



Arctic Development

***An Economic Analysis Of The Eskimo Point
And Maguse River Commercial Char Fishery***

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AN ECONOMIC ANALYSIS OF THE ESKIMO POINT AND MAGUSE RIVER
COMMERCIAL CHAR FISHERY
SUMMER 1900

SUMMARY

The short-term and long-term economic viability of the Eskimo Point **commercial** char fishery is evaluated by means of a cash flow analysis, breakeven analysis and return to investment analysis for a typical Eskimo Point fisherman. The average incomes derived from the Eskimo Point Area, Maguse River and Copperneedle River quotas are determined, as are the fixed and variable costs of commercial fishing, and the net economic performance of the fishery.

Most fishermen are subsistence fishermen who occasionally fish commercially. Participation in the commercial fishery is widespread, but not very concentrated in terms of individual effort; the average fisherman made only four commercial sales during the season. At the present market price for fish, average incomes are high enough to cover the immediate operating costs of gas and food, but not high enough to cover the fixed costs of equipment depreciation and repairs. Only 25% of the commercial fishermen made enough money to break even.

The potential for full-time participation in the fishery is evaluated by means of a cash flow analysis, breakeven analysis and return to investment analysis for a hypothetical full-time fisherman purchasing new equipment. Assuming the use of six fishnets and the same catch per unit effort seen in part-time fishing, a fisherman making twenty fishing trips during the season could make a net profit of approximately \$2,500.00 after covering all costs. Over an investment period of five years, this level of profit would allow the fisherman to replace all of his equipment and realize a 20% return on his investment. However, due to the small size of the allowable commercial quotas, harvests of this size would restrict commercial fishing to 4.8 people,

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INTRODUCTION

The people of Eskimo Point, N.W.T., have fished in the areas covered by the present Eskimo Point Area and Maguse River quotas for as long as they can remember. Fish have traditionally been an important staple in the diet and provide not only variety but also an important source of protein. During the past four summers, fishermen have had the opportunity to take part in a commercial char fishery which has given Arctic Char additional economic value. Participation in the commercial fishery is widespread in the community and provides some level of seasonal income to over fifty people.

This report provides an economic analysis of the commercial Arctic Char skiff fishery conducted in Eskimo Point during the summer of 1988. Information was collected throughout the commercial season by interviewing fishermen when they came into town to sell their catch. A survey form was used to collect data on the **areas** fished, the number of fish taken and the costs involved. Information on income earned from fish sales was taken from the local fish dealer's fish purchase records. A number of follow-up interviews were also held to obtain more detailed information. In total, information was collected from 35 fishermen (65% of the total number of fishermen), representing 94% of the total catch value. The information collected is summarized in the body of the report, with the actual data appended.

It became readily apparent through the interviews that the subsistence* fishery and the commercial fishery are inseparable to many of the fishermen. Fishing is carried out both for sale and for domestic consumption at the same time, in the same place and using the same equipment. The amount of fish sold commercially depends on the size and quality of the total catch, the amount of fish that the fisherman already has stored at home, and whether or not the fisherman or his family is in the mood to eat fish. Many of the fishermen in Eskimo Point indicated that one of the major benefits of commercial fishing was that it provided money to pay for the gas and food needed for domestic fishing. For these reasons, this analysis includes some information on the subsistence fishery as well.

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*The terms subsistence fishery and domestic fishery will be used interchangeably to refer to fishing that is conducted primarily for food.

COMMERCIAL FISHING

There are three commercial quota areas regularly harvested by the fishermen of Eskimo Point; the Eskimo Point Area quota, the Maguse River quota, and to a limited extent, the Copperneedle River quota. Each of these quotas has an allowable catch of '9600 lbs. dressed weight. Within each of these quota areas, very specific fishing grounds are exploited. Unlike some of the western native fisheries, there **is** no sense of ownership or family control over any of the fishing grounds. Fishermen simply set their nets where they think the **fish** are, moving them whenever the fishing proves unsuccessful. Thus one fisherman may fish many different **fishing** grounds during the season.

Commercial fishing in Eskimo Point is identical to summer subsistence fishing in terms of areas fished, species fished and technique and equipment used. It is carried out using freighter **canoes** with outboard motors, and gill nets that are manually set and lifted each day. The timing of fishing is determined by the tides so the catch may be brought to town at any time of the day or night. A few fishermen leave their nets set in place and check them on low tide each day, however, most people set and lift their nets on each trip to reduce net damage by whales and seals, and accumulation of seaweed.

During the 1988 **summer** season, 55 fishermen participated in the **commercial** fishery, a 17% increase over the 1987 **season.**¹ This represents approximately 20% of the male population over the age of 16. Fishermen ranged in age from 18 to well over 60. with the majority being between 30 and 50 years old. Although there were three women commercial fishing in 1987, only men fished during 1988. Fourty-four fishermen fished the Eskimo Point quota, 26 fished the Maguse River quota, 5 fished the Copperneedle River quota and one catch was made on the Ferguson River quota. The harvests from each of these quotas are summarized in Tables 1 and 2.

The commercial season began on July 17 and continued until the 17th of September for a total of 8 weeks. The bulk of the Eskimo Point Area quota was taken during the first two weeks of the commercial fishing season, and the entire quota was taken by the end of the fourth week. Approximately 70% of the Maguse River Quota was harvested. Most of the fishing in the Maguse River **Quota** took place after the Eskimo Point Area quota had been harvested, as illustrated in Graph 1. Close to 40% of the Copperneedle River Quota was harvested, with fishing taking place during the latter part of the season.

Graph 2 illustrates how the level of fishing effort changed throughout the season in terms of the number of men fishing and the number of catches brought in for sale. Participation was highest at the beginning of the commercial season tapering off

gradually during the first four weeks and then more rapidly after the Eskimo Point quota was taken and fishermen had to fish further from town. Towards the end of the commercial fishing season, bad weather and competition from other activities such as whale hunting and caribou hunting also contributed to the , **decrease in commercial fishing.**

The average catch per trip and the average total harvest per fisherman are similar for the Eskimo Point Area and Maguse River quotas. The average catch per trip was 71 lbs. for the Eskimo Point quota (ranging from 15.3 lbs to 341.5 lbs) and 65.8 lbs. for the **Maguse** River quota (ranging from 28.8 lbs to 153.7 lbs). The average total harvest for the season was 202.2 lbs. for the Eskimo Point quota (ranging from 19 lbs to 1,707.5 lbs) and 226.6 lbs. for the **Maguse** River quota (ranging from 30 lbs to 1,691 lbs).

Sixty-five percent of the fishermen fishing the Maguse River also fished the Eskimo Point quota, so it is necessary to consider the two quotas together to obtain a picture of the average total harvest per fisherman for the whole season. The total season's catch from the combined quotas ranged from 19 lbs to 3,398.5 lbs with an average of 276.9 lbs.

The average catches from the Copperneedle River are much higher, with an average trip catch of approximately 290 lbs., and a season's average of 754.6 lbs. However, because of its **greater distance from Eskimo Point, the Copperneedle is much more dangerous to access** using small canoes and the possibility of being stranded by weather and losing the catch completely **is** much greater than experienced in the closer quota areas.

Graph 3 illustrates how the average catch per trip changed over the course of the season. During the first month of the season, only the Eskimo Point and **Maguse** River quotas were fished and the average catch per trip remained fairly constant. A drastic rise in the average catch per trip is seen beginning the week of August 20, corresponding to the large catches harvested in the Copperneedle River quota.

