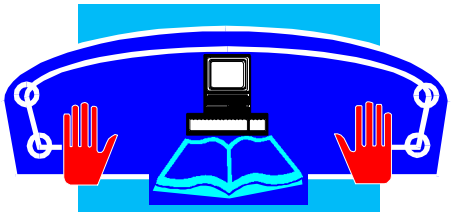

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Market Research - Nwt Fish Products
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Introduction

The Department of Economic Development and Tourism is in the process of developing a long term strategy for the development of the fishing industry in the NWT. As a first step in this process the Department contracted RT & Associates in June 1993 to conduct market research for various fish species commercially harvested in the NWT. The results of this research are summarized in the following report.

The purpose of the market research was to help develop a broad picture of market trends in the fishing industry which impact on the present and future commercial fisheries in the NWT and to highlight potential markets where the NWT would have the best opportunities to sell fish products over the long term. To collect the information required to complete this task we used several different methodologies including a review of written materials, compilation and analysis of government statistics and personal interviews.

The written materials we reviewed included previous market studies commissioned by ED&T, reports produced by the ISTC Seafood and Marine Products Campaign, Trade Reports published by External Affairs Canada, Seafood Market Reports published by the Canadian Association of Fish Exporters, Annual Statistical Reports published by Fisheries and Oceans, and a range of other materials produced by the fishing industry. A list of the reports used in this study can be found in Appendix 1.

We conducted interviews with a total of 30 individuals representing every level of the fish marketing system including producers, buyers, sellers, processors, brokers, wholesalers, retailers, and exporters. Interviews included representatives from the east and west coasts, the Prairies, Ontario, Quebec and the U.S.A. It should be noted that during the course of the study we attempted to interview representatives from FFMC however they declined to participate. Therefore all information in this report pertaining to FFMC prices and sales have been obtained from other written sources. A copy of the questionnaire used to guide interviews and a list of individuals contacted can be found in

Appendix 2.

We also carried out a data base search on a number of commercial databases available through CAN/OLE and CompuServe. A list of relevant articles found through the database search can be found in Appendix 3.

The following report is divided into two sections. The first section provides a brief overview of current world trends in fish production and consumption with special emphasis on the North American market.

The second section is made up of market information sheets for each of the species investigated including Lake Whitefish, Lake Trout, Arctic Char, Turbot, Greenland Shark, Icelandic Scallops, Shrimp and Herring. Where possible, market information has been presented in terms of the following categories:

- Origin of Production
- Production Trends
- Demand by Geographic Location
- Demand by Market Sector
- Product Form
- Pricing Trends
- Competing Species and Products
- Future Trends
- Target Markets for NWT Production

The written text provides general market information. More detailed information on markets, market size, value and pricing per product for 1988 - 1992 is found in Appendix 4. This information was provided to us by the Canadian Association of Fish Exporters (CAFE). We strongly recommend that the GNWT become an associate member of CAFE as they are an invaluable source of information on markets and market trends.

Glossary of Market Terms

For the reader's convenience we have also included the following glossary of marketing terms to clarify some of the terms used in the text.

Count: Term used to specify the size of shrimp or scallops. Count is the number of fish per pound. (i.e. 30-40 count shrimp would have 30 to 40 shrimp per pound)

Dressed: Fish that has been gutted and had the organs removed.

Fillet: A strip of flesh from the side of a fish, cut away from the backbone. Fillets can be skin-on or skinless, pinbone-in or pin-bone out.

Grading: Measurements by which seafood is often sold. Increments can either be in counts per pound (i.e. 30/40 shrimp) or size (i.e. 2-4 ounce fillets).

H&G: Short for headed and gutted (i.e. fish that have had both the head and guts removed).

IQF: Individually Quick Frozen. Term for product that is frozen in individual pieces.

Layerpack: A carton of fillets which are packed in layers. Each layer is separated by a sheet of polyethylene.

Pinbones: Fine bones often found along the midline of fillets (for example in whitefish).

Roe: Ripe fish eggs. Sujiko and Ikura are different types of salmon roe sold to Japan.

Round: Refers to the entire fish, head and guts intact. Round scallops refers to the entire scallop, shell included.

Shatterpack: A carton of frozen fillets similar to a layerpack but layers are separated by a continuous interleaved polyethylene sheet. Individual fillets can be separated by dropping or "shattering" the pack.

Surimi: Japanese term for raw extruded fish flesh used as the raw material for an expanding line of shellfish analogs such as crab sticks. Surimi is usually made from cheap, white ocean fish such as pollock.

General Trends in Fish Production and Consumption

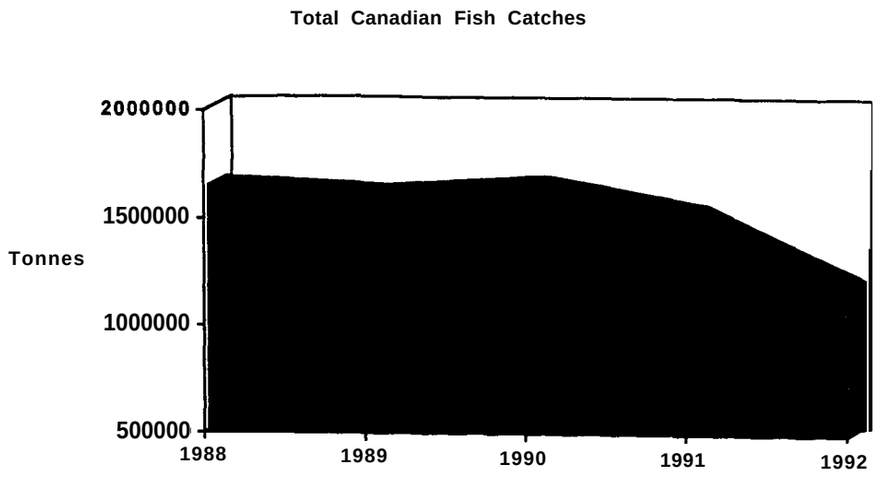
World Trends in Production

The total world catch of fish has increased significantly over the past three decades.. During the 1980's growth rates averaged over 4 per cent and the world catch increased from 72 million tomes in 1980 to approximately 100 million tonnes by 1990. Experts predict that this is the maximum sustainable yield of the world's natural fisheries and further increases will represent over-fishing.

About one third of the world catch enters international trade and because both quantity and price have increased, the value of international fish trade has increased sharply over the past two decades. By 1991, total international trade in fish and seafood was valued at approximately US$40 billion.

As world population grows the demand for fish products is expected to continue to increase. If present consumption levels continue it is estimated that by the year 2000 the global demand for seafood will be 113 million tomes with imports accounting for about 38 million tonnes or approximately one third of all consumption.

In contrast, total Canadian fish catches have been gradually declining over the past five years as shown in the following chart.

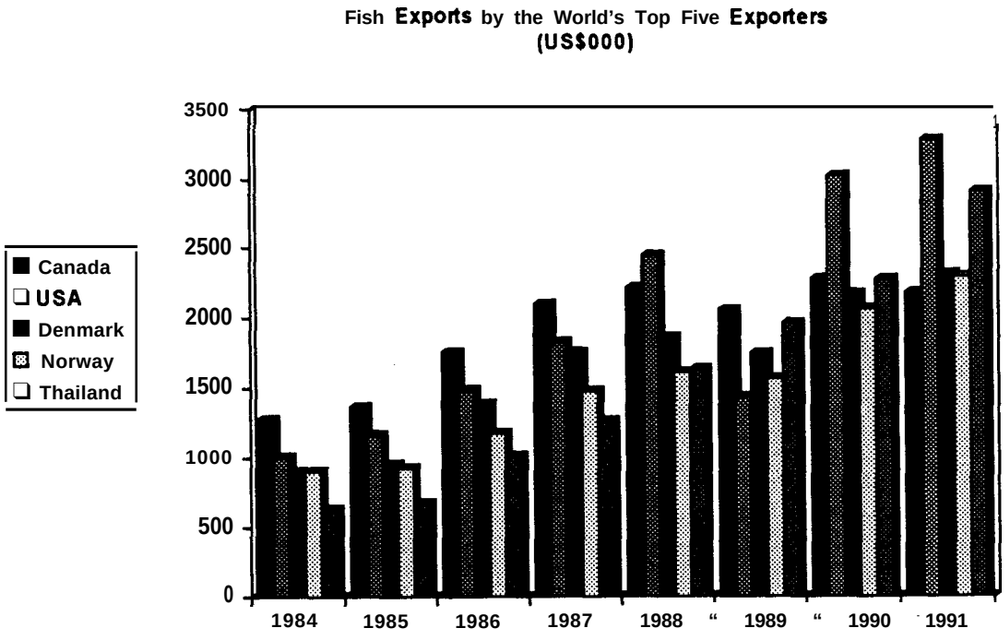


Summary of Canadian Fish Catches 1988-1992
(in metric tonnes)

1988	1989	1990	1991	1992
1,642,144	1,606,307	1,647,391	1,515,281	1,163,563

In 1992 Canadian fish catches totaled 1.163 million tonnes, a decrease of approximately 30 per cent over 1988 levels.

Until 1988, Canada was the world's leading exporter of fish products in terms of value however in 1988 the USA surpassed Canada in fish exports for the first time and has continued to lead the world in fish exports as shown in the following chart.



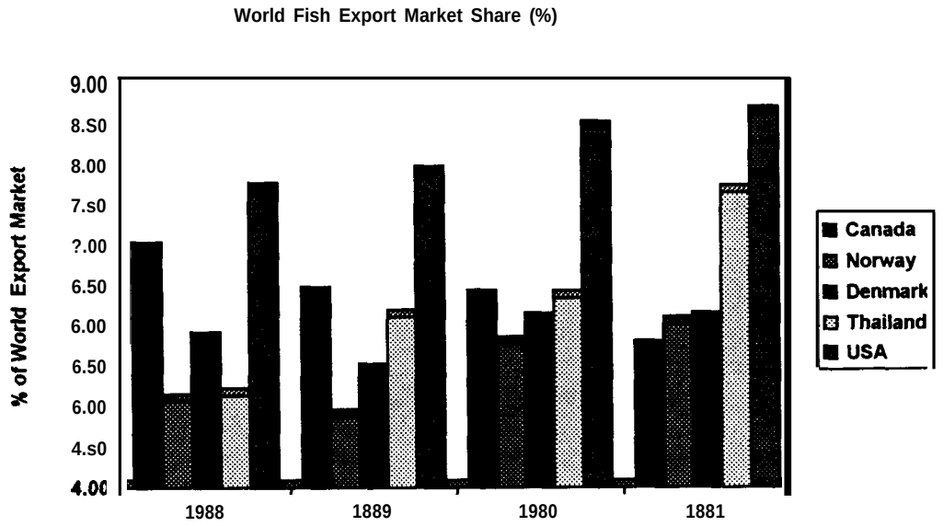
World Fish Exports by the Top Five Exporting Countries ($000)

Year	1984	1985	1986	1987	1988	1989	1990	1991
Canada	1,272	1,359	1,752	2,092	2,206	2,051	2,270	2,168
USA	1,003	1,162	1,481	1,825	2,441	1,432	3,020	3,275
Denmark	899	953	1,381	1,751	1,856	1,745	2,166	2,302
Norway	903	922	1,171	1,475	1,608	1,564	2,060	2,282
Thailand	633	675	1,012	1,261	1,631	1,959	2,265	2,901

The value of Canadian fish exports has remained fairly stable since 1987 however Canada's fish exports as a percentage of world exports has been gradually decreasing from approximately 7 per cent in 1988 to 5.7 per cent in 1991.

In terms of world export market share Canada fell from first place in 1987 to fifth place in 1991.

Fish exports of the top five exporting nations as a percentage of total world fish export markets are shown below.



Percent of World Export Fish Market of Top Five Exporting Countries

Year	1988	1989	1990	1991
Canada	6.94	6.38	6.34	5.71
Norway	5.06	4.87	5.76	6.01
Denmark	5.83	5.43	6.05	6.06
Thailand	5.13	6.10	6.33	7.64
USA	7.68	7.88	8.44	8.62

Canada's strongest competition in export markets comes from the U. S., followed by Thailand, Denmark, and Norway.

American fish exports have more than doubled in value between 1987 and 1991 and the U.S. export market share has gradually increased from less than 3 per cent in the early 1960's to 7.7 per cent in 1988 and 8.6 per cent by 1991. This growth can be attributed primarily to developments in the Alaskan fishery.

Thailand has also shown strong and rapid growth over the last 25-30 years. In 1987 Thailand was exporting $1.3 million worth of fish products. By 1991 fish exports had increased more than two times to $2.9 million. Thailand exceeded Canada's export value for the first time in 1991 capturing 7.6 per cent of the world market.

Denmark has not shown the same rates of increase but has maintained a strong and steady presence with a slight upward trend in world trade share from about 5 per cent in the early 1960's to about 6 per cent in the 1980's and 1990's.

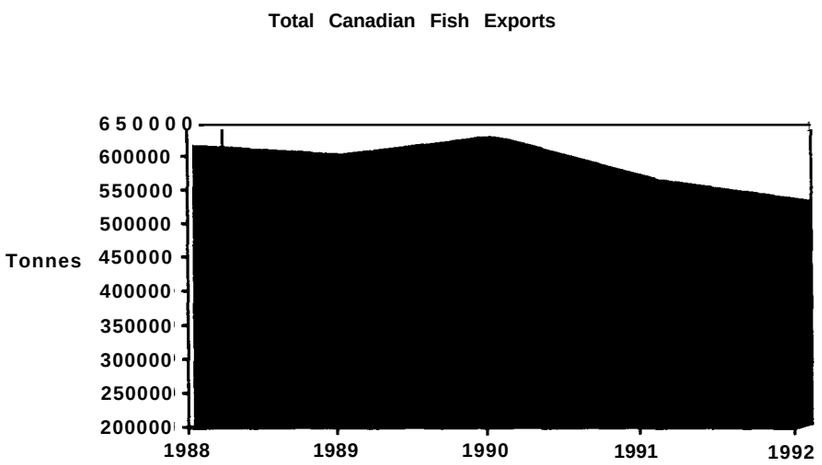
Norway in contrast, has reduced its competitive share. During the 1960's and 70's Norway's export market share was almost identical to Canada's but its world share dropped steadily after 1977 until it was only about 5 per cent in 1987. In 1990 Norway began to recover its share of the market and by 1991 had exceeded Canada's exports with a total market share of 6 per cent. This growth can be attributed to the strong growth in aquacultured fish produced by Norway.

At one time Japan was the world's largest fish exporter but its market share has dropped steadily and dramatically from approximately 17 per cent in 1962 to 3.2 per cent in 1987, and 2.2 per cent in 1991. This is largely a result of reduced access to other countries' 200 mile EEZ. Japan is now the world's leading importer of fish products. In 1991 Japan imported over $12 billion in fish products, accounting for almost 30 per cent of the world market.

In 1991 other major players in the international market included Taiwan, Korea, Iceland,

the Netherlands, China, Indonesia, Chile, and the U. K.. China, Chile, the UK, France and Russia have all shown fairly strong growth in recent years and could pose a competitive threat to Canada in the not too distant future.

The volume of Canadian fish exports have also been decreasing as shown in the following chart. In 1992 Canadian fish exports totaled approximately 530,000 tonnes, down 15 per cent from a peak of 625,000 tonnes in 1990.



Total Canadian Fish Exports 1988-1992
(in metric tonnes)

1988	1989	1990	1991	1992
616,852	601,152	624,660	562,117	529,907

The percentage of total Canadian fish catch that was exported (by volume) remained fairly constant at approximately 37 per cent between 1988 and 1991. In 1992 approximately 45 per cent of Canada's total catch was exported.

Summary

The total world catch and the value of world trade in fish and seafood products has been gradually increasing over the past two decades. Canada is a major player in the international fish market and until 1988 was the world's leading exporter of fish products in terms of value. Over the past five years however, Canada's share of the fish export market has fallen from almost 7 per cent in 1987 to 5.7 per cent and fifth place in 1991.

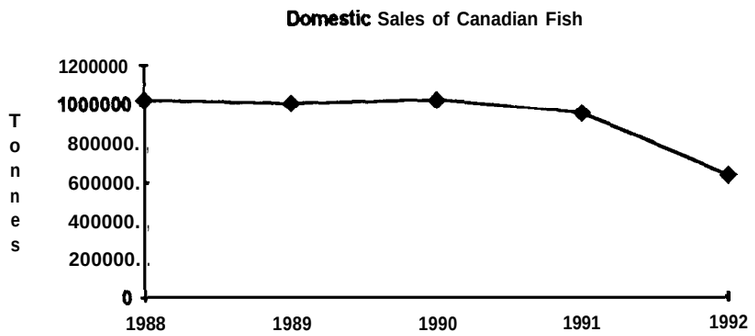
The USA is currently the leading exporter of fish products worldwide, capturing 8.6 per cent of the world market. American fish exports have more than doubled in value over the past five years largely as a result of growth in the Alaskan fishery. Thailand is following close behind the US in terms of exports and has shown tremendous growth over the past five years.

