

DATA FROM THE MONITORING OF
DOMESTIC/COMMERCIAL FISHERIES
FOR ARCTIC CHARR
IN THE BIG FISH RIVER AND RAT RIVER AREAS,
NORTHWEST TERRITORIES, 1986.

by

Paul D. Sparling and D. Bruce Stewart

Arctic Biological Consultants
Box 84, 1 McWilliams Place
Pinawa, Manitoba
ROE 1LO

November 1986

This report was prepared under contract for
the Department of Fisheries and Oceans.

Fisheries Joint Management Committee
Report # 86-002

3085

DISCLAIMER

This report was prepared for the Fisheries Joint Management Committee, as part of the implementation terms of the Inuvialuit Final Agreement. The opinions, findings, conclusions and recommendations expressed in this report are those of the Authors and do not necessarily reflect the views of the Fisheries Joint Management Committee.

CONTENTS

	Page
Introduction	1
Study area	1
Previous studies	1
Description of the fishery	1
Methods	3
Results	4
Big Fish River	4
Rat River	5
Acknowledgements	6
References	6
 Appendix 1. Biological data from the domestic/commercial Arctic charr harvests in the Big Fish River area, N.W.T., between 15 and 19 August, 1986	 17
Appendix 2. Biological data from the domestic/commercial Arctic charr harvests in the Rat River area, N.W.T., between 3 and 6 September, 1986	 20
Appendix 3. A flow chart and code for the determination of the maturity stages of Arctic charr	 23
Appendix 4. Fishing effort data from the domestic/commercial Arctic charr fishery in the Big Fish River area, N.W.T., between 13 and 19 August, 1986	 24
Appendix 5. Fishing effort data from the domestic/commercial Arctic charr fishery in the Rat River area, N.W.T., between 30 August and 7 September, 1986	 26
Appendix 6. Charr fishing information request form	28

LIST OF FIGURES

Figure	Page
1. Map of the Northwest Territories showing the location of the study area	7
2. Map of the Mackenzie River Delta showing domestic and commercial gillnetting sites	8
3. Length-frequency distributions for Arctic charr caught at A) the Rat River, and B) the Big Fish River, N.W.T., during the fall domestic/commercial fisheries	9
4. Age-frequency distributions for Arctic charr caught at A) the Rat River, and B) the Big Fish River, N.W.T., during the fall domestic/commercial fisheries	10

LIST OF TABLES

Table	Page
1. The location, number of fishermen, dates of fishing, and number of Arctic charr caught at each of the fisheries in the western region of the Mackenzie Delta	11
2. Daily catch of Arctic charr per unit of fishing effort (CPUE; 100 m of net set for 24 h) by the domestic/commercial fisheries in the Big Fish River and Rat River areas, N.W.T.	12
3. Mean fork length, mean round weight, mean age, mean condition factor, maturity and sex ratio by length interval for on-site sampled Arctic charr taken by the domestic/commercial fishery at the Big Fish River, N.W.T., in August 1986	13
4. Mean fork length, mean round weight, mean condition factor, maturity, and sex ratio by year class for on-site sampled Arctic charr taken by the domestic/commercial fishery at Big Fish River, N.W.T., in August 1986	14
5. Mean fork length, mean round weight, mean age, mean condition factor, maturity and sex ratio by length interval for on-site sampled Arctic charr taken by the domestic/commercial fishery at the Rat River, N.W.T., in September 1986	15
6. Mean fork length, mean round weight, mean condition factor, maturity, and sex ratio by year class for on-site sampled Arctic charr taken by the domestic/commercial fishery at Big Fish River, N.W.T., in August 1986	16

INTRODUCTION

Domestic and commercial fishermen from Aklavik and Fort McPherson, Northwest Territories, fish for Arctic charr (Salvelinus alpinus L.) in the western region of the Mackenzie Delta. Fishing takes place as the Arctic charr migrate upstream, through the Mackenzie Delta to spawning and overwintering grounds on tributaries of the Rat and Big Fish rivers.

In 1983, responding to community concerns, the Department of Fisheries and Oceans (DFO) initiated studies to assess the abundance and distribution of Arctic charr stocks in the western Mackenzie Delta (Gillman and Sparling 1985). This report presents data that were collected during a survey of the domestic/commercial fisheries for Arctic charr in the Big Fish River and Rat Rivers areas during August and September 1986, and data from a census of the winter fishery at the Cache Creek fish hole.

STUDY AREA

The area surveyed in this study extends from Fort McPherson north along the western edge of the Mackenzie Delta past Aklavik to Shingle Point on the Beaufort Sea coast (Fig. 1). Gillman and Sparling (1985) have described the Rat River area and Gillman (et al. 1985) have described the Big Fish River area.

PREVIOUS STUDIES

Previous fisheries survey work on the Big Fish and Rat River systems has been described by Gillman and Sparling (1985) and Gillman (et al. 1985). Further information is available from the Fish and Marine Mammal Management Division, DFO Central and Arctic Region, in Winnipeg.

DESCRIPTION OF THE FISHERY

Arctic charr in the Mackenzie Delta are anadromous, summering in the Beaufort Sea and wintering in freshwater systems. Annual migrations to freshwater begin in early August as charr move into the Mackenzie Delta from the Beaufort Sea to spawning and wintering grounds (Gillman and Sparling 1985). As the Arctic charr migrate they are exploited by both domestic and commercial gillnet fisheries. Traditionally the Arctic charr have been harvested sequentially at or near Shingle Point, the mouth of the Big Fish River, the Aklavik townsite, the mouth of Husky Channel, Big Eddy, Husky Channel at the mouth of the Rat River, and at Destruction City on the Rat River (Fig. 2).

Early in October, once the Arctic charr have reached their spawning grounds on tributaries of the Rat and Big Fish rivers, known locally as "fish holes", they are exploited by domestic fishermen using sweep nets and/or beach seines. The fish hole on Fish Creek, a tributary of the Rat River, was subject to intensive fishing in the early 1970's and has not been fished in the last few years. The fish hole on Cache Creek, a tributary of the Big Fish

River, has been exploited continuously (Fig. 2).

Commercial fishing for Arctic charr in the Mackenzie Delta is restricted to an area north of Aklavik. Commercial harvests are taken along with domestic harvests and are considered as such until the fishermen market their catch. In 1986 there was a quota of 900 kg (round weight) on the catch of Arctic charr in the Mackenzie Delta (Manual of Fisheries Acts and Regulations 1986).

Most fishermen who catch Arctic charr in the study area are residents of Aklavik and Fort McPherson, although some fishermen at Shingle Point are from Inuvik. Extended family groups fish traditional locations on a yearly basis. Charr taken between Aklavik and Shingle point are dressed with the heads attached, and hung by the tail in open-roofed smoke houses until they are transported to freezer facilities. Charr taken in the Rat River area are split and then hung and dried in enclosed smoke houses. Incidental species taken during the Mackenzie Delta charr fishery are also utilized. Broad whitefish (C. nasus), Arctic cisco (C. autumnalis), and round whitefish (Prosopium cylindraceum) may be used for human consumption while other species like lake whitefish (Coregonus clupeaformis), least cisco (C. sardinella), northern pike (Esox lucius), inconnu (Stenodus leucithys), and white sucker (Catostomus commersoni) are generally used for dog food.

During the fall fishery, fishermen usually use 20 to 50 m gillnets consisting of a single mesh size. Stretched mesh sizes range from 64 mm (2.5"), 76 mm (3"), 83 mm (3.25"), 89 mm (3.5"), 102 mm (4"), 114 mm (4.5") and 127 mm (5"), with the 89 mm mesh being most commonly used and most effective for catching Arctic charr. The nets are usually set in back eddies that form where channels and/or rivers meet. They are checked for fish one to four times daily, depending on the daily success. Individual fishermen may have up to five nets set at any given time. At the mouth of Husky Channel, nets of up to 100 m in length are sometimes anchored on their upstream end in mid-channel with the downstream end free and waving in the current. In 1986, these nets were not used at Husky Channel because of high water levels and associated flotsam, but they were used at Aklavik to catch Arctic cisco.

METHODS

Information and samples of Arctic charr were collected from fishermen in the Big Fish River and Shingle Point areas between 14 and 23 August 1986, and in the Rat River area from 29 August until 7 September. Local fishermen were subcontracted to provide transportation and assistance at both locations. All of the Arctic charr fishing camps were visited, and whenever possible figures were obtained to enable calculations of the catch per unit of fishing effort. Fishermen who expected to catch more charr were given a catch record form to record their catch, and to forward to Arctic Biological Consultants (Appendix 6). Catch figures for the winter Arctic charr fishery at the Cache Creek fish holes were collected during October and November by a subcontractor from Aklavik.

