-	-	Water haul										1
																			0	
162 (16)	8	1/2 mi E. Grief Pt.	23/02/84	1210	5000+	30-50	35	7.5	1	47	44	61	56	1.9	1.68	8	-	53		
									2	35	32	73	68	1.77	1.31	9	1	63		
152 (15)	9	1/2 mi E. Hurtado Pt.	23/02/84	1900	2000	700	100	6.9	1	52	51	50	49	0.65	0.66	3	1	46		
									2	42	44	53	56	0.4	0.36	2	7	44		
152 (15)	10	1/4 mi E. Hurtado Pt.	24/02/84	0610	2000	300-	400	7.6	1	37	40	56	60	0.3	0.25	1	2	53		
									2	38	44	49	56	0	-	-	1	48		
152 (15)	11	1 mi S. Powell River	24/02/84	1355		30	0	7.6	-	Water haul										
162 (16)	12	Westview Ferry Dock	24/02/84	1450	5000	40	10	7.6	1	52	42	72	58	1.70	1.46	9	1	62		
									2	41	33	84	67	0.75	0.56	5	5	74		
152 (15)	13	Dinner Rock	25/02/84	0615	2000	200	0.3	7.6	1	41	43	55	57	0.57	0.50	2	3	50	36	20
									2	34	33	69	67	0.8	0.60	3	2	64		
162 (16)	14	3/4 mi SE. Westview Gov. Wharf	25/02/84	1610	5000	200	0	8.0	-	Water haul										
162 (16)	15	3/4 mi SE. Westview Ferry Wharf	25/02/84	1715	5000	200	150	8.0	1	45	46	52	54	4.54	4.24	19	8	25		
									2	37	40	56	60	4.5	3.74	18	8	30		
									3	44	44	56	56	5.3	4.73	19	15	22		
									4	40	40	59	60	4.2	3.52	18	14	27		

Table 15 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER "WESTVIEW I", STAT. AREAS 15 - 18, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage				Sex Ratio				Roe Yield \$		Roe Grade (Pcs)			Spnd. out	Juv. or immat.
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No.	F No.	Wt.	Adj. wt.	#1	#2	#3			
152 (15)	16	1 mi W. Dinner Rock	26/02/84	0605	2000	200	5	7.3	1	41	43	55	57	1.87	1.63	8	5	42	2
									2	45	47	50	53	2.47	2.35	8	5	37	
162 (16)	17	1/2 mi SW. Westview Ferry Dock	26/02/84	1630	5000	75	0	7.3	-	Water haul									
162 (16)	18	1/2 mi SW. Westview	26/02/84	1815	5000	100	5	7.6	1	55	49	58	51	2.37	2.31	13	12	33	
152 (15)	19	1/4 mi SE. Powell River	26/02/84	2035	5000	200	50	7.5	1	56	44	71	56	4.32	3.86	25	7	39	
									2	59	48	65	52	3.0	2.86	16	4	45	
152 (15)	20	1/2 mi Ferry Dock	27/02/84	1235	5000	400	0	7.7	-	Water haul									
152 (15)	21	3/4 mi SE. Powell River Hulks	27/02/84	1340	5000	300	50	7.6	1	52	46	62	54	5.0	4.60	22	7	33	
									2	65	56	51	44	3.5	3.98	17	4	30	
152 (15)	22	1/4 mi Powell River Mill	27/02/84	1655	7000+	200	100	6.9	1	40	44	51	56	6.9	6.16	26	1	24	1
									2	45	46	53	54	5.98	5.53	25	5	23	
									3	33	37	56	63	6.57	5.22	25	8	23	
152 (15)	23	1/4 mi NW. Atrevida Reef	28/02/84	0630	800	200	500	7.3	1	26	25	79	75	2.07	1.38	9	6	64	
									2	27	27	75	73	1.18	0.80	6	8	61	
162 (16)	24	Myrtle Pt.	28/02/84	1430	7000- 10000	350	75	7.7	1	53	50	52	50	7.27	7.34	31	5	16	
									2	46	48	49	52	6.94	6.72	29	7	13	
162 (16)	25	NW. Ent. Frolander Bay	28/02/84	1725	10,000	400	15	7.7	1	41	43	54	57	8.33	7.33	38	5	11	
									2	41	46	48	54	6.8	6.31	29	9	10	
									3	53	52	48	48	6.43	6.77	29	7	12	
162 (16)	26	3/4 mi SE. Ferry Dock	29/02/84	1315	3500	150	75	7.7	1	56	50	56	50	6.2	6.20	31	3	22	
									2	47	42	65	58	6.03	5.20	26	2	37	
162 (16)	27	Thunder Bay	29/02/84	1750	3-5000	300	5	7.5	1	39	36	68	64	7.28	5.72	34	6	28	
									2	37	35	70	65	7.65	5.85	37	9	24	
									3	46	43	61	57	7.28	6.39	33	8	20	
162 (16)	28	Hulks	01/03/84	0530	3000+	1000	200	7.6	1	43	47	48	53	9.33	8.85	32	3	13	
									2	34	36	61	64	9.48	7.38	37	7	17	
									3	53	50	52	50	6.72	6.79	29	3	20	
									4	53	52	48	48	6.43	6.77	27	5	16	

Table 15 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER "WESTVIEW I", STAT. AREAS 15 - 18, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage				Sex Ratio				Roe Yield %			Roe Grade (Pcs)			
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No. %	F No. %	Wt.	Adj. wt.	#1	#2	#3			
152 (15)	29	1 mi E. Harwood I.	01/03/84	0830	3000	500	0	7.6	-	Water haul									
152 (15)	30	3/4 mi E. Harwood I.	01/03/84	1005	3000- 5000	500	0	7.3	-	Water haul									
152 (15)	31	NW. Powell River Mouth	01/03/84	1713	3000- 5000	100	0	7.3	-	Water haul									
162 (16)	32	NW. of Hulks	02/03/84	0500	3000- 5000	800	30	7.4	1	51	54	44	46	7.95	8.59	31	2	11	
									2	34	37	57	63	11.5	9.19	46	3	8	
									3	44	48	45	51	9.17	9.06	34	4	7	
									4	43	48	47	52	8.33	7.98	32	7	8	
									5	36	39	57	61	9.29	7.58	38	8	11	
152 (15)	33	Between Powell River & Sliammon	02/03/84	0720	100 1500	800	100+	7.4	1	38	44	48	56	11.30	10.13	40	3	5	
									2	52	60	35	40	8.9	11.07	33	1	1	
									3	36	45	44	55	11.9	10.82	40	1	3	
									4	43	53	38	47	10.5	11.19	36	-	2	
									5	39	46	45	54	10.6	9.89	40	-	5	
162 (16)	34	NW. end of Hulks	02/03/84	1605		450	125	7.4	1	50	42	68	58	6.89	5.98	33	10	25	
									2	52	46	61	54	5.77	5.34	29	6	26	
152 (15)	35	Off beach Sliammon	03/03/84	0540	500- 1000	75	8	7.4	1	49	42	69	58	4.00	3.42	22	11	36	
									2	50	42	68	58	3.60	3.13	21	13	34	
									3	51	44	66	56	3.55	3.15	21	22	23	
152 (15)	36	Hurtado Pt.	03/03/84	0910	100	Wheelhouse and sample log missing													
152 (15)	37	SW. Sliammon Beach	03/03/84	1155	2000- 3000	700	150	7.3	1	51	48	56	52	8.48	8.11	41	3	12	
									2	64	58	47	42	6.12	7.23	27	7	13	
									3	55	50	55	50	8.38	8.38	39	9	7	
152 (15)	38	SE. Atrevida Reef	03/03/84	1435	2000- 3000	400	-	7.4	-	Water haul									
152 (15)	39	SE. Atrevida Reef	03/03/84	1525	2000- 3000	1000	250	7.4	1	41	45	50	55	10.68	9.73	41	3	6	
									2	44	47	50	53	9.28	8.72	38	2	10	
									3	46	50	46	50	9.20	9.20	38	7	1	
									4	46	46	53	54	9.42	8.80	40	7	6	

Table 15 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER "WESTVIEW I", STAT. AREAS 15 - 18, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage				Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Spnd. out	Juv. or Immat.			
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No. %	F No. %	Wt.	Adj. wt.	#1	#2	#3						
152 (15)	40	3/4 mi S. of Sliammon	04/03/84	0700	4000+	800	30-40	7.0	1	38	39	60	61	12.00	9.80	51	5	4				
									2	39	41	56	59	12.07	10.25	46	8	2				
									3	56	61	36	39	8.42	10.77	32	3	1				
									4	41	48	44	52	10.50	10.14	41	1	2				
									5	42	47	47	53	10.17	9.63	42	4	1				
152 (15)	41	Between Harwood Pt. and Scuttle Pt.	05/03/84	0730	4000- 5000	800+	40	7.3	1	54	51	51	49	8.54	8.79	38	7	6				
									2	56	54	47	46	8.64	9.47	39	5	3				
									3	58	54	50	46	8.37	9.04	40	7	3				
152 (15)	42	W. Harwood Split	05/03/84	1100	2000	250	10	7.4	1	46	52	42	48	10.18	10.67	40	2	-				
									2	46	55	38	45	10.69	11.83	38	-	-				
									3	38	46	44	54	10.17	9.47	40	-	4				
142 (14)	43	Deep Bay	05/03/84	1905	1000	125	50	7.8	1	59	61	37	39	7.62	9.90	29	3	5				
									2	40	48	44	52	11.50	10.97	38	-	6				
									3	42	44	53	56	10.67	9.56	46	2	5				
173 (17)	44	Stuart Channel	06/03/84	1910	15,000	500	110	7.9	1	51	55	41	45	9.94	11.14	37	-	4	43-			
									2	42	51	40	49	11.0	11.27	36	1	3				
173 (17)	45 ¹	Stuart Channel	07/03/84	0134	500	60	7.8	1	52	56	41	44	11.55	13.10	37	-	4					
									2	49	53	43	47	10.47	11.21	38	-	5				
172 (17)	46 ¹	E. Maude I.	08/03/84	0910	3000	450	350	7.6	1	64	54	54	46	9.55	10.43	48	3	3				
									2	59	50	59	50	10.71	10.71	54	1	4				
									3	87	67	43	33	7.12	10.76	38	-	5				
172 (17)	47	Nanoose Harbour	08/03/84	1305	2000	75	30-40	8.3	1	44	56	35	44	10.48	11.83	35	-	-				
									2	57	65	31	35	9.16	13.01	29	2	-				
									3	42	54	36	46	10.5	11.36	36	-	-				
183 (18)	48	1/4 mi E. Fane I.	10/03/84	1850	1300-	Skim	10	7.9	1	65	56	51	44	2.5	2.84	15	5	31		1		
									2	57	45	70	55	4.0	3.63	23	4	43				
183 (18)	49								No set information, released catch; small juveniles													
									2	53	45	64	55	9.5	8.68	50	5	9				
171 (17)	51	Parker I.	12/03/84	1900	2000-	3000	10	7.6	1	25	76	8	24	-	-	-	-	8	160			
									2	26	77	8	25	-	-	-	-	-				

Table 15 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER "WESTVIEW I", STAT. AREAS 15 - 18, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage			Sex Ratio			Roe Yield %		Roe Grade (Pcs)			Juv. Spnd. out	or Immat.			
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No. %	F No. %	Wt.	Adj. wt.	#1	#2	#3				
171 (17)	52	Porter Pass	13/03/84	0605				7.7	1	52	46	61	54	-	-	20	6	35	32	
171 (17)	53	Porter Pass	13/03/84	0635	800-			7.8	1	39	57	30	43	-	-	1	-	29	28	
					1000				2	37	47	41	53	-	-	-	-	41	22	
171 (17)	54	Porter Pass	14/03/84	0635		1		7.8	1	63	62	38	38	-	-	38	-	-		
									2	51	52	48	48	-	-	47	-	1		
									3	53	51	50	49	-	-	49	1	-		
173 (17)	55	S. Side Hudson I.	20/03/84	1600	400-	50	25	8.5	1	3	43	4	57	-	-	1	-	3	140	
					500															
173 (17)	56	3/4 mi SW. DeCourcy I.	21/03/84	0530	4	40-50	10	8.3	1	36	44	45	56	9.47	8.52	44	1	-	17	
					500															
173 (17)	57	Atlin Pylades Channel Post	21/03/84	1600				-	1	35	38	57	62	13.0	10.48	55	-	2	5	
171 (17)	57	N. Galiano Dock	21/03/84	1810	1500	25	112	8.3	1	5	45	6	55	-	-	3	-	3	110	
171 (17)	58	Wise I.	22/03/84	0620	1000	10	10	8.1	1	-	-	1				-	-	1	108	
181 (18)	59	Hawkins I.	22/03/84	1410	7000-	40	0.15	8.3	1	26	50	26	50	-	-	-	-	-	26	6
					8000															
183 (18)	60	1/2 mi E. Mayne I.	22/03/84	1900	500+	Light skimmer	5	8.1	1	-	-	3				-	-	3	118	
181 (18)	61	Collison Pt.	23/03/84	0815	1000+	10	3	8.1	1	22	43	29	57	-	-	-	-	29	8	

Seine Opening

Management sub-area 15-2 (Powell River) opened on March 2 for 1 hour and 46 minutes for a hauled catch of 650 tons. The area was opened again on March 4 for 4 hours and 28 minutes for a catch of 3,788 tons; the overall catch was 3,788 tons with roe yields over 10%.

