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Data from Fisheries for Arctic Charr, Kuujua River and Holman Areas, Victoria Island, Northwest Territories, 1966-87

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DATA FROM FISHERIES FOR ARCTIC CHARR,
KUUJJUA RIVER AND HOLMAN AREAS, VICTORIA
ISLAND, NORTHWEST TERRITORIES, 1966-87

by

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ABSTRACT

Lewis, P.N.B., A.H. Kristofferson, and D.H. Dowler. 1989. Data from fisheries for Arctic charr, Kuujjua River and Holman Areas, Victoria Island, Northwest Territories, 1966-87. Can. Data Rep. Fish. Aquat. Sci. 769: iv + 17 p.

The domestic fishery for Arctic charr of the Kuujjua River was monitored from 1966 to 1978 and the sport fishery from 1966 to 1975. Data were collected on harvest levels and some measures of effort were obtained. Although the sport fishery no longer takes place, the domestic fishery continues. Biological data from samples of the domestic catch in 1978 and 1987 are presented. Results of a tagging study in 1969 indicate that charr overwintering in the Kuujjua River system are taken in the sea by the summer domestic fishery near the community of Holman. A commercial harvest of 600 kg has been taken each year since 1979. Biological data from samples of charr taken by a test fishery in the Safety Channel area in 1982 and 1983 are presented. Results of tagging in Safety Channel in 1983 indicate that Kuujjua River charr were taken by this fishery.

Key words: fish catch statistics; fisheries; monitoring; sampling (biological); Salvelinus alpinus (L.); tagging.

RÉSUMÉ

Lewis, P.N.B., A.H. Kristofferson, and D.H. Dowler. 1989. Data from fisheries for Arctic charr, Kuujjua River and Holman Areas, Victoria Island, Northwest Territories, 1966-87. Can. Data Rep. Fish. Aquat. Sci. 769: iv + 17 p.

La pêche à l'omble arctique de la rivière Kuujjua a fait l'objet d'une surveillance, de 1966 à 1978 dans le cas de la pêche domestique et de 1966 à 1975 dans celui de la pêche sportive. On a recueilli des données sur la récolte ainsi que certaines données sur l'effort de pêche. Bien que la pêche sportive ait cessé, la pêche domestique se poursuit. On présente les données biologiques tirées des échantillons de la récolte domestique de 1978 et de 1987. Les résultats d'une étude de marquage réalisée en 1969 indiquent que l'omble qui passe l'hiver dans le bassin de la rivière Kuujjua est capturée en mer par la pêche domestique d'été située près de la communauté de Holman. Une récolte commerciale de 600 kg a été obtenue chaque année depuis 1979. On présente également des données biologiques provenant d'échantillons d'ombles capturées dans une pêcherie expérimentale située dans la région du chenal Safety en 1982 et 1983. Les résultats d'une étude de marquage réalisée dans le chenal Safety en 1983 indiquent que l'on capture de l'omble arctique de la rivière Kuujjua par cette pêcherie.

Mots-clés: statistiques sur les prises; pêcheries; surveillance; échantillonnage biologique; Salvelinus alpinus (L.); marquage.

INTRODUCTION

Anadromous (searun) Arctic charr, *Salvelinus alpinus* (L.), spawn and overwinter in the Kuujjua River. This stock has a history of exploitation. The people of Holman, Northwest Territories, have long utilized it for domestic (food) fishing, a sport fishery took place at the mouth of the river from 1966 to 1975 and a small commercial fishery began in 1979. Today, the domestic fishery continues as a very important food source for Holman residents and the commercial quota (600 kg annual) is harvested each year and sold within the community.

The Department of Fisheries and Oceans (DFO) monitored the sport fishery at the Kuujjua River annually from 1966 to 1975 and the domestic fishery from 1966 to 1978. Additionally, biological data on the stock were collected from the domestic fishery in 1978 and again in 1987. Tagging studies were carried out on the Kuujjua River in 1969 and at Safety Channel in 1983.

For some time, residents of this community have expressed an interest in further development of commercial fishing in the Holman area and towards that end have requested that DFO increase the small commercial quota on the Kuujjua. Given the importance of the domestic fishery and the possibility that an increase in the commercial harvest could result in overexploitation of the Kuujjua River Arctic charr stock, DFO advised the people of Holman to conduct exploratory fishing in other, preferably unexploited, river systems to increase commercial production. As a result, test fisheries were conducted down the coast from Holman in the Safety Channel area of Prince Albert Sound in 1982 and 1983 but results suggest that Arctic charr taken in this area in summer are likely to be feeding Kuujjua River fish. Subsequent test fisheries have concentrated on more distant locations such as the Kuuk and Kagluk rivers (Baker 1986; Stewart and Sparling 1987; McGowan 1989) and Naloagyok and Kagloryuak rivers (McGowan 1989) farther up into Prince Albert Sound.

This report reviews and summarizes the information obtained to date on the Kuujjua River Arctic charr stock. The biological data collected during the 1982 and 1983 test fisheries in Safety Channel are included.

MATERIALS AND METHODS

STUDY AREA

The Kuujjua (Kuujjuar) River (71°16'N, 116°49'W) flows into Minto Inlet approximately 80 km northeast of the community of Holman (Fig. 1). The river system is fairly large, with headwaters approximately 240 km to the east. The river bed is mostly gravel and stones with some sections of boulders. The river is navigable for about the first 3 km from the sea after which it becomes shallow with numerous rapids. None of these, however, appears large enough to impede movement of fish. The

first lake upstream, Tatic or Fish Lake, is reported to be the major spawning area for charr. The extent to which charr migrate further upstream in the system is not known. There is a set of falls between the second and third upstream lakes but it may not obstruct fish movement.

In addition to charr, lake trout (*Salvelinus namaycush*) are found in the Kuujjua River, and least cisco (*Coregonus sardinella*), whitefish (*Coregonus clupeaformis*), ninespine stickleback (*Pungitius pungitius*) and fourhorn sculpin (*Myoxocephalus quadricornis*) have also been reported (Stewart and Bernier 1982).

THE FISHERIES

Domestic fishery

The Kuujjua River domestic fishery takes place in the fall just after freeze-up, usually in early to mid-October. Although other areas are fished, the main fishing area is Tatic Lake (Fig. 2). Fishing is done with gillnets set under the ice with the aid of a long pole or an ice jigger. The nets used are short, about 25 m long and 1-2 m deep. Generally 114 mm mesh size is used although mesh as small as 76 mm has been recorded. Recently, 139 mm mesh has become more common. The nets rest on the bottom and are checked daily, weather permitting. The catch is frozen on site and some is transported back to the community while the remainder is stored in shelters built of ice blocks and used later in the winter. In addition to the fall fishery, domestic fishing is also done at the mouth of the Kuujjua and in the sea near the community of Holman during the summer months.

The Kuujjua domestic fishery was monitored from 1966 to 1978 by residents of Holman on contract to DFO. From 1966 to 1970 the number of fishermen involved each year was recorded and the number of charr taken was estimated. After 1970, the total catch of charr was tallied each year. The survey also included data on the number and (sometimes) length of nets used. Starting in 1972 the number of days spent fishing was recorded and the total catch of lake trout was tallied as well. In 1972, fishermen were instructed to report the charr catch as either "red bellies" (spawners) or "silvers" (non-spawners). In an effort to obtain information on mean weight of charr in the catch, monitors were instructed in 1974 to weigh a random sample of at least 100 charr each year. However, it is not clear whether this was done. Reliable data on mean weight were not obtained until 1975, when the total weight of the harvest, to the nearest 0.45 kg (pound), round weight, was reported.