Biological samples were taken from Arctic charr caught in both the Big Fish and Rat river areas. The charr were obtained from the fishermen and returned to them after samples and measurements had been taken. Sampling did not alter the quality or marketability of the fish. For each Arctic charr, the fork length (± 1 mm) and round weight (± 25 g) were measured, the sex and stage of maturity were recorded, stomach contents were examined, and the sagittal otoliths were removed and stored dry in a coin envelope. The presence of tags, scars, and external parasites were recorded.

The stage of maturity was determined by gross examination of the gonads following the classification code used by Gillman and Sparling (1985; Appendix 3). Fish age determinations were made from the sagittal otoliths by Mr. G. Carder (Fish and Marine Mammal Management Division, DFO Central and Arctic Region, Winnipeg).

Regression analyses, condition factors, and catch effort figures were calculated using a Zenith 100 microcomputer. Length-weight relationships were calculated using least squares regression analysis on logarithmic transformations of fork lengths and round weights. The relationship is described as follows:

$$\text{Log}_{10} \text{ weight in g} = b \cdot \text{Log}_{10} \text{ fork length in mm} + \log a$$

The condition factor (K), a relative measure of the plumpness or robustness of the fish, was determined by the following formula:

$$K = (\text{round weight in g} \cdot 10^5) \cdot \text{fork length in mm}^{-3}$$

The catch per unit of sampling effort (CPUE) was expressed in terms of the number or weight (kg) of Arctic charr caught per 100 m of net set for 24 h. Daily CPUE's values were calculated based on the sum of the number of metre-hours of gillnet that was set each calendar day. In calculating CPUE's each net set was assigned to the calendar day wherein the majority of its set time fell. No corrections were made to the catches to account for differences in mesh size, time of day, or location of the fishing.

RESULTS

Timing of the Arctic charr harvest at each fishing location depends on the proximity of the location to the Beaufort Sea, with the earliest fisheries taking place along the coast (Table 1). In 1986, the fall Arctic charr fishery began at Shingle Point on 10 August and ended on 20 September at Destruction City (Figure 2). Fishing at each location can last for approximately two weeks, however it may last up to four weeks at Destruction City. Some 1298 Arctic charr were caught during the fall gillnet fishery.

The winter fishery was confined to the spawning grounds at the fish hole on Cache Creek, where some 1660 Arctic charr were taken between 4 and 27 October (Table 1). Three different groups of fishermen from Aklavik were involved in the fishery. The third and last group met with poor success and reported that few, generally small Arctic charr remained in the fish holes. The fish holes on Fish Creek were not fished during 1986.

Water levels and the amount of silt and debris carried by the rivers are the key factors which limit accessibility to the fisheries, and their length and success during a given year. In 1986, high water levels created strong currents, inundated landing and camping sites, and carried heavy loads of silt and flotsam. They shortened the fishery at the Big Fish River, preventing fishermen from harvesting non-spawning charr, virtually eliminated the fall charr fishery near the Aklavik townsite, and prevented fishermen at the Rat River from harvesting the early-migrating spawning segment of the charr population.

Figures presented for the catches of Arctic charr per unit of fishing effort (CPUE) are complicated by fishermen's use of a variety of mesh sizes (Table 2). The 114 and 127 mm mesh sizes seldom caught charr, but were used by fishermen in hopes of catching larger fish. In addition, the daily fishing effort varied and the catch success depended largely on the set location with respect to the changing currents. Perhaps more indicative of the fishing success were the overall length, number of fishermen, and number Arctic charr caught at each location (Table 1).

Other species of fishes that were caught during the fisheries were: lake whitefish, broad whitefish, round whitefish, inconnu, Arctic cisco, northern pike, burbot, and white sucker (Appendices 4 and 5).

BIG FISH RIVER

The Arctic charr sampled at the Big Fish River ranged in age from 6 to 14 years, length from 305 to 539 mm, weight from 325 to 1725 g, and in condition from 0.97 to 1.46 (Appendix 1). The modal length class was 400 to 449 mm and contained 38% of the charr sampled (Fig. 3b). The mean age of the fish was 8.6 y (SD = 1.14; Table 3), and the modal age class was 9 y (Fig. 4b).

The relationship between length (x) and weight (Y) for the Big Fish River charr can be expressed as :

$$\text{Log}_{10} \text{ weight in g} = 2.77 \text{ Log}_{10} \text{ length in mm} - 4.35$$

The correlation coefficient for the regression is 0.96.

The condition of the fish, as expressed by the condition factor (K), was generally good and averaged 1.14 (SD = 0.09; Table 3). It decreased slightly with age and length. Parasites (Diphyllbothrium sp.: Cestoda) which can cause a fish's condition factor to be high when the fish is actually in poor condition were not found to infect the fish. However, scars caused by lampreys, seals, and gillnets were found on the bodies of 14 of the 105 charr sampled, and the gill parasite, Salmincola sp. (Copepoda), was found on 4 charr (Appendix 1).

Arctic charr caught during the Big Fish River fishery were nearly all pre-spawners (Appendix 1). Females outnumbered males in all length (Figure 3b; Table 3) and age classes (Table 4). Individuals of both sexes were mature by age 6 years.

RAT RIVER

Arctic charr that were sampled at the Rat River ranged in age from 4 to 9 years, length from 256 to 572 mm, weight from 175 to 2100 g, and in condition from 0.83 to 1.32 (Appendix 2). The modal length class was 350 to 399 mm and contained 43.5% of the charr sampled (Fig. 3a). The mean age of the fish was 5.6 y (SD = 1.10; Table 5), and the modal age class was 6 y (Fig. 4a).

The relationship between length (x) and weight (Y) for the Rat River charr can be expressed as :

$$\text{Log}_{10} \text{ weight in g} = 3.12 \text{ Log}_{10} \text{ length in mm} - 5.25$$

The correlation coefficient for the regression is 0.98.

The condition of the fish was generally good and averaged 1.13 (SD = 0.09; Table 5). They were not host to Diphyllbothrium sp. (Cestoda) parasites which can falsely raise the fish's apparent condition. However, scars caused by lampreys, seals and gillnets were found on the bodies of 21 of the 110 charr sampled (Appendix 2).

Few of the Arctic charr caught during the Rat River fishery were preparing to spawn in the fall of 1986, most were immature or resting between spawning years (Appendix 2). Females slightly outnumbered males in the catch (Fig. 3a) but no trends were obvious among the length (Table 5) or age classes (Table 6).

ACKNOWLEDGEMENTS

We thank Jacob Archie of Aklavik and his family, and Alfred Francis and his family from Fort McPherson, for their assistance in the field; Cory Chouinard and Richard Barnes of Inuvik and Vic Gillman of Winnipeg for their advice and support; Gary Carder of DFO Winnipeg for determining the ages of the charr; and the Aklavik and Fort McPherson fishermen for their cooperation.

REFERENCES

- Gillman, D.V., and P.D. Sparling. 1985. Biological data on Arctic charr, Salvelinus alpinus (L.), from the Rat River, Northwest Territories, 1983. Can. Data. Rep. Fish. Aquat. Sci. 535: iv + 15 p.
- Gillman, D.V., P.D. Sparling, and B. Gillis. 1985. Arctic charr population studies, Part 1. Big Fish River. Department of Fisheries and Oceans, Northern Oil and Gas Assessment Panel (NOGAP) Project 2-109: 1-15.
- Manual of Fisheries Acts and Regulations. 1986. Section 16: Northwest Territory fishery regulations. Department of Fisheries and Oceans, Ottawa. 55 p.