Gillnet Opening

The area from Cape Lazo to Neck Point was opened on March 9 for 54 hours and 30 minutes for a hauled catch of 6000 tons. Sub-area 14-10 was opened on March 11 for 5 hours for 2,325 tons; the overall catch was 8,325 tons with an estimated roe yield of 10-12%.

¹Charter payment herring.

Table 16. Length frequency distribution of herring. ROE HERRING CHARTER SEINER "WESTVIEW", STAT. AREAS 15 - 18, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Biol. sample No.	Length Frequency (cm)																					Average length (cm)	Cutoff (cm)	% Below cutoff
						12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	Sample size						
						13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28								
162 (16)	1	Westview B.W.	20/02/84	2015	1	1					1	3	5	8	7	12	5	3		1			46	19.5 (4 juv)	19.0	39			
152 (15)	2	Hurtado Pt.	21/02/84	0600	2						2	9	8	15	11	4	1						50	19.3	19.0	38			
162 (16)	3	1 mi SE. of Westview	21/02/84	1515	3						2	2	10	12	9	9	4	2					50	20.0	19.0	28			
152 (15)	4	Dinner Rock	22/02/84	0530	-																		-	-	-	-	-		
152 (15)	5	1/3 mi SE. Powell River	22/02/84	1705	4						3	1	13	11	11	4	4	2	1				50	19.9	19.0	34			
162 (16)	6	Westview Ferry Dock	23/02/84	0550	5						1	2	5	11	13	8	8	2					50	19.5	19.0	38			
162 (16)	7	1/2 mi E. Grief Point	23/02/84	1055	-																		-	-	-	-	-		
162 (16)	8	1/2 mi E. Grief Point	23/02/84	1210	6						2	2	5	17	10	11	2	1					50	19.0	19.0	52			
152 (15)	9	1/2 mi E. Hurtado Point	23/02/84	1900	7						1	1	2	4	14	11	10	7					50	20.2	19.0	16			
152 (15)	10	1/4 mi E. Hurtado Point	24/02/84	0610	8						1	1	5	11	10	12	7	4					51	20.7	19.0	14			
162 (16)	11	1 mi S. Powell River	24/02/84	1355	-																		-	-	-	-	-		
162 (16)	12	Westview Ferry Dock	24/02/84	1450	9						2	3	10	12	15	4	2	2					50	18.8	19.0	54			
152 (15)	13	Dinner Rock	25/02/84	0615	10						1	3	3	3	10	12	3	2	2				39	19.8 (11 juv)	19.0	26			
162 (16)	14	3/4 mi SE. Westview Gov. Wharf	25/02/84	1610	-																		-	-	-	-	-		
162 (16)	15	3/4 mi SE. Westview Gov. Wharf	25/02/84	1715	11						1	1	1	4	3	13	11	12	3	1			50	20.0	19.0	20			
152 (15)	16	1 mi W. Dinner Rock	26/02/84	0605	12						2	6	6	15	7	9	2	2					49	19.8	19.0	29			
162 (16)	17	1/2 mi SW. Westview Ferry Dock	26/02/84	1630	-																		-	-	-	-	-		

Table 16 (cont'd). Length frequency distribution of herring. ROE HERRING CHARTER SEINER "WESTVIEW", STAT. AREAS 15 - 18, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Biol. sample No.	Length Frequency (cm)																				Average length (cm)	Cutoff (cm)	% Below cutoff
						12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	Sample size					
						/	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	/						
162 (16)	18	1/2 mi off Westview	26/02/84	1815	13						3	7	18	11	6	4		1					50	19.0	19.0	56		
162 (16)	19	1/4 mi SE. Powell River	26/02/84	2035	14						2	3	6	16	15	8	3						53	18.9	19.0	51		
162 (16)	20	1/2 mi Ferry Dock	27/02/84	1235	-																		-	-	-	-		
152 (15)	21	3/4 mi SE. Powell River Hulks	27/02/84	1340	15							1	4	8	9	16	7	4	1				50	20.0	19.0	26		
152 (15)	22	1/4 mi NW. Powell River Mill	27/02/82	1655	16						1		2	10	8	10	8	4	2	2			48	20.2	19.0	29		
152 (15)	23	1/4 mi NW. Atrevida Reef	28/02/84	0630	17						2	3	6	17	17	4	1						50	19.7	19.0	22		
162 (16)	24	Myrtle Pt.	28/02/84	1430	18							1	15	11	10	9	4						50	20.0	19.0	32		
162 (16)	25	NW. Ent. Frolander Bay	28/02/84	1725	19								11	16	10	10	2	1						50	20.1	19.0	22	
162 (16)	26	3/4 mi SE. Ferry Dock	29/02/84	1315	20						2	3	5	16	10	7	3	2						48	19.0	19.0	54	
162 (16)	27	Thunder Bay	29/02/84	1750	21						1		7	15	11	6	8	2						50	19.4	19.0	20	
162 (16)	28	Hulks	01/03/84	0530	22						1		3	6	6	7	13	14						50	20.7	19.0	20	
152 (15)	29	1 mi E. Harwood I.	01/03/84	0830	-																		-	-	-	-		
152 (15)	30	3/4 mi E. Harwood I.	01/03/84	1005	-																		-	-	-	-		
152 (15)	31	NW. Powell River Mouth	01/03/84	1713	-																		-	-	-	-		
162 (16)	32	NW. of Hulks	02/03/84	0500	23						1	1	3	7	12	15	13	1						51	19.9	19.0	24	
152 (15)	33	Between Powell River + Stiammon	02/03/84	0720	24							2	2	7	14	12	7	3	2	1				50	21.1	19.0	8	

Table 16 (cont'd). Length frequency distribution of herring. ROE HERRING CHARTER SEINER "WESTVIEW", STAT. AREAS 15 - 18, 1984.

Table 16 (cont'd). Length frequency distribution of herring. ROE HERRING CHARTER SEINER "WESTVIEW", STAT. AREAS 15 - 18, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Biol. sample No.	Length Frequency (cm)																				% Below cutoff
						12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	Sample size			
						13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28					
171 (17)	51	Parker I.	12/03/84	1900	39		1	16	23	9	3												52	15.4	19.0	100
171 (17)	52	Porter Pass	13/03/84	0605	40				3	16	11	15	4	1									50	17.6	19.0	90
171 (17)	53	Porter Pass	13/03/84	0635	41					2	7	7	3	6	5	12	5	2		1			50	20.7	19.0	32
171 (17)	54	Porter Pass	14/03/84	0635	42					1	2	8	12	8	7	5	4	3					50	19.6	19.0	46
173 (17)	55	S. Side Hudson I.	20/03/84	1600	43				3	9	13	9	8	2	3	2	1						50	18.4	19.0	68
173 (17)	56	3/4 mi SW. DeCourcy I.	21/03/84	0530	44				2		14	13	5	4	7	4	1						50	19.2	19.0	58
173 (17)	Atlin Post	Pylades Channel	21/03/84	1600	45					7	12	8	9	8	2	2	2						50	20.0	19.0	38
171 (17)	57	N. Galiano Dock	21/03/84	1810	46				1	1	5	10	10	8	3	6	6						50	20.1	19.0	34
171 (17)	58	Wise I.	22/03/84	0620	47					2	6	9	16	12	4		1						50	20.4	19.0	16
181 (18)	59	Hawkins I.	22/03/84	1410	48					1		4	3	1	2	16	13	6	4				50	23.5	19.0	2
183 (18)	60	1/2 mi E. Mayne I.	22/03/84	1900	49				5	5	8	6	10	10	5		1						50	19.8	19.0	36
181 (18)	61	Collison Pt.	23/03/84	0815	50						3	5	12	14	12	2	1	1	50	23.3	19.0	0				

Table 17. Seine set data and roe yield information. ROE HERRING CHARTER SEINER "PACIFIC QUEST", STAT. AREAS 13 - 17, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage			Sex Ratio			Roe Yield %		Roe Grade (Pcs)			Spnd. out	Juv. or Immat.	
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No. %	F No. %	Wt.	Adj. wt.	#1	#2	#3		
142 (14)	1	Deep Bay	17/02/84	1825	600	500+	30-40	7.9	1	70	54	59	46	0	-	-	1	58
142 (14)	2	Deep Bay	20/02/84	2200	500+		150	8.2	1	44	61	28	39	-	-	-	1	27
142 (14)	3	Komas Bluff	21/02/84	0510	50	V.L. skimmer	2-3	7.6	1	58	67	29	33	0.98	1.47	4	7	18
142 (14)	4	Komas Bluff	21/02/84	1900	2000		15	8.1	1	42	52	39	48	-	-	-	1	38
142 (14)	5	Komas Bluff	22/02/84	1925	2000	V.L. skimmer	5	8.1	1	32	38	53	62	-	-	-	3	50
142 (14)	6	Komas Bluff	23/02/84	0545	2000	200- 300	50	8.0	1	39	47	44	53	0.4	0.38	3	6	35
142 (14)	7	Komas Bluff	24/02/84	1845	50	V.L. skimmer	5	7.9	1	49	52	46	48	0.6	0.62	6	4	36
142 (14)	8	Deep Bay	25/02/84	1845	700		100	7.1	1	37	48	40	52	1.2	1.16	7	-	33
142 (14)	9	Fillongley Park	27/02/84	2100		V.L. skimmer	0.5	8.1	1	47	49	48	51	3.9	3.86	18	3	27
									2	42	44	54	56	6.25	5.55	27	4	23
									3	49	49	51	51	3.25	3.19	13	5	33
142 (14)	10	Deep Hole	27/02/84	2345	1000	skimmer	50	7.8	1	38	52	35	48	3.78	3.95	13	10	12
									2	52	71	21	29	2.52	4.38	11	5	5
									3	37	54	32	46	4.5	4.85	14	7	11
142 (14)	11	Sandy I.	28/02/84	1700		100	0	8.2	-	Water haul								
142 (14)	12	1 1/2 mi S. Sandy I.	28/02/84	1800		50	1	8.2	1	39	55	32	45	9.56	10.60	31	1	-
									2	52	66	27	34	7.15	10.45	24	1	2
									3	48	62	29	38	5.5	7.29	24	2	3
142 (14)	13	Sandy I.	28/02/84	2120		skimmer	10	8.1	1	50	52	47	48	7.0	7.22	30	6	11
									2	58	57	43	43	6.5	7.63	31	3	9
									3	58	58	42	42	6.9	8.21	33	4	5