Biological sampling of the Tatic Lake domestic catch was done by DFO personnel in October 1978. A random sample of 207 charr from the catch was examined and fork length (+1 mm) and round weight (+50g) were taken. Sex and maturity were determined from the condition of the gonads. Sagittal otoliths were taken for age determination. Age was determined as de-

scribed by Kristofferson and Carder (1980) and followed Grainger (1953). A second random sample of 304 charr was sampled for fork length and round weight only.

An additional sample of 110 Arctic charr, taken in July and August, 1978, from domestic nets set in the sea near the community of Holman, has been made available. This sample was taken by a local resident on contract to DFO scientists from Ste. Anne de Bellevue, Quebec as part of a study on seals in the Holman area. Data include fork length (± 1 cm), round weight (± 10 g), sex, and age. Ages were determined as described earlier in this report.

The Tatik Lake domestic fishery was again sampled for biological data in October, 1987. This was done by members of the Holman Hunters and Trappers Committee on contract to the Fisheries Joint Management Committee (FJMC), a joint Inuvialuit - DFO committee to assist Canada and the Inuvialuit in administering the rights and obligations relating to fisheries under the Inuvialuit Final Agreement. Sampling took place in October on the fishery at Tatik Lake. A total of 198 charr were sampled for fork length, round weight, and sex; ages were determined by DFO from sagittal otoliths.

In addition to monitoring, a tagging program was carried out in 1969 by DFO personnel. A total of 147 charr were captured at the mouth of the Kuujjua River (Fig. 2) in late June during their seaward feeding migration, tagged with Petersen disc tags and released.

Sport fishery

Great Bear Lodge, located on Sawmill Bay, Great Bear Lake, established an outpost camp at the mouth of the Kuujjua River (Fig. 2) in 1966 for the purpose of offering guests an opportunity to angle for Arctic charr. Anglers were flown in for brief periods between mid-July and late August. Local residents of Holman, on contract to DFO, recorded the number of anglers and their catch each year from 1966 to 1975 with the exceptions of 1968 and 1969. This operation was phased out after 1975 because the lodge was looking for a closer site from which to catch charr.

Commercial and test fisheries

DFO established an annual commercial quota of 600 kg on the Kuujjua River in 1979 to allow residents of Holman to sell charr to tourists visiting the community. The commercial catch is taken coincident with the summer and fall domestic fishery and the minimum mesh size required is 139 mm as specified in Schedule V of the Northwest Territories Fishery Regulations. In recognition of the extent and importance of the domestic fishery to Holman residents, the commercial quota remains small so as not to jeopardize the Kuujjua River charr stock. Efforts to expand the commercial fishery have thus been directed toward areas other than the Kuujjua River system.

Test fisheries are conducted to determine the potential for developing commercial fisheries (Kristofferson and McGowan 1981). A provisional quota is assigned to the area in question, records are kept of the effort required to catch the provisional quota, and a biological sample of the catch is taken to determine stock status at the onset of fishing. DFO issued a test fishery permit to the Inuvialuit Development Corporation to take 1 350 kg (round weight) of Arctic charr from the Safety Channel area (Fig. 2) in August, 1982. Fishing took place in salt water using 139 mm mesh gillnets. A total of 131 charr were sampled for biological data by staff from the Department of Renewable Resources, Government of the Northwest Territories, Coppermine, NWT. Length, weight, and sex were recorded and ages were determined from sagittal otoliths by DFO personnel.

The test fishery was repeated in the Safety Channel area in August-September, 1983. Biological data, as described earlier, were recorded by DFO personnel from 137 charr sampled on site. Additionally, 31 Arctic charr were captured by gillnets (114 and 139 mm mesh) during the fishery, tagged with Floy anchor tags, and released.

RESULTS

DOMESTIC FISHERY

Records of the domestic harvest are presented in Table 1. During the survey period the number of fishermen ranged from 8 to 30. Overall it has remained relatively constant (mean = 23) with the exception of the first two years. Effort, expressed in number of person-days (no. of fishermen x no. of days), ranged from 113 to 316 (mean = 221). Effort, expressed as net-days (no. nets x no. of days of fishing), ranged from 324 to 1 339 (mean = 796). The catch of Arctic charr, in numbers, has varied from 1 704 to approximately 4 000. Mean annual harvest for the entire survey period (including estimated catches) was 3 200 charr (SD = 766), while mean annual harvest for the period where the catch was actually tallied each year (1971-78) was about 2 900 charr (SD = 842). Lowest catches were recorded in 1974 (1 704 charr) and 1978 (1 986 charr). The low catch appears to be related to effort. Lowest effort (net-days) was recorded in 1974 and 1978 as well. Interestingly, catch-per-unit-effort (CPUE) expressed as no. charr/net-days was highest during these two years.

In the early years of the survey accurate information on the mean weight of charr taken in the domestic fishery was very difficult to obtain. Although the number of fishermen was recorded each year, total harvest in numbers of charr was estimated. Consequently mean weight was estimated as well. Mean round weight for the period 1966-72 inclusive was estimated at 3.18 kg (7 pounds) although this figure could not be confirmed. A sample of the domestic catch taken on 7 and 26 August 1966 revealed a mean round weight of 1.58 kg (3.5 pounds) (N = 368). However, this sample was obtained at or

near the mouth of the Kuujjua from 76-127 mm mesh size gillnets and may not have been representative of the size of charr taken through the ice on Tatik Lake in October of that year. Estimates of the mean size in 1973 and 1974 were 2.95 kg (6.5 pounds) and 2.27 kg (5 pounds), respectively. Total weight of the catch was not calculated for the years 1967-74 because of the uncertainty regarding the accuracy of the estimates of mean weight during that period. Total annual harvest (round weight) for the years 1975-78 ranged from 4 487 to 5 862 kg with a mean of 4 900 kg (SD = 660). The mean size of charr in the catch was 1.87 kg (SD = 0.47) and ranged from 1.19 kg in 1975 to 2.26 kg in 1978.

Generally, the percentage of current-year spawners in the domestic catch was low compared with nonspawners. Excluding 1974, the mean was 4.8% per year. Tatik Lake, where the fishing took place, is a known spawning ground for Arctic charr. Charr do not spawn in consecutive years in the central Arctic, and the number of spawners is small, only about 2-7% of the total migratory stocks (Johnson 1980). Therefore, the number of spawners taken in the domestic catch at Tatik Lake could have been taken in direct proportion to their abundance. The exception was 1974 when almost 26% of the catch was reported to be spawners. The reason for this is not known. That year, the lowest domestic harvest was recorded. Perhaps some fishing took place on the spawning grounds. As noted previously, CPUE was high, suggesting a concentration of charr.

The catch of lake trout was much less than that of Arctic charr. Mean number taken from 1972 to 1978 was 394 (SD = 211). It ranged from a high of 774 in 1975 to a low of 155 in 1978. The lake trout harvest, to some extent, appears also to be related to effort. Low catches were reported in 1974 and again in 1978 when effort was low. However, at least for 1984, CPUE for lake trout was high.