The fishermen set and lift their nets each day and then bring their daily catch in for sale, so the unit of effort was defined as one net fishing for one day. Catch per unit effort was therefore determined as the number of pounds caught per net per day, and was based on the number of nets used by each fisherman and the average catch per trip. Average catch per unit effort was 31.4 lbs **for** the Eskimo Point area (ranging from 7.6 lbs. to 113.8 lbs.), 23.6 lbs for the **Maguse** River quota (ranging from 11.6 lbs. to 51.2 lbs.), and 99.5 lbs. per net in the Copperneedle River (ranging from 80.2 lbs. to 147.1 lbs.).

INCOME

Fish were sold locally to Kakavik Fisher Foods in Eskimo Point for \$1.40 a pound. This is a 40 percent increase over the price paid to fishermen last year. Gross incomes derived from fish sales are summarized in Table 3. The commercial fishery' brought in a total of \$26,481.00 in fisherman's wages; \$12,453.70 from the Eskimo Point quota, \$8,246.70 from the Maguse River quota, and \$5282.20 from the Copperneedle River.

The average income per trip was \$99.40 for the Eskimo Point quota, \$92.07 for the Maguse River quota and \$409.22 for the Copperneedle River quota. Total income for the season ranges from \$26.60 to \$4,758.90 per fisherman, with an average of \$481.46 for the entire fishery. Average income for the season from the Eskimo Point quota was \$283.00, from the Maguse River quota was \$317.18 and from the Copperneedle quota was \$1056.44.

There is a wide range in the level of effort put into commercial fishing. The number of commercial sales made during the season ranged from 1 to 17 but the average number of commercial catches made during the season was only 4 per fisherman. This indicates that while participation is widespread in the community, it is not very concentrated in terms of individual effort. Only 14 of the 55 fishermen (25%), made 5 or more commercial **trips** during the 8 week season and only 25% of the fishermen made a gross income greater than \$500.00 for the season. (See Graphs 4 and 5).

SUBSISTENCE

It is obvious from the small number of commercial catches made by the average fisherman during the season than most fishermen in Eskimo Point are primarily subsistence fishermen who occasionally sell part of their catch; they are not commercial fishermen in the usual sense. However, these fishermen made it very clear through the interviews that commercial fishing was an important source of income for them, particularly because it provided the money needed to buy gas for their own subsistence fishing. Most fishermen said that they fished both for domestic consumption and for commercial **sale** at the same time, taking a few fish for the family, and, if the catch was large enough, selling the surplus. Any fish that were not of high enough quality to sell were also kept for domestic use. Others said that they sold all of their catch during the commercial season and that the extra income helped them buy gas for domestic fishing and hunting.

When fishermen brought in fish for sale, they were asked how many fish from the catch they kept for domestic use. Only 10% of the fishermen interviewed reported taking fish from their commercial catch for domestic use while fishing the Eskimo Point

quota. All of the fishermen that were interviewed fishing the Maguse River quota reported taking fish from the **commercial** catch for domestic use. The number of fish taken for domestic use ranged from 1 to 6 from each catch with an average of approximately 2.

The average weight of fish sold in 1988 was approximately 5 lbs. At the commercial rate of \$1.40 a pound, these domestic fish represent an additional income of approximately \$14.00 per fishermen, particularly for those fishing the **Maguse River** quota. If a substitution value is assigned to the domestic catch as a measure of its benefit (as suggested in Usher, **1976^a**), the **value** of the subsistence catch increases to approximately \$20.00 a trip as char can be purchased in the town for \$2.00 a pound. Although this may not appear to be of great significance, it is equivalent to the cost of gas used to **harvest the Eskimo Point** quota. **Table 4** indicates the income derived from fishing if the substitution value of the subsistence catch that is taken while commercial fishing is included.

The bulk of subsistence fishing is done in addition to the commercial fishing trips. Fishermen indicated that they caught anywhere from 50 to 150 fish a year for their own domestic use, with the average being about 100 fish. It must be noted that this number is based on fisherman's recall of an entire year and so can only be taken as a rough estimate. Although this domestic catch is not directly related to the commercial catch, many of the fishermen said that the money made commercial fishing helped make the domestic catch possible.

FISHING COSTS

The costs involved in commercial fishing for the Eskimo Point, Maguse River and Copperneedle quotas are summarized in Table 5. The major costs can be grouped into two categories: the capital investment and fixed costs associated with the purchase of boat, motor, and gill nets; and the variable costs associated with each trip, gas and oil for the outboard motor, maintenance and repairs, and food and supplies. All of the fishermen are self-employed and own their own equipment. None of the fishermen paid themselves **a wage** or hired labour while fishing.

CAPITAL INVESTMENT

The major capital investments **required** to participate in the commercial fishery are identical for all quota areas, and are essentially the same as the investments required for subsistence fishing; a canvas-covered wooden canoe, an outboard motor, and a number of gill nets.

The canoes used range in size from 20 to 24 feet, with 22 feet being by far the most common. The average amount paid for a canoe was approximately \$2,400.00, although prices paid ranged from \$400.00 for a used canoe, up to \$4,000 for a new one. In 1988, a new 22 ft canoe could be purchased locally for \$4000.00. The expected operating life of these canoes was approximately 5 to 6 yrs.

The motors used range from 20 to 55 horsepower, with most falling between 25 and 35 hp. The purchase price of the motors ranged from \$300.00 to \$3200.00, with the **average** price being approximately \$2,000.00. A new 30 hp motor purchased locally would cost approximately \$3,000.00. Motors are expected to last an average of 3 years, although they may require extensive repairs each season.

The average total investment made by Eskimo Point fishermen for boat and motor was approximately \$5,100.00. A fisherman purchasing new equipment for commercial fishing would have to spend approximately \$7,000.00 for a new boat and motor at local 1988 prices.

There **are** at least 60 sea worthy canoes in Eskimo Point and it appears that availability of equipment is not a problem for fishermen. A few of the people interviewed said that they would like to fish commercially but were unable to because they did not own a boat and motor and couldn't afford to buy them. However, many of the fishermen interviewed indicated that they often took people who did not have equipment out fishing with them, and a number of successful commercial fishermen said that they borrowed equipment or accompanied other people in order to fish and that this was not a problem.

The canoes and motors were all bought without government assistance and in most cases were bought previous to entry into commercial fishing. They are not used exclusively for commercial fishing but also for domestic fishing and hunting, and for recreational uses.

Char are caught using 50 yard gill nets with a regulation 5 1/2 inch mesh (stretched]. The number of nets used by each fisherman ranges from **1 to 6**. The average number of nets used for each trip in the Eskimo Point area was 2.4. People fishing the **Maguse** River quota averaged slightly higher at 3.0 nets **per** trip, but their average catch per net was slightly lower. The average number of nets used for the **Copperneedle** River quota was 2.8.

Nets cost approximately \$200.00 each and the average investment in nets is approximately \$500.00. Most people reported that they would like to use more nets for fishing, 6

being the optimum, but the high cost of nets limited their purchase and therefore limited their potential catch.

The average total capital investment for an Eskimo Point fisherman was approximately \$5,700.00. A complete set of new equipment for **commercial** fishing, including the optimum six nets, would cost approximately \$8,300.00 at 1988 local prices.

The fishermen who entered the commercial fishery already owned fishing equipment for subsistence fishing, therefore there was no large capital investment required. The only major new investment has been the purchase of additional gill nets by some of the fishermen.

FIXED COSTS

The fixed costs that commercial fishermen must meet are those costs that do not tend to change with the level of fishing effort: a \$10.00 fishing license for each of the quotas fished, and the cost of depreciation on the canoe and outboard motor.

