

AN OVERVIEW OF NUNAVUT FISHERIES

BACKGROUND PAPER

March 31, 2004

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Glossary

BFC – Baffin Fisheries Coalition Inc.: A group of HTOs, private Inuit companies, and Pangnirtung Fisheries Inc. that has been allocated the entire Canadian share of 0A turbot quota. They also hold some shrimp quota.

DFO – Fisheries and Oceans Canada. The federal department responsible for fisheries management.

HTOs – Hunter and Trapper Organisations. These are organisations that have management responsibilities designated under the Nunavut Land Claims Agreement. They allocate commercial char quota and may regulate the harvesting practices of their members.

NDC – Nunavut Development Corporation. A Crown corporation of the Government of Nunavut mandated to support subsidiary businesses in order to create jobs in targeted sectors.

NFWG – Nunavut Fisheries Working Group. An informal working group made up of employees of the Government of Nunavut, Nunavut Tunngavik Inc., and the Nunavut Wildlife Management Board.

NLCA – The Nunavut Land Claims Agreement of 1993.

NTI – Nunavut Tunngavik Incorporated. The Inuit organisation representing the interests of Inuit beneficiaries under the Nunavut Land Claims Agreement. NTI is responsible to implement the Inuit obligations of the Agreement and ensures that other parties meet their obligations.

NWMB – Nunavut Wildlife Management Board. An Institution of Public Governance established under the NLCA to be the main instrument of fish and wildlife management in the Nunavut Settlement Area (NSA). The Board also has advisory authority in the marine areas adjacent to the NSA, referred to as Zones I and II. The NWMB allocates quota to Nunavut interests according to criteria set by the Board.

NSA – The Nunavut Settlement Area of the NLCA.

Zone I and Zone II – Areas specified in the NLCA that are outside the NSA but in which Nunavut maintains certain interests and roles.

INTRODUCTION: AN OVERVIEW OF NUNAVUT FISHERIES

In the 2003 Nunavut Economic Development Strategy, the potential for the fishery sectors of Nunavut's economy to provide significant benefits to the people and communities of this territory was clearly recognized. However, as outlined in this overview, much of the wealth generated by Nunavut fisheries never enters Nunavut's economy. As a result, major opportunities to add value to the territory based on fisheries development are available. These gains will be dependent on the ability of Nunavut's political decision-makers, land claims organisations, and entrepreneurs to make solid strategic choices.

The Government of Nunavut recognises the importance of developing a clear strategy that builds on broad consensus on how fisheries development can proceed in an effective and coordinated manner. The department recognizes that such a strategy must focus on creating economic benefits that will flow to individuals, communities and businesses within Nunavut. A process of consultation will be required in order to generate open and informed discussion of the strategic issues facing fisheries development in the territory.

To provide background support for such a consultation process, the Fisheries Directorate engaged Brubacher Development Strategies Inc. to prepare this synthesis document along with a companion document setting entitled, "A Strategic Framework For Nunavut Fisheries." This synthesis is intended to provide an overview of Nunavut's fishery sectors—char, turbot, shrimp, and emerging fisheries, along with the processing activities associated with these fisheries.

The Strategic Framework Document builds on this overview, highlighting the key issues that need to be addressed, and recommending strategic approaches to resolve these issues.

Part 1: OVERVIEW OF NUNAVUT FISHERIES

1.1 SUMMARY OF CURRENT VALUE OF FISHERIES TO THE NUNAVUT ECONOMY

Data for Nunavut fisheries are not readily available. The following estimates are based on a range of government sector studies, and on interviews with plant managers and other industry sources. They should be considered 'ball-park' figures that give a general idea of the relative value of the various sectors' contribution to Nunavut's economy. Based on these estimates, Nunavut fisheries contribute between \$12 and \$14 million to the territorial economy. Of this amount, \$7.5 to \$9.5 million enters the wage economy, and another \$4.4 million is within the land-based economy.

- Estimate \$3.5 to \$4 million/year earned from royalties paid for quota.
- Arctic char harvested for personal use valued at \$4.4 million (based on a harvest estimate of 400,000 kilograms and a wholesale price of \$11 per kilogram).
- Few to no profits from processing plants.
- Char and turbot plants have total sales of fish products in the area of \$3 to \$3.5 million per year. Much of this value enters Nunavut's economy as payments to fishers, to plant workers, plant management and administration, operating expenses and facilities maintenance. Commercial char sales are estimated at \$1.5 million and turbot sales are between \$1.5 and \$2 million. These include both retail sales within Nunavut and wholesale export sales.
- The commercial char fishery involves 75 individual fishers earning some \$220,000.
- The commercial inshore turbot fishery involves 50 to 75 individuals earning between \$275,000 and \$550,000 in fishing income, depending on ice conditions.
- Commercial clam divers are at a pilot project stage in Qikiqtarjuaq.
- Processing plant workers in char and turbot plants number some 60 individuals, earning \$750,000. Management and administrative salaries are paid in addition to this amount.
- Offshore turbot vessels employ some Inuit crew. If they make up between 10% and 15% of total crew they should earn between \$400,000 to \$600,000 in crew shares.¹
- Offshore shrimp vessels fishing Nunavut quota and Qikiqtaaluk Corporation's shrimp licenses employ some Inuit crew. If they make up between 10% and 15% of total crew they should earn \$350,000 to \$500,000 in crew shares.
- Fishers are eligible for enhanced benefits under the Fishers Employment Insurance program. These benefits could double the income of some fish harvesters.

¹ Crew numbers and crew income have not been tracked by the BFC, which holds the major turbot quota. Crew income estimate is based on an assumed catch of 5000 tonnes raw turbot, equal to 3,571 tonnes J-cut with a landed value in Newfoundland of \$4,500 per tonne. Crew share (Inuit and non-Inuit) would be 25% of this amount, equalling a total of \$4.0 million. The shrimp calculation is based on a 6,000 tonnes landed harvest valued at \$2,200 per tonne, and a 25% crew share worth \$3.3 million. Inuit shares would be 10% to 15% of these amounts.

1.2 TURBOT FISHERY

Summary of Economic Contribution

The turbot fishery provides income to Nunavut's economy in a variety of ways. These include:

- Fishermen income from sale of Cumberland Sound turbot from the winter ice fishery to the Pangnirtung fish plant. Involves 50 to 75 fishermen plus their assistants, earning between \$275,000 and \$500,000 per year, depending on ice platform conditions.
- These individuals are eligible to receive the enhanced benefits of the fisheries Employment Insurance program, which could nearly double the value of this fishery to Nunavut's economy.
- Pangnirtung Fisheries Inc. plant processed some 400 tonnes turbot in 2003. This yielded export sales of between \$1.8 to \$2 million. The plant pays wages, salaries and 'honoraria' of some \$800,000 to some 86 individuals in 30 to 40 full-time positions plus two local managers and administration staff. Both men and women are employed at the plant.
- The Pangnirtung plant also purchases goods and services from the local and territorial economy—freight, fuel, maintenance, and so on. The value of these expenditures is not reported.
- Activities of the plant are subsidised by the Nunavut Development Corporation (Approximately \$300,000 in 2003). This may be partly recouped through reduced Income Support payments and increased personal income tax paid to government.
- Nunavut HTOs, Cumberland Sound Fisheries Inc, and the Baffin Fisheries Coalition (BFC) hold 5,500 tonnes of turbot quota in 0B and 0A—or 58% of the total 9,500 Canadian TAC for these subareas. Combined, Nunavut-held quota has a market value of approximately 12% to 15% of the landed value of Frozen At Sea turbot—between \$1.8 and \$2.3 million each year.
- Offshore turbot vessels employ some Inuit crew. Estimate they make up between 10% and 15% of total crew and earn \$400,000 to \$600,000 in crew shares.
- Total value of turbot fishery—sales from Nunavut plus Inuit crew shares— to Nunavut is in the range of \$2.5 million per year. Sales of turbot quota yield another \$1.8 to \$2.3 million.
- Recent catch of Nunavut turbot is around 5,000 t per year of raw fish, or 3,570 t of processed at sea product. This represents a landed value in Newfoundland of some \$16 million. Thus Nunavut is gaining slightly more than one-quarter of the total landed value of the turbot for which it holds quota.

Development Issues, Options And Needs In The Turbot Fishery

Inshore Winter Fishery

- The Cumberland Sound Inshore winter fishery has demonstrated itself to be a viable fishery. Its viability depends, however, on the ability of the Pangnirtung Fisheries plant to provide a local market for this fish.
- Thus, the continued ability of the plant to access offshore turbot seems to be a critical factor for the winter fishery. This is currently achieved through the use of CSF and BFC quota.
- Should scientific surveys demonstrate that the Cumberland Sound stock is distinct from the 0B population, it would be desirable to separate the inshore from the offshore quota. DFO has taken some steps in this direction.
- Potential also exists for an inshore winter fishery in Clyde River, Qikiqtarjuaq and possibly other communities. Pilot projects have shown there are turbot in some of the fjords near Clyde River.
- A model for developing such fisheries would need to be designed. One option might be to establish processing plants close to these fisheries. With adequate access to offshore turbot, arrangements to land fish from offshore in order to ensure adequate quantities to maintain plant operations could be made, along the lines of the Pangnirtung plant.
- A second option might be to install freezer capacity so that the winter catch could be stored and then shipped out as a back-haul during the regular summer sea lift.

Processing capacity

- Expansion of the Pangnirtung plant through increased freezer capacity, improved processing lines, acquisition of a filleting machine and other steps has been undertaken in recent years. With these and other on-going improvements, a capacity of 900 tonnes per year—or double the current production levels—may be possible.
- Current economics at the plant require that the cost of fish must be subsidized. Currently, this is achieved using quota held by CSF and BFC. Further expansion may require access to further subsidy to offset high costs.
- Another issue is the treatment of waste water from the plant. This may lead to further capital investment being required.

Acquire an offshore factory-freezer to fish offshore allocation

Access to offshore harvest capacity through vessel acquisition is desirable for several reasons:

- Vessel ownership will ensure that Nunavut gains the knowledge and expertise related to fishing 0A turbot stocks. This will reduce dependency on a small number of companies from outside the territory who may use their unique knowledge of these stocks to drive hard royalty negotiation bargains.
- Vessel ownership may also protect Nunavut interests from hard royalty bargaining based on scarcity of Canadian vessels available to fish in the Arctic. DFO's Canadianisation policy puts these vessel owners in a stronger position than Nunavut quota-holders—potentially leading to lower quota royalty payments.

- Once a vessel company is well-established, it may be expected to become profitable.
- It is felt by some that only by being able to harvest its own quota will Nunavut be able to maintain control over its fisheries development. While any enterprise will always be constrained by economic realities, ownership may provide greater flexibility in areas such as Inuit crew employment and landing fish at Nunavut plants.

Inshore summer turbot fishery

- An inshore summer turbot fishery will require major science and exploratory efforts, infrastructure development, training, and development of local markets.
- Cumberland Sound may hold potential, although further stock assessment is needed, followed by fishing gear strategy pilot testing. The Pangnirtung HTO prohibits the use of mobile gear.
- Another option, might be the use of small inshore vessels that would fish the fjords, then off-load their catch to a large regional collector vessel (or 'mother ship'). Major research and development efforts will need to be made for inshore fisheries development.

Marine infrastructure

- "The presence of marine facilities will have a cascading effect for Nunavut residents harvesting adjacent fishery resources by enhancing opportunities for landing, processing and marketing the catch in Nunavut using local employees." DSD, 2001 Charting a Course paper.
- Marine infrastructure will also open the potential to provide goods and services to offshore vessels. The same infrastructure needed for fisheries will be useful for sealift re-supply, for cruise-ship tourism, and for providing safe access to the sea by community members.
- Small Craft Harbour program of DFO not yet implemented in Nunavut. Discussions between the GN and DFO for access to small harbour funding have been initiated.

Access and allocation

- Currently, access to the winter inshore fishery is mediated by the Pangnirtung HTO. The available quota—500 t—is higher than can be fished from the winter ice platform, so demand for access to this fishery has never been higher than the fishery can support.
- Limited access to 0B quota is a barrier to Nunavut fisheries development. While Nunavut has access to a limited 0B allocation (27% of the total 5,500 Canadian TAC), this is well below the normal level expected for adjacent fisheries. Further, there is no access to the competitive portion of the quota.
- The 0B fishing season is longer than that of 0A, therefore adequate access to this fishery is an important component to developing viable fishing plans for future Nunavut-owned vessels.

The Nunavut Fisheries Working Group has identified three strategic objectives related to turbot access and allocation:²

- Maintain 100% of the Canadian share of 0A turbot and obtain a majority of any NAFO TAC increase.

Nunavut is the only Canadian jurisdiction with history and adjacency in Division 0A. For the past three years Nunavut interests have been provided with 100% of the Canadian quota allocation in Division 0A. It is expected that NAFO will announce an increase in the TAC for 0A +1A, and Canada has indicated to Greenland in bilateral discussions that it will be taking a majority of this increase, to be fished by Nunavut interests.

- Establish a separate management zone for Cumberland Sound.

Nunavut has made a proposal to establish a separate management zone for the Cumberland Sound area of Division 0B, with an initial quota allocation of 1,000 t.

- Increase Nunavut's share of the 0B quota.

Nunavut is looking to increase its share of the 0B turbot allocation, which has been set at 1,500 t, or 27.3% of the total Canadian allocation of 5,500 t since 1998. In order to increase this share, Nunavut is looking to gain access to both the current company and competitive allocations.

Arguments in support of these objectives are made by the NFWG and include:

- Adjacency to the resource
- Historical attachment
- Economic dependency
- Support in new and existing policy.

In addition to these objectives, future development within Nunavut's fisheries may lead to new access issues. For example, access issues may be expected to arise should a summer fishery in Cumberland Sound be developed. How, would a 1,000 t inshore quota be divided between the winter fishermen and new, inshore vessel-owning entrants? Similarly, decisions about who gets to fish may arise in future fjord-based fisheries, should viable but limited stocks be located.

Finally, what balance should be struck between community-held quota used to raise royalty revenues and individual owner-operators who may seek to own their own vessel? Some of these issues are not entirely new to the NWMB and current policy does begin to address these. However, further consideration may be needed in order to ensure that future access and allocation decisions are fair and predictable.

In this light, six general strategic objectives have been set out by the Nunavut Fisheries Working Group:

- Centralize DFO management of the Sub-area 0 fishery, with adequate staffing levels, in the Iqaluit office.
- Develop a licensing structure for Nunavut fishers.

² NFWG October 2003 Submission to the Standing Senate Committee On Fisheries and Oceans' Special Study on Quota Allocations and Benefits to Northern Fishers.

- Obtain a continued commitment to science in Sub-area 0, through multi-year turbot and shrimp science programs.
- Obtain a commitment for implementation of a fisheries development program for Nunavut, considering and funding such important issues as training, infrastructure and capacity development.
- Obtain a commitment from the Small Craft Harbours Branch of DFO for harbour development in Nunavut.
- Obtain a commitment from DFO to move to operationalize the Memorandum of Understanding it signed with the Government of Nunavut in August 2000.

1.3 SHRIMP FISHERY – NORTHERN AND STRIPED

Summary Of Economic Contribution

Nunavut has participation in the northern shrimp fishery through the Enterprise Allocation (1.5 licenses) held by Qikiqtaaluk Corporation, plus additional shrimp quota held by Qikiqtaaluk Corporation, several HTOs, and the Baffin Fisheries Coalition. These entities generate benefits to the Nunavut economy through the sale of shrimp quota for royalty revenues and through gaining crew positions for Inuit on southern-owned vessels.

- Royalties generated from Nunavut-held quota (Zone I & II, plus from QC's Enterprise Allocations), are estimated at approximately \$1.8 to \$2.0 million per year, under current market conditions.
- Offshore shrimp vessels fishing Nunavut quota and Qikiqtaaluk Corporation's shrimp licenses employ some Inuit crew. Estimate they make up between 10% and 15% of total crew and earn \$350,000 to \$500,000 in crew shares.
- Total value of the shrimp fishery to Nunavut is, therefore, approximately \$2.3 million per year.

Development Issues, Options And Needs In Nunavut's Shrimp Fishery

Access and allocation

The Nunavut Fisheries Working Group has identified three strategic objectives related to the shrimp fishery:

- Obtain 100% of the quota in SFA 0 for Nunavut.
An exploratory allocation of 500 t of *P. borealis* has been in place and provided to offshore license holders for several years. However, this allocation has never been fished by these license holders. Due to the lack of performance and attachment to this fishery, Nunavut is looking to obtain full control of this allocation, based on a commitment to fish the allocation.
- Increase Nunavut's share of the SFA 1 and SFA 2 *P. borealis* quota.
Nunavut interests have only a 20% share of the *P. borealis* quota in SFA 1 & 2. To increase this allocation to a fair and equitable level, Nunavut is looking to obtain 100% of any further quota increases as well as transfers of existing allocations, especially those allocations which have not been harvested by the offshore license holders.
- Increase Nunavut's share of the SFA 2, 3, and 4 *P. montagui* quota.
Nunavut interests currently control a majority, 52%, of the *P. montagui* allocations in Nunavut's adjacent waters. This is primarily due to a new allocation of 2,500 t provided to Nunavut in 2002. Nunavut will ultimately be looking to increase this allocation toward the goal of an 80-90% share, through new quotas and/or the transfer of existing quotas.

In addition, the six general objectives identified under Section 1.2, above, are also relevant here:

- Centralize DFO management of the Sub-area 0 fishery, with adequate staffing levels, in the Iqaluit office.
- Develop a licensing structure for Nunavut fishers.
- Obtain a continued commitment to science in Sub-area 0, through multi-year turbot and shrimp science programs.

- Obtain a commitment for implementation of a fisheries development program for Nunavut, considering and funding such important issues as training, infrastructure and capacity development.
- Obtain a commitment from the Small Craft Harbours Branch of DFO for harbour development in Nunavut.
- Obtain a commitment from DFO to move to operationalize the Memorandum of Understanding it signed with the Government of Nunavut in August 2000.

