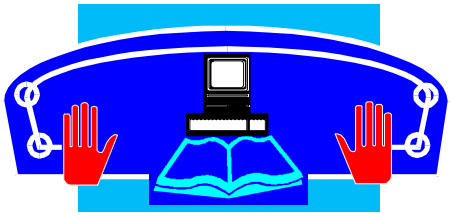

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Market Interaction of Canadian Farmed and Wild Arctic Char

Market Analysis Group
Commercial and Market Analysis Division

Economic and Commercial Analysis Directorate
Department of Fisheries and Oceans
Ottawa, Ontario
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(Department of Fisheries and Oceans
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Economic and Commercial Analysis Report No. 22

FOREWORD

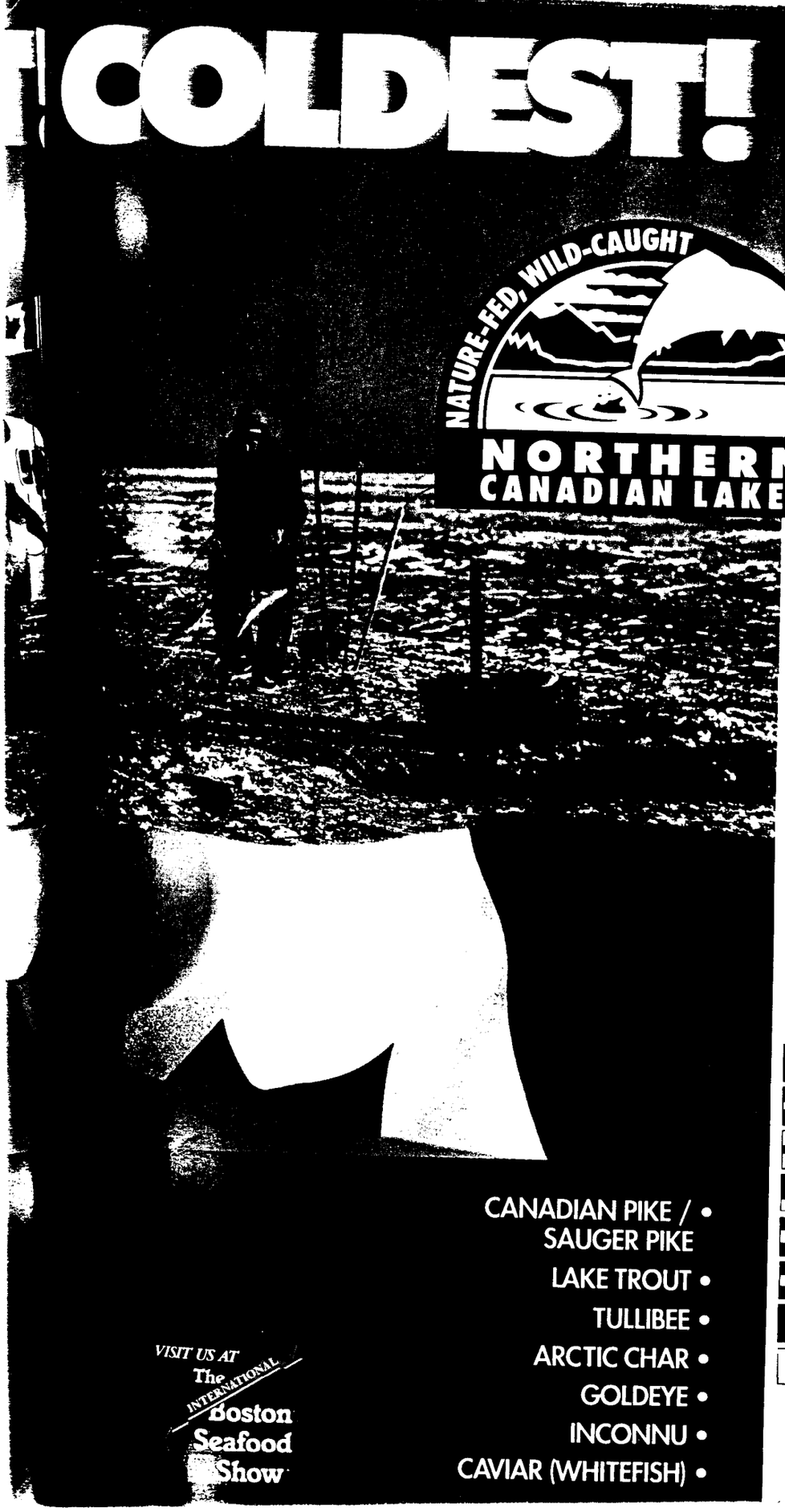
This study was commissioned by the Department of Fisheries and Oceans to obtain a better understanding of the current trends in Canadian farmed and wild Arctic char products, prices and supplies.

This report provides a comprehensive look at Arctic char in Canada and contains marketing information on a subject which we trust will be of considerable interest to the Canadian commercial fishing sector.

PREFACE

Cette étude a été commandée par le Ministère des Pêches et des Océans afin de mieux comprendre les tendances actuelles des prix et de 1'offre dans les produits canadiens de l'aquiculture et de i 'omble chevalier.

Ce rapport donne un aperçu détaillé de l'omble chevalier au Canada et contient des renseignements sur la commercialisation d'un produit qui saura, scion nous, intéresser le secteur de la pêche commercial au Canada.



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EXECUTIVE SUMMARY

The supply of Arctic char in Canada and worldwide is expected to increase dramatically in the next few years due to aquiculture production. There is concern about the potential disruption of traditional markets for Canada's wild Arctic char fishery. This study examines the potential market displacement of Canadian wild Arctic char by farmed Arctic char production, and the potential impact on prices of both wild and aquacultured Arctic char.

A company in Winnipeg is the only significant producer of farmed Arctic char in Canada to date. Currently, they sell about 6.8 tonnes of 8-10 ounce char annually but have a capacity to produce 225 tonnes. An operation in the Yukon is planning to sell 4-7 pound Arctic char and claim that they could produce about 500 tonnes, Industry experts estimate that there are about 400,000 eggs, fry and adult char in the aquiculture production system in Canada with another 300,000 or more probably available in 1989.

CONCLUSIONS

The pan sized 8-10 ounce farmed char is considered by most customers to be a different product than than the 4-7 pound wild fish. It is unlikely that the pan sized product will have any effect on the wild Arctic char prices or volumes of sale until the annual sale of the 8-10 ounce char reaches at least 45-90 tonnes. As production of the pan sized char exceeds 90-100 tonnes per

year, it is likely that the prices will decrease for this size, eventually levelling about a $1.00 per pound above the price for trout.

When the price for pan size Arctic char decreases, there is a possibility that it will bring down the price of full size char, whether they be wild or farm raised, unless the larger fish can be promoted as a distinct product from pan size.

According to most industry sources, the 4-7 pound fresh farmed char will have a less serious effect on the prices and volumes of the wild char than will the pan sized product. However, retailers prefer fresh product and anticipate that the 4-7 pound fresh fish will have a significant downward effect on the volume of frozen wild char sales, although it will have a lesser effect on the prices;

If the wild and farmed char producers promote their products in a coordinated manner, it is likely that they can increase sales throughout the industry. If volumes of sales increase, it may be possible for the industry to afford well executed promotional programs.

It is difficult to quantify the effects on the wild char industry of an increase in farmed Arctic char production. There is no data to illustrate the potential demand for Arctic char if it is promoted well to the trade. There

is a reasonable possibility that 680-907 tonnes of char per year could be sold in Canada without significant price disruption (to put this in perspective about 3,600 tonnes of trout are sold per year in Canada). The quantity of char that can be sold will depend upon the price of the product, its quality and the effectiveness of promoting this unique species. The presentation (packaging, advertising, product form, freshness) to the end user will be important.

MARKET INTERACTION OF CANADIAN FARMED AND WILD ARCTIC CHAR

1. INTRODUCTION

The supply of Arctic char in Canada and worldwide is expected to increase in the next few years due to aquiculture production. There is a concern about the potential disruption of traditional markets for Canada's wild Arctic char fishery.

In Canada, wild Arctic char is produced from the Northwest Territories (NWT) and the Labrador area of Newfoundland, with a small amount coming from the Quebec fishery. In recent years, landings from the NWT have been in the range of 52 to 88 tonnes per year and from Labrador, 104 to 250 tonnes per year. The catch in Labrador has been declining both in total volume and in individual fish sizes.

A few aquaculturists in Canada and Norway have recently began raising and marketing Arctic char on a limited scale, but with intentions of growth. We did not find any Arctic char producers in the US during our research. The Department of Fisheries and Oceans and industry officials were concerned about the impact of the increase in supply of farmed Arctic char on the Canadian and US markets for wild Arctic char. Consequently, the Department of Fisheries and Oceans retained Western Management Consultants to examine the potential market displacement of Canadian wild Arctic char by farmed Arctic char production, and the potential impact on prices of both wild and farmed Arctic char.

Our approach included:

- A review of published reports on Arctic char production and markets, and the markets for competitive products such as farmed and wild salmon;

- Interviews were conducted in person and by telephone of a wide selection of government officials, current Arctic char producers and wild char producers and marketers in all regions of Canada from the Atlantic to the Pacific;

- A detailed survey, by telephone, of a wide selection of seafood buyers including: brokers and wholesalers; retail grocery chains; specialty seafood retailers and major seafood restaurants.

This report begins with a description in Chapter 2 of the current Arctic char production in Canada. In Chapter 3, we discuss the aquiculture of Arctic char. Chapter 4 outlines the distribution and marketing systems used for both Arctic char and salmon which is the major competitive product. Chapter 5 summarizes the results of the industry surveys and in Chapter 6, we discuss the survey results relative to the market for char and its competitive products. In Chapter 7, we present our conclusions and recommendation drawn from our research. A list of contacts and copies of the questionnaires are in the appendix.

APPROACH AND METHODOLOGY

In approaching this assignment, we considered several factors including:

- The established market for wild Arctic char supplied from the NWT by the FFMC and from the Labrador area;
- The lack of farmed Arctic char presently in the market;
- The lack of market oriented information in Arctic char; and
- The small quantities of char in the market and the consequent lack of public precognition.

In summary, we first reviewed pertinent data; then interviewed people considered to be "experts" in the marketing of Arctic char; conducted structured interviews with a wide cross section of buyers or potential buyers of char; and analyzed our data to determine possible market interaction. This approach is described in detail below.

Literature Review

1. We conducted a literature review covering marketing and production information on Arctic char. This included-back issues of several fisheries and aquiculture journals.

2. We reviewed pertinent studies on salmon and trout markets and market interaction of wild and farmed stocks of these species.

3. Statistical information published by the Department of Fisheries and Oceans was reviewed.

- Industry Interviews

1. We begun by interviewing senior executives of the FFMC and DFO in Winnipeg followed by 20 interviews with persons across Canada considered to have expert knowledge of the current state of Arctic char marketing and aquiculture. These interviews included federal and provincial government officials.

2. Based on the information from these interviews, we designed three separate but similar interview forms for: brokers/ wholesalers; seafood retailers and supermarkets; and restaurants. Professional telephone interviewers surveyed 57 firms in these categories across Canada. The results are tabulated.

3. We conducted 13 interviews with firms -in the US. These interviews were open ended as only 2 reported selling-any char.

4. We carried out a review of information on Arctic char utilization through the Canadian Restaurant and Food Services Association.

Report

Based on the above, we compiled this report.

2. WILD ARCTIC CHAR PRODUCTION

Arctic char may be found in the circumpolar waters of Asia, Europe and North America. In North America the species is native to the Labrador coast north of the Hamilton Inlet and across northern Arctic Canada to Alaska.

* Arctic char, a salmonid like salmon and trout, is the freshwater and anadromous species that lives closest to the north pole, occupying the fresh waters of the most northerly waters far beyond the limits attained by other freshwater species. Some char populations live, feed, and breed solely in fresh water; other populations spend part of their life cycle at sea. A phenomenon that is perhaps unique to this species is that both the anadromous and the non-migratory (freshwater) forms commonly inhabit the same freshwater lakes and rivers.