In contrast, Japan, once the world's leading fish exporter, has fallen to fifteenth place as an exporter and has become the world's largest importer of fish and seafood products primarily because of reduced access to other countries' fishing grounds.

Markets for Canadian Fish

Canada

The Canadian domestic market is a major market for Canadian fish products, however domestic sales have seen a decline in volume over the past five years as illustrated in the following chart.



Domestic Sales of Canadian Fish 1988-1992
(in metric tonnes)

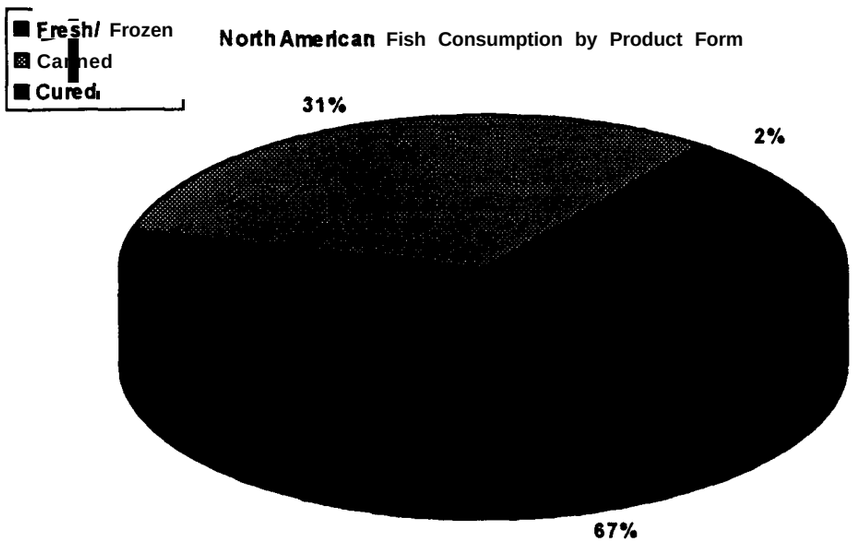
1988	1989	1990	1991	1992
1,025,292	1,005,155	1,022,731	953,164	633,656

Of the total 1992 Canadian catch, 633,656 tonnes (or 55%) were sold domestically. This is down approximately 40 per cent from the 1 million tonnes sold domestically in 1988. Some of this decrease has been replaced by imported fish. While Canada is a leading world exporter of fish, 61 per cent of Canadian demand is filled by imports. This suggests that the Canadian market is under supplied by domestic producers due to the greater attraction of the American market for suppliers.

The U.S. accounts for approximately half of Canadian fish imports. U.S. imports totaled 123,671 tonnes in 1991, valued at $384 million. Approximately 40 per cent of fish products imported from the U.S. are fresh or frozen fillets and an additional 40 per cent are shellfish.

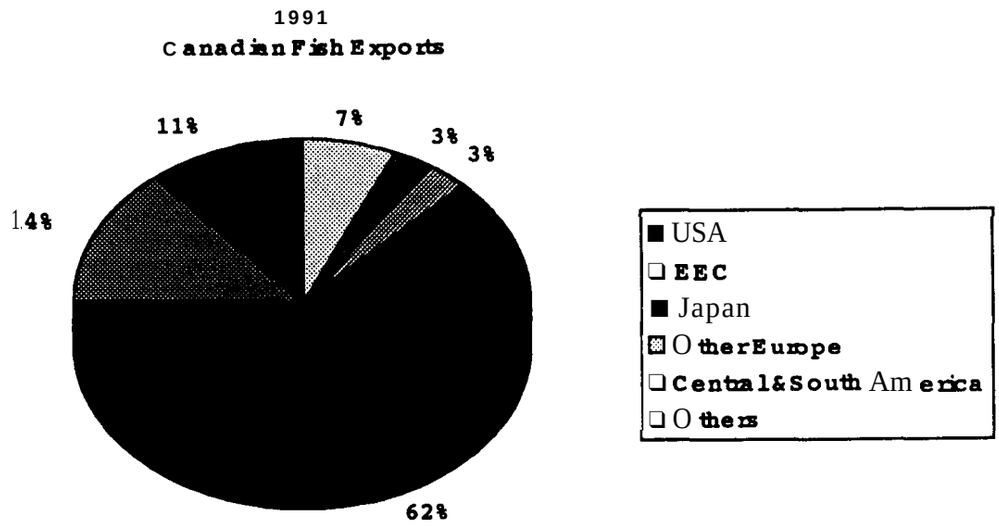
It is interesting to note that a substantial amount of fish imported from the U.S. is originally caught in Canada. Atlantic coast producers find it more convenient and lucrative to sell to large American buyers in the northeast which then resell their product to Canadian wholesalers and retailers.

On average Canadians consume approximately 8.0 kg of fish per capita per year. It is estimated that each Canadian household spends approximately $213 per year on fish purchases resulting in total estimated sales of $426,809,400 for fish in major urban centres in Canada. Fresh and frozen fish are by far the most popular in the North American market, making up 67 per cent of fish purchases. Canned fish follows with 31 per cent of the market, and smoked and cured fish make up 2 per cent of the market share.



Canadian Export Markets

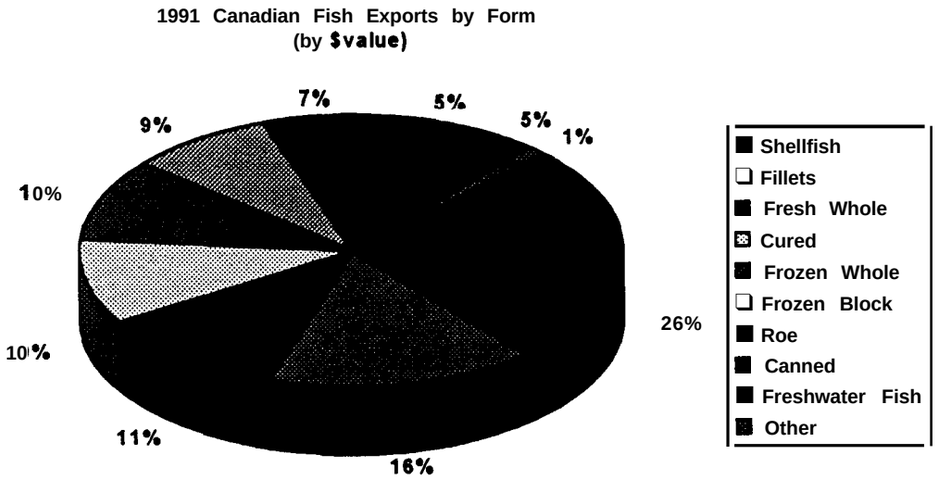
A breakdown of 1991 major export markets for Canadian fish is shown below. The USA provides the largest market for Canadian fish, buying 62 per cent of total exports by volume. In 1991 this amounted to 353,190 tomes of fish. Traditionally Japan has. been Canada's second largest export market taking approximately 15 per cent of total fish sales by volume, however by 1991 Japan had dropped to third place behind the European Community.



Summary of Canadian Fish Exports -1991

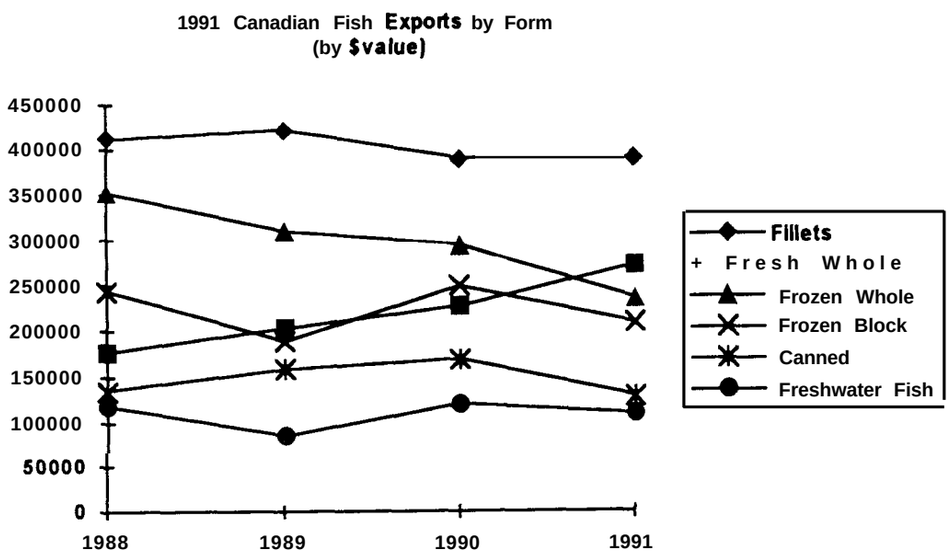
Country	Export Volume
U.S.A.	353,190 tonnes
EEC	77,199 tonnes
Japan	62,493 tonnes
Other European Countries	37,317 tonnes
Central and South America	15,281 tonnes
All Others	16,637 tonnes

As shown in the chart below, shellfish make up the largest portion of Canadian fish exports by value. Of other sea fish exports, fillets (including fresh and frozen) provide the greatest income, followed by frozen whole fish.



Form	Value
Shellfish	$640,625
Fillets (Fresh and Frozen)	$393,749
Fresh Whole	$271.245
Cured	.$245,822
Frozen Whole	$235,837
Frozen Block	$208,928
Roe	$164.581
Canned	$128.664
Freshwater Fish	$109,343
Other	$22,915
Total	S2.421.709

The following chart illustrates changes in the importance of various product forms in the export market. Fresh and frozen fillets continue to be the most important export form however the total income provided by fillet sales gradually declined between 1988 and 1991. The most dramatic change during this time period was the growth in income derived from sales of fresh whole fish and the accompanying decrease in sales of frozen whole fish.

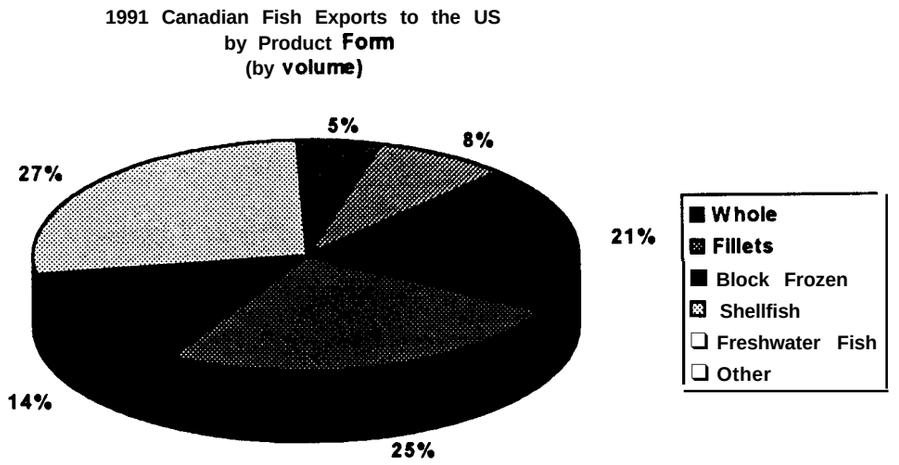


Canadian fish exports in 1991 totaled 562,117 tonnes valued at $2.46 billion. Together the USA, Japan and the EEC buy 88 per cent of Canada's fish exports. Each of these major markets is briefly described below.

United States

Next to Japan, the U.S. is the world's second largest importer of fish products. In 1990 Canada was the leading fish exporter into the U.S. providing 22 per cent of U.S. imports valued at $1.41 billion. Between 86 and 97 per cent of Canada's fresh fish and frozen

fish go to the U.S. In 1991 fresh and frozen fillets accounted for approximately 25 per cent of sales to the U. S., whole or dressed exports accounted for 21 per cent, frozen blocks and steaks for 14 per cent, and fresh and frozen shellfish 27 per cent. Ground fish products such as cod, haddock, hake, flatfish, halibut, pollock and redfish dominate Canadian exports into the U.S. Live lobster is also an important product exported into this market.



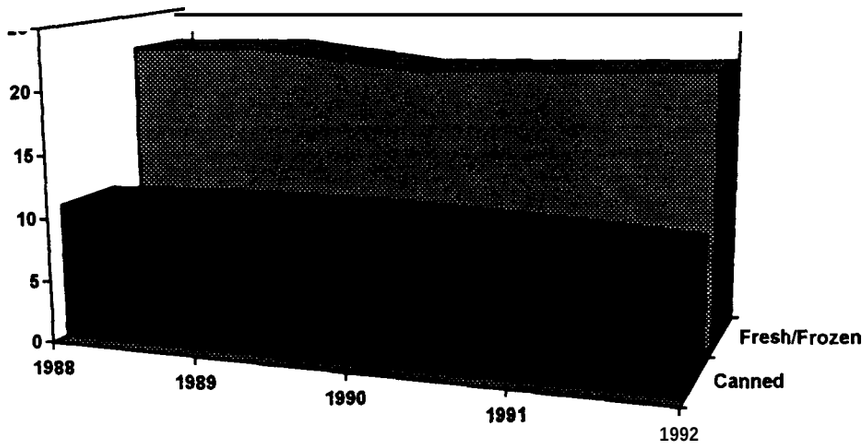
Total fish consumption in the USA has increased overall in the last two decades and is expected to continue to increase through the 1990's although per capita consumption is starting to show a decrease. In 1992 US residents consumed 14.8 pounds (6.7 kgs) of seafood per person, down 1/10 of a pound from 1991. Growth in consumption has come primarily from shrimp, catfish and salmon. Salmon imports alone increased by 18 per cent in 1992 over 1991. According to an ISTC Competitiveness Assessment of the Canadian Seafood and Marine Products Industry, US fish consumption per capita is predicted to reach 9 kilograms by the end of the century.

Total U.S. fresh and frozen product sales have grown fastest while growth in sales of

canned fish and breaded products have slowed. On a per capita basis fresh and frozen sales are more that double the volume of canned fish sales and have shown a gradual increase since 1990. Per capita canned sales have decreased during the same period as shown below.

With the increase in sales of fresh and frozen fish there has also been an increase in concern over the quality and appearance of fish products.

U.S. per capita Consumption of Fresh/frozen vs. Canned Seafood (kgs)



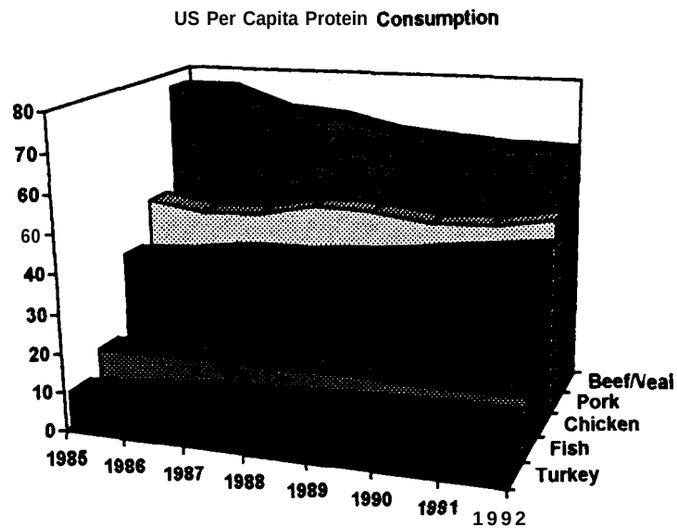
U.S. Per Capita Consumption of Fresh/Frozen Fish vs. Canned Fish (kgs)

	1988	1989	1990	1991	1992
Canned	10.8	11.2	11.2	10.78	10.12
Fresh/Frozen	22.20	22.44	21.12	21.34	21.78

A disproportionately higher amount of seafood is consumed away from home making

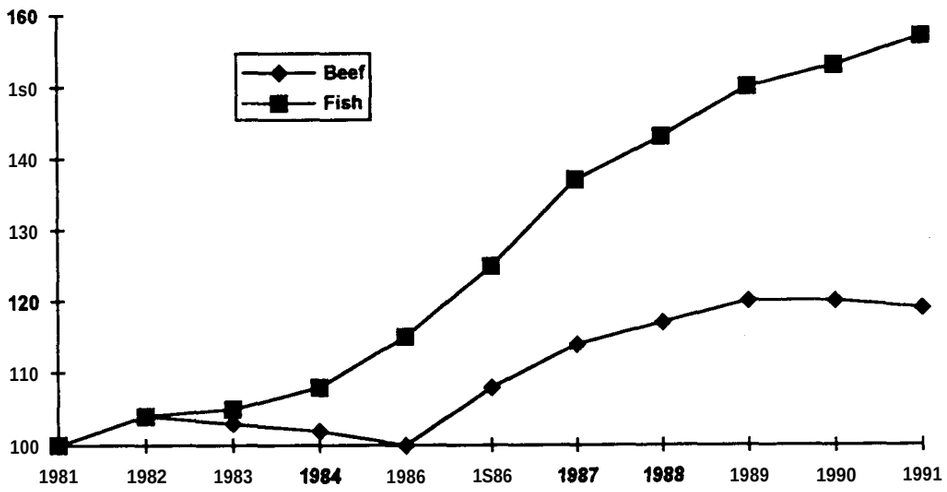
restaurants an important distribution sector. Restaurant sales have grown at a faster rate than sales in other sectors.