Achieving the 80-90% share of adjacent stocks through future growth in shrimp TAC may be unlikely. There has been a rapid increase in shrimp TACs over the past few years, but there is a biological limit to growth in shrimp populations. It may also be reasonable to expect stock declines at some point.

1.4 ARCTIC CHAR FISHERY – DOMESTIC AND COMMERCIAL

Summary Of Economic Contribution³

- An estimated 400,000 kg arctic char is harvested for domestic use. The net value of this fish to the Nunavut economy is estimated at \$4.4 million, based on a wholesale value of \$11 per kilogram. Imports of food from outside the territory are reduced by approximately this amount.
- Between 80,000 and 100,000 kg of char are harvested for commercial purposes. The commercial harvest involves some 75 individuals who earn approximately \$220,000.
- Processing char employs 50 to 70 individuals who earn between \$275,000 and \$400,000.
- Commercial char sales are estimated to total between \$1 million and \$1.2 million.

Development Options and Needs

Supply and marketing

In the char sector, issues of supply are closely related to those of marketing. Both the quality of the fish supplied to the plant, as well as the reliability of product flow to clients from one year to the next are important in market development. In the Consilium Nunavut market study⁴, eight areas were identified as key to a successful plan for marketing char:

- Reliability of supply from year to year;
- Continuity of supply within a given year;
- Maintenance of high and consistent product quality over the long-term;
- Focus on the quality and consistency of a small range of value-added products;
- Development of a common, consistent marketing message among producers in terms of product image, communicated through effective promotional materials;

³ These data are estimates based on data from NDC annual reports, interviews with plant managers, along with some assumptions required to fill in data gaps.

⁴ 2002 Marketing study prepared for the Nunavut Development Corporation by Consilium Nunavut.

- Having product consistently available to back up investment by customers in response to marketing and promotional strategies;
- A solid, consistent system for marketing and distribution of product from producers to consumers in target markets;
- Good, ongoing customer development and service.

The following issues and strategies were identified:

- Issue: Security and quantity of supply
 - o Objective: Increase the sources and overall level of supply of char.
 - o Objective: Increase the amount of fresh char sold and delivered to customers.
 - o Objective: Continually support and improve the quality of char harvested by working in training fishermen on the use of weirs, and continuing to investigate the potential for new technologies such as fish wheels.
- Issue: Maintenance of Product Quality—Production Standards
 - o Objective: Establish product standards based on current practice and continue to investigate ways to make further improvements.⁵
- Issue: Product Mix—New value-added products
 - o Objective: Develop a small range of shelf-stable items to meet demand in grocery and tourist markets.
- Issue: Promotion—Development of common promotional materials
 - o Objective: Develop a cooperative, NDC-wide promotional strategy and materials for the full range of wild-harvested products produced in NDC plants in Nunavut.

The lack of promotional materials was identified as a constraint to niche market development. Typically in the industry, 10% of operational budgets are allocated to promotion during early years of market development. The idea of an NDC-wide promotional strategy is to lead to a Nunavut brand built on a consistent image and messages. This might include a Nunavut logo, common promotional messages, common standards related to quality and packaging sizes.

- Issue: Distribution and target markets—Rationalizing the distribution system.
 - o Objective: Rationalize the distribution structure for KFL products in Nunavut, NWT and southern Canada.
 - o Objective: Pursue initial discussions with other NDC plant managers, under NDC leadership, ...to investigate opportunities for co-ordinated marketing and distribution through the use of common sales agents and distributors.

Three important points are made in the KFL market study related to this issue of product distribution. First, Nunavut processors currently sell product within Nunavut directly, without the assistance of marketing agents. As a result, market development within the territory is not

⁵ The Market Study notes that the high quality char products are currently being produced consistently. The point of this Issue and Strategy is to ensure that present practices are standardized in order to ensure long-term consistency.

thoroughly managed and customers do not get the level of service they may receive from other suppliers. There is, however, a sales agent for KFL in Yellowknife.

Secondly, plants may sell product over-the-counter at prices lower than that charged by their Nunavut retail customers. This practice effectively undercuts the plants' own wholesale customers. The market study calls for a retail price structure to be established in order to avoid this problem.

Thirdly, industry distribution structures and client relationships need to be respected and nurtured. For example, care needs to be taken when dealing with distributors in other jurisdictions—if a distributor develops new markets they will expect to be able to maintain their role and not be 'cut out' of the business, even if the retail client attempts to purchase product directly from the producer. Developing confidence amongst key players in the distribution chain may pay dividends.

- Issue: Setting 5-year priorities for development of target markets.
 - o Objective: Reduce sales of whole dressed fish, increase sales of fresh fish from fall harvest and increase sales of value-added products. Increase total fish harvest by 20% over five years.
 - o Objective: Increase revenues from Nunavut by 67%; from NWT by 97%; and from southern Canada by 132%. Begin to develop a US market.

Labour market and training

Given the importance of char to the domestic economy, there may be training and development issues of importance to this sector of the char fishery. No specific studies on this issue are available.⁶

In the 2001 Training Needs Assessment report, it was felt that training for processing plant workers may need to focus more on increasing the skills and productivity of existing workers—and reducing turn-over rates—than on preparing new workers for recruitment opportunities.

Training areas identified in that study included: safety in the plant, quality assurance, HACCP training, development of high productivity work group environments as opposed to single job lines, and carefully targeted recruitment for replacement of workers who have quit.

Plant managers often seem to be called on to carry out tasks that are typically not assigned to a manager, leading to over-work and, on occasion, burn-out. The need to develop supervisory and management skills amongst Inuit plant workers was identified—"the availability of Inuktitut-speaking managers, or at least a liaison person who understands the marketing and management side of the processing business, is important in light of the language barriers currently experienced."⁷

Recent events in the food industry have increased the requirements for record-keeping. Paperwork needs to be conscientiously kept up and it needs to be perfect in order to maintain a reliable product recall system.⁸

⁶ Quality maintenance and conservation fishing techniques may be relevant areas for development.

⁷ Consilium and Brubacher (2001).

⁸ Interview with one of the plant managers.

Plant workforce reliability and turn-over is also a contributing factor related to the labour force capacity in Nunavut plants. A suggestion that pre-employment orientation workshops be included as part of a plant training program has also been made.

Policy development issues

Currently, any plant in Nunavut is eligible to benefit from the Fish Freight Subsidy, up to the maximum amount available in this program's budget. As fisheries production increases, there may be a need to establish policy on who gets access to the subsidy, or on how available subsidy dollars are allocated amongst applicants.

Access to government operating subsidies is only available to processors that are majority-owned by the NDC. This situation clearly favours public ownership of Nunavut's processing capacity. It may be necessary to review this situation from time-to-time.

Various suggestions for NDC assistance in market development and branding have been noted above in relation to NDC support for NDC-owned plants. Care should be taken to ensure this support does not have negative impacts on privately-owned plants. The possibility of opening up this kind of support to encompass all players should be explored through consultation.

1.5 NUNAVUT'S EMERGING FISHERIES

There are several emerging fisheries opportunities in Nunavut. These include clams, flounder, and scallops. Others, such as crab, may also warrant investigation.

Emerging Clam Fishery

- Currently a pilot project in Qikiqtarjuaq.
- Vancouver-based company is providing management and entrepreneurial capacity.
- Divers are independent operators, being paid for each kilogram they produce.
- Clam harvests are recorded and stored while samples are shipped south for food safety testing.
- The product is currently available in stores in Nunavut, selling for \$8.99 per 500g package.

Emerging Starry Flounder Fishery

- Test fishing carried out in Coronation Gulf, around Kugluktuk.
- Need a scientific survey to determine stocks.
- If commercial quantities, then business plan will be required.

Development Issues, Options and Needs

- The foundation for emerging fisheries begins with stock assessment. This requires initial test-fishing, followed by sufficient efforts to determine whether commercial quota can be assigned.
- Pilot projects for emerging fisheries require management and entrepreneurial capacity. In addition to organising activities around stock assessment, efforts need to be made to mobilize harvesters, identify markets, address processing and food safety issues, maintain records of project outcomes, prepare proposals to generate funding and so forth. For many communities, this capacity is not readily available. In some cases outside expertise has to be brought in, and the costs of this must be recovered through pilot project funding.
- Emerging fisheries may also require infrastructure—harbour facilities if vessels are required, processing capabilities, cold storage.

1.6 MARKET THEMES AND GLOBAL TRENDS

Overall Themes

Several key themes emerge from consideration of the global fishing sector:

- The global fishing industry is highly competitive and volatile.
- There is a rise in low-cost fish processing in several Asian countries, including China, Thailand and Vietnam (particularly for crabmeat and groundfish).
- International consolidation is taking place in harvesting, processing, and the buying of fish products that has resulted in buyers having more power to set prices.
- Fish prices can change quickly: The price of turbot is now almost three times higher than shrimp. It used to be the other way around. Regional industries can shut down with little notice due to a drop in prices and a change in exchange rates.
- There is great concern over the sustainability of the fishing industry due to over-fishing and increasing climatic changes. There are many experts who believe climatic changes have been and will continue to significantly influence the size and location of fish stocks. The United Nations' Food and Agriculture Organization has identified it as a priority research issue.
- There is increasing concern over the issue of food safety (latest being mercury levels in farmed Atlantic salmon and also levels in Arctic marine animals).
- There is concern over the quality of data on fishing resources and harvesting worldwide. In addition, compared to other northern fishing jurisdictions, Canada appears to have less knowledge on its northern fishing stocks and is investing less money on research
- There is concern over the industry's ability to enforce quotas worldwide.

Global Trends

- Total fishery production in 2001 was 130.2 million tones (excluding aquatic plants), of which 37.9 million tones was from aquaculture practices. Global capture remained relatively stable between 1996-2001.
- China is the leading producing country (both in terms of fishing and aquaculture) followed by Peru, United States, Japan and Indonesia. Canada was 20th overall.
- China is an emerging market for Canadian fish products. It is the largest consumer of fish products in the world. However, Japan is the largest importer of fish products (23 per cent of total import value) followed by the United States.
- Shrimp species continue to be the largest global fish commodity accounting for approximately 19 per cent of total value of internationally traded fishery products. Other major traded species include groundfish, tuna and salmon.
- Industry consensus is that there will be little change in the level of shrimp and groundfish landings from 2003 levels. Supply of shrimp world-wide is expected to remain high.

Based on several studies, the following long-term trends (up to 2030) were identified:

- World production, total consumption, food demand and per capita food consumption will increase over the next three decades; however, the rate of these increases will slow over time. For example, European production over the past decade will continue its trend of stagnation in capture fisheries production and growth in aquaculture production. Some reports suggest that 40 per cent of global fish consumption will come from aquaculture in 15 years time.
- Consumption patterns in developed countries will reflect demand for, and imports of, high-cost/high-values species. While consumption increases in the United States are

expected to be modest, demand will likely shift from lower-priced species to higher-priced ones as per capita income rises.

- As time passes, fishers will lag further behind other occupations. Earning more by fishing more will not be feasible due to overexploited stocks. This will put pressure to use superior fishing technologies and methods to get higher catches.
- There will be continued effort worldwide to lower harvesting costs and improve the quality of the catch. “Harvesters—or even entire fleets—that cannot cut costs and increase value will eventually leave the industry.”

Part 2: THE CONTEXT FOR STRATEGY IMPLEMENTATION

2.1 THE 'INGREDIENTS FOR DEVELOPMENT' OF NUNAVUT FISHERIES

2.1.1 Fish populations—the 'resource'

Conservation of the marine resource is a fundamental concern to all participants in the Nunavut fishery. Any fisheries development strategy needs to ensure that stocks are not put at risk due to fishing pressure. What, then, is the current status of fish stocks in Nunavut?

Char—Updated surveys are needed. This is a very valuable fishery for the domestic 'land-based' economy. Given the importance of char for domestic 'basic needs' uses, a conservative approach needs to be taken when managing this species.

Turbot stocks are assessed by the NAFO Science Council, based on data from fishing vessels and stock assessment research. Concerns about decreasing numbers of older turbot being caught in NAFO areas 2 and 3 have led to dramatic reductions in TAC. For example, the 2003 quota of 42,000 t will be reduced in those areas to 20,000 t in 2004, with further reduction down to 16,000 t by 2007.⁹ Turbot do not reproduce until they reach thirteen years of age, and young fish don't achieve commercial sizes until they are at least five years old. As with other fisheries, scientific prudence tends to be diminished by political and economic factors—the NAFO Scientific Council had advised a maximum catch of no more than 16,000 t for 2004.

Turbot populations in Nunavut's adjacent waters (NAFO sub-areas 0A and 0B) are not showing the same age-class declines at this time. However the science in this area is weak and neither turbot population dynamics, nor the broader ecological relations in these northern waters are adequately understood.

Within Nunavut, there has been an effort to assess whether the turbot stock found in Cumberland Sound is a distinct population from the population found in 0B. The belief is that young turbot swim higher in the water column than older fish and will enter the Sound which has a shallow-water ledge blocking the entrance. As the fish age and grow, they favour the sea-bottom in deep water parts of the Sound and no longer swim into the shallow-water at the mouth of Cumberland Sound. They are thus 'trapped'. Some scientific research has been carried out to test this hypothesis and an application has been made to NAFO to have the Cumberland Sound turbot deemed a separate stock that can be managed on its own.

Shrimp populations are at an all-time high. However, recent catches in the more southerly shrimp fishing areas show the size of shrimp to be declining. The shrimp fishery may be expected to remain a significant fishing sector in Nunavut's adjacent waters. However, stocks in northern SFAs are less well known—future increases may occur in these areas, though these are by no means guaranteed. Northern shrimp quota in SFA 0 and SFA 2 (eastern part) and Stripped shrimp quota in SFA 2 are exploratory—significant efforts need to be applied to determine whether commercial catch is viable in these regions.

Clam biomass—the total weight of clams in an area—have been estimated by DFO scientists out of Winnipeg. Starry Flounder has been found during test fishing in Coronation Gulf. Stock assessment research needs to be done in order to establish an experimental quota for this species.

⁹ McGrath, Darrin. 2003. "The trouble with turbot." The Navigator. Vol. 6 (11). November 2003.

Climate Change — The emerging ‘wild-card’

Efforts are being made by scientists around the world to anticipate what impact climate change is having on major natural systems. A recent modelling effort¹⁰ has considered the impact that melting of the Greenland ice cap may have on ocean currents. The suggestion is made that the flow of cold water from this melting ice may halt the northern flow of warm water—the Gulf Stream. Other models suggest other outcomes. Whatever the model, its reasonable to expect that changes to ocean current patterns could have important impacts on fish ecology and population dynamics.

The bottom line is that climate change may lead to greater uncertainty in making predictions about future stocks, particularly when the underlying ecological and biological understanding is already severely limited.

2.1.2 Human Resources

A more detailed overview of the individuals who share personal stakes in Nunavut’s fisheries is provided in Appendix B. These groups of workers include:

- Char fishers in both the basic-needs and commercial fishery
- Workers in the char and turbot processing plants, and in the emerging clam packing enterprise
- Turbot fishers in the Cumberland Sound ice-platform fishery
- Inuit crew working on southern-owned offshore vessels fishing Nunavut turbot and shrimp quota.

Understanding the labour market

The importance of fisheries to the household economies of individual fishermen is not well documented in Nunavut. Some interviews with fishermen have been carried out during previous studies, however these have been brief and focused on general areas.

Until the work is done to document how fishing fits into the annual round of production, and how the income derived from these activities is applied to achieving household objectives, or until fishermen organize themselves to gain a collective voice, little can be said with confidence about the objectives of this group and its various components. A study by Pauktutit currently focussed toward women working at the Pangnirtung Fisheries plant should provide valuable insight into some of these areas.

Areas that need to be addressed through labour market research include:

- Gender and demographic analysis of fisheries jobs
- Demand for full-time versus part-time work
- Demand for community-based versus offshore work
- Earnings objectives
- Income distribution and expenditure
- Workplace expectations and preferences
- How fisheries participation fits in the ‘annual round’

In spite of high levels of unemployment, filling job positions can be difficult. Potential workers often have productive alternatives in other sectors of the wage economy, or in the northern mixed economy. As a result, addressing the human resource dimension of fisheries development requires that a complete labour market approach be taken. This involves addressing both the supply of labour as well as the demand for work.

Increasing the skills of potential workers through training is one dimension on the ‘supply side’ of the labour market equation. Recruiting the right people for training and for work, and then retaining these people in their training programs and jobs are equally important. Understanding the demand for work is the other key dimension in the labour market. What kinds of jobs do men and

women seek? How well do alternative fisheries development strategies create these kinds of desired job opportunities?

¹⁰ See for example the report of the work of Philippe Huybrechts in the journal Nature. (<http://www.nature.com/nsu/030414/030414-2.html>)

Some key observations related to the fisheries labour market include:

- Adequate labour force should be available, but market for managers is highly competitive.
- Need to consider the gender balance presented by alternative development strategies
- Labour market considerations—will there be enough people to fill all the offshore jobs?
- Profiles of labour supply and demand issues are needed for each of Nunavut's fisheries sectors.

Summary: Nunavut's Fisheries Labour Force and Stake In the Fishery

Based on interviews with plant managers, the total number of commercial fishers in Nunavut is roughly estimated at 130 to 175 individuals. These are those people who earn some income by catching, landing and selling char, turbot and clams on a commercial basis. Most of these are char fishers who earn between \$1000 to \$6000 per season on average. Individual turbot fishermen gross an average of \$10,000 to \$40,000 over the year.

These earnings could be doubled if fishermen access the full benefits of the enhanced Employment Insurance Program designed specifically to assist Canada's fishermen. However, lack of awareness of these entitlements may be preventing this program from providing its full benefits to much of this labour force.