Data from the biological sample taken at Tatik Lake on October, 1978, are presented in Tables 2 and 3. Mean age was 10.4 years (N = 164) and ranged 7 to 16 years. Mean length was 555 mm (N = 511) and ranged 388 to 875 mm. Mean round weight was 2.26 kg (N = 511). The sex ratio favoured males 1.20:1. Mean condition factor, K, was 1.23. Age- and length-frequency distributions of the samples are shown in Fig. 3 and 4, respectively. Modal age was 9 years and modal length was 500-550 mm.

The data from the biological sample taken during the summer domestic fishery in the sea near Holman, 27 July to 3 August, 1978 are presented in Tables 4 and 5. Mean age was 14.6 years (N = 82) and ranged 9 to 21 years. Mean length was 705 mm (N = 110) and ranged 410 to 860 mm. Mean round weight was 4.18 kg (N = 110). The sex ratio favoured females 1.14:1. Mean condition factor, K, was 1.17. Age- and length-frequency distributions are shown in Fig. 3 and 4, respectively. Modal age was 16 years and modal length was 700-750 mm and 800-850 mm. Caution should be used in comparing these data with the data collected from Tatik

Lake in October 1978. Although it is assumed that the same mesh size was used in both fisheries, it is not known if the summer sample (27 July - 3 August) was random.

The data collected during October, 1987, from the domestic fishery at Tatik Lake are presented in Tables 6 and 7. Mean age was 13.8 years (N = 169) and range was 10 to 19 years. Mean length was 640 mm (N = 198) and range was 505 to 817 mm. Mean round weight was 3.04 kg (N = 198). Sex ratio favoured females 1.18:1. Mean condition factor, K, was 1.12. Age- and length-frequency distributions of the samples are shown in Fig. 3 and 4, respectively. Modal age was 13 years and modal length was 600-650 mm. Comparison with the 1978 data may not be valid since it is likely that the use of 139 mm mesh size gillnets was more prevalent in 1987 than in 1978.

Results of the 1969 tagging program indicate that 32 of the 147 charr tagged in June were recaptured by the various fisheries by the end of December of that year. A total of 56 tags had been returned by the end of 1970 and the total reached 73 by the end of 1973. Most of the recaptured charr (55%) were taken in the summer domestic fishery in the sea near the community of Holman (Fig. 2), indicating that this fishery impacts the Kuujjua River charr stock. Some charr were taken as far as 25 km east of Holman into Prince Albert Sound (Safety Channel area). The remainder of the returns came from Tatik Lake (33%) and the mouth of the Kuujjua River (12%).

SPORT FISHERY

Records of the sport fishery are presented in Table 8. The number of anglers on the river varied from as few as 22 in 1970 to as many as 142 in 1967 and 1973. Mean number of anglers per year was 84 (SD = 46), excluding 1968 and 1969 when numbers were estimated. Mean annual harvest, in numbers of charr, was 200 (SD = 171). The harvest per angler varied from a high of 5.7 charr in 1972 to a low of 0.4 charr in 1975. Total harvest (sport and domestic combined) is also shown. The harvest data are most reliable from 1971 on, when tallies of the catch, rather than estimates, were done. Therefore, the total mean annual harvest (sport and domestic combined) on the Kuujjua for the period 1971-75 was 3 340 charr (SD = 858). As stated earlier in this report, data on mean weight of charr was very difficult to obtain for the earlier years of the surveys hence harvest statistics, in round weight, are not presented where only estimates of mean weight are available. Estimated mean round weight of charr in the angled catch was reported to be 2.72-3.63 kg (6-8 pounds). However, the accuracy of this estimate cannot be determined from available information.

COMMERCIAL AND TEST FISHERIES

The commercial quota of 600 kg for Kuujjua River Arctic charr has been reported to have been taken each year since its inception in

1979. No biological samples of the commercial catch per se have been taken. However, the fishery takes place coincident with the summer and fall domestic fishery and, although gillnets of minimum 139 mm mesh size are required, some charr taken in the smaller mesh sizes used by the domestic fishery are probably sold commercially. Therefore, the biological data presented in this report (Tables 6 and 7; Fig. 3 and 4) for the October, 1987, domestic fishery at Tatik Lake are probably representative of the commercial catch as well.

Data from the test fishery conducted at Safety Channel in late August, 1982, are shown in Tables 9 and 10. The provisional quota of 1 350 kg round weight was reported to have been harvested and the charr were transported to Inuvik for sale. Mean age was 12.0 years (N = 119) and ranged from 8 to 17 years. Mean length was 633 mm (N = 131) and ranged from 340 to 810 mm. Mean round weight was 3.40 kg (N = 131). The sex ratio favoured females 1.26:1. Mean condition factor, K, as 1.32. Age- and length-frequency distributions of the sample are shown in Fig. 5 and 6, respectively. Modal age was 12 years and modal length was 600-650 mm.

Data from the test fishery conducted in Safety Channel in late-August to early September, 1983 are shown in Tables 11 and 12. A total of 896 kg (round weight) of the 1 350 kg quota was harvested and the charr were sold in Inuvik. Mean age was 12.5 years (N = 113) and ranged from 9 to 20 years. Mean length was 629 mm (N = 137) and ranged from 410 to 862 mm. Mean round weight was 3.18 kg. The sex of the fish was not determined because the samples were returned intact to the fishermen. Mean condition factor, K, was 1.22.

Age- and length-frequency distributions of the sample are shown in Fig. 5 and 6, respectively. Modal age was 12 years and modal length was 600-650 mm.

To date, seven of the 31 charr tagged during the 1983 test fishery in Safety Channel have been recaptured. Four were taken in the Kuujjua River, Tatik Lake area (Fig. 2), two in the Safety Channel area and one from the Kagloryuak River at the head of Prince Albert Sound.

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caught in the sea near Holman. The Holman Hunters and Trappers Committee provided the data from the 1987 sample from Tatik Lake. Thanks also to the people of Holman for their cooperation in monitoring the fishery and returning tags. Mr. W. Bond, DFO, reviewed a previous draft of this report and provided many helpful suggestions.

