



INTERNATIONAL CONFERENCE ON
SUSTAINABLE CONTRIBUTION OF FISHERIES
TO FOOD SECURITY

Kyoto, Japan, 4-9 December 1995

organized by the

GOVERNMENT OF JAPAN

in collaboration with the

FOOD AND AGRICULTURE ORGANIZATION

OF THE UNITED NATIONS

DEMAND AND SUPPLY OF FISH AND FISH PRODUCTS
IN SELECTED AREAS OF THE WORLD
PERSPECTIVES AND IMPLICATIONS FOR FOOD SECURITY

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**The Status of Seafood in Canada:
Hypotheses for Fish Consumption in 2010**

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Bibliography

Anderson, J. L. and J. G. Anderson, 1994. "The Status of Seafood in the US: Hypotheses for Fish Consumption in 2010." Food and Agriculture Organization of the United Nations.

The ARA Consulting Group, 1994. "Competitiveness Issues in the Canadian Aquaculture Industry." Agriculture and Agri-Food Canada.

The ARA Consulting Group, 1993. "Seafood Industry Development Planning Background Paper." BC Ministry of Agriculture, Fisheries and Food, Victoria.

Egan, D., 1993. "Profile of the North American Fresh and Frozen Salmon Market." in: Aquaculture Models and Economics, eds. U. Hatch and H. Kinnucan, Westview Press, pp. 217-230.

"Fisheries Statistical Highlights." Department of Fisheries and Oceans, various years.

The Longwoods Research Group, 1981. "A Study to Identify Strategies for Increasing Fish Consumption in Canada." Department of Fisheries and Oceans.

Mlacak, W., 1993. "Canadian Seafood Market Study - Size, Nature and Potential of the Canadian Seafood Market". Department of Fisheries and Oceans (unpublished draft).

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I The Status of Seafood in Canada

There are many similarities in seafood consumption between Canada and the United States. In addition, Canada has traditionally been a major exporter of seafood and the main supplier of imported seafood to the United States. This paper has been prepared as a companion piece to "The Status of Seafood in the US: Hypotheses for Fish Consumption in 2010" follows a similar format. It was developed in consultation with the authors and many of the statements in the US report which apply to Canada are reiterated.

A. Consumption Trends: Seafood Vs. Other Protein Sources

Seafood consumption has increased since 1971, when it was 5.0 kg of edible weight per capita. Seafood consumption rose through the 1970s and 1980s until reaching its highest level in 1986 at 7.41 kg per capita. Since that time it has fluctuated between 7.05 and 7.33 kg per capita. This reflects an increase between 1971 and 1990 of 42 percent.

Over the same period, red meat consumption declined from 75.2 kg to 70.0 kg per capita, a decrease of approximately 7 percent. Beef consumption declined from a high of 38 kg per capita in 1976 to a 22 kg. in 1993. It appears that this decline in beef consumption has levelled off. Pork consumption fluctuated between 20 kg and 25 kg during the period and began to increase in 1992. Per capita consumption of other red meats has increased.

Poultry consumption increased from 19.7 kg to 24 kg per capita during the 1971-1990 period. Chicken consumption rose dramatically from 14.0 kg in 1973 to 22 kg in 1993. Egg consumption declined from 13 kg to 10 kg per capita. Turkey consumption was relatively stable during the period between 4.5 and 4.9 kg per capita.

B. Price and Expenditure Trends: Seafood Vs. Other Protein Sources

The modest increase in per capita consumption over the past two decades, despite the decline in red meat consumption is explained by the rise in seafood prices relative to competing proteins and consumer prices of all goods. While the per capita quantity of seafood consumed increased by 42 percent between 1971 and 1990, the nominal price of seafood landings in Canada increased by approximately 913 percent.

Increasing overall expenditures on seafood indicate that demand has shifted in favour of seafood relative to red meat. These consumption trends follow closely those of the United States.