Eating patterns in the US are changing. The per capita consumption of beef is decreasing while consumption of pork and poultry continues to grow as illustrated in the graph below.



Unfortunately the cost of fish is increasing in the American market and the price difference between fish and red meat continues to widen as shown below. As a result, per capita consumption of fish has not kept pace with the growth in less expensive forms of protein.

Price Index for Seef and Fish in the American Market



In the American market fish consumption is directly correlated to income; as incomes increase fish purchases increase. Unfortunately, the current recessionary environment has made it more difficult to sell high priced seafood products and there has been a shift to lower priced species and cheaper products.

Japan

Japan is the world's leader in per capita fish consumption (averaging 86.0 kg per person per year) and the largest importer of fish world wide. In 1992 Japanese fish imports totaled $US13,248 million.

The most important Canadian fish export items going to Japan are herring roe and salmon. Canadian exports of fish and fishery products to Japan increased by 9.4 per cent from Cdn $595.1 million in 1991 to Cdn $650.8 million in 1992, however export volumes decreased by 9.0 per cent from 87,160 metric tonnes in 1991 to 78,743 metric tonnes in 1992.

The decline in Canadian exports to Japan is the result of several socio-economic factors. Firstly, Japan is experiencing a marked trend towards westernization and away from traditional culture. The impact of westernization can be seen in tradition of gift giving. Gift giving is an extremely important aspect of Japanese etiquette and high priced gift boxes of fish products, particularly high quality salmon and herring roe, were traditionally preferred gifts. With the shift towards westernization these gifts have been replaced with gifts of meat and liquor and other "western" products which has had a negative impact on both the salmon and herring industry.

Secondly, Japan has been suffering from a depressed economy which has impacted on the Japanese fish market in a number of ways. For example, the economic slowdown has resulted in decreased entertainment budgets for Japanese companies and as a consequence, sales quantity and selling prices of expensive fish items which are served mainly at expensive restaurants, hotels, and sushi bars have been seriously affected. The reduction in overtime work due to the economic slow down has also caused a decrease in sales of foods supplied to overtime workers and sales at late night family restaurants and convenience stores. The decrease in dining out, including business entertaining, has led to an increase in eating at home. As a result of these changes, Japanese imports of the more expensive fish species such as salmon and herring roe have been declining while less expensive imports such as pollock are on the increase.

The recent strong yen situation is expected to work in favour of imported fisheries products however it is generally accepted that it will take longer than expected to recover from the current economic slow down and imports of fish in 1993 and 1994 will be affected by the delay in economic recovery.

Inexpensive exports of fish products from Russia to Japan have also been increasing. While the quality of fish products packed in Russia is still inferior, it has been improving quickly and Russian salmon, salmon roe, pollack roe and surimi had big impacts on Japanese fish markets in 1992.

The European Community

France, Italy and Spain are among the top five importers of fish products worldwide. Consumption of both fresh fish and shellfish in the European Community as a whole has recently shown a rising trend but even with these increases the EC has been a declining market for Canadian fishery products. Price and quality are important factors affecting demand and Canada has not been able to compete for a variety of reasons including the use of tariff and non-tariff barriers and preferential access for Scandinavian importers which have rendered Canadian products uncompetitive.

Canada can only export products into Europe tariff-free if there is no European supply available. This sometimes creates a seasonal market in Europe for Canadian products. For example, Norway, Denmark and Sweden supply herring throughout the EC. However, when Scandinavian herring is not available the tariffs are lifted and Canadian herring is imported. When European herring becomes available again, the tariffs are put back into effect.

Canadian products also have difficulty competing due to the high costs and reduction in quality associated with long transportation lines. The success of European aquiculture, particularly salmon, has meant that Canadian Pacific salmon cannot compete in price or product quality with salmon grown in close proximity to its final market.

The major Canadian exports to Europe are salmon, lobster and cod. Lobster is the only major product that can be exported to Europe tariff-free.

General Changes in the Market Environment

Canadian fisheries products compete in the international marketplace therefore the level and value of Canada's fish exports are strongly affected by world wide availability and supply. The following examples illustrate how Canadian fisheries are affected by changes in international fisheries:

- current shortages of Atlantic groundfish have resulted in higher prices for Canadian products but this has made it harder for Canadian groundfish to compete with the American domestic supply of Alaskan pollock and cheap imports of pollock from countries such as South Korea.

. decreases in Europe's supply ofcold-water shrimp have resulted in increased exports of Canadian shrimp to the EC through Denmark. Canada may also be able to increase its shrimp supply into Japan as Greenland (Canada's major competitor) faces declining catches.

- aquiculture production for certain species has been so successful that it is having a dramatic effect on the world market, especially for salmon. European farmed salmon, led by Norway and Scotland, has successfully penetrated the EC market through increased availability, reduced prices, and high quality. Canadian salmon has a difficult time competing due to high transportation costs. On the other hand, the success of Canadian farmed salmon, and the proximity of the supply to the US market has given Canada an advantage over European imports of fresh salmon to the US. However, this advantage is expected to decline as aquiculture becomes more widespread and salmon loses its "luxury" image as prices drop.

. The Free Trade Agreement is expected to have an overall positive effect on the fish industry by making better use of Canada's proximity to the large US market however the Free Trade Agreement also allows the USA to buy unprocessed Canadian fish resulting in the loss of value-added income.

- changes in the European Community have made it the largest single market in the free world with 324 million consumers, however competition within the EC is expected to be fierce, forcing Canadian exporters to become more competitive on a global level, or risk losing revenues and market share.

The type of products preferred in the international market are also changing. Fresh and frozen fish are the largest selling products worldwide on a per capita basis and there have been significant increases in the percentage shares of world trade for exports of fresh, chilled, and frozen fish, and shellfish. Both the ground fish and salmon markets are seeing increased demand for premium products of high quality.

In addition to premium products (fresh fish, frozen fillets) there is also an increase in the consumption of value-added products, particularly frozen entrees, in the developed markets (i.e. European Community, Japan, U. S.) and a move away from breaded, battered, cured, and canned products.

North American Trends in Fish Consumption

Canada and the United States represent the major markets for fish harvested in the NWT therefore in this section we have developed a more detailed overview of the characteristics of the North American market and current market trends affecting the North American sale of fish products.

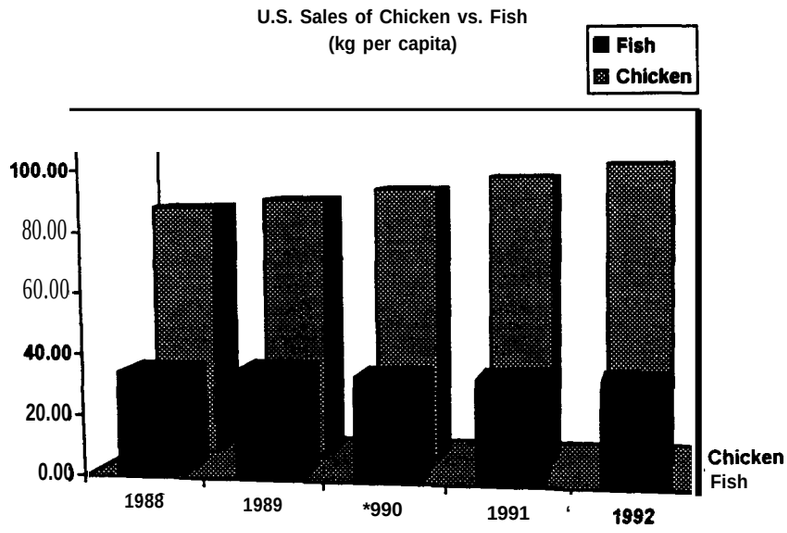
Generally Canadian and American fish consumption follow the same patterns. Fish represents approximately 3 per cent of Canadian food purchases and the annual per capita consumption of fish is estimated at approximately 8 kg per person. This represents a 50 per cent increase over 1970 levels of 5.27 kg per person and an annual growth rate of about 1 per cent. While Canadian consumption is far lower than other countries such as France (20 kg per capita) or Japan (86 kg per capita), it is slightly higher than the US which was approximately 6.7 kg in 1992.

The increase in general demand for fish and seafood products can at least partially be attributed to increased consumer awareness and preoccupation with their health together with an awareness of the nutritional benefits of seafood products. Generally more North Americans are making an effort to “eat right” and as a result the importance of beef and pork has declined while that of poultry and other red meats has risen. Beef consumption decreased by one per cent between 1981 and 1987, chicken consumption increased by 35 per cent and other red meat consumption increased by 16 per cent. Fish marketers have been able to capitalize on this trend by promoting fish as a low calorie, low cholesterol product without significant additives.

Increased fish sales can also partially be attributed to an increase in North Americans traveling and an increased immigrant population in large cities. These both result in an increase demand for a wide range of seafood products both at the retail and restaurant levels.

The most important factor affecting purchase of fish remains consumer sensitivity to

price. Seafood would have much greater market potential if the price was competitive with that of meat or poultry. The price of fish has increased by 50 per cent in the last ten years while the price of chicken has increased by only 20 per cent. As a result, chicken sales have grown much more quickly than fish sales.



U.S. Sales of Chicken and Fish (kg per person)

Year	1988	1989	1990	1991	1992
Fish	33.44	34.32	33.00	32.78	32.56
Chicken	86.46	89.10	92.62	96.58	100.98

Quality and appearance in fish products are other factors that are becoming more important as sales of fresh whole fish and fillets increase, while those of frozen blocs and canned products decrease. The consumer is becoming much more demanding when it comes to quality and fisheries that cannot ensure consistently high quality will have a difficult time placing their products.

Disposable income also influences fish consumption in North America, especially since

the restaurant trade accounts for a proportionately high volume of sales. In the last three years, fish sales have slowed in response to the recessionary economic climate and a recovery has yet to be seen.

North American Consumer Profiles

North American seafood consumers generally fall into three categories:

Ethnic consumers: non-anglophone and non-francophone ethnic groups eat fish frequently. This group is generally brought up eating fish and is interested in a wide range of species, especially more exotic species from warmer seas. Generally they are more conscious of using all parts of the fish and are therefore more willing to purchase more expensive species and tend to purchase fish in small fish stores where presentation and cleanliness are not of primary concern.

Up-scale Consumers: this group is largely responsible for the increased demand in fresh fish and exotic species. Up-scale consumers are characterized by higher education, higher income, professional status, 24- 44 age category, greater social mobility, are widely traveled, more cosmopolitan and more open to new experiences. Studies have found that income is strongly correlated to seafood consumption and both income and education are important variables in determining consumption. The top income group in North America consumes seven times more fresh fish than the lowest income group.

Conservative Consumers: These consumers eat traditional fish products such as salmon, trout, cod, sole, haddock and halibut. Growth in demand has been slow in this category.

A significant but shrinking proportion of the Canadian population are non-consumers of fish products. Taste is a factor in their decision not to eat fish but non-consumption also stems from the relative expense of fish, cultural barriers, previous negative experience, fear of choking on bones, and fear of poisoning.

The groups most likely to increase their consumption are those who are already consuming large amounts of seafood.

Trends in Species Sales

Shortages in traditional species since the mid-1980's have allowed imported species to capture a significant share of the North American market. Non-traditional species such as Alaskan pollock, grouper, orange roughy, whiting and catfish are now important species in today's market and Alaskan pollock has become a price setter in the low end of the market. New products such as surimi and other high value-added, ready-to-eat products are becoming popular as well.

According to fish salespersons and retail buyers in Montreal and Toronto the most popular products in the Canadian market are the traditional species most familiar to Canadian consumers including salmon, cod, sole, trout, turbot, haddock, shrimps, lobster, scallops, and mussels. Salmon is without doubt the most popular finfish sold in both Canada and the U.S.

Pollock (surimi) has shown the greatest growth rate of all fish products sold in supermarkets. Pollock has been so successful because it sells for a low price, has a bland taste, is boneless, and is considered to be both nutritious and good quality. New seafood consumers prefer mild-tasting, boneless whitefish that is easy to prepare which explains part of pollock's popularity. At the same time, consumers are also willing to buy unfamiliar varieties if they are informed about how to prepare them, although according to people in major food chains there is no clear trend for more exotic products and sales of exotics must be supported by substantial promotions.

Price remains the most important factor influencing fish purchases regardless of species.

Trends in Product Form

Sales of fresh fish in both Canada and the U.S. grew throughout the 80's and into 1990 largely as a result of the appearance of fresh fish counters in supermarkets. This growth has slowed in the early nineties, primarily because of the recession, but fresh fish retains a strong market.

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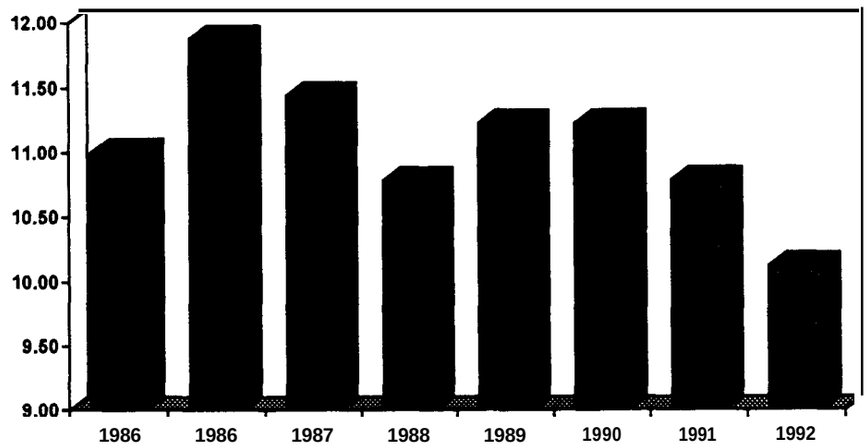
A survey of fish sales in Ontario and Quebec found that increased fresh fish sales were often at the expense of frozen product. In fact, sales of frozen products are generally declining throughout Canada. For example, the volume of frozen fish products sold in Quebec supermarkets declined by 9 per cent in 1990 over 1989, and by 2 per cent the previous year. Sales in Ontario dropped 3 per cent in 1990 over 1989. The decrease is sales is primarily due to a decrease in the sale of unbreaded fillets. Sales of breaded products apparently remained stable.

Breaded and battered seafood is considered a "mature market" with no major increases expected in the near future. The Canadian market for these products tends to be very species specific. A Canadian will distinguish between a fishstick made of cod or pollock and pay a premium for the former, the US consumer regards a fishstick as a fishstick regardless of raw material.

In spite of the recent decline in sales, there is reason to believe the frozen food market has growth potential over the mid-term. The rate of decline has slowed as the relatively cheaper cost of frozen product becomes more attractive in a recessionary economy. Frozen product is attractive to low and middle income earners, and frozen fish is more practical due to ease of storage. The most popular frozen products are sole and haddock.

Consumption of canned fish is declining as shown below, except for a specific ethnic market. This may be due to better nutrition awareness campaigns and the variety of fresh and frozen products available.

Canned Fish Consumption
(kg par capita)



In contrast, the market for prepared dishes in general is growing due to socio-economic changes such as the increasing entry of women into the labour market reducing the time available for preparing food. According to trends identified by Good Housekeeping magazine, most women don't cook any more, they assemble -- using kits, mixes, or sauces to create the illusion of a home-cooked meal without either the work of a meal cooked from scratch or the guilt of not cooking at all. Kits are an international trend -- they save time and energy, they eliminate waste, they are nutritional, and they are guilt-free because they involve more preparation than simply reheating.

Women tend to be afraid to cook fish because it is too intimidating, too obscure, too expensive and too easy to ruin. According to Good Housekeeping's trend watcher, the industry should investigate "fish kits" or a variety of "Fish Tonight" sauces that could offer the same flexibility, convenience, and ease of preparation as their chicken counterparts. Accordingly, the fisheries industry needs to simplify fish and make it more consumer friendly. Recognizing that North Americans prefer bland, boneless fish is a start. Consumers need to be able to find boned and prepared fillets so they can heat the sauce, add the fish and serve. An approach that has been very successful with catfish in

the U.S. is to sell boneless, skinless fillets packaged with a seasoning packet and simple instructions.

Price is also important in prepared dishes. According to some wholesalers $5 is the maximum consumers will pay for prepared dishes. Prepared dishes are also less affordable for families of three and more. At present 19.6 per cent of all prepared dishes sold in Canada have a fish or shellfish base.

Fish must also meet the needs of other current food trends if it is too be successful in increasing its market share. For example, there is a 90's trend toward fun (casual, relaxed) food and toward adventure eating combined with a continuation of the 80's trend toward indulgence but in a restrained economy. There is also a very strong trend toward increased consciousness about health and diet. Success will therefore depend on providing a product that provides "meal ideas" that satisfy the consumers desire for:

- ease and convenience;
- nutritious and healthy food;
- elimination of guilt;
- simplicity;
- staying at home.

Meal ideas for the 1990's must allow the consumer to contain costs while still achieving a feeling of fun and adventure, social acceptability, environmental responsibility, youthfulness, naturalness, and an element of indulgence.