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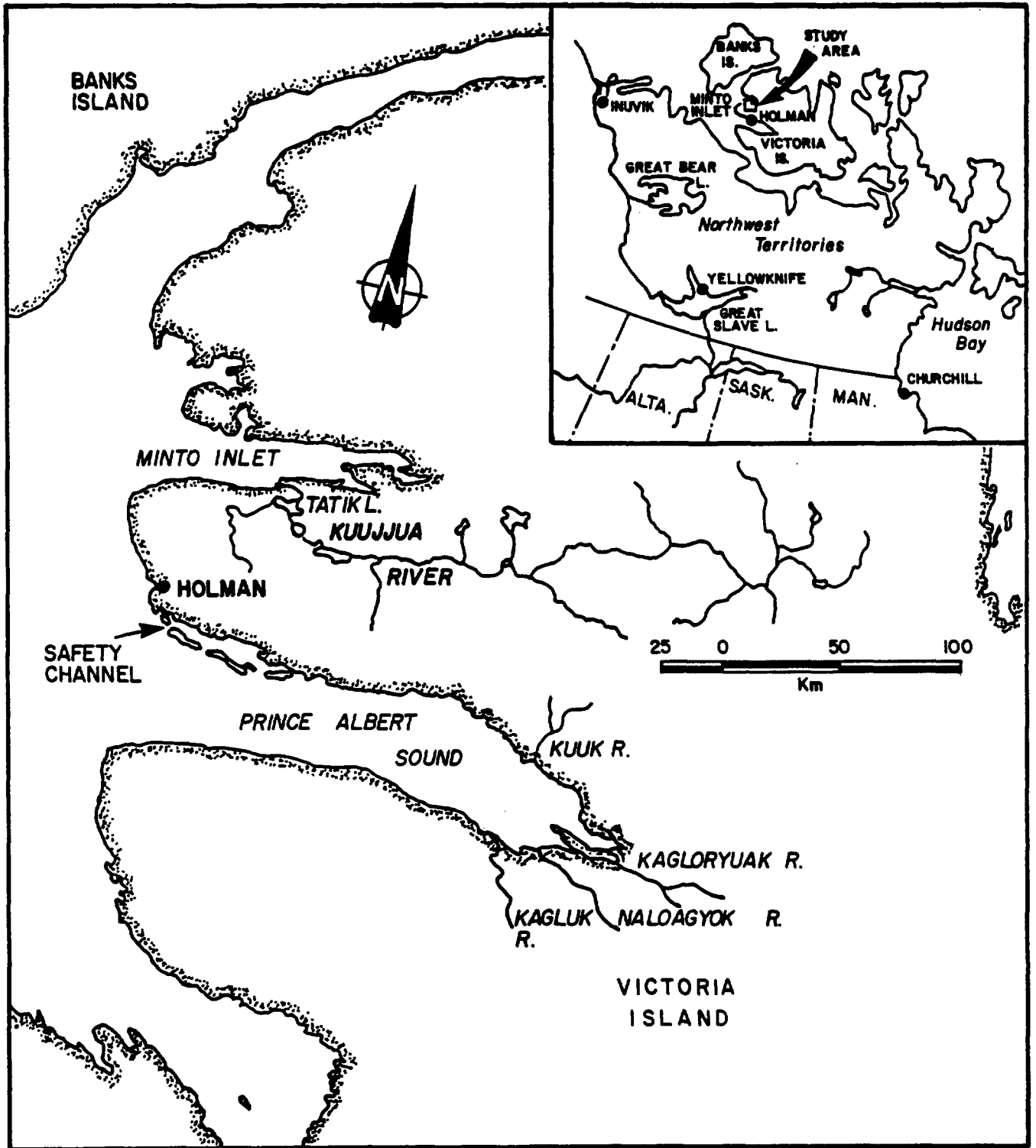


Fig. 1. Map of western Victoria Island showing the Kuujjua River and the community of Holman.

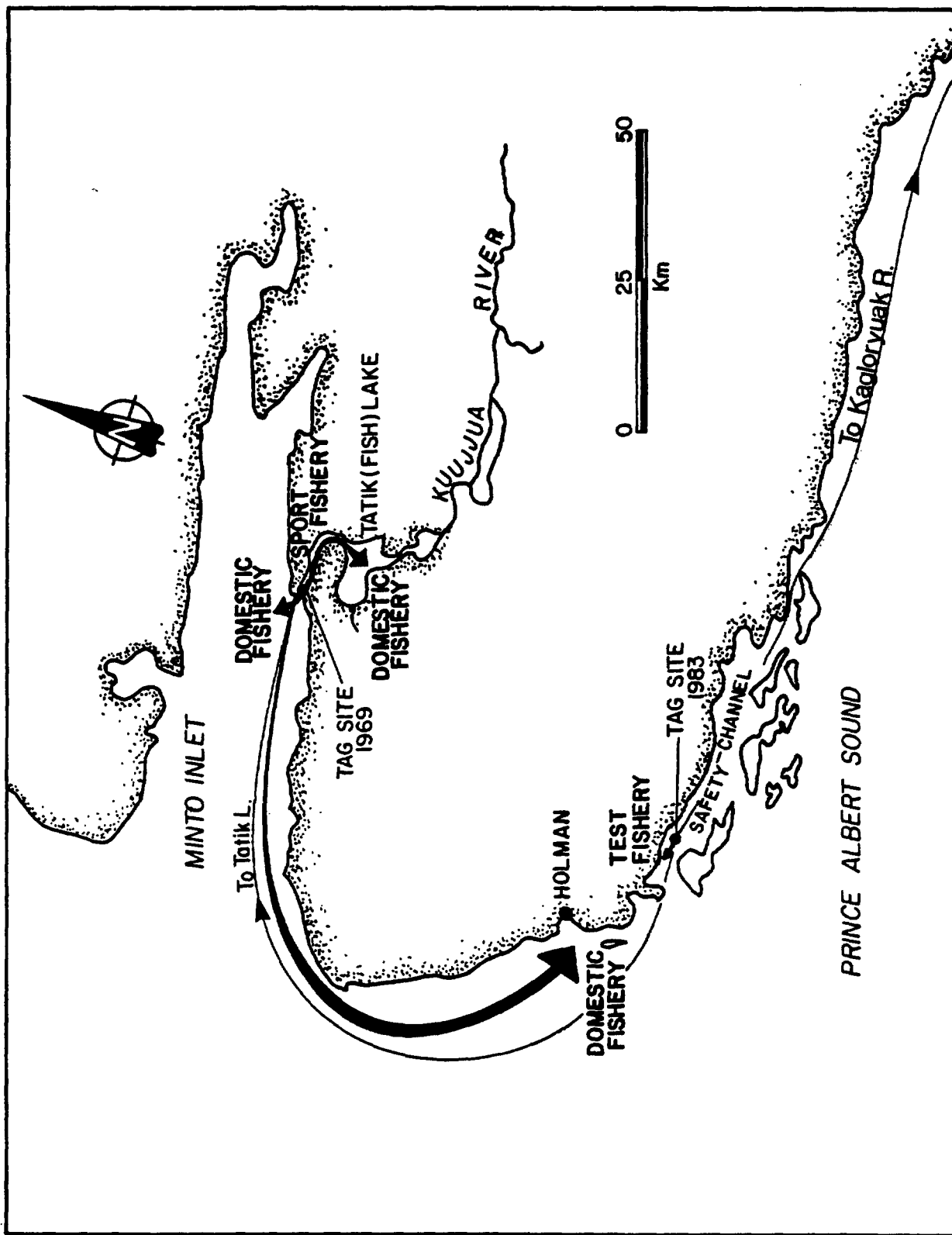


Fig. 2. Map of the study area showing location of fisheries and migration of tagged charr.