C. Seafood Consumption by Type

A major change occurred in Canadian per capita seafood consumption over the period 1971 to the present in the relative shares of fresh/frozen fish and shellfish.

During the period 1971 to 1990, per capita fresh/frozen finfish and shellfish consumption increased from 3.22 kg to 4.69 kg per capita, an increase of about 46 percent.

In contrast, per capita consumption fell in most categories of canned and cured fishery products. Overall, per capita consumption of canned products decreased from 5 percent, from 0.22 kg to 0.49 kg per capita. Per capita consumption of cured products declined 19 percent, from 0.41 kg to 0.73 kg per capita.

These trends are similar to those in the United States. Canned salmon consumption is believed to be higher in Canada, and canned tuna consumption less, compared to the United States.

Not reflected in the consumption totals is the consumption of recreationally-caught fish. These statistics have been collected since 1980. Per capita consumption of recreationally caught fish was 2.1 kg in 1980 per capita and 1.9 kg. in 1990.

The trend towards fresh/frozen consumption of species has been enhanced by aquaculture, especially from imports of cultured shrimp, and from domestic farmed salmon production.

The increase consumption of farmed salmon is fairly recent. Salmon farming industries have developed in British Columbia and New Brunswick which supply markets primarily in North American markets.

A decline in cod landings in Atlantic Canada has led to a recent decrease in consumption of fresh and frozen cod. In contrast, other species such as lobster and crab have shown increases in landings and in consumption.

II Trends Shaping the Seafood Market

Surveys of seafood consumers indicate that seafood consumption and expenditures tend to increase with income and to be greatest among consumers aged 25 to 55. Seafood consumption and expenditures also tend to be higher in many coastal and urban areas. This consumption pattern is quite similar to that in the United States.

Canada has also had a high influx of immigrants from high seafood consuming nations in recent years. A shift towards an aging and increasingly urbanized population will cause seafood consumption and expenditures to increase.

This demand will be dampened somewhat because average incomes have only shown gradual increases in recent years. Canada's high taxation levels, necessitated because of its social system and high debt burden, has caused a levelling off of the purchasing power of the average Canadian household.

Canada's fishing industry has historically been export oriented, in part because the domestic industry is relatively small in comparison to the United States. Canada's exports have diversified considerably since 1971. New developments in transportation, distribution, extension of shelf life of live and fresh seafood, and in freezing techniques have occurred which have permitted increased trade with live, fresh and frozen seafood beyond local or regional markets. This diversification has also influenced domestic consumption. Fresh fish and shellfish is much more commonly available on a year round basis in all urban centres.

A. Restaurant Vs. At-Home Seafood Consumption.

Current estimates indicate that the majority of Canadian seafood expenditures are associated with food service purchases. Higher value added seafoods, such as lobster appear to be more frequently consumed in restaurants. It is estimated that the majority of the higher valued seafoods are consumed in the food service sector. The trend of away-from-home consumption is expected to continue.

The most common seafood species consumed at home, as suggested by weekly food expenditure data in 1992 published by Statistics Canada, are fresh/frozen shrimp, salmon, haddock, flounder and sole, cod and other seafish, and canned salmon and tuna. These account for about three quarters of the total Canadian seafood expenditures in stores. Total expenditures on seafood make up about 2% of household purchases of food from stores.

A major trend in supermarkets has been full service seafood counters. Salmon has become more commonplace, and is increasingly being consumed at home.

B. Consumer Perceptions of Seafood

As in the United States, an increased awareness of the health benefits of seafood, concerns about seafood safety and concerns about the state of fish and other marine resources are influencing demand for seafood.

A number of incidents over seafood safety have occurred in recent years in different parts of North America which have received considerable attention by the mass media. An outbreak in 1987 of Parasitic Shellfish Poisoning with several people who had consumed mussels from Atlantic Canada was one such incident. Even though Canada has a mandatory seafood inspection system, these incidents raised fears about seafood safety, and have undoubtedly influenced consumer behaviour.