Offshore Inuit crew are reported to earn in the neighbourhood of \$15,000 to \$18,000 per voyage. Crew shares are based on landed-value of the catch, and therefore fluctuate with market conditions. Little data about the individual behaviour of this labour market segment is reported. How many Inuit work on turbot and shrimp vessels? How many crew work throughout the year? How many choose to work only one voyage per season? Are these workers fully accessing their EI entitlements?

There has not been any formal organisation of Nunavut fishermen. Their interests do not seem to be effectively promoted to decision-makers either within Nunavut or to the federal government.

Suggestions made by sources in the processing sector suggest that on-going efforts to enhance and maintain reliably high quality of landed fish might be of value. Gear-type (nets versus weirs) is of particular importance to fish quality. In relation to this quality issue, it should also be noted that the ability of fishermen to supply their product to plants depends on long-distance transportation, often combining both land and air. Subsidies, as well as reliable scheduling and appropriate handling during transit are factors here.

2.1.3 Infrastructure

- Fisheries development requires a 'convergence' of infrastructure, particularly in the inshore where harbours and marine centres, vessels, transportation facilities and processing plants are all required.
- Infrastructure is also needed for Nunavut to capture additional value from the offshore fishery. Harbours and marine centres could enable goods and services to be provided to offshore vessels, and could improve the economics of landing offshore fish for local processing. Currently, though, there are no harbours, ports, or marine facilities in Nunavut communities.
- Lack of docking facilities means that inshore vessels cannot be adequately harboured from the weather and tides experienced in the arctic. A Small Craft Harbour Investment Strategy has been developed by the GN to address some of the really basic needs—breakwater development and docking facilities. This

strategy makes some general references to fisheries. Discussions have been initiated with the federal government to begin funding these priority efforts.

- Other major infrastructure needs—new processing plants, cold storage warehouses and container facilities for example, have not yet undergone feasibility or pre-feasibility assessment, although some of this assessment work is planned by the GN for the near future. Private efforts have been undertaken, through the BFC, in the area of planning for offshore vessel acquisition. Similar feasibility planning for inshore vessels has been done in some communities—not necessarily related to fisheries though.
- Inadequate municipal infrastructure is also a barrier to fisheries development. Processing plants require clean water and place a demand on waste water treatment facilities. They may also place demands on other aspects of municipal infrastructure related to ground transportation, international communications and broadband access, energy consumption and so on. One conclusion of a recent shrimp plant pre-feasibility analysis was that Nunavut’s capital city would be unable to supply the needed fresh water required by such a plant without major investment in this basis infrastructure.
- The ‘local politics’ dimension of infrastructure planning may provide a major challenge for decision-makers. Should infrastructure projects be used as a means to provide new economic opportunity to communities that lack other economic advantages, or should infrastructure be built where the chances of success are most certain? A careful balance needs to be created around this tension. Regardless of the eventual response to this challenge, communities that gain infrastructure should be expected to demonstrate some level of accountability for results.
- Nunavut has been ‘abandoned’ compared to other maritime regions of Canada — No harbours, ports, or marine facilities
- Getting the right infrastructure in place is key for inshore development and could increase value to Nunavut of offshore fisheries
- Priority infrastructure must be identified in relation to local fisheries opportunities and opportunities related to other sectors such as tourism and re-supply. These may include breakwaters, harbours, cold storage, marine centres, and processing plants.

2.1.4 Organisational And Entrepreneurial Capacity

With increasing access to offshore quota, the financial stakes are increasing in Nunavut. As a result, the organisational landscape is changing as more people are becoming aware of the current and potential benefits Nunavut’s fisheries may provide.

- To achieve successful implementation of a fisheries strategy will require organisational ‘champions.’ These are required at a large-scale level for development of offshore turbot and shrimp resources, as well as for coordinating the market and supply issues surrounding on-shore processing. Organisational development is also required for community-based inshore fisheries development such as clams and other emerging species. In recent years, Nunavut fisheries organisational capacity has increased in major ways through the Baffin Fisheries Coalition (BFC), the Nunavut Fisheries Working

Group (NFWG), increased Government of Nunavut capacity in fisheries, and through NTI.

- Nunavut communities often lack business capacity. As a result, management and entrepreneurial coordination is purchased from outside the territory by those fishery businesses or sectors that have adequate development support or a sufficient scale to be self-funding.
- The GN and DIAND have worked together on a range of small fisheries development projects. The success of these activities has helped to develop a relationship between DIAND and the emerging fisheries sector. Future progress may be achieved by building on this productive relationship. While the relationship with DFO has not been as successful, the prospects are improving with the emergence of the BFC as an industry group that has a track record in OA and is gaining resources to be applied toward fisheries development projects.
- On a territorial level, the Nunavut Economic Forum has emerged as a broad-based group to advocate for and work on economic development issues in the territory. In addition, the Nunavut Development Corporation (NDC) has continued to play an important roles in the char fishery and in supporting turbot processing capacity through its processing plants.
- DFO seems to have neglected Nunavut, relative to other regions which received major development assistance in their commercialization phases, and relative to Aboriginal initiatives in the south that are currently being supported. There is a need to more fully engage the policy and funding resources of the federal government in support of Nunavut's fisheries development objectives. In every other jurisdiction in Canada, the developmental stages of regional fisheries have been actively supported by DFO. By way of contrast, Nunavut's adjacent offshore fishery has been largely handed over to established Atlantic fisheries interests. Although current policy related to adjacency does not support this situation, other policy trends supporting capacity reduction, industry stability, and a general withdrawal of DFO from fisheries development—outside of southern Aboriginal interests—have worked against Nunavut's interests. Some specific challenges in this area include:
 - Dispersal of DFO responsibility for Nunavut's fisheries across offices in Iqaluit, Winnipeg, St. John's and Ottawa dilutes what little political clout Nunavut holds. In each of the DFO offices outside Iqaluit, Nunavut interests represent only a minority voice amongst the other larger players.
 - DFO has attempted to use the NLCA to deny Inuit access to programs generally available to other Aboriginal peoples. DFO's Atlantic Fisheries Strategy (AFS) provides a package of assistance that includes help for Aboriginal communities to gain economic benefits from their adjacent fisheries. It has, for example, provided nearly \$80 million over the past decade to transfer licenses to Aboriginal interests. None of this has been available to Nunavummiut. The Aboriginal Aquatic Resource and Oceans Management Program (AAROM) and the At-Sea Mentoring Initiative are additional DFO programs aimed at increasing Aboriginal capacity in the fisheries sector. These programs specifically exclude Nunavummiut on the basis that they have a land claims agreement.
 - Engaging DFO in Nunavut fisheries development is challenged by current DFO policy trends. A current trend is to reduce processing and harvest capacity. Nunavut wants to increase capacity — hence an uphill struggle in terms of DFO priorities. A current trend is to increase private sector responsibility for future development. Nunavut industry is not yet at a stage where it can bankroll the

development process based on only a fraction of the territory's adjacent resources.

- The issue of governance must be addressed, particularly in relation to the offshore turbot and shrimp fisheries. The quota assigned to Nunavut for these fisheries would seem to represent a 'public good.' If this is correct, then decisions about how to develop these fisheries need to be made in a way that is transparent to the Nunavut public. At the same time, it is reasonable that the existing criteria for allocation of quota—adjacency, community involvement, and so on—should come into play in these decisions. A challenge then is to develop a decision-making process that is open and yet still effective. Decisions need to take into account—and be seen to take into account—the diverse individual and community interests related to fisheries and fisheries development. Some critical issues that need to be considered and decided on include:

2.2 BUSINESS OPPORTUNITIES AND ECONOMIC LEAKAGE IN NUNAVUT FISHERIES

Fisheries provide a wide variety of business opportunities or 'entrepreneurial niches'. These are the business functions of a fishery that need to be carried out in order to get fish out of the water and onto the consumer's diner table. They include:

- training and certification providers (public or private)
- inshore and offshore vessel owners and their crews (private sector)
- fisheries managers (public sector)
- fisheries observers (private sector or public sector)
- marine services providers (public or private sector)
- processors (usually private or public/private)
- inspection services (public or private)
- product brokers (private)
- product marketers (private)
- investors (public or private)

A brief presentation of how each of these business functions are carried out in relation to Nunavut's fisheries will help to identify the context in which fisheries business development can proceed.

Training and certification

A wide range of training and certification courses have been provided over the years. Nunavut Arctic College and the Marine Institute out of St. John's have played a lead role in this training during recent years.

Other training initiatives have been carried out using sector-specific experts. Commercial dive training and certification in Qikiqtarjuaq is a recent example. Some local experts have also been used to provide training. For example, Pangnirtung winter turbot fishermen have trained individuals in other communities during test fishing in the fjords. Processing plants provide some formal and in-formal on-the-job training.

Sources of economic leakage: While some training is provided by local experts, plant managers, and by NAC, much is carried out by outside trainers. This is a source of leakage from the Nunavut economy.

Inshore owner-operators

Inshore fishing is currently limited to the winter turbot fishery in Cumberland Sound. Some of the most active winter turbot fishermen—discussed in Section 0 above—are able to earn significant returns from their labour. This group may be a potential pool for future entrepreneurial capacity needed to develop a summer turbot fishery in Cumberland Sound.

Sources of economic leakage:

1. Ice conditions on Cumberland Sound limit the winter inshore catch to well below the 500 t available quota. As a result, the remaining quota is fished by vessels from outside the territory. Instead of earning a 'landed value' from the Pangnirtung plant, Nunavut interests earn only a royalty payment.

2. A potential inshore shrimp fishery (*P. montagui*) is located within the NSA around Resolution Island. This is being fished by offshore factory-freezer trawlers since there is no capacity to land

or process this resource in Nunavut at this time. Instead of earning the landed value of this shrimp, a royalty is earned. A plant feasibility study has demonstrated that under conditions prevailing at the time of the study, a plant could not be operated profitably. The broader analysis of the potential for a net positive return to Nunavut overall was not included as part of that study.

Offshore owner-operators

Offshore fishing for turbot and shrimp is currently carried out entirely by southern vessel owners. Nunavut interests gain only a royalty payment from sale of the quota they hold, along with some crew positions. These payments are typically 12 to 15% of the landed value of frozen-at-sea (FAS) product, or \$385 to \$485 per tonne of quota.

Sources of economic leakage: The landed value of FAS turbot currently yields some \$4500 per tonne. This equals a yield of some \$3215 per tonne of raw fish. Perhaps 10% of this amount—\$320 per tonne raw fish—is retained by the vessel owner as profit, after costs such as quota purchase, crew costs, broker and freight-to-market charges, fuel, operating, and vessel financing charges are paid. By not owning its own vessel, Nunavut loses this profit potential. Some additional ‘costs’ of vessel ownership might be captured into the Nunavut economy if a Nunavut interest owned the vessel—increased Inuit crew is frequently assumed. The ownership option might, then, add as much as \$325 per raw tonne over and above what is currently gained through quota sale and negotiated crew positions. With 5,500 t turbot quota held by Nunavut interests, this represents a potential loss of nearly \$1.8 million per year.

Processors

Only one fish plant—Iqaluit Enterprises—is run by a private entrepreneur. This northern business has been operating for over fifteen years and has maintained itself as a viable business that is not dependent on subsidies beyond the fish freight program. In addition, the NDC majority-owned plants are active in processing the commercial char landed from Nunavut waters. These plants seem to be doing a good job at value-added processing of char, thereby reducing economic leakage to reasonable levels.

Processing of turbot only takes place at the Pangnirtung Fisheries plant. Of the approximately 9,000 t captured from 0A and 0B, the plant is able to process less than 500 t, or about 5% of the catch. Some value-added is achieved through quality-streaming (selling winter turbot as premium ‘ice fillets’) and precisely weighed packaging. No shrimp is processed in Nunavut.

Sources of economic leakage: Processing of turbot at the Pangnirtung plant adds a roughly estimated 20%—or \$650—to the value of turbot sold from Nunavut, compared to the landed value of frozen-at-sea product.¹¹ Of the 5,500 t turbot quota held by Nunavut interests in 0A and 0B, less than 500 t, or nearly 10%, is processed in Nunavut. Not all of this added value would be captured within Nunavut’s economy, however. Some will be lost in freight, commissions, fish purchase costs, plant operating ‘leakage’ and so on. Perhaps 75% of this value-added is captured through plant wages and salaries, purchases from inshore fishermen, payments to Nunavut-based airlines and so on. With 5,500 t turbot quota held by Nunavut interests and only 500 t currently being processed in Nunavut, this represents a potential loss of some \$2.4 million from the Nunavut economy.

¹¹ Based on a price of \$4,500 per tonne ‘J-cut’ fish and a yield of 1 tonne J-cut from 1.4 tonnes raw turbot caught from the sea. This yields \$3,214 per tonne raw fish. For Pangnirtung, assume 90% of sales (90% * \$2,154,968 = \$1,939,471) are for turbot, and the offshore landings are J-cut, while inshore are raw. Thus the data available in the NDC annual report yields a value of \$3,879 per tonne of raw fish processed and sold. Thus processing adds some \$650 per raw tonne to the value of Nunavut turbot.

Fisheries managers

This is largely a public sector function. The Iqaluit DFO office currently only carries out a portion of the overall management functions related to Nunavut's adjacent fisheries. DSD has developed a fisheries unit. The NWMB has staff based in its Iqaluit offices.

Sources of economic leakage: As with many government services, consultants and contractors are often engaged to assist in specific management functions. The location of management units may be expected to influence where consultant expertise develops. By decentralizing fisheries management outside Nunavut, development of local contract and consulting expertise is lost.

Fisheries Observers

Offshore vessels carry fisheries observers on board to ensure restrictions and regulations are being followed and to record infractions. The observer role is a public management function that has been privatized to a large extent. Observers are hired by private sector companies, contracted by DFO to provide these services.

Sources of economic leakage: Currently, fisheries observer services on the vessels fishing in Nunavut's adjacent offshore areas—and throughout the Newfoundland and Labrador Region—are provided by Seawatch Inc. out of St. John's. Two other companies have been awarded contracts for the Gulf of St. Lawrence and the Maritime fisheries regions. The entire Atlantic fishery makes use of some 250 fisheries observers. To date, no trained observers have been recruited from Nunavut. The possibility of developing an offshore fisheries observer program is being considered by the GN's Fisheries Unit.

Fisheries Science, Research and Development

Fisheries science, stock assessment and other fisheries research activities requires access to vessels, skilled crew, scientific expertise, and sector knowledge.

Sources of economic leakage: Generally, Nunavut fisheries science is carried out using vessels, crew and sector specialists from outside the territory. One Nunavut company—Kabva Marine—has provided some services in this area during turbot research in Cumberland Sound.

Marine Services Providers

With no harbour facilities for fishing vessels, Nunavut has no businesses providing marine services.

Sources of economic leakage: There are some twenty-five shrimp and turbot vessels active in Nunavut's adjacent offshore waters during the annual fishing season. Offshore vessels that fish in Nunavut waters typically take on provisions from their home port or at the port where they off-load their catch. A wide range of services could be provided from Nunavut if the appropriate facilities and businesses were in place. These might include cold storage, crew change (from Iqaluit), provision of food and supplies, and general maintenance parts and supplies.

Product Marketers and Brokers

Currently there are no fish marketers promoting Nunavut fisheries products to stores within the territory. The potential for this role to be played by the NDC in the context of char fisheries products has been suggested. Marketing of product is typically carried out by firms in Yellowknife and in the south for char products.

Fish products brokers serve as intermediaries between vessel owners who harvest the fish and the foreign markets where the processed-at-sea products are eventually sold. These are large-scale operations that charge a fixed rate—typically 4% of landed valued—for their services.

Sources of economic leakage: It is normal for marketing specialists to be engaged from within the destination market area. Therefore, there is no particular 'leakage' issue by having firms from

Yellowknife, Toronto handle this function for product ending up for sale in these areas. However, leakage does occur to the extent that product that might find a consumer market within Nunavut flows out of the territory. Instead of the retail value of these products entering the Nunavut economy, the territory enjoys only a wholesale value when product enters southern markets.

The small size of Nunavut's fisheries will likely preclude the territory from developing the international commercial relations and the product volumes required to support a brokerage business.

Investors and Financial Institutions

Development of fishery sector opportunities will require not only the support of public investments in public infrastructure and science. It will also require major investment in productive capital such as processing plants and fishing vessels. Nunavut has a number of institutions available to support some of this investment. However, some sector-specific investments are typically financed by institutions having a long history in the fisheries sector. Major vessel loans, for example, are often financed by institutions in northern Europe.

Sources of economic leakage: Interest payments to loaning institutions located within Nunavut will be available support development of further sectors within the territorial economy. Interest payments to institutions outside the territory is leakage out of the economy.

Southern entrepreneurs

The Nunavut Fisheries Working Group has estimated that only about 8.5% of the nearly \$100 million landed value of Nunavut's adjacent fisheries is captured into the Nunavut economy through royalty payments and Inuit involvement as crew. Some of the remainder could potentially be captured into the Nunavut economy through development of vessel ownership and/or expansion of processing facilities. As suggested earlier, a large portion of the economic value of the fishery will continue to flow out of the territory to southern entrepreneurs.

Nunavut's in-shore and adjacent off-shore fish resources clearly provide economic opportunities to other fishing enterprises and fisheries sector entrepreneurs and businesses located in the Atlantic provinces and in Europe. All of the shrimp and all of the turbot except that caught during the winter from Cumberland Sound is fished by vessels from outside the territory. All of the shrimp and most of the turbot caught in Nunavut's adjacent waters are landed at plants or cold storage facilities located outside of the territory. This provides some opportunity for processing plants and for fish brokers operating in these regions. In addition, the vessels that are involved in harvesting Nunavut-adjacent stocks are all licensed and maintained outside of Nunavut. Marine services business—supplies, maintenance, and so on—in these southern regions therefore benefit from the business generated by the arctic fishery.