The anadromous char spend between 4 and 8 years in fresh water before making their first trip to the sea. At sea, they feed on capelin and northern sand lance, and occasionally on greenland and safron cod. After about six weeks in the sea during the brief open water season they return to fresh water, prior to freeze-up, where they overwinter. It appears that the anadromous char eat very little in fresh water and lose much of the weight they gained during the summer. This yearly cycle is repeated except in spawning years when the "sexually mature" char either stay in fresh water all summer or return early from the sea. Spawning takes place at a maximum of once every two years. Char live to a considerable age and attain great

size. The greatest period of growth occurs about the time young char first migrate to the sea, reaching a maximum at about ten years and declining to a minimum at the age of about 24 years. Compared to other wild salmonids, anadromous char growth rates are relatively slow. This, combined with a low reproductive capability, make char vulnerable to over-exploitation.

The Arctic char has a fusiform or cigar body shape characteristic of most salmonids. It's size and coloration vary considerably according to habitat, food supply, and season. Typitally, "adult" anadromous char will range from 2 to 10 pounds, will be dark blue to dark green or brown on the back and sides, changing to silver or a dull white on the belly. Intense blues or greens with silvery bellies are characteristic of char returning from the sea in the fall.

The freshwater or non-migratory adult char are generally of a smaller size. Typical coloration ranges from dark blue to brown on the sides and frequently red, orange, or yellow on the belly. Some populations may have red or mauve spots along the flanks. Anadromous char, because of size and flesh colour are the preferred form for commercial fishing. Most fishing takes place during the upstream migration in the fall although some stocks are fished in the spring downstream migration or through the ice on lakes during the winter.

*Sources: Johnson (1984) and Gyselman (1984). In Johnson and Burns [eds.]. "Biology of the Arctic Charr: Proceedings of the International Symposium on

Arctic Charr. University of Manitoba Press.; Scott and Crossman. 1973. Freshwater Fishes of Canada. Bulletin No. 187. Fisheries Research Board of Canada. ; Johnson (1980) and MacCrimmon and Gotts (1980). In E.K. Balon [cd.]. Charrs: Slmonid Fishes of the Genus Salvelinus. Dr. W. Junk by Publishers. The Hague.; and Kristofersson (1989) DFO Briefing Note on Salvelinus alpinus.

THE COMMERCIAL FISHERY

The Canadian commercial fishery for char is centred in Labrador and in the Northwest Territories. These two fisheries do not overlap, with one " exception, their products are sold in the Central Canada marketplace.

Atlantic Production

As illustrated in Table 2.1 the catch of wild Arctic char from the Labrador region reached a high of 253 tonnes in 1981 and declined steadily to 108 tonnes in 1987. Industry representatives stated that the 1988 catch was down to about 70 tonnes. The reason given for the decline in the catch was a reduced fishing effort which is partially a reaction to a reduced fish size and returns to the fishermen.

Table 2.1

Northern Labrador Arctic Char Landings 1981-87
(tonnes)

Year	No. of Fisherman	Total Catch
1981	276	253
1982	259	243
1983	267	179
1984	262	1 4 8
1985	227	142
1986	188	114-
1987	202	108

About 80 per cent of the Labrador catch is processed at the cooperative at Nain. The remaining 20 per cent is processed at the Torngat Cooperative. The managers of these two cooperatives stated that the majority of their fish are now in the 2-5 pound range with a small amount over 5 pounds. They noted that the average fish size has been declining and speculate that this is probably a reflection of over-fishing. The fishery used to extend further north to more remote regions of Labrador which accounted for some of the larger catches during the early 1980s. However, fishing effort has declined in Northern Labrador as has the size of individual fish which has lead to a reduction in landed weight. As wild Arctic char is such a slow growing fish, fishing pressure can rapidly deplete the population. Industry spokesmen were not optimistic about the future catch of char and both cooperatives believe that it will continue to decline.

Table 2.2

Price Spreads - Labrador Arctic Char 1989

($/lb - FOB plant)

Red fleshed fish	2.50 - 3.00
Pink fleshed fish	2.00
Pale pink/white	1.60

The range of flesh colours found in the char from Labrador varies from pale pink to red. The red fleshed product fetches a price premium as illustrated in Table 2.2. Also, the price varies with the size of the fish, with larger fish (5 pounds and up) receiving the highest prices.

The Torngat Cooperative sells its char to distributors in Montreal and Halifax. The Nain Cooperative in Northern Labrador markets through distributors in Montreal and Halifax, with a very small quantity going to Europe. The Halifax distributor, in turn, sell much of the product to the eastern US. It is estimated that over half of the Labrador catch end up in US markets. At a dressed out yield of approximately 75 per cent, the total production of the Labrador Co-operatives is estimated to average 91 tonnes per year.

Northwest Territories Production

Arctic char landings in the Northwest Territories (NWT) have ranged from 52 tonnes to 89 tonnes over the past six years as illustrated in Table 2.3,

Table 2.3

Landings Of Arctic Char - N.W.T.

(tonnes)

1983	52
1984	62
1985	63
1986	73
1987	53
1988	89

Most of the wild char comes from the Cambridge Bay, Rankin Inlet and Chesterfield Inlet areas. The product is processed in "satellite plants" located in those areas and is then shipped to the Freshwater Fish Marketing Corporation (FFMC) plant in Winnipeg for storage and distribution outside of the NWT .- The product can be sold locally within the NWT without passing through the FFMC. Although the total quota for the NWT is approximately 1,497 tonnes, the

true economic potential is probably not that high due to the inaccessibility of" much of the char resource and the lack of market acceptance of the landlocked char product.

The quality of char from the NWT is claimed to be higher than that from the Labrador region as the size of the fish in general is larger, the flesh colour is a more uniformly red and it does not suffer the colour variations of the char from the Atlantic region. In particular, the winter caught char are reputed to be of-superior quality and size.

The Freshwater Fish Marketing Corporation (FFMC) is a crown corporation that sells all of the freshwater fish production from Alberta, Saskatchewan, Manitoba, the NWT and parts of Northern Ontario. Arctic char is only a small proportion of the product handled by the FFMC. The majority of the char sold through the FFMC are in the dressed head-on frozen form. A small quantity of product is sold as frozen vacuum packed steaks, and roasts and in the fresh form.

According to sales information from the FFMC, more than 90 per cent of the char is sold in Canada, with the remainder sold in the US. About 80 per cent of the char are sold in Alberta, Manitoba and Ontario as illustrated in Table 2.4.

Table 2.4

Sales Distribution of Arctic Char, (FFMC)
(tonnes)

	1988	1987	1986	1985	1984
B.C.	2.7	2.9	6.6	0	.4
Alberta	11.8	13.8	18.4	14.2	20.8
Manitoba	7.6	7.8	7.8	5.2	5.5
Ontario	15.7	20.7	17.2	7.8	9.1
Quebec	3.7	9.4	3.2	.6	3.9
Other		.6	.8	.8	1.2
Canada	41.5	55.2	53.9	28.5	40.8
U.S.A.	1.2	2.7	.4	.8	1.6
France/Germany	2.7	1.4	.6		
TOTAL	45.4	59.3	54.9	29.3	42.4

Except for 1985, when sales volumes were low and prices high, the average domestic wholesale price for Arctic char has risen steadily as follows:

Table 2.5

Average Wholesale Price - Arctic Char from FFMC
($/lb FOB Winnipeg)

1984	3.00
1985	4.28
1986	3.15
1987	3.70
1988	4.65

Prices are related to fish size and flesh colour and are affected by competitive products (salmon) in the market and the quantities of char in the specific categories that are offered for sale. The advantage of the FFMC over Labrador char producers is that the latter have very few fish over 6 pounds whereas the spring catch of char in the NWT yield a high percentage of 6-7 pound fish with good colour, which bring higher prices compared to smaller fish.

3. AQUACULTURE PRODUCTION OF ARCTIC CHAR, SALMON AND TROUT

Although Arctic char aquiculture is in its infancy, the aquiculture of other salmonids has been increasing at a rapid pace in Canada in the past three to five years. Therefore, we have included a discussion of market interactions of farmed and wild salmon and trout as it may indicate future directions for the Arctic char industry.

ARCTIC CHAR AQUACULTURE

Although one supplier is currently producing char of significant quantity on a regular basis, there is a great deal of interest in char aquiculture both on the Atlantic coast and in other areas of Canada. Polar Seas Fisheries in Whitehorse, Yukon is growing char but not yet supplying it to the marketplace. Several other trout farmers across the west are experimenting with char and selling small quantities locally. The interest in Arctic char appears to be based on the following:

- The adaptability of Arctic char to growth in colder water than is suitable for rainbow trout;

- The perceived uniqueness of the product that potential producers believe will give thema greater yield in the marketplace;

- The opportunity to be involved in producing a new product for which the demand may be high and the market reasonably open.

An excerpt from a memorandum by J. Tabachek, Section Head, Aquiculture, DFO Winnipeg best summarizes the development of Arctic Char aquiculture in Canada:

> "Arctic char were first raised in Canada at DFO's Rockwood Experimental Hatchery in 1978. Research at this facility has been devoted primarily to Arctic char since 1980 and has resulted in the majority of the present knowledge of Arctic char culture in Canada. Pilot scale commercial production was conducted and showed that it was feasible to raise Arctic char to market size in a similar time frame as rainbow trout. Culture of char in the Maritimes was promoted by the success of researchers at Rockwood Hatchery. The industry first become involved in Arctic char culture in about 1985 and operators, many of whom had never raised fish before, approached DFO about char culture. These operators were interested in building facilities in the Yukon, Manitoba and Saskatchewan. Through Technology Transfer Agreements, DFO has assisted in providing stocks for future broodstock for these facilities. Some of these clients will have broodstock in 1989/90 which they will use to supply their own future needs and/or the needs for the aquiculture industry."

DFO dutifully carried out its mandate to transfer the technology of char aquiculture to the private sector by providing assistance, information and stocks of eggs and fish. The technology transfer program is a mechanism to put the products of government research into the private sector. The char aquiculture agreements were designed to establish private commercial char broodstock in Canada as well as to provide the necessary-technical information necessary to farm char. For instance, it is now confirmed that the growth rate of Arctic char is slightly lower than that for trout and char have greater size availability within any age class.

Under DFO's science/technology transfer program, 125,000 certified eggs/fingerlings were supplied to 23 producers in 1988. As opposed to previous practice, DFO will supply eggs in lots of 10,000-30,000 to a smaller number of producers. This change was in response to comments made by some producers who felt that the egg lots being distributed were to small to effectively establish broodstocks. This base stock was supplied to the industry so that they can produce their own broodstock as a foundation of a commercial enterprise. It requires four years for the char to mature to broodstock.

The main source of eggs in the Atlantic region is the Huntsmen Marine Biological Laboratory in St. Andrews, New Brunswick which has 1,200 broodstock. Specialists from the laboratory believe there are about 250,000 fry presently in the aquiculture growth system throughout the Atlantic. The fry are spread throughout the Atlantic provinces with the largest amount existing at the Purtle Springs Hatchery in New Brunswick (120,000 fry). It was estimated that Purtle Springs could have 300,000-400,000 eggs for sale in late 1989. The interest in char aquiculture in the Atlantic region is very high, particularly in

Newfoundland. None of the individuals spoken to, connected to the char or the aquiculture industry in the Atlantic region, had any firm data on the marketplace nor about the quantities of char that could come to market at any particular time.

Also, it has been reported that a Cree Native Indian band on James Bay may set up a char production facility capable of supplying to the market 100,000 fish/year in the 1-3 pound size.

Some of the problems facing the Arctic char farming industry are related to the lack of experience of commercial operators with this species. A number of the barriers to be overcome include:

- The genetic pool for Arctic char is varied and will require a number of years of refinement in order to reduce the variations in growth rates, and enhance feed conversion rates;

- Research is continuing on the best physical environment and culturing conditions for commercial production of char. This information will come from individuals operating in the industry and learning from experience, coupled with ongoing research by DFO.