Table 17 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER "PACIFIC QUEST", STAT. AREAS 13 - 17, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage				Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Juv. Spnd. out or immat.	
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No. %	F No. %		Wt.	Adj. wt.	#1	#2	#3		
142 (14)	14	Fillongley Park	29/02/84	0510	1000	500	100	8.1	1	38	50	38	50	9.4	9.40	34	3	1	
									2	37	50	37	50	9.1	9.10	32	4	1	
									3	45	56	35	44	7.8	8.90	28	3	4	
									4	40	53	36	47	8.8	9.28	31	3	2	
142 (14)	15	Off Hornby I.	29/02/84	1250		200- 300	0	8.1	-	Water haul									
142 (14)	16	Deep Hole	29/02/84	1900		150	20-30	8.0	1	57	58	41	42	6.0	7.18	27	3	11	
142 (14)	17	Fillongley Park	01/03/84	0550	1000	50	20-30	8.0	1	32	40	48	60	13.28	11.07	46	1	1	
									2	51	57	39	43	7.38	8.52	31	4	4	
									3	52	59	36	41	8.42	10.29	34	-	2	
									4	46	59	32	41	8.45	10.30	29	2	1	
162 (16)	18	3/4 mi SE. of Hulks	01/03/84	1610	3000	400	100	8.0	1	55	46	65	54	4.92	4.54	26	7	32	
									2	52	46	62	54	6.0	5.51	33	5	24	4 1
152 (15)	19	Off Powell River Mill	02/03/84	0605	3000- 5000	1000	150	7.5	1	52	61	33	39	7.57	9.76	26	3	4	05 1
									2	43	51	42	49	8.25	8.35	35	3	4	
									3	50	55	41	45	5.9	6.54	30	6	5	
									4	40	48	44	52	8.5	8.11	34	2	8	
									5	51	53	45	47	7.5	8.00	35	1	9	
									6	51	50	51	50	8.85	8.85	46	-	5	
152 (15)	20	3/4 mi E. Sliammon Village	02/03/84	0915	1500	50	0.25	-	1	34	40	51	60	11.61	9.68	44	4	3	
									2	34	36	61	64	9.8	7.63	39	10	12	
									3	34	39	54	61	10.0	8.14	44	6	4	
152 (15)	21	1/2 mi SE. of Hulks	02/03/84	1400		300	-	7.8	-	Water haul									
152 (15)	22	1/2 mi SE. of Hulks	02/03/84	1430		300	100	7.8	1	47	44	60	56	5.2	4.63	34	7	19	
152 (15)	23	Off Smoke Stack	02/03/84	1800		30	5	7.6	1	50	44	64	56	4.75	4.23	29	8	27	
152 (15)	24	Off Hulks	03/03/84	0555		200	25	7.6	1	33	34	65	66	5.83	4.40	26	6	33	2
									2	45	42	63	58	5.20	4.46	29	3	31	

Table 17 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER "PACIFIC QUEST", STAT. AREAS 13 - 17, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage				Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Spnd. out	Juv. or Immat.		
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No. %	F No. %	Wt.	Adj. wt.	#1	#2	#3					
172 (17)	25	Nanoose Bay	03/03/84	2035	2300	300	25	7.6	1	50	51	49	49	9.53	9.63	38	3	8			
									2	57	54	49	46	7.18	7.77	32	4	13			
									3	34	36	61	64	10.75	8.37	50	3	8			
									4	51	54	44	46	7.29	7.87	32	6	6			
172 (17)	26	Impenituse Rock/ Nanoose	04/03/84	0200	2300	1000	15	7.3	1	60	48	64	52	6.0	5.81	36	3	25	1		
172 (17)	27	Off Spar Buoy/ Nanoose	04/03/84	0555	<u>3000-</u> <u>4000</u>	1000	75	7.3	1	51	55	42	45	9.05	10.01	33	6	3			
									2	45	49	46	51	9.63	9.53	40	2	4			
									3	56	63	33	37	7.4	9.97	28	2	3			
									4	51	54	44	46	9.41	10.16	36	4	4			
173 (17)	28	3/4 mi SE. of Ruxton Pass	05/03/84	1910	3000	1000	50	8.2	1	64	54	55	46	4.44	4.81	25	4	26	1		
173 (17)	29	1 mi E. of Boat Harbour	05/03/84	2100	1000	60-70	8.2	1	53	64	30	36	8.54	11.83	26	1	3				
									2	54	65	29	35	7.85	11.25	26	1	2			
									3	40	48	43	52	11.65	11.25	38	3	2			
									4	49	59	41	46	11.15	12.23	36	-	5			
173 (17)	30 ¹	S. DeCourcy I.	06/03/84	1930	15,000	100	35-40	8.3	1	52	56	41	44	10.05	11.39	36	2	3	1		
									2	41	49	42	51	9.85	9.73	36	2	4			
									3	41	47	46	53	12.0	11.34	43	-	3			
									Water haul												
173 (17)	31	1/8 mi S. DeCourcy I.	07/03/84	0020	15,000	100	-	8.4	-												
173 (17)	32	Stuart Channel	07/03/84	1900	4,000	100	65	8.5	1	58	63	34	37	7.15	9.66	23	2	9	2		
									2	44	48	48	52	11.2	10.73	40	-	8			
									3	59	58	43	42	7.95	9.42	34	-	9			
									- Plant Test #1-7.25, #2-8.25, #3-4.75-no sample retained												
173 (17)	33 ¹	Stuart Channel	08/03/84	0420			8.2	-													
173 (17)	34 ¹	Stuart Ch./ DeCourcy I.	08/03/84	0545	<u>5000-</u> <u>7000</u>	200	200	9.0	1	47	51	45	49	12.4	12.68	41	1	3	1		
									2	45	51	44	49	10.9	11.03	40	1	3			
									3	48	56	38	44	10.3	11.65	35	-	3			
									4	44	45	53	55	11.55	10.58	44	5	4			
131 (13)	35	Okisollo Channel	10/03/84	0945	2500	200	200	8.2	- Juveniles												
132 (13)	36	Deepwater Bay	11/03/84	0435	300	6	2	8.3	1	89	57	68	43	-	-	-	1	67	1	32	

Table 17 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER "PACIFIC QUEST", STAT. AREAS 13 - 17, 1984.

Section (Area)	Set (Area)	Location	D/M/Y	Time	Tonnage				Sex Ratio				Roe Yield %			Roe Grade (Pcs)			
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No.	M %	F No.	F %	Wt.	Ad.J. wt.	#1	#2	#3	
137 (13)	37	SE. Rebecca Spit	12/03/84	0525			25	7.7	1	22	33	44	67	2.2	1.65	16	1	27	16
152 (15)	38	N. Hurtado Pt.	13/03/84	0525	500	skim	15	8.4	1	4	44	5	56	-	-	3	-	2	41
152 (15)	39	Keefer Rock	15/03/84	0500	300- 500	skim	50	8.4	-	All juveniles									
142 (14)Post	Atlin Sound	Upper Baynes	26/02/84	1300	5	5	0.1	-	1	37	47	41	53	9.6	9.13	35	-	6	1
					Test #1 Dipnet Sample				2	32	42	44	58	10.0	8.64	35	1	8	
									3	56	52	52	48	8.17	8.49	41	1	10	
173 (17)Margaret	Sarah W.	Blackberry Pt.	27/02/84	0510			-	1	38	50	38	50	-	-	-	-	3	35	

(Sara Margaret sample for verification of roe cond. - transported by aircraft)

Information on fishery (Table 15).

¹Charter payment herring.

Table 18. Length frequency distribution of herring. ROE HERRING CHARTER SEINER "PACIFIC QUEST", STAT. AREAS 13 - 17, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Biol. sample No.	Length Frequency (cm)																		% Below cutoff			
						12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28					
						13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	Sample size					
142 (14)	1	Deep Bay	17/02/84	1825	1							2	5	6	9	12	8	6	1	1			50	21.2	19.0	14	
142 (14)	2	Deep Bay	20/02/84	2200	2							1	1	2	4	13	10	14	4	1			50	22.3	19.0	4	
142 (14)	3	Komas Bluff	21/02/84	0510	3						1	1	6	6	5	12	9	5	3	1	1		50	20.4	19.0	28	
142 (14)	4	Komas Bluff	21/02/84	1900	4							2	7	12	11	9	7	3					51	21.5	19.0	4	
142 (14)	5	Komas Bluff	22/02/84	1925	5						1	2	9	4	15	8	7	3	1				50	20.6	19.0	24	
142 (14)	6	Komas Bluff	23/02/84	0545	6						1	1	11	6	5	10	15	2	2				53	20.9	19.0	25	
142 (14)	7	Komas Bluff	24/02/84	1845	7						5	9	8	11	7	6	4						50	20.3	19.0	28	
142 (14)	8	Deep Bay	25/02/84	1845	8						1	2	5	6	9	7	11	6	3				50	21.2	19.0	16	
142 (14)	9	Fillingley Park	27/02/84	2100	9						2	9	12	12	10	3	2						50	20.2	19.0	22	
142 (14)	10	Deep Hole	27/02/84	2345	10						1	2	3	7	11	13	10	3					50	21.9	19.0	6	
142 (14)	11	Sandy I.	28/02/84	1700	-							Water haul												-	-	-	-
142 (14)	12	1 1/2 mi S. Sandy I.	28/02/84	1800	11							5	4	6	12	11	8	2	1					49	21.7	19.0	10
142 (14)	13	Sandy I.	28/02/84	2120	12						1	1	6	5	9	19	4	4	1					50	20.9	19.0	16
142 (14)	14	Fillingley Park	29/02/84	0510	13						2	4	7	8	14	10	3	2					50	21.1	19.0	12	
142 (14)	15	Off Hornby I.	29/02/84	1250	-							Water haul												-	-	-	-
142 (14)	16	Deep Hole	29/02/84	1900	14						1	5	12	10	11	8	2	1					50	19.7	19.0	36	

Table 18 (cont'd). Length frequency distribution of herring. ROE HERRING CHARTER SEINER "PACIFIC QUEST", STAT. AREAS 13 - 17, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Biol. sample No.	Length Frequency (cm)																		Average length (cm)	Cutoff (cm)	% Below cutoff
						12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28				
						13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28					
142 (14)	17	Fillingley Park	01/03/84	0550	15							4	5	4	12	15	4	4	1	1			50	20.9	19.0	18
142 (14)	18	3/4 mi SE. of Hulks	01/03/84	1610	16						1	6	8	12	12	5	5						50	18.9	19.0	54
152 (15)	19	Off Powell River Mill	02/03/84	0605	17							2	7	5	10	12	8	3	2				49	19.9	19.0	29
152 (15)	20	3/4 mi E. Sliammon Village	02/03/84	0915	18							2	7	16	15	5	4	1	1				51	20.2	19.0	18
152 (15)	21	1/2 mi SE. of Hulks	02/03/84	1400	-																		-	-	-	-
152 (15)	22	1/2 mi SE. of Hulks	02/03/84	1430	19							3	14	17	12	4			1				51	19.6	19.0	33
152 (15)	23	Off Smoke Stack	02/03/84	1800	20					1		3	8	15	9	10	4	1					51	19.0	19.0	53
152 (15)	24	Off Hulks	03/03/84	0555	21						1	6	16	10	9	4	3			1			50	19.5	19.0	46
172 (17)	25	Nanoose Bay	03/03/84	2035	22						2	1	8	11	9	9	5	4	1				50	19.4	19.0	44
172 (17)	26	Imperial Rock/ Nanoose	04/03/84	0200	23						1	7	14	15	6	5		2					50	18.4	19.0	74
172 (17)	27	Off Spar Buoy/ Nanoose	04/03/84	0555	24						1	5	8	9	9	5	10	4					51	20.4	19.0	28
173 (17)	28	3/4 mi SE. of Ruxton Pass	05/03/84	1910	25	1					2	20	12	6	4	3	1	1					50	18.6	19.0	70
173 (17)	29	1 mi E. of Boat Harbour	05/03/84	2100	26						3	4	7	2	8	6	11	4	2	2	1		50	21.0	19.0	28
173 (170)	30	S. DeCourcy I.	06/03/84	1930	27						1	8	7	12	11	4	4	3					50	20.8	19.0	18
173 (17)	31	1/8 mi S. DeCourcy I.	07/03/84	0020	-																		-	-	-	-
173 (17)	32	Stuart Channel	07/03/84	1900	28						1	2	4	6	9	9	8	5	3	3			50	20.4	19.0	26

Table 18 (cont'd). Length frequency distribution of herring. ROE HERRING CHARTER SEINER "PACIFIC QUEST", STAT. AREAS 13 - 17, 1984.

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 28	Length Frequency (cm)		Average length (cm)	Cutoff (cm)	% Below cutoff									
							13 / 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28													
							13	14	15	16	17	18	19	20	21					
173 (17)	33	Stuart Channel	08/03/84	0420	29		3	6	5	13	5	12	5	1		50	20.9	19.0	18	
173 (17)	34	Stuart Ch./ DeCourcy I.	08/03/84	0545	30		2	8	9	6	7	8	5	3	2		50	20.1	19.0	38
131 (13)	35	Okisollo Channel	10/03/84	0945	31	1	5	17	14	10	1		2				50	16.3	19.0	96
132 (13)	36	Deepwater Bay	11/03/84	0435	32		8	19	15	5	1	1	1				50	18.1	19.0	84
137 (13)	37	SE. Rebecca Split	12/03/84	0525	33		7	15	12	10		4	1	1			50	17.5	19.0	88
152 (15)	38	N. Hurtado Pt.	13/03/84	0525	34	2	1	2	8	9	12	11	2	3			50	19.1	19.0	44
152 (15)	39	Keefer Rock	15/03/84	0500	35	All juveniles											-	-	19.0	100
142 (14)	Atlin	Upper Baynes Sound	26/02/84	1300	Dip Net		1	1	5	14	18	10	1				50	21.1	19.0	4
173 (17)	Sara Margaret	W. Blackberry Pt.	27/02/84	0510		(Sara Margaret sample for verification of roe cond.)														