Some of this economic leakage is inevitable due to the limited size of Nunavut's fisheries and related economic sectors. Some of this leakage, though, is also related to federal government policy. Currently, Nunavut gains benefits through the sale of quota to vessel owners. The royalties generated are playing an important role in fisheries sector development. However, DFO 'Canadianization' policy has the effect of reducing the level of this revenue over what could be achieved in a free market. Vessels willing to pay for quota to fish turbot, for example, are more numerous than available turbot—thereby creating a favourable situation for quota-holders as vessels owners bid up to gain the fishing right. However, Canadian vessels are scarce. By limiting access to Canadian turbot to Canadian vessels, DFO is supporting development of the Atlantic Canadian offshore fleet at the cost of Nunavut fisheries development.

Summary

This presentation of the entrepreneurial activity that has developed around Nunavut's fisheries, indicates that many business functions or 'niches' are empty in Nunavut. As a result, these entrepreneurial roles are filled by businesses in the south—at a price of considerable 'economic leakage'. The scale of Nunavut's fisheries is limited enough that some of these functions may not

be viable—fish brokering and some marine services, for example. Other business functions, such as marketing fisheries products within the territory, fishing offshore quota, processing within Nunavut, could be developed in order to capture a greater share of the ‘economic pie’ created from fish resources.

Part 3: A Strategy To Advance Nunavut Fisheries

The challenge for Nunavut is to develop a strategy that will guide and focus efforts to combine the existing capacity—available fish, people, infrastructure, and organizations—in ways that will produce the greatest benefits, and then to use limited resources to build further capacity in the key areas that are holding back further development.

The companion document to this synthesis paper—“A Strategic Framework For Nunavut Fisheries”—seeks to set out the key issues that need to be considered during this process.

Appendix A: Nunavut Fishery Sector Descriptions

Nunavut Fishery Sector Descriptions

TURBOT FISHERY

Background

Turbot (*Reihardtius hippoglossoides*)—sometimes referred to as Greenland Halibut—is one of four major commercial flatfish species in Canada’s Atlantic and Arctic groundfish fishery.¹² It is the most widely distributed groundfish species in the North Atlantic and has been fished in the waters of Canada, Greenland, Iceland, the Faeroe Islands, Norway and Russia since the 1960s.

Development of the groundfish fishery is closely tied to international involvement in the waters off the coast of Canada. Historically, countries such as France, Spain and Portugal, have maintained very active fishing efforts in this region. The first factory freezer and commercial stern trawler arrived from Scotland at the Grand Banks in 1954. Russian trawlers soon followed and by the 1960s a major Russian fishing effort was underway. By the mid-1960s nearly twenty nations were fishing the Grand Banks.¹³

During this period, stock management and conservation was attempted under the International Convention for the Northwest Atlantic Fisheries (ICNAF), an organisation formed in 1949 by eleven fishing nations. However, ICNAF had authority only to make recommendations, not to enforce its measures, and calls by ICNAF scientists for catch limits were ignored. ICNAF began setting Total Allowable Catch limits (TACs) in 1970, with limits for most species established by 1974. These limits considered both biological and economic factors. They were ignored by many nations. The ICNAF eventually led to the establishment in 1979 of the Northwest Atlantic Fisheries Organisation (NAFO).

In 1977, following the failure of the Third Law of the Sea Conference to reach agreement on the resource rights of coastal nations, Canada unilaterally declared a 200-mile territorial ‘economic zone’ extending out from its coastline. Along with this declaration came a claim of ownership of marine resources within the newly claimed jurisdiction. However, the continental shelf in the Atlantic region extends beyond this 200 mile limit, leaving the management of important fish stocks outside Canada’s control. As a result, foreign fishing nations continued to have unregulated access to these stocks.

To support Canada’s national sovereignty within the 200 mile limit, DFO launched a program of support to expand Canadian fisheries capacity. If Canada was to claim sovereignty over the area, it needed to establish a commercial presence. The fisheries development programs at the time provided massive support to the Atlantic fishing industry to acquire vessels, improve harbour facilities, and expand processing capacity. At the time, the major focus of this new fishing capacity was the northern cod.

Following the 200-mile limit declaration, the Newfoundland fishery grew rapidly. Between 1977 and 1981, the number of registered fishers increased by 41%, and the total catch by 27%. Fishery yields continued to increase through to the mid-1980s. NAFO members unhappy with their quota allocations inside Canada’s 200-mile limit registered vessels in non-NAFO countries and fished as they pleased in the ‘nose and tail’ region of the Grand Banks outside Canada’s jurisdiction.

Between 1986 and 1992, Canada and other NAFO members maintained their catch levels in the face of growing scientific evidence that stocks—particularly cod—were in serious trouble. In 1992,

¹² Bowering (1999) lists the others as the American plaice, the witch flounder, and the yellowtail flounder. Atlantic halibut is a major species in terms of market value.

¹³ See <http://www.nafo.ca>.

though, Canada initiated major quota reductions, closing much of the Atlantic groundfish fishery and marking the beginning of the 'cod moratorium'.

Faced with dramatic cod quota reductions, fishing for turbot in international waters of the Flemish Pass off eastern Canada expanded during the early 1990s. With the collapse of other groundfish resources in the Northwest Atlantic at the time, turbot became the most important groundfish fishery in the area.¹⁴ This intensive activity led to a major dispute between Canada and Spain—the 'turbot wars' of 1995. The outcome of this was an agreement for management responsibility for turbot to be undertaken by the Northwest Atlantic Fisheries Organisation (NAFO).

It has now been over ten years since the first groundfish moratorium was announced in Newfoundland waters relating to Northern cod. During this period, the shellfish industry (snow crab and northern shrimp) has replaced the groundfish industry in terms of size (60 per cent of total catch) but double the overall landed value prior to the moratorium (now over \$500 million). For example, while the number of harvesters in Newfoundland and Labrador's fishing industry is down by nine per cent, net fishing income is up by over 150 per cent.

The fishing fleet has changed over this period of time as well—there is now greater use of inshore vessels (less than 65 feet) than when the fishing industry was based on the groundfish. But this has also meant there is now greater seasonality in the industry with far fewer landings in the winter months. This has had implications for the processing industry that has historically relied on a relatively evenly distributed demand for its services throughout the year. Greater use of processing technology has also been responsible for the decrease in processing jobs. In Newfoundland and Labrador, employment levels in processing facilities are now only 58 per cent of 1990 levels and only four year-round groundfish processing plants remain in operation.¹⁵

DFO policy has also shifted dramatically during the post-moratorium period. Previous policies supporting fisheries development and expansion have given way to policies aimed at reducing surplus fishing capacity, ensuring sector stability and integrating conservation principles and outlooks into the industry itself. These policy shifts have tremendous implications for the development of Nunavut's marine fisheries.

Turbot Fishery Management

The resource

The main spawning area for turbot is in the Davis Strait, adjacent to Baffin Island. However, turbot are found in abundance all along the northwest Atlantic coast. Greenland and Denmark have conducted extensive research on turbot stocks (as well as shrimp stocks) in its adjacent waters. This research is used to assist NAFO's operations. Canada's last comprehensive scientific research activity in area 0 was in 1986.¹⁶ Currently, DFO has been undertaking some catch and release studies in Cumberland Sound.

According to Bowering (1999) turbot prefer deeper, warmer waters where the bottom is comprised of mud, as compared to some of the other commercial flatfishes. They are typically caught in waters 500 to 1000 metres in depth, but have been found in depths of 2200 metres in the West Greenland waters of the Davis Strait.

¹⁴ Bowering, W.R. 1999. Ecology, Fisheries and Management of Greenland Halibut In the Canadian Northwest Atlantic. PhD Thesis. University of Bergen, Norway.

¹⁵ Government of Newfoundland and Labrador, *Fish Processing Policy Review: Final Report*, [online], December 2003. [February 5, 2004]. <http://www.gov.nf.ca/fishaq/dunnereport/>

¹⁶ Ray Andrews, *An Overview of Greenland Halibut (Turbot) in NAFO 0+1+2+3KLMNO*, April, 2000.

From a biological perspective, a key requirement for managing fish species is to be able to distinguish separate spawning units or 'stocks'. By identifying a discrete fish population, it is possible to understand the growth rates, reproductive success rates and other population attributes. Knowing how the population functions allows for decisions to be made about how much of the population can be harvested at any time.

However, actually gathering the knowledge required to undertake stock identification, and assessment, thereby enabling stock-based management is not as easily achieved as it is theoretically conceived of. A wide range of techniques are used in stock delineation studies—e.g. protein electrophoresis, parasites as biological tags, analysis of meristics and morphometrics, external tagging to determine migration patterns, comparisons of fecundity, mitochondrial DNA sequence variation analysis and so on.

The main conclusion of the various studies carried out on turbot suggest that the North Atlantic turbot population is a single stock. Intermixing occurs among turbot “between the northern and southern extremes of the commercial range in the western Atlantic; inside and outside the Canadian 200-mile fishery zone, and between samples on either side of the Atlantic...”¹⁷

The location of key spawning grounds is another key to resource management. For turbot, various hypotheses have been suggested over the past decades. As further data becomes available, new hypotheses develop. None seem to be conclusive. Current suggestions are that one important turbot spawning area is located in Davis Strait south of 64° north. Spawning turbot have also been found in the Labrador and eastern Newfoundland areas and in the Flemish Pass. Earlier research from the 1930s, suggested that the main turbot spawning area is in an area of Davis Strait around 67° north. The idea that Davis Strait is the 'source' of turbot for the entire northwest Atlantic fishery is still commonly held and not conclusively debunked.

As earlier noted, turbot is primarily managed by the North Atlantic Fisheries Organization (NAFO). The offshore stock of turbot in Nunavut's adjacent waters is shared jointly by Canada and Greenland with the TAC being split equally. However, there have been disagreements in the past on quotas between Canada and Greenland. It is argued that the sharing of offshore turbot with Greenland (50/50) favours Greenland since it does not include Greenland's lucrative inshore turbot fishery that relies on the same fishing stock. The fish migrate from the Davis Strait to Greenland's fiords.¹⁸

Turbot populations interact with other species, potentially leading to complex management issues. For example, Bowering has looked at the types of food eaten by turbot. For smaller fish, small crustaceans seem to be the major food source. For turbot of moderate size (1 to 2 feet in length), the diet includes northern shrimp.

Turbot management—history, access, allocation

The first quota for turbot was set in 1976 by the ICNAF at 20,000 t for the Davis Strait – West Greenland area, including the Greenland inshore regions. This was raised to 25,000 t throughout the period of 1978 to 1994.

In 1995 management of turbot was handed over to NAFO. Based on new data in 1994, NAFO reduced the TAC to 11,000 t, where it remained until 1998. However, during the process leading to NAFO gaining jurisdiction of turbot, Greenland managed to have its inshore fishery—NAFO Division 1A—excluded from the NAFO turbot management regime. Thus, there are no quota restrictions for this inshore area.

¹⁷ Bowering thesis, 1999.

¹⁸ The Navigator, “Canadian fishermen caught in European ‘turbot sandwich’, April 2000. www.thenavigatormagazine.com/back_issues/apr2000.htm (captured 02/03/2004).

In the southern NAFO areas (Subarea 2 and Divisions 3K and 3L), the first TAC of 40,000 t was established by ICNAF in 1974. During 1986 to 1989, Canada set TACs at 100,000 t. This was reduced to 50,000 t during the 1990 to 1993 period, and was again slashed to 25,000 t in 1994. These reductions followed the NAFO Science Council's observations of a rapid decline in turbot biomass. NAFO Divisions 3M, 3N and 3O were added to the management area when NAFO took over turbot management in 1995, and a TAC of 27,000 t was set for this area, where it remained up to 1998.

The 11,000 t 0 + 1 TAC has been fished within the sub-areas 0B and 1B to 1F. Greenland fishes the inshore of 1A outside NAFO TAC restrictions, and has increased its catch to 25,000 t in 2000 from 17,000 t in 1996.

Nunavut's Adjacent Waters – 0A

In 1993 and 1994, a test fishery was initiated in 0A by the territorial government and DIAND. DFO provided a 300 t exploratory quota and allowed a 30-day fishing effort. The result was a 329 t catch. In 1997, a 65-day effort was allocated to Qikiqtarjuaq Corporation and Cumberland Sound Fisheries, resulting in a 208t catch. In 1999 a biomass survey was undertaken in the southern part of 0A, resulting in a biomass estimate of 83,000 t. A fishing effort of 58 days provided in 2000 led to a catch of 290 t.

Based on the 1999 biomass survey, the NAFO Scientific Council recommended a TAC of 4,000 in 2001. DFO provided this developmental quota to Nunavut, for allocation amongst Nunavut interests by the NWMB. The NWMB provided the allocation to the Baffin Fisheries Coalition, described in detail later in this report. Subsequent research surveys in 2001 have increased the biomass estimate to 98,000 t in 0A and 50,000 t in 1A, leading to expectations (as of 2003) that NAFO will increase the TAC for 0A + 1A to 8,000 t.¹⁹ Nunavut interests are seeking a majority of the expected 4,000 t TAC increase, based on science, historical attachment, landings and adjacency.

Table 1: Northwest Atlantic Turbot—Sub-area 0 Canadian Quota

	1981 to 1989	1990 to 1991	1992	1993	1994 to 1995	1996 to 2000	2001	2002 to present
0A								
0A Nunavut						300	3,500	4,000
<i>Total 0A</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>300</i>	<i>3,500</i>	<i>4,000</i>
0B								
Foreign Charters	12,400	6,640	1,040	1,040	4,500			
Developmental/Company Allocations		5,360	10,460	3,920		2,500	2,500	2,500
Competitive				6,540	0	1,500	1,500	1,500
Nunavut	100	500	1,000	1,000	1,000	1,500	1,500	1,500
<i>Total 0B</i>	<i>12,500</i>	<i>12,500</i>	<i>12,500</i>	<i>12,500</i>	<i>5,500</i>	<i>5,500</i>	<i>5,500</i>	<i>5,500</i>
Total 0A + 0B	12,500	12,500	12,500	12,500	5,500	5,800	9,000	9,500

Source: DFO 2004. Integrated Fisheries Management Plan: Greenland Halibut, NAFO Subarea 0 2003-2005.

Nunavut's Adjacent Waters – 0B

During the late 1970s to 1994, Canada held one-half of the 25,000 t 0 + 1 allocation, or 12,500 t. Initially, there was little interest in this quota from the Canadian fishing sector. Up until the beginning of the groundfish fishery collapse, most of the Canadian 0B quota was fished by foreign, largely Russian, fleets. In 1987, for example, only 3,000 t of the Canadian quota was fished by Canadian interests. As cod stocks declined, Canadian catch rates increased—5,700 t in

¹⁹ At a 4,000 t TAC, the stock exploitation rate is 4%. BFC has argued that this is a lower utilization rate than is applied in 0B and therefore has lobbied to increase the TAC level in 0A (Burke report).

1989, 5,900 in 1990, and 6,900 t in 1991. By 1992 the entire Canadian quota was fished by Canadian interests. In 1994, the Canadian quota was cut to 5,500 t.²⁰

Of the 11,000 t TAC set by NAFO for 0B + 1B to 1F, Canada is allocated one-half of this amount, or 5,500 t within sub-area 0B. Responsibility for dividing this amount amongst Canadian fishing interests rests with DFO. Inuit interests received allocations prior to 1996 for inshore fishing. Initially, 100 t was made available in 1988 and 1989 following a test project in 1987. This increased to 500 t in 1990 and 1991, with 255 t and 147 t caught, respectively. For the years 1992 to 1995, 1000 t quota was available for the winter fishery, with annual catches of 285 to 430 t achieved during these years.

Since 1996, allocations for turbot in zone 0B have been as follows:

- Nunavut: 1,500 tonnes
- Company quotas: 2,500 tonnes
- Competitive fishery: 1,500 tonnes

Nunavut's 1,500 t allocation includes a 500 t offshore quota and a 1,000 t quota designated for inshore fishing. Distribution of the Nunavut quota is done by the NWMB. Current allocation is shown in the table below.

Table 2: Allocation of Nunavut's 0B Turbot Quota

Nunavut Interest	NWMB-assigned quota share (tonnes)
Cumberland Sound Fisheries - CSF (Pangnirtung)	750
Nattivak HTO (Qikiqtarjuaq)	330
Qikiqtarjuaq Corporation	285
Mittimatalik HTO (Pond Inlet)	45
Namautaq HTO (Clyde River)	45
Pangnirtung HTO	45
<i>Total</i>	<i>1500</i>

Source: Department of Sustainable Development

Except for the winter inshore turbot fishery, all Nunavut's quota is brokered to third-party fishing vessels in return for royalty payments. Although 1,000 t quota is technically designated for inshore use on a priority basis, in practice, inshore ice fishermen use the 45 t quota allocated to the Pangnirtung HTO. In years where conditions allow for greater harvests than this amount, the additional quota is taken only from the CSF allocation, rather than equally from all quota-holders. Of the 2,500 t allocated by DFO to company quotas, 1,900 t has been given to one company, SeaFreez.

Twenty fishing interests hold licenses that allow access to the 1,500 t competitive 0B turbot fishery. Part of the competitive quota (900 t) is designated for fixed-gear, with the other portion (600 t) available to mobile gear. Most of the competitive license-holders are under 65 feet,

²⁰ Burke Consulting. 2003. "Strategic Fisheries Report: Nunavut's Offshore Fisheries Resources: Turbot and Shrimp Access and Allocations." Prepared for the Nunavut Fisheries Working Group.

although four 65 to 100-foot vessels and three vessels over 100 feet are eligible to fish this allocation. In practice, though, only a few have actually participated in this fishery in recent years.²¹ Total landings from this competitive fishery have ranged from 1,115 to 1,660 t between 1995 and 2000.

Prosecution of Nunavut's turbot fishery

Inshore turbot fishery

The Cumberland Sound fishery began in 1987 and is the only inshore turbot fishery operating in the region on an annual basis. Fishing is carried out during the months of January to May, using long-lines set through holes cut in the sea ice. Ice platform conditions in Cumberland Sound, are unstable, however, leading to variable success from year to year.