- Fish feeds specifically developed for Arctic char have not yet been marketed. Initially it appears that producers are using trout feed and one individual is supplementing with

natural crustaceans. The marketplace may dictate the type of feed and colouring additives to be used as it may be specific in its demands for a particular colour of flesh. The majority of Canadian trout are "engineered" this way through their feed to develop red flesh.

Present Char Operations

We interviewed three operators who are presently producing and selling Arctic-char or are producing it with the intention of selling it in the near future.

Elders Aquafarms Ltd. of Winnipeg, Manitoba are the only major producer that we identified who is presently selling char on a regular basis. Elders started their operation in August of 1987 and have been marketing for over a year. Elders produce rainbow trout and char in converted malting tanks inside a former grain malting and elevator complex in Winnipeg. At this time, Elders are selling all of their char in the fresh dressed head-on state as a pan size product in the 8 - 10 ounce range. The majority of their product is being sold in Montreal and Toronto with a small amount in the central US, mostly to the food service market. Currently, Elders cannot supply enough char, even at $4.50 per pound. (Compared to trout at $2.25/lb F.O. B. Winnipeg). Elders have ample brood stock and state that they could raise about 1,000,000 fish or approximately 227 tonnes per year when they reach capacity. Their present production is about 7 tonnes per year, They view this product as an experimental item to test the market.

Polar Seas Fisheries of Whitehorse, Yukon intends to raise Arctic char to 4.5 - 7 pound size, which takes about three years. This firm believes that the market demand is higher for the larger char than for the pan size product. Polar Seas are not selling any product at present but indicate their intention to bring their first 454 tonnes harvest to market in 1989. Also, they anticipate having 907 tonnes available by 1991. According to an article in the Edmonton Journal, January 5, 1989, Polar Seas hope to sell their product in the $4.50- 5.00/lb range, which is $0.50 - 1.00/lb higher than the current price for aquacultured B.C. salmon.

Sun Valley Trout Farms in Clearbrook, British Columbia is also raising Arctic char in similar manner to the rainbow trout that they have produced for a number of years. They intend to market a pan size product and believe that they can get $2.00/lb more than they can for trout. At the present time Sun Valley are raising their own brood stock in order to produce sufficient quantity to get into the market.

SUMMARY AT PRESENT AND POTENTIAL FARMED ARCTIC **CHAR** PRODUCTION

The following summarizes the present and future farmed char industry situation:

- There are an estimated total of 400,000 eggs, fry and fish in aquiculture at present in Canada;

- Up to 450,000 eggs could be available to the system in late 1989 (325,000 in east);

- Most aquaculturists are holding fish to raise broodstock, although they do sell a few fish locally;

- Only one truly commercial operation selling 7 tonnes per year at an average $4.50/lb but with potential and intent to grow to 227 tonnes;

- One Yukon operator intends to produce 454 tonnes of 4-7 pound fish in 1989. No evidence of this volume yet;

- It is reasonable to assume Arctic char aquiculture production will increase dramatically over the next five to ten years. Probably marketing at least 454 tonnes by 1994 and 907-1,361 tonnes by 1999, if prices stay above cost of production.

TROUT AND SALNON AQUACULTURE

Trout have been farm raised for many years. There is a well established rainbow trout aquiculture industry in Ontario, Manitoba, British Columbia, Quebec and the Atlantic provinces. Ontario has a particularly well developed industry with 2,268 tonnes produced in 1988. In North America, the dominant force in trout aquiculture is the state of Idaho producing over 15,422 tonnes per year. Most trout are marketed in the 8-10 ounce size. Table 3.1 illustrates the decline in trout prices in 1989.

Table 3.1

Aquacultured Trout Prices (8-10 oz.)
($/lb F.O.B., Major City)

Date	Ontario	B.C.	Idaho (in Toronto) Fresh	Frozen
Ott/88	2.95	2.70	2.10	2.15
Dee/88	2.80	2.60	2.10	2.14
Feb/89	2.80	2.50	1.95	2.14
Apr/89	2.70	2.60	2.10	2.20
June/89	2.70	2.70	1.85	2.20

'Source: Canadian Aquiculture journal

Salmon aquiculture has expanded rapidly over the past five years. Many operations have been established in the Atlantic and Pacific coastal regions for the production of Atlantic, Chinook and Coho salmon. There are even some trout farmers in Ontario attempting to raise salmon.

In the early stages of salmon aquiculture, the product was raised to a 10-12 ounce pan size but this proved to be less profitable than the production of larger fish ranging from 2-8 pounds. Different sizes of salmon have different market impacts on other salmonids and seafood products. In exploring the impact of farmed char production on the wild char market one may draw some parallel between the impact of farmed salmon on the wild salmon market.

Until late 1988, the salmon aquiculture industry experienced rapid growth, enjoying a buoyant market with attractive prices. In early 1989 it was apparent that there was an excess supply of farmed salmon compared to demand, particularly considering the influx of Norwegian farmed salmon. The salmon aquiculture industry, is suffering from rising interest rates and the

highly debt financed position of many of the producers. Consequently, producers are tending to sell their salmon at more competitive prices and some producers are selling off a smaller sized product in the 2 pound range in order to assist their cash flow and turnover of inventory. This "dumping" of small salmon seriously affected the market price for 2-3 lb trout. There is no single selling organization for farmed salmon. Consequently, this has opened a large number of sales "points" in the market as producers scramble to survive.

Coupled with the problem of the financial difficulties of the salmon aquaculture industry is the increased production from sources with lower costs or larger subsidies, such as the well established industry of Norway or the burgeoning Chilean production, both of which are exporting their product to Canada at a very competitive price. Even though import quantities may not be large they are enough to upset farmed salmon prices.

The wild salmon fishing industry is not on its way to extinction. This industry has well established marketing channels and will continue to sell their fresh wild product during the summer months when salmon aquaculturists tend to hold back their production so as to not compete with the abundance of wild salmon. Many restaurant operators purchase troll caught salmon during the summer months, as this catching method has become synonymous with quality. The declining wholesale prices shown in Table 3.2 illustrates that 1989 could prove to be a particularly difficult year as the wild salmon catch is expected to be substantial. In this scenario, prices for farmed salmon are declining due to an oversupply situation.

Table 3.2

Aquacultured Salmon Prices (6-9 lb.)
($/lb F. O. B., Major City)

Date	Chinook BC	Coho BC	Atlantic N.B.	Atlantic Norway (CIF)
Oct/88	5.20	5.20	6.20	5.95
Dee/88	5.95	5.35	5.25	5.25
Feb./89	5.10	5.10	5.25	5.00
Apr/89	4.25	4.25	4.85	4.70
June/89	3.45	3.95	4.70	4.65

Source: Canadian Aquiculture journal

4. DISTRIBUTION AND MARKETING SYSTEMS

Table 4.1 illustrates the market mix and distribution of Arctic char from the FFMC. Price differential for fresh compared to frozen whole dressed char vary from $0.16 to $1.55/lb (higher for fresh) by different years, although no trend is apparent. Over 95 per cent of Labrador char are sold frozen, mostly to wholesalers in Central and Eastern Canada.

Table 4.1

Product Type and Geographical Distribution
Arctic Char from FFMC
(tonnes)

	1988		1987		1986	
	tonnes	%	tonnes	%	tonnes	%
Total Sales	46		60		55	
Canada	42	91.3	56	93.3	54	98.2
USA	1	2*2	3	5.0		
Europe	3	6.5	1	1.7	1	1.8
Fresh dressed	2	4.3	5	8.3	3	5.4
Frozen dressed	43	93.5	51	85.0	47	85.5
Other	1	2.2	4	6.7	5	9.1

The supply of wild char has been relatively steady in Western Canada and has been declining at a regular rate from Labrador as discussed in Chapter 2. According to Statistics Canada, per capita fresh and frozen seafood consumption in Canada has been increasing at a steady rate over the past five ‘years which should be positive for Arctic char sales. However, the variety of seafood available has also increased so char must “make its mark” with other spe-ties.

In order to understand the potential relationship between wild and aquacultured Arctic char, it is essential to understand the marketplace and the specific requirements of the various market segments. The marketplace consists of the retail grocery sector (grocery chains, small stores and specialty stores such as fish stores) and the food service market also known as the HRI or Hotel Restaurant and Institutional market. These sectors may be serviced by brokers and wholesalers or directly from processors. Approximately 65-70 per cent of the consumer dollar spent on food is spent in the grocery industrywiththe remaining 30-35 per cent being spent away from home or food service marketplace. Studies of the salmon market by DPA Group Inc.' suggest that in Canada, 66 per cent of the salmon is sold through the HRI sector, 22 per cent through grocery supermarkets and 12 per cent through specialty fish stores.

Our research suggests that the sales pattern for Arctic char is skewed even more towards the HRI sector and specialty fish stores than it is for salmon.. It appears that 75-80 per cent of Arctic char are sold through higher class "white tablecloth" restaurants with the remainder sold in specialty fish stores and retail outlets. Canada Safeway in Manitoba have recently decided to carry live pan size char in some stores.

The markets for char and salmon differ also because Arctic char is a more unique product. Moreover char is a single species and is mostly sold frozen whole, whereas salmon is sold in many forms (fresh, frozen, dressed whole, head on or off, fillets, steaks, large to small, wild or farmed) from six species, from several countries.

Each market segment differs in its characteristics and specific product requirements. The following describes the characteristics of the market segments and should lead to a better interpretation of the survey results.

RETAIL SEGMENT

The retail segment consists of grocery supermarkets, stores and specialty fish stores.

Retail Supermarkets

It has been estimated that the retail supermarkets sector represents approximately 22 per cent of salmon sales in Canada. Our research suggests that the per centage for Arctic char is much lower, likely less than 10 per cent. Retail supermarkets are either part of a major grocery retail chain such as Loblaws, A&P, Steinbergs or Safeway, or independent supermarkets who are serviced by wholesalers such as Provigo, Oshawa Group or Kelly Douglas. Retail supermarkets generally receive their products from central warehouses and even independent retailers purchase from their own wholesale warehouse distribution centre. Recently, in Canada, supermarket chains have been adding fresh fish counters, often serviced by the delicatessen departments. The fresh fish counters, which are staffed by relatively knowledgeable people, have become one of the more profitable additions to the grocery retail business. With the ever increasing interest of consumers in fresh as opposed to frozen fish, it is likely that this trend will continue.

The retail supermarket industry is characterized by the importance of price in their purchasing decisions and the requirement of supply continuity.

Counter space is limited in every retail store and they are only interested in carrying products with relatively fast sales. In the case of fresh fish, the old adage in the retail business is "sell it or smell it". If Arctic char is not a popular product with the consumer, it will not be carried for long by retailers. Retail grocers carry very little Arctic char.

Specialty Fish Stores

The specialty fish stores represent approximately 12 per cent of salmon sales in Canada according to the DPA Group Inc. These retailers represent a knowledgeable buyer group. Traditionally, this segment carries a wider range of fresh seafood products than full line grocery stores, although with the advent of the specialty fresh fish counters in grocery stores, some of this imbalance is changing. Retail fish shops often have full service counters and prefer to do their own cutting of product in order to impose higher markups than supermarkets. Specialty fish stores are highly decentralized and rate the availability of a fresh product very highly. Most of the stores are serviced through seafood wholesalers. Again, these stores will carry Arctic char only if it sells at a reasonable speed.

THE FOOD SERVICE OR HOTEL RESTAURANT AND INSTITUTIONAL (HRI) SECTOR

The food service sector can be differentiated by different types of restaurants such as the: fast food chains; medium priced family type restaurant; higher priced or white tablecloth restaurant; and specialty seafood restaurants. The HRI sector is the major purchaser of Arctic char.

Restaurants usually operate with fixed menus and require reliable supplies of product at relatively stable prices as it is expensive to change menu prices repeatedly. As a matter of interest, it is generally considered that the food cost in a higher priced or specialty seafood restaurant should run approximately one third of the menu price (that is, a $12.00 menu item should have a food cost of approximately $4.00).