Table 19. Seine set data and roe yield information. ROE HERRING CHARTER SEINER "SARAH MARGARET", STAT. AREA 17, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage				Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Juv. Spnd. out or Immat.		
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M		F		Wt.	Adj. wt.	#1	#2	#3		
										No.	%	No.	%			#1	#2	#3		
173 (17)	1	Between Shingle Pt. & Poirier Pass	20/02/84	2230			30-40	30-40	8.0	1	90	58	65	42	-	-	-	65	3	
171 (17)	2	Secretary I.	21/02/84	0620	300	20-25	10-15	8.3	1	101	62	61	38	-	-	-	-	61	12	
173 (17)	3	Abeam Pylades I.	22/02/84	1845	1500+	>100+	80+	7.8	1	87	55	72	45	-	-	-	1	71	2	
173 (17)	4	Cardale Pt.	22/02/84	2120	3500	200	150	7.8	1	46	48	49	52	-	-	-	-	49		
171 (17)	5	Between Hall I. & Pile Bay	24/02/84	1930	100	35	30	7.6	1	92	58	68	42	-	-	-	15	53		
171 (17)	6	Poirier Pass	24/02/84	2145	8000	150	40	7.6	1	63	48	69	52	-	-	1	25	43		
171 (17)	7	Poirier Pass	25/02/84	1940	8000	200	140	7.6	1	72	59	51	41	-	-	5	30	16	1	
171 (17)	8	Poirier Pass (Reid I.)	26/02/84	0915			20		7.7	2	63	54	54	46	0.66	0.71	5	31	18	95
171 (17)	9	Poirier Pass	26/02/84	0900			150	125	7.7	1	62	57	47	43	-	-	1	26	20	1
173 (17)	10	W. Blackberry Pt.	27/02/84	0510	10,000	275	200	7.7	1	33	48	36	52	-	-	2	20	14		
173 (17)	11	Pylades Channel	27/02/84	1910	1000	100	60-70	7.8	1	29	39	46	61	-	-	5	23	18		
									2	39	49	40	51	1	0.99	6	19	15		
									3	36	49	38	51	0	-	-	6	32		
173 (17)	12	Reid I.	28/02/84	0610					-	Water haul										
173 (17)	13	Pylades Channel	28/02/84	1830		85	25	7.9	1	50	59	35	41	0.87	1.06	3	7	25		
									2	60	65	33	35	0.0	-	-	7	26		
173 (17)	14	Pylades Channel (Ruxton Pass)	28/02/84	2000	11,000-	300	150	7.9	1	35	49	36	51	1.13	1.11	4	6	26		
					12,000				2	42	56	33	44	1.4	1.59	5	1	27		
172 (17)	15	Nanooose Bay	29/02/84	1900	1,000-	50	5	8.2	1	61	48	65	52	1.22	1.18	9	4	52	2	
					10,000				2	74	58	53	42	1.0	1.20	7	5	40	5	
172 (17)	16	Nanooose Bay	01/03/84	0445	8,000-	150	100	8.1	1	67	60	44	40	2.5	3.16	13	12	19		
					10,000				2	61	58	45	42	3.8	4.47	20	7	18		
									3	67	59	46	41	1.4	1.72	7	21	18		

Table 19 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER "SARAH MARGARET", STAT. AREA 17, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage			Temp (°C)	Test No.	Sex Ratio		Roe Yield %		Roe Grade (Pcs)			Spnd. out	Juv. or immat.
					In loc.	Set on	Est. catch			M No.	F No.	Wt.	Adj. wt.	#1	#2	#3		
173 (17)	17	Ruxton Pass	01/03/84	1920	500	200	100	7.9	1	68	65	36	35	1.56	2.25	8	9	19
								2		76	70	33	30	1.18	1.95	4	12	17
173 (17)	18	Pylades I.	01/03/84	2125	200	100	70	7.9	1	48	53	43	47	3.72	3.93	16	16	11
								2		54	57	41	43	4.6	5.32	18	9	14
172 (17)	19	Maude I.	02/03/84	2000		30	20	7.8	1	51	52	48	48	4.85	5.00	23	3	22
								2		44	46	52	54	6.55	6.04	27	3	22
								3		67	56	53	44	4.3	4.86	22	7	24
172 (17)	20	Nanooose Harbour	02/03/84	2200	8,000- 10,000	200	150- 200	7.8	1	47	50	47	50	8.7	8.70	37	2	8
								2		35	47	39	53	9.55	9.06	30	3	6
172 (17)	21	Nanooose Harbour	03/03/84	0445	8,000- 10,000	100	100	7.8	1	58	55	48	45	5.0	5.52	30	3	15
								2		74	63	43	37	4.1	5.57	23	5	15
172 (17)	22	Nanooose Bay	03/03/84	0100	-	-	-	-	-	Water haul								1
173 (17)	23	Stuart Channel	03/03/84	2130	1500	100	75	8.0	1	41	48	44	52	9.0	8.69	29	1	14
								2		46	51	44	49	8.55	8.74	30	2	12
								3		43	50	43	50	8.45	8.45	30	7	6
173 (17)	24	Gabriola Pass	04/03/84	0500	1500	40	20	8.0	1	45	53	40	47	8.45	8.97	22	5	13
								2		44	51	42	49	5.63	5.77	20	11	11
								3		47	53	42	47	5.92	6.27	19	6	17
173 (17)	25	Ruxton Pass	04/03/84	0630	1500- 2000	150	75	8.1	1	49	60	33	40	6.97	8.67	21	5	7
								2		51	57	38	43	7.65	8.96	28	2	8
								3		41	48	45	52	9.1	8.70	25	7	13
173 (17)	26	Stuart Channel (W. Ruxton I.)	04/03/84	2000	5000+	200	150	8.0	1	29	37	49	63	13.2	10.51	35	6	8
								2		43	57	33	43	9.95	11.46	26	2	5
								3		37	49	39	51	9.6	9.36	26	6	7
173 (17)	27	Stuart Channel	05/03/84	1900				8.3	1	50	56	40	44	9.25	10.42	31	1	8
								2		51	50	52	50	8.75	8.66	33	1	18
173 (17)	28 ¹	Stuart/DeCourcy	06/03/84	2000	3000- 5000	200	100	8.1	1	33	45	41	55	13.6	12.27	39	1	1
								2		42	55	35	45	11.0	12.09	32	1	2
								3		40	49	42	51	12.5	12.21	40	-	2
								4		42	49	43	51	11.5	11.36	36	1	6

Test #1 & #2 - sample taken at the start of pumping

Test #3 - sample taken at the mid point of pumping

Test #4 - sample taken at the end of pumping

Table 19 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER "SARAH MARGARET", STAT. AREA 17, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage				Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Spnd. out	or immat.	Juv.			
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No. %	F No. %	Wt.	Adj. wt.	#1	#2	#3							
173 (17)	29	1/2 mi off Blackberry Pt.	07/03/84	2100	500	200	75	8.1	1	77 No. %	56 29	60 44	1.55 0.5	1.77 0.86	8 4	5 4	47 35		1				
173 (17)	30	Pylades Channel	08/03/84	0445	2000- 3000	200	85	7.8	1	51 2	61 69	32 27	39 31	10.9 8.0	14.12 12.90	28 19	1 2	3 6		2			
173 (17)	31	Pylades/Ruxton	09/03/84	1930	2000- 3000	200	80	8.5	1	47 2	51 65	46 32	49 35	11.3 11.32	11.41 16.26	40 30	3 1	3 1					
173 (17)	32	Stuart Channel	10/03/84	1930	8000- 10000	250	100	-	1	48 2	51 51	47 48	49 49	12.0 10.5	12.12 10.71	43 40	- 1	4 7		1			
173 (17)	33	2/3 mi of Yellow Pt.	11/03/84	1900	8000- 10000	200	10-15	-	1	51 2	57 48	39 49	43 51	9.8 10.7	11.32 10.59	37 44	- 2	2 3		1			
173 (17)	34	Stuart/Ruxton	14/03/84	0915	- scratches		8.5	-		Water haul													
173 (17)	35	Stuart/Ruxton	14/03/84	1915	10,000	500	100	8.5	1	67 2	50 74	66 54	50 64	9.25 8.65	9.32 9.32	54 51	6 10	6 3		2			
172 (17)	36	Nanooze Bay (1/2 mi off Maude I.)	15/03/84	1815	1000	100	40	8.3	1	40 2	51 45	39 52	49 41	11.3 11.0	11.44 11.53	39 39	- 1	- 1	11 4		1		

Fishery Information (Table 15).

¹Charter payment herring.

Table 20. Length frequency distribution of herring. ROE HERRING CHARTER SEINER "SARAH MARGARET", STAT. AREA 17, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Biol. sample No.	Length Frequency (cm)																		Sample size	Average length (cm)	Cutoff (cm)	% Below cutoff
						/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/				
						13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28						
173 (17)	1	Between Shingle Pt. & Porlier Pass	20/02/84	2230	1					3	6	8	7	13	2	8	1	1	1					50	19.1	19.0	48
171 (17)	2	Secretary Is.	21/02/84	0620	2					1	1	1	18	12	3	6	2	4	2					50	18.9	19.0	66
173 (17)	3	Abeam Pylades Is.	22/02/84	1845	3					1	1	8	16	3	7	6	7	1						50	19.6	19.0	52
173 (17)	4	Cardale Pt.	22/02/84	2120	4					1	1	2	3	3	12	12	12	3						49	21.9	19.0	8
171 (17)	5	Between Hall Is. & Pile Bay	24/02/84	1930	5					2	8	18	7	8	5	2								50	19.2	19.0	56
171 (17)	6	Porlier Pass	24/02/84	2145	6					1	7	5	10	11	7	4	3	2						50	20.2	19.0	26
171 (17)	7	Porlier Pass	25/02/84	1940	7					3	5	1	11	6	13	6	4	1						50	21.5	19.0	16
171 (17)	8	Porlier Pass (Reid Is.)	26/02/84	0915	-					Water haul													-	-	-		
171 (17)	9	Porlier Pass	26/02/84	0915	8					3	14	8	6	10	6	3								50	20.2	19.0	34
173 (17)	10	W. Blackberry Pt.	27/02/84	0510	9					2	2	2	10	15	12	7								50	22.5	19.0	4
173 (17)	11	Pylades Channel	27/02/84	1910	10					1	5	12	9	11	11	3								52	21.8	19.0	2
173 (17)	12	Reid Is.	28/02/84	0610	-					Water haul													-	-	-		
173 (17)	13	Pylades Channel	28/02/84	1830	11					2	5	4	4	9	9	7	6	3	1					50	21.0	19.0	22
173 (17)	14	Pylades Channel (Ruxton Pass)	28/02/84	2000	12					1	4	1	8	17	13	5	1							50	21.5	19.0	10
172 (17)	15	Nanouse Bay	29/02/84	1900	13					2	5	8	17	6	8	3	1							50	18.7	19.0	64
172 (17)	16	Nanouse Bay	01/03/84	0445	14					1	5	5	9	12	8	4	4	2	2					50	19.5	19.0	40
173 (17)	17	Ruxton Pass	01/03/84	1920	15					1	1	4	9	5	10	10	4	2	4					50	20.4	19.0	30