Conservation is another important issue with many consumers. An interesting phenomena is observed with recreational catches. While the number of anglers in Canada has increased considerably during the past two decades, DFO data show an increase in catch and release. These anglers are being motivated by conservation issues. Canadians have also expressed concerns over driftnet fishing.

C. Domestic Landings

Another major trend influencing Canadian demand for seafood is the level of domestic landings. Canada has one of the world's largest commercial fisheries.

Many groundfish stocks in the Atlantic Canada fishery are at historical low levels. Domestic landings increased to 1.6 million tonnes in 1990 but have declined every year since due to the near collapse of Atlantic cod stocks. Further to a moratorium imposed on commercial fishing of northern cod in the Atlantic fishery in 1992, a buyout plan was introduced to reduce the catch effort.

There exists excess capacity of the domestic fleets on both coasts. Several fisheries have moved towards rights-based fisheries, using policies such as various individual transferable quota (ITQ) systems, following trends in New Zealand. In the Atlantic Canada fishery, these ITQ fisheries include some offshore and inshore groundfish, snow crab, northern shrimp, Stimpson surf clams, offshore scallops, herring by purse seine, offshore lobster and offshore tuna fisheries.

The fisheries on the Pacific coast are also undergoing significant change. British Columbia's salmon fisheries, the province's largest fishery, saw sockeye and pink catches decline appreciably in 1994. Salmon fleet rationalization is expected in 1996.

Some of the minor fisheries in B.C. are now managed under ITQ systems. These include halibut, sablefish and groundfish trawl fisheries.

There is a growing recreational harvest in B.C. Species such as chinook may eventually become exclusively sport-caught fish.

D. Changing Sources of Supply

Some described above, some dramatic shifts in supply have occurred with domestic supplies. In 1991, the largest landings were cod, herring/sardines, capelin, redfish, salmon and hake. In 1994 they were herring/sardines, hake, scallops and salmon.

The northern cod moratorium will continue indefinitely and the cod stocks will likely recovery very gradually. In British Columbia, the hake quota will likely be curtailed. Some reallocation of fish resources may occur as a result of Aboriginal land claims settlements.

In aggregate, it is expected that domestic supplies from the traditional fisheries will not increase over the next decade. As a result, further exploitation of underutilized species is expected to occur as well as increased imports and increased production from aquaculture.

The considerable surplus of exports over imports is likely to continue to be reduced. With many of the minor fisheries and even some major fisheries like salmon, Canada is destined to be a niche player in world markets.

1. Underutilized Species

There have been a few species previously underutilized which have shown increases in landings. In Atlantic Canada, about ten species which were underutilized five years ago are now specially targeted.

In British Columbia, a number of minor fisheries have expanded during the past decade. A number of other species (e.g., dogfish, skate, pollock) are underutilized and others like flying squid are unutilized. None however have development potential to match salmon and herring catches.

2. Aquaculture

Commercial aquaculture in Canada has been a growth industry. The value of production has grown from \$7 million in 1984 to \$250 million in 1991. Salmon farming in British Columbia and New Brunswick, trout farming in Ontario, mussel farming in Prince Edward Island and oyster and clam farming in British Columbia accounted for 90 % of the total value of production in 1991. The British Columbia salmon farming industry produced 19,200 tonnes of farmed salmon in 1991. This production had a wholesale value of \$135 million and represented 51% of the total value of Canadian production.

In the short and medium term, several constraints to growth exist. Many of these constraints are regulatory in nature. These regulatory constraints stem largely from internal conflicts between resource protection and development mandates.

Limits to growth in the salmon farming industry include user conflicts in British Columbia and biophysical constraints in New Brunswick. In 1995, the Province of British Columbia initiated a public review of the environmental impacts of salmon farming in the province over concerns about potential interactions between indigenous and introduced salmonids.

3. Imports

Imports accounted for nearly 20 percent of the quantity of edible Canadian fishery supply in 1994. The largest supplier, by value, to Canada was the US, followed by Thailand, Russia, Iceland and China.