- Fast Food Restaurants

The fast food industry is a major distributor of fish products but not of Arctic char. Sales are usually generated with such products as fish and chips or fish burgers and these are based on a white fish.

Medium Price Family Style Restaurants

The medium price and family style restaurants such as coffee shops and cafeterias represent about 35 per cent of restaurant fish sales but are not a market for Arctic char which is a higher priced product. Most of the product appearing in these restaurants will be less expensive and will not be a specialty product.

High Price White Tablecloth and Specialty Seafood Restaurants

This group of restaurants is the major outlet for Arctic char. This type of restaurant usually has an expensively printed menu and they do not want to have to reprint it frequently. Therefore, reliability of supply and stability of prices are important. Many of those that we spoke to said that they would be willing to carry both frozen and fresh char because the frozen product would represent their standard menu item that they would always have on the

printed menu and the fresh product, until it became readily available on a regular basis, would be a daily or an occasional feature. This is how they handle salmon.

The gourmet restaurants have a strong preference for the fresh product but only if delivery is reliable. An important feature of the HRI segment is the decentralized purchasing of products. Even large hotels and restaurants that are part-of a chain typically buy fish locally from a wholesale outlet, particularly when it is a fresh product. In order to promote a product to this sector, it is important to explain to the operators what the product characteristics are and to ensure that only the very best quality reaches the chefs in these establishments as they have many other products to choose from. Operators are particular over product quality and consistency.

WHOLESALERS/BROKERS

Wholesalers and brokers are a critical component in the distribution system. In theory, their preferences should reflect those of the restaurant and retail markets. However, their opinions concerning Arctic char, as noted from our survey, did not always reflect those of the HRI and retail sector. Price and continuity of supply are very important to this group.

Wholesalers, usually take title and physical possession of the goods. Seafood wholesalers often have distribution centres where they may process whole fish into steaks and fillets or even-undertake substantial repacking. Wholesalers service many of the smaller retail and food service-outlets. The

food service industry is often supplied through specialty wholesalers who carry a wide variety of restaurant supplies as well as seafood.

Brokers do not usually take possession of goods but act as the sales agent for the client, for whom they: make sale calls; check customers merchandising; send and collect invoices and, generally, look after the clients interests.

5. RESULTS OF THE STUDY

We surveyed 90 individuals experienced in the seafood (particularly char industry). This group included buyers or potential buyers of Arctic char from all sectors of the distribution chain including: brokers/wholesalers; retailers and supermarkets; and restaurants. The list of contacts is in the Appendix. The purpose of this survey was to assess the experience of the trade with Acetic char in general, and farmed char in particular. We attempted to quantify the buyers' future interest in farmed char. Also, for comparative purposes, we collected pertinent data on salmon and trout. The data summarized in this chapter pertains to the Canadian industry. Information on the US market is under a separate heading.

Interviews were both informal (general discussion) and formal, the latter using the questionnaires specifically designed for each of the three component groups in the distribution system. Copies of each of the questionnaires are in the Appendix. Responses to the questions are noted on these copies, expressed, where possible, as per centages of the responses.

Only summary data is reported in this chapter. Data is presented by the question numbers that are common across the three questionnaires. Results of the questionnaires are discussed in this chapter.

Question 1 - Do you presently carry Arctic char?

Table 5.1A

Per cent of Respondents Carrying Arctic Char

	Brokers/ Wholesalers		Retailers	Restaurants
YES	6	7	58	64
NO	33		42	36

Among retailers, only one of the supermarket chains carried Arctic char. The majority of them have not experienced customer demand. Among those not carrying char, lack of demand and unreliable availability ranked highest as the reasons. Availability was also linked to seasonality of supply; among those not carrying char, interest varied as to what char products they would carry. The one product that consistently held an interest was the fresh head-on 4-6 pound size. The fresh pan size 8-10 ounce char was of interest to the fish retailers but of little interest to the broker/wholesalers and restaurateurs who did not presently carry char.

Table 5.1B

Per cent of Interest in Carrying Arctic Char products
By Respondents Not Presently Carrying Char

	Brokers/ Wholesalers	Retailers	Restaurants
Frozen, head-on	67	20	25
Fresh, head-on 4-6 lbs	100	80	75
Fresh, 8-10 oz.	0	60	20

Question 2 - Do you do any processing or char prior to sale?

Question 3 - We would like some information about the source, volumes and prices of the frozen char that you carry.

- In these questions, which are not entirely comparable between the different sectors, we attempted to determine the quantities of Arctic char purchased, prices paid, prices charged for sale of the product and the form in which the product was sold. In the discussion we have combined these questions as they are related.

- Table 5.2 illustrates the comparable purchase and sale prices of Arctic char products by the different distribution steps. Prices paid by retailers and restaurants will vary according to the quantities purchased and the wholesaler from whom they purchase the product. The blanks in the table are due to the lack of comparable information from the different sources. This table illustrates the size of spread or margin experienced by each of these sectors. Points to note from this data are:

  Wholesalers purchase their product from both the FFMC and from the cooperatives in Labrador. They sold to a complete range of customer types including retailers and restaurants;

  Sixty seven per cent of the wholesalers processed char prior to sale. Of this processing 50 per cent produced steaks, 33 per cent fillets and 25 per cent smoked;

- The range of volumes purchased by fish retailers varied considerably as illustrated in the questionnaire. On average the stores purchased 245 pounds of frozen, head-on char per month and 575 pounds of fresh char. None of the retailers contacted purchased 8-10 ounce pan size char. The average size of the fish in the retail industry was in the 4-6 pound range.

Table 5.2

Comparable Purchase/Sale Prices of Arctic Char " Products by Distribution Step
($/lb)

	Brokers/Wholesalers		Retailers		Restaurants
	Buy	Sell	Buy	Sell	Buy
Frozen, head-on 2-4 lb	2.50	3.40			
4-7 lb	4.75	5.38	4.65	8.01	5.47
7 lb	4.50	5.38			
Fresh, 8-10 oz.	4.50	5.95			5.95
Fresh, head-on 2-7 lb			5.00	8.01	

° Retailers carried a variety of types of product in their store as illustrated below with the average retail price:

Fillets 24% - $9.54/lb

Steaks 38% - $8001/lb

Whole 38% - $8.01/lb

.0 The major product form purchased by restaurants was frozen, head-on in the 6-9 pound size (this is one-size larger than. those purchased by retailers) on average price of $5.47/lb. One restaurant surveyed also

purchased 8-10 ounce pan size trout at $5.95/lb. The average of frozen head-on was 415 pounds per month.

- Char is served in different forms in restaurants as illustrated in Table 5.3. The price per serving varies according to the size of the serving. The normal standard in a specialty restaurant is that the food cost will be approximately one-third of the serving cost.

Table 5.3

Char Products Served in Restaurants

	% Served	Serving Size *	$/ Serving
Fillet	40	7-10 oz.	14.48
Steak	60	6-8 oz.	10.73
Whole 10.oz.	10	8-10 oz.	15.25

*More than 100 percent because some restaurants serve more than one product type.

Question 4 - How do you find the quality of the char that you now buy?

- Table 5.4 illustrates the responses to this question. All respondents found the char that they presently purchase to be satisfactory to excellent. There is no explanation for the findings that retailers and restaurateurs found the product to be better than did the wholesalers.

Table 5.4

Quality of Arctic Char Presently Purchased
(% of responses)

	Brokers/ Wholesalers	Retailers	Restaurants
Excellent	17	30	67
Satisfactory	83	70	33

Question 5 - What is the colour of the flesh of the char that you now buy?

Question 6 - If you could get a "better" colour char, would you pay a premium for it?

It has been suggested by persons in the industry that paler coloured flesh is not popular and receives a lower price than a brigher red product. The question of whether a bright red colour is important to the end users of the char is also raised. Table 5.5 presents responses to the question "what is the co" our of the product now being purchased" and "what colour is preferred" and Table 5.6 illustrates the interest of the respondents in paying a premium for better colour.

Table 5.5

Colour of Flesh of Char
(% of Responses)

	Brokers/Wholesalers		Retailers		Restaurants	
	Present	Prefer	Present	Prefer	Present	Prefer
Red	17	34		50	10	17
Orange-red	66	66	30	17	30	33
Pink	17		30	33	20-	
Pale Pink			30		20	
White					10	17
Other			10		10	

Table 5.6

Interested in Paying Premium for Better Colour
(% of responses)

	Brokers/ Wholesalers	Retailers	Restaurants
YES	25	67	17
NO	75	33	83

- Conclusions drawn from this data are:

  There is a difference between the different sectors of the trade as to their perception of the colour they are presently selling. Although it is obvious that they would all like to buy a product with a brighter red than they presently receive;

  The retail trade is willing to pay more to get a better colour. This is probably because they display their product on a fish counter where people buy according to what they see, whereas in restaurants the customer is not as sensitive to the colour of the fish flesh.

Question 7 - Have you ever tried any farmed Arctic Char?

- The responses to this question illustrated in Table 5.7 show that over 70 per cent of the industry has not tried farmed Arctic char. In fact, in the restaurant sector, only 11 per cent of the respondents had tried any farmed Arctic char.

Table 5.7
Percent of Respondents Who Have Tried Farmed Arctic Char

	Brokers/ Wholesalers	Retailers	Restaurants
YES	29	25	11
NO	71	75	89

Question 8 - Would you be interested in carrying fresh Arctic Char?

The results of this questions are illustrated in Table 5.8 below:

Table 5.8
Interest in Carrying Fresh Farmed Char

	Brokers/ Wholesalers	Retailers	Restaurants
8-10 oz. interest	87%	63%	75%
$/lb	$2.85	$3.65	$4.00
lb/month	1,200 lbs	55 lbs	70 lbs
2-4 lb interest	87%	75%	0%
$/lb	$4.13	$4.66	
lb/month	5,600 lbs	38 lbs	
4-7 lb interest	87%	88%	67%
$/lb	$4.75	$5.67	$5.00
lb/month	3,200 lbs	270 lbs	
7 lb interest	87%	25%	33%
$/lb	$5.88		$6.00
lb/month	3,000 lbs		

It can be seen from this Table that:

- There is a very high interest at all levels of the industry in carrying fresh farmed Arctic char. The greatest interests is in the 8-10 ounce and 4-7 lb size;

Based on the information in Table 5.2 on prices that are presently being paid, the respondents suggested that they are willing to pay a higher price for fresh farmed product, than the products they presently purchase;

- Restaurants had no interest in fresh 2-4 pound fish, probably because they fillet or steak them and as this is not a size that they usually purchase.

Question 9 - If yes to first part of Q8 and any other parts, would you carry both 8-10 ounce pan size and 2-7 pound sizes?

The results illustrated in Table 5.9 infer that there is a market for both the 8-10 ounce pan size and the 2-7 pound full size fresh Arctic char. Also, the buyers would not exclude the purchase of one in order to purchase the other.

Table 5.9

Would Carry 8-10 oz. and 2-7 lb. Fresh Arctic Char
(% of responses)

	Brokers/ Wholesalers	Retailers	Restaurants
YES	50	67	40
NO	50	33	60

Question 10 - If fresh farmed char was only available on a limited or occasional basis, would you still be interested in carrying it?

- It was anticipated that in the early stages of industry development, there may be a limited quantity of fresh farmed char available. The question was asked whether the respondents were interested in carrying the product if it was only available on a limited or occasional basis. The results are reported in Table 5.10 and illustrates that there is little or no concern in the trade as to the continued availability of char and the industry would support char aquiculture even when production is sporadic.

Table 5.10

Interests in Carrying Fresh Farmed Char Even on Limited or Occasional Basis (% of responses)

	Brokers/ Wholesalers	Retailers	Restaurants
YES	88	100	92
NO	12		8

Question 11 - If you carried fresh char in the 8-10 oz. pan size, how would this affect your purchase of frozen char?