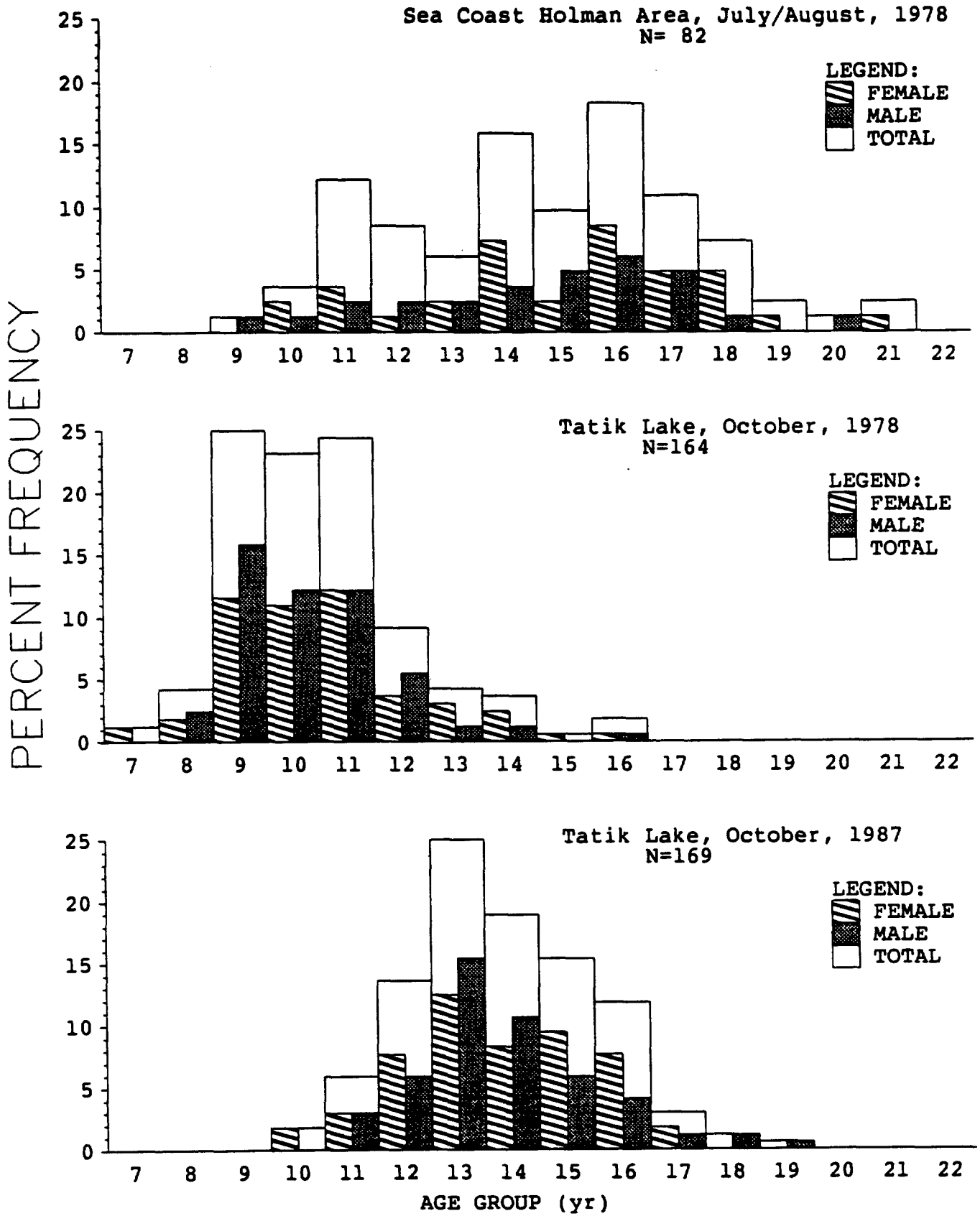
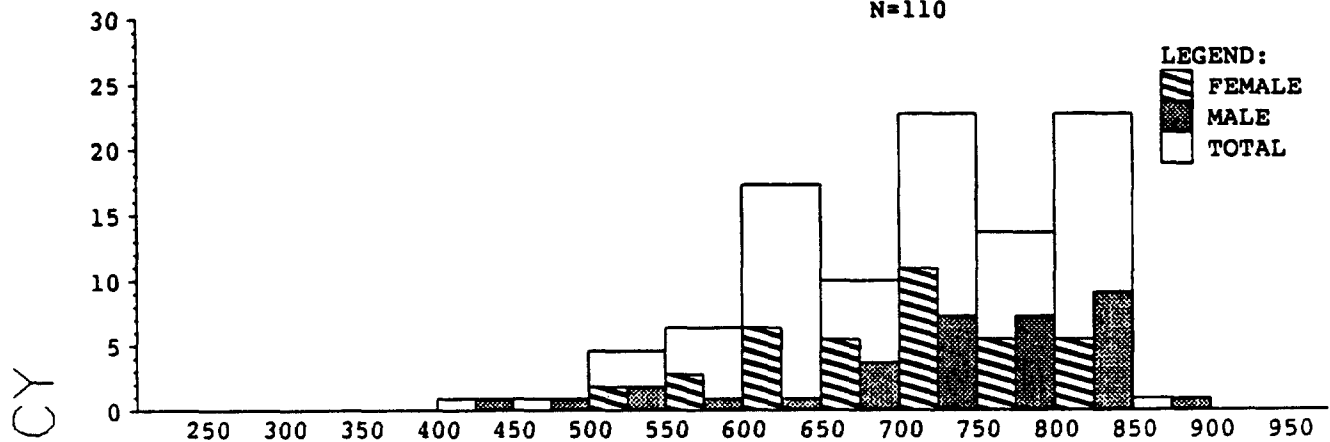
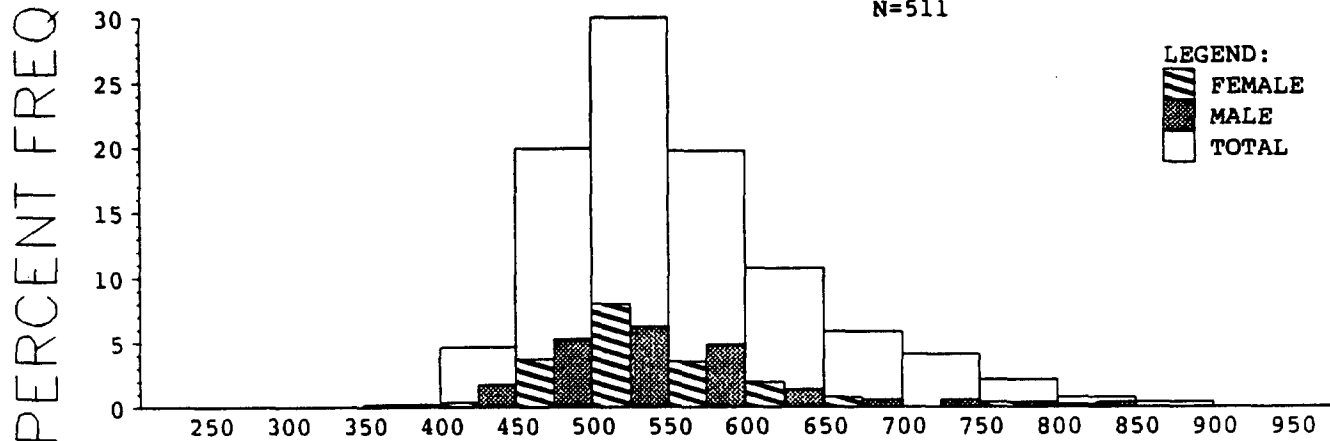


Fig. 3. Age-frequency distribution of Arctic charr sampled from the domestic fishery, sea coast-Holman area, July-August 1978; Tatik Lake, October 1978; Tatik Lake, October 1987.