Since the average Eskimo Point fisherman uses his boat and motor for a variety of activities, the amount of equipment depreciation included in this analysis should reflect only the portion of time that the equipment is actually used for commercial fishing. Since this information is unavailable, an estimate was calculated based on the amount of fish caught. According to the interviews, an average of approximately 100 char are harvested during the year for domestic use. At an average weight of 5 lbs. per fish, **the** average domestic harvest would be approximately 500 lbs. a year. A commercial catch of 200 lbs. would represent approximately 30% of the total amount of fish caught by each fisherman during the year. This value of 30% has been used as a rough indicator of the percentage of time that the equipment is used for commercial fishing, and depreciation has been calculated on this basis.

The Income Tax Act capital cost allowance schedule pertaining to farmer's and fishermen's capital assets (CCH Canadian Ltd. 1984=) was used to calculate depreciation expenses for **the** following analysis. The fixed costs for a typical Eskimo Point fisherman total approximately **\$360.00** a year. Fixed costs for a full-time fisherman (ie. taking into account the full value of depreciation on equipment) would amount to \$1800.00 a year.

VARIABLE COSTS

Variable costs of production are those costs that vary in proportion to the level of fishing effort, increasing as fishing effort increases. The major variable costs incurred by Eskimo Point fishermen are the cost of gas and oil for the outboard motors, food supplies, and repairs and maintenance.

Variable costs for the Eskimo Point quota averaged \$10.00 a trip for food and \$20.00 for gas and oil. These costs amount to 30% of the average gross income made per trip from the Eskimo Point quota. Costs for the Maguse River quota were \$10.00 a trip for food and \$28.00 for gas and oil, amounting to 40% of the average gross income made from this quota. The Copperneedle quota is farther away and requires both more fuel and more food supplies because of the potential of having to stay overnight. Gas and oil supplies averaged \$130.00 and food supplies cost approximately \$50.00 per trip. Variable costs consume 44% of the average **gross** income from the Copperneedle quota. All figures are based on the local 1988 prices of \$14.95 for 5 gallons of gas and \$5.00 a litre for outboard motor oil.

The amount of fuel used obviously depends on how far away the fishing grounds are and the price of gas was frequently given as the main reason for not fishing the more distant quotas. Complaints about the high cost of gas were also heard from many of the smallest scale fishermen (those with only 1 or 2 sales all season), who indicated that they would fish more often if they could afford to buy gas more often.

Food costs are highly variable, depending on how fishing is carried out. Most fishermen set their nets in the morning, spend the day on the fishing grounds, and pull up their nets in the evening to return to town with their catch. Several fishermen worked at full-time jobs in Eskimo Point during the fishing season. Some of these fishermen fished in the evenings, spending the night on the fishing grounds and returning to town for work in the morning. Others fished only on the weekends, often spending the entire weekend on the fishing grounds. Food provisions are needed for each of these styles of fishing as at least one meal, and more often two or three meals, must be taken away from home.

Some fishermen with full-time jobs went out to set their nets in the morning before **work** and returned to check them in the evenings. This type of fishing does not require food supplies and so has a lower cost of production. However, the chance of net damage is also much higher when nets are left unattended, and many people said that they preferred not to fish this way.

Maintenance and repair costs are also highly variable. Only one person reported boat damage during the time that information was being collected, but several people lost nets due to whale or seal damage, or damage by other boats. Depending on **the** number of nets used, 1 or 2 nets often have to be replaced each season due to irreparable damage. The type of repairs most commonly needed are replacement of the propeller and/or gears and recanvassing of the canoe. Average maintenance and repair costs are about \$250.00 a year, however most fishermen were quick to

point out that the damage sustained by their boats was often not due to commercial fishing but to recreational use or domestic harvesting.

NET REVENUE

In order for commercial fishing to survive in the short-term, fishermen must be able to cover at least the costs associated with each trip with the income made from fishing. In order to be economically viable, fisherman must be able to cover both their variable operating costs and their fixed costs with the proceeds from fishing. To determine whether the Eskimo Point commercial fishery is viable in the short run, a cash flow analysis and breakeven analysis have been performed for both an average Eskimo Point fisherman and a hypothetical full-time fisherman.

CASH FLOW ANALYSIS

Table 6 shows a cash flow analysis for a typical Eskimo Point fishing operation. Gross profit for the season, after covering the cost of gas and food supplies, averaged \$341.00. All but two fishermen showed a positive gross profit in 1988.

This value compares very favorably with the average incomes earned in 1987 when the market price for char was only \$1.00 a pound. During that season the average gross profit per trip was \$3.16 and the average gross profit for the season was \$66.01. Only 46% of the fishermen showed a positive gross profit during the 1987 **season.**⁴

As indicated above, the domestic catch is an important part of the commercial catch, particular for **the** Maguse River quota. If the substitution value for **an** average domestic catch of 2 fish per trip is added to the income, gross profit increases in value to an average of \$421.46 for the season.

Once 30% of the costs of miscellaneous supplies and depreciation for the canoe and motor are subtracted, the average net revenue becomes negative (a loss of \$21.54), indicating that income is not high enough to cover all fishing costs. If the subsistence catch is included as income, net revenue becomes slightly positive, showing a profit of \$58.46 over the season.

As indicated by Graph 4, only a very few people concentrated their efforts on commercial fishing. However, the presence of one serious commercial fisherman does illustrate the potential for more full-time participation. Table 7 is a cash flow analysis for a hypothetical commercial fisherman, using 6 nets and making 20 trips during the season. Assuming the same average catch per unit effort and costs seen in the part-time fishermen,

a full time-commercial fisherman harvesting both the Eskimo Point Area and Maguse River quotas could expect to make a gross profit of approximately \$4,340.00 during the season after covering the costs of food and fuel. After deducting the full depreciation value of the canoe and motor, and the costs of repairs and , supplies, a net revenue of \$2,540.00 can be expected.

At the present allowable quota levels, the Eskimo Point and Maguse River quotas could sustain a maximum of 4.8 full-time fishermen with this level of harvest if all part-time subsistence fishermen were excluded.

BREAKEVEN ANALYSIS

Table 8 shows a Breakeven Analysis for a typical Eskimo Point fisherman, using the averaged costs for the combined Eskimo Point and Maguse River quotas.

At the 1988 market value of \$1.40 a pound for char, a fisherman must sell 371 lbs. of fish to cover his operating costs and 30% of the fixed capital costs. It was assumed that one net would need to be replaced each season due to loss or damage, and \$250.00 in repairs would be required. Fourteen of the 55 fishermen met this breakeven volume during 1988. At the present quota levels, the combined Eskimo Point and **Maguse** River quotas could support 46 fishermen at this part-time breakeven volume of harvest.

Table 9 presents a Breakeven Analysis for the hypothetical full-time commercial fisherman, using 6 nets and purchasing new equipment. In order for a full-time fisherman to break even he would have to sell 1841 lbs. of fish. Only one fisherman in Eskimo Point caught enough fish to cover full costs, however, a fisherman fishing full time with 6 nets would be able to capture this volume in 11 trips based on an average catch per unit effort of 30 lbs. per net. The combined Eskimo Point and Maguse River quotas could support 9.3 fishermen at this level of harvest.

LONG-TERM VIABILITY

In order for commercial fishing to be a viable economic activity in the long-run, fishermen must be able to **cover** not only their operating costs but also the replacement costs of equipment. To determine the ability of Eskimo Point fishermen to cover these costs a Return to Investment Analysis was performed for an average Eskimo Point fisherman and for a hypothetical full-time commercial fisherman.

RETURN TO INVESTMENT

Table 10 is a Return to Investment Analysis for an average Eskimo Point fisherman. It is clear that at the average level of

fishing effort, there is not enough profit made to cover investment costs solely from commercial fishing. This is indicated by strongly negative net present values.