Question 12 - If you carried fresh char in the 2-7 lb. size, how would this affect your purchase of frozen char?

- Question 11 and 12 examine the effect of fresh char on the purchase patterns of the respondents for frozen char. Results of these questions are shown on Table 5.11.

Table 5.11

Effect Of Fresh Char On Purchase Of Frozen Char
(% of responses)

	Wholesale		Retail		Restaurants	
	8-10 OZ.	2-7 lb	8-10 OZ.	2-7 lb	8-10 OZ.	2-7 lb
Have No Effect	33	75	33	17	25	33
Would Reduce Frozen	33			33	25	67
Would Replace Frozen	33	25		17	25	
Do Not Buy Frozen Char			67	33	25	

- This data could be interpreted as:

- Both the retail and restaurant sector suggest that a number of them do not buy frozen char at the present time. Wholesalers often thaw frozen char and steak or fillet the fish as was reported earlier. For this reason, retailers and restaurants who buy from the wholesalers believe they are getting a fresh or thawed product;

- In general, the results from these questions are inconclusive. Except for the response of wholesalers on the effect of 2-7 pounds fresh char on the frozen market, where 75 per cent claim that it will have no effect. Other sectors of the industry have no firm opinion about the effect of-either the pan size or the larger size fish on the market.

Question 13 - Do you presently carry trout?

- This question deals with the subject of trout. All of the wholesalers and retailers interviewed, and 93 per cent of the restaurants carry trout. Although this information is useful in examining the trout market it has little bearing on char. Three points of note are:

  - Seventy to eighty per cent of the trout purchased are in the 8-12 ounce range;

  - Wholesalers sell approximately 50 per cent of their product fresh and the remainder frozen. It is likely that much of the frozen product is Idaho imports;

  - Sixty seven per cent of the trout purchased by restaurants and 77 per cent of trout purchased by retailers is fresh.

Question 14 - Do you presently carry salmon?

Question 15 - Do you use different types of salmon (i.e. different species, product type, fresh or frozen, etc.)?

Question 16 - Does your purchase of aquacultured salmon decrease when fresh wild salmon is available (June - September)?

Do you anticipate that you will buy more, less or the same of aquacultured salmon over wild salmon in the future?

- The anticipated trend in the purchase of acquaculture salmon is reported below in Table 5.12. It can be seen from this Table that at

all levels of the industry it is anticipated that there will be more farmed salmon purchased in the future than at present. In particular, wholesalers are more optimistic over farmed salmon purchases than are other sectors of the business.

Table 5.12

Anticipated Purchasing Trend for
Farmed Salmon Compared to Wild Salmon
(% of responses)

	Brokers/ Wholesalers	Retailers	Restaurants
MORE	50	43	14
LESS			14
SAME	50	57	72

Question 17 - Is Arctic char unique or could you replace it with trout or salmon?

The responses to this are very interesting in that they differ by the sectors of the industry and are reported in Table 5.13 below:

Table 5.13

Could Arctic Char be Replaced by Trout or Salmon
(% of responses)

	Brokers/Wholesalers		Retailers		Restaurants	
	Trout	Salmon	Trout	Salmon	Trout	Salmon
YES	25	50	10	30	0	10
NO	75	50	90	70	100	90

- Conclusions can be drawn from this data are:

  Trout is not a significant competitor or substitute for for Arctic char.

  Half of the wholesalers interviewed think that salmon could replace Arctic char. People that they sell to, the retailers and restaurants do not agree. Retailers and restaurants who have to deal direct' y with the public strongly support the concept that Arctic char is unique and certainly can not be' replaced by trout. Only very few of the respondents from this group thought it could be replaced by salmon.

Question 18 - Do you think that the prices and the volume for traditional frozen, wild, dressed, head-on Arctic char will be effected by the introduction to this market of farm fresh char, salmon and trout?

- The results of this question are summarized in Tables 5.14A and 5.14B.

Table 5.14A

Effect of Farmed Fresh Char, Salmon and Trout on Wild Char Prices
(% of responses)

	Brokers/Wholesalers Prices up/down/same	Retailers Prices up/down/same	Restaurants Prices up/down/same
8-10 oz. char	11/ 29 / 60	22/ 22 / 56	0/ 46 / 54
4-7 lb char	11/ 29 / 60 "	22/ 33 / 45	12/ 25 / 63
salmon	11/ 29 / 60	11/ 22 / 67	8/ 25 I 67
trout	11 / 90	11/ 11 / 78	13/ O / 87

Table 5.14B
Effect of Farmed Fresh Char, Salmon and Trout on Wild Char Volumes
(% of responses)

	Brokers/Wholesalers Volume up/down/same	Retailers Volume up/down/same	Restaurants Volume up/down/same
8-10 oz. char	20/ 0 / 80	13/ 38 / 49	25/ 25 / 50
4-7 lb char	40/ 0 / 60	0/ 57 / 43	17/ 17 / 66
"salmon	20/ 0 / 80	33/ 11 / 56	13/ 13 / 74
trout	50/ 0 / 50	11/ 22 / 66	14/ 14 / 72

- The interpretation of these tables leads to the following:

  - Although the majority of wholesalers believe that neither the price nor the volume of wild Arctic char will be affected by the farmed fresh char or salmon about 30 per cent see the price of wild char going down while the volume stays the same and about 11 per cent project the price of wild char going up while the volume of the produce also goes up.

  - Twenty two to twenty three per cent of the retailers interviewed believe that the price for wild char will decrease in response to more farmed fresh char in the market while 22 per cent think that the price will go up. However, 38 per cent believe that the volume of wild char will go down with the introduction of the pan-size fresh char and 57 per cent believe that the 4 to 7 pound char will cause the volume of wild char to decrease;

- 46 per cent of restaurateurs believe that the pan-size char will drive down the price of the wild char and 25 per cent believe that the 4-7 pound farmed char will have a negative effective on wild char prices. Only 12 per cent of restaurateurs think that the price of wild char rise in response to the farmed char. Twenty-five per cent of the restaurateurs believe that the volume of wild char sales will increase with more pan-sized char in the marketplace and an equal number believe it will decrease.

THE US MARKET

As the quantity of Arctic char sold in the US is so low, only **2 of the 13** firms interviewed carried or had carried the product. These 13 interviews were done in an open ended method and are not included in the previously reported results for the Canadian market.

As noted in Chapter 2, very little Arctic char is sold by the FFMC into the US market. In 1988, the FFMC sold 2.7 per cent of its production, or 1.2 tonnes into the US. In 1987, the FFMC sold 2.7 tonnes or 4.5 per cent of production to US and it varied from 0.1-3.7 per cent of production for the three previous years. Considering the size of the central and western US marketplace, this is such a small amount that it is negligible.

Estimates of the quantity of Labrador char sold into the eastern US market varied between 50 and 68 tonnes a year. Again, considering the size of

the New York and Boston marketplace (over 20 million people) this is a very small quantity.

Our interviews of US wholesalers, retailers and food service companies yielded the following information:

- There is very little familiarity with the Arctic char, even at the wholesaler level;

- Fish wholesalers in Minnesota and Illinois claim that they cannot get sufficient Arctic char to make it worthwhile ordering;

- Fish wholesalers indicated that they would be interested in carrying Arctic "char as it appeared to them to be a unique and unusual fish product but they did not anticipate that they could pay more than the going price for salmon of equal quality and they had to have a steady supply; and

- Food service operators were very interested in a product that sounded different and had a high quality "clean" image. However, they were not familiar with the product and felt that it should be presented to them for their review. Food service operators did not anticipate paying any more for comparable quality salmon.

The pan-size (8-12 ounce) salmon market in the United States was estimated by one of the largest brokerages to be no larger than 1,361 tonnes per

year. The present price for 10-12 ounce salmon in Seattle is $3/lb (Cdn.) compared to Idaho trout at $2.52/lb and the larger red fleshed trout 2-4 pounds at $3.18/lb. This distributor was not familiar with Arctic char and did not perceive that there was a significant pan-size market in the US.

6. DISCUSSION OF FINDINGS

The data presented in the Chapter 5 were the results of formal and informal interviews and discussions with 90 representatives of the seafood industry in Canada and the US. Persons to be interviewed were not selected at random but, rather, were chosen for their pertinence to this study.

The brokers and wholesalers represent the largest firms of their kind in the--major cities of Montreal, Toronto, Edmonton, Calgary and' Vancouver. Also a selection of firms from central US and New York were interviewed.

Retailers were selected from two groups, major grocery chains and specialty seafood retailers. As for wholesalers, specialty seafood retailers were selected randomly from those representatives in major cities in the country.

Also, restaurants were selected from across the major cities. As discussed previously the fast food and family-style restaurants are not the normal market for Arctic char. At present, Arctic char falls into the category of exotic or rare species carried mainly by specialty seafood restaurants and the upper level or white-table cloth restaurants, in most market areas. We believe that the restaurant sample selected is a reasonable representation of that specialized sector.

As illustrated above, the firms interviewed were not selected at random but were chosen to provide the maximum information on Arctic char while

also indicating a cross section of opinions across the country and all sectors of the market. Therefore, it would not be accurate to extrapolate our quantitative findings for the whole market population. We believe that the results are supportable as they are based on expert market opinion.

In this chapter we discuss the findings of our research.

Market Distribution Of Arctic char

- Given the small quantity of Arctic char sold in Canada it is surprisingly well-dispersed amongst our sample with 65 per cent of the wholesalers and restaurants carrying the product and approximately 60 per cent of retailers. By definition, "carrying theproduct",does not mean that these firms handle large quantities of product on a daily basis buy does mean that they carry it in stock or it is available throughout the year.

Quality

- The quality of Arctic char seems to be very acceptable throughout the industry. No respondent found the product unsatisfactory. In fact, 67 per cent of restaurants responding stated that the product was excellent.

- Although, prior to our interviews, we had the impression that Arctic --char from the FFMC were of superior quality to that from Labrador this was not supported by the views of seafood wholesalers. Among seafood

wholesalers only 15 per cent felt that there was difference between Arctic char from the two locations but they could not identify the difference.

- The colour of the flesh of the char has importance to' its acceptability. The more orange or red the flesh colour the higher the price paid and the more acceptable to the buyer. None of the firms interviewed expressed strong opinions about the colour of the fish they were presently buying. Table 5.5 illustrated that there was a general preference to having a more red or orange fleshed fish than they are presently receiving, but it was not a strong enough preference for wholesalers or restaurateurs to pay a premium for better colour. Retailers, on the other hand, responded that 67 per cent would be prepared to pay a premium to get a better coloured product. It is probable that retailers consider the colour more important as they often display their fish steaked or filleted to the public.

Restaurant Pricing

- Better quality restuarants, such as those interviewed in this survey, normally try to price their menu items at three times the food ingredient cost. This is strictly a "rule of thumb" and not always followed, if a product can be specialed or if there is some other reason for pricing differently. In looking at table 5.3 this is

evident. For instance, an average 8 ounce serving of Arctic char costs the restaurant approximately $2.75. Multiplied by three times this is $8.25. If other food ingredients are added to the $8.25 it would probably increase by approximately $2.00 to $10.25 which is very close to the average serving cost of $10.73 for an Arctic char steak dinner. This general rule of thumb will apply whether the main ingredient is salmon, trout, or Arctic char.

The restaurant price per serving for trout is about 60 per cent that of Arctic char, whereas salmon ranges from less than char to 1.5 times higher depending upon the species.

Pricing

- As illustrated in table 6.1 below the wholesale prices for Arctic char from the FFMC and aquiculture 8-10 ounce product are fairly comparable to those for aquacultured salmon. The smaller Labrador Arctic char are about $2.00 less than the western char. The Labrador char prices are very close to those for trout.