Packaging Trends

It is now almost compulsory for retailers and restaurateurs to offer completely boned fish. Very few whole fish are sold at the retail level except to ethnic customers and of those, Pacific salmon, trout and smelt are the ones sold most often.

In flesh-packaged and frozen products the consumer is looking for packages with small portions. Restaurants arelooking forindividua.l portions of6 - 8 oz. for lunch presentation and 8-10 oz. for dinners.

Labeling and packaging are also very important from the consumer point of view. The four types of information most frequently checked on labels are, in order of importance, product price, expiry date, cooking instructions, and ingredients. Consumers look for packaging which allows them to see the product and gives clear information such as “the eat before” date, cooking methods, list of ingredients, manufacturer’s name etc.

A recent study examining Canadian consumer perceptions of fish and seafood revealed that Canadians have a strong aversion to being reminded about the live fish when purchasing fish to eat. The study recommended against using pictures of fish with head and tails intact. Consumers prefer to think of fish as meat on a plate rather than as a living creature.

Important Market Sectors

As indicated above there has been an increase in the presence of fresh fish counters in supermarket chains which has resulted in a increased market for fresh fish of all types.

There has also been an increase in the number of meals eaten outside the home which has made the restaurant and hotel sector an increasingly important player in North American fish markets. In 1990, 39 per cent of all food eaten in Canada was eaten outside the home.

The most popular main dish ordered in restaurants is chicken (22%), followed by hamburger (10%), steak (8%) and fish (7%). The most popular shellfish is shrimp (3%) followed by lobster (2%), scallops (2%) and crab (l%). Price is the most important criterion when choosing a main dish.

According to a study of markets in Quebec and Ontario, seafood sales in restaurants are growing because people cook fish less at home compared with red meat and poultry therefore eating fish in a restaurant allows them to vary their menu and try new dishes or more sophisticated recipes. The population is also becoming more concerned about the quality of their nutrition and fish offers an attractive alternative for a better-balanced diet. Restaurants are offering a greater number and variety of fish dishes which has also increased fish purchases in restaurants.

Restaurant products in highest demand in Ontario and Quebec include salmon, perch, shrimp, shark, red snapper, swordfish, squid, mackerel, striped bass, ocean perch, turbot, pickerel, grouper, sea bream, and spiny dogfish. The demand for smoked fish also seems to be growing.

The demand for all products with a pollock base is growing rapidly in medium and low-price restaurants.

Large chain restaurants buy only frozen products because handling is easier and they are more reasonably priced. Adherence to uniform size (IQF fillets) is important for this group.

For medium priced restaurants product quality and price rank as equally important, however these restaurants tend to stay away from very expensive species. Most of these restaurants buy a combination of fresh and frozen fish but the proportion varies widely. Often, fresh fish will be offered as a special to supplement a permanent menu offering supplied by frozen product.

Most high priced restaurants buy fresh fish almost exclusively. These buyers are extremely demanding and want personalized service. Price is not a great consideration compared to quality, variety and prompt, accurate service. Filleted fish is in most demand, although French chefs tend to buy whole fish. These restaurants generally have daily delivery and expect to order 24 hours in advance.

Although most higher priced restaurants tend to purchase fresh fish, a 1991 consumer study in the USA indicated that consumers would not mind being served frozen fish. There is a growing perception that frozen products can actually be “fresher than fresh” if handled properly. However, consumers also indicated that they did not want fish to be advertised as frozen on a menu.

The institutional market is also an important market sector particularly for lower priced species. However, at least in Quebec and Ontario, the institutional market is more or less stagnant as far as seafood products are concerned. For hospitals and institutions the following products are in demand: frozen block (2.27 kg), layers (4.54 kg or 6.80 kg) or single fillets (IQF), pre-portioned products, boned products, and reasonably priced products which can be easily obtained from suppliers throughout the year. Second-stage processed products (breaded or fish cakes) are also popular. Preference is given to Canadian products in the institutional market.

Summary

The Canadian domestic market absorbs approximately 55 per cent of Canada's annual fish harvest however the volume of domestic sales has been gradually decreasing over the past five years as domestic products are replaced by imports.

The major export markets for Canadian fish products are the USA (62%), EEC (14%) and Japan (1 1°/O). Ground fish products such as cod, haddock, hake, flatfish, halibut, pollock and redfish dominate exports to the U.S. Live lobster is also an important export into this market. Exports into the EEC are largely constrained by high transportation costs and tariff barriers. The major Canadian exports into Europe are salmon, lobster and cod. Lobster is the only major product that can be exported to Europe tanff-free. Japan is the largest importer of fish world wide. The most important Canadian fish products sold to Japan are salmon and herring roe however the market for these products is declining due to Japan's economic slow down and a move towards a more westernized society.

Shellfish make up the largest portion of Canadian fish exports by value (27%) followed by fresh and frozen fillets (25%) and whole fresh fish (19%).

North America is the primary market for NWT fisheries products. Fish consumption in North America has been slowly increasing however fish sales lag far behind sales of other protein sources (beef, poultry) because of its relatively high price. Fish products would have a much greater market potential if the price was competitive with meat or poultry.

Fresh fish sales are on the increase in North America, while frozen and canned sales are declining. There is also a growing market for prepared dishes and kit meals. To take advantage of this trend the fishery industry needs to simplify fish and make it more consumer friendly. Consumers need to be able to find boned and prepared fillets to use in kit meals.

The most popular products in the Canadian market are the traditional species: salmon, cold, sole, trout, turbot, haddock, shrimps, lobster, scallops and mussels. Salmon is by far the most popular finfish sold in North America. The recessionary economic climate has resulted in a market trend toward sales of lower priced species and pollock (surimi) has benefited, showing the greatest growth rate of all fish products sold in supermarkets. .

NWT Fish Species

Market Information Sheets

Highlights

The following section provides an overview of markets for the major species harvested in the NWT. Below we have summarized the major findings for each species.

Lake Whitefish:

- Whitefish is sold as a commodity therefore prices are set entirely by supply and demand without regard to origin of catch. Prices are low during the summer and higher during the winter. NWT whitefish enjoys a seasonal advantage during the winter months when other fisheries are not operating and price is high.
- The most lucrative whitefish market is the Jewish ethnic market for fresh fillets in large American and Canadian cities, particularly in the Great Lakes basin area, however this market is declining.
- Average whitefish prices have decreased over the past five years and are expected to continue decreasing.
- The main competition for NWT whitefish is other whitefish. Whitefish is commercially harvested in the Great Lakes and throughout the FFMC harvesting area; the NWT produces approximately 11 per cent of North American whitefish, Great Lakes production has increased dramatically over the past few years resulting in a major market glut.
- Quality is becoming increasingly important. NWT whitefish is perceived by the market to be of lower quality and lower freshness than other whitefish. Given the long distance to market, it is very difficult for NWT whitefish to compete with Great Lakes fish. In addition, the Great Lakes fishery is starting to use trap nets which have set a new standard for fresh fish quality that will make it increasingly difficult to market lower quality gill net fish.
- Currently the NWT is one of the only sources of fresh whitefish during the winter and therefore captures a premium price for its winter harvest. However, increased winter production from the Great Lakes is expected which means NWT fish must

match Great Lakes quality and freshness if it is to maintain its premium winter whitefish prices.

- Given the increasingly high level of competition in the whitefish market, the NWT should concentrate on improving quality and concentrate on its winter production of whitefish if it wishes to maintain its market share.

Lake Trout:

- Market demand for lake trout is extremely low. The market perceives lake trout to be contaminated and few dealers will carry it. At present the market is oversupplied.
- Lake trout prices are low and are expected to continue declining. This trend of low prices and oversupply is expected to continue for at least the next several years.
- Lake trout must compete with aquacultured trout and both wild and aquacultured salmon which are all available in large quantities and low prices.

Arctic Char

- In the past arctic char has been marketed as an alternative to salmon. However there is currently a large oversupply of salmon in the market and salmon prices have dropped dramatically, depressing the price for char.
- The present approach is to distinguish char from salmon and develop a unique niche market. There appears to be a strong potential market for arctic char in the upscale restaurant and retail sector in North America and Japan. Dealers felt char could be successfully marketed and promoted as a unique and exotic NWT fish however this will require a strong promotional campaign to educate the public and to disassociate char from salmon.
- The most important factors in developing arctic char markets are quality and reliability of supply. The quality of char now being produced in the NWT is not consistently high enough to export from Canada therefore the Japanese market cannot effectively be tapped.
- The preferred market form for char is fresh whole char and fresh fillets particularly in

the restaurant market. Demand in the retail market is for fillets and skin wrapped portions.

- NWT char must compete with wild char from Labrador, aquacultured char, and salmon. NWT char is considered to be of higher quality than Labrador char because of its deeper colour and larger size. Aquacultured char can be delivered fresh and is readily available. It is also considered to be of more consistent quality and colour than wild char. As aquacultured char becomes more common on the market, wild char will have to improve its quality to compete.

Turbot

- There is a strong market for turbot and most dealers indicated they could sell as much turbot as they could get. Generally both market and price are expected to increase over the next few years.
- There is strong demand for fillets worldwide, particularly in North America and Europe. American demand is for frozen skinless, boneless fillets from smaller fish (under one kg). European demand is for frozen skin-on fillets over one kg. to be used for smoking.
- Most dealers felt the most lucrative turbot market was the Asian market (particularly Taiwan) for whole frozen fish over 2 kg.
- Turbot prices are relatively stable but show seasonal variations; prices are lowest during the spring and summer when turbot is abundant and highest during the winter. The Baffin turbot fishery takes place during the winter when fresh turbot is not available in southern market therefore enjoys a seasonal advantage.
- Baffin turbot must compete with the Atlantic turbot fishery and turbot fisheries in the North Sea and Greenland which are all considered to have turbot superior in quality to Baffin turbot. However, most of these fisheries do not operate during the winter and therefore the Baffin fishery enjoys strong market acceptance and good prices.

Greenland Shark

- At present there is no market for Greenland shark.
- Marketing the shark captured inthe Baffin turbot fishery is further constrained by high the levels of urea and mercury found in the catch.

Icelandic Scallop

- The, scallops found in the NWT are smaller and darker coloured than sea scallops and therefore command a low price. The market strongly prefers larger, whiter sea scallops.
- There is a northern niche market for Icelandic scallops (Yellowknife, Iqaluit, Nanisivik) and France is a potential market for Icelandic scallops.
- NWT scallops face direct competition from Norway, Greenland and Iceland which all have large Icelandic scallop production. There has also been a large bed of Icelandic scallops found off the coast of Newfoundland which is expected to yield thousands of tonnes of scallops. Ail of these sources can produce scallops at a lower cost than the Baffin region.
- Given the high level of competition and the high cost of producing and transporting Baffin scallops, the recommended target market for NWT scallops is the domestic northern market where Icelandic scallops are acceptable and where the consumer is willing to pay a higher price.

Shrimp

- The shrimp harvested in the NWT are small cold-water shrimp. The market generally prefers large, warm-water shrimp however there are growing markets for cold-water shrimp in the Denmark, Japan and the US.
- Shrimp are sold graded and frozen IQF directly from the boats in response to daily market demands. It is critical that shrimp fisheries be tied into the worldwide marketing network.

. Avery large bed of cold water shrimp has been discovered on the Flemish Cap off the coast of Newfoundland. This bed of shrimp is expected to provide a huge supply of shrimp lasting several years and will likely depress the price of cold water shrimp.

. Most marketers felt the present market niche could absorb all of the NWT shrimp production but more work should be put into improving processing facilities so that. shrimp can be brought to market in a high quality, marketable form.

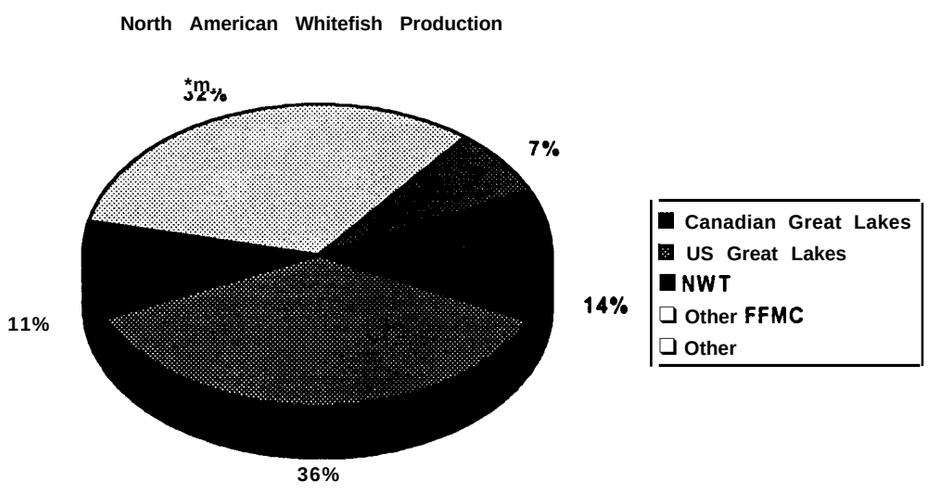
Herring:

- World production of herring has been increasing resulting in a widespread oversupply of herring and depressed prices. Most fish dealers expect the worldwide supply of herring to continue to increase and the price to continue to fall. Food herring is currently sold for $500 a tonne.
- There is also a large market for herring roe in Japan. Hernng roe commands a much higher price than food herring but this market is also saturated and due to changes in the Japanese economy this market is expected to decline in the near future.
- Given the high levels of herring production and extremely low market prices, it is not advisable to try to enter the herring market at this time.

Lake Whitefish

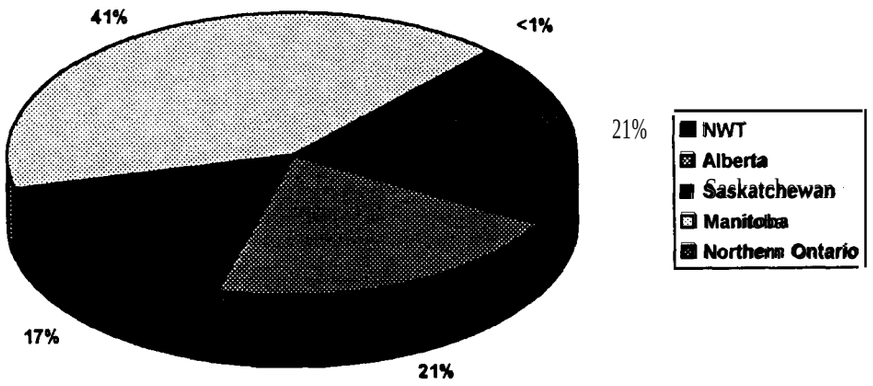
Origin of production:

North America produces over 15,000 metric tomes round weight of whitefish per year. Of this, approximately 2,000 metric tonnes are harvested from the Canadian Great Lakes, 5,000 metric tomes are harvested from the US commercial fisheries in the Great Lakes, 6,000 metric tonnes are harvested in the area serviced by FFMC (Alberta, Saskatchewan, Manitoba, N.W. Ontario and NWT), and 1,000 metric tonnes come from elsewhere in North America as shown below.



NWT represents approximately 11 percent of total North American production or 21 per cent of FFMC's whitefish production as shown in the following chart.

FFMC Whitefish Production by Region



NWT whitefish is commercially harvested from Great Slave Lake and makes up approximately 80 per cent of the total Great Slave Lake harvest. All NWT whitefish that is exported from the Territories is marketed through the Freshwater Fish Marketing Corporation (FFMC). Virtually all Great Slave Lake whitefish meets export standards and can be sold into the U.S. market.

According to a 1990 study by Deloitte, Haskins and Sells, FFMC supplied approximately 15 - 20 per cent of the whitefish purchased by North American fresh whitefish fish buyers or approximately 5 per cent of their total fish purchases. If the NWT supplies approximately 21 per cent of FFMC's whitefish this represents approximately 4 per cent of all whitefish purchased by North American fresh whitefish buyers or approximately 1 per cent of total fish purchases made by North American fresh whitefish buyers.

Whitefish is also found in North Eastern Europe and in former Soviet Block States where it is not currently utilized.

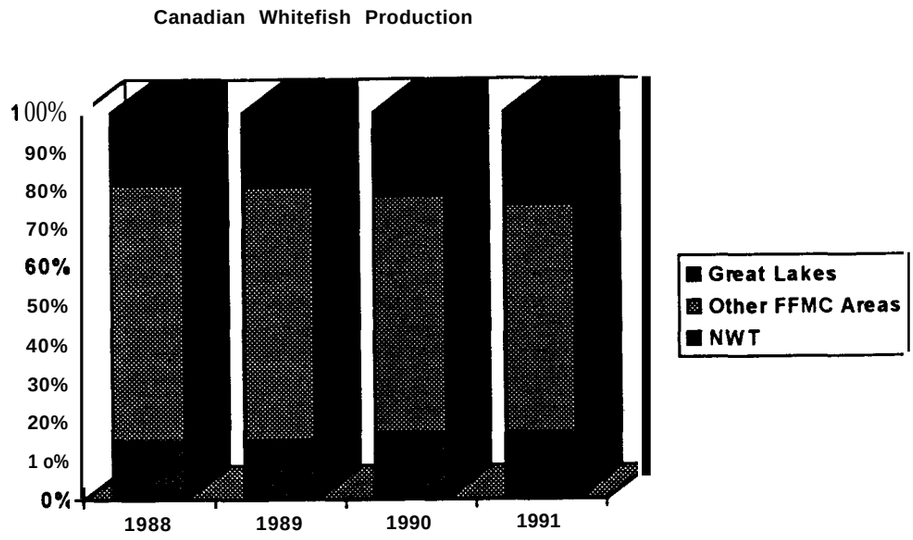
Production Trends:

Whitefish production varies with season from lake to lake. Generally there is an oversupply of American whitefish during the summer and prices are low, so many Great Lakes producers do not bother to fish during the summer months. Fishing is considered to be the best during April and May when the fish come up to feed, and during October when they spawn so fishing increases at these times. Lake Huron tends to produce during September, Lake Michigan during October and Lake Ontario during November. Great Lakes production drops dramatically during the winter months (December to March) although Lake Huron produces some winter fish.