The winter fishery in Pangnirtung employs approximately 50 to 60 people. Of these, approximately 20 are active producers who each employ one additional assistant. The fishermen travel to two preferred fishing locations. The nearest—and best—spot is an eight hour drive by snow machine. Fishermen will stay out for two (up to a maximum of three) days at a time. The 'highliners' come back with 1,000 lbs per trip, while others produce 200 to 300 lbs.

Gear to support the winter fishery is stocked by Pangnirtung Fisheries and sold to the fishermen. The plant will typically sell \$40,000 to \$50,000 worth of this equipment. Fishermen have recently earned \$1.23 per pound for turbot delivered to the plant. This is equivalent to \$2,700 per tonne. A total of \$550,000 was paid for fish from the 2003 winter fishery catch.

Maintaining high quality is critical to ensuring a product the plant will purchase. Fish are put into containers filled with sea water, then protected with tarps. These containers are transported by 'komatiq' to the Pangnirtung Fisheries plant where they are inspected and graded. In this way, the fishermen learn on-the-spot about the quality requirements of the plant.

In 2002, exploratory fishing was conducted in the summer in open water but was not successful due to difficulties in locating fish stocks.²² DFO has undertaken some catch-and-release research in order to gather data that may demonstrate the Cumberland Sound turbot stock is distinct from the main stocks of NAFO Divisions 0 to 3. This would enable DFO to manage these stocks outside the NAFO system, just as Greenland manages its 1A inshore stocks independently.

²¹ Burke Consulting, 2003 report.

²² Northwest Atlantic Fisheries Organization, Scientific Council Meeting, June 2003, Canadian Research Report for 2002, Serial No. N-44833.

Fishing Nunavut's adjacent off-shore turbot

As with the majority of the company quota, Nunavut's offshore turbot quota is sold to outside foreign and Canadian fishing interests in return for royalty payments and negotiated crew positions on the fishing vessels. Qikiqtarjuaq Corporation and the three HTOs outside Pangnirtung broker their 0B quota separately. Quota allocated to the Pangnirtung HTO is generally allocated to inshore winter fishermen. Cumberland Sound Fisheries uses its quota to support the operations of the Pangnirtung Fisheries processing plant.

The 750 t Cumberland Sound Fisheries 0B allocation, minus whatever amount has been deducted for the winter turbot fishery, is fished by Davis Strait Fisheries Ltd. The deal between CSF and this company includes an agreement to land about a third of the catch at the Pangnirtung Fisheries plant. CSF purchases this fish from Davis Strait using the royalty revenues raised from the sale of quota to the company. The result is that the Pangnirtung Fisheries plant is able to access its off-shore turbot at essentially no cost—a factor that is currently critical to the plant's viability.

The 4,000 t quota (plus the 400 t temporary 2003 allocation) held in 0A by the Baffin Fisheries Coalition is similarly brokered to Canadian and foreign fishing vessels in return for royalty and crew positions. This quota is fished by both trawlers and long-liners. To date, most of the long-lining is carried out by foreign vessels. There is considerable preference expressed by BFC members to maximize the use of long-lining—fewer small turbot are captured this way and there is a belief that this technique is less damaging to the sea-bottom than is trawling.

Efforts to increase the 'Canadianisation' of the 0A fleet are being made, although an effort is also being made to maintain fishing of 0A using a combination of mobile and fixed gear. There are few Canadian long-line vessels of a size suited to this far northern region. Therefore, better royalty deals can be negotiated with foreign vessels than with the scarce Canadian vessels. Nonetheless, DFO policy places considerable pressure on BFC to use Canadian vessels, rather than accessing the more readily available foreign vessel fleet. BFC has responded—the catch by Canadian vessels has increased from under one-third in 2001 to nearly one-half in 2002.

While all vessels in 2001 used trawls, in 2002, two Canadian trawlers and one long-liner was involved in 0A, while two foreign trawlers and four long-liners participated. Turbot caught by the large factory trawlers and long-line vessels is typically processed ('J-cut'), graded, packed and frozen at sea. This product is ready to sell to processing plants and to brokers.

Processing turbot from Nunavut

The only on-shore processing of turbot in Nunavut is carried out in Pangnirtung. Prior to 1992, a small fish plant was operated in Pangnirtung by Cumberland Sound Fisheries Ltd. When the plant ran into financial problems, the territorial development corporation stepped in, purchased a controlling interest and built a new plant. The new company was named Pangnirtung Fisheries Ltd., and the plant was completed in 1994. A second, privately-owned plant, Imavik Fisheries Ltd., was also active in the community, until it burned down in 1996.²³

Initially, the Pangnirtung fish plant processed winter turbot. The 1993 winter turbot fishery, for example, landed 400 t — a level not subsequently achieved. At this time, the plant operated during a 3 to 4 month period around the winter catch.

However, as ice conditions led to reduced inshore catch, the plant began to seek a share of the turbot being fished in the offshore 0B area. In 1996 a 500 t allocation was provided to,

²³ This historical context is derived from RT & Associates, 2001. "Meat and Fish Processing in Nunavut: Issues, Factors and Opportunities for Future Development." Prepared for the Nunavut Development Corporation.

Cumberland Sound Fisheries Ltd.

The addition of summer landings led to an expanded 9 to 10 month processing season. An additional benefit of CSF's quota allocation was that the royalty revenues allowed the company to increase its ownership stake in Pangnirtung Fisheries up 49% of voting stock—the maximum private ownership allowed while still remaining eligible for territorial operating subsidies.

Today, CSF holds 750 t 0B turbot quota, and between 225 to 285 t of turbot is landed in Pangnirtung by Davis Strait Fisheries from CSF's 0B allocation. In addition, the Pangnirtung HTO, CSF, and Pangnirtung Fisheries are members of the BFC. As a result, turbot from 0A is also landed at Pangnirtung for the plant under an arrangement with this coalition.

The fish landed from the off-shore arrives frozen, headed and gutted, and packaged for easy storage pending further processing. Turbot is also purchased from the inshore winter turbot fishermen. This fish arrives whole and fresh—'super-chilled' in salt water. It is not packaged and must be handled individually.

Because the winter-caught turbot are delivered in super-chilled sea water they are not frozen when they reach the plant. For this reason, the plant is able to sell them as 'ice fillets'—fish that have been frozen only once, following processing, for transportation to southern markets. A premium is earned for this higher-quality product—typically between 5 and 7 cents/lb.

Sales from the Pangnirtung plant in 2003 were \$2.15 million. The plant's major cost factors are fish purchases (38% of sales), labour costs (24% of sales), and freight costs (14% of sales).²⁴ The recent acquisition of a filleting machine has dramatically increased processing capacity. The 2001 addition of an electronic grader has enabled more precise fillet weighing to be achieved, leading to higher prices for this product.

Under the Fish Freight Subsidy program, the GN pays half the cost of air freight from Pangnirtung to Iqaluit. The plant also gets a reduced air freight rate from Iqaluit to its broker in Montreal. As a majority-owned NDC enterprise, the plant receives an operating subsidy from the GN. In 2003, this subsidy totalled \$306,000.

The remainder of 0A and 0B turbot—3,500 to 4,000 t of Nunavut's 5,500 t quota—is landed at major ports in Atlantic Canada, such as Harbour Grace. This fish is sold to fish brokers by the fishing companies that purchased Nunavut quota. These brokers operate cold-storage container facilities at these ports.

Markets

The primary market for Nunavut fresh and frozen turbot fillets produced at the Pangnirtung Fisheries plant is the eastern United States (through the Boston area). An estimated 95% of the plant's product enters the US through a broker in Montreal. The remainder is sold within Canada.

A shift in product mix has occurred over the past few years in favour of fillets over headed and gutted. As previously noted, turbot from the winter inshore fishery is sold as a premium 'ice fillet' product.

Stable markets for frozen product also exist in continental Europe and Asia, where much of the turbot landed in Newfoundland enters these markets through four or five major brokers that deal with the Atlantic fishery. These brokers deal in major volumes. Some fish companies supply large quantities—over 50,000 t—and are able to get some leverage with the brokers enabling

²⁴ RT & Associates, 2001

negotiation. Generally, though, prices are fixed for suppliers dealing in small quantities such as Nunavut have available.

Summary Of Socio-Economic Contribution Of The Turbot Fishery

Inshore turbot fishermen

In 2003 a total of 74 fishermen supplied turbot and char to the Pangnirtung Fish Plant, for a total payment of \$549,150. In 2002, 65 fishermen earned a total of \$288,949.

There are 20 active ice fishers, who produce most of the turbot. They brought in a total of some 250 t of turbot in 2003, for which the plant paid approximately \$2.70/kg. The active fishers are able to gross, on average, approximately \$30,000 to \$40,000 during the season. From this they need to pay their assistants and equipment and operating costs.

Offshore turbot fishery

Between 1994 and 2002—the period for which the 0B TAC has been set at 5,500 t, an average annual catch of 5,114 t turbot has been caught each year.²⁵ The 2003 catch from 0A was approximately 4,100 t. The total catch from Nunavut's adjacent waters is therefore around 9,000 t/y. This quantity will yield some 6,300 t of J-cut product, ready to sell at Newfoundland ports.

Recent prices for 'J-cut' turbot at Newfoundland ports are in the range of \$4,000 to \$5,000/t. Using a price of \$4,500/t, Nunavut-adjacent turbot catch has a landed value of \$28.3 million per year. The recent catch of Nunavut-held quota is around 5,000 t/y raw fish, equivalent to 3,500 t J-cut. This quantity has a landed value in Newfoundland of some \$15.75 million.²⁶ From the landed value, vessel owners pay crew shares, operating costs, brokers transport fees, DFO catch levies and so on.

However, Nunavut interests do not currently fish their allocation. Rather, their participation in the direct economic benefits of this quota is limited to royalty payments. These are typically in the range of 12 to 15% of the landed value of the fish—around \$1.8 to \$2.3 million per year, under current market conditions. The Burke report indicates royalty revenues of \$1.86 million going to Nunavut interests. Thus, Nunavut is gaining approximately 12% of the landed value of the quota they have been allocated, and about 6% of the current landed value of Nunavut's adjacent turbot stocks.

In addition to receiving royalty revenues, Nunavut also gains some wages/crew shares from its adjacent stocks. The Burke report²⁷ estimates that crew wages/shares of \$1.7 million are paid to Nunavut residents working on turbot vessels fishing Nunavut quota. Prior to active fishing of 0A quota, an estimated 20 Inuit men, between the age of 20 and 45 were employed on the off-shore turbot vessels, earning average incomes of \$17,500, for a total of \$350,000.²⁸

²⁵ Derived from DFO historical catch data presented in the Burke 2003 report.

²⁶ A landed value of \$23.7 million for 0A and 0B turbot, and \$13.7 million for Nunavut's share, was estimated by Burke, 2003, based on a price of \$2,500 per tonne of raw fish (equivalent to approximately \$3,570 for J-cut). Recent turbot prices have improved.

²⁷ See Burke, 2003, Table 12.

²⁸ Jacques Whitford, 2002 report.

Combined with royalty revenues, Nunavut is capturing approximately \$3.6 million in direct economic impact from its adjacent turbot stocks. This is just over 12% of the direct economic impact this fish contributes to the Canadian economy.²⁹

Processing

The Pangnirtung Fisheries plant operates with 30 to 40 full-time plant workers. Absences and turn-over, however, mean that more individuals are actually employed over the course of the plant's operating season. In 2002, for example, a total of 86 individuals received some employment income from the plant. In that year, a total of nearly \$400,000 was paid to plant workers. Most of the plant workers (approximately three-quarters) are women between the age of 35 and 50 years old.³⁰

In addition to these workers' wages are salaries to administration and managers, and honoraria to board members. In the plant's 2002/03 fiscal year, a total of \$800,000 was paid in wages, salaries, and honoraria.

NORTHERN AND STRIPED SHRIMP

Background

Northern or pink shrimp (*Pandalus borealis*) is found in the Northwest Atlantic from Davis Strait, south to the Gulf of Maine. Populations in the northern part of the range exhibit slower rates of growth and maturation, but increased longevity results in larger maximum size. They are prey for many species including Atlantic cod, Greenland halibut and harp seals.

Striped shrimp (*Pandalus montagui*) is also available in Hudson Strait, Ungava Bay and west of Resolution Island areas but is being harvested at a much more limited level.

The commercial fishery for northern shrimp began in 1978 with market demand being relatively weak until 1986. Since then, the shrimp industry in Canada has grown tremendously. Annual catches increased thereafter until 2000 (100,500t being the highest annual yield).

But it would appear that the industry has been going through some significant growing pains on several fronts including harvesting, handling and processing. There is overcapacity on the harvesting side and issues of quality control on the processing side. Prices are currently much lower than levels in the late 1990s resulting in a drop in annual catches since 2001. Market prices for shrimp are influenced by several factors including the global supply and demand for cold-water and warm-water shrimp and shrimp substitutes, and exchange rates—something which is now a concern given the rise in the Canadian dollar. The annual total allowable catch has yet to be met and inshore operations were shut down temporarily in 2002 and again in 2003 in the Gulf of St. Lawrence. The recent poor performance has led the Government of Newfoundland and Labrador to conduct several studies on the industry.

A key factor affecting future demand for northern shrimp will be if market differentiation in the United States occurs between warm and cold-water shrimp. Currently, the growth in demand in the US for crab has not yet transcended to cold-water shrimp. Shrimp returns will continue to be marginal until reductions in operating costs and increased market returns can be achieved.

²⁹ This assumes that the landed turbot is directly trans-shipped to customers outside of Canada. However, further processing in Newfoundland plants would increase the direct impact to the Canadian economy, and lower Nunavut's share of this value.

³⁰ Jacques Whitford 2002 report.

Shrimp Fisheries Management

The resource

There are seven Shrimp Fishing Areas (SFAs) in Canadian waters in the Northwest Atlantic, beginning with Baffin Bay (SFA0) and ending on eastern Newfoundland (SFA 7). Nunavut is adjacent to areas SFA 0, 1, 2 and 3. 80 per cent of the total catch in recent years has come from SFAs 2, 4, 5, and 6.

The offshore shrimp fishery operates year round beginning in SFAs 5 and 6 (Mid-Labrador and Newfoundland), moving north as ice conditions permit. Nunavut adjacent waters are fished during mid-summer. This year round fishing pattern is essential to maintain a financially viable operation and to provide a continuous supply of shrimp to the fiercely competitive international market.

The SFA 0 TAC in Baffin Bay is a preemptory one only, as this area presents formidable ice and weather conditions and only fished in an exploratory manner.

Shrimp Management Planning — Setting and Allocating TAC

SFA 1 (Davis Strait) is a joint Canada-Greenland stock, the management of which is the subject of annual bilateral meetings between the two countries. The Scientific Council of NAFO completes annual assessments of this shrimp stock. The long-term sharing formula for this offshore stock between Canada and Greenland is 17% and 83% respectively. SFA 1 has not performed well in recent years and unable to reach its full TAC (38 per cent of TAC from 1994-2001). But in 2002, there was an increase in catch rates.

Part of SFA 2 is also considered exploratory. Ice conditions and shifts in water masses make this area difficult to fish. The SFA 2 exploratory TAC established in 1999 is developing slowly due principally to the fact that shrimp concentrations are elusive.

In 1997, 500t of the 3,800t catch limit was allocated to Nunavut, to be fished inside the Nunavut Settlement Areas by one or more of the 17 traditional offshore licence holders with the permission of the Nunavut Wildlife Management Board. Between 1997 and 2001, catches were maintained at a high level ranging from 2,800t to 3,700t. During 2002, an additional 2,000t in SFA 2 and 500t in SFA 3 were allocated to the NWMB to be fished completely inside the NSA.

The harvesting of striped shrimp used to take place exclusively in the Ungava Bay area. However, in more recent years, striped shrimp has been harvested in the Hudson Strait and east of Resolution Island. There is no fishery independent data so it is uncertain as to the potential available for striped shrimp. However, it has been determined that the striped shrimp in these areas are all part of the same stock. In addition, the average female carapace length has decreased thus reducing the reproductive potential of individual shrimp.

There are 17 offshore northern shrimp licences in Canada's northwest Atlantic waters. The Northern Coalition, representing Aboriginal, regional and cooperative based groups, holds several of the licences as follows:

- Qikiqtaaluk Corporation – 1 licence;
- Makivik Corporation – 1 licence;
- Unaaq Fisheries (Kuujuuaq) – 1 licence;
- Labrador Inuit Development Corporation – no licence but holds a joint-venture offshore licence with National Sea Products Limited;
- Torngat Fish Producers Coop Society Ltd. – 1 licence; and

- Labrador Fishermen’s Union Shrimp Company Ltd. - 2 licences.³¹

Nunavut currently holds 26 per cent of the quotas adjacent to Nunavut for shrimp.

Management of the Shrimp Fishery

DFO’s Long-Term Objectives for the Northern Shrimp Fishery

- To maintain effective resource conservation, while providing for orderly long-term development of the fishery.
- To provide fair access to and equitable sharing of the northern shrimp resource with particular emphasis on the needs of the people and communities most adjacent to the resource, without any permanent increase in harvesting capacity.
- To ensure that the fishery provides the maximum benefits for Canadians.
- To promote the continued development of a commercially viable and self-sustaining fishery.
- To continue to promote, at NAFO, a management scheme for the Flemish Cap shrimp fishery which is effective at controlling fishing effort and which would result in a sustainable fishery for the future.
- To continue to promote, with Greenland, a management scheme for NAFO Division 0A and Subarea 1 shrimp.

Source: Department of Fisheries and Oceans. *Integrated Fisheries*

Currently, the Iqaluit office of DFO has no involvement in management of the shrimp fishery. The NWMB is responsible for allocating the current Nunavut quota of *P. montagui* that is all designated to be fished with the NSA of SFA 2, 3 and 4.