Table 6.1

Wholesale Price Comparisons - Arctic Char, Trout and Salmon
1989 - $ per lb

Product	Arctic Char	Trout (ret.)	Salmon
FFMC, Wild	4.65		
Labrador, Wild	2.50		
Aquiculture 8-10 oz.	4.50	(2.18 Idaho (2.75 Ontario	
'2-4 lb.		2.90	
Aquiculture Salmon			
Atlantic			4.93
Coho			4.43
Chinook			4.26

- Sixty to seventy per cent of respondents are interested in carrying fresh char. In responding to the question "what price they would pay", most did not know or would not respond. Table 6.2 below illustrates the suggested prices by these respondents and the present price now being paid for the same product. There is no consistency in the relationship between the present price and the suggested prices by the respondents. This may be because the people responding to our survey were interested in keeping the prices down and therefore suggested prices that were often below what they are presently paying. Even taking this into consideration, it would appear the wholesalers are prepared to pay prices similar to what they are paying today and in the vicinity of salmon prices. The exception to this is "the suggested price of $2.85/lb wholesale for 8-10 ounce char which is close to the trout prices. Both retailers and restaurants suggested

prices for the pan-sized fish that are lower then the prices that they are presently paying. This could indicate that there will be a price resistance to that product as volumes increase.

Table 6.2

Suggested Versus Present Price, Arctic Char
$ per lb

	Wholesale		Retail		Restaurants	
	Suggest	Present	Suggest	Present	Suggest	Present
8-10"oz.	2.85	4.50	3.65		4.00	5.95
2-4 lb	4.13	2.50	4.66			
4-7 lb	4.75	4.75	5.76	4.65	5.00	5.47
7 + lb	5.88	4.50			6.00	

Industry Interest And Intentions

- There is some controversy among char aquaculturists as to whether they should produce an 8-10 ounce char or a 2-7 pound char. It is important to take into consideration market demand and price differentials as the larger fish will undoubtedly have a higher cost of production. The previous Table 6.2 illustrated that at present the price of the 8-10 ounce and the 4-7 pound fish are relatively close. Also, the trade are interested in reducing the price of the 8-10 ounce char but not reducing the 4-7 pound char price.

- Table 5.9 illustrated that 50 per cent of the wholesalers, 67 per cent of the retailers and 40 per cent of the restaurants would carry both pan size and full size char. These findings suggest that there is a market for both sizes of fish.

- The data was not clear as to the potential effect of increased fresh char will have on the present purchases of frozen char. In general, about one-third of the respondents felt that there would be no effect on the purchase of frozen char and about two-thirds felt that the quantity of frozen char would be reduced or could be replaced by fresh char.

Interaction of Arctic Char With Salmon And Trout

- We explored the market for farmed salmon and trout as we had anticipated that they could be competitive with or substitute Arctic char. Also, it was considered that the experience from farmed salmon interaction with wild salmon markets could prove to be a model for predicting Arctic char interactions.

- Forty to fifty per cent of wholesalers and retailers intend to purchase more aquacultured salmon compared to wild salmon whereas only 14 per cent restaurants intend to do the same and 14 per cent intend purchase less.

- The response to whether Arctic char could be replaced by trout or salmon was most interesting. None of the groups in the trade felt that trout could replace or substitute for Arctic char. Fifty per cent of the wholesalers felt that salmon could replace Arctic char. However, only 30 per cent of retailers felt that salmon could replace Arctic char and 10 per cent of restaurateurs felt that salmon could

substitute for char. As restaurateurs and retailers are much closer to the perceptions of consumers, perhaps it is reasonable to accept their opinion that trout definitely is not a substitute for char and salmon is a very minor substitute for char. However, it is noted, that both retailers and restaurateurs hold this opinion when char is priced at or slightly below the price of comparable salmon products. Opinion may differ if char prices were significantly lower than salmon prices.

- Although the questionnaire examined the "uniqueness" of Arctic char compared to trout and salmon, this question was explored further in open ended discussions with respondents. The data collected was more opinion (qualitative) than quantitative, therefore it does not lend itself to rigorous comparative analysis, asking as it does price change information.

- Without question, Arctic char is presently considered unique from both pan size and large size trout, a species that has been promoted to ordinary status. Different species of salmon are perceived differently with some more expensive than Arctic char. However, respondents generally considered Arctic char to hold a special niche different from trout or salmon.

- Arctic char is not unique in the sense that there is no other product like it but it is "exotic" enough to be considered a fish-that is different from salmon. Many restaurants and retailers commented that

they do not receive enough information about Arctic char and it is not promoted in their establishments. Many of these respondents felt that more promotion effort would yield considerable success in the marketplace.

Effects Of Farmed Fresh Char On The Wild Char Prices And Volumes

The important question to be answered in this study is how will the prices and volumes of wild Arctic char be affected by" farmed fresh char. When asked the question of how an increased quantity of farmed char in the marketplace will affect the wild char the following were the responses:

Thirty per cent of the wholesalers felt the price of wild char would drop and the volume would increase;

About 25 per cent of the retailers believed that the price of wild Arctic char would fall and 40 per cent felt that the volume would fall; and

Thirty-five per cent of the restauranteurs felt that the price would fall and 22 per cent felt that the volume would fall.

7. CONCLUSIONS AND RECOMMENDATIONS

The conclusions of our research are:

1. Wild Arctic Char Production

- The production of wild Arctic char has declined particularly from Labrador over recent years.

- Prices for 4-7 pound char are close to farmed Atlantic salmon prices.

- The wild char industry presently sells about 136 tonnes in Canada and export 54-57 tonnes to the US, the majority of which comes from Labrador.

2. Aquiculture of Arctic Char

- At present, almost all of the 6.8 tonnes of farmed Arctic char sold per year are in the pan size. This does not represent any threat to the prices or volumes of the wild Arctic char.

- It is estimated that there are about 400,000 eggs, fry and adult Arctic char in the aquiculture system in Canada, with the potential for another 425,000 eggs to be added in 1989.

- It is reasonable to conclude that farmed Arctic char production will increase on an annual basis over the next 5-10 years. We estimate that by 1994, farmed char sales could be at least 454 tonnes and by 1999, in the range of 907-1,361 tonnes.

- There a number of government agencies who appear to be interested in expanding the Arctic char aquiculture industry in Atlantic Canada and Western Canada. In some cases, public funds from Federal and Provincial sources have been used to start up and to assist Arctic char operations. It appears there is little coordination of these developments between the provinces or the different agencies promoting char aquiculture.

- There is a considerable lack of information on:

  - the quantity of Arctic char in the aquiculture system in Canada;
  - the state of development of the fish;
  - the marketing plans of the individual operators.

3. Markets

- Although 60 per cent of the fish distribution industry carries Arctic char this does not amount to a large volume. Arctic char has not been promoted in Canada, as it has always had such a limited volume that it has not justified major coordinated promotional efforts.

- The US offers a major market opportunity if it is developed carefully with sound marketing strategies and promotional plans. Certain areas of the US are not favorably inclined towards the consumption of salmon, trout or other red fleshed fish, however the Western and Northern States do offer a market opportunity in this market.

- The market is very satisfied with the quality of the present Arctic char and does not notice a significant difference between the product quality from the Atlantic or Central Canada. The 'differential in prices between the two areas is mainly due to the size of the individual fish.

- We conclude that there is a market for distinct products such as the frozen wild fish, the 8-10 ounce pan size fish and the 4-7 pound char. The least desirable product is the 2-4 pound char.

- The trade indicates a willingness to pay a small premium for fresh product, delivered on a regular and consistent basis.

- Trout are definitely not a substitute product for Arctic char and are seen by the trade as being considerably lower on the exotic or quality scale.

- Although wholesalers perceive salmon as a substitute product for Arctic char this view is not held by retailers or restaurants.

4* Interactions of Wild and Farmed Arctic Char

° The pan sized 8-10 ounce farmed char is considered by most customers to be a unique product different from the 4-7 pound wild fish. Retailers do not consider that the pan sized char will have a significant effect on the prices of wild char however, restaurants do believe that it will have a significant effect. It is most unlikely that there will be any effect on the wild Arctic char prices or volumes of sale until the pan sized product reaches at least 68-91 tonnes per year of sales. We believe that the 8-10 ounce product is susceptible to prices dropping within its own category as volume increases. As production of the pan sized char reaches the 91 tonnes and higher volumes, it is likely that the prices will come down, and eventually levelling to about a $1.00/lb above the trout price.

When the price for pan size Arctic char decreases there is a possibility that it will bring down the price of full size char, whether they be wild or farm raised, unless this product can be distracted in buyer perception.

° According to most of the industry sources, the 4-7 pound fresh farmed char will have a less serious effect on the prices and volumes of the wild char than will the pan sized product. At present, the quantity of fresh char is very limited, however the aquiculture industry could concentrate on fresh markets. As retailers would prefer to purchase

fresh over frozen, it is likely that they would favour the fresh 4-7 pound char over the frozen product, whether wild or farmed.

- If the wild and farmed char industry promote their products in a coordinated and professional manner it is likely that they can increase sales throughout the industry.

- It is difficult to quantify the effects on the wild char industry of increased aquiculture. There is no data to illustrate the potential demand for Arctic char if it is well promoted and presented to the trade. There is a reasonable possibility that 680-907 tonnes of char per year could be sold in Canada without significant price disruption (to put this in perspective about 3,629 tonnes of trout are sold per year in Canada). The quantity of char that can be sold will depend upon the price of the product and the presentation to the consumer.

THE RECOMNENDATIONS

The recommendations of this report are:

1. Research indicates that there is a relatively large inventory of eggs, fry and adult fish in the aquiculture system. However, the lack of precise data on these fish makes it difficult for government agencies or the fish marketing sector to plan the development of this business. We recommend that the Department of Fisheries and Oceans, in cooperation with the appropriate Provincial Ministries:

- Conduct, coordinate or contract for the collection of information from the Arctic char aquiculture industry such as: the quantity of char in the system; the stage of development of the fish; the production and marketing plans of the operators; and other pertinent information. The composite data could be communicated to the industry in a newsletter or bulletin on a regular timely basis in order to encourage sound industry planning.

2. Many of the private aquiculture ventures currently under development" for raising char have been recipients of public funds. Such injections of funding may assist in the development of that individual business but can have a disruptive effect on an industry that is struggling to become established in various parts of Canada. This encouragement of "fast-tracking" the industry could exacerbate any of the problems of the wild fishery adapting to the influx of farmed fish. We recommend that Federal and Provincial funding agencies coordinate their development assistance by ensuring that they involve the Department of Fisheries and Oceans in their deliberations of funding various applications.

3. The Department of Fisheries and Oceans has done a good job of assisting aquaculture operators, through technology transfer agreements, in the establishment of Arctic char aquiculture. We recommend that the Department of Fisheries and Oceans continue in providing technical assistance and advice to these operators.

4. Arctic char aquiculture is spread throughout Canada and would not lend itself to cooperative marketing. However, we believe that if the Arctic char markets are to be developed to their maximum then some coordination of effort is required. The first step, as mentioned above, is communication of timely industry information. Also, we recommend that the wild char industry and the farmed char industry work together to develop promotional materials and marketing strategies that will maximize their sales and help to maintain the market price at a level sufficient to maintain a viable industry.

APPENDICES

APPENDIX

LIST OF CONTACTS

Arctic Fish Company (AFC) Inc. Waldheim, Saskatchewan	Keith Derksen
Polar Seas Fisheries Whitehorse, Yukon	Gavin Johnson
Sun Valley Trout Farms Clearkbrook, B.C.	Bernie. Lehman
Elders Aqua Farms Ltd. "Winnipeg, Manitoba	Jim Byrnes Sheila Ginn
Freshwater Fish Marketing Corporation Winnipeg, Manitoba	Peter Smith
Torngat Co-operative Labrador	Bill Flowers
Nain Co-operative Labrador	Brett Wareham (also NFLD. Dept. Fisheries)
Department Of Fisheries & Oceans St. Johns, Newfoundland	Brian Dempson Randy Penny
Huntsman Marine Laboratories St. Andrews, New Brunswick	Brian Gleeb
NORDCO Engineering St. Johns, Newfoundland	Nigel Robins
B.C. Salmon Farmers Association Vancouver, B.C.	Al Archibald
B.C. Ministry Agriculture & Fisheries Victoria, B.C.	Jim Fraelich Al Castledine
Department Of Fisheries & Oceans Winnipeg, Manitoba	Peter Thompson Brian Souter Dan Topolniski Syd Kirwan
-Ontario Trout Producers Co-operative Guelph, Ontario	John Grant
Coolwater Aquafarms Pickering, Ontario	John Neal

COMPANIES SURVEYED

British Columbia

Broker/Wholesaler

Neptune Foods
Konings Wholesale
Al bion Fisheries

Retail

Overwaitea Foods
Kelly Douglas
Mary's Seafood
Seafood City
Canada Safeway

H.R.I.