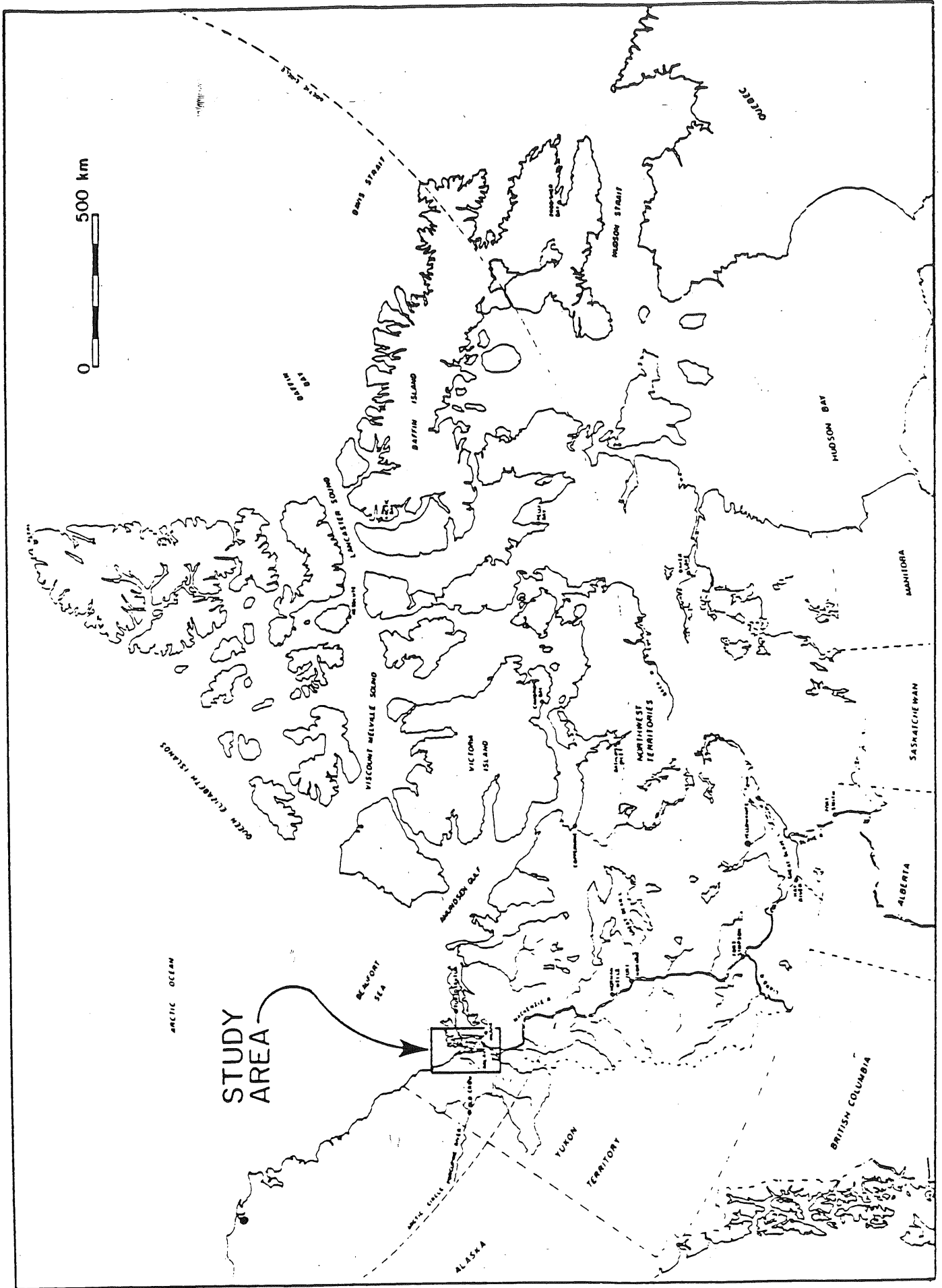


Fig. 1. Map of the Northwest Territories showing the location of the study area.

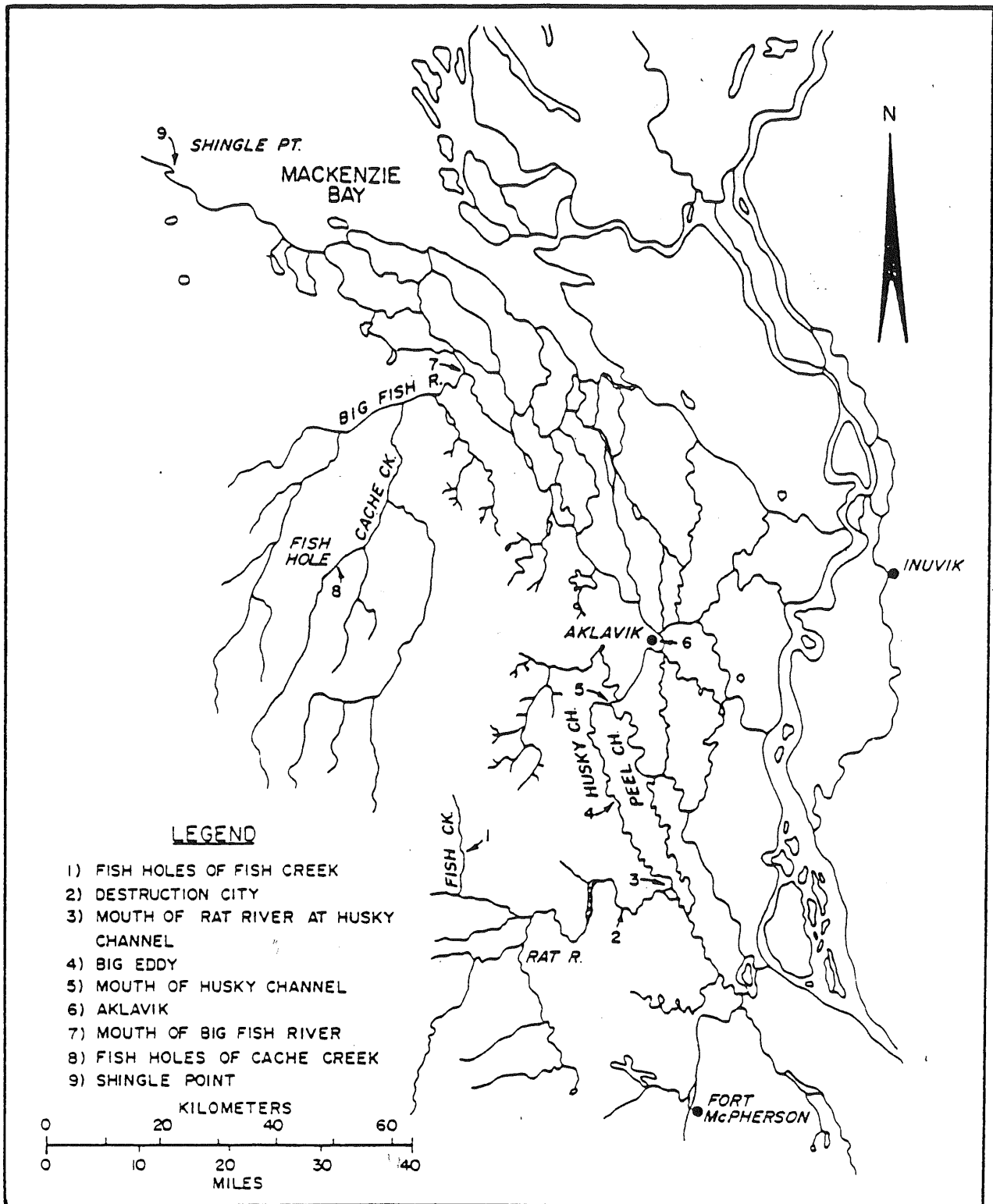


Fig. 2. Map of the Mackenzie River Delta showing domestic and commercial gillnetting sites.