Table 11 shows the Return to Investment for the hypothetical full-time **commercial** fisherman. A fisherman using 6 nets and making 20 trips a season, would, over the period of 5 years, be able to not only cover the cost of his investment, but also make a return of up to 20%. This level of return to investment is considered to be quite acceptable for even a high risk business.

CONCLUSION

The information presented in this report points to two general conclusions. Firstly, it indicates that even though the Eskimo Point commercial fishery is extremely restricted in terms of season length and available quota sizes, it would be possible for a small number of people to seriously pursue commercial fishing and get an acceptable return to their labour and capital investment. **Commercial** fishing will never provide a full income, but a fisherman could make a net profit of approximately \$2,500.00 after covering all operating and investment costs. At this rate of profit, he could easily cover the cost of reinvestment and realize a return of over 20% on his investment capital, indicating that commercial fishing is a viable enterprise. However, the small size of the fishery means that this opportunity would be available to only a very few people.

The second point that is obvious from this study is that the fishermen of Eskimo Point don't fish that way. The average fisherman only made 4 commercial fishing trips during the season, and made a gross profit (after covering gas and food costs) of approximately \$340.00. This is not enough to cover the cost of depreciation on the fishing equipment, and the other fixed costs associated with fishing. It is clear that these are not typical commercial fishermen, but rather primarily subsistence fishermen that take advantage of the commercial market when they have excess catch, incorporating commercial fishing into the traditional mixed economy. The money they make pays for gas and food, and provides a little bit of extra income. This extra income was considered to be particularly important for those people who did not have other jobs. The high cost of fishing and hunting was frequently cited as one of the major concerns in the community and commercial fishing was seen as a good way to underwrite these activities for people who did not have other work or income.

Commercial fishing has increased the options available for earning cash and the extent of fishing effort seen is linked to the relative attractiveness of other activities, including other harvesting activities such as domestic fishing, whaling, and caribou hunting. The people of Eskimo Point like to fish, and

commercial fishing simply requires that they adapt existing knowledge and technology. It uses relatively simple technology and requires a low level of investment so that fishermen are not pressured into fishing full-time to pay for major capital investments. As seen by the number of fishermen that also held full-time jobs, fishing can be conducted in conjunction with other work or can alternate with other seasonal forms of employment.

Essentially, Eskimo Point fishermen use commercial fishing as a supplementary source of income, and they will continue to fish commercially **as** long as the price paid for fish continues to cover their immediate operating expenses.

ENDNOTES

1. Yonge, L. 1988. Analysis of the Economic Performance of the Commercial Fishery at Eskimo Point, NWT. Prepared for the Department of Economic Development and Tourism, Keewatin **Region**, Government of the Northwest Territories, unpublished.
2. Usher, Peter J. 1976. "Evaluating Country Food in the Northern Native Economy" in Arctic 29(2) : 105 - 120.
3. **CCH Canadian Ltd., Canadian Depreciation Guide for Farmers and Fishermen, in Canadian Depreciation Guide 1984 Edition.**-
4. Yonge, L. 1988. *ibid.*

TABLES AND GRAPHS

TABLE 1

ESKIMO POINT COMMERCIAL FISHERY - SUMMER 1988 HARVESTS

| QUOTA SYSTEM | WEEK ENDING | HARVEST (LBS) (Dressed Wt.) |
|---------------------------------|----------------|--------------------------------|
| <u>Eskimo Point Area</u> | July 23 | 3,335.0 |
| | July 30 | 4,698.5 |
| | August 6 | 722.5 |
| | August 13 | 139.5 |
| Total Harvest | | 8,895.5 |
| Total Commercial Quota | | 8,600.0 |
| <u>Maause River</u> | July 23 | 51.5 |
| | July 30 | 91.0 |
| | August 6 | 1,547.0 |
| | August 13 | 2,158.0 |
| | August 20 | 1,573.5 |
| | August 27 | 250.0 |
| | September 3 | 185.0 |
| | September 17 | 34.5 |
| Total Harvest | | 5,890.5 |
| Total Commercial Quota | | 8,600.0 |
| <u>Comerneedle River</u> | August 20 | 1,528.0 |
| | August 27 | 940.5 |
| | September 3 | 866.5 |
| Total Harvest | | 3,335.0 |
| Total Commercial Quota | | 8,600.0 |
| <u>Ferauson River</u> | August 27 | 468.0 |
| Total Harvest | | 468.0 |
| Total Commercial Quota | | 25,960.0 |

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ESKIMO POINT COMMERCIAL FISHERY - SUMMER 1988 CATCH STATISTICS

| | ESKIMO POINT QUOTA | MAGUSE RIVER QUOTA | COPPERNEEDLE RIVER QUOTA | TOTAL FISHERY |
|-----------------------------|--------------------------|--------------------------|--------------------------------|------------------|
| Total Harvest (lbs)* | 8895.5 | 5890.5 | 3773 | 18559 |
| % of Total Fishery | 47.9 | 31.7 | 20.3 | 100 |
| Total Number of Harvests | 102 | 82 | 11 | 195 |
| % of Total Fishery | 52.3 | 42.1 | 5.6 | 100 |
| Number of Fishermen | 44 | 26 | 5 | 55 |
| % of Total Fishery | 80.0 | 47.3 | 9.1 | 100 |
| Average Catch/Trip (lbs)* | 71 | 65.0 | 292.3 | 82.9 |
| Average Catch/Season (lbs)* | 202.2 | 226.6 | 754.6 | 343.9 |
| Average Catch/Net (lbs)* | 31.4 | 23.6 | 99.5 | 40.9 |

* Weights are all given in dressed weight

TABLE3

ESKIMO POINT COMMERCIAL FISHERY - SUMMER 1988 GROSS INCOMES

| | ESKIMO POINT QUOTA | MAGUSE RIVER QUOTA | COPPERNEEDLE RIVER QUOTA | TOTAL FISHERY |
|-----------------------|--------------------------|--------------------------|--------------------------------|------------------|
| Average Income/Trip | \$99.40 | \$92.07 | \$409.19 | \$116.06 |
| Average Income/Season | \$283.00 | \$317.18 | \$1,056.44 | \$481.46 |
| Total Income Season | \$12,453.70 | \$8,246.70 | \$5,282.20 | \$26,481.00 |
| % of Total Fishery | 47.0 | 31.1 | 19.9 | 100.0 |

TABLE4

ESKIMO POINT COMMERCIAL FISHERY - SUMMER 1988 GROSS INCOMES
SUBSISTENCE CATCH INCLUDED

| | ESKIMO POINT QUOTA | MAGUSE RIVER QUOTA | COPPERNEEDLE RIVER QUOTA | TOTAL FISHERY |
|-----------------------|--------------------------|--------------------------|--------------------------------|------------------|
| Average Income/Trip | \$119.40 | \$112.07 | \$429.19 | \$136.06 |
| Average Income/Season | \$329.00 | \$381.18 | \$1,096.44 | \$561.46 |
| Total Income Season | \$14,493.70 | \$9,886.70 | \$5,502.20 | \$30,381.00 |
| % of Total Fishery | 47.7 | 32.5 | 18.1 | 100.0 |