Table 20 (cont'd). Length frequency distribution of herring. ROE HERRING CHARTER SEINER "SARAH MARGARET", STAT. AREA 17, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Blot. sample No.	Length Frequency (cm)																					Average length (cm)	Cutoff (cm)	% Below cutoff
						12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	Sample size						
						13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	Sample size							
173 (17)	18	Pylades I.	01/03/84	2125	16							1	4	3	11	9	9	9	4				50	20.6	19.0	16			
172 (17)	19	Maude I.	02/03/84	2000	17							3	9	7	12	6	6	6	1				50	20.6	19.0	24			
172 (17)	20	Nanoose Harbour	02/03/84	2200	18							2	7	11	16	6	5	2	1				50	20.4	19.0	18			
172 (17)	21	Nanoose Harbour	03/03/84	0445	19							2	1	10	14	10	5	5	3				50	19.1	19.0	54			
172 (17)	22	Nanoose Bay	03/03/84	0100	-							Water haul												-	-	-	-		
173 (17)	23	Stuart Channel	03/03/84	2130	20							1	2	7	6	7	10	11	4	2				50	20.9	19.0	20		
173 (17)	24	Gabriola Pass	04/03/84	0500	21							3	10	5	7	4	8	11	2				50	21.0	19.0	26			
173 (17)	25	Ruxton Pass	04/03/84	0630	22							2	1	7	6	2	6	4	8	9	4	1		50	20.9	19.0	32		
173 (17)	26	Stuart Channel (W. Ruxton I.)	04/03/84	2000	23							1	2	2	3	4	10	8	8	10	2			50	21.2	19.0	16		
173 (17)	27	Stuart Channel	05/03/84	1900	24							1	6	14	7	5	9	2	5	1				50	19.0	19.0	56		
173 (17)	28	Stuart/DeCourcy	06/03/84	2000	25							7	5	5	9	7	9	5	2	1				50	20.8	19.0	24		
173 (17)	29	1/2 mi. off Blackberry Pt.	07/03/84	2100	26							9	16	12	9	2	2							50	18.2	19.0	74		
173 (17)	30	Pylades Channel	08/03/84	0445	27							3	5	5	5	5	7	10	7	3				50	20.9	19.0	26		
173 (17)	31	Pylades/Ruxton	09/03/84	1930	28							1	12	10	6	4	3	6	6	2				50	20.0	19.0	46		
173 (17)	32	Stuart Channel	10/03/84	1930	29							2	12	11	6	4	7	2	4	2				50	19.7	19.0	50		
173 (17)	33	2/3 mi off Yellow Pt.	11/03/84	1900	30							6	8	7	13	5	8	3						50	20.3	19.0	28		
173 (17)	34	Stuart/Ruxton	14/03/84	0915	-							Water haul												-	-	-	-		

Table 20 (cont'd). Length frequency distribution of herring. ROE HERRING CHARTER SEINER "SARAH MARGARET", STAT. AREA 17, 1984.

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			
						/ 13	/ 14	/ 15	/ 16	/ 17	/ 18	/ 19	/ 20	/ 21	/ 22	/ 23	/ 24	/ 25	/ 26	/ 27	/ 28			
173 (17)	35	Stuart/Ruxton	14/03/84	1915	31						5	20	14	9	2					50	18.2	19.0	78	
172 (17)	36	Nanooose Bay (1/2 mi off Maude I.)	15/03/84	1815	32						1	2	3	7	10	9	8	5	5		50	20.2	19.0	26

Table 21. Seine set data and roe yield information. ROE HERRING CHARTER SEINER "ABRAXAS PROVIDER", STAT. AREAS 14 ~ 17, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage				Sex Ratio				Roe Yield %			Roe Grade (Pcs)			
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No. %	F No. %	Wt.	Adj. wt.	#1	#2	#3			
172 (17)	1	Nanooze Bay	20/02/84	1914	800- 1000	800- 1000	150	7.4	1	89	64	51	36	0	-	-	50	1	1
172 (17)	2	Lantzville/ Nanooze	22/02/84	1930	4000	1000	75	7.2	1	91	65	50	35	0	-	1	3	46	2
144 (14)	3	Nuttal Bay	23/02/84	0630		50	10	-	-	No Information									1
172 (17)	4	Maude I.	24/02/84	0530	1500	700- 800	35	7.8	1	103	69	47	31	1.75	2.80	10	5	32	
									2	100	68	48	32	0.4	0.62	4	6	38	
									3	127	77	38	23	0.25	0.54	4	2	32	
									4	73	70	31	30	0.0	-	-	2	29	
									5	71	72	27	28	0.31	0.56	1	7	19	
									6	77	72	30	28	0.72	1.29	1	2	27	
172 (17)	5	Maude I./ Nanooze	24/02/84	2144	8000	8000	100	7.8	1	49	49	50	51	0.42	0.42	2	1	47	4
									2	47	49	48	51	0	-	-	-	48	5
172 (17)	6	Amelia I.	25/02/84	1900		500		-	-	Water haul									-62-
172 (17)	7	Maude I.	26/02/84	0450	8000		40	7.8	1	47	44	59	56	0.84	0.75	4	-	55	3
									2	48	44	62	56	0.40	0.35	2	5	55	2
									3	51	46	61	54	1.19	1.09	7	2	52	3
172 (17)	8	Maude I.	27/02/84	1900	8000	500	50	7.9	1	92	70	40	30	0.38	0.63	4	-	36	26
									2	77	64	44	36	0.97	1.33	6	3	35	
									3	76	59	52	41	1.25	1.54	8	2	42	
172 (17)	9	Amelia I.	27/02/84	2235	500		0	8.4	-	Water haul									
144 (14)	10	Opp. Cottam Pt.	28/02/84	0546			0	-	-	Water haul									
162 (16)	11	Stillwater Bay	29/02/84	0527			0	7.3	-	Water haul									
162 (16)	12	Myrtle Pt.	29/02/84	0735			0	-	-	Water haul									
162 (16)	13	Myrtle Pt.	29/02/84	0815			0	-	-	Water haul									

Table 21 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER "ABRAXAS PROVIDER", STAT. AREAS 14 - 17, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage				Sex Ratio				Roe Yield %			Roe Grade (Pcs)			Juv. Spnd. out or immat.					
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No. %	F No. %	Wt.	Adj. wt.	#1	#2	#3								
162 (16)	14	Alblon Pt.	29/02/84	0933			0	-	-	Water haul														
162 (16)	15	Alblon Pt.	29/02/84	1017			0	7.5	-	Water haul														
162 (16)	16	Stillwater Bay	29/02/84	1055			0	-	-	Water haul														
162 (16)	17	Stillwater Bay	29/02/84	1136			0	-	-	Water haul														
162 (16)	18	Evenden Pt.	29/02/84	1430			0	-	-	Water haul														
162 (16)	19	Evenden Pt.	29/02/84	1714			0	-	-	Water haul														
162 (16)	20	Stillwater Bay	29/02/84	2055	3000- 5000	10-20	5-10	7.5	1	31	25	91	75	0.75	0.50	5	3	83	9	5	163	5	1	
162 (16)	21	Westview	01/03/84	0920	50-75	75	50	7.5	1	34	41	49	59	10.5	8.90	41	1	7	1	5	8	1	1	
162 (16)									2	37	45	46	55	8.66	7.82	33	5	8						
162 (16)									3	38	47	42	53	8.05	7.67	31	3	8						
162 (16)									4	47	56	37	44	6.55	7.44	26	4	7						
162 (16)									5	38	46	44	54	9.4	8.75	32	2	10						
162 (16)	22	N.W. Grief Pt.	01/03/84	1745		25	1	7.6	1	57	43	76	57	2.9	2.54	18	3	55	3	1	59	4		
162 (16)									2	49	38	81	62	2.75	2.21	21	1							
162 (16)									3	46	36	83	64	3.2	2.49	23	3	57	3	5	13	6		
162 (16)	23	1/2 mi N. NW. Grief Pt.	02/03/84	0450		150	75	7.4	1	43	41	61	59	9.4	8.01	44	3	14	3	3	6	4		
162 (16)									2	53	52	49	48	9.87	10.28	40	5							
162 (16)									3	46	43	61	57	9.52	8.35	43	5							
162 (16)	24	SW. Hulks	02/03/84	0720		100	20	6.7	1	40	52	37	48	9.5	9.88	29	-	8						
162 (16)									2	36	46	43	54	10.35	9.51	34	-	9						
162 (16)	25	Grief Pt.	02/03/84	1735		250	200	7.4	1	44	47	49	53	8.7	8.25	39	3	7	1	5	7	16		
162 (16)									2	38	47	43	53	7.85	7.39	34	6	3						
162 (16)									3	47	48	51	52	9.07	8.72	39	5							

Table 21 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER "ABRAXAS PROVIDER", STAT. AREAS 14 - 17, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage				Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Juv. Spnd. or out immat.			
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M		F		Wt.	Adj. wt.	#1	#2	#3			
										No.	%	No.	%			#1	#2	#3			
162 (16)	26	Westview	03/03/84	0550	200	100	6.8	1	52	48	57	52	7.4	7.07	41	4	12	8			
									2	59	50	59	50	9.58	9.58	50	1	8			
									3	50	46	58	54	7.76	7.23	38	2	18			
162	27	Westview	03/03/84	1440	0	100	7.3	-	Water haul									4			
162	28	Westview	03/03/84	1535		1500	200	100	7.8	1	61	47	70	53	2.75	2.57	17	5	48		
(16)										2	59	44	75	56	4.3	3.84	36	8	31		
152	29	S. Sliammon W.	03/03/84	1731	150	50	7.9	1	61	57	46	43	8.31	9.66	37	1	8		1		
(15)									2	44	42	60	58	10.15	8.80	44	2	14			
									3	46	46	55	54	8.8	8.22	42	3	8			
152	30	E. Scuttle Bay	04/03/84	0602	200	100				1	45	53	40	47	9.65	10.24	36	2	2	16	
(15)										2	33	45	41	55	10.99	9.92	34	5	2		
										3	32	37	54	63	10.82	8.61	37	11	6		
152	31	S. Powell River	05/03/84	0705	2000- 3000	500	200	7.2	1	64	55	53	45	7.4	8.17	38	2	13	1		
(15)		Mill								2	42	45	51	55	8.45	7.71	34	3	14		
173	32 ¹	SE. of DeCourcy I.	05/03/84	2021	500- 1000	135	8.2	1	41	51	40	49	10.85	10.98	33	2	5				
(17)									2	33	40	49	60	13.43	11.23	43	1	5			
									3	41	49	42	51	11.13	11.00	38	4	-			
142	33	Outside of Lambert Channel	07/03/84	1335	15	5	8.3	1	51	66	26	34	6.15	9.10	22	-	4	6	7		
(14)									2	28	42	38	58	9.73	8.45	32	-	6			
									3	39	48	43	52	10.58	10.10	40	1	2	4		
142	34	Baynes Sound	07/03/84	1710			8.6	-	Water haul									1			
(14)																					
142	35	NW. End Baynes Sound	07/03/84	1741					100	100	8.6	1	54	57	40	43	9.06	10.63	39	-	1
(14)										2	43	52	39	48	12.01	12.62	38	-	1		
										3	47	64	27	36	8.05	11.03	27	-	-	1	
142	36	Boyle Pt.	08/03/84	0831			-	-	Water haul										1		
(14)																					
142	37	Boyle Pt./Lambert Ch.	08/03/84	0853					500	100	8.0	1	41	59	28	41	9.35	11.51	27	-	1
(14)										2	34	53	30	47	12.05	12.85	30	-	-	1	
										3	28	47	32	53	12.8	12.01	32	-	-	2	
144	38	Off Craig Bay	08/03/84	0855	50	8.4	-	-	Water haul										1		
(14)																					

Table 21 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER "ABRAXAS PROVIDER", STAT. AREAS 14 - 17, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage				Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Juv. Spnd. out or immat.	
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No. %	F No. %	Wt.	Adj. wt.	#1	#2	#3			
144 (14)	39	Craig Bay	09/03/84	1744	70	15	8.6	1	36	49	38	51	10.75	10.46	36	2	-	6	
									2	47	55	38	45	10.85	12.14	36	2	-	5
									3	44	51	42	49	11.9	12.19	42	-	-	3
144 (14)	40	Nuttal Bay	10/03/84	0837	3000	500	200	8.3	1	43	48	47	52	11.31	10.83	43	-	4	4
									2	48	59	33	41	8.85	10.87	30	1	2	4
									3	48	55	39	45	11.61	12.96	38	-	1	
172 (17)	41	Nanoose Bay	10/03/84	1035	50	20	8.4	1	43	54	36	46	10.65	11.68	34	-	2	4	
									2	52	58	37	42	1.7	14.06	37	-	-	3
									3	43	50	43	50	11.99	11.99	42	-	1	2
165 (16)	42	Narrows Inlet	13/03/84	1400				-	-	Water haul									
165 (16)	43	Nine Mile Pt./ Salmon Inlet	14/03/84	0728				-	-	Water haul									
164 (16)	44	Deserted Bay/ Jervis Inlet	15/03/84	0615				-	-	Water haul									

Fishery Information (Table 15).