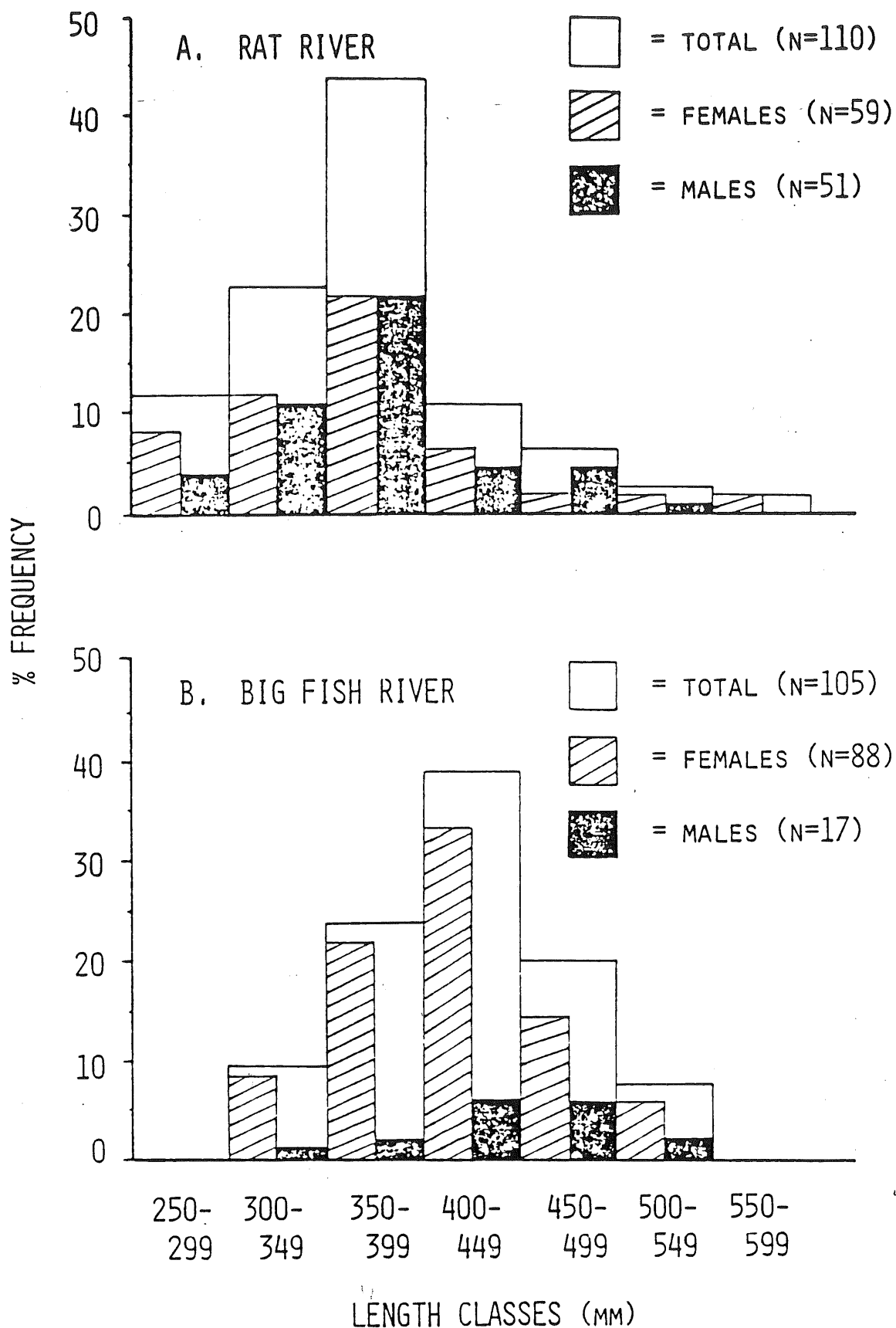


Figure 3. Length frequency distributions for Arctic charr caught at A) the Rat River, and B) the Big Fish River, N.W.T., during the 1986 fall domestic/commercial fisheries.

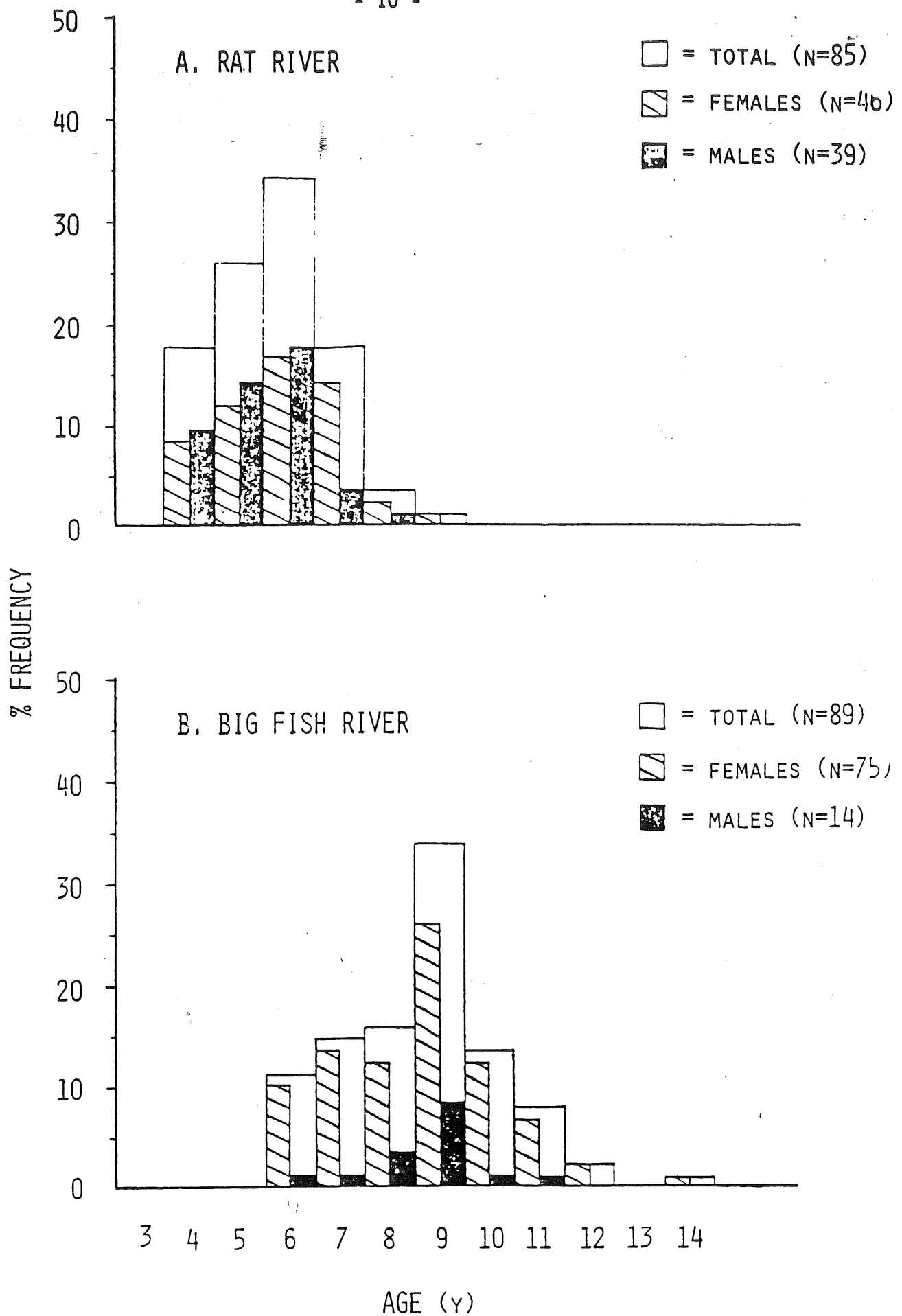


Figure 4. Age frequency distributions for Arctic charr caught at A) the Rat River, and B) the Big Fish River, N.W.T., during the 1986 fall domestic/commercial fisheries.

Table 1. The location, number of fishermen, dates of fishing, and number of Arctic charr caught at each of the fisheries in the western region of the Mackenzie Delta.

Fishing Location (Fig. 2)	Map Coordinates	Number of Fishermen	Dates of, Fishing ¹	Number of Arctic Charr Caught
Shingle Point	68°59'N, 137°20'W	8	10-20/8/86	37
Mouth of Big Fish River	68°40'N, 135°52'W	4	14-27/8/86	197 (176 kg) ²
Aklavik Townsite	68°13'N, 135°00'W	?	5-13/9/86	11*
Big Eddy	67°57'N, 135°18'W	1	30-31/8/86	3
Mouth of Rat River	67°45.5'N, 135°08'W	3	3/9-20/9/86	714 (449 kg)
Destruction City	67°43'N, 135°21'W	1	24/8-20/9/86	336
Cache Creek fish hole	68°18'N, 136°20'W	\$20	4-27/10/86	1660

* = 138 "whitefish" were caught offshore Aklavik during the same period.

¹ = day/month/year from the date the first Arctic charr were caught until the end of fishing.

² = brackets enclose the estimated weight of the catch in kg, calculated by multiplying the total number of fish caught by the mean weight of the fish sampled.

Table 2. Daily catch of Arctic charr per unit of fishing effort (CPUE; 100 m of net set for 24 h) by the domestic/commercial fisheries in the Big Fish River and Rat River areas, N.W.T.

Location and Fishing Date	Fishing Effort (total metre hours of nets set)	Number of Arctic Charr Caught	Arctic Charr caught per unit of fishing effort (2400 net metre hours)	
			# of Charr	Weight of Charr (kg)
<u>Big Fish River</u>				
13/08/86	60	0	0	0
14/08/86	260	0	0	0 ¹
15/08/86	838	9	26	24
16/08/86	1465	25	41	41
17/08/86	2880	65	54	45
18/08/86	1563	22	34	33
19/08/86	1615	18	27	22
26/08/86	600	9	36	-
27/08/86	600	9	36	-
<u>Rat River</u>				
30/08/86	280	0	0	0
31/08/86	680	0	0	0
01/09/86	960	0	0	0
02/09/86	480	0	0	0
03/09/86	1010	4	10	8
04/09/86	3440	50	35	27
05/09/86	2170	37	41	27
06/09/86	2060	26	30	23
07/09/86	-	32	-	-
08/09/86	-	16*	-	-
09/09/86	-	17*	-	-
10/09/86	-	64	-	-
11/09/86	-	46	-	-
12/09/86	-	35	-	-
13/09/86	-	9**	-	-
14/09/86	-	8**	-	-
15/09/86	-	10**	-	-
16/09/86	-	15	-	-
17/09/86	-	7	-	-
18/09/86	-	6**	-	-
19/09/86	-	2**	-	-
20/09/86	-	2**	-	-

¹ = the number of Arctic charr caught per unit of sampling effort multiplied by the mean weight of the charr that were sampled that day.