Imports of seafood have been increasing. The value of imports increased from \$727 million in 1988 to \$1,200 million in 1994.

Shrimp imports represent the largest proportion total seafood imports. A substantial proportion of seafood imports are also in value-added product forms.

Some of the increase in imports from the US are raw fish to supply processors. This applies to supplies of cod in Atlantic Canada and Alaskan salmon delivered to British Columbia processors.

Imports are at lower values than exports. With the decline in landings of lower valued species such as cod, increased pressure will be placed on imports to meet Canadian demand.

E. Processed and Value Added Seafood

There is expected to be a continuing trend towards fresh and frozen seafood consumption, both in shellfish and finfish. Canada lags behind many other countries in adding value to its seafood landings. However, recent trends have seen many processing technologies developed elsewhere being adopted. Examples include surimi production in British Columbia. Some sectors such as the farmed salmon industry, face intense international competition, and can be expected to produce value-added products such as portion controlled loins in the coming years.

III Hypotheses for US Seafood Markets in 2010

1. Canadian Fisheries

As Canadian stocks decline or stabilize, the expected price for products solely dependent upon the wild fisheries will tend to increase at a rate greater than inflation. These include products such as flounder and other flatfish on the East coast and halibut and sablefish on the West coast.

2. Aquaculture and Imports

Increases in consumption will require greater supplies from aquaculture and imports. The U.S. will continue to be the largest single source of imports. Other countries will likely contribute a greater proportion of imports, especially shrimp imports.

Domestic aquaculture will represent a growing proportion of seafood supply, especially farmed salmon. However, Canada is not able to produce a low-priced aquacultured product like catfish in any significant quantities and is unlikely to become a major aquaculture producer.

3. Value Added

Value added production will increase with wild and cultured finfish and shellfish. Many Canadian processors have been diversifying their product lines by sourcing their production from other countries and using their brands and their sales and distribution networks to market these products.

Opportunities exist for processors to adopt a marketing rather than a production focus. These opportunities will be enhanced with the introduction of labour saving technologies, further development of niche markets (e.g., live products) and the development of microwavable products.

4. Demographics

Demographic patterns will be similar to those in the United States. Two trends are particularly important: the trend toward an aging population and the increase in away from home food consumption. Both of these trends favour increased seafood consumption.

5. Aggregate Seafood Prices

With limited supplies and increasing demand, prices are likely to remain high. The stagnation of real incomes may mean that many higher valued seafood products will be increasingly exported.

6. Aggregate Per Capita Consumption

Protein markets are becoming increasingly competitive. The red meat industry is actively trying to retain consumers through mass advertising. There is considerable opportunity for increased consumption of chicken. Generally, per capita consumption of poultry should increase in Canada, particularly as a result of GATT rules which will put pressure on supply managed systems for poultry production. Historically, poultry prices have been higher in Canada than in the US, and per capita consumption slightly lower.

7. Fresh and Frozen Per Capita Consumption

It is expected that fresh and frozen seafood consumption will continue to comprise an increasing share of per capita consumption of protein, but perhaps not as much as in the United States, because of less purchasing power and the stabilization and/or decline in domestic landings.

8. Additional Supply Requirements

Canada's seafood consumption has been quite stable. Indications are that current consumption levels should be maintained and may increase at the same gradual rate as they have during the past two decades.

Official population forecasts for the year 2010 are 33.6 million. If per capita consumption levels were to remain at the 1992 level of 7.65 kg, the total consumption would increase by almost 40,000 tonnes or 18% of the 1992 total consumption.

Anderson and Anderson forecast increased per capita consumption of 20 percent by the year 2010. This same increase is achievable in Canada, but is regarded as an

upper limit on potential increases. A 20 percent increase in per capita consumption would result in increased consumption of 91,000 tonnes or 42 percent of the total 1992 consumption. A mid-range increase of 10 percent would increase consumption by 65,000 tonnes or 30 percent of the 1992 consumption.