¹Charter payment herring.

Table 22. Length frequency distribution of herring. ROE HERRING CHARTER SEINER "ABRAXAS PROVIDER", STAT. AREAS 14 - 17, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Biol. sample No.	Length Frequency (cm)																			Average length (cm)	Cutoff (cm)	% Below cutoff
						12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28					
						13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28						
172 (17)	1	Nanoose Bay	20/02/84	1914	1						1	4	4	6	6	9	7	8	2	3			50	21.3	19.0	18	
172 (17)	2	Lantzville/ Nanoose	22/02/84	1930	2					2	1	5	6	7	15	7	5	1					49	19.9	19.0	29	
172 (17)	2	Lantzville/ Nanoose	22/02/84	1930	2							2	8	11	10	11	4	4					50	21.5	19.0	4	
144 (14)	3	Nuttal Bay	23/02/84	0630	3				11	37	21	22	7	2									100	16.3	19.0	98	
172 (17)	4	Maude I.	24/02/84	0530	4						1	6	12	7	10	7	3	3	1				50	20.0	19.0	38	
172 (17)	5	Maude I./ Nanoose	24/02/84	2144	5						9	18	26	16	13	10	6	2					100	19.2	19.0	53	
172 (17)	6	Amelia I.	25/02/84	1900	-																		-	-	-	-	
172 (17)	7	Maude I.	26/02/84	0450	6						4	7	9	11	10	6	2	2					51	20.5	19.0	22	
172 (17)	8	Maude I.	27/02/84	1900	7					3	7	6	19	29	17	11	7	1					100	18.5	19.0	64	
172 (17)	9	Amelia I.	27/02/84	2235	-				6	20	20	4	1	1									52	15.1	19.0	100	
144 (14)	10	Opp. Cottam Pt.	28/02/84	0546	-	6		3															9	13.2	19.0	100	
162 (16)	11	Stillwater Bay	29/02/84	0527	-																		-	-	-	-	
162 (16)	12	Myrtle Pt.	29/02/84	0735	-																		-	-	-	-	
162 (16)	13	Myrtle Pt.	29/02/84	0815	-																		-	-	-	-	
162 (16)	14	Albion Pt.	29/02/84	0933	-																		-	-	-	-	
162 (16)	15	Albion Pt.	29/02/84	1017	-																		-	-	-	-	

Table 22 (cont'd). Length frequency distribution of herring. ROE HERRING CHARTER SEINER "ABRAXAS PROVIDER", STAT. AREAS 14 - 17, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Biol. sample No.	Length Frequency (cm)																		Average length (cm)	Cutoff (cm)	% Below cutoff	
						12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28					
						13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	size					
162 (16)	16	Stillwater Bay	29/02/84	1055	-																			-	-	-	
162 (16)	17	Stillwater Bay	29/02/84	1136	-																			-	-	-	
162 (16)	18	Evenden Pt.	29/02/84	1430	-																			-	-	-	
162 (16)	19	Evenden Pt.	29/02/84	1714	-																			-	-	-	
162 (16)	20	Stillwater Bay	29/02/84	2055	-																			50	18.7	19.0	56
162 (16)	21	Westview	01/03/84	0920	8																			50	21.3	19.0	4
162 (16)	22	NW. Grief Pt.	01/03/84	1745	9																			50	18.3	19.0	68
162 (16)	23	1/2 mi N. NW. Grief Pt.	02/03/84	0450	10																			50	19.4	19.0	42
162 (16)	24	SW. Hulks	02/03/84	0720	11																			50	21.9	19.0	10
162 (16)	25	Grief Pt.	02/03/84	1735	12																			50	20.2	19.0	16
162 (16)	26	Westview	03/03/84	0550	13																			50	19.6	19.0	48
162 (16)	27	Westview	03/03/84	1440	-																			-	-	-	
162 (16)	28	Westview	03/03/84	1535	14																			50	18.3	19.0	70
152 (15)	29	S. Sliammon W.	03/03/84	1731	15																			50	19.6	19.0	34
152 (15)	30	E. Scuttle Bay	04/03/84	0602	16																			50	20.8	19.0	4
152 (15)	31	S. Powell River Mill	05/03/84	0705	17																			50	19.8	19.0	38

Table 22 (cont'd). Length frequency distribution of herring. ROE HERRING CHARTER SEINER "ABRAXAS PROVIDER", STAT. AREAS 14 - 17, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Length Frequency (cm)																		Average length (cm)	Cutoff (cm)	% Below cutoff	
					Biol. sample	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	Sample size				
					No.	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28					
173 (17)	32	SE. of DeCourcy I.	05/03/84	2021	18							1	1	7	7	15	10	7	3			51	20.6	19.0	18	
142 (14)	33	Outside of Lambert Channel	07/03/84	1335	19							1	3	12	13	10	9	2				50	20.8	19.0	8	
142 (14)	34	Baynes Sound	07/03/84	1710	-																	-	-	-	-	
142 (14)	35	NW. End Baynes Sound	07/03/84	1741	20							2	1	2	10	9	7	14	5			50	21.0	19.0	10	
142 (14)	36	Boyle Pt.	08/03/84	0831	-																	-	-	-	-	
142 (14)	37	Boyle Pt./ Lambert Ch.	08/03/84	0853	21							1		1	6	12	16	11	3			50	22.2	19.0	2	
144 (14)	38	Off Craig Bay	08/03/84	0855	-																	-	-	-	-	
144 (14)	39	Craig Bay	09/03/84	1744	22							4	2	7	15	8	11	3				50	20.8	19.0	12	
144 (14)	40	Nuttal Bay	10/03/84	0837	23							2	3	4	2	11	11	9	6	1	1		50	21.1	19.0	18
172 (17)	41	Nanoose Bay	10/03/84	1035	24							1	1	1	7	6	9	7	10	6	2		50	20.9	19.0	20
165 (16)	42	Narrows Inlet	13/03/84	1400	-																	-	-	-	-	
165 (16)	43	Nine Mile Pt./ Salmon Inlet	14/03/84	0728	-																	-	-	-	-	
164 (16)	44	Deserted Bay/ Jervis Inlet	15/03/84	0615	-																	-	-	-	-	

Table 23. Seine set data and roe yield information. ROE HERRING CHARTER SEINER "OCEAN HORIZON", STAT. AREA 23, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage				Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Juv. Spnd. out	or Immat.
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No.	F No.	Vol.	Adj. vol.	#1	#2	#3			
232 (23)	1	Chrow I.	25/02/84	1855	150	150	40	7.7	1	66	47	73	53	2.0	1.90	16	4	53	
									2	72	44	92	56	3.0	2.67	26	7	59	
233 (23)	2	Lyaill Pt.	26/02/84	1130	200	50	50	7.5	1	55	50	55	50	9.0	9.0	39	2	14	
									2	56	50	55	50	8.0	8.08	34	5	16	
232 (23)	3	Chrow I.	27/02/84	0636	3000	300	35	7.4	1	60	47	69	53	5.0	4.67	28	10	31	
									2	58	41	82	59	6.5	5.55	34	14	34	
233 (23)	4	Mayne Bay	27/02/84	2145	-	-	-	7.4	-	Water haul									
232 (23)	5	Chrow I.	28/02/84	0620	4000	500	175	7.2	1	54	60	36	40	4.5	5.63	23	4	9	
									2	40	40	60	60	8.5	7.08	37	7	16	
232 (23)	6	Chrow I.	01/03/84	1845	2000- 3000		200	8.0	1	62	44	79	56	10.0	8.93	50	5	24	
									2	73	47	83	53	6.5	6.11	42	7	34	
									3	72	50	73	50	8.0	7.95	50	7	16	
232 (23)	7	Newcombe Channel	02/03/84	1642		50	5	8.0	1	84	51	82	49	7.0	7.09	46	7	29	
									2	94	57	71	43	4.5	5.23	42	5	24	
232 (23)	8	Newcome Channel	02/03/84	1856		70			1	61	37	103	63	7.5	5.97	55	5	43	
									2	82	49	86	51	5.5	5.37	40	7	39	
									3	88	51	86	49	5.0	5.06	42	8	36	
232 (23)	9	Chrow I.	03/03/84	1904		150	8.0		1	65	49	68	51	8.5	8.32	39	9	20	
									2	61	48	66	52	7.75	7.45	43	-	23	
									3	55	47	63	53	10.0	9.36	42	5	16	
232 (23)	10	Stopper I.	04/03/84	0919	1000- 1500	500	150	8.1	1	58	55	48	45	11.5	12.69	43	2	3	
									2	38	38	62	62	13.5	10.89	55	3	4	
									2	69	63	41	37	8.5	11.39	36	2	3	
									4	58	51	56	49	10.0	10.18	52	1	3	
232 (23)	11	David I.	05/03/84	0828	3000	300 500	300	8.0	1	47	47	54	53	13.5	12.62	48	1	5	
									2	47	48	50	52	12.0	11.65	45	2	3	
									3	44	44	56	56	14.0	12.50	51	3	2	
232 (23)	12	Stopper I.	05/03/84	0948		100		8.0	1	71	50	70	50	10.25	10.33	55	-	15	
									2	80	54	67	46	11.25	12.34	58	-	9	
									3	81	54	69	46	8.5	9.24	51	-	18	

Table 23 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER "OCEAN HORIZON", STAT. AREA 23, 1984.

Section	Set No.	Location	D/M/Y	Time	Tonnage			Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Spnd. or out immat.	Juv.	
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No. %	F No. %	Vol.	Adj. vol.	#1	#2	#3			
232 (23)	13	Newcombe Channel	05/03/84	1145		500	20	8.2	1	95	49	100	51	2.0	1.95	25	2	73	2
232 (23)	14	Chrow I.	05/03/84	2024	500	200	70-80	8.2	1	64	44	80	56	10.0	8.99	60	3	17	2
									2	73	55	59	45	7.5	8.39	46	4	9	
									3	73	53	66	47	8.25	8.68	51	-	15	
232 (23)	15	Spilling Islets	06/03/84	0607		600-	40	8.1	1	63	48	67	52	10.0	9.71	48	7	12	
						800			2	54	46	63	54	11.0	10.22	50	4	9	
									3	56	42	76	58	13.0	11.28	60	3	13	
232 (23)	16	Chrow I.	06/03/84	1522	2000	Whole bunch	400	-	1	57	46	66	54	11.75	10.94	55	4	7	
									2	59	50	60	50	12.0	11.90	50	5	5	
									3	65	53	57	47	12.25	13.12	48	6	3	
232 (23)	17	Twin Rivers	06/03/84	1748				-	-	Water haul									
232 (23)	18	Twin Rivers	06/03/84	2055		200	40-50	-	1	64	50	65	50	10.0	9.92	50	5	10	1
									2	52	37	87	63	11.0	8.79	58	14	15	
									3	53	39	82	61	12.0	9.88	58	12	12	
232 (23)	19	Twin Rivers	07/03/84	1927		200-	50	-	1	84	61	54	39	9.5	12.15	47	5	2	1
						300			2	79	55	65	45	9.0	9.98	46	10	9	
									3	52	39	83	61	14.0	11.38	71	6	6	
									4	78	51	76	49	11.0	11.13	63	7	6	
232 (23)	20	Chrow I.	08/03/84	0530			150-	-	1	68	53	60	47	10.0	10.66	51	4	5	
							170		2	72	50	72	50	11.5	11.50	57	5	10	
									3	57	46	68	54	13.5	12.41	61	2	5	
									4	48	38	78	62	14.5	11.71	68	5	5	
231 (23)	21 ¹	Pipestem Inlet	12/03/84	0710	000	110	110	-	1	52	48	57	52	14.5	13.86	57	-	-	
									2	60	50	61	50	13.0	12.90	60	-	1	
									3	53	45	64	55	14.0	12.80	63	-	1	
231 (23)	22 ¹	Pipestem Inlet	12/03/84	1100	700-	75	75	-	1	46	45	56	55	14.0	12.75	55	-	1	
						1000			2	65	55	53	45	13.0	14.48	52	1	-	
									3	55	49	58	51	12.3	11.99	58	-	-	
									4	82	60	55	40	8.0	9.98	52	2	1	
									5	71	58	52	42	9.0	10.64	50	2	-	
									6	61	54	51	46	11.0	12.09	51	-	-	

Table 23 (cont'd). Seine set data and roe yield information. ROE HERRING CHARTER SEINER "OCEAN HORIZON", STAT. AREA 23, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage				Sex Ratio				Roe Yield %			Roe Grade (Pcs)			
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No. %	F No. %	Vol.	Adj. vol.	#1	#2	#3			
232 (23)	23	Stopper I.	12/03/84	1650				-	-	Water haul									
231 (23)	24	Pipestem Inlet	12/03/84	1750	700- 1000	50	50	-	1	82	56	64	44	11.0	12.56	61	3	-	171
232 (23)	25	Forbes I.	13/03/84	0825	100- 500	100- 500	50	-	1	42	36	74	64	16.25	12.74	70	2	2	
									2	56	46	65	54	13.0	12.10	60	-	5	2
									3	72	56	56	44	11.75	13.41	52	1	3	1
									4	62	53	55	47	9.0	9.57	54	-	1	
									5	47	46	55	54	14.25	13.22	52	-	3	

Seine Opening

Management sub-areas 23-8, 23-9 and 23-10 opened on March 8 for 1 hour and 44 minutes for a hauled catch of 6000 tons. The roe yields were 11-12%.