North American whitefish production has increased dramatically over the past fifteen years and there is now a serious glut in the market. According to one dealer, there is more whitefish on the market now than there has been in the past 90 years and the increase is expected to continue. Most of the increase has come from American Great Lakes production where, according to one dealer, production in the state of Michigan alone increased to 5,5oO metric tonnes in 1993.

There has also been an increase in the use of trap net fisheries in the Great Lakes particularly on Lake Michigan, Fish captured by trap nets are of much higher quality than gill net captured fish, making it more difficult for gill netted whitefish to compete in the market. Gill net captured fish tend to suffer from bruising and are generally softer than trap net captured fish which are captured live and are therefore much fresher.

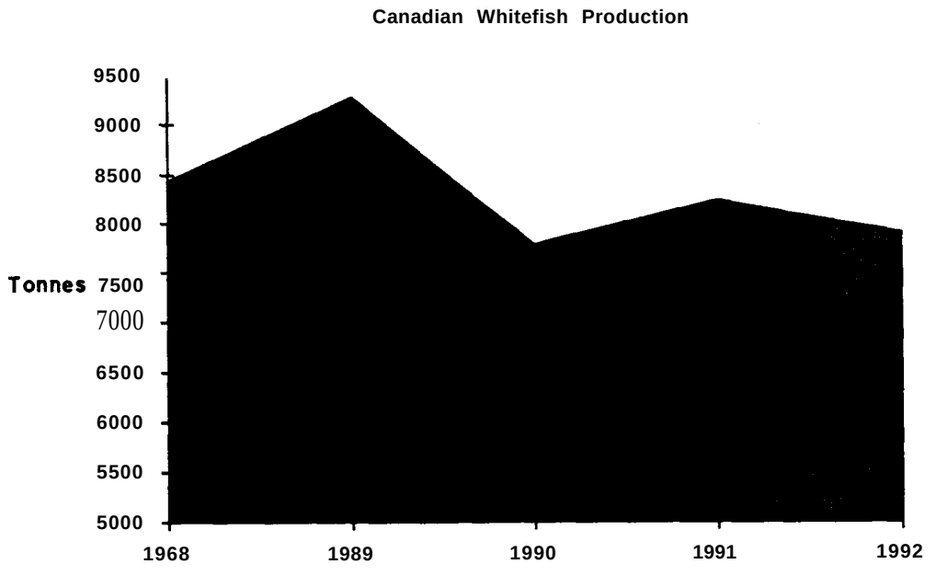
Whitefish production in the Canadian Great Lakes has also increased over the past five years, both in terms of absolute landings and as a percentage of Canadian whitefish landings as shown in the following chart.



Canadian Whitefish Production

Year	1988	1989	1990	1991
NWT	1260	1380	1345	1371
Other FFMC Areas	5559	5990	4854	4839
Great Lakes	1545	1726	1701	1960

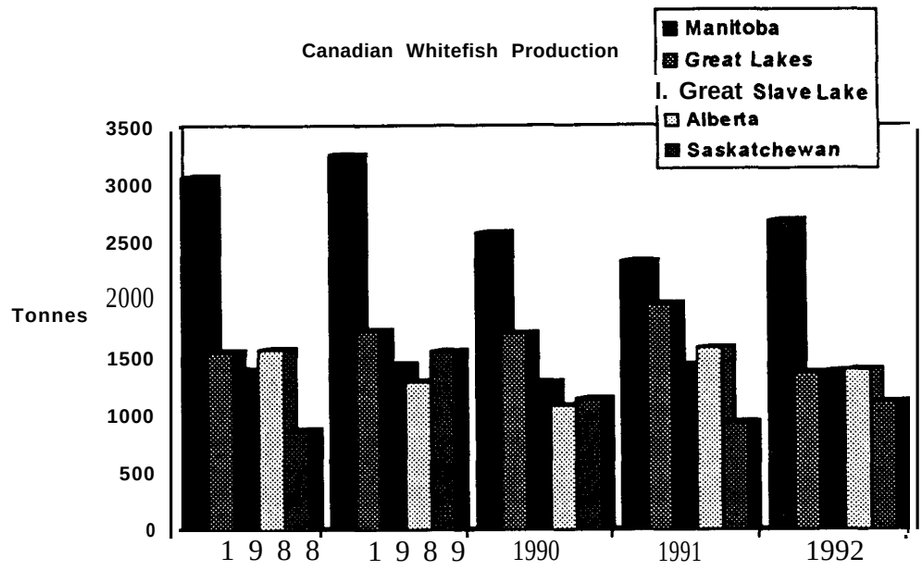
In response to the general oversupply of whitefish, total Canadian whitefish production has decreased by approximately 15 per cent over the past three years as shown on the following chart.



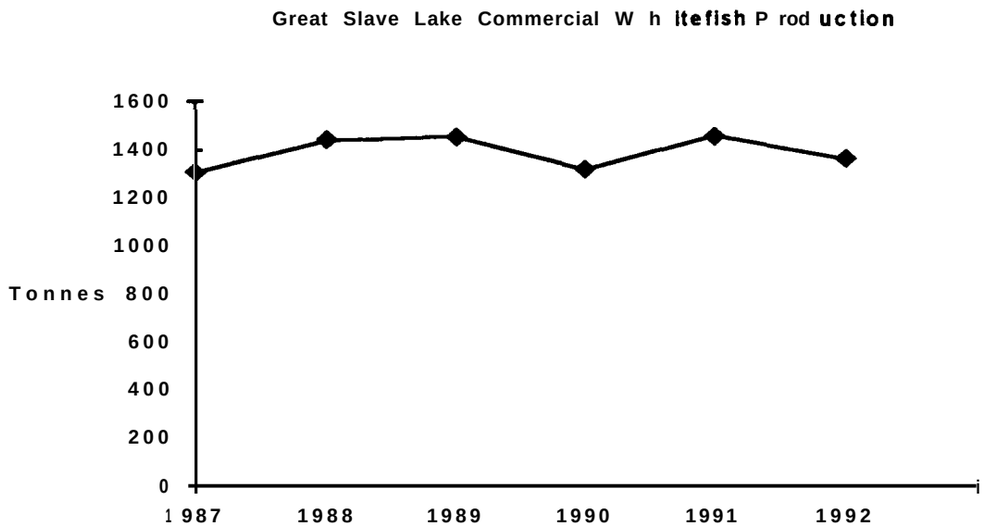
Canadian Whitefish Production 1988-1992
(in metric tonnes)

1988	1989	1990	1991	1992
8,435	9,261	7,776	8,232	7,904

Most of this decrease is due to a decrease in whitefish production by Manitoba and Saskatchewan as illustrated in the following graph.



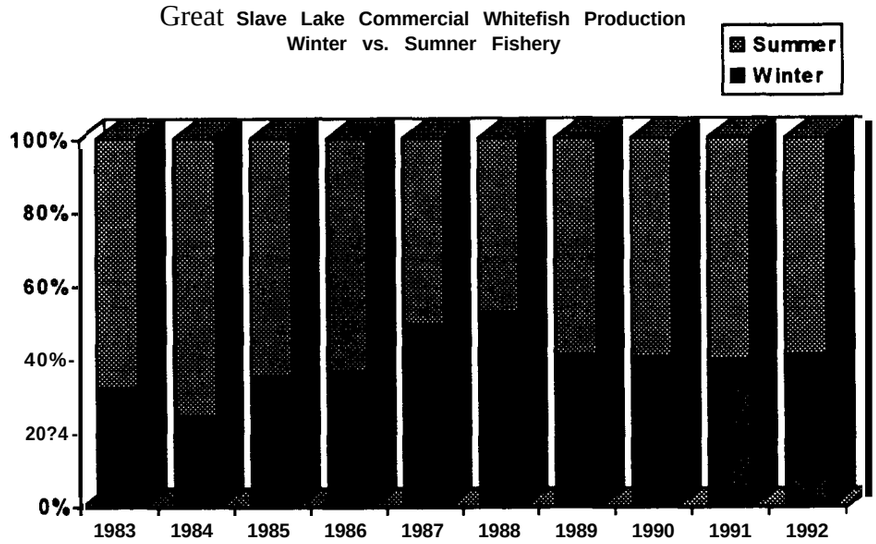
In contrast, Great Slave Lake whitefish production has remained fairly constant at approximately 1,400 metric tonnes a year as shown in the following graph.



Great Slave Lake Whitefish Production 1987-1992
(in metric tonnes)

1987	1988	1989	1990	1991	1992
1,310	1,438	1,451	1,317	1,452	1,353

Whitefish prices are higher during winter than summer because the winter supply of whitefish is limited. In response to this higher price, winter production of whitefish has increased on Great Slave Lake over the past 15 years. Winter whitefish production on Great Slave Lake peaked in 1988 with a record 700 tonnes, or more than 50 per cent of the lakes' annual production. Since that time, winter production has leveled off at approximately 40 per cent of the total annual harvest as illustrated in the following chart.

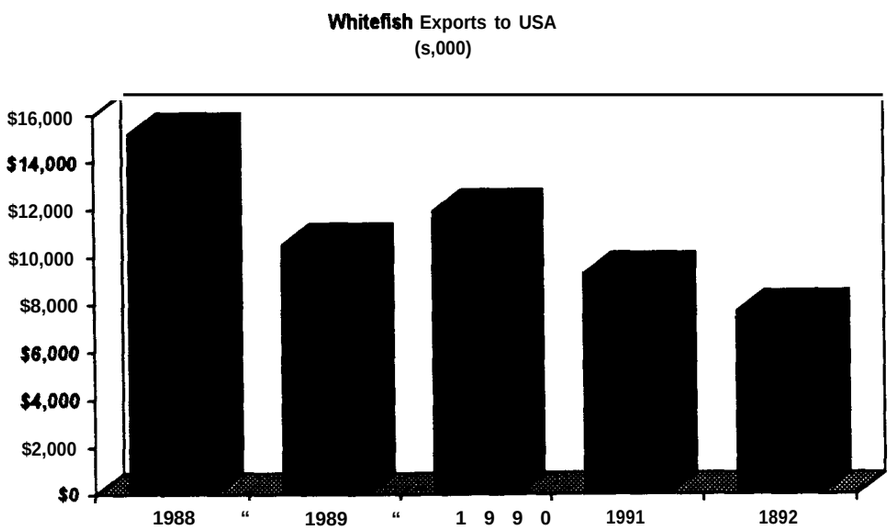


Demand by geographic location:

The U.S. is the principal market for whitefish supplied by both FFMC and Ontario absorbing approximately 70 per cent of FFMC sales. The Canadian domestic market is the second largest at 15 per cent.

Fresh markets for whitefish are primarily in the Great Lakes basin, in the urban areas on. the American side including Chicago, Detroit, Cleveland and down to New York and the Atlantic corridor to a lesser extent. These markets developed when transportation networks for fresh marine fisheries were poor and expensive. With the introduction of frozen convenience fish such as fish sticks, the market for fresh whitefish has been relatively stagnant, with little expansion from traditional geographic areas. Detroit and Chicago are the two largest fresh whitefish markets because of the level of consumer awareness associated with whitefish that is produced from the Great Lakes and the level of usage of whitefish by the Jewish and Catholic population.

Sales into the American market have been gradually decreasing over the past five years Statistics Canada export data for whitefish fillets, fresh and frozen whole dressed fish, and frozen blocks are shown below.



Value of Canadian Exports of Whitefish to USA 1988-1992

1988	1989	1990	1991	1992
$15,189,000	$10,508,000	$11,904,000	$9,261,000	$7,681,000

In Canada, the traditional markets for whitefish are in the Jewish ethnic markets of Montreal and Toronto. Some sales are also made in the Prairie provinces.

One dealer indicated that while the whitefish market used to be concentrated in the eastern U. S., they are now selling whitefish all over North America including the American mid-west, Los Angeles, Miami, Quebec and southwestern Ontario.

Very little whitefish is exported outside of North America.

Currently almost all NWT whitefish is sold to FFMC and exported south. Local sales are left to informal arrangements between local end users and the fishermen themselves. Only very small quantities are sold locally and these are essentially over the side sales directly from the fishermen at the dock. With no established distribution systems, local markets are left without available supplies of locally caught fish.

A recent report prepared for the NWT DevCorp by Hinchey and Copestake ("Conceptual Business Plan for the Great Slave Area Fishery") suggested that there may be a relatively strong Yellowknife market for conveniently packaged whitefish products. This report estimates that Yellowknife hotels and restaurants could probably absorb 75 tomes round weight per year. Retail trade might make up another 25 tonnes, while a further 50 tomes might be directed to institutional markets such as hospitals, correctional institutions and schools. Thus, Yellowknife alone could probably absorb 150 tonnes of production.

If other communities were to utilize only another 50 tonnes, it seems very likely that the NWT marketplace could take a significant proportion of the Great Slave Lake whitefish

production. However, customers would have to be assured of a reliable supply of product that was processed and packaged in a usable form by an inspected and certified facility and was readily available during normal business hours.

In 1992 the only established retail vendor selling whitefish in Yellowknife was OK. economy, which sold polybag Whitefish at $5.90/kg. They only sold one case of whitefish every two weeks at peak demand.

Demand by important market sectors:

The primary market for whitefish is the Jewish ethnic market which peaks during the religious holidays Rosh Hashanah and Yom Kippur (fall) and Passover (spring). Great Slave Lake whitefish has always been a major supplier of fresh whitefish for the Jewish holiday of Passover. Before Passover (one week per year at various dates in March and April) the conditions of supply and demand are such that whitefish can sell for up to three times the lowest summer price. Exclusive of the Passover holiday, the fresh market for dressed whitefish is always better during the winter season since there is not the same competition from the Great Lakes as there is during the summer.

Most fresh whitefish is sold to restaurants who are willing to pay a higher price than retail stores. Supermarkets have been reluctant to provide shelf space for whitefish because the price is too high relative to other fresh food products however frozen whitefish and whitefish fillets are increasingly being carried by supermarkets and fish store chains, and whitefish is sold to general supermarkets when it is cheap and plentiful.

A small percentage of Great Slave Lake whitefish (approximately 1 per cent) is sold into the lucrative Kosher smoking market. This fish is generally fatter than other export whitefish and sometimes is characterized by a fatty hump behind its head. Smoker fish buyers indicated that the product FFMC provides is inferior to the product they receive from the Great Lakes Producers and can therefore not command a premium price. In fact smokers would prefer to buy all their whitefish from the Great Lakes if possible.

Unfortunately, the smoker market in North America is shrinking. Over the past two to three years a number of major smokehouses have gone bankrupt due to a combination of lower demand and a general economic environment where it is hard to make a profit. FFMC have indicated that their market share of smoker whitefish has gone from 3,000 metric tonnes to less than 700 metric tonnes. The smoker houses were the main buyers of frozen whitefish product and with the decline in smoker houses it has become very difficult to sell frozen whitefish. One dealer indicated that the large producers would not even buy whitefish at $0.88 per kg for freezing because even at that low price it wasn't worth their while.

Product Form:

Approximately 80 per cent of NWT fish is sold into the fresh market as this is the most profitable market. Most buyers prefer to purchase whitefish as fresh round or fresh dressed in order to process it further themselves by pinboning, filleting, and packaging. Some dealers indicated that in the last year the demand for fillets has increased and more fillets are being cut directly on the water which results in a higher quality product. It was also pointed out that fresh fillets can be deboned however the pinbones must either be left in or be removed by hand which increases the cost of production.

A number of dealers stressed the increasing importance of quality, particularly in the fresh fish market. It was pointed out that fishermen are inconsistent in the way they dress fish on the lake which hurts the market. One dealer suggested hiring "dressers" at the processing facility to ensure consistent quality.

Prime smoking fish are produced in a head on dressed and frozen form and can achieve prices to the fishermen in the range of $5.83 US per kg but more normally between $2.20-$3.30 per kg. However, as indicated above, this market for frozen fish is rapidly declining such that very little frozen fish is now being sold.

Golden Caviar produced from whitefish has been a relatively successful undertaking.

FFMC began by trying to market this product in Japan but found greater success in North America.

Some whitefish is filleted into a skin-on pinbone-in IQF product, graded into various sizes. At present these are generally directed to institutional and food service markets however a number of dealers felt that frozen fillets and frozen pan-ready portion packs had market potential.