Sea Coast Holman Area, July/August, 1978
N=110



Tatik Lake, October, 1978
N=511



Tatik Lake, October, 1987
N=198

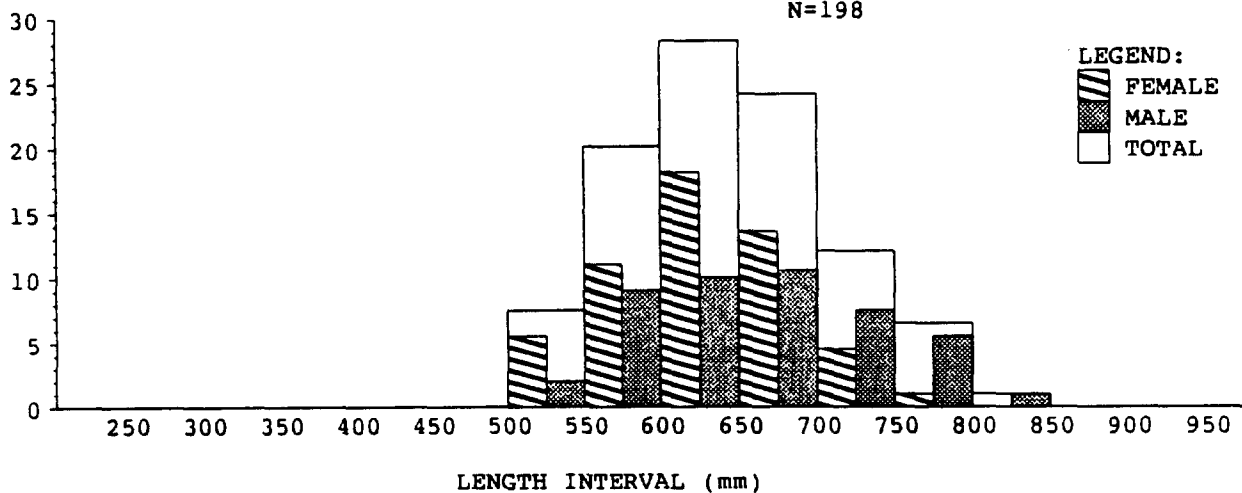


Fig. 4. Length-frequency distribution of Arctic charr sampled from the domestic fishery, sea coast-Holman area, July-August 1978; Tatik Lake, October 1978; Tatik Lake, October 1987.

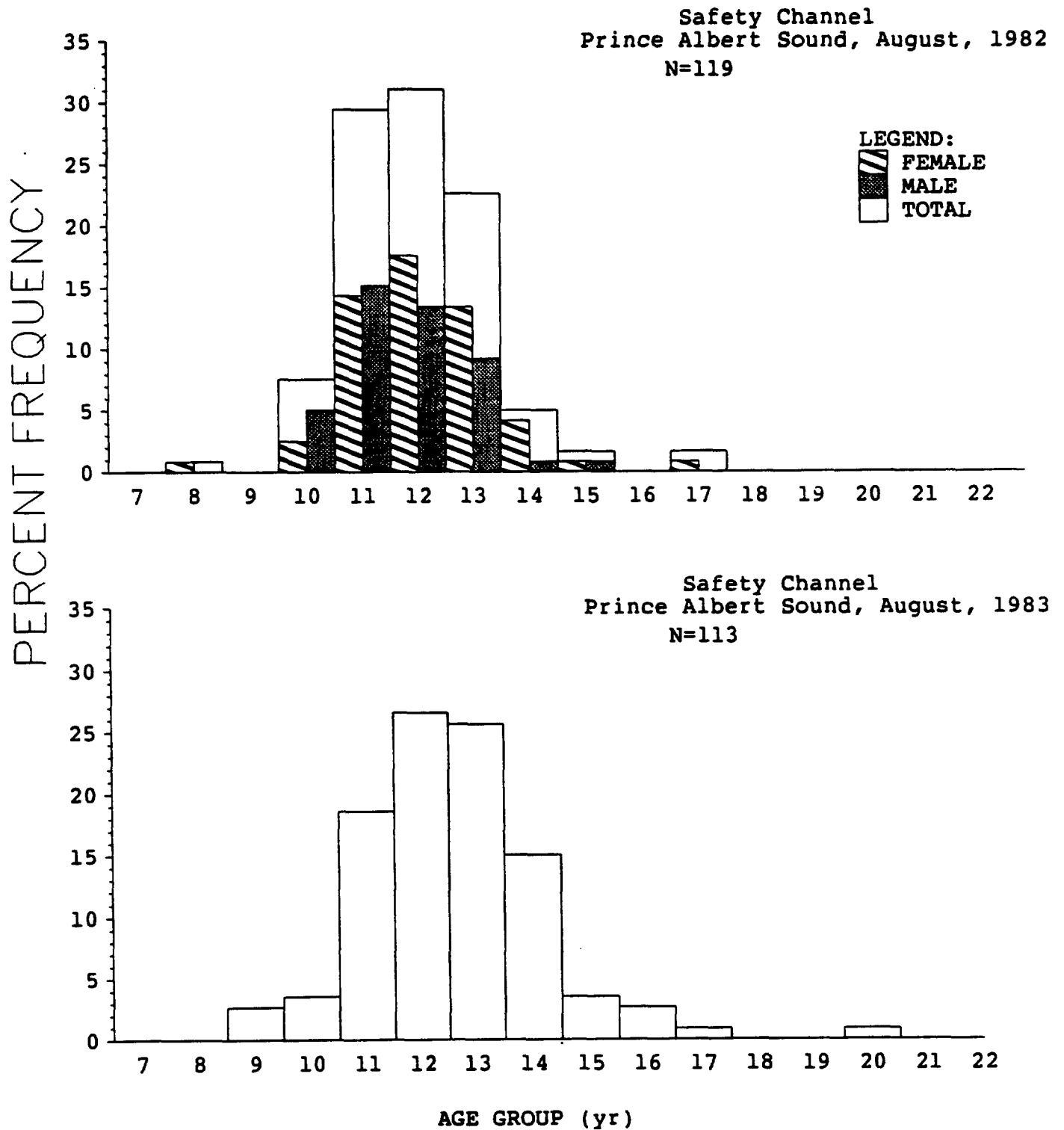


Fig. 5. Age-frequency distribution of Arctic charr sampled from test fisheries in the Safety Channel area, August 1982; August 1983.