DFO has recently developed a new Integrated Fisheries Management Plan that includes the Nunavut Settlement Area and the Shrimp Fishing Areas within Nunavut’s adjacent waters (SFAs 0, 1, 2, and 3). The department recognizes that Nunavut currently has access to a minor share—25% in 2002—of the northern shrimp quota in its adjacent waters. Therefore, no additional access will be granted to non-Nunavut interests in waters adjacent to Nunavut until the territory has achieved access to a major share of these resources subject to Aboriginal and treaty rights.

Other issues related to Nunavut’s share or allocation of fisheries resources adjacent to the Territory will be addressed through other processes. Fulfillment of this recommendation will not impinge on land claims, nor will it affect the current status of other participants in the northern shrimp fishery.

Increased access to the resource for Aboriginal people was a priority for DFO in 2003, resulting in temporary allocations to the Innu, the Labrador Inuit Association, the Labrador Metis Nation and the Conne River Micmac.

Scientific advice and assessments are the basis for the determination of TACs in the northern shrimp fishing areas. Available research suggests little is known about shrimp concentrations in Nunavut adjacent areas. Allocations of shrimp in SFA 0 have never been fished. Industry continues to be critical of the lack of science being conducted in this fishery, particularly in the north. As such, industry tabled three proposals (CAPP, Northern Coalition and Nunavut) in 2002 to create a research quota that would fund science through the purchase of quota by industry. These proposals were rejected by DFO in favour of an allocation to the 17 license-holders

³¹ This section courtesy of DFO, Integrated Fisheries Management Plan

designed to help fund scientific research. This included 1,125 t in SFA 4 and 2,500 t in SFA 5. Nunavut has protested this approach to carrying out science in its adjacent waters, as this may later lead to the existing license-holder claiming entrenched rights to future allocations based on their 'development' efforts—efforts funded by this give-away of quota.

The TACs established for the period 2001-2003 are outlined in 0. The resource in each fishing area is monitored and assessed on an annual basis and new advice is provided if a significant change is detected. The TACs in Table 3 may be modified as required during the term of the management plan.

DFO regarding *P. montagui*: The *P. montagui* fishery, which until recently was contained within SFA 3 (Hudson Strait/Ungava Bay), is changing. A quota of 1,200 tonnes was set for SFA 3 in 1992. In 1995, the fishery shifted well to the east, primarily into Division 0B (SFA 2), where catches were often mixed with pink shrimp (*P. borealis*). A review conducted in the spring of 1996 concluded that the 1995 fishery exploited the same *P. montagui* population previously fished within SFA 3 and that the resource might best be protected by applying the TAC for *P. montagui* to SFAs 2, 3 and 4 west of 63°00'W. During 1996, a 3,800t catch limit was established for the larger management area. In 1997, 500t of the 3,800t catch limit was allocated to Nunavut, which can be fished inside the NSA by one or more of the 17 traditional offshore licence holders with the permission of the NWMB. Between 1997 and 2001, catches were maintained at a high level ranging from 2,800t to 3,700t. During 2002, an additional 2,000t in SFA 2 and 500t in SFA 3 were allocated to the NWMB to be fished completely inside the NSA.

**TOTAL ALLOWABLE CATCH (TAC) FOR NORTHERN SHRIMP STOCKS
2001-2003**

Shrimp Fishing Area	Description of Area	TAC (t)			
		1996 TAC Threshold	2001	2002	2003
0	Davis Strait (NAFO Division 0A-west of 60° 30'W) exploratory	500	500	500	500
1	Davis Strait (NAFO Division 0A-east of 60° 30'W)	8,500	12,040	12,040	14,167
2	Davis Strait (NAFO Division 0B) (<i>P. borealis</i>) fished in SFA 2 and those portions of SFAs 3 & 4 north of 60°30N and west of 63°00W	3,500	5,250	5,250	5,250
2	Davis Strait (NAFO Division 0B) exploratory <i>P. borealis</i> fished east of 63°00W		3,500	3,500	3,500
2	Davis Strait (NAFO Division 0B) (<i>P. montagui</i> exploratory) fished inside the NSA			2,000	2,000
3	Eastern Hudson Strait and Ungava Bay (<i>P. montagui</i>) fished west of 63°00W	1,200	3,800	3,800	3,800
3	Eastern Hudson Strait and Ungava Bay (<i>P. montagui</i> exploratory) fished inside the NSA			500	500
4	NAFO Division 2G (1,853t of the offshore quota and 206t of the inshore quota is fished south of 60°00N)	5,200	8,320	8,320	10,320
5	Hopedale plus Cartwright Channels	7,650	15,300	15,300	23,300
6	Hawke Channel plus NAFO Division 3K	11,050	61,632	61,632	77,932
7	NAFO Division 3L inside the 200 mile limit		5,000	5,000	10,833
TOTAL		37,600	115,342	117,842	152,102

Source: DFO Shrimp Management Plan

There is a Northern Shrimp Advisory Committee (NSAC) comprised of representatives of the industry (offshore licence holders and inshore temporary new entrants), the Department of

Fisheries and Oceans, the Nunavut Wildlife Management Board, and provincial and territorial governments.

Nunavut's Participation In Shrimp Fishery

Shrimp harvesting – the offshore fleet

Twelve to thirteen offshore trawlers currently harvest the Canadian quota held by the 17 offshore licence-holders. These vessels operate out of ports in Newfoundland and Nova Scotia. Some of the vessel-owners—Ocean Prawns, Clearwater, Davis Strait and Farocan—do not hold a license. Rather, they fish the quotas of license holders such as Qikiqtaaluk Corporation, Unaaq Fisheries, Labrador Fishermen's Union, Pikalujak Fisheries (Labrador) and others, who do not own vessels, in return for royalty payments. Other license holders, such as FPI Ltd and Newfoundland Resources Ltd, harvest their quota with their own vessels. Mersey Seafoods owns a vessel and fishes both its own shrimp license and that of the Torngat Fish Producers Co-op.

The offshore fleet double-crews their vessels with average crews of 17 to 28 for a total of approximately 600 crew for the entire fleet.

All vessels are purpose-built for shrimp trawling and processing although some have the capacity to process and freeze groundfish as well. The ships range in length from 49m to 75m, with hold capacities ranging from 400 to 1,960m³. The vessels operate out of Newfoundland and Nova Scotia ports, with occasional landings in Greenland when fishing in far northern waters (SFA 1).

Tavel (2001) notes that trawlers do unload in Greenland when fishing in the far north. This practice, however, is becoming less frequent than in the past because of the very high cost of landing there. For example, when fishing in the far north, one of the larger trawlers usually steams 5 days one way to unload at a southern Canadian port, compared to using the alternative one day steam to Nuuk, Greenland. In other words, 8 days additional steaming while consuming 10,000 liters of fuel per day is sometimes considered more advantageous than landing in Greenland. This flexibility, however, is more readily available to those with newer, larger vessels.

Good port infrastructure such as adequate wharves, unloading facilities, refrigerated warehouses, and ship supplies, are essential for the efficient operation of these shrimp trawlers. For example, the larger and newer vessels are unloaded at a rate of over 35 tons per hour, and the “turn-around” time in port is usually 24-36 hrs. This includes loading fuel, supplies such as food and packaging material, and changing crews. Some vessels keep their industrial shrimp separated in the hold, so it would be easier to unload separately in a port such as Iqaluit. Others state that their industrial shrimp is spread throughout the hold, which would make it difficult to unload separately.

Fishing trips generally last until the hold is full, a period ranging from 20-75 days, depending on catch rates and hold capacity. The larger, more modern vessels may make six to eight trips per year, averaging 270-320 days, while the smaller offshore vessels may make eight to ten trips per year, averaging 200-250 days. Small meshed otter trawls are used which are fitted with sorting grates to avoid by-catch of finfish. The offshore industry funds 100 per cent observer coverage to monitor activity and conduct scientific sampling of the catches.³²

The offshore fleet usually focuses on frozen at sea, shell-on product. This product was historically marketed in Japan (raw-frozen for sushi and consumer markets) and Western Europe (cooked and frozen). However, due to a 12 per cent tariff on whole cooked shrimp by the EU and a repositioning of shrimp to a lower priced commodity, more of the market has shifted to lesser developed countries such as China and Russia.

³² Fisheries and Oceans Canada, Integrated Fisheries Management Plan, 2003. www.dfo-mpo.gc.ca/communic/fish_man/ifmpns-pgipcn/index_e.htm [February 2, 2004]

Shrimp harvesting – the inshore fleet

In addition to the offshore shrimp fishery, there has been a significant nearshore shrimp fishery in the Gulf of St. Lawrence. More recently, as shrimp TACs have been increased rapidly, DFO has provided over 300 new licenses and Temporary Inshore Allocations to fishers in Newfoundland and Labrador.

The inshore shrimp fishing season is greatly affected by ice conditions. The inshore fishery is conducted on a competitive basis with trip limits and harvesting caps determined and enforced by the industry itself.

Some experimental work with shrimp pots has been initiated in Cumberland Sound during 2002 and 2003. Shrimp pot trials have been carried out during the 1990s in nearshore waters of Newfoundland and Labrador. These did not lead to a viable fishery, however.

Processing and Markets

Processing of shrimp caught by vessels operated by the 17 offshore license-holders is carried out largely on-board these factory freezer trawlers. The catch is processed and frozen as either cooked or raw product. Markets are in Japan and Western Europe, although new markets for small shrimp are developing in Russia and China.

The inshore fleet focuses on shell-off cold water shrimp, which is primarily processed on land and shipped to the American and European markets. Exports of shrimp are subject to tariffs—these are lower for shrimp that requires further processing in Europe. Thus, a high percentage of EU imports of shrimp from Canada are destined for processing in European, not Canadian processing plants.

There are 12 inshore shrimp plants in Newfoundland, employing a core workforce of approximately 1,350 workers. One shrimp peeling plant is located in Labrador. The smallest shrimp (industrial shrimp) are usually frozen and exported to peeling plants in Scandinavia. However, more product is now going to peeling plants in Canada. Plants have been in operation in Quebec and New Brunswick with new plants in Newfoundland and Labrador. A recent report of the Newfoundland Inshore Shrimp Panel identified key concerns in the inshore shrimp sector. These include seasonality (due to ice conditions, overcapacity in the inshore fleet, the number and optimum size of enterprises, as well as the EU tariff.

The introduction of temporary new entrants to the northern shrimp fishery in 1997 required the development of some different management measures for this mainly inshore component. Management boards were set up to oversee the orderly development of this fishery. As the inshore fishery is a wetfish fishery, i.e., no processing at sea, the processing and marketing considerations are different, and concerns about the quality of landed product need to be addressed. Also, the Northern Shrimp Advisory Committee was expanded to include representatives of the temporary allocation holders.

In 2001 a market glut in the inshore fishery resulted in a suspension of effort from July-September. This resulted in the formation of the Structural Study of the Inshore Shrimp Fishery, more commonly referred to as the Review of the Cooked and Peeled Shrimp Industry (Vardy Report). This report was commissioned by the Province of Newfoundland and Labrador in 2001. The panel released its report in April of 2002 highlighting problems with seasonality, overcapacity, the number and optimum size of enterprises involved in the fishery and the current EU tariff on cooked and peeled shrimp.

Market conditions continued to beleague the inshore fishery in 2002 with another suspension of effort occurring from August 3 – August 31.

Tavel (2001) notes that *P. montagui* is worth less in the market place since it is harder to peel, yields are less, and the peeled product is not as pink as that from *P. borealis*. In general, shrimp vessels view *P. montagui* as a bycatch and attempt to minimize such catches. For example, when cooking these two types of shrimp together, it is common practice to label the whole product as *P. montagui* if it consists of 10% or more of this species. It is difficult to obtain precise values of how much less *P. montagui* is worth in the marketplace, however it could be in the range of 10-15%.

The traditional offshore fleet focuses on the frozen at sea, shell-on product, which was historically marketed in Japan and Western Europe. The largest and intermediate-sized shrimp were packed raw-frozen for the Japanese sushi, sashimi and consumer markets, or were cooked and frozen for the European/Russian markets.

A major shift in the size composition of shrimp has had a direct affect on markets over the last couple of years. The repositioning of shrimp in the marketplace from a luxury item to a premium product and in recent years, to a lower priced commodity product for lesser developed countries, has moved the market more to Russia and China, where significant quantities of cooked at sea small shrimp are purchased for a low price. The tariff of 12% on whole cooked shrimp into the European Union (EU) has had a dampening effect on that market.

Summary Of Socio-Economic Contribution Of The Shrimp Fishery

The combined product value for the northern shrimp fishery in 2002 was estimated to be approximately \$250 million. This figure is up from 2001 (\$230 million) but down from 1999 and 2000 levels of \$280 million (see Table 3).

Table 3: Catches and Landed Values for Northern Shrimp 1991-2002

Year	Catch (mt)	Product Value (millions \$)	Price (\$/mt)
1991	19,172	\$75.7	\$3,948
1992	24,189	\$85.9	\$3,551
1993	25,797	\$85.1	\$3,299
1994	28,985	\$123.2	\$4,250
1995	30,050	\$138.2	\$4,599
1996	31,340	\$134.8	\$4,301
1997	48,310	\$160.0	\$3,312
1998	78,867	\$250.0	\$3,170
1999	85,331	\$280.0	\$3,281
2000	100,591	\$280.0	\$2,784
2001	95,457	\$230.0	\$2,409
2002	102,054	\$250.0	\$2,450

Source: DFO, Integrated Fisheries Management Plan: Northern Shrimp

ARCTIC CHAR FISHERY

Background

Arctic Char (*Salvelinus alpinus*) typically migrate from fresh water to the sea in the spring. Mature fish later return in the fall to their fresh water habitat to spawn. While most char exhibit this 'anadromous' behaviour, some populations are trapped in freshwater bodies. These are referred to as 'landlocked' populations.

The isolation of char populations has led to considerable genetic diversity between char from different river systems. This leads to variation in flesh characteristics and in colour. These genetic differences are significant in marketing and in the development of aquaculture stocks.

Char are fished throughout Nunavut and are an important component of the Inuit diet. A recent study of nutrition and food security in Kugaaruk, for example, found that Arctic char was the most important country food consumed during the October/November 2001 study period.³³

Char is also fished commercially, with commercial and experimental quota assigned to lakes and rivers in each of Nunavut's three regions. Commercial char fishing has a 30-year history. Fishing activity targets char running in the rivers during the spring and fall runs, as well as char that are at sea during the summer.

Char Fishery Management

As with other resources within the Nunavut Settlement Area, char management is the responsibility of the NWMB. The NWMB sets the basic needs level for char and identifies the level of 'surplus' char which can be allocated to other uses, according to the priority list set out in the NLCA, Article 5.6.31.

Commercial and experimental quotas are established for individual rivers and lakes across Nunavut, and are set out in Schedule V of the Northwest Territories Fishery Regulations, under the federal Fisheries Act. These quotas were established by DFO around 1987. Since that time, little scientific effort has been carried out to estimate char population levels. New population surveys are required in order to determine whether existing quotas realistically reflect the available char resource.³⁴

Management of access to commercial quotas and allocation of fish quantities to individual commercial char fishermen is carried out by the local HTOs within whose jurisdiction the particular water body lies.

As directed in the NLCA, the priority use of char is for Inuit domestic use. In order to determine the level of char available for commercial harvest, the NWMB has included an assessment of Inuit char harvests in the Nunavut Harvest Study, in order to identify a 'basic needs' level for this species.

³³ INAC, Dialogos Educational Consultants Inc. 2003. Nutrition and Food Security in Kugaaruk, Nunavut: Baseline Survey for the Food Mail Pilot Project.

³⁴ Consilium Nunavut, 2002. KFL Market Study.

Nunavut's Char Fishery

Domestic economy harvest

The NWMB's Harvest Study results are scheduled to be released in 2004. Pending this report, a very rough estimate of 400,000 kg char is caught per year for domestic purposes.³⁵ This compares with commercial harvests of between 80,000 and 100,000 kg per year.

Thus—and very roughly—an estimated 80% of Nunavut's char fishery is utilised in the domestic economy, with 20% of the harvest going to the commercial fishery.

Apart from the Harvest Study, there has been little work done to consider quality, conservation, maximum value or other issues related to the domestic economy char fishery.

Commercial harvesting

The history of Kitikmeot Foods Ltd provides a good history of the development of the commercial char fishery in Nunavut.³⁶ Commercial char harvesting began as a territorial government pilot economic development project in 1970. At that time, centralized marketing was carried out through the Winnipeg-based Freshwater Fish Marketing Board (FFMB).

The char plant in Cambridge Bay was profitable and was operated between 1974 and 1990 by the local co-op (Ikaluktutiak), employing 70 people on a seasonal basis. Whole dressed char was sent to Winnipeg for further processing. When the FFMB stopped selling the plant's fish, the co-op ran into difficulty, and the territorial government purchased majority ownership, bringing it under the NWT Development Corporation. By 1995, the local meat processing plant was combined with the char plant to form Kitikmeot Foods Ltd. Today, the Ikaluktutiak Co-op continues to hold a 2% share of KFL.