Pricing Trends over the past five years:

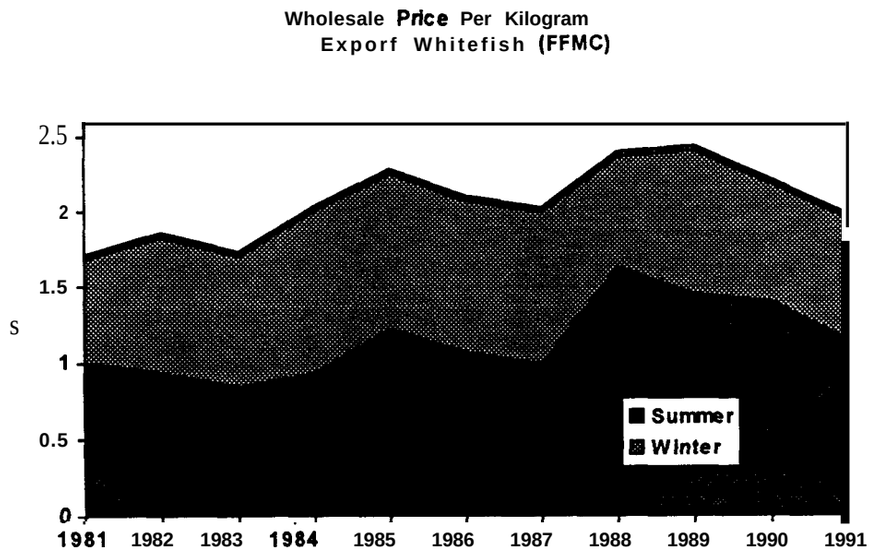
Whitefish is sold as a commodity in the North American market therefore price is determined by supply and demand. During the summer months the market is generally oversupplied with whitefish and demand is low resulting in low prices. During the winter months there is little fresh whitefish available and demand is high therefore the price rises accordingly. Prices are highest around the Jewish holidays of Rosh Hashanah and Yom Kippur (in September) and Passover (in March or April).

Whitefish prices also vary with size and quality. Generally, the larger the fish, the higher the price it commands. The market prefers fish over three pounds and the price for jumbos tends to be almost twice the price of medium whitefish. When whitefish is in ample supply, the lower quality gill net fish tend to receive a lower price than fresh whitefish caught in a trap net fishery. Lighter coloured fish also receive higher prices that darker skinned fish.

In addition to the seasonal pattern in whitefish prices, whitefish have experienced an overall downward trend in average price. Dealers indicated that 1993 whitefish prices had dropped 15 per cent over last year's prices and that the low price periods were becoming longer and high price periods were becoming shorter. Average 1993 summer whitefish prices in the American market were $US1.32 - 1.65 per kg for dressed and $2.86-$3.08 per kg for fillets. Average winter prices were $US2.75 -4.40 per kg for dressed and $5.50-$6.60 per kg. for fillets. Prices for frozen fish have dropped even

further from US$2.64 per kg in 1991 to US$0.88 -$2,80 per kg in 1993.

The following chart illustrates FFMC prices per kg for export whitefish between 1981 and 1991.



Average Wholesale Prices for Export Whitefish
1987-1991 **(FFMC)**
(per kilogram)

Year	1987	1988	1989	1990	1991
Summer	0.95	1.58	1.41	1.36	1.10
Winter	1.94	2.31	2.35	2.13	1.89

FFMC whitefish prices peaked in 1989 at $2.35 per kg for winter fish but had dropped to $1.89 per kg by 1991. FFMC summer prices tend to be about 40 per cent lower than winter prices.

A number of dealers pointed out that FFMC is the price setter for whitefish and that they tend to set the price very low. Several dealers complained that the private sector cannot afford to sell whitefish at the prices set by FFMC and felt that FFMC had an unfair advantage as a crown corporation.

Competing species and products:

Great Lakes whitefish represents the greatest source of competition to NWT whitefish. Fish from the Great Lakes is considered to be consistently fresher than NWT whitefish and the vast majority of distributors/wholesalers of both fresh and smoker whitefish indicated they would prefer to purchase all of their whitefish requirements from Great Lakes suppliers if they could.

Great Lakes whitefish is also perceived to have other advantages over NWT whitefish. Great Lakes fishermen associations are willing to compete on price, Great Lakes whitefish tends to be lighter in colour and is therefore preferred by the customer, Great Lakes fisheries can respond more quickly to market demand, and Great Lakes whitefish is provided in a greater range of sizes which allows the distributor/wholesaler to target markets more effectively. The majority of whitefish from the FFMC is a medium sized fish.

However, NWT whitefish enjoys the advantage of being available during the winter when the Great Lakes fisheries shut down. The lack of whitefish supply from the Great Lakes corresponds with an increase demand associated with major religious holidays throughout the winter resulting in a significant price premium for whitefish from the NWT. Once Great Lakes production begins in April and May prices typically drop by more than 50 per cent.

Whitefish also faces strong competition from other fish species particularly ocean fish. Approximately 65 per cent of fish carried by wholesalers and distributors are ocean species which have several advantages: Ocean fish are generally larger which may

eliminate the need for pinboning; distributors/wholesalers can take advantage of a number of promotional schemes that other countries are offering (e.g. the New Zealand orange roughy campaign); and many of the larger markets are in coastal cities where awareness of ocean fish is greater and fish can be delivered fresh.

Aquacultured fish also compete with whitefish as both products are usually carried by the same distributors. Farm fish are perceived to be less polluted than naturally harvested fish, farm fish are price competitive with fresh whitefish, and the supply of farm fed fish is more predictable than wild harvest fish. Farm fed fish are also not subject to the same degree of seasonal price variation. The marketplace would prefer to have a stable supply of fish throughout the year so that seasonal price variations could be eliminated.

In spite of the high level of competition, whitefish has managed to maintain its own market niche particularly in the Jewish markets. Several dealers pointed out that whitefish do not really compete with other white fleshed fish such as pollock and roughy because it has its own well-established market. However, whitefish must still compete with other fish in its price category and as species such as salmon come down in price it will be a challenge to find new whitefish markets as the old ones weaken.

Future trends in production and price:

Production of whitefish is expected to continue increasing particularly in the Great Lakes. As the Great Lakes are being cleaned up the whitefish populations are responding with dramatic population increases and quotas have been increased accordingly. Lake Huron for example has had a 40 per cent increase in lake whitefish quota over the past two to three years. In addition, new aboriginal fisheries that are not governed by quotas are entering the commercial whitefish market. It is unknown how great an impact these fisheries will have on total production however it is expected that there will continue to be a general oversupply of whitefish in the future.

Whitefish is expected to continue to maintain its market share however several of its traditional markets are shrinking and dealers are being pressured to find new market niches. While whitefish is not expected to compete with the cheaper rough fish such as pollock, it will be facing increasing competition from inexpensive salmon and other white fleshed fish in its price category.

With these supply and demand conditions in effect it is expected that the price for whitefish will continue to gradually decline over the next few years.

Given the high level of production, quality will become even more important in the market place. The increasing use of trap nets in the Great Lakes fishery has set a new standard for fresh fish quality that will make it increasingly difficult to market lower quality gill net fish.

There is also expected to be increased winter production coming from the Great Lakes which will mean that NWT fish must match Great Lakes quality and freshness if it is to maintain its premium winter whitefish prices.

Target Markets

All of the fish dealers we spoke with indicated that whitefish is expected to maintain a strong market however the increased supply will likely push the market price for whitefish down even further. Therefore it is recommended that the NWT fishery concentrate on increasing its winter harvest of whitefish to maximize the available price premium. It is expected that currents markets will continue to be able to absorb all of the whitefish harvested from Great Slave Lake however fishermen may have to accept continually lower prices.

The domestic NWT market for whitefish should also be examined more closely. According to the Discussion Paper on a Conceptual Business Plan for the Great Slave Area Fishery produced by Hinchey and Copestake in 1992, there is potential to sell

approximately 200 tonnes of whitefish in the NWT each year. Local sales would likely provide a higher return to fishermen than the current prices offered by FFMC.

It is also recommended that quality control be given top priority as quality is becoming more and more critical in the whitefish market. Unfortunately NWT whitefish is. considered to be inferior in quality to Great Lakes whitefish so particular attention will have to be paid to improve that image if NWT whitefish is to compete in the Canadian and US market.

Lake Trout

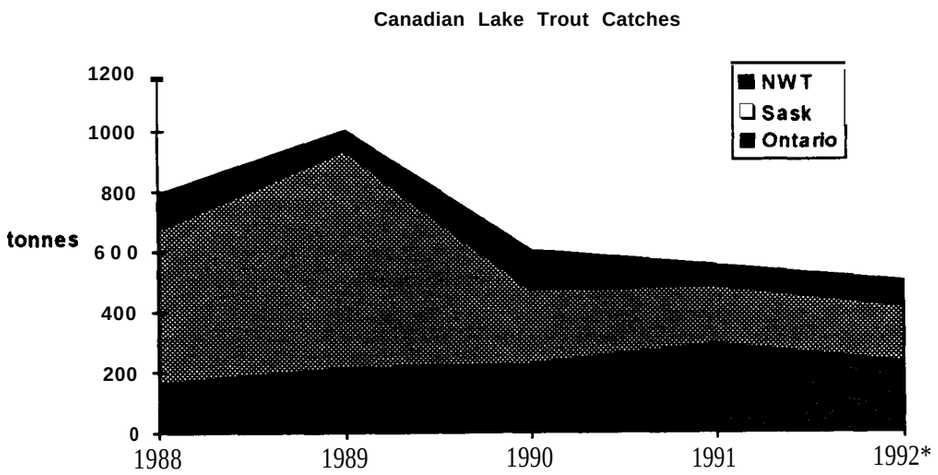
Origin of production:

Canadian Lake Trout is harvested primarily in Great Slave Lake, the Great Lakes and Saskatchewan. Lake trout is also harvested in the American Great Lakes, particularly Lake Michigan, which is a large producer and generally sets the market price. Most dealers we spoke with agreed that the production of lake trout from Lake Michigan alone could very easily oversupply the present market demand.

Production Trends over the past five years:

Every fish dealer that we spoke with indicated that the amount of lake trout they handle has dropped considerably over the past few years. Several years ago bad publicity about contaminants in lake trout destroyed the market for lake trout and it has yet to recover. Consumers, particularly in the U. S., are now afraid of eating lake trout and have switched to salmon or aquacultured trout as an alternative.

In response to the low demand and corresponding low price for lake trout, production of lake trout has also fallen drastically over the past few years. The following chart illustrates Canadian Lake Trout production. Canadian Lake Trout production in 1992 was approximately 500 metric tonnes, less than 50 per cent of 1989 production.



*estimate used for 1992 Ontario value.

Canadian Lake Trout Catches 1988-1992
(in metric tonnes)

Year	1988	1989	1990	1991	1992*
Ontario	163	212	224	288	227
Sask	516	725	247	196	188
NWT	112	65	132	67	81
Total	791	1002	603	551	496

The production of lake trout in the NWT has followed the same general pattern. The chart below illustrates Great Slave Lake commercial lake trout production since 1987. There was a high level of trout production in 1990 however production has generally declined over the past five years. Total production in 1992 was 81 metric tonnes, a decrease of 60 per cent over 1989/90 harvest levels.

Great Slave Lake Lake Trout Catches 1987-1992
(in metric tonnes)

Year	1987	1988	1989	1990	1991	1992
	113	112	65	132	67	81

Market Demand:

Lake trout in the Great Lakes and elsewhere in Southern Canada and the United States is considered a sports fishery fish rather than a food fish. Conflict between sport fisheries and commercial fisheries in the Great Lakes has lead to the virtual elimination of fresh water commercial fishing in the US Great Lake states. It is therefore not a target species and as such no markets are developed. These fish are essentially dumped.

In addition, lake trout has also been affected by consumer perception that this type of fish has been affected by a number of diseases and is high in contaminants, which has resulted in a major reduction in consumer demand. Aquiculture has been able to

capitalize on this information by promoting "clean" trout grown in a controlled environment and subject to disease prevention measures.

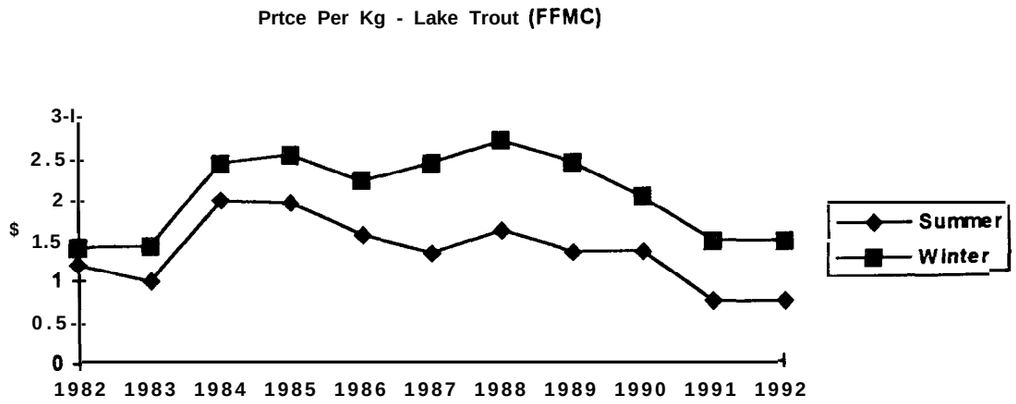
Small amounts of wild lake trout are sold to markets in Montreal, Chicago, Detroit and New York, primarily to the Jewish ethnic market. There is also a small market in the American midwest.

Most lake trout is sold into the retail sector where its low price makes it suitable for supermarket and chain store sales. Some fish stores also carry lake trout. Market preference is for fresh fish, primarily fillets, although fresh whole dressed and fresh headed and gutted fish are also sold.

Some lake trout is smoked however most dealers felt that lake trout is generally too oily for smoking. It was also pointed out that the high oil content of lake trout results in short shelf life.

Pricing Trends over the past five years:

The wholesale price for lake trout has declined steadily over the past five years for both summer and winter caught fish. According to research conducted by the NWT DevCorp in 1993, the best price they could obtain for trout packaged in polybags was $3.06 a kg F.O.B. Montreal, which made it uneconomical to pursue. The following chart illustrates summer and winter lake trout wholesale prices offered by FFMC. Winter prices are consistently higher than summer prices however both prices have dropped by 50 per cent since 1989. Winter prices for lake trout peaked at $2.68 per kg in 1989 and declined to $1.43 per kg by 1992. Summer lake trout only received $0.70 per kg in 1992.



FFMC Lake Trout Prices (per kg)

Year	1986	1987	1988	1989	1990	1991	1992
Summer	1.54	1.32	1.58	1.32	1.32	0.70	0.70
Winter	2.2	2.42	2.68	2.42	1.98	1.43	1.43

The 1993 prices for lake trout have shown little improvement. Most dealers estimated summer wholesale prices to be $0.88 to $1.32 per kg, with winter prices approximately 40 per cent higher. All dealers indicated that they could only sell lake trout at very low prices.

Competing species and products:

Lake trout must compete with aquacultured trout and both wild and aquacultured salmon. All of these species are available in large quantities and low prices in the current market therefore lake trout can only be sold at a very low price.

Future trends in production and price:

The present trend of oversupply and low price is expected to continue for at least the next few years. Dealers could see no improvement in sight. It is also expected that it will take time to shake the "contaminated" image of lake trout. The consumer does not differentiate between lake trout harvested in clean waters and other lake trout. Unfortunately, "a trout is a trout" to most consumers, therefore they are reluctant to purchase NWT lake trout.

The continuing low price and oversupply of salmon is also expected to keep the price of lake trout depressed for the next few years. This, combined with an increase in aquacultured production of both salmon and trout is expected to make it extremely difficult to market lake trout.

All in all, the market for lake trout does not look promising and several of the dealers we spoke with have chosen to drop lake trout from their list of products altogether.

Arctic Char

Origin of production:

There are three sources of Arctic Char in Canada: wild char caught in the NWT, wild char caught in Labrador, and a small but growing volume of farmed char from southern Canada.

NWT wild char is commercially harvested in the Kitikmeot, Keewatin and Baffin regions. The Kitikmeot Region (Cambridge Bay) has been the most consistent producer of export arctic char over the years however adverse environmental factors severely limited the catch in 1991 and a failure in marketing strategy reduced sales in 1992. High transportation costs inhibit expansion of the fishery. The Keewatin production has fluctuated widely in the last 15 years due to both environmental and organizational problems. The Baffin has produced a steady supply of arctic char however the harvest has generally been sold within the NWT. Export of char from the Baffin has been limited by distance constraints and the monopoly the FFMC had on char purchases until 1993 at which time the NWT DevCorp undertook char marketing.

Most wild Labrador char (80%) is processed in Nain; the remaining catch is processed at the Torngat Cooperative. Char from Labrador is generally smaller than char from the NWT and the average size has been declining, probably due to over fishing. The majority of arctic char caught in Labrador are now in the 1- 2.5 kg range and it is expected that catch size will continue to decline. Labrador char is also predominantly paler; only about 20 per cent of the catch is red-orange fleshed.