* = Wilson and Itsi only, ** = Francis only, other daily Arctic charr totals after 07/09/86 were the combined catches of all three fishermen. The length of gillnet set after 07/09/86 was not recorded.

Table 3. Mean fork length, mean round weight, mean age, mean condition factor, maturity and sex ratio by length interval for on-site sampled Arctic charr taken by the domestic/commercial fishery at Big Fish River, N.W.T., in August 1986.

Length Interval (cm)	Number	Fork Length (cm)		Round Weight (g)		Age (y)		Condition Factor		Males		Females		F/M Ratio
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	No.	% Mature	No.	% Mature	
30.0 - 34.9	10 (7)*	333	12	455	65	6.9	1.0	1.23	0.11	1	100	9	22	9.0
35.0 - 39.9	25 (21)	379	16	626	93	7.5	1.0	1.15	0.08	2	100	23	91	11.5
40.0 - 44.9	41 (36)	427	14	900	103	8.6	1.2	1.15	0.07	6	100	35	100	5.8
45.0 - 49.9	21 (18)	475	15	1194	114	9.7	1.0	1.12	0.08	6	100	15	100	2.5
50.0 - 54.9	8 (7)	517	13	1456	167	11.3	1.3	1.05	0.06	2	100	6	100	3.0
Total	105 (89)	-	-	-	-	-	-	-	-	17	100	88	74	5.2
Mean	-	423	52	894	298	8.6	1.6	1.14	0.09	-	-	-	-	-

* = number of fish in each length interval whose ages were determined.

Table 4. Mean fork length, mean round weight, mean condition factor, maturity, and sex ratio by year class for on-site sampled Arctic charr taken by the domestic/commercial fishery at Big Fish River, N.W.T., in August 1986.

Age (y)	Number	Fork Length (cm)		Round Weight (g)		Condition Factor		Males		Females		F/M Ratio
		Mean	SD	Mean	SD	Mean	SD	No.	% Mature	No.	% Mature	
6	10	373	37	600	154	1.14	0.06	1	100	9	78	9.0
7	13	382	28	667	129	1.18	0.08	1	100	12	100	12.0
8	14	406	35	777	226	1.13	0.07	3	100	11	91	3.7
9	30	432	35	948	217	1.16	0.07	7	100	23	100	3.3
10	12	459	33	1092	207	1.12	0.09	1	100	11	100	11.0
11	7	485	36	1239	264	1.08	0.07	1	100	6	100	6.0
12	2	498	14	1263	88	1.02	0.01	0	-	2	100	-
14	1	529	-	1500	-	1.01	-	0	-	1	100	-
Total	89	-	-	-	-	-	-	14	100	75	95	5.4
Mean	-	424	50	897	287	1.14	0.08	-	-	-	-	-

Table 5. Mean fork length, mean round weight, mean age, mean condition factor, maturity and sex ratio by length interval for on-site sampled Arctic charr taken by the domestic/commercial fishery at Rat River, N.W.T., in September 1986.

Length Interval (cm)	Number	Fork Length (cm)		Round Weight (g)		Age (y)		Condition Factor		Males		Females		F/M Ratio
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	No.	% Mature	No.	% Mature	
25.0 - 29.9	13 (10)*	284	15	248	47	4.5	0.7	1.07	0.10	4	0	9	0	2.3
30.0 - 34.9	25 (21)	317	13	354	47	4.6	0.6	1.11	0.06	12	0	13	0	1.1
35.0 - 39.9	48 (37)	375	11	608	55	6.0	0.7	1.15	0.07	24	0	24	0	1.0
40.0 - 44.9	12 (8)	427	15	890	115	6.5	0.5	1.14	0.08	5	20	7	14	1.4
45.0 - 49.9	7 (7)	466	12	1154	204	7.0	0.8	1.14	0.17	5	40	2	0	0.4
50.0 - 54.9	3 (0)	520	13	1683	148	-	-	1.19	0.02	1	0	2	0	2.0
55.0 - 59.9	2 (2)	569	4	2050	50	8.5	0.5	1.12	0.01	-	-	2	0	-
Total	110 (85)	-	-	-	-	-	-	-	-	51	6	59	2	1.2
Mean	-	370	63	629	365	5.6	1.1	1.13	0.09	-	-	-	-	-

* = number of fish in each length interval whose ages were determined.

Table 6. Mean fork length, mean round weight, mean condition factor, maturity, and sex ratio by year class for on-site sampled Arctic char taken by the domestic/commercial fishery at Rat River, N.W.T., in September 1986.

Age (y)	Number	Fork Length (cm)		Round Weight (g)		Condition Factor		Males		Females		F/M Ratio
		Mean	SD	Mean	SD	Mean	SD	No.	% Mature	No.	% Mature	
4	15	304	21	307	64	1.08	0.08	8	0	7	0	0.9
5	22	334	32	428	131	1.11	0.05	12	0	10	0	0.8
6	29	384	35	675	208	1.16	0.07	15	13	14	0	0.9
7	15	408	38	765	196	1.11	0.11	3	33	12	0	4.0
8	3	509	47	1600	389	1.20	0.07	1	0	2	0	2.0
9	1	565	-	2000	-	1.11	-	0	-	1	0	-
Total	85	-	-	-	-	-	-	39	8	46	0	1.2
Mean	-	368	60	610	346	1.13	0.08	-	-	-	-	-

Appendix 1. Biological data from the domestic/commercial Arctic charr harvests in the Big Fish River area, N.W.T., between 15 and 19 August, 1986.

Date ¹	Arctic Charr Number	Fork Length (mm)	Round Weight (g)	Condition Factor	Sex and Maturity ²	Age (y)	Stomach Contents ³	Remarks
150886	1	354	500	1.13	f2		mt	
150886	2	445	1050	1.19	f2	10	mt	
150886	3	430	925	1.16	m7	9	mt	
150886	4	539	1725	1.10	m7		mt	seal scars, Pink Tag # W800487
150886	5	367	525	1.06	f2	9	mt	
150886	6	390	650	1.10	m7	6	mt	
150886	7	395	725	1.18	f2	7	mt	
150886	8	427	750	0.96	f2	10	mt	
150886	9	511	1350	1.01	f2	12	mt	
160886	10	411	825	1.19	f2	11	mt	
160886	11	414	900	1.27	m7	9	mt	
160886	12	425	900	1.17	f2	9	mt	
160886	13	412	825	1.18	f2	9	mt	
160886	14	455	1125	1.19	f2	9	mt	
160886	15	448	1100	1.22	f2		mt	
160886	16	414	800	1.13	f2	9	mt	
160886	17	490	1400	1.19	m7	9	mt	
160886	18	390	700	1.18	f2	7	mt	
160886	19	472	1100	1.05	f2	11	mt	
160886	20	429	950	1.20	f2	8	mt	lamprey scars
160886	21	475	1150	1.07	f2	11	mt	
160886	22	458	1275	1.33	f2		mt	
160886	23	428	900	1.15	f2	9	mt	lamprey scars
160886	24	396	725	1.17	f2	7	mt	
160886	25	477	1250	1.15	f2	10	mt	
160886	26	520	1400	1.00	f2	11	mt	
160886	27	395	700	1.14	f2	9	mt	
170886	28	451	1100	1.20	f2		mt	
170886	29	424	900	1.18	f2	9	mt	
170886	30	490	1250	1.06	f2		mt	
170886	31	499	1350	1.09	m7	10	mt	
170886	32	439	1000	1.18	f2	9	mt	
170886	33	529	1500	1.01	f2	14	mt	
170886	34	399	800	1.26	f2	8	mt	
170886	35	408	775	1.14	f2	9	mt	
170886	36	378	650	1.20	f2	7	mt	
170886	37	381	650	1.18	f2	6	mt	lamprey scars
170886	38	410	800	1.16	m7	8	mt	seal scars
170886	39	404	750	1.14	f2	6	mt	
170886	40	372	600	1.17	f2	8	mt	
170886	41	325	500	1.46	m7		mt	
170886	42	477	1250	1.15	f2	9	mt	<u>Salmincola</u> sp. on gills
170886	43	470	1175	1.13	m7	9	mt	
170886	44	484	1175	1.04	f2	12	2 shrimp	<u>Salmincola</u> sp. on gills
170886	45	431	950	1.19	f2	9	mt	lamprey scars
170886	46	444	850	0.97	f2		mt	net, lamprey+seal scars

Appendix 1. Cont'd.