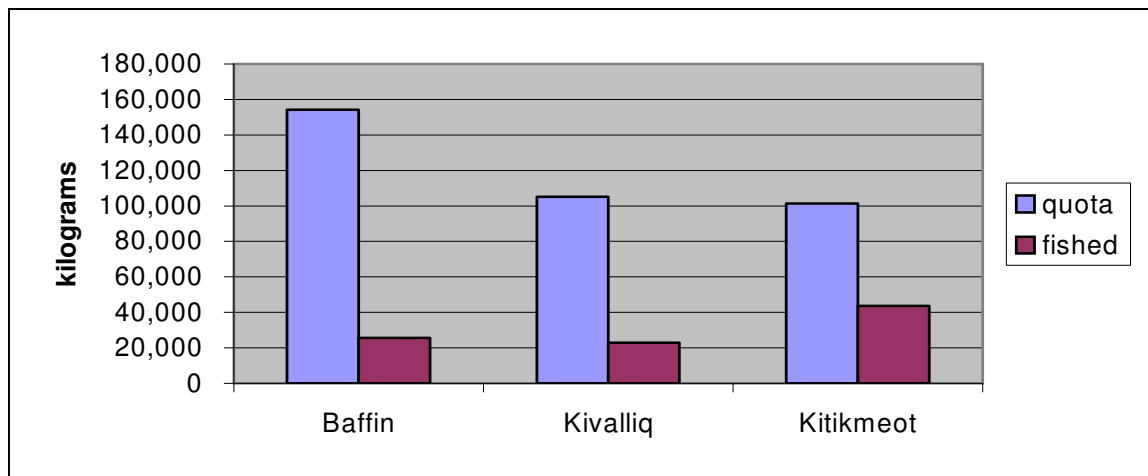
Commercial char is harvested by independently operating fishermen either by gillnets or by weirs. Harvesting technology is closely connected to fish quality and the ability to achieve high value, niche marketing objectives. Of particular relevance is the use of weirs or other technologies such as 'fish wheels' rather than nets. These technologies capture fish with much less damage than does net fishing. Currently, successful use of weirs has been demonstrated in the Kitikmeot region and efforts are being made to increase their use. No testing of fish wheels has been done to date.

Figure 1:, below, shows the total commercial quota available in each region, along with the commercial catch, based on 1996/97 DFO data. A total of 360,700 kg of char is available for commercial purposes. This quota is dispersed across some 84 water bodies and is not all accessible for the purposes of commercial processing. In 1996/97, char for commercial purposes was taken from 42 of these water bodies. The total commercial catch in that year was 110,690 kg. 92,188 kg of this was from waters having commercial quota, with an additional 18,502 kg from waters with experimental quota.³⁷

³⁵ This is based on roughly 900,000 fish being caught over five years. An arbitrary estimate of five pounds—or 2.27 kg—per fish is assigned as an average weight in order to provide a value that can be compared to the commercial harvest estimates.

³⁶ This description is derived from the Consilium Nunavut 2002 KFL Market Study.

³⁷ Data from DFO's 1999. "Annual Summary of Fish and Marine Mammal Harvest Data for the Northwest Territories. Volume 9: 1996-1997."

Figure 1: 1996/97 Commercial Char—Quota and Catch

Source: DFO. 1999. "Annual Summary of Fish and Marine Mammal Harvest Data for the Northwest Territories. Volume 9: 1996-1997."

A major factor in the commercial char sector is the cost of transportation of the fish from widely dispersed water bodies to the plants. Costs of transportation between communities are partly offset by the Fish Freight Subsidy, which reimburses 50% of the cost of transportation. A distance of 100 miles seems to be the limit for bringing fish from the water to a plant by chartered aircraft.

Use of commercial flights allows other plants such as Iqaluit Enterprises to source char from distant communities such as Arctic Bay and Pangnirtung.

Recent harvests in the Kitikmeot Region have increased to about 62% of the available quota in that region.³⁸ The Kitikmeot commercial catch is focussed on seven rivers within 100 miles of the Kitikmeot Foods processing plant in Cambridge Bay. There are an additional 18 rivers with available quota within this 100 mile 'viable' distance of the Kitikmeot plant, so the potential for expanded commercial char fishing is not currently limited by the availability of char.

Processing

There is an increased focus on value-added processing. KFL has increased its sales of smoked char products from 16% to 23% between 1989/99 and 2001/02, while sales of whole dressed fresh and frozen char decreased from 59% to 45% of total sales during the same period. Recently, the plant has begun to test a canned char product and a long shelf-life vacuum packed 'retort' package smoked char product.

Processing fish for export outside the territory is subject to strict food safety laws. Current standards are applied under the Fish Inspection Act, however the federal government is aligning Canadian standards to international standards. This will involve the application of Hazard Analysis Critical Control Points (HACCP) models which have become the international standard. While similar to the current food safety standards, the HACCP approach is more rigorous and places greater responsibility for food safety on individual processing plants. One consequence is that the requirements for meticulous record-keeping at the plant level are very high. The Canadian Food Inspection Agency will be working with northern stakeholders to develop HACCP models that are appropriate for northern processing conditions.

³⁸ According to a 2002 Marketing study prepared for the Nunavut Development Corporation by Consilium Nunavut.

The wide variation in char from location to location presents a challenge to the development of markets. Consumers expect consistent quality and a consistent looking product. As a result, there have been efforts made by the KFL plant to link char from specific rivers to specific products. Char from one river, for example, may be most suited for producing premium fillets, while another may be best for cold smoked product. Fish from a new ‘test river’ has been found to have a firmer and paler flesh. Char from this river was used to test the new ‘retort’ product—vacuum-packed, specially processed product that requires no refrigeration. This practice of ‘resource streaming’ also helps to create greater consistency within product lines.

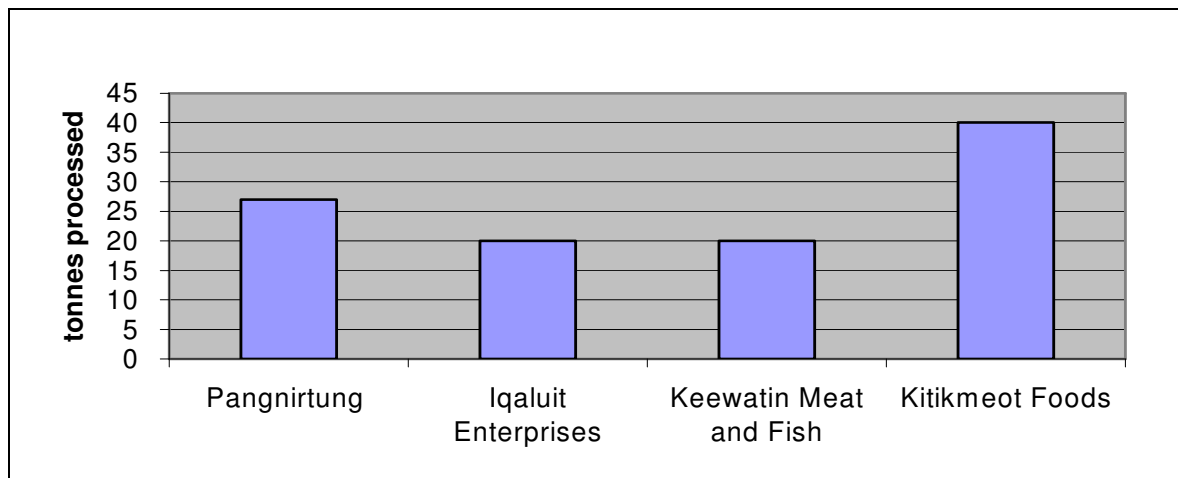
Figure 2: illustrates the relative importance of the various Nunavut plants in terms of char processing. Kitikmeot Foods Limited (KFL) processes the greatest quantity of char, at approximately 40,000 kg. Much of the char processed at the Iqaluit Enterprises plant is purchased from Pangnirtung Fisheries. The Rankin Inlet plant (Keewatin Meat and Fish) is purchased from Whale Cove.

Char is the major product of Iqaluit Enterprises, although that plant also processes caribou and sells turbot, muktaaq, clams, shrimp and various other country foods. They produce cold-smoked char as well as a traditional air-dried product called ‘pipsi’.

Char is also the major product of KFL, which produces a variety of fresh, frozen, and hot and cold-smoked products. They also produce a char jerky and are experimenting with canned char and a retort-packaged product that does not require refrigeration. KFL also processes a line of muskox product which accounts for approximately one-third of the plants total sales.

By contrast, char is a minor product of the Pangnirtung plant, which produces a much larger quantity of turbot. Char also accounts for a minority of the sales of the Rankin plant.

Figure 2: Nunavut Char Processors (2001)



Source: Consilium and Brubacher, 2001. Based on 2001 interviews with plant managers.

Markets

In the market place, wild char competes with wild salmon and farmed salmon and char, unless specific processing and marketing strategies are used to differentiate the wild char product from these. Given the small volumes of wild char relative to these other products, along with the high production costs associated with bringing wild char to market, product differentiation and niche marketing are critical to developing a viable sector.

Current market structure involves sales within Nunavut, to the NWT, and to markets in southern Canada. The breakdown of these markets, along with the sub-market segments within each of these regions, is provided in the table below for KFL, based on data from the KFL market study.

In addition, some sales are made by other plants to specific clients in the US. Some of the Pangnirtung char is sold to Iqaluit Enterprises for subsequent processing and sale.

Table 4: Market Summary for Kitikmeot Foods Limited

Market	Sub-market	Characteristics
<i>Nunavut</i> (one-half of sales)	Hotel, restaurant, institutional (HRI)	<ul style="list-style-type: none"> - buy frozen char (whole, fillets, smoked) - mostly institutional - account for about one-third of Nunavut sales
	Grocery	<ul style="list-style-type: none"> - Co-ops, Northern, other grocery stores, HTAs - Account for between one-third and one-half of Nunavut sales
	Gift and souvenir	<ul style="list-style-type: none"> - No specialty outlet customers
	Over-the-counter from the plants	<ul style="list-style-type: none"> - KFL sells its products over-the-counter, accounting for nearly one-fifth of total sales.
<i>Northwest Territories</i> (one-third of sales)	HRI	<ul style="list-style-type: none"> - Restaurants, catering to mines, hospitals, seniors, in-flight meal services etc. - >75% of NWT sales
	Grocery	<ul style="list-style-type: none"> - small, <20%
	Gift and souvenir	<ul style="list-style-type: none"> - very small segment.
	HRI	<ul style="list-style-type: none"> - very small segment
<i>Southern Canada</i> (one-fifth of sales)	Grocery	<ul style="list-style-type: none"> - strong market through sea-food distributors - accounts for almost all sales
	Gift and souvenir	<ul style="list-style-type: none"> - no sales to specialty outlet customers
		<ul style="list-style-type: none"> - no international sales by KFL

Source: Compiled from data presented in the KFL Market Study, 2002.

In order to develop new markets for char, customers demand a reliable supply from year to year, along with continuous supply throughout the year. Thus, if marketing efforts are to be made, care must be taken to ensure reliability and continuity of supply. The Consilium Nunavut study suggests that supply of fresh product will be a key building block for expansion of the overall niche market for wild char. They further note that, “currently the supply of fresh char cannot meet market demand because of logistics of supply, production and transportation.”

Summary of Socio-Economic Contribution

Contribution to the domestic economy

The major socio-economic contribution of char to the Nunavut economy is in the domestic sector of the mixed economy. Here, char provides a major contribution to the diet of many, if not most, Nunavummiut.

A very rough estimate of the value of char to the domestic economy can be made by considering the payments made to commercial fishermen per kilogram of char caught and applying this to the domestic catch of char. It was estimated earlier that some 400,000 kg per year of char are fished for individual household or domestic economy use, never entering the commercial segment of the char fishery. This char is then transported to individual households and further processed into product that can be consumed immediately or stored for future consumption.

The domestic economy char fishery contributes an estimated value of \$4.4 million to the Nunavut household economy based on a wholesale value of \$5 per pound. This is the import substitution value of char caught for household use—every pound of this fish will reduce leakage by an amount equivalent to the wholesale cost of a pound of similar food paid to southern suppliers by Nunavut's grocery retailers.

Contribution to the wage economy

Processing plants provide economic benefits to the commercial fishermen who fish the char, as well as to those plant workers who process the fish.

The 1996/97 commercial and experimental char harvest across Nunavut was 109,934 kg.³⁹ The amount received by char fishers (the 'landed value') totalled \$282,413. DFO records indicate that 279 commercial licenses were sold across Nunavut during this year, although the actual number of individuals fishing on these licenses may vary—some HTOs holding licenses may have several people actively fishing, while other individuals may access a license but not actively utilise it. No data is available to indicate the value of char fishing to actively engaged commercial fishers. An average of \$1,012 per commercial license can be derived by dividing the total landed value of char by the number of commercial licenses sold.⁴⁰

Considering individual plant data may provide a more accurate picture of the productivity of individual char fishers. The Kitikmeot Foods Ltd. plant reports that a total of 42,270 kg (93,000 lbs) was purchased from 25 fishers—or about 1,700 kg caught by each fisherman. The average earnings per fisherman was between \$4,500 and \$6,000. The plant in Rankin Inlet purchases its char from satellite plants in Whale Cove and Chesterfield Inlet. Some 40 individuals from those communities supply a total of 13,640 kg (30,000 lbs) of char—an average of 340 kg per fisherman. At a price of \$3.30 per kg (\$1.50 per pound), this would bring an average of \$1,100 earned by each fisherman.

³⁹ DFO. 1999. "Annual Summary of Fish and Marine Mammal Harvest Data for the Northwest Territories. Volume 9: 1996-1997." This figures includes fish caught on commercial quota (92,188 kg) as well as that from lakes having experimental quota (17,746 kg). The landed value is estimated by DFO based on averages prices. The 1996/97 data is the most recent data available from DFO. Previous year data is available in Volumes 1 to 8 of the "Annual Summary" reports. More recent data is not compiled but may become available through DFO Winnipeg. Contact Vera Williams 204-984-5436.

⁴⁰ This is a very rough estimate of average earnings from the char fishery, since the data do not specify how many licenses were issued for commercial char fishing. Of greater interest would be the distribution of earnings amongst char fishers. Unfortunately, no such data has been made available.

The Pangnirtung plant purchased 55,000 lbs of char from the 2001 summer char fishery. Data for char purchases by Iqaluit Enterprises plant were not available. Much of the char processed by Iqaluit Enterprises is purchased from the Pangnirtung plant, though some is bought directly from individual fishermen across the Baffin region.

NUNAVUT’S EMERGING FISHERIES

There are several emerging fisheries opportunities in Nunavut. These include clams and flounder. Others, such as scallops and crab may also warrant investigation.

Emerging Clam Fishery

- Currently a pilot project in Qikiqtarjuaq.
- Vancouver-based company is providing management and entrepreneurial capacity.
- Divers are independent operators, being paid for each kilogram they produce.
- Clam harvests are recorded and stored while samples are shipped south for food safety testing.
- The product is currently available in stores in Nunavut, selling for \$8.99 per 500g package.

Emerging Starry Flounder Fishery

- Test fishing carried out in Coronation Gulf, around Kugluktuk.
- Need a scientific survey to determine stocks.
- If commercial quantities, then business plan will be required.

The foundation for emerging fisheries begins with stock assessment. This requires initial test-fishing, followed by sufficient efforts to determine whether commercial quota can be assigned.

Pilot projects for emerging fisheries require management and entrepreneurial capacity. In addition to organising activities around stock assessment, efforts need to be made to mobilize harvesters, identify markets, address processing and food safety issues, maintain records of project outcomes, prepare proposals to generate funding and so forth. For many communities, this capacity is not readily available. In some cases outside expertise has to be brought in, and the costs of this must be recovered through pilot project funding.

Emerging fisheries may also require infrastructure—harbour facilities if vessels are required, processing capabilities, cold storage.

Appendix B: Nunavut's Fisheries Labour Force

NUNAVUT'S FISHERIES LABOUR FORCE

The individuals, organisations, and entrepreneurs that are involved in the fisheries are the most critical element to developing the fishery. 'People' will either make it happen or prevent it from happening. A more in-depth look at the various groups of people with interests in Nunavut's fisheries is therefore presented in this appendix. It should be noted that there has been no in-depth assessment of Nunavut's fisheries labour force. The following material is based on available information provided in various reports and from limited interviews with key respondents.

Individual Fishers and Owner-operator enterprises

Char fishers

Most Inuit households are involved in the char fishery from time to time, if not on a regular basis. The recent Kugaaruk Nutrition and Food Security report, prepared under DIAND's food mail program, identifies char as the most-eaten food in the 'meat, fish, poultry' category.

Individual fishers and owner-operator fishing also make up the largest stakeholder group in the Arctic char fishery. Here, a large number of individuals supply char to fish plants in the Kitikmeot, Kivalliq and Baffin regions. Most commercial char licenses are held by HTOs with individuals fishing on the HTO license. Some individuals do, however, hold their own char license and are able to sell the fish they catch directly.

Turbot fishermen

Individual 'owner-operators' are also active in the winter turbot fishery in Pangnirtung. In this fishery, individual ice-fishermen purchase the gear they need to participate in that fishery.

While the Pangnirtung ice fishery is the only commercial inshore turbot fishery currently developed, efforts have been made to train people to test the potential for turbot fishing in other regions of the East Baffin coast. Six fishermen were trained during the Spring, 2003, near Clyde River, for example.

Summary

Based on interviews with plant managers, the total number of commercial fishers in Nunavut is roughly estimated at 130 to 175 individuals. These are those people who earn some income by catching, landing and selling char, turbot and clams on a commercial basis. Most of these are char fishers who earn between \$1000 to \$6000 per season on average. Individual turbot fishermen gross an average of \$10,000 to \$40,000 per season—depending largely on how well the ice platform develops.

There has not been any formal organisation of fishermen. Their interests are either not promoted to decision-makers, or are promoted through other channels, including, perhaps, the HTOs.

Suggestions made by sources in the processing sector suggest that on-going efforts to enhance and maintain reliably high quality of landed fish might be of value. Gear-type (nets versus weirs) is of particular importance to fish quality.

In relation to this quality issue, it should also be noted that the ability of fishermen to supply their product to plants depends on long-distance transportation, often combining both land and air. Subsidies, as well as reliable scheduling and appropriate handling during transit are factors here.

Fish Plant Workers

Estimating the number of Nunavummiut involved in fish processing is hampered by lack of data reporting. A very rough estimate of 150 individuals is provided as a ball-park estimate for hourly workers. This number includes workers at the Cambridge Bay, Rankin Inlet, Whale Cove, and Pangnirtung NDC-owned plants, as well as at the privately owned plant in Iqaluit. These are not

full-time jobs, but rather indicate how many individuals have earned some income at one of these plants processing char or turbot.