Wild arctic char is generally harvested in the late summer and early fall before the fish return to fresh water to overwinter. There has also been some success with a winter char fishery carried out through the ice.

Aquacultured char is relatively new in Canada. Currently, about 24 operations are raising char with the majority of producers located in New Brunswick, P.E. I. and Newfoundland. Three companies are experimenting with char in Manitoba and one Yukon operation has been working on commercial production since the late 1980's. A few other operations are located in Saskatchewan, Ontario and B.C. Most of these operations are growing char only as a sideline to trout or salmon; there are only a few serious specialists in char aquiculture in Canada.

Both Iceland and Norway also produce significant amounts of Arctic Char. The University of Tromso in Norway has been a center for char aquiculture development since the late 1970's however no significant volumes of char are being exported from Norway yet.

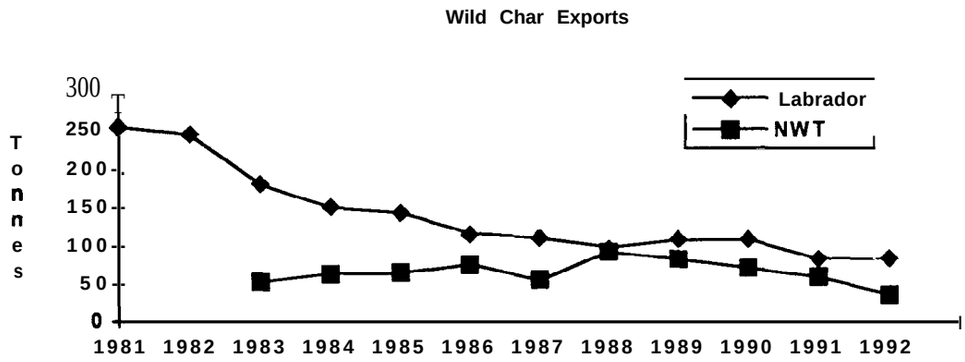
Iceland has recently entered the market with "farmed fresh" char. Iceland produced 300 metric tonnes of cultured char in 1991, and planned to produce 700 metric tonnes in 1992. There is some concern that this level of production maybe too high at the current level of market awareness. Iceland is now exporting about 1000 kg of farmed char a week into Boston, a relatively small volume in terms of the overall fish trade but equivalent, on an annual basis, to the average export production of the Cambridge Bay plant.

The current potential Canadian supply of char including both farmed and wild caught char has been estimated by ED&T officials to be between 198 and 283 tonnes. An additional 52 tonnes of imported farmed char is estimated to be available in the North American market.

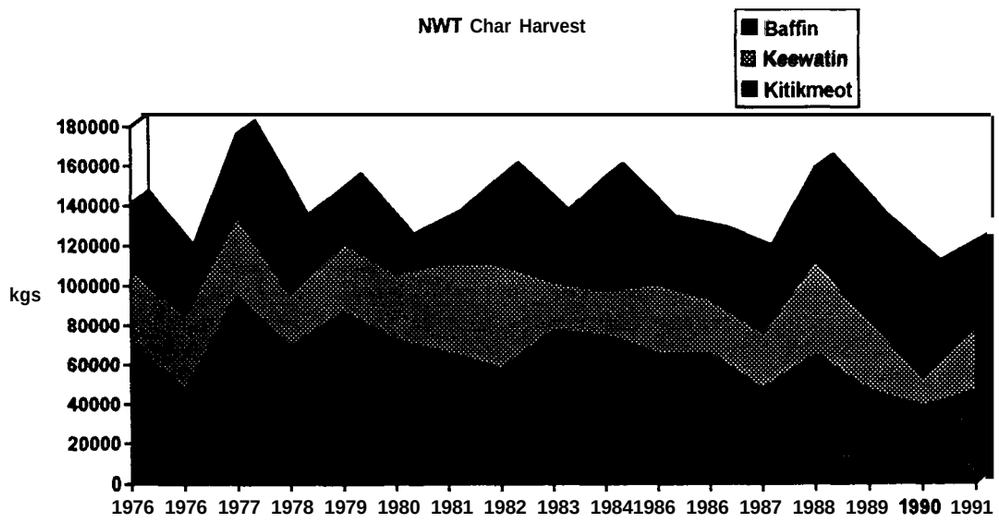
Production Trends over the past five years:

Wild char harvests in Labrador peaked in 1981 at 253 tonnes and have declined since that time to a low of 80 tonnes in 1992, a drop of almost 70 per cent (see chart below). This drop has been attributed to reduced fishing effort in reaction to decreasing returns

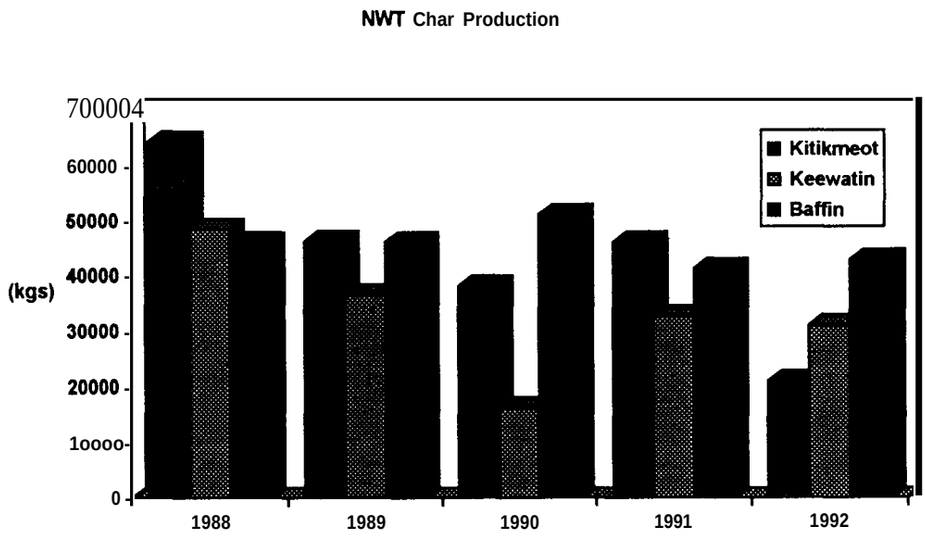
to fishermen as a result of over exploitation of stocks and the resultant decrease in fish size.



Over the past ten years NWT char harvests have fluctuated widely. The chart below presents historical harvest data for NWT char fisheries including fish sold both within and outside the NWT. It should be noted that much of the NWT char catch does not leave the Territories.



The following chart presents harvest data for regional NWT char fisheries over the past five years. Total harvest from the Baffin region has remained relatively consistent at approximately 45,000 kgs annually. The Kitikmeot harvest has ranged between 21,000 and 64,000 kgs per year and the Keewatin harvest varied between 16,000 kgs and 48,000 per year. This inconsistency of supply is one of the chief complaints from fish dealers who indicated that it is extremely difficult to find markets for fish if the supply cannot be guaranteed. In some years dealers had made char sales but had no product.



NWT Commercial Arctic Char Production 1988-1992
(in kgs)

	1988	1989	1990	1991	1992
Kitikmeot	64298	46150	38012	45948	21000
Keewatin	48390	36500	16145	32631	31000
Baffin	46000	46000	51000	41147	42700

Total exports of NWT char have ranged between 33 and 89 metric tonnes annually with a general decline over the last few years because of a combination of poor environmental factors and marketing problems.

Wild char is generally available only during the late summer and fall. Several dealers indicated that the market for char would be vastly improved if the season could be extended. There has been some success with winter char fisheries. The market is strong during the winter and several dealers felt the winter fishery had good potential. However, the quality of winter caught char has historically been very poor which has led to problems. Fish dealers recommended moving away from lake frozen fish during the winter to improve the quality of winter caught char before trying to penetrate the winter market.

Both the market and production of aquiculture char have shown slow growth and the supply of marketable fish is limited. Producers are still establishing broodstocks in order to provide a self-sustaining supply. In 1991, between 20 and 38 tonnes of Canadian farmed arctic char were sold. As of 1991, there were 2 million eyed char eggs in incubation in Canada which represented a potential supply of 200 tonnes for 1993. Production capacity in Canada presently is about 400 tonnes.

It is estimated that 400,000-600,000 farmed char in the 250-350 gram range and fewer than 10,000 farmed char in the 1 kg and over range were available for market in 1992.

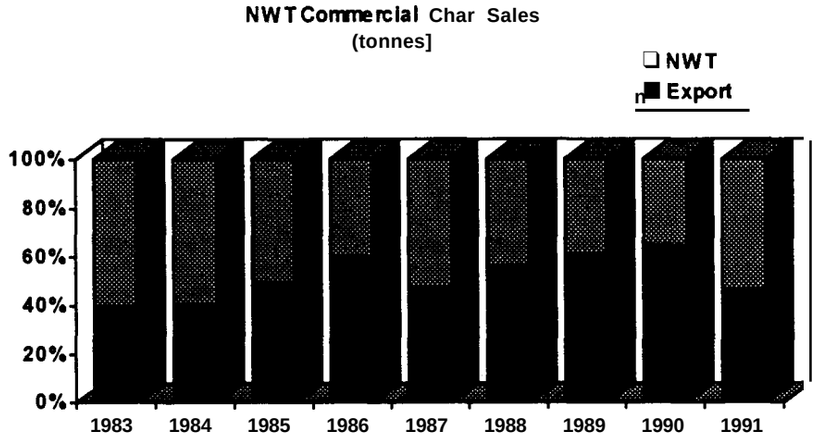
Most farmed char marketed to date has been under one kg as it is difficult to produce larger char economically. Considering the record of the Canadian supply of farmed char to date, the 200 tonne production predicted for 1993 is considered highly optimistic.

Demand by geographic location:

Arctic char is found primarily in remote areas, distant from most markets. This has resulted in high production costs limiting potential markets. It has been estimated that if

it were justified economically, commercial production could increase three or four times the current level. The projected size of the existing North American market for Arctic char is 1,000-2,000 tonnes. Projected size of the world market for Arctic char by 1995 is 5,000 tonnes.

As the following chart shows, approximately 45 per cent of the annual NWT commercial char catch is sold within the NWT, the remainder is exported. The percentage of char exported from the territories has gradually increased over the last ten years from approximately 40 per cent in 1983 to approximately 60 per cent in 1990.



Historical sales of arctic char within the NWT are shown in the following table.

	NWT Char Sales (kgs)
1983	78,137
1984	91,795
1985	64,494
1986	48,894
1987	58,335
1988	69,688
1989	49,650
1990	37,157
1991	63,726

There is a strong and growing market for char within the NWT made up of both local residents and restaurants and hotels that use arctic char to attract clientele. However the sale of char within the territories is not organized and hotels and restaurants frequently complain of the inconsistent supply and quality of the available char.

The major retail char markets in the NWT are in Yellowknife and Iqaluit. Preferred products for sale in Yellowknife are vacuum-packed frozen fillets or steaks and smoked char for retail sales, and whole frozen (gutted) fish for hotel use. Summer is the peak season for sales in Yellowknife because of the high tourist interest and the greater number of banquets and conventions. The annual demand for fresh and frozen char among hotels and retail outlets is estimated to be approximately 10,000 kgs a year.

Frozen and hot smoked char are also sold through local community coops. Regional demand for char in the NWT is estimated to be approximately 100,000 kgs.

Until 1993, all char exported from the NWT was marketed through FFMC. FFMC sold more than 90 per cent of its char production in Canada with the remainder sold in the US. Approximately 80 per cent of sales were made in Alberta, Manitoba and Ontario. The market for char in the coastal provinces is very limited because of the close

proximity of fresh salmon and other ocean species.

Current retail marketing efforts by the NWT DevCorp are focusing on eastern and central Canada, primarily Montreal. In eastern and central Canada, Montreal and Toronto offer the best opportunities for char sales. Halifax, which is presently served by Labrador char, offers another good metropolitan market although the lower level of fish consumption in that city and the less cosmopolitan nature of its populace makes it a less attractive market than Montreal or Toronto.

Labrador char is marketed through distributors in Montreal and Halifax, with Halifax distributors selling into the eastern U.S. Probably over half the Labrador production ends up in the States. However, according to a recent survey of restaurants and retailers, the U.S. market for Arctic char is dormant as the product is not well known. Restaurants and retailers who have recently introduced char have been successful however those that carried char in the past have recollections of spotty quality stemming from frozen wild char sent down from the Canadian north and the poor quality of early farmed char.

One study indicated that the current perception among American restaurants and hotels is that arctic char "is supposed to be very good, somewhat expensive, hard to get, and nearly impossible to get fresh, unless specially air freighted from the Scandinavian countries". The study concludes that there therefore appears to be a ready market for Canadian char in the US given the right marketing and promotion.

Japan represents a potential market for NWT char as well. The Japanese make a clear distinction between arctic char and salmon and consider arctic char a delicacy which they are prepared to pay a premium price for. The Japanese market is interested in high quality, deep red char for sushi blocks. These char must be very fresh and very high quality, graded by colour then cut into whole sides. Several dealers commented on the possible large market for char in Japan however they all stressed that the Japanese market demands extremely high quality wild char with a deep colour for which they will

pay $33 per kg. One dealer we interviewed anticipates selling 50- 100,OOO kgs of Cambridge Bay char to Japan next season.

There are also strong char markets in Europe but they are largely served by Norway and Iceland which can produce cheap farmed char and salmon and are aggressively marketing their product to top-end customers. Norway and Iceland have identified fairly lucrative markets in France, Germany Sweden and the United Kingdom. Canada cannot compete in these markets because of high transport costs and the tariffs imposed by the European Community. Under these tariff restrictions, Norway and Iceland sell their fish tariff-flee while Canadians pay a 12 - 18 per cent tariff depending on the level of secondary processing. Tariffs on Canadian products are only lifted when European communities cannot meet the European market demand.

Demand by important market sectors:

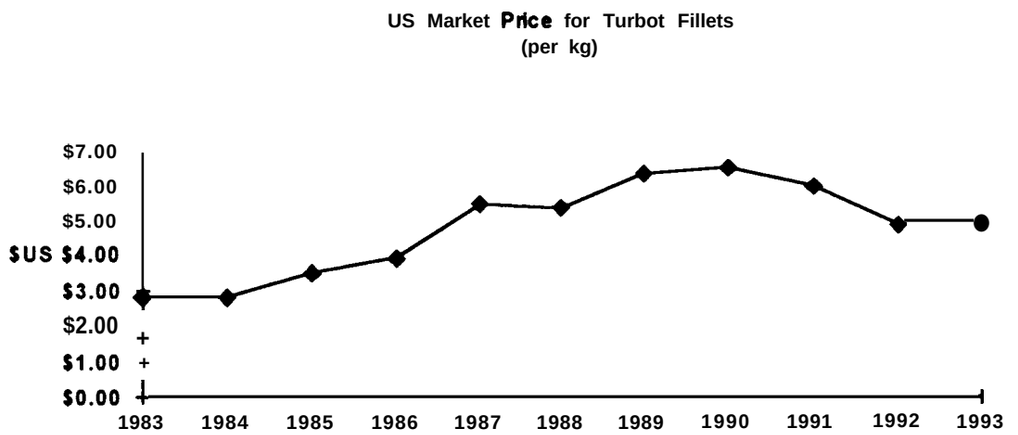
Arctic char is an up-scale market item generally perceived as a clean, unpolluted, exotic, cold water fish. The traditional market for arctic char sold outside the NWT has been the high price white table cloth trade in Central Canada (supplied by FFMC) and the eastern US seaboard (supplied by Labrador). It is estimated that 75-80 per cent of arctic char are sold into this market; the balance is marketed into specialty fish stores and retail outlets.

A general lack of awareness of char currently limits restaurant and retail sales of char. Those we spoke with felt char was one of the best fish on the market but as a relatively new product it took too much time and money to market.

The short seasonal supply is also a problem for placing char into the general retail sector. Most large chain stores are now computerized and only have a limited number of “slots” in their system for new products. With char available only seasonally, and with the supply being inconsistent, chain stores hesitate to bring it in because it does not integrate easily with their computer system. This is also the case with the food services industry.

Pricing Trends over the past five years:

Trends in the U.S. market showed a steady rise in prices paid for turbot after 1984 reaching of peak of $6.56 per kg in 1990. Average prices dropped and leveled out at approximately $4.95 per kg in 1991 and 1992 as illustrated in the following chart.



Average U.S. Market Price for Turbot Fillets
(per kg)

1988	1989	1990	1991	1992	1993
$5.39	$6.38	$6.56	$6.05	$4.95	$4.95

Larger fish bring higher prices in the Asian and European market but a low price in the American market where the preference is for 4 oz. - 8 oz. fillets, Current wholesale prices for 1-2 kg frozen-at-sea turbot is approximately US $3.50.kg with fish over 5 kg selling in the US$5.40/kg range. Some premium fillet packs fetch up to US$6/kg.