¹Charter payment herring.

Table 24. Length frequency distribution of herring. ROE HERRING CHARTER SEINER "OCEAN HORIZON", STAT. AREA 23, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Biol. sample No.	Length Frequency (cm)																		Average length (cm)	Cutoff (cm)	% Below cutoff	
						/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	Sample size			
						13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28						
232 (23)	1	Chrow I.	25/02/84	1855	1					2	10	16	5	7	5	4	2							51	19.5	19.0	55
233 (23)	2	Lyall Pt.	26/02/84	1130	2					2	3	7	8	9	10	6	4	1						50	21.5	19.0	10
232 (23)	3	Chrow I.	27/02/84	0636	3					1	1	5	8	6	14	8	3	2	1					49	20.1	19.0	31
233 (23)	4	Mayne Bay	27/02/84	2145	-					Water haul																	
232 (23)	5	Chrow I.	28/02/84	0620	4					1	4	1	3	9	12	10	9	1						50	21.3	19.0	12
232 (23)	6	Chrow I.	01/03/84	1845	5					1	6	9	7	10	7	4	4	1	1					50	20.3	19.0	32
232 (23)	7	Newcombe Channel	02/03/84	1642	6					4	12	12	9	3	4	3	2	1						50	19.2	19.0	56
232 (23)	8	Newcombe Channel	02/03/84	1856	7					1	11	14	9	6	3	1	3	2						50	19.5	19.0	52
232 (23)	9	Chrow I.	03/03/84	1904	8					2	5	4	4	9	7	9	6	5						51	21.0	19.0	22
232 (23)	10	Stopper I.	04/03/84	0919	9					2	2	6	12	5	8	11	4							50	21.6	19.0	8
232 (23)	11	David I.	05/03/84	0828	10					2	3	7	13	8	8	7	2							50	22.2	19.0	4
232 (23)	12	Stopper I.	05/03/84	0948	11					2	5	5	9	10	5	10	3							49	20.3	19.0	24
232 (23)	13	Newcombe Channel	05/03/84	1145	12					5	23	14	6	1	1									50	18.1	19.0	84
232 (23)	14	Chrow I.	05/03/84	2024	13					5	15	11	13	2	1	4								51	19.7	19.0	39
232 (23)	15	Splitting Islets	06/03/84	0607	14					3	5	6	6	15	4	5	4	2						50	20.3	19.0	28
232 (23)	16	Chrow I.	06/03/84	1522	15					5	10	3	7	7	11	6	1							50	20.8	19.0	30

Table 24 (cont'd). Length frequency distribution of herring. ROE HERRING CHARTER SEINER "OCEAN HORIZON", STAT. AREA 23, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Length Frequency (cm)																				Average length (cm)	Cutoff (cm)	% Below cutoff
					Biol. sample No.	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					
						/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/				
232 (23)	17	Twin Rivers	06/03/84	1748	-	Water haul																				-	-
232 (232)	18	Twin Rivers	06/03/84	2055	16						2	8	11	6	7	4	7	2	1	1				49	19.9	19.0	43
232 (23)	19	Twin Rivers	07/03/84	1927	17						2	8	9	5	3	8	8	7						50	20.3	19.0	38
232 (23)	20	Chrow I.	08/03/84	0530	18						1		5	9	8	7	10	6	4					50	21.3	19.0	12
231 (23)	21	Pipestem Inlet	12/03/84	0710	19						1	5	6	7	8	8	10	5						50	20.6	19.0	24
231 (23)	22	Pipestem Inlet	12/03/84	1100	20						5	7	12	8	7	5	2	3	1					50	20.5	19.0	24
232 (23)	23	Stopper I.	12/03/84	1650	-	Water haul																				-	-
231 (23)	24	Pipestem Inlet	12/03/84	1750	21						1	1	8	11	14	8	2	4	1					50	19.4	19.0	42
232 (23)	25	Forbes I.	13/03/84	0825	22						1	2	11	6	9	5	7	7	1	1				50	20.7	19.0	28

Table 25. Seine set data and roe yield information. ROE HERRING CHARTER SEINER "PACIFIC OCEAN", STAT AREAS 23 AND 24, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage			Sex Ratio			Roe Yield %		Roe Grade (Pcs)			Juv. Spnd. out or immat.		
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No. %	F No. %	Vol.	Adj. vol.	#1	#2	#3		
243 (24)	1	1/2 mi W. Starling Pt.	25/02/84	1435	1500- 2000	75	10	7.2	1	68	41	980	59	2.0	1.69	25	3	7
243 (24)	2	1/2 mi W. Starling Pt.	25/02/84	1525	1500- 2000	100	100	7.2	1	53	51	509	49	6.5	6.70	26	5	1
									2	49	48	548	52	7.5	7.16	33	3	1
									3	54	52	493	48	8.0	8.40	28	8	1
243 (24)	3	1/2 mi W. Starling Pt.	26/02/84	1830	1500- 2000	200	100	7.1	1	54	45	651	55	10.5	9.62	50	4	1
									2	63	58	463	42	6.0	7.11	31	2	1
									3	63	53	561	47	8.5	9.02	43	2	1
243 (24)	4	2 mi S. Starling Pt.	28/02/84	1910	2000+	500	100	6.2	1	54	50	545	50	10.0	10.00	47	2	
									2	53	51	501	49	12.5	12.89	49	-	
									3	50	52	474	48	11.0	11.34	39	4	
245 (24)	Dip NE. Dunlap I. Net	02/03/84	1230					8.3	1	48	53	43-	47	11.5	12.16	43	-	
243 (24)	5 Shelter Inlet	05/03/84	1745						1	79	48	860	52	6.5	6.24	54	2	3
									2	83	48	908	52	7.0	6.73	62	-	2
243 (24)	6 Sydney Inlet	05/03/84	2020					8.1	1	45	42	618	58	10.0	8.70	51	2	
									2	47	42	667	58	13.5	11.56	59	-	
									3	61	52	570	48	9.5	9.83	47	-	1
243 (24)	7 Sydney Inlet	06/03/84	2005			75	20	-	1	35	38	563	62	14.5	11.79	52	1	
									2	29	32	634	68	15.0	10.95	59	-	
									3	42	46	503	54	14.0	12.89	44	3	
232 (23)	8 Stopper I.	10/03/84	1700			100	100	-	1	48	53	42-	47	12.5	13.38	42	-	
									2	46	46	54-	54	13.0	12.04	53	1	
									3	48	44	615	56	14.5	12.95	56	-	
232 (23)	9 ¹ Maggie River	10/03/84	1830		90-					No information								
					100													
232 (23)	10 Stopper I.	11/03/84	0800				25-30	-		Herring released - too small for charter payment								
231 (23)	11 Pipestem Inlet	11/03/84	1300		1000					Herring were good size and 13% roe yield (released because too many herring)								
231 (23)	12 ¹ Pipestem Inlet	11/03/84	1500		1000			30		Herring taken to complete charter payment (approx. 13% roe yield)								

Wheelhouse and Sample Logs were not completed for sets 9 - 11; the above information was obtained from the log book.

¹Charter payment herring.

Table 26. Length frequency distribution of herring. ROE HERRING CHARTER SEINER "PACIFIC OCEAN", STAT. AREAS 23 AND 24, 1984.

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	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28								
						/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/					
243 (24)	1	1/2 mi W. Starling Pt.	25/02/84	1435	1	No samples taken																					-	-	-	-
243 (24)	2	1/2 mi W. Starling Pt.	25/02/84	1525	2						1	1	7	3	6	11	10	8	2	2					51	21.5	19.0	18		
243 (24)	3	1/2 mi W. Starling Pt.	26/02/84	1830	3						2	3	5	4	7	6	5	10	6	2					50	20.5	19.0	28		
243 (24)	4	2 mi S. Starling Pt.	28/02/84	1910	4						1	2	3	2	8	7	9	12	5	1					50	21.9	19.0	12		
245 (24)	Dip Net	NE. Dunlap I.	02/03/84	1230		Herring ball																					50	22.5	19.0	2
243 (24)	5	Shelter Inlet	05/03/84	1745	5						1	12	11	12	3	5	1	2	1	2					50	18.6	19.0	72		
243 (24)	6	Sydney Inlet	05/03/84	2020	6						5	5	6	8	6	3	9	5	2	1					50	20.4	19.0	32		
243 (24)	7	Sydney Inlet	06/03/84	2005	7						2	2	6	10	7	10	8	5							50	21.6	19.0	8		
232 (23)	8	Stopper I.	10/03/84	1700	8	Fragile roe sample																					-	-	-	-

Table 27. Seine set data and roe yield information. ROE HERRING CHARTER SEINER "NITA MARIA", STAT. AREA 25, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Tonnage				Sex Ratio				Roe Yield %		Roe Grade (Pcs)			Spnd. or out	Juv. or Immat.	
					In loc.	Set on	Est. catch	Temp (°C)	Test No.	M No.	%	F No.	%	Vol.	Adj. vol.	#1	#2	#3		
253 (25)	1	Rosa Harbour	27/02/84	1720	1000-	25-30	25	8.0	1	66	36	116	64	1.5	1.18	21	12	83	10	
					1500				2	66	38	109	62	2.25	1.81	28	6	75	12	
251 (25)	2	Nootka Sound	06/03/84	1446		100	0	-	-	Water haul										1
252 (25)	3	1/2 mi S. Pantoja Is.	07/03/84	0840	100	100	20-30	8.0	1	122	56	96	44	9.8	11.14	80	4	12		
									2	107	50	108	50	10.0	9.96	88	8	12	2	
									3	115	54	98	46	10.0	10.87	83	2	13		
252 (25)	4	Zucarate Channel	07/03/84	1055	30-40	30-40	0	8.0	-	Water haul										

Gillnet Opening

Management sub-areas 25-13 & 14 (Esperanza) opened on March 5 for 9 hours for a hauled catch of 1,026 tons. The roe yields ranged from 11-14%.

The charter payment herring were taken by the Ocean Horizon in Area 23.

Table 28. Length frequency distribution of herring. ROE HERRING CHARTER SEINER "NITA MARIA", STAT. AREA 25, 1984.

Section (Area)	Set No.	Location	D/M/Y	Time	Length Frequency (cm)																		Average length (cm)	Cutoff (cm)	% Below cutoff	
					Biol. No.	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				
					sample No.	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/				
253 (25)	1	Rosa Harbour	27/02/84	1720	1						9	19	18	9	6	3	1	2				67	18.6	19.0	69	
251 (25)	2	Nootka Sound	06/03/84	1446	-						Water haul												-	-	-	-
252 (25)	3	1/2 S. Pantoja I's.	07/03/84	0840	2						2	9	7	24	3	3	2						50	18.2	19.0	84
252 (25)	4	Zuciarte Channel	07/03/84	1055	-						Water haul												-	-	-	-

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 such major location should be resampled at regular intervals.
- (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.
- (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. Some vessel masters may prefer to pump samples, eliminating much of the "drying up" process.
- (b) Assure yourself of enough fish by taking at least 45 kg (100 lb, 2 or 3 buckets) from each set.
- (c) After obtaining a representative sample, immediately release the remaining fish to minimize scale damage.
- (d) Fill one sample bucket with a random sample of herring; place one completed shipping/sample label inside and 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.