TAELE5

ESKIMO POINT COMMERCIAL FISHERY - FISHING COSTS

| CAPITAL INVESTMENTS: | AVERAGE FISHERMAN | PURCHASED NEW 1988 | |
|--|---------------------------------|--------------------------|--------------------------------|
| Canoe | \$2,400.00 | \$4,000.00 | |
| Motor | \$2,000.00 | \$3,000.00 | |
| Nets | \$500.00 | \$1,200.00 | |
| AVERAGE CAPITAL INVESTMENT | \$5,700.00 | \$8,200.00 | |
| FIXED COSTS AND SEMI-VARIABLE COSTS | AVERAGE FISHERMAN (@ 30%) | FULL-TIME FISHERMAN | |
| Canoe Depreciation | \$108.00 | \$600.00 | |
| Motor Depreciation | \$90.00 | \$450.00 | |
| Repairs | \$75.00 | \$250.00 | |
| Net Replacement | \$60.00 | \$400.00 | |
| Misc Supplies | \$30.00 | \$100.00 | |
| TOTAL | \$363.00 | \$1,800.00 | |
| VARIABLE COSTS | ESKIMO POINT QUOTA | MAGUSE RIVER QUOTA | COPPERNEEDLE RIVER QUOTA |
| Gas/trip | \$20.00 | \$28.00 | \$130.00 |
| Food/Trip | \$10.00 | \$10.00 | \$50.00 |
| TOTAL | \$30.00 | \$38.00 | \$180.00 |

TABLE 6

CASH FLOW ANALYSIS FOR A TYPICAL ESKIMO POINT FISHING OPERATION

| | AVERAGE FISHERMAN | INCLUDING SUBSISTENCE CATCH |
|--|----------------------|-----------------------------------|
| Gross Income/Season (from fish sales) | \$481.46 | \$561.46 |
| Variable Costs | | |
| Gas/Oil (4 trips) | \$100.00 | \$100.00 |
| Food (4 trips) | \$40.00 | \$40.00 |
| Total Variable Costs/Season | \$140.00 | \$140.00 |
| Gross Profit/Season | \$341.46 | \$421.46 |
| Fixed and Semi-variable costs (@30% of total costs) | | |
| Cance Depreciation | \$108.00 | \$108.00 |
| Motor Depreciation | \$90.00 | \$90.00 |
| Repairs | \$75.00 | \$75.00 |
| Net Replacement | \$60.00 | \$60.00 |
| Misc Supplies | \$30.00 | \$30.00 |
| Total Fixed and Semi-Variable costs/season | \$363.00 | \$363.00 |
| NET REVENUE | (\$21.54) | \$58.46 |

TAELE7

CASH FLOW ANALYSIS FOR A HYPOTHETICAL FULL-TIME FISHERMAN
(Based on the use of 6 nets, 30 lbs. catch/net, and 20 trips during the season)

| | |
|---|-------------------|
| Gross Income/Season (from fish sales) | \$5,040.00 |
| Variable Costs | |
| Gas/Oil (20 trips) | \$500.00 |
| Food (20 trips) | \$200.00 |
| Total Variable Costs/Season | \$700.00 |
| Gross Profit/Season | \$4,340.00 |
| Fixed and Semi-variable costs | |
| Canoe Depreciation | \$600.00 |
| Motor Depreciation | \$450.00 |
| Repairs | \$250.00 |
| Net Replacement | \$400.00 |
| Misc Supplies | \$100.00 |
| Total Fixed and Semi-Variable Costs/Season | \$1,800.00 |
| NET REVENUE | \$2,540.00 |

TABLE 8**BREAKEVEN ANALYSIS FOR A TYPICAL ESKIMO POINT FISHERMAN**

| | |
|--|-----------------|
| UNIT SALES PRICE | \$1.40 |
| UNIT COST | |
| Gas/Oil (\$25.00/trip) | \$0.30 |
| Food (\$10.00/trip) | \$0.12 |
| TOTAL | \$0.42 |
| UNIT CONTRIBUTION MARGIN | \$0.98 |
| FIXED COSTS (Based on 30% of full costs) | |
| Canoe Depreciation | \$108.00 |
| Motor Depreciation | \$90.00 |
| Repairs | \$75.00 |
| Net Replacement | \$60.00 |
| Misc Supplies | \$30.00 |
| TOTAL | \$363.00 |
| BREAKEVEN VOLUME (lbs) | 371 |

TABLE 9**BREAKEVEN ANALYSIS FOR A HYPOTHETICAL FULL-TIME FISHERMAN**

| | |
|-------------------------------|-------------------|
| UNIT SALES PRICE | \$1.40 |
| UNIT COST | |
| Gas/Oil (\$25.00/trip) | \$0.30 |
| Focal (\$10.00/trip) | \$0.12 |
| TOTAL | \$0.42 |
| UNIT CONTRIBUTION MARGIN | \$0.98 |
| FIXED COSTS | |
| Canoe Depreciation | \$600.00 |
| Motor Depreciation | \$450.00 |
| Repairs | \$250.00 |
| Net Replacement | \$400.00 |
| Misc Supplies | \$100.00 |
| TOTAL | \$1,800.00 |
| BREAKEVEN VOLUME (lbs) | 1841 |

TABLE 10

RETURN TO INVESTMENT ANALYSIS FOR A TYPICAL ESKIMO POINT FISHERMAN

NET CM-1 INFLOW

INCOME
Fish Sales \$481.%

COSTS
Gas/Oil (4 trips) \$100.00
Food (4 trips) \$40.00
Repairs (30% of total) \$75.00
Net Replacement (30% of total) \$60.00
Supplies (30% of total) \$30.00
TOTAL \$305.00

NET CASH FLOW \$176.46

NET PRESENT VALUE 5 YEAR INVESTMENT

| | @10% | @15% | @20% |
|--------------------------|--------------|--------------|--------------|
| Cash Flow | | | |
| 176.46 | \$668.96 | \$591.49 | \$527.79 |
| Less Investment (@30%) | \$1,710.00 | \$1,710.00 | \$1,710.00 |
| NET PRESENT VALUE | (\$1,041.04) | (\$1,118.51) | (\$1,182.21) |

TABLE 11

RETURN TO INVESTMENT ANALYSIS FOR A HYPOTHETICAL FULL-TIME FISHERMAN

NET CASH INFLOW

INCOME
Fish Sales (20 trips) \$5,040.00

COSTS
Gas/Oil (20 trips) \$500.00
Food (20 trips) \$200.00
Repairs \$250.00
Net Replacement \$400.00
Supplies \$100.00
TOTAL \$1,450.00