Salmon House On The Hill
Papillote
Kettle Of Fish
Cannery

Alberta

Broker/Wholesaler

Billingsgate Fish
City Fish Company

Retai 1

Canada Safeway
Food For Less
East Wharf Seafoods
Boyd's Lobster Shop
Four Season Fish Imports
Prince Rupert Fish Market
Portage Seafoods
Ship To Shore Seafoods

H.R.I.

Abbey Lane Wharf
Joey's Only Restaurant

COMPANIES SURVEYED (cent'd~

Ontario

Broker/Wholesaler

Union Fish Market
Michael's Mussels
Mike's Fish Co. Ltd.
Ocean Queen Seafoods
Harbour Fish Company
Clouston Foods
Booth Fisheries

Retail

- Loblaws/National Grocer
" A&P/Dominion
Healey's Fine Foods
Gus' Fish, Meat And Poultry
Mahoney's Maritime Food Fair
Miracle Food Mart

H.R.I.

Old Fish Market Restuarants
Whaler's Wharf
Red Lobster (Canada)
Smuggler's Seafood & Tavern
Mermaid Seafood
Spinnakers
Fisherman's Wharf
Seven Island Fresh Fish
Pier 4 Storehouse Restaurant

Quebec

Broker/Wholesaler

Pecheries Atlantique du Quebec
La Reine de La Mer Inc.
Ocean Enterprises

Retai 1

Poissonnerie Jean Talon
Poissonnerie Sherbrooke

H.R.I.

- Restaurant Chez Pauze
Pavilion de L'Antique
Restaurant Le Bourlinqueur
Restaurant Rive Gauche
Le Bovin

COMPANIES SURVEYED (cent'd~

U.S.A.

Broker/Wholesaler

Glavin M. Son Ltd.	New York
Northwest Foods	Detroit
Chicago Fish House	Chicago
ClearWater Fisheries Inc.	Chicago
Coastal Seafoods	Minneapolis
Dory Seafoods Inc.	Seattle.

Retail

Leonards Market	New York
Yorkville Fishery	New York
Superior Fish	Detroit
Hayen's Fish Market Inc.	Chicago
Super Value	Minneapolis

H.R.I.

Joe Muir Seafood	Detroit
Sysco/Continental	Minneapolis

DEPARTMENT OF FISHERIES AND OCEANS

ARCTIC CHAR MARKET SURVEY

% of Valid Respondents

BROKERS/WHOLESALERS

Name of Firm: _____ Broker: _____ Wholesaler: _____

Telephone: _____ City: _____

Person Contacted: _____ Title: _____

1. Do you presently carry Arctic char? Yes 67% IF YES, go to Q2

   No 33% IF NO

Why don't you carry Arctic char?

Too expensive (what price should it be)? _____

Unreliable availability 50%

Poor quality (cement) _____

No demand 50%

Not familiar with char _____

Are you interested in carrying Arctic char if it is available as:

	No	Yes	Size Range	If YES, what price would you pay per pound (kilogram)	IF NO, would you buy this product at a lower price No	Yes	If YES, what price would you be willing to pay?
Frozen, head on fish	_	67%	( )	$ DK	_		$ DK lb.
Frozen fillets	50%		(X)	DK	100%		
Frozen steaks	_	67%	(X)		_		lb.
*Fresh, head on 4-6 lb.	_	100%	(X)		_		lb.
*Fresh, head on 8-10 oz.	100%		(X)		100%		

*IF YES, SKIP TO Q9, THEN 13

ALL NO, SKIP TOQ10

*DK = Don't know or not applicable

2. Do you do any processing of char prior to sale? Yes 67% No 33%

If yes, do you steak 50%
fillet 33%
smoke 25%
other ____

3. We would like some information about the source, volumes and prices of the frozen char that you carry.

	Source*	Ave. lb./ month	$/lb paid	$/lb sold	Major Customer Type**
Frozen, head on 2-4 lb.	A,B	5,900	2.50	3.40	A,B,C
Frozen, head on 4-7 lb.	A	200	4.75	5.35	A,C
Frozen, head on 7+ lb.	A,B	3,600	4.50	5.35	A,C
Fresh, head on 8-10 oz.	Winnipeg	2,000	4.50	5.95	A
Frozen steaks					
Frozen fillets					

*Fresh Fish Marketing Corporation (FFMC), Winnipeg (A)
Nain Cooperative, Labrador (B)
Torngar Cooperative, Labrador (C)
Other (D)

**Food service, hotels, restaurants (A)
Supermarkets (B)
Fish stores (C)

4. How do you find the quality of the char that you now buy?

Excellent 17%
Satisfactory 83%
Poor ____

If 'Poor' in Q4, ask what quality problem do you experience?

Freezer burn ____ Poor appearance ____ Colour ____

5. What is the colour of the flesh of the char that you now buy?

	Now	What colour flesh would You prefer?
Red	17%	34%
Orange-red	66%	66%
Pink	17%	
Pale pink		
White		
Other		

6. If you could get a "better" coloured char. would you pay a premium for it? Yes 25% No 75%

IF YES, how much would you pay per pound? $ DK /lb.

Recently, farm raised (aquacultured) Arctic char has been produced and marketed fresh - mostly in the 8-10 oz. size, dressed head on. Shortly fresh farmed char in the 4-6 lb. size will be available.

7. Have you ever tried any farmed Arctic char? Yes 29% No 71%

8. Would you be interested in carrying fresh farmed char in the

	No	Yes	IF YES What price would you be willing to pay?	What quantity would you buy per month? Mostly DK
8-10 oz. pan	13%	87%	$2.85 (2-3.75) /lb.	ave.1,200 lb.
2-4 lbs.	_	___	$4.13 (3.75-4.50) /lb.	5,600 lb.
4-7 lbs.	_	___	$4.75 (4.25-5.50) /lb.	3,200 lb.
7+ lbs.	_	___	$5.88 (5.15-6.00) /lb.	3,000 lb.

9. IF YES to first part of Q8 and any other parts, would you carry both 8-10 oz. pan size and 2-7 lb. sizes? Yes 50% No 50%

10. **IF YES TO Q8**

In the early stages of industry development, there may be a limited quantity of fresh farmed char available. Later, as production expands, quantities would be available on a regular basis.

If fresh farmed char was only available on a limited or occasional basis, would you still be interested in carrying it? yes 88% No 12%

11. IF YES TO FIRST PART Q8

If you carried fresh char in the 8-10 oz. pan size, how would this affect your purchase of frozen char?

Have no effect	33%
Would reduce frozen	33%
Would replace frozen	33%
Do not buy frozen char	

12. IF YES TO REMAINDER OF Q8

If you carried fresh char in the 2-7 lb. size, how would this affect your purchase of frozen char?

Have no effect	75%
Would reduce frozen	
Would replace frozen	
Do not buy frozen char	

13. Do you presently carry trout? Yes 100% No _____

IF YES

What size fish? (8-12 oz.) 70%, (12 02-3 lb) 30%

Fresh 50% Frozen 50%

Where does your trout come from? Geographically: Idaho, Ontario, Nova Scotia, Quebec

Name of distributor Varies

How many pounds per month do you buy? Ave 1,800 lb; range 150-8,000 lb

Price to purchase $2.00-2.80/lb

Sale price $2.90-3.00/lb

14. Do you presently carry salmon? Yes 100% No _____
IF YES, proceed to Q15, IF NO, proceed to Q17.

15. Do you use different types of salmon (i.e. different species, product type, fresh or frozen, etc.)? Yes 88% No 12%

Thinking of the type of salmon you purchase the **most,** is it: Product #1
Thinking of the type of salmon you purchase next, etc.
Number of responses by code. (Not all respondents would answer)

	Species*	B = both Fresh (F)/ Frozen (FZ)	Wild W/Q Aquiculture**	Whole/W Steak/S Fillet/F	Size lb. or oz.
-Product #1	A-7,C-2	B-1,F-7,FZ-1	B-2,W-1,Q-6	W - 9	
Product #2	C-1,K-2,S-4	B-1,F-4,FZ-2	B-3,W-1,Q-3	S-1,W-6	
Product #3	C-3,K-1,P-1,S-1	F-4,Fz-2	B-1,W-1,Q-3	W-5,S-1	
Product #4					

*Species: Atlantic (A); Spring, Chinook (S); **Coho,** Silver (C); Chum, Silver Brite (K); Pink, Humpy (P).

****IF AQUACULTURED SALMON IS PURCHASED, ASK**

16. Does your purchase of **aquacultured** salmon decrease when fresh wild salmon is available (June - September)? Yes 100% No _____

Do you anticipate that you will buy more, less or the same of **aquacultured** salmon over wild salmon in the future?

More 50% Less _____ Same 50%

17. Is Arctic char unique or **could** you replace it with: trout Yes 25% No 75%
salmon Yes 50% No 50%

18. In your opinion, do you think that the prices and the volume for traditional frozen wild caught dressed head on Arctic char will be affected by the introduction to this market of:

	Prices			Volumes		
	Yes, up	Yes, down	Dk or No effect	Down	up	DK or No effect
8-10 oz. fresh farmed char	11%	2	9 60% %	20%		80%
4-7 lb. fresh farmed char	11%	29%	60%	40%		60%
Fresh **aquacultured** salmon	11%	29%	60%	20%		80%
Fresh trout		11%	89%	50%		50%

19. Is there a difference between arctic char from the Fresh Fish Marketing Corporation and from Labrador? Yes 15%

What is the difference? DK

DEPARTMENT OF FISHERIES AND OCEANS

ARCTIC CHAR MARKET SURVEY

% of Respondents

FISH RETAILERS AND SUPERMARKETS

Name of Retailer: _____ Chain: _____ Independent: _____

Telephone: _____ City: _____

Person Contacted: _____ Title: _____

1. Do you presently carry Arctic char? Yes 58% IF YES, go **to Q2**

No 42% IF NO

Why don't you carry Arctic char?

Too expensive (what price should it be)? 22%

Unreliable availability 22%

Poor quality (comment) 22% one didn't like frozen

No demand 33%

Not familiar with char

Are you interested in carrying Arctic char if it is available as:

	No	Yes	Size Range	If YES, what price would you pay per pound (kilogram)	IF NO, would you buy this product at a lower price No	Yes	If YES, what price would you be willing to pay?
Frozen, head on fish	20%		( )	$ DK		50%	$ DK lb.
Frozen fillets		40%	(x)	DK		100%	lb.
Frozen steaks		20%	(x)			50%	
*Fresh, head on 4-6 lb.		80%	(x)				lb.
*Fresh, head on 8-10 oz.		60%	(x)		100%		lb.

● IF YES, SKIP TO **Q9, THEN 13**

ALL NO, SKIP TO Q10

*DK = Don't know or not applicable

IF YES TO FIRST **PART Q1**

2. How is the product sold in your store?

	Yes	No	What is the Current Retail Price $/lb ave. (range)
Fillets	24%		$9.54 ($7.95-10.67)
Steaks	38%		$8.41 ($7.45-10.00)
Whole	38%	___	$8.01 ($6.49-11.00)
Other			

3. What are your present purchase volumes and prices in terms of pounds per month and dollars per pound?

	lb.	$	How large are these fish on average?
Frozen, head on	245 (50-1000)	4.65(4-5.25)	Mostly 4-6, few 6-9
Fresh, head on	575 (250-1000)	5.00	
Fresh, head on 8-10 oz.			
Frozen steaks			
Frozen fillets	50	4.95	

4. How do you find the quality of the char that you now buy?

Excellent 30%
Satisfactory 70%
Poor _____

If 'Poor' in Q4, ask what quality problem do you experience?