Date ¹	Arctic Charr Number	Fork Length (mm)	Round Weight (g)	Condition Factor	Sex and Maturity ²	Age (y)	Stomach Contents ³	Remarks
170886	47	443	950	1.09	f2		mt	
170886	48	387	625	1.08	f2	6	mt	
170886	49	451	950	1.04	f2	10	mt	seal scars
170886	50	338	450	1.17	f2	9	mt	
170886	51	432	1000	1.24	f2	10	mt	
170886	52	351	475	1.10	f2		mt	
170886	53	504	1275	1.00	f2	10	mt	
170886	54	483	1300	1.15	m7	8	mt	
170886	55	353	550	1.25	f1	6	mt	
170886	56	327	450	1.29	f2		mt	lamprey scars
170886	57	419	850	1.16	f2	8	mt	
170886	58	433	1000	1.23	f2	10	mt	
170886	59	444	1000	1.14	f2	9	mt	lamprey scars
170886	60	354	500	1.13	f2	8	mt	
170886	61	337	450	1.18	f2	7	mt	
170886	62	363	500	1.05	f1	8	mt	
170886	63	438	900	1.07	m7	9	mt	
170886	64	433	975	1.20	f2	10	mt	
170886	65	418	800	1.10	f2	6	mt	
170886	66	413	825	1.17	f2	7	mt	
170886	67	406	850	1.27	f2	9	mt	
170886	68	388	675	1.16	f2	9	mt	
170886	69	323	375	1.11	f1	6	mt	no egg development
170886	70	340	450	1.14	f2	7	mt	
170886	71	370	500	0.99	f2	8	mt	
170886	72	432	900	1.12	f2	7	mt	
170886	73	416	750	1.04	m7	8	mt	
180886	74	444	1075	1.23	f2	9	mt	
180886	75	346	500	1.21	f2	6	mt	
180886	76	411	800	1.15	f2	10	mt	<u>Salmincola</u> sp. on gills
180886	77	447	1000	1.12	f2	8	mt	
180886	78	406	750	1.12	f2	7	mt	
180886	79	454	1025	1.10	m7	9	mt	
180886	80	494	1375	1.14	f2	10	mt	
180886	81	398	750	1.19	f2		mt	
180886	82	397	675	1.08	f2	9	mt	
180886	83	528	1725	1.17	m7	11	mt	<u>Salmincola</u> sp. on gills
180886	84	494	1250	1.04	m7	9	mt	
180886	85	470	1050	1.01	f2	9	mt	urogenital scar
180886	86	486	1125	0.98	f2	11	mt	
180886	87	428	900	1.15	f2	9	mt	
180886	88	505	1325	1.03	f2	10	mt	Tag # 00471
180886	89	478	1250	1.14	f2	9	mt	
180886	90	458	1150	1.20	f2	9	mt	
180886	91	380	700	1.28	f2		mt	
180886	92	398	750	1.19	m7	7	mt	
180886	93	347	575	1.38	f2	7	mt	

Appendix 1. Cont'd.

Date ¹	Arctic Charr Number	Fork Length (mm)	Round Weight (g)	Condition Factor	Sex and Maturity ²	Age (y)	Stomach ³ Contents	Remarks
190886	94	340	475	1.21	f2		mt	
190886	95	443	1150	1.32	f2	9	mt	fat fish
190886	96	445	1000	1.13	m7		mt	
190886	97	357	600	1.32	f2	7	mt	
190886	98	500	1350	1.08	f2	11	mt	lamprey scars
190886	99	419	775	1.05	f2	6	mt	
190886	100	413	800	1.14	f2	8	mt	
190886	101	305	325	1.15	f1	6	mt	lamprey scars
190886	102	442	925	1.07	f2		mt	lamprey scars
190886	103	439	975	1.15	f2	8	mt	
190886	104	375	550	1.04	f2	8	mt	
190886	105	379	575	1.06	f2	7	mt	

¹ = day/month/year eg. 190886 is 19 August 1986.

² f = female, m = male, for explanation of numbered maturity codes see Appendix 3.

³ mt = empty stomach.

Appendix 2. Biological data from the domestic/commercial Arctic charr harvests in the Rat River area, N.W.T., between 3 and 6 September, 1986.

Date ¹	Arctic Charr Number	Fork Length (mm)	Round Weight (g)	Condition Factor	Sex and Maturity ²	Age (y)	Stomach Contents ³	Remarks
030986	1	393	675	1.11	f1	5	mt	
030986	2	371	600	1.17	f1	7	mt	
030986	3	382	675	1.21	m6	6	mt	
030986	4	454	1100	1.18	f1	7	mt	lamprey scars
040986	5	383	650	1.16	f1	6	mt	lamprey scars
040986	6	394	775	1.27	m6		mt	
040986	7	368	600	1.20	m6	6	mt	
040986	8	412	750	1.07	f1	6	mt	
040986	9	391	700	1.17	f1	6	mt	
040986	10	533	1800	1.19	m6		mt	
040986	11	402	725	1.12	m6		mt	
040986	12	433	1000	1.23	f1	7	mt	
040986	13	441	1025	1.20	f1	7	mt	
040986	14	330	400	1.11	m6	5	mt	lamprey scars
040986	15	326	375	1.08	f1	5	mt	lamprey scars
040986	16	339	450	1.16	f1	6	mt	
040986	17	309	375	1.27	m6		mt	lamprey scars
040986	18	294	300	1.18	f1	5	mt	tiny eggs
040986	19	301	300	1.10	m6	5	mt	
040986	20	315	325	1.04	m6	4	mt	
040986	21	315	325	1.04	f1	4	mt	
040986	22	303	300	1.08	f1	5	mt	tiny eggs
040986	23	388	625	1.07	f1	7	mt	
040986	24	387	625	1.08	f1	6	mt	
040986	25	353	500	1.14	f1	6	mt	
040986	26	330	400	1.11	f1	4	mt	lamprey scars, tiny eggs
040986	27	291	325	1.32	f1	4	mt	tiny eggs
040986	28	301	300	1.10	m6	4	mt	
040986	29	309	300	1.02	m6	5	mt	
040986	30	302	275	1.00	m6	4	mt	
040986	31	312	350	1.15	f1	4	mt	tiny eggs
040986	32	305	300	1.06	m6	5	mt	
040986	33	329	400	1.12	f1	5	mt	
040986	34	472	875	0.83	m7	7	mt	tail scars, red color, kype
040986	35	376	600	1.13	f1	5	mt	
040986	36	348	425	1.01	f1	4	mt	
040986	37	290	275	1.13	f1	6	mt	lamprey scars
040986	38	292	250	1.00	m6	4	mt	
040986	39	310	325	1.09	f1	5	mt	
040986	40	293	250	0.99	m6	4	mt	
040986	41	286	250	1.07	m6	5	mt	
040986	42	351	500	1.16	f1	7	mt	lamprey scars
040986	43	374	525	1.00	m6	6	mt	
040986	44	457	1200	1.26	m7	6	mt	
040986	45	437	950	1.14	m6	6	mt	
040986	46	363	525	1.10	m6	6	mt	

Appendix 2. Cont'd.