Appendix Table 1 (cont'd)

-
- (e) Keep samples refrigerated on ice or in chilled seawater .
 - (f) Caution the vessel master to instruct the crew not to throw any fish overboard or begin salting fish for personal use until Fisheries Service samples have been processed.

4. Processing onboard charter vessel samples

- (a) Sample for roe yield using standard volumetric procedures as detailed in the instructions included with the ROE SAMPLE KIT.
- (b) Subsample the fish
 - i) Subsample from herring on deck by filling several buckets with a shovel or dipnet - do not pick out fish individually.
 - ii) The sampler should face away from the bucket containing fish and drop his hand into it. The first fish touched must be sampled, and each fish thereafter is selected by the same method until the sample is complete (50 fish). If a fish is not suitable for sampling (damaged), discard it and continue.
- (c) Measure the fish
 - i) Tack the waterproof Wheelhouse and Sample Log to the measuring board.
 - ii) Pencil in the appropriate "cut off" line on the measuring sheet.
 - 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 and extend beyond that point.
 - iv) Measure 50 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.
- (d) IMPORTANT - Please attempt to send the biological samples to Vancouver and Nanaimo before they decompose. Advise by B.C. telephone or radio telephone (to XL177) of when and how the samples are sent, i.e. commercial carrier destination and estimated time of arrival.

Appendix Table 2. The 1984 roe herring cutoff lengths used to separate age 3 herring from older fish.

Statistical Area	Cutoff length
<u>NORTH COAST</u>	
Area 2E	190 mm
2W	200 mm
5	180 mm
6 - 10	185 mm
<u>STRAIT OF GEORGIA</u>	
Areas 14 - 18	190 mm
<u>WEST COAST VANCOUVER ISLAND</u>	
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 the previous year 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 l (4 imp. gal.) bucket with lid
- instruction sheet with photographs at maturity stages

Determination of roe maturity:

1. Randomly obtain approximately 34 kg (75 lb) of herring from the set or load.
2. Fill the roe test bucket with fish to the top of the bucket.
Note - The bucket should be filled to overflowing.
3. Determine sex of all fish in the bucket (by squeezing or stripping).
4. Record numbers of each sex on sampling sheet.
5. Strip all roe from females.
6. 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.

7. 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.
8. 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.

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

1. Obtain a random sample of approximately 34 kg (75 lb) of herring from the set or load.
2. Hang the plastic container on the scale and tare the scale.
3. Fill the container with 10 kg (22 lb) of herring.
4. Strip all roe from the females.
5. 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.

6. 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.
7. Record the number of females with conditions 1, 2 and 3 maturity and record the number of males.
8. 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. Formula used to adjust roe yields assuming a 50:50 male/female sex ratio.

-
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 Fig. 1a. Wheelhouse and Sample Log - roe yield by volume.

WHEELHOUSE & SAMPLE LOG									
SET INFORMATION					ROE TEST INFORMATION				
1. Vessel	<u>OCEAN MARAUDER</u>				Captain	<u>LENIC</u>			
2. Area	<u>2 MI (INSKIR CHAIN)</u>				Location	<u>5 mile E. Hastings Pt.</u>			
3. Date: Day	<u>20</u>	Month	<u>3</u>	Year	<u>83</u>	a) No. Females cond. 1 Roe	<u>41</u>	TEST 2	<u>49</u>
5. Set No.	<u>36</u>	7. Sample No.	<u>25</u>	8. Time Set	<u>0910</u>	b) No. Females cond. 2 Roe	<u>0</u>	TEST 3	<u>37</u>
9. Sample: a) is	<u>V</u>	b) is not				c) No. Females cond. 3 Roe	<u>2</u>		<u>1</u>
10. Est. Tons in school set on	<u>300</u>	11. In catch	<u>200</u>			d) TOTAL FLMALLS	<u>43</u>	TEST 2	<u>54</u>
12. Est. Tons in Location	<u>3500</u>	13. Stat Area	<u>Do not know</u>			e) No. of Males	<u>34</u>	TEST 3	<u>40</u>
14. a) Wind Direction & Velocity	<u>0</u>	b) sky	<u>100% clear</u>			f) Roe Yield (VOL.)	<u>12.5%</u>	Average	<u>12.5%</u>
c) other				d) Sea Surface Temp.	<u>8.5°C</u>	g) Roe Yield (WT.)	<u>14.0%</u>	TEST 2	<u>11.0%</u>
15. Herring School Behaviour	<u>Fast moving schools</u>				h) Total sample weight	<u>gm./lb.</u>	TEST 3	<u>gm./lb.</u>	<u>gm./lb.</u>
16. Incidence of other species	<u>3-4 Dogfish</u>				i) Total roe weight	<u>gm./lb.</u>		<u>gm./lb.</u>	<u>gm./lb.</u>
17. Summary of On Board Size Measurements:									
a) Cutoff length used	<u>200</u>				20	<u>6</u>	<u>15</u>	<u>17</u>	<u>8</u>
b) measured	<u>50</u>				21	<u>3</u>	<u>1</u>		
c) No. Fish less than cutoff length	<u>0</u> %				22	<u>2</u>	<u>2</u>		
d) Average Size	<u>22.4</u>				23	<u>1</u>			
Comments RE: HERRING SIZE									
<u>Herring seem to have larger girths than normal - taller</u>	12	13	14	15	16	17	18	19	20
	1	1	1	1	1	1	1	1	1
	21	22	23	24	25	26	27	28	29
	1	1	1	1	1	1	1	1	1
	30								
	1								
Reporting officer:	<u>Joe Blow</u>								
Date Reported:	D	M	Yr	<u>20, March 83</u>					
Time:	<u>1030</u>								
Reported to:	<u>C. Director</u>								

Appendix Fig. 1b. Wheelhouse and Sample Log - roe yield by weight.

WHEEL HOUSE & SAMPLE LOG

SET INFORMATION

1. Vessel PACIFIC QUEST 2. Captain JOHN POLANIO
3. Area 14 (North) 4. Location COMOX HARBOUR
5. Date: Day 27 Month Feb Year 83
6. Set No. 4 7. Sample No. 4 8. Time Set 0540
9. Sample: a) is ✓ b) is not _____ representative
10. Est. Tons in school set on 300 11. In catch 20
12. Est. Tons in Location 1500 13. Stat Area 3000
14. a) Wind Direction & Velocity SW b) sky 10 % clear
c) other _____ d) Sea Surface Temp. 6.3°C
15. Herring School Behaviour Tight to bottom

16. Incidence of other species 3 Dogfish

17. Summary of On Board Size Measurements:

- a) Cutoff length used 190
- b) measured 50
- c) No. Fish less than cutoff length 0 %
- d) Average Size 21.7 cm.

Comments RE: HERRING SIZE

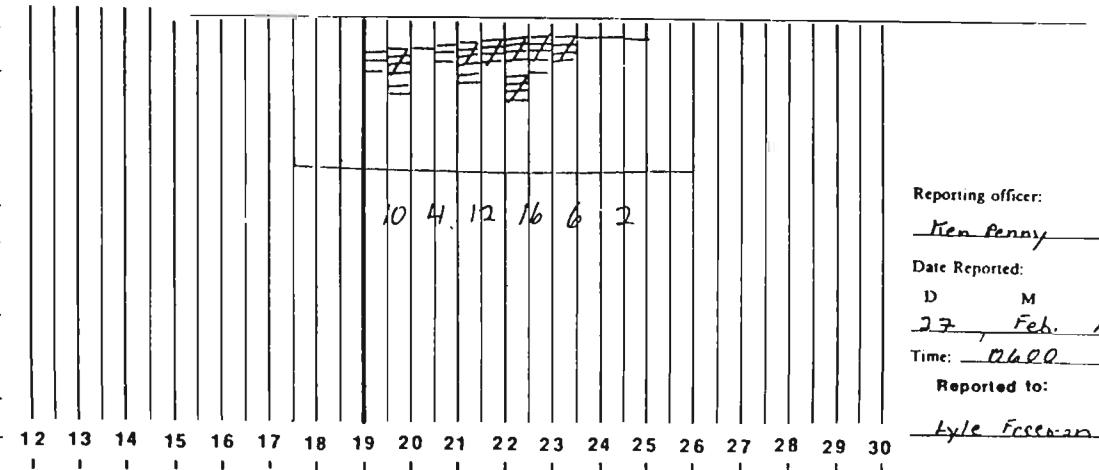
Herring are larger than normal

ROE TEST INFORMATION

	TEST 1	TEST 2	TEST 3	Average
a) No. Females cond. 1 Roe	<u>30</u>	<u>29</u>	<u>31</u>	
b) No. Females cond. 2 Roe	<u>2</u>	<u>3</u>	<u>4</u>	
c) No. Females cond. 3 Roe	<u>5</u>	<u>5</u>	<u>4</u>	
d) TOTAL FEMALES	<u>37</u>	<u>37</u>	<u>39</u>	
e) No of Males	<u>38</u>	<u>42</u>	<u>34</u>	
f) Roe Yield (VOL.)	<u>%</u>	<u>%</u>	<u>%</u>	
g) Roe Yield (WT.)	<u>9.8%</u>	<u>9.05%</u>	<u>10.75%</u>	<u>9.9%</u>
h) Total sample weight	<u>10,000 gm./lb.</u>	<u>10,000 gm./lb.</u>	<u>10,000 gm./lb.</u>	
i) Total roe weight	<u>980 gm./lb.</u>	<u>905 gm./lb.</u>	<u>1035 gm./lb.</u>	

20. Comments RE: Maturity i.e. Maturity (gonad running or firm) spawning, bird and Sea Lion activity etc.

Many of the females are running - males also changing



Reporting officer:

Ken Penny

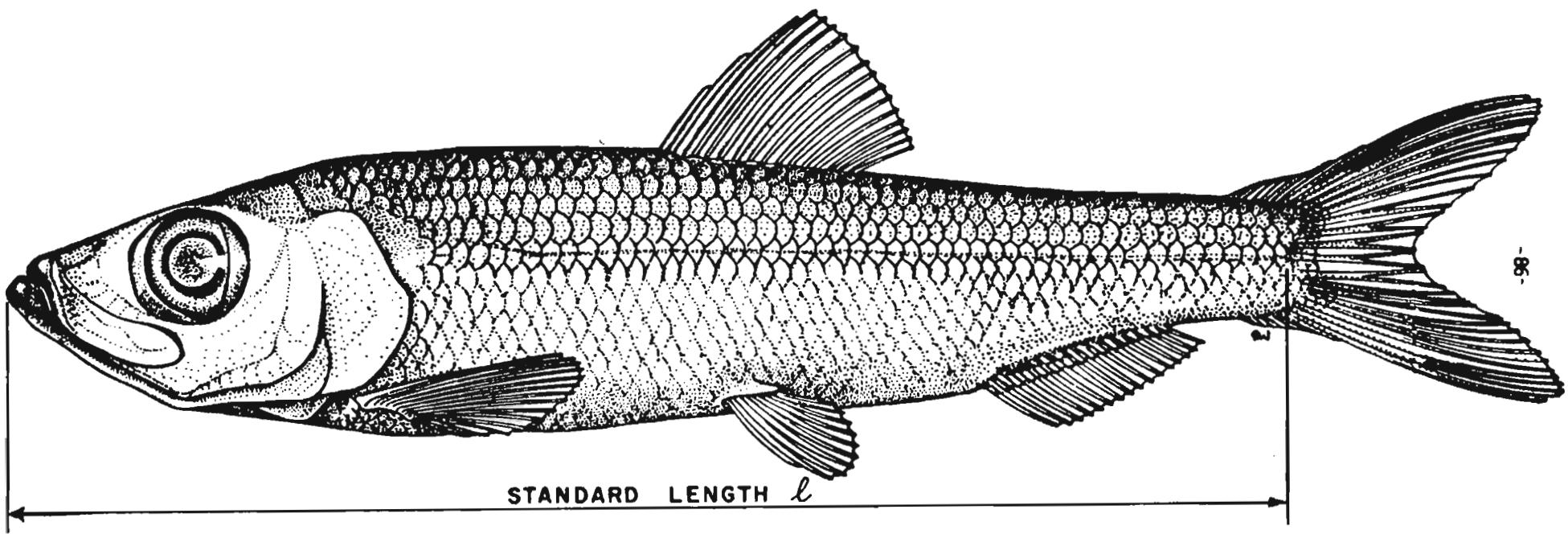
Date Reported:

D M Yr
27 Feb. 83

Time: 0600

Reported to:

Lyle Freeman



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.