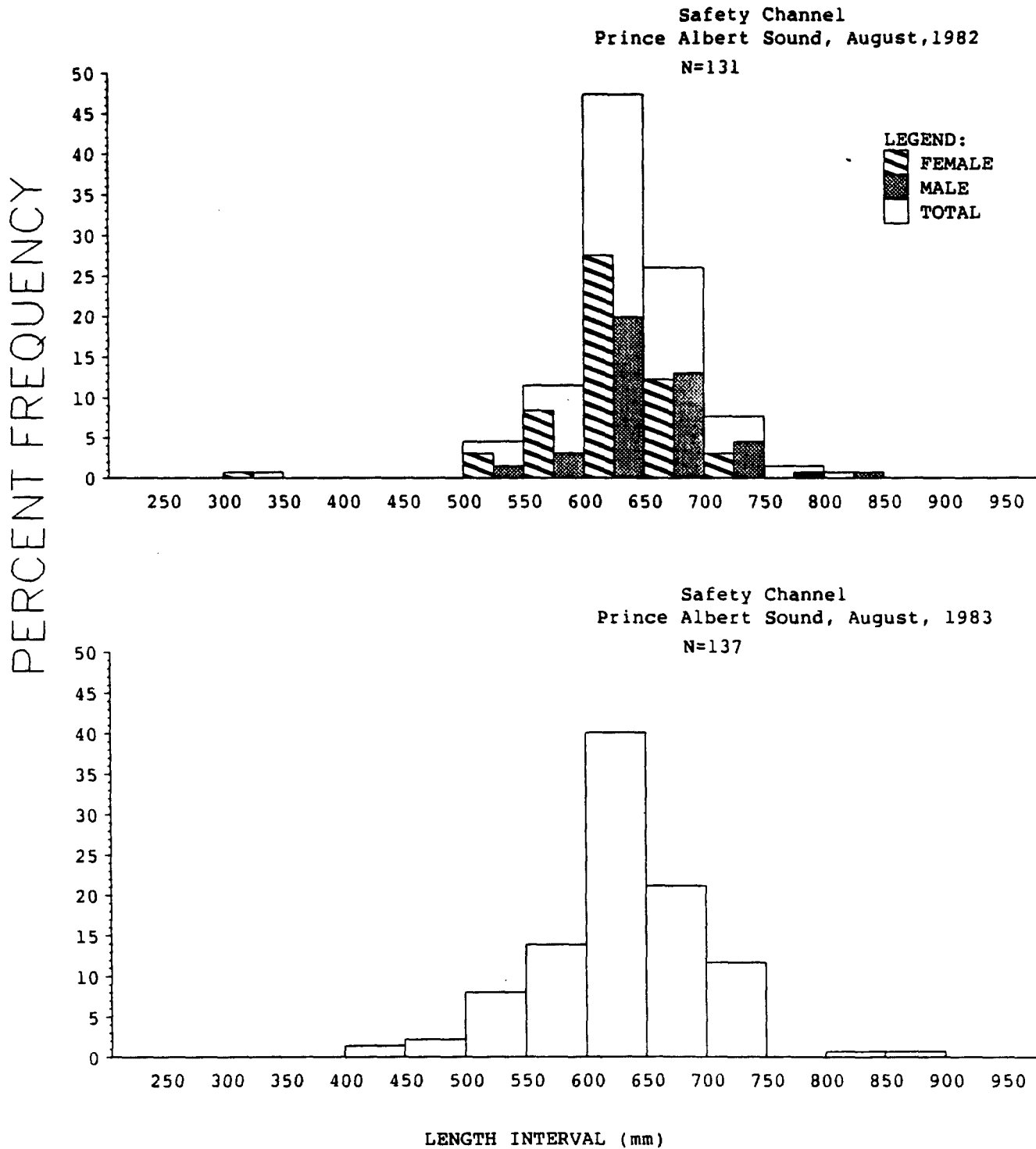


Fig. 6. Length-frequency distribution of Arctic charr sampled from test fisheries in the Safety Channel area, August 1982; August 1983.

Table 1. Domestic fishery harvest data, Kuujjua River, 1966-78.

| Year | No. Fishermen | Person-Days | Net-Days | A. Charr | | | L. Trout |
|------|-----------------|-------------|----------|-------------------|----------------------|------------|------------|
| | | | | No. Caught | Total Round wt. (kg) | % Spawners | No. Caught |
| 1966 | 16 | | | 3600 ¹ | 5700 ² | | |
| 1967 | 8 ¹ | | | 4000 ¹ | | | |
| 1968 | 20 ¹ | | | 3500 ¹ | | | |
| 1969 | 28 | | | 3500 ¹ | | | |
| 1970 | 25 | | | 3800 ¹ | | | |
| 1971 | 23 | | 1339 | 3994 | | | |
| 1972 | 24 | 180 | 952 | 3063 | | | 556 |
| 1973 | 28 | 235 | 797 | 3367 | | 3.4 | 422 |
| 1974 | 27 | 113 | 324 | 1704 | | 25.9 | 308 |
| 1975 | 25 | 316 | 957 | 3782 | 4487 | 3.9 | 774 |
| 1976 | 21 | 311 | 884 | 2222 | 4696 | 6.3 | 295 |
| 1977 | 25 | 175 | 685 | 3046 | 5862 | 2.2 | 249 |
| 1978 | 30 | 218 | 347 | 1986 | 4488 ³ | 8.2 | 155 |

¹ Estimation, based on interviews with fishermen after each fishing season ended.

² Calculated using mean round weight per charr of 1.58 kg based on sample of catch (N = 368).

³ Calculated using mean round weight per charr of 2.26 kg based on sample of catch (N = 511).

Table 4. Biological data by age group for Arctic charr sampled from domestic gillnets set along sea coast near Holman, 27 July to 3 August 1978.

| AGE (YR) | N | MALES | | | FEMALES | | | COMBINED | | | K | N | % | LENGTH(MM) | | WEIGHT(G) | | K | % | | | | |
|----------|------|-------|-----|------|---------|------|------|----------|------|------|----|------|------|------------|------|-----------|------|------|---|---|---|---|---|
| | | N | % | K | N | % | K | N | % | K | | | | N | % | K | N | | | % | K | N | % |
| | | | | | | | | | | | | | | | | | | | | | | | |
| MEAN | SD | MEAN | SD | MEAN | SD | MEAN | SD | MEAN | SD | MEAN | SD | MEAN | SD | MEAN | SD | MEAN | SD | | | | | | |
| 9 | 1 | 4 | 410 | - | 910 | - | 1.32 | - | 1.32 | - | 1 | 1 | 1 | 410 | - | 910 | - | 1.32 | - | | | | |
| 10 | 1 | 4 | 550 | - | 2040 | - | 1.23 | - | 1.33 | - | 3 | 4 | 557 | 31 | 2267 | 603 | 1.29 | 67 | | | | | |
| 11 | 2 | 8 | 535 | 92 | 2040 | 962 | 1.28 | 1.29 | 1.29 | 393 | 10 | 12 | 577 | 49 | 2449 | 592 | 1.25 | 60 | | | | | |
| 12 | 2 | 8 | 585 | 120 | 2945 | 1605 | 1.40 | 1.15 | 1.15 | - | 7 | 9 | 594 | 61 | 2881 | 916 | 1.33 | 33 | | | | | |
| 13 | 2 | 8 | 720 | 28 | 5220 | 0 | 1.41 | 1.23 | 1.23 | 325 | 5 | 6 | 654 | 62 | 3766 | 1341 | 1.30 | 50 | | | | | |
| 14 | 3 | 12 | 720 | 62 | 4760 | 1382 | 1.25 | 1.26 | 1.26 | 564 | 13 | 16 | 686 | 53 | 4152 | 977 | 1.26 | 67 | | | | | |
| 15 | 4 | 15 | 738 | 68 | 4705 | 770 | 1.18 | 1.28 | 1.19 | 0 | 8 | 10 | 724 | 75 | 4649 | 1167 | 1.22 | 33 | | | | | |
| 16 | 5 | 19 | 780 | 32 | 5942 | 1116 | 1.24 | 1.24 | 1.19 | 1273 | 15 | 18 | 747 | 63 | 4883 | 1341 | 1.16 | 58 | | | | | |
| 17 | 4 | 15 | 770 | 32 | 5670 | 669 | 1.24 | 1.06 | 0.99 | 225 | 9 | 11 | 764 | 42 | 4939 | 1021 | 1.10 | 50 | | | | | |
| 18 | 1 | 4 | 770 | - | 5900 | - | 1.29 | 1.06 | 0.84 | 133 | 6 | 7 | 743 | 39 | 4534 | 897 | 1.09 | 80 | | | | | |
| 19 | - | 4 | 860 | - | 6580 | - | 1.03 | - | 0.84 | - | 2 | 2 | 815 | 21 | 4990 | 962 | 0.92 | - | | | | | |
| 20 | 1 | 4 | 860 | - | 6580 | - | 1.03 | - | 0.84 | - | 1 | 1 | 860 | - | 6580 | - | 1.03 | - | | | | | |
| 21 | - | - | - | - | - | - | - | - | 0.97 | - | 2 | 2 | 805 | 7 | 5330 | 481 | 1.02 | - | | | | | |
| TOTAL | 26 | | 706 | 115 | 4667 | 1722 | 1.26 | | | | 82 | | 691 | 96 | 4073 | 1428 | 1.20 | 56 | | | | | |
| MEAN | | | | | | | | | | | | | 684 | 80 | 3756 | 1049 | 1.17 | | | | | | |
| MEAN AGE | 14.6 | | | | | | | | | | | | 15.1 | | | | 14.6 | | | | | | |