Date ¹	Arctic Charr Number	Fork Length (mm)	Round Weight (g)	Condition Factor	Sex and Maturity ²	Age (y)	Stomach ³ Contents	Remarks
040986	47	376	575	1.08	m6	5	mt	
040986	48	414	750	1.06	m6		mt	
040986	49	368	550	1.10	f1	6	mt	
040986	50	377	575	1.07	m6	5	mt	
040986	51	371	600	1.17	f1	7	mt	
040986	52	385	600	1.05	f1	7	mt	
040986	53	384	550	0.97	m6		mt	
040986	54	332	400	1.09	f1	5	mt	
050986	55	384	625	1.10	m6		mt	
050986	56	445	1100	1.25	m7	6	mt	
050986	57	372	650	1.26	m6		mt	
050986	58	302	300	1.09	f1		mt	
050986	59	262	175	0.97	f1		mt	lamprey scars
050986	60	375	625	1.19	f1	6	mt	
050986	61	384	600	1.06	f1	7	mt	
050986	62	257	175	1.03	f1	4	mt	
050986	63	352	550	1.26	m6	6	mt	lamprey scars
050986	64	332	425	1.16	m6	5	mt	lamprey scars
050986	65	386	625	1.09	m7		mt	
050986	66	384	600	1.06	f1	7	mt	lamprey scars
050986	67	365	600	1.23	m10		mt	resting
050986	68	385	650	1.14	f1	6	mt	
050986	69	427	800	1.03	f1	6	mt	
050986	70	428	875	1.12	f1		mt	
050986	71	464	950	0.95	m6	7	mt	
050986	72	374	625	1.19	f1	6	mt	
050986	73	502	1475	1.17	f1		mt	Tag # N207744
050986	74	461	1150	1.17	f1	8	mt	
050986	75	565	2000	1.11	f1	9	mt	
050986	76	312	350	1.15	m6	4	mt	
050986	77	256	175	1.04	f1		mt	lamprey scars
050986	78	319	350	1.08	m6	4	mt	
050986	79	298	300	1.13	f1	5	mt	lamprey scars
050986	80	299	250	0.94	f1		mt	lamprey scars
050986	81	296	275	1.06	m6	4	mt	
050986	82	572	2100	1.12	f5	8	mt	lamprey scars
050986	83	366	600	1.22	f1		mt	
050986	84	322	375	1.12	f1		mt	
050986	85	311	375	1.25	f1		mt	
050986	86	363	525	1.10	m6	5	mt	
050986	87	378	625	1.16	m6	6	mt	lamprey scars
050986	88	361	525	1.12	m6	5	mt	
050986	89	362	575	1.21	f1	5	mt	
050986	90	387	700	1.21	m6	6	mt	
050986	91	376	575	1.08	f1		mt	
060986	92	388	675	1.16	m6	6	mt	

Appendix 2. Cont'd.

Date ¹	Arctic Charr Number	Fork Length (mm)	Round Weight (g)	Condition Factor	Sex and Maturity ²	Age (y)	Stomach Contents ³	Remarks
060986	93	373	600	1.16	f1	7	mt	
060986	94	433	900	1.11	f2		mt	
060986	95	389	675	1.15	m6		mt	
060986	96	526	1775	1.22	f5		mt	
060986	97	458	1250	1.30	m10	6	mt	
060986	98	279	225	1.04	f1	4	mt	lamprey scars
060986	99	377	625	1.17	f1		mt	
060986	100	374	600	1.15	f1	6	mt	
060986	101	313	350	1.14	m6	5	mt	
060986	102	376	650	1.22	m6	6	mt	
060986	103	378	650	1.20	m6		mt	lamprey scars
060986	104	378	650	1.20	m6	5	mt	
060986	105	369	600	1.19	m6	6	mt	
060986	106	368	600	1.20	m6	6	mt	
060986	107	443	950	1.09	m6	7	mt	
060986	108	493	1550	1.29	m10	8	mt	lamprey scars
060986	109	364	550	1.14	f1	6	mt	
060986	110	403	850	1.30	f1	7	mt	

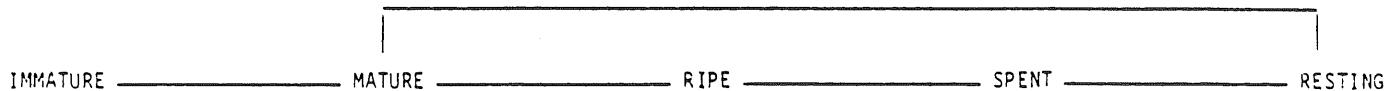
¹ = day/month/year eg. 190886 is 19 August 1986.

² f = female, m = male, for explanation of numbered maturity codes see Appendix 3.

³ mt = empty stomach.

Appendix 3. A flow chart and code for the determination of the maturity stages of Arctic charr.

MATURITY FLOW CHART



FISH MATURITY CODE

<u>Maturity State</u>		<u>Female</u>		<u>Male</u>
Immature (virgin)	1	<ul style="list-style-type: none"> - ovaries granular in texture - hard and triangular in shape - up to full length of body cavity - membrane full - eggs distinguishable 	6	<ul style="list-style-type: none"> - testes long and thin - tubular and scalloped shape - up to full body length - putty-like firmness
Mature	2	<ul style="list-style-type: none"> - current year spawner - ovary fills body cavity - eggs near full size but not loose - not expelled by pressure 	7	<ul style="list-style-type: none"> - current year spawner - testes large and lobate - white to purplish color - centers may be fluid - milt not expelled by pressure
Ripe	3	<ul style="list-style-type: none"> - ovaries greatly extended and fill body cavity - eggs full size and transparent - expelled by slight pressure 	8	<ul style="list-style-type: none"> - testes full size - white and lobate - milt expelled by slight pressure
Spent	4	<ul style="list-style-type: none"> - spawning complete - ovaries ruptured and flaccid - developing oocytes visible - some retained eggs in body cavity 	9	<ul style="list-style-type: none"> - spawning complete - testes flaccid with some milt - blood vessels obvious - testes violet-pink in color
Resting	5	<ul style="list-style-type: none"> - ovary 40-50% of body cavity - membrane thin, loose, and semi-transparent - healed from spawning - developing oocytes apparent with few atretic eggs - some eggs may be retained in body cavity 	10	<ul style="list-style-type: none"> - testes tubular, less lobate - healed from spawning - no fluid in center - usually full length - mottled and purplish in color
<u>Unknown</u> (virgin)	0	<ul style="list-style-type: none"> - cannot be sexed - gonads long or short and thin - transparent or translucent 		
<u>Unknown</u> (non-virgin)	11	<ul style="list-style-type: none"> - resting fish - has spawned but gonads regenerated - sexing not possible 		

Appendix 4. Fishing effort data from the domestic/commercial Arctic charr fishery in the Big Fish River area, N.W.T., between 13 and 19 August 1986.

Fisherman	Gillnet Set		Gillnet Pull		Set	Net	Mesh	Species of Fishes Caught ²									
	Date ¹	Time	Date	Time	Length (h)	Length (m)	Size (mm)	AC	LWF	BWF	RWF	ACO	INC	NP	BUR	I	K
Archie	130886	2200	140886	100	3.0	20	114		1	1							
Archie	140886	100	140886	1400	13.0	20	114		7	8							
Archie	140886	1400	150886	1730	27.5	20	114	3	4	4			1				
Archie	150886	1930	150886	2200	2.5	25	64	4			1						
Storr	150886	2030	150886	2330	3.0	30	102	1									
Archie	150886	2200	160886	100	3.0	25	64	1	2								
Storr	150886	2330	160886	130	2.0	30	102										
Storr	160886	130	160886	1030	9.0	30	102	5	1	2							
Archie	160886	100	160886	1130	10.5	25	64	2	2	1		1					
Storr	160886	1030	160886	1200	1.5	30	102	2	1	1							
Archie	160886	1200	160886	1300	1.0	20	114		1	3							
Archie	160886	1200	160886	1300	1.0	25	64										
Storr	160886	1200	160886	1600	4.0	30	102	7		2							
Storr	160886	1600	160886	2030	4.5	30	102	3		1							
Archie	160886	1300	160886	2030	7.5	20	114		1	4			2			1	
Archie	160886	1300	160886	2030	7.5	25	64	1		1							
Archie	160886	1730	160886	2030	3.0	25	76	3	1		1						
Archie	160886	2030	160886	2300	2.5	25	64	1	1	1							
Archie	160886	2030	160886	2300	2.5	25	76	1		1							
Archie	160886	2030	160886	2300	2.5	20	114		1	1			2	2			
Storr	160886	2030	170886	1100	14.5	30	102	6	1	6			1				
Archie	160886	2300	170886	1130	12.5	20	114	6		2							
Archie	160886	2300	170886	1130	12.5	25	64	4	3					1	1		
Archie	160886	2300	170886	1130	12.5	25	76	12			1	1	1				
Archie	170886	1130	170886	1830	7.0	20	114	2	*								
Archie	170886	1130	170886	1830	7.0	25	76	7	*								
Archie	170886	1130	170886	1830	7.0	25	64	3	*								
Archie	170886	1830	170886	2300	4.5	25	64	3	*								
Archie	170886	1830	170886	2300	4.5	25	76	12	*								
Archie	170886	1830	170886	2300	4.5	20	114	3	*								
Storr	170886	1100	180886	1230	25.5	30	102	7	2	4			2				
Archie	180886	2300	180886	1330	14.5	20	114	2	3	3	1		2				
Archie	180886	1330	180886	1730	4.0	20	114	1	1				1				
Storr	180886	1230	180886	1900	6.5	30	102	4	1				1				
Archie	180886	1730	180886	2330	6.0	25	64										
Archie	180886	1730	180886	2330	6.0	25	76	5									
Archie	180886	1730	180886	2330	6.0	20	114	1									
Elanik	180886	2300	180886	2400	1.5	25	102	1		1							
Storr	180886	1900	190886	1300	18.0	30	102	8	1	2			3				
Archie	180886	2300	190886	1430	15.0	25	76	10		2			1				
Archie	180886	2330	190886	1330	14.0	20	114	1	4	1			1				
Elanik	180886	2400	190886	1330	13.5	25	102	1		1							
Archie	190886	1330	190886	1700	3.5	25	76							1			
Archie	190886	1330	190886	1700	3.5	20	114	3					2				
Storr	190886	1300	190886	1900	6.0	30	102	2		1							

Appendix 4. Cont'd.