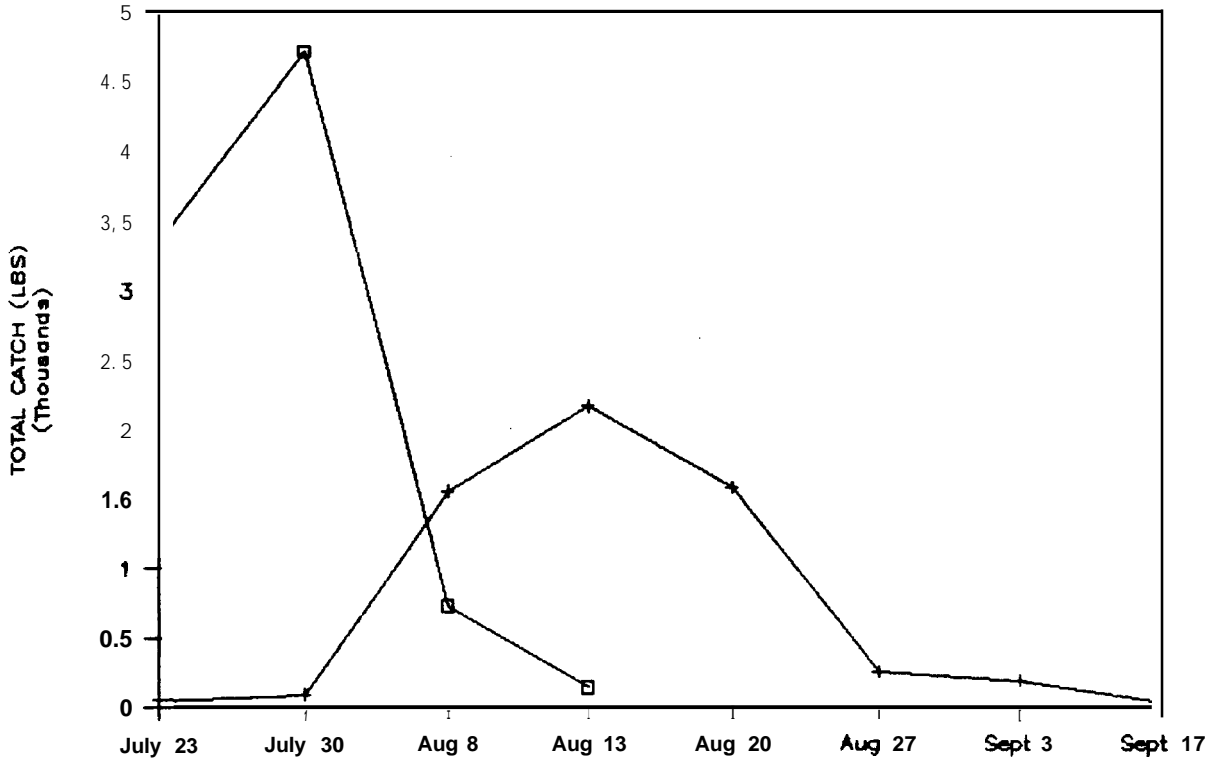
NET CASH FLOW \$3,590.00

NET PRESENT VALUE 5 YEAR INVESTMENT

| | @10% | @15% | @20% |
|--------------------------|-------------|-------------|-------------|
| Cash Flow | | | |
| \$3,590.00 | \$13,609.69 | \$12,033.68 | \$10,737.69 |
| Less Investment | \$8,300.00 | \$8,300.00 | \$8,300.00 |
| NET PRESENT VALUE | \$5,309.69 | \$3,733.68 | \$2,437.69 |