While most retailers thought the general price trend for turbot was relatively stable or increasing slightly, there are major seasonal fluctuations depending on supply and demand. Most dealers sell all their product as it comes in and when supply is short the

price to the fishermen increases to stimulate production. Prices are lowest during the spring and summer fishery when turbot is abundant.

The Baffin Island turbot fishery takes place during the winter months beginning in January. Turbot is generally not available in southern markets during these months, therefore the market is strong and the price is generally high. It is not until Gaspe turbot appears on the market in May that Baffin prices begin to drop below viability.

Competing species and products:

Baffin turbot must compete with other turbot producers in Canada (primarily the Atlantic fishery) and around the world, including the North Sea and Greenland both of which produce vast amounts of turbot. Several of the dealers we interviewed felt that Baffin turbot was inferior in taste and quality to other turbot. Fortunately, major competing turbot fisheries (primarily Gaspe) do not occur during most of the period when the Baffin fishery is carried out resulting in a higher level of market acceptance for the Baffin product.

The Atlantic fishery takes place during the spring, summer and fall whereas the Baffin fishery is a winter fishery. The open water Greenland fishery also ends during the fall when, as a result of drops in water temperature and other factors, turbot migrate to deeper waters and areas under the ice in place like Cumberland sound. Baffin takes advantage of this migration during the period from January to March. In April, the Gaspe fishery again has access to their stocks. Historically, the Baffin fishery overlaps slightly with the Gaspe fishery and this has resulted in softer prices during the spring in markets close to the Gaspe fishery.

Consequently Baffin turbot enjoys a seasonal market position when competing fresh product is scarce and demand is high. Until competing fisheries such as the Greenland winter turbot fishery emerge, Baffin can anticipate maintaining this favoured position. Even then, fish dealers felt the winter market should be adequate to absorb such

additional product for many years.

Turbot must also compete with other ground fish products. During the winter months turbot fillets are consumed as an alternative to sole. In Canada the winter supply of fresh flat fish from the Atlantic provinces is very sporadic, with weather and ice conditions affecting the harvest, and foreign exchange conditions directing the fish to and from the American market. These combine to cause volatile supply and price fluctuations. By monitoring the flatfish market and harvest conditions, NWT turbot can be available to fill the void when other flatfish such as sole are unavailable or highly priced. This will help to establish a reputation of supply consistency and may in time help to make turbot fillets the species of choice amongst regular consumers. In the U.S. market turbot successfully competes with flounder and sole and replaces them when supplies are short. It was noted by a number of dealers we spoke with, including the president of CAFE, that some unscrupulous restaurant owners in Toronto, Montreal and Chicago have been substituting turbot for the more expensive flounder in their dishes making a tidy profit.

Canada's main competitors in the groundfish sector are the US domestic fishery, Denmark, Iceland, Norway, and South Korea. The US groundfish fishery has increased in recent years, especially off the Alaska coast, following the nationalization of the Pacific fishery and the end of foreign fishing. This source is becoming more important in the US domestic market due to resource problems in the traditional North Atlantic stocks.

Denmark has built a reputation in the US as a solid supplier of finished products, but it too is being affected by declining Atlantic catches. As a result, Denmark is concentrating on producing top quality products in innovative forms and packages. Exports to the US from the Nordic countries are declining due to high price levels and declining stocks. The demand for fresh fish in Europe has increased and preferential tariff arrangements with the EC have made exporting to this large market more accessible and profitable.

The Canadian groundfish industry in general is facing stiff competition, changing consumer demands, and supply problems. US consumption of groundfish is expected to

decline slightly and then stabilize in the near future, representing a normal adjustment after years of increase. Consumer preferences are shifting away from traditional species and products made with groundfish to new varieties and products made with a variety of species (surimi). The major competitive threat is from cheaper substitutes such as Alaskan pollock and products form the Pacific Rim (orange roughy and hoki).

Future trends in production and price:

Both the price and market for turbot are expected to increase over the next several years. With groundfish stocks facing serious declines in resources the groundfish market is looking for alternatives and sales of turbot have been strong. All the dealers we spoke with said the turbot market was limited only by supply and most said they could sell any turbot that was made available. It is projected that all supplies of flatfish will continue to lag behind market demand and therefore Canadian sales of both fresh and frozen turbot have the potential to increase.

The production of turbot from the Baffin region is expected to continue to increase. More fishermen are becoming involved in the fishery each year, and fishermen are increasingly coming in from other communities during the fishing season to participate. During the 1993 fishing season approximately 102 fishermen and 40 plant workers were employed and this level of involvement is expected to increase. Turbot production for 1993 is forecast to be between 450 and 550 metric tonnes (round) ultimately increasing to the fill quota allotment of 1000 metric tonnes,

The limiting factor in the Baffin turbot fishery is the catch rate per long line therefore to increase production the number of fishermen must increase. However, it is expensive to purchase the necessary equipment and this limits participation to some extent. The NWT DevCorp believes that the turbot fishery has great potential therefore is committed to subsidizing this industry until it becomes better established.

Target Markets:

Freight rates limit the areas to which Baffin fish can be shipped at a competitive price therefore marketing efforts have been directed to institutional and retail fish markets in the NWT and wholesalers and/or brokers in cities which can be reached through airlines operating from Pangnirtung at satisfactory rates. Using these criteria, target areas are Toronto, Montreal, Ottawa, Boston, and New York.

The American market must be watched very closely with an almost daily monitoring of prices and currency exchange rates. Any rapid drop in price or the exchange rate must be met with withdrawal of product. The Canadian market is more stable and easily managed.

Generally all dealers felt the U.S. market for turbot was very good and was expected to remain strong. The main problem with turbot is the lack of supply rather than a lack of market opportunities. Dealers felt that they could move more turbot if it was available, essentially they could sell everything that could be produced. The best product for the American market is frozen fillets.

In a study carried out for the Cumberland Sound Fishery, all marketers agreed that the most lucrative turbot market was the Asian market for whole frozen fish. This market has other advantages in that whole fish are easiest to process, most easily achieve the required quality standards, and can help to establish a high expectation for Baffin products in the market place. These standards will help to ensure a reliable market with the highest potential returns.

Therefore it is recommended that the largest whole fish should be checked for condition and packed in size grades of 3 - 5 kg and 5 - 10 kg or larger size for export into the Asian market. Smaller fish can be filleted for the American market and cut to consistent portion sizes of 6-8 oz. and 8-10 oz.

Fish should not be steaked for the southern market. Steaking exposes a high proportion of flesh to the air and greatly speeds the spoilage rate. For this reason southern buyers prefer to buy whole fish and do the steaking immediately before presentation to the end user and will therefore discount steaked fish rather than pay a premium for it.

Greenland Shark

Greenland Shark is captured as a bycatch of the Baffin turbot fishery. In some months the shark harvest is quite high and it is estimated that approximately 100,000 kgs of shark may be captured each year.

At present there is no market for Greenland shark. The president of the Canadian Association of Fish Exporters indicated that the shark market is depressed worldwide and there is very little effort being put into marketing shark of any kind. Other fish dealers concurred.

Marketing Greenland shark is further complicated by the fact that the fish caught off Baffin are extremely high in both urea and mercury. To sell shark as a food product would require a high level of processing to make it safe to eat which would result in a very expensive product.

There have been some attempts to process greenland shark skins into leather however these have not met with much success. The market for shark skin leather is very small and specialized and there are many other sources of shark skin available that are both cheaper and more easily accessible than Baffin shark.

In other countries such as Greenland where shark bycatches are also an issue, effort has gone into shark control rather than shark use because of the lack of a market. Japan on the other hand is planning to implement a 5-year project to research shark resources. Shark is caught as a bycatch of the Japanese tuna fishery but because shark meat is used in fish paste products the price for shark is extremely low and fishermen throw them away rather than bringing them in to port. The Japanese Fishery Agency will investigate the potential of shark as a fishery resource to see if they can be economically used in some way.

Icelandic scallop

Origin of production:

Worldwide, nearly a million metric tonnes of scallops are landed each year. Japan is the largest producer, harvesting 370,000 tonnes in 1991, followed by China (130,000 tonnes), U.S. (1 15,000 tonnes) and Canada (90,000 tomes). Together these four nations account for more than 2/3 of the total world scallop production. The North American scallop fishery is dominated by sea scallops which have abductor muscles of up to 2 inches in diameter. These scallops are found from Newfoundland to North Carolina and make up over 90 per cent of North American scallop landing.

Canadian sea scallops are harvested in the Gulf of St. Lawrence off the shores of Nova Scotia, New Brunswick, Prince Edward Island and West Newfoundland. Scallop dragging takes place between May and June, and between October and November. There is no scallop harvest between July and September because scallops and lobster share the same beds and scallop harvesting cannot take place during the summer lobster harvest.

Scallops have also been harvested out of Pangnirtung, however there has not been any scallop dragging for several years because of problems with the scallop boat. It is expected that scallop fishing will resume during the summer of 1993 with commercial harvesting in the Pangnirtung area and exploratory dragging in the Broughton Island area,

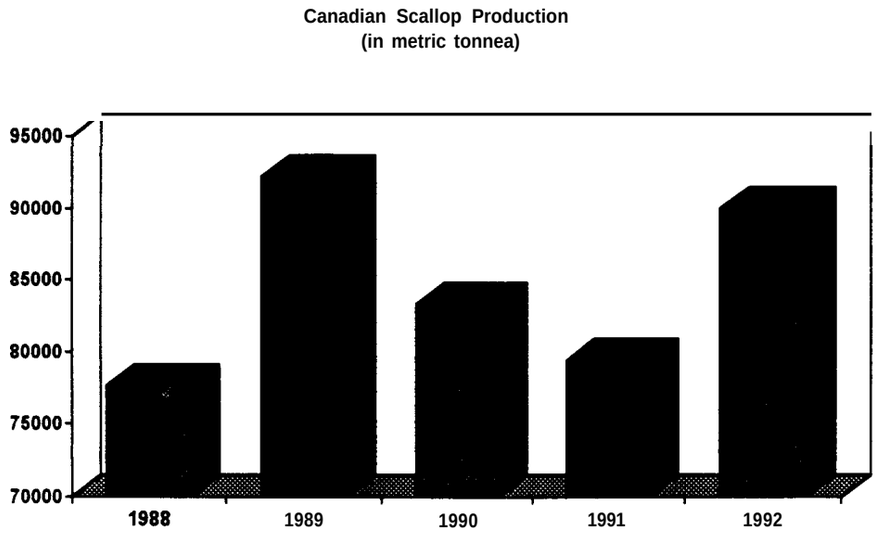
Scallops found in the NWT are Icelandic scallops, a much smaller and darker coloured species than the larger sea scallop variety, Generally fish dealers felt that Icelandic scallops were inferior to sea scallops because of their small size, yellowish colour and poor texture therefore they command a low price. Icelandic scallops are considered too small to be shucked by hand and therefore scallop harvesting requires a high level of

mechanization which may make scallop harvesting uneconomical.

The following is general scallop market information and pertains primarily to sea scallops as this species dominates the market and provides the major competition for Icelandic scallops,

Production Trends over the past five years:

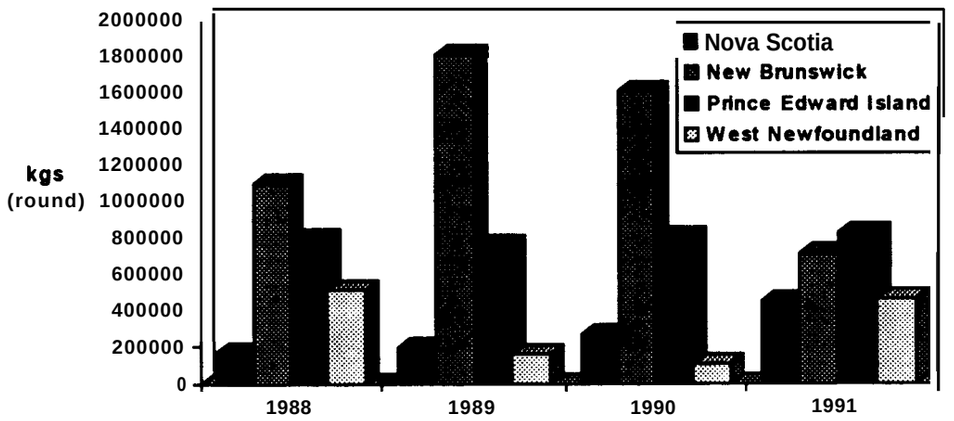
In 1989 Canadian production of scallops reached a peak in production with a total harvest of 92,188 metric tomes. The following two years saw a decrease in production followed by a strong recovery in 1992 with a total harvest of 89,974 metric tomes, a 16 per cent increase over 1988 harvests. The following chart illustrates total Canadian scallop production over the past five years.



The relative importance of the scallop producing regions has also changed over the past five years. As shown in the following chart, New Brunswick, once the major producer

of Canadian scallops has seen a major decrease in its scallop harvest while Nova Scotia has been gradually increasing in terms of importance. Prince Edward Island has remained relatively stable over the past five years and is presently the largest scallop producer in Canada.

Canadian Scallop Production

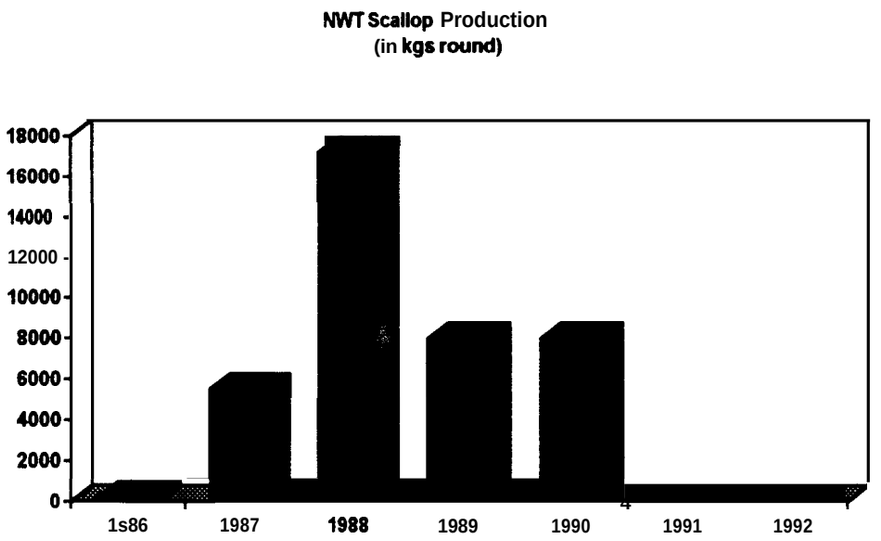


US landings of sea scallops have been steadily increasing since 1986 although there is some concern about the ability of the Georges Bank resource to withstand such high harvesting pressure.

NWT scallop production has been erratic with a peak production of 17,299 kgs (round, shell on) in 1988 followed by a drop of over 50 per cent to 8,000 kgs in 1989 and 1990. There was no harvesting at all in 1991 and 1992.

NWT Icelandic Scallop Production 1986-1992
(in kgs round weight)

1986	1987	1988	1989	1990	1991	1992
191	5536	17200	8000	8000	0	0



Demand by geographic location:

More than a third of the world scallop catch is destined for export - mostly to the U.S. and France - generating a trade valued at more than $300 million a year. Japan leads the world in scallop production and consumption followed by the U.S. which consumes 36,000 metric tonnes of scallop meats each year and demand is rising. Both of these countries sell a major portion of their scallop catch domestically.

Canada leads the world in exports of scallops with over 29 per cent of world market share in 1989, followed by Iceland and Peru. Canada is the top exporter to the U.S. which dominates as Canada's major export market. Almost 94 per cent of Canada's exports go to the US. Overall, US imports of scallops have been decreasing significantly

since 1986 as a result of increased domestic catches however Canada's percentage of the US market share (approx. 60 per cent in 1988) has been increasing at the expense of its traditional competitors: Japan, Iceland, and Panama.

Unfortunately the American market prefers large white scallops (minimum weight 15-20 grams) and there is only a limited market for Icelandic scallops. Similarly, the Japanese market prefers large sea scallops. Japan insists on very high quality and purchases scallops with a minimum weight of 50 grams.

One wholesaler suggested that France may be a suitable market for NWT scallops as the French are familiar with the unique characteristics of Icelandic scallops and purchase large quantities.

When scallops were being harvested out of Pangnirtung, a local northern market was developed with product being sold in Iqaluit, Yellowknife and Nanisivik. The scallops were well received and were sold at prices up to $22 per kg. However, since local scallops have not been available during the past several years, southern scallops have moved in, at a lower price, to fill this market gap and it is uncertain whether Baffin scallops will be able to recapture its market share and command the same price.

Product Form:

Unlike most other fish and seafood products, the market image of scallops is not affected by freezing. Most scallops exported by Canada are frozen (IQF) because scallops have a short shelf life. Frozen sea scallops are sold in 5-pound blocks (meat only). Fresh sea scallops are sold to processors in 50-pound cloth sacks, processors then wash (and sometimes soak in sodium tripolyphosphate) the scallops and either pack them in 8-pound containers for the fresh market or freeze them in 5-pound blocks for the frozen market.

Most of the wholesalers we spoke with also sold IQF scallops in a variety of smaller