Freezer burn _____ Poor appearance _____ Colour ____

5. What is the colour of the flesh of the char that you now buy?

	Now	What colour flesh would you prefer?
Red		50%
Orange-red	30%	17%
Pink	30%	33%
Pale pink	30%	
White		
Other	10%	

6. If you could get a "better" coloured char, would you pay a premium for it? Yes 67% No 33%

IF YES, how much would you pay per pound? (kilogram) $ DK /lb.

Recently, farm raised (aquacultured) Arctic char has been produced and marketed fresh - mostly in the 8-10 oz. size, dressed head on. Shortly fresh farmed char in the 4-6 lb. size will be available.

7. Have you ever tried any farmed Arctic char? Yes 25% No 75%

8. Would you be interested in carrying fresh farmed char in the

	No	Yes	IF YES What price would you be willing to pay? Many DK	What quantity would you buy per month?
8-10 oz. pan size	.	63%	$3.65 (2.75-4.55) /lb.	55 (50-70) lb.
2-4 lbs.	_	75%	$4.66 (2.75-7.00) /lb.	38 (20-50) lb.
4-7 lbs.	_	88%	$5.67 (4-10.00) /lb.	270 (20-1000) lb.
7+ lbs.	_	25%	$ DK /lb.	DK lb.

9. IF YES to first part of Q8 and any other parts, would you carry both 8-10 oz. . pan size and 2-7 lb. sizes? Yes 67% No 33%

10. **IF YES TO Q8**

In the early stages of industry development, there may be a limited quantity of fresh farmed char available. Later, as production expands, quantities would be available on a regular basis.

If fresh farmed char was only available on a limited or occasional basis, would you still be interested in carrying it? Yes 100% No _____

11. **IF YES TO FIRST PART Q8**

If you carried fresh char in the 8-10 oz. pan size, how would this affect your purchase of frozen char?

Have no effect	33%
Would reduce frozen	
Would replace frozen	
Do not buy frozen char	67%

12. **IF YES TO REMINDER OF Q8**

If you carried fresh char in the 2-7 lb. size, how would this affect your purchase of frozen char?

Have no effect	17%
Would reduce frozen	33%
Would replace frozen	17%
Do not buy frozen char	

13. Do you presently carry trout? Yes 100% No _____

IF YES

What size fish? (8-12 oz.) 80% (12 OZ.-10 lb) 20%

Fresh 77% Frozen 33%

Where does your trout come from? Geographically: Idaho, Alberta, B.C., Ontario

Name of distributor _____

How many pounds per month do you buy? 660 lb (30-5,000.)

Price to purchase Fresh - $3.05 (2.90-3.20); Frozen - $2.67 (2.00-3.25)

Sale price Fresh - $3.95-4.55; Frozen - $3.75-4.50

14. Do you presently carry salmon? yes 100% No ____
IF YES, proceed to Q15, IF NO, proceed to Q17.

15. Do you use different types of salmon (i.e. different species, product type, fresh or frozen, etc.)? Yes No 83% 17%

Thinking of the type of salmon you purchase the most, is it: Product #1
Thinking of the type of salmon you purchase next, etc.
Number of responses by code. (Not all answered.)

	Species*	B = both Fresh (F)/ Frozen (FZ)	Wild W/Q Aquiculture**	Whole/W Steak/S Fillet/F	Size lb. or oz.
Product #1	A-4,S-6	B-1,F-9	B-2,W-3,Q-5	A-1 ,W-9	
"product	#2 A-2,C-2,P-2,S-2	B-1,F-6,FZ-1	B-2,W-4,Q-2	W-7,A-1	
Product #3	C-1,K-2,P-1,S-1	F-4,Fz-1	W-4	W-4,A-1	
Product #4	C-1	F-1		A-1	

*Species: Atlantic (A); Spring, Chinook (S); Coho, Silver (C); Chum, Silver Brite (K); Pink, Humpy (P).

**IF AQUACULTURED SALMON IS PURCHASED, ASK

16. Does your purchase of aquacultured salmon decrease when fresh wild salmon is available (June - September)? Yes 87% No 13%

Do you anticipate that you will buy more, less or the same of aquacultured salmon over wild salmon in the future?

More 43% Less ____ Same 57%

17. Is Arctic char unique or could you replace it with: trout Yes 10% No 90%
salmon Yes 30% No 70%

18. In your opinion, do you think that the prices and the volume for traditional frozen wild caught dressed head on Arctic char will be affected by the introduction to this market of:

	Prices			Volumes		
	Yes, up	Yes, down	No effect	Down	Up	No effect
- 8-10 oz. fresh farmed char	2	22%	56%	13%	38%	49%
4-7 lb. fresh farmed char	22%	33%	45%		57%	43%
Fresh aquacultured salmon	11%	22%	67%	33%	11%	56%
Fresh trout	11%	11%	78%	11%	22%	66%

DEPARTMENT OF FISHERIES AND OCEANS

ARCTIC CHAR MARKET SURVEY

% of Respondents

RESTAURANTS

Name of Restaurant: _____

Telephone: _____ City: _____

Person Contacted: _____ Title: _____

1. Do you presently carry Arctic char? Yes 64% IF YES, go **to Q2**

No 36% IF NO

Why don't you carry Arctic char?

Too expensive (what price should it be)? _____

Unreliable availability 29%

Poor quality (comment) 14%

No demand 57%

Not familiar with char _____

Are you interested in carrying Arctic char if it is available as:

	No	Yes	Size Range	If YES, what price would you pay per pound (kilogram)	IF NO, would you buy this product at a lower price? No	Yes	If YES, what price would you be willing to pay?
Frozen, head on fish	75%	25%	( )	$ DK	100%		$ DK lb.
Frozen fillets	75%	25%	(X)	DK	100%		
Frozen steaks	75%	25%	(X)				
*Fresh, head on 4-6 lb.	75%		(X)				lb.
*Fresh, head on 8-10 oz.	80%	20%	(X)				lb.

*IFYES, SKIP TO **Q9,** THEN 13

ALL NO, SKIP TO Q10

*DK = Don't know or not applicable

IF YES TO FIRST PART Q1

2. How is the product served in your restaurant?
Add over 100% because some serve more than one type.

	Yes	No	What is the serving size?	What is the menu price? Ave. (range)
Fillet	40%	_	7-1o oz.	$14.48 (9.95-18.00)
Steak	60%	_	6-8 oz.	$10.73 (7.50-15.95)
Whole	1 0%	.	8 oz.	$15.25
Other	___	___	_____	_____

3. What are your present purchase volumes and prices in terms of pounds per month and dollars per pound?

	Ave. lb. (range)	$	How large are these fish on average?
Frozen, head on	415 (30-2,500)	5.47 (4-6.00)	mostly 6-9 lb
Fresh, head on	35 (30-40)	DK	6-9
Fresh, head on 8-10 oz.	100-150	5.95	10 oz.
Frozen steaks	_____	_____	
Frozen fillets	_____	_____	

4. How do you find the quality of the char that you now buy?

Excellent 67%

Satisfactory 33%

Poor _____

If 'Poor' in Q4, ask what quality problem do you experience?

Freezer burn _____ Poor appearance _ Colour ____

5. What is the colour of the flesh of the char that you now buy?

	Now	What colour flesh would you prefer?
Red	10%	17%
Orange-red	30%	33%
Pink	20%	33%
Pale pink	20%	
White	10%	17%
Other	10%	

6. If you could get a "better" coloured char, would You pay a premium for it? Yes 17% No 83%

IF YES, how much would you pay per pound? $ DK /lb.

Recently, farm raised (aquacultured) Arctic char has been produced and marketed fresh - mostly in the 8-10 oz. size, dressed head on. Shortly fresh farmed char in the 4-6 lb. size will be available.

7. Have you ever tried any farmed Arctic char? Yes 11% No 89%

8. Would you be interested in carrying fresh farmed char in the

	No	Yes	IF YES What price would you be willing to pay? Mostly DK	What quantity would you buy per month?
8-10 oz. pan size	25%	75%	$4.00 (2.50-6.00) /lb.	70 (30-150 lb. (kg)
2-4 lbs.	100%		$ /lb.	lb. (kg)
4-7 lbs.	33%	67%	$ 5.00 /lb.	DK lb. (kg)
7+ lbs.	67%	33%	$ 6.00 /lb.	DK lb. (kg)

9. IF YES to first part of Q8 and any other parts, would you carry both 8-10 oz. pan size and 2-7 lb. sizes? Yes 40% No 60%

10. **IF YES TO Q8**

In the early stages of industry development, there may be a limited quantity of fresh farmed char available. Later, as production expands, quantities would be available on a regular basis.

If fresh farmed char was only available on a limited or occasional basis, would you still be interested in carrying it? Yes 92% No 8%

11. IF YES TO FIRST **PART Q8**

If you carried fresh char in the 8-10 oz. pan size, how would this a-ffect your purchase of frozen char?

Have no effect	25%
Would reduce frozen	25%
Would replace frozen	25%
Do not buy frozen char	25%

One major buyer thinks total char purchases would rise 15%.

12. IF **YES TO REMINDER OF Q8**

If you **carried fresh** char in the 2-7 lb. size, how would this affect your purchase of frozen char?

Have no effect	33%
Would reduce frozen	67%
Would replace frozen	
Do not buy frozen char	

13. Do you presently carry trout? Yes 93%

IF YES

What size fish? (8-12 oz) 67%; (12 oz.-4 lb) 33%

Fresh 67% Frozen 33%

Where does your trout come from? Geographically: Idaho, Ontario, Quebec, Manitoba, Nova Scotia

Name of distributor

How many pounds per month do you buy? 110 (20-330)

Price to purchase $3.42/lb (1.75-3.86)

Menu price $11.64 (6.75-16.00)

14. Do you presently carry salmon? Yes 100% No _
IF YES, proceed to Q15, IF NO, proceed to Q17.

15. Do you use different types of salmon (i.e. different species, product type, fresh or frozen, etc.)? Yes 75% No 25%

Thinking of the type of salmon you purchase the most, is it: Product #1
Thinking of the type of salmon you purchase next, etc.
Number of respondents by code. Not all replied.

	Species*	B = both Fresh (F)/ Frozen (FZ)	Wild W/Q Aquiculture**	Whole/W Steak/S Fillet/F	Size lb. or oz.
Product #1	A-7,C-3,S-3	B-2,F-10,FZ-1	Q-6,W-7	W-10,S-2,F-1	
Product #2	S-4,C-1	F-5	Q-2,W-3	F-1,W-4	
Product #3	C-1	F-1	W-1	W-1	
Product #4	K-1	F-1	W-1	W-1	

*Species: Atlantic (A); Spring, Chinook (S); Coho, Silver (C); Chum, Silver Brite (K); Pink, Humpy (P).

**IF AQUACULTURED SALMON IS PURCHASED, ASK

16. Does your purchase of aquacultured salmon decrease when fresh wild salmon is available (June - September)? Yes 43% No 57%

Do you anticipate that you will buy more, less or the same of aquacultured salmon over wild salmon in the future?

More _____ Less 14% Same 72%

17. Is Arctic char unique or could you replace it with: trout Yes ___ No 100%
salmon Yes 10% No 90%

18. In your opinion, do you think that the prices and the volume for traditional frozen wild caught dressed head on Arctic char will be affected by the introduction to this market of:

	Prices			Volumes		
	Yes, up	Yes, down	No effect	Down	up	No effect
8-10 oz. fresh farmed char	_	46%	54%	25%	25%	50%
4-7 lb. fresh farmed char	12%	25%	63%	17%	17%	66%
Fresh aquacultured salmon	8%	25%	67%	13%	13%	74%
Fresh trout	13%	____	87%	14%	14%	72%