GRAPH 1 TOTAL WEEKLY CATCH

BY QUOTA

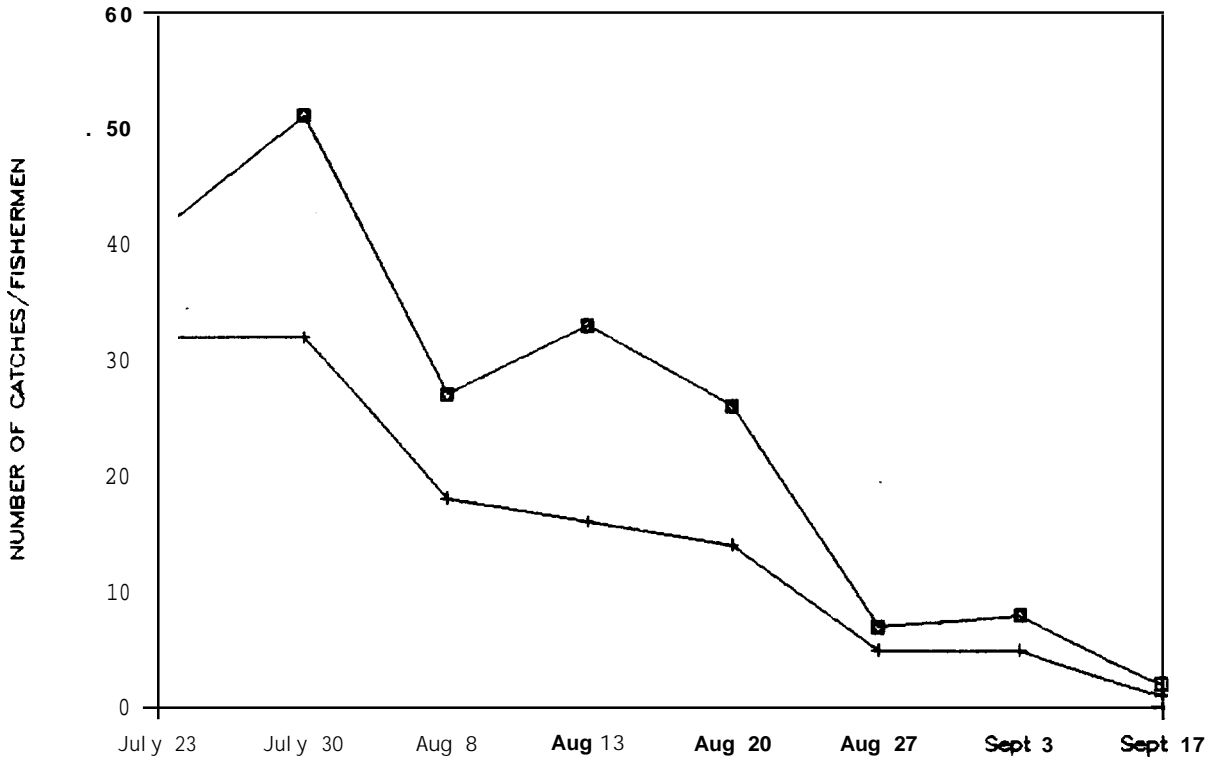


a Eskimo Point Quota

+ Moguse River Quota

GRAPH 2 WEEKLY FISHING EFFORT

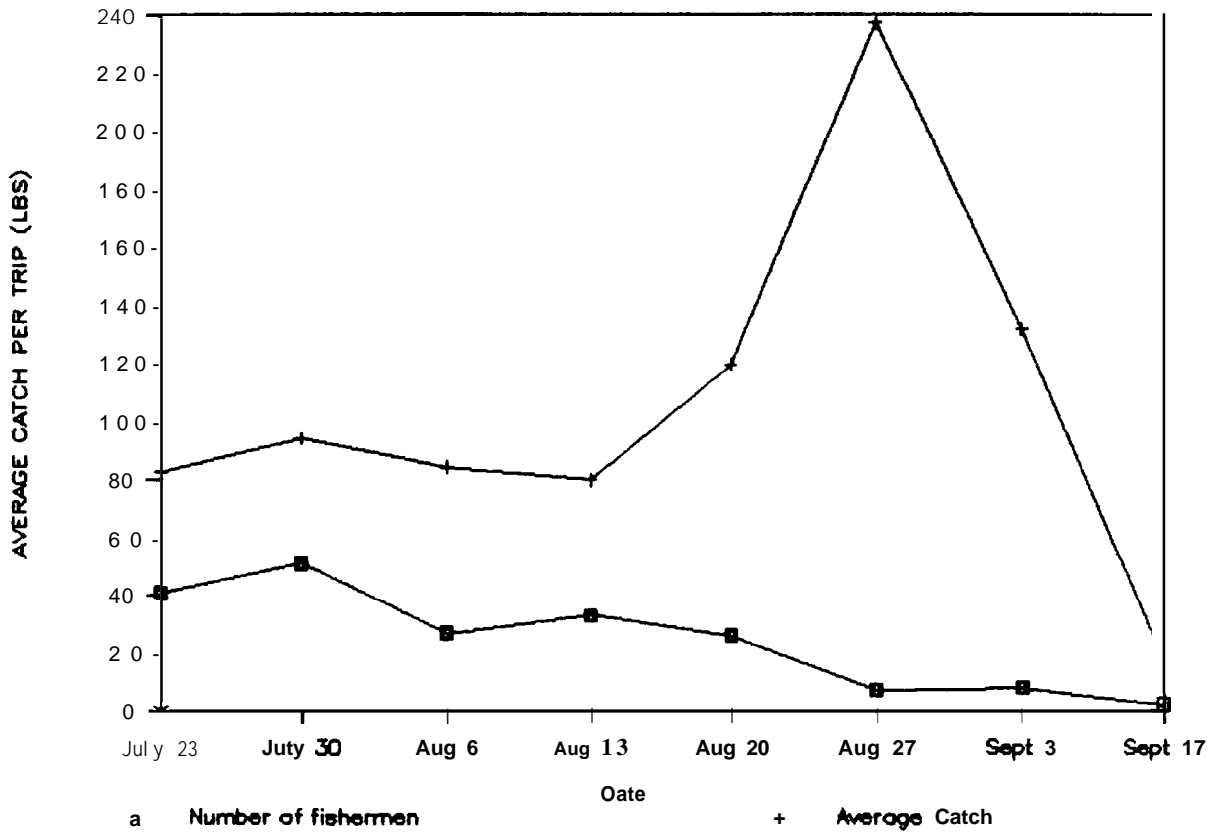
NUMBER OF CATCHES & NUMBER OF FISHERMEN



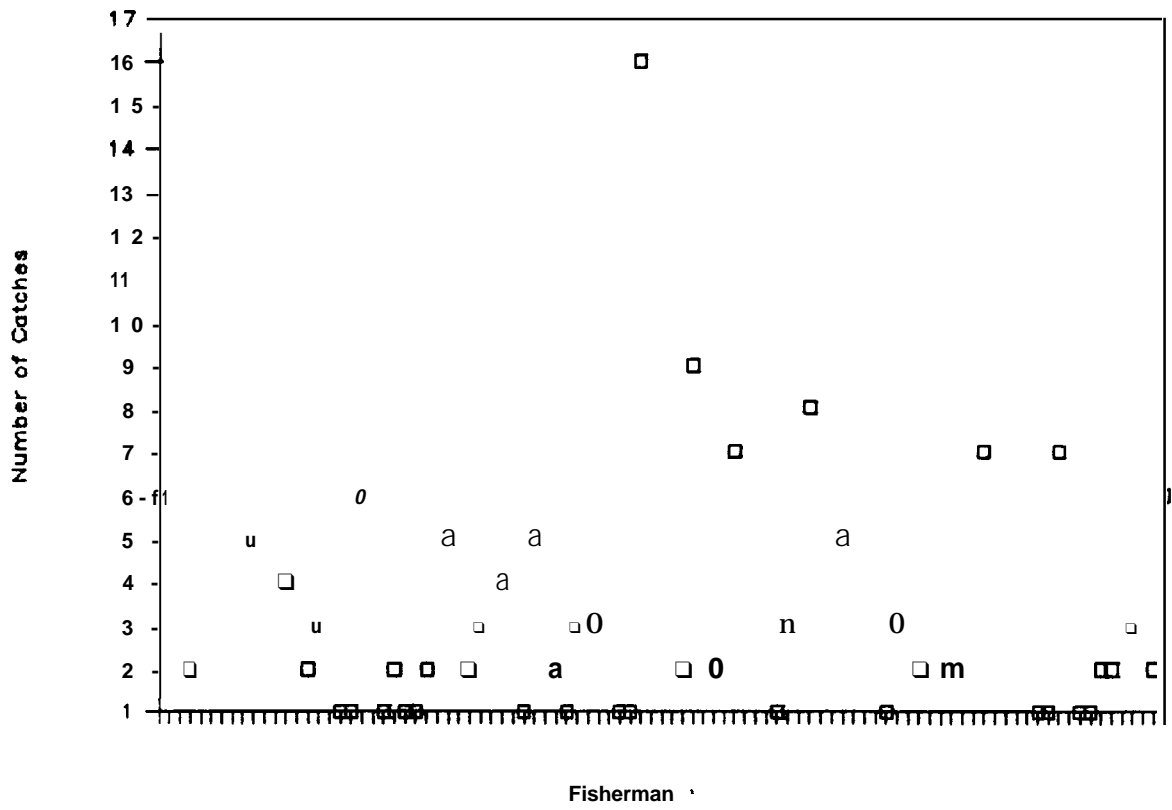
Number of catches

Number of Fishermen

GRAPH 3 AVERAGE CATCH PER TRIP



GRAPH 4 NUMBER OF CATCHES PER FISHERMAN



**APPENDIX 1 DATA SUMMARY - ENTIRE FISHERY
ESKIMO POINT COMMERCIAL FISHING - SUMMER 1988**

| FISHERMAN | WEEKLY CAmI FUR THE WEEK ENDING... | | | | | | | mm | AVERAGE | #CATCHES | GAS USED (GALS) | |
|-----------|------------------------------------|----------------------------|---------|----------|----------|----------|----------|------------------|------------------|----------|-----------------------|---------------|
| | JULY 23 * | JULY 30 * | AUG 6 * | AUG 13 * | AUG 20 * | AUG 27 * | SEPT 3 * | SEPT 17 * | HARVEST (LBS) | | | CAmi (LBS) |
| 1 | | 55,0 e 21,0 e 20,0 e | | | 82,0 n | | | 11,5 n 23,0 n | 212,5 | 35,4 | 6, | |
| 2 | 51,5 B | | 64,0 9 | | | | | | 115,5 | 57,8 | 2 | 11,6 |
| 3 | 107,0 e | 120,0 e | 73,5 n | 27,5 | 26,0 n | 61,0 n | 224,5 c | | 1179,0 | 65,5 | 18 | |
| | | 61,0 e | 31,0 n | 18,0 n | 47,5 n | | 24,5 n | | | | | |
| | | 43,0 e | | 54,0 n | %,0 n | | | | | | | |
| | | | | 43,08 | 94,0 B | | | | | | | |
| | | | | 27,5 n | | | | | | | | |
| 4 | 29,0 e 148,0 e | | | | 16,0 n | | 160,5 c | | 550,0 | 91,7 | 6 | 45,8 |
| | | | | | 89,01 | | | | | | | |
| | | | | | 107,51 | | | | | | | |
| 5 | 48,5 e | 48,5 e | | | | | | | 265,5 | 66,4 | 4 | |
| | 81,5 e | 87,0 e | | | | | | | | | | |
| 6 | 29,0 e | | | 30,0 n | | | | | 59,0 | 29,5 | 2 | 14,8 |
| 7 | 12,0 e | 50,0 e | | | | | | | 111,0 | 37,0 | 3 | 7 |
| | | 49,0 e | | | | | | | | | | |
| 8 | | | 49,0 n | | | | | | 49,0 | 49,0 | 1 | 24,5 |
| 9 | | | 73,0 n | | | | | | 73,0 | 73,0 | 1 | 5 |
| 10 | 12,5 e | 18,0 e | 73,5 B | 31,0 n | 172,0 c | | 12,0 B | | 501,0 | 62,6 | 8 | 31,3 |
| | | | 25,0 n | | 157,0 c | | | | | | | 10 |
| 11 | | 27,0 e | | | | | | | 27,0 | 27,0 | 1 | 30 |
| 12 | | 95,0 e | | 88,0 n | | | | | 183,0 | 91,5 | 2 | |
| 13 | 43,5 e | | | | | | | | 43,5 | 43,5 | 1 | |
| 14 | 19,0 e | | | | | | | | 19,0 | 19,0 | 1 | |
| 15 | 32,5 e | 48,5 e | | | | | | | 81,0 | 40,5 | 2 | 20,3 |
| | | | | | | | | | | | | 1 |
| 16 | 19,0 e | 26,0 e | 19,0 e | | | | | | 109,0 | 21,8 | 5 | 21,8 |
| | | 31,0 e | 14,0 e | | | | | | | | | 5 |
| 17 | | 20,0 e | 59,0 e | | | | | | 79,0 | 39,5 | 2 | |
| 18 | 84,0 e | 165,5 e | | | | | | | 344,5 | 114,8 | 3 | 38,3 |
| | | 95,0 e | | | | | | | | | | 5 |
| 19 | 181,0 e | 33,5 e | | | | | | | 292,5 | 73,1 | 4 | |
| | | 28,0 e | 50,0 e | | | | | | | | | |
| 20 | | | 29,0 e | | | | | | 29,0 | 29,0 | 1 | 14,5 |
| 21 | | | | 135,5 n | 43,0 n | 468,0 f | | | 791,0 | 131,8 | 6 | 26,4 |
| | | | | 44,0 B | 50,01 | 50,51 | | | | | | 10 |
| 22 | 57,5 e | | 34,5 e | | | | | | 92,0 | 46,0 | 2 | 46,0 |
| 23 | | | | | 142,5 c | 326,0 c | 481,5 c | | 1293,5 | 323,4 | 4 | 107,8 |
| | | | | | 34%5 c | | | | | | | 45 |
| 24 | 20,5 e | | | | | | | | 20,5 | 20,5 | 1 | |
| 25 | 73,5 e | 51,0 e | | | | | | | 171,5 | 57,2 | 3 | |
| | | 47,0 e | | | | | | | | | | |
| 26 | 1&O e | 46,5 e | | | | | | | 82,5 | 27,5 | 3 | |
| | | 18,0 e | | | | | | | | | | |
| 27 | | | | 438,0 C | 713,0 C | 614,5 C | | | 1765,5 | 588,5 | 3 | 147,1 |
| 28 | | 42,5 n | | | | | | | 42,5 | 42,5 | 1 | 21,3 |
| 29 | 24,0 e | | | | | | | | 24,0 | 24,0 | 1 | 15 |