Fisherman	Gillnet Set		Gillnet Pull		Set Length (h)	Net Length (m)	Mesh Size (mm)	Species of Fishes Caught ²								
	Date ¹	Time	Date	Time				AC	LWF	BWF	RWF	ACO	INC	NP	BUR	WSK
Storr	190886	1900	190886	2315	4.3	30	102			1						
Archie	190886	1700	190886	2030	3.5	25	76	1								
Archie	190886	1700	190886	2030	3.5	20	114		2							
Elarik	190886	2030				25	102	10	*							
Archie	190886	2030				20	114	21	*							
Storr ³	190886	2030				25	76	11	*							
Archie	250886		260886		24	25	64	9	*							
Archie	260886		270886		24	25	64	9	*							

* = Species caught other than Arctic charr were not recorded.

¹ = Day/Month/Year, eg. 190886 is 19 August 1986.

² AC = Arctic charr, LWF = lake whitefish, BWF = broad whitefish, RWF = round whitefish, ACO = Arctic cisco, INC = inconnu, NP = northern pike, BUR = Burbot, WSK = white sucker.

³ = Catches on 26 and 27/8/86 represent the number of charr caught in approximately 24 h.

Appendix 5. Fishing effort data from the domestic/commercial Arctic charr fishery in the Rat River area, N.W.T., between 30 August and 7 September, 1986.

Fisherman	Gillnet Set		Gillnet Pull		Set Length (h)	Net Length (m)	Mesh Size (mm)	Species of Fishes Caught ²								
	Date ¹	Time	Date	Time				AC	LWF	BWF	RWF	ACO	INC	NP	BUR	WSH
Francis	300886	1300	300886	1930	6.5	20	114			2						
Francis	300886	1230	300886	2000	7.5	20	114			5						
Francis	300886	1930	310886	1230	17.0	20	114			2			1			
Francis	300886	2000	310886	1300	17.0	20	114			4				1		
Francis	310886	1230	010986	1230	24.0	20	114		1	3						
Francis	310886	1300	010986	1300	24.0	20	114			4				1		
Francis	010986	1230	020986	1230	24.0	20	114			4					1	
Francis	020986	1230	030986	1330	25.0	20	114			5						
Francis	020986	1330	030986	2200	8.5	20	114			4						
Francis	020986	1300	030986	2130	8.5	20	114			4						
Francis	020986	1300	030986	2130	8.5	20	89	4	5	5			2			
Francis	030986	2200	040986	1100	13.0	20	114	1	1	3			1			
Francis	030986	2130	040986	1030	13.0	20	114			3						
Francis	030986	2130	040986	1030	13.0	20	89	6	7	6			2			
Wilson	030986	2200	040986	1100	13.0	20	64	9	*							
Wilson	030986	1800	040986	1100	17.0	20	89	3	*							
Wilson	030986	1800	040986	1100	17.0	20	102	2	*							
Wilson	030986	1800	040986	1130	17.5	20	114		4	3			2	2	3	
Wilson	040986	1130	040986	1500	5.5	20	64	8	*							
Wilson	040986	1130	040986	1500	5.5	20	89	3	*							
Wilson	040986	1130	040986	2100	9.5	20	102	1	*							
Wilson	040986	1500	040986	2100	6.0	20	89	2	*							
Wilson	040986	1500	040986	2100	6.0	20	64	6	*							
Francis	040986	1100	040986	2200	11.0	20	114		1				2			
Francis	040986	1030	040986	2200	11.5	20	127		1	1			1		1	
Francis	040986	1030	040986	2200	11.5	20	89	7	3	6			2	3		1
Wilson	040986	2100	040986	2300	2.0	20	64	2								
Wilson	040986	2200	050986	1000	12.0	20	89	5	*							
Francis	040986	2200	050986	1200	14.0	20	114			2					1	
Francis	040986	2200	050986	1200	14.0	20	89	14	5	10				1		
Francis	040986	2200	050986	1200	14.0	20	127			3						
Wilson	050986	1000	050986	1530	5.5	20	102	2	*							
Wilson	050986	1000	050986	1530	5.5	20	127	1	*							
Wilson	050986	1530	050986	2130	6.0	20	114	3	*							
Wilson	050986	1530	050986	2130	6.0	20	127	2	*							
Francis	050986	1200	050986	2230	10.5	20	114			1				1		
Francis	050986	1200	050986	2230	10.5	20	127			5						
Francis	050986	1200	050986	2230	10.5	20	89	10	5	8		1				
Wilson	050986	2130	060986	1430	17.0	20		3	*							
Wilson	050986	2130	060986	1430	17.0	20		3	*							
Francis	050986	2230	060986	1100	12.5	20	114			2						
Francis	050986	2230	060986	1100	12.5	20	127			4						
Francis	050986	2230	060986	1100	12.5	20	89	10	1	9			3			
Francis	060986	1100	060986	2130	10.5	20	114			5						

Appendix 5. Cont'd.

Fisherman	Gillnet Set		Gillnet Pull		Set Length	Net Length	Mesh Size	Species of Fishes Caught ²								
	Date ¹	Time	Date	Time	(h)	(m)	(mm)	AC	LWF	BWF	RWF	ACO	INC	NP	BUR	WSK
Francis	060986	1100	060986	2130	10.5	20	127			3			1			
Francis ₄	060986	1100	060986	2130	10.5	20	89	10	6	4			2	2		
Wilson	060986		070986		24			13								
Francis	060986	2130	070986	1300	15.5		89	19	*							
Wilson	070986		080986		24			16	*							
Francis	070986		090986		48		89	38	(12) ³							
Wilson	080986		090986		24			17	*							
Francis	090986		100986		24		89	44	(9)							
Wilson	090986		100986		24			20	*							
Francis	100986		110986		24		89	25	(7)							
Wilson	100986		110986		24			21	*							
Francis	110986		120986		24		89	11	(10)							
Wilson	110986		120986		24			24	*							
Francis	120986		130986		24		89	9	(9)							
Francis	130986		140986		24		89	8	(5)							
Francis	140986		150986		24		89	10	(4)							
Francis	150986		160986		24		89	6	(6)							
Wilson	150986		160986		24			9	*							
Francis	160986		170986		24		89	4	(10)							
Wilson	160986		170986		24			3	*							
Francis	170986		180986		24		89	6	(12)							
Francis	180986		190986		24		89	2	(5)							
Francis	190986		200986		24		89	3	(8)							

* = Species caught other than Arctic charr were not recorded.

¹ = Day/Month/Year, eg. 060986 is 6 September 1986.

² AC = Arctic charr, LWF = lake whitefish, BWF = broad whitefish, RWF = round whitefish, ACO = Arctic cisco, INC = inconnu, NP = northern pike, BUR = Burbot, WSK = white sucker.

³ = figures in brackets are number of fish of all species other than Arctic charr that were caught. These totals represent approximately 24 or 48 hours of fishing effort for one 20 m gillnet with 89 mm meshes.

⁴ = Wilson's catch also includes that of S. Itsi. The length of net set is unknown from 05/09/86 onward.

Appendix 6. Charr fishing information request form.

FISHERMAN:

LOCATION: _____

[illegible]

For each day that you set your net or nets to catch Arctic charr this summer please write down the date, how many hours the net or nets were in the water catching fish, how long your net or nets were and what the mesh size or sizes were, how many charr you caught in your nets when you picked them, and what other kinds of fish and how many of each kind were in your nets when you picked them.

To obtain \$10 reward return completed form to: P. Sparling - when you stop fishing for charr this summer.
804 Fleet Avenue
Winnipeg, Manitoba
R3M 1L4
(204) 452-6518