Table 5. Biological data by length interval for Arctic charr sampled from domestic gillnets set along sea coast near Holman, 27 July to 3 August 1978.

| LENGTH INTERVAL (MM) | N | % | MALES | | | FEMALES | | | COMBINED | | | K | N | % | LENGTH(MM) | | WEIGHT(G) | | K | % | | | | |
|----------------------|----|------|-------|------|------|---------|------|------|----------|------|-----|------|-----|------|------------|------|-----------|------|----|---|---|---|---|---|
| | | | N | % | K | N | % | K | N | % | K | | | | N | % | K | N | | | % | K | N | % |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| MEAN | SD | MEAN | SD | MEAN | SD | MEAN | SD | MEAN | SD | MEAN | SD | MEAN | SD | MEAN | SD | MEAN | SD | MEAN | SD | | | | | |
| 400 | 1 | 3 | 410 | - | 910 | - | 1.32 | - | 1.32 | - | 1 | 1 | 1 | 410 | - | 910 | - | 1.32 | - | | | | | |
| 450 | 1 | 3 | 470 | - | 1360 | - | 1.31 | - | 1.31 | - | 1 | 1 | 1 | 470 | - | 1360 | - | 1.31 | - | | | | | |
| 500 | 2 | 5 | 520 | 0 | 1810 | 0 | 1.30 | 0 | 1.18 | 0 | 5 | 5 | 526 | 1766 | 98 | 1.22 | 50 | | | | | | | |
| 550 | 1 | 3 | 550 | 2040 | 2040 | - | 1.23 | 3 | 1.32 | 393 | 7 | 6 | 570 | 2366 | 289 | 1.27 | 75 | | | | | | | |
| 600 | 1 | 3 | 600 | 2720 | 2720 | - | 1.26 | 7 | 1.29 | 317 | 19 | 17 | 617 | 3019 | 347 | 1.28 | 88 | | | | | | | |
| 650 | 4 | 11 | 668 | 3628 | 3628 | 372 | 1.22 | 6 | 1.31 | 336 | 11 | 10 | 675 | 3813 | 430 | 1.25 | 60 | | | | | | | |
| 700 | 8 | 22 | 728 | 5019 | 5019 | 282 | 1.31 | 12 | 1.11 | 4082 | 477 | 23 | 721 | 4480 | 589 | 1.20 | 60 | | | | | | | |
| 750 | 8 | 22 | 770 | 5386 | 5386 | 695 | 1.18 | 6 | 1.04 | 4612 | 971 | 15 | 767 | 4989 | 888 | 1.11 | 43 | | | | | | | |
| 800 | 10 | 27 | 822 | 5942 | 5942 | 842 | 1.08 | 6 | 0.97 | 5255 | 616 | 23 | 819 | 5588 | 805 | 1.02 | 38 | | | | | | | |
| 850 | 1 | 3 | 860 | 6580 | 6580 | - | 1.03 | - | - | - | 1 | 1 | 860 | 6580 | 805 | 1.03 | - | | | | | | | |
| TOTAL | 37 | | 724 | 4714 | 1599 | 1.20 | | | | | 42 | | 705 | 4180 | 1376 | 1.17 | 53 | | | | | | | |
| MEAN | | | | | | | | | | | | | 697 | 3921 | 1057 | 1.16 | | | | | | | | |

Table 8. Sport fishery harvest and total harvest (domestic and sport) of Arctic charr, Kuujjua River, 1966-75.

| Year | No. Anglers | Sport Harvest | | Total Harvest |
|-------------------|----------------|---------------|-------------------|-------------------|
| | | No. Caught | No. Per Angler | No. Caught |
| 1966 | 84 | 133 | 1.6 | 3733 ¹ |
| 1967 | 142 | 569 | 4.0 | 4569 ¹ |
| 1968 ² | 80 | 400 | | 3900 ¹ |
| 1969 ² | 125 | 500 | | 4000 ¹ |
| 1970 | 22 | 110 | 5.0 | 3910 ¹ |
| 1971 | 39 | 119 | 3.1 | 4113 |
| 1972 | 57 | 325 | 5.7 | 3388 |
| 1973 | 142 | 135 | 1.0 | 3502 |
| 1974 | 118 | 187 | 1.6 | 1891 |
| 1975 | 66 | 27 | 0.4 | 3809 |

¹ Domestic harvest estimated. See Table 1.

² Number of anglers and sport harvest are estimates.

Table 11. Biological data by age group for Arctic charr sampled from the test fishery (gillnets, 139 mm mesh size), Safety Channel, 23-25 August 1983.

| AGE (YR) | NO. | PERCENT | FORK LENGTH(MM) | | ROUND WEIGHT(G) | |
|-------------|------|---------|-----------------|----|-----------------|------|
| | | | MEAN | SD | MEAN | SD |
| 9 | 3 | 3 | 472 | 27 | 1133 | 189 |
| 10 | 4 | 4 | 536 | 85 | 1888 | 769 |
| 11 | 21 | 19 | 590 | 51 | 2483 | 892 |
| 12 | 30 | 27 | 622 | 45 | 3053 | 776 |
| 13 | 29 | 26 | 648 | 41 | 3407 | 771 |
| 14 | 17 | 15 | 648 | 47 | 3538 | 954 |
| 15 | 4 | 4 | 678 | 53 | 4113 | 1211 |
| 16 | 3 | 3 | 636 | 55 | 3033 | 764 |
| 17 | 1 | 1 | 815 | - | 6900 | - |
| 20 | 1 | 1 | 862 | - | 7350 | - |
| TOTAL | 113 | | | | | |
| MEAN | | | 626 | 66 | 3128 | 1118 |
| MEAN AGE | 12.5 | | | | | |

Table 12. Biological data by length interval for Arctic charr sampled from the test fishery (gillnets, 139 mm mesh size), Safety Channel, 23-25 August 1983.

| LENGTH INTERVAL (MM) | NO. | PERCENT | MEAN FORK LENGTH(MM) | ROUND WEIGHT(G) | | K |
|----------------------------|-----|---------|-------------------------|--------------------|------|------|
| | | | | MEAN | SD | |
| 400 | 2 | 1 | 428 | 900 | 141 | 1.14 |
| 450 | 3 | 2 | 476 | 1133 | 104 | 1.05 |
| 500 | 11 | 8 | 527 | 1673 | 268 | 1.14 |
| 550 | 19 | 14 | 581 | 2284 | 242 | 1.16 |
| 600 | 55 | 40 | 627 | 3025 | 393 | 1.23 |
| 650 | 29 | 21 | 672 | 3895 | 488 | 1.28 |
| 700 | 16 | 12 | 716 | 4713 | 632 | 1.28 |
| 800 | 1 | 1 | 815 | 6900 | - | 1.27 |
| 850 | 1 | 1 | 862 | 7350 | - | 1.15 |
| TOTAL | 137 | | | | | |
| MEAN | | | 629 | 3182 | 1121 | 1.22 |

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