APPENDICES

IlPPm21 CONTINUED.

| FISHERMAN | WEEKLY cm FOR THE WEEK ENDING... | | | | | | | TOTAL | AVERAGE | CATCH/ | GAS | |
|-----------|----------------------------------|--------------------|--|--|------------------|------------------|----------------------------|-----------|---------------|-------------|----------|----------------------|
| | JULY 23 * | JULY 30 * | AUG 6 * | AUG 13 * | AUG 20 * | AUG 27 * | SEPT 3 * | SEPT 17 * | HARVEST (LBS) | CATCH (LBS) | #CATCHES | NET USED (LIB) (als) |
| 30 | 320.5 e 442.5 e 152.5 e | 656.0 e 136.0 e | 303.5 n 118,09 141.0 n 111,01 | 234,5 n 95,0 n 142.5 n | 226.0 n | 74.0 n 64.5 n | | | 3398.5 | 212.4 | 16 | 70.8 5 |
| 31 | | 368.5 e | 60.0 e | | | | | | 428.5 | 224.3 | 2 | 107,1 5 |
| 32 | | 111.5 e 133.5 e | 54.5 e 102.0 n | | 26.0 n 29.0 n | | 46.0 n 54.0 n 48.5 n | | 605.0 | 67.2 | 9 | 10 |
| 33 | 58,0 e | | | 112.0 | | | | | 170.0 | 85.0 | 2 | |
| 34 | 36.0 e | 136.0 e | 87.5 n 66.0 e 31,0 e 168.0 e | | | | | | 670,0 | %7 | 7 | 16,0 5 |
| 35 | 09,5 e | | | | | | | | 89.5 | 89.5 | 1 | |
| 36 | 148,0 e 81.0 e | 228,0 e | | | | | | | %7,0 | 152.3 | 3 | 76,2 10 6 |
| 37 | 305.0 e 48.0 e | 140.0 e | 00.0 n 273.5 e 09.5 e | 27.5 e | 66.0 n | | | | 1027,5 | 128.4 | 8 | |
| 38 | | 36.0 e | | 83.0 n 63.01 69.01 | 65.51 | | | | 316.5 | 63.3 | 5 | 15,8 3 |
| 39 | 66.5 e | | | | | | | | 66.5 | 66.5 | 1 | |
| 40 | 48.0 | | | 48.0 n 43.0 n | | | | | 139.0 | 46.3 | 3 | 23.2 5 |
| 41 | | 57,0 e 47.5 e | | | | | | | 104.5 | 52.3 | 2 | |
| 42 | 64.0 e | 48.5 n | | | | | | | 112.5 | 56.3 | 2 | 28.1 5 |
| 43 | | 48.5 e | 144.5 e | | | | | | 193,0 | %5 | 2 | |
| 44 | | 41.0 e 53.0 e | | | | | | | 94.0 | 47.0 | 2 | 47,0 7 |
| 45 | 44,0 e | 87.5 e | | 147.0 n 86,0 n 86,01 124,5 n 67,51 | | | | | 642,5 | 91.8 | 7 | |
| 46 | | | 103.01 | | | | | | 103,0 | 103.0 | 1 | |
| 47 | | | | | 36.08 | | | | 36.0 | 36.0 | 1 | |
| 48 | 42.0 e | 260.0 e | %0 e 138.5 e | 22.0 n 66.5 e | 35.5 n | | | | 660.5 | 94.4 | 7 | 47.2 10 2 |
| 49 | | 86.0 e | | | | | | | 86.0 | 66.0 | 1 | |
| 50 | | 29.0 e | | | | | | | 29.0 | 29.0 | 1 | |
| 51 | 15.0 e | 28,0 e | | | | | | | 43.0 | 21,5 | 2 | 21,5 |
| 52 | 122.0 e 71.5 e | | | | | | | | 193.5 | 96.8 | 2 | |
| 53 | | | | 71,0 n 116,0 n | 102.0 n | | | | 259.0 | 96.3 | 3 | 7 |
| 54 | | | 112,0 n | 25.0 n | | | | | 137.0 | 68.5 | 2 | 22.8 15 |
| 55 | | 37,5 e | | 26,0 n 35,0 n 44.0 n | 20.01 47.0 n | | | | 217.5 | 34.7 | 6 | 17.4 10 |

APPENDIX 1 CONTINUED.

| FISHERMAN | WEEKLY CATCH FOR THE WEEK ENDING . . . | | | | | | | | Km HARVEST | AVERAGE c m | #CATCHES | CATCH/ NET | GAS USED |
|-----------|--|-----------|---------|----------|----------|----------|----------|-----------|---------------|----------------|----------|---------------|-------------|
| | JULY 23* | JULY 30 * | AUG 6 * | AUG 13 * | AUG 20 * | AUG 27 * | SEPT 3 * | SEPT 17 * | | | | | |
| TOTAL | 3386.5 | 4709.5 | 2269.5 | 2623.5 | 3101.5 | 1658.5 | 1051.5 | 34.5 | 18925.0 | 4559.9 | 195 | | |
| AVERAGE | 82.6 | 93.9 | 84.1 | 79.5 | 119.3 | 236.9 | 131.4 | 17.3 | 343.9 | 82.9 | 4 | 40.9 | 10.2 |
| Hum | 442.5 | 656.0 | 303.5 | 438.0 | 713.0 | 614.5 | 481.5 | 23.0 | 3398.5 | 588.5 | 18 | 147.1 | %0 |
| MINIMUM | 12.0 | 18.0 | 14.0 | 18.0 | 16.0 | 50.5 | 12.0 | 11.5 | 19.0 | 19.0 | 1 | 11.6 | LO |
| n | 41.0 | 51.0 | 27.0 | 33.0 | 26.0 | 7.0 | 8.0 | 2.0 | 55.0 | 55.0 | 55.0 | 26.0 | 30.0 |

* QUOTA HARVESTED: e = ESKIMO POINT n = MAGUSE RIVER c = COPPERNEEDLE RIVER f = FERGUSON RIVER