Data provided for the Pangnirtung plant indicated that the plant operates with 30 to 40 full-time workers, but that 86 individuals earned nearly \$400,000 income from the plant in 2002. Employment is reduced to fewer than 10 people during the summer char processing season. An estimate of 16 people are involved at the KFL plant to clean char during July to September, with 8 people involved in further processing of the fish over the following six months. Approximately 10,000 hours of labour are purchased at the KFL plant at a wages between \$9 and \$15 per hour.

No information is available to indicate the amounts earned by these workers, although this data would be available by compiling information from T4 or ROE slips. A research project currently being carried out by Pauktutit looking at women workers at the Pangnirtung plant may provide a better profile of Nunavut's fish plant workers.

Frequent turn-over and low retention of plant workers is reported by plant managers to be a major challenge. One plant has indicated it may seek to hire "a couple consistent employees who know processing" from the south in order to provide a minimum level of reliability within the workforce. Another plant manager noted that turnover and recruitment problems have become less severe as he has identified a pool of workers to draw from.

Offshore Crew

Data on the number of individuals working on offshore vessels fishing Nunavut quota, how much they earn, and how many voyages they participate in are not available. This is surprising given the apparent importance being placed on accessing offshore harvest capacity in order to create more of these positions.

It is reported that challenges exist in filling the positions negotiated with vessel owners as part of the quota sale agreements. This is particularly the case in attempts to promote Inuit crew to higher-level positions. Recruitment for summer positions is reported to be particularly challenging.

For the purpose of estimating the stake that offshore crew have in the fishery, an industry standard of 25% of landed value being paid to crew has been used. This leads to an estimated total crew share for shrimp and turbot vessels in the neighbourhood of \$1 million being paid to Nunavummiut. This is based on an assumption that Inuit crew earn 10 to 15% of total crew shares and on current market values for turbot and shrimp.

Appendix C: Organisational And Entrepreneurial Landscape

ORGANISATIONS INVOLVED IN THE FISHERIES SECTOR

“The proliferation of development corporations in response to the government [federal] decentralization efforts, the natural desire of local communities to control their destiny, and the need to find ways of channelling money from land settlements into communities have been some of the most important changes in the financial infrastructure of the Arctic region in recent years.”⁴¹

Co-operatives

Although the co-ops are not currently heavily involved in fisheries activities in Nunavut, they have played a key role in the historical development of these fisheries.

Kiktoayak Eskimo Co-operative – Killineq Island/Port Burwell⁴²

One of the first two northern Aboriginal co-operatives was established by the federal government in Nunavut in 1958. The Kiktoayak Eskimo Co-operative was a fish plant set up on Killineq Island in the community of Port Burwell. Located in the southeast corner of Nunavut, just off the northern tip of Labrador, the community had hosted a Newfoundland trading company in the late 1890s, a Moravian mission, the Hudson Bay Company and, by the 1960s had been embraced within the territory of the NWT.

Fishing was begun in the Port Burwell area in 1951/52 when an experimental fishing station was established to take advantage of the rich stocks in the area. A new fish plant was built in 1968 and operated for the following decade. In 1978 the GNWT choose to shut down the community and close to 100 residents re-located.

Ikaluktutiak Co-operative – Cambridge Bay

The Ikaluktutiak Co-operative started out in the 1960s as a small arctic char fish plant. Since that time, the co-op has expanded to include the co-op store, a hotel, cable television service and a taxi service. During this period, as noted in Part 2 under the discussion of the char fishery, the co-op’s involvement in the fishery has declined somewhat. Today, the NDC owns most of the new Kitikmeot Foods Ltd. plant. Nonetheless, the Ikaluktutiak Co-op continues to own a share in this business.

Hunter and Trapper Organisations (HTOs)

HTOs hold important powers under Section 5.7.3 of the NLCA. In the char fishery, the HTOs are responsible for allocating the commercial quota assigned to individual water bodies amongst fishermen. HTOs also provide commercial licenses to fishermen within their region.

Of particular importance to commercial inshore fisheries development is the Section 5.7.3 (a) power of HTOs to “regulate harvesting practices and techniques among members, including the use of non-quota limitations.” Exercising their power, and reflecting their concern that fishing efforts do not interfere with fish habitat, the Pangnirtung HTO has not permitted the use of gear other than longlines in exploratory efforts to develop a summer turbot fishery in Cumberland Sound. These efforts have not yet been successful. If longlining turns out not to be economically viable, the HTO may be placed in a position where it will need to decide between allowing exploration with mobile gear, or possibly foregoing an inshore summer fishery.

⁴¹ Ketilson and MacPherson. 2001. “A report on Aboriginal Co-operatives in Canada: Current Situation and Potential for Growth.” Centre for the Study of Co-operatives.

⁴² This description is derived from Robert Eno report at www.pinetreeline.org/other/other8/other8ba.html and from INAC. 2001 “Aboriginal Co-operatives in Canada – Case Studies”

HTOs also represent a potential organising capacity for inshore fisheries development. With base funding to support a modest operation, some HTOs have been able to establish corporate arms. For example, Papiuruq Fisheries of the Nattivak HTO in Qikiqtarjuaq purchases clams and other fish and meat products from local fishers and hunters who hold commercial licenses.⁴³ Qiliruaq Inc. of the Amarok HTO in Iqaluit oversees negotiations with southern vessel operators to sell quota for royalties and to ensure Inuit employment on these vessels. HTOs have, in the past, purchased boats and could be important players in developing the in-shore summer turbot fishery or in exploring the potential for emerging fisheries such as scallops.

Currently, six HTOs are members in the Baffin Fisheries Coalition (BFC). Four of these—from Pond Inlet, Clyde River, Qikiqtarjuaq, and Pangnirtung—hold turbot quota for Sub-area 0B. The HTOs for Iqaluit and Kimmirut hold experimental allocations of striped shrimp in the Nunavut Settlement Area. Together with Cumberland Sound Fisheries Inc, Qikiqtaaluk Corporation, Aqviq Marine Inc., and Kabva Marine Inc, these HTOs have formed the Baffin Fisheries Coalition, discussed below.

The focus of HTOs tends to be on developing opportunities for community members in the inshore and char fisheries. HTOs have played a role in identifying individuals for training and employment on offshore vessels. Membership of the six HTOs on the BFC Board has brought a considerable focus on off-shore fisheries and the economics of large vessel acquisition. However, this does not seem to be reflected in HTO priorities. Some recognition of the need for better communication between the BFC and member HTOs has been expressed.

Qikiqtaaluk Corporation

Qikiqtaaluk Corporation is the only birthright corporation that is currently active in Nunavut fisheries. It is beneficially owned by the Inuit of the Baffin region through the Qikiqtani Inuit Association.

Qikiqtaaluk Corporation has held licenses to fish shrimp since 1987. As the holder of 1.5 licenses (one held individually, and the other through Unaaq Fisheries Inc, a company equally held by Qikiqtaaluk Corporation and Makivik Corporation), the company has been able to sell the fishing rights to its quota for royalty payments.

The current enterprise allocation (2003) is 3,146 t. Therefore, Qikiqtaaluk Corporation's 1.5 licenses provides 4,719 t shrimp. In addition, members of the Northern Coalition (both Qikiqtaaluk Corporation and Unaaq Fisheries are members) receive an additional 874 t of temporary quota per license. Thus, Qikiqtaaluk Corporation has a total quota of 6,000t. In previous years, enterprise allocations were lower, but prices were higher. It is estimated that the royalty value of Qikiqtaaluk Corporation's allocation should have been fairly constant over the years at around \$1.5 million per year.⁴⁴ Over the fifteen years in the business of brokering its quota, then, the corporation should have earned in the neighbourhood of \$20 to \$25 million.

⁴³ Jacques Whitford Environment Ltd. 2002. "Social and Economic Benefits Assessment of Fisheries and Sealing in Nunavut." Profile of Papiuruq Fisheries based on conversation with the Secretary, Ooleepeeka Audlakiak.

⁴⁴ i.e. 1.5 licenses * (3,146 t/license + 874 t/license) = 6,030 t quota. With a 12% royalty, and current prices of ~ \$2,200/t this quota should generate a royalty payment of around \$250/t, for a total of \$1.5 million. In previous years when prices were closer to \$4,000/t, the royalty would be worth \$480/t. During the period of high prices, however, the EA was closer to 2,166/license, or 3,249 t for Qikiqtaaluk Corporation. This should generate annual royalty payments of \$1.5 million per year.

From Qikiqtaaluk Corporation web page⁴⁵:

“The shrimp fishery has provided \$10 million over a ten year period to the regional economy and employment for over 500 Inuit. Last year alone, over 80 Inuit were hired to work on vessels chartered for the fishery, contributing over \$2,000,000 to the Baffin economy annually. QC is also involved in the turbot fishery, which brought in nearly \$300,00 in royalties last year and provided employment for 10 Inuit.

With an eye to the future, QC plans to expand its operations to include inshore and mid-shore fisheries, and to harvest underutilized species such as crab. QC intends to purchase additional vessels for offshore and inshore operations, and to build a new large processing plant in the Baffin Region.”

However, with total gross revenues in the order of \$25 million per year, and payments to Inuit and Inuit companies of some \$9 million in wages and subcontracts, fishing royalties of \$1.3 million to \$1.5 million make up a small portion of Qikiqtaaluk Corporation’s total business. Over the fifteen years the corporation has been involved in the fishery, the focus seems to be placed in other business areas.⁴⁶

Qikiqtaaluk Corporation’s approach to fisheries may change in the future. The current fishing agreement with Davis Strait Fisheries is due to expire in 2005, freeing the corporation to re-assess its strategy of simply brokering quota in return for royalties and Inuit employment positions. They have been considering options leading to vessel control and may consider investing in other areas of the fishery.

Nunavut Wildlife Management Board

The Nunavut Wildlife Management Board was established under the NLCA to be the main instrument of fish and wildlife management and the main regulator of access to fish and wildlife in the Nunavut Settlement Area (NSA). Overseeing the conservation of all wildlife within the territory of Nunavut, the NWMB is creating a management system that complements Inuit harvesting rights while ensuring a long-term, healthy, renewable resource economy.

The NWMB is composed of nine members. Four are appointed by Inuit (one each by NTI and the three Regional Inuit Associations), three by the federal government (Department of Indian Affairs and Northern Development, Environment Canada, Department of Fisheries and Oceans), one by the Government of Nunavut, and a chair nominated by the eight other members and appointed by the federal government.

The NWMB holds exclusive decision-making authority regarding quotas and harvesting restrictions within the NSA. Allocation of quota within the NSA is, therefore, a responsibility of the NWMB. The Board also has advisory authority in the marine areas adjacent to the NSA referred to in the NLCA as Zones I and II. It is the NWMB that allocates offshore quota provided by DFO to Nunavut to individual interests.

The NWMB has developed policy to guide allocation of commercial marine fisheries quotas established in fisheries within the NSA and of quotas allocated to Nunavut by DFO within

⁴⁵ <http://www.qikiqtaalukcorp.nu.ca/ventures.htm>

⁴⁶ It has been suggested that QC’s fishing royalties may have helped to keep the corporation solvent during periods where the corporation would otherwise have become insolvent. No independent attempt to probe the role these royalties have played in QC’s development has been made here. It is not known to what extent QC based its business decisions on net benefits to Inuit versus corporate profitability.

Nunavut's adjacent waters (NAFO Divisions 0A and 0B and Shrimp Fishing Areas 0, 1, 2, and 3)—Zones I and II in the NLCA. The following principles and criteria are from this policy.⁴⁷

Principles Governing the NWMB's Decisions/Advice Respecting Fisheries:

Several sections of the NLCA provide direction to the NWMB relevant to the NWMB's task in allocating commercial quotas. As well as the guiding principles and objectives of Article 5 (Articles 5.1.2 and 5.1.3), these include:

1. The NWMB must uphold the principles of conservation, as outlined in the NLCA (Article 5.1.5), which includes "the maintenance of vital, healthy wildlife populations capable of sustaining harvesting needs..."
2. The NWMB must give priority to commercial ventures already in operation (Article 5.6.38) and those commercial ventures sponsored by HTOs and RWOs (Article 5.6.39).
3. The importance of the principle of adjacency must be recognized and given special consideration by the government in decisions relating to the allocation of commercial fishing licences in Zones I and II (Article 15.3.7). Likewise, the NWMB shall recognize and give special consideration to the principles of adjacency in allocating commercial quotas.
4. The importance of the principle of economic dependence of communities in the NSA on marine resources must be recognized and given special consideration by the government in decisions relating to the allocation of commercial fishing licences in Zones I and II (Article 15.3.7). Likewise, the NWMB shall recognize and give special consideration to this principle of economic dependence in allocating commercial quotas.
5. In allocating commercial licences, preference must be given to those who have resided in the NSA for at least 18 months prior to application (Article 5.6.45 (a)).
6. In allocating commercial licences, preference must be given to those operations that will most likely provide direct benefits to the NSA economy, especially through local employment (Article 5.6.45 (b)).

Allocation Criteria – Established Fisheries:

In accordance with the Principles outlined above and with the NLCA in general, the NWMB will use the following criteria in evaluating applications for quotas in fisheries with established commercial quotas:

1. Adjacency to the fishing area. Communities closest to the fishing area will have priority over those farther from the fishing area (in accordance with principle 3 above);
2. Ownership/sponsorship of the economic enterprise applying for the quota – RWO/HTO ownership/sponsorship (in accordance with principle 2 above), ownership by a resident of Nunavut (in accordance with principles 5 and 6 above);
3. History in the fishery including past demonstrated ability to harvest quotas allocated to the applicant (in accordance with principles 2 and 4 above);
4. Economic dependency on marine resources. While the NWMB recognizes that all communities in the NSA are dependent on marine resources, for the purpose of deciding upon allocations among NSA applicants and communities, those applicants and communities with a

⁴⁷ These are current as of January 2004.

dependence on the fishery will have priority over new applicants (in accordance with principles 2 and 4 above);

5. Employment provided to Nunavut residents, especially Inuit, in both the harvesting and processing phases (in accordance with principle 6 above);

6. Training provided to Nunavut residents, especially Inuit, in both the harvesting and processing phases (in accordance with principle 6 above);

7. Other economic benefits to Nunavut residents, especially Inuit (in accordance with principle 6 above);

8. Harvesting method (in accordance with principle 1 above);

9. Compliance with any management plan, conservation plan or harvesting plan approved by the NWMB (in accordance with principle 1 above).

The NWMB will take the combination of the above factors into account in reviewing all applications.

Review Criteria – Emerging/Exploratory Fisheries:

These fisheries are new fisheries. No proponent will have a history in the proposed fishery. However, the same principles will govern the Board's review of these applications. Emerging fisheries/exploratory fisheries will require time to prove the level of resources available. The following criteria will be used by the NWMB in evaluating proposals for these fisheries and in making decisions or recommendations on these fisheries:

1. Any exploratory licence/allocation should not be considered to provide any guarantee of a permanent licence/allocation in the fishery;

2. Any decisions on permanent licences/allocations will not be approved until the exploratory fishery has provided results on which long-term sustainable quotas can be set (in accordance with principle 1 above).

3. Participation in the exploratory fisheries should be restricted to Nunavut companies or to Nunavut interests joint-ventured with southern interests (in accordance with principles 2, 3, 4 and 5 above);

4. Access to exploratory/emerging fisheries should not be exclusive to the first applicant. Overall exploratory allocations shall be reviewed as additional participants are added to the fishery to ensure that no conservation concern is created (in accordance with principles 1 and 6 above);

5. Where the number of applicants interested in participating in an exploratory fishery creates a conservation concern, the evaluation of applications shall be based on the same criteria as for established fisheries, except for history in the fishery (in accordance with principles 1 through 6 above);

6. Exploratory licences should be issued for up to 5 years, subject to annual reporting by the proponent and an annual review of the fishery by the Nunavut Fisheries Working Group (NFWG) (in accordance with principles 4 and 6 above);

7. Proponents for such exploratory fisheries shall be encouraged to move towards onshore processing, and local employment (in accordance with principles 4 and 6 above).

In addition to its role in regulating and allocation access to fish and wildlife, the NWMB has established the Nunavut Wildlife Research Trust. This fund provides over \$700,000 per year to support government-led research projects. The NWMB Studies Fund provides some \$100,000 per year to support research led by Inuit organisations. Resources from the NWMB provided critical assistance in conducting exploratory fishing in 0A in the past.

Nunavut Tunngavik Incorporated

NTI represents the interests of the Inuit beneficiaries of the NLCA. It is responsible to implement the Inuit obligations of the Agreement, and ensures that other parties meet their obligations.

NTI has taken an active role in building a foundation for economic development in Nunavut. It took a leadership role in developing the Sivummut Economic Development Strategy Group, ensuring that the GN, NTI, and other key organisations worked together to develop a broad framework strategy for economic development. The organisation has worked collaboratively with the GN to lobby the federal government for an Economic Development Agreement that would provide investment resources for major sectoral, community economic foundation-building, and territorial investments. NTI has also established the Atuqtuarvik Corporation as a major financing organisation to support Inuit businesses.

NTI has recently engaged an experienced staff person to head up a fisheries unit within the organisation. Over the coming year, NTI expects to assess the critical issues and develop a plan for how they should become engaged in fisheries issues.

Baffin Fisheries Coalition Inc.

Baffin Fisheries Coalition (BFC) was incorporated in 2001 out of a desire of the Nunavut Fisheries Working Group (the NWMB, NTI, DFO, DSD) to keep the new 0A turbot quota intact. It was felt that the past use of quota revenues had not led to tangible benefits in terms of fisheries development. The NFWG felt that keeping the quota together would help to focus the proceeds from this quota toward fisheries development, rather than seeing the benefits dispersed for other purposes.

As a result, a meeting was held with the individuals and organisations who had already received shrimp and turbot quota through the NWMB. At this meeting, participants agreed to support the proposal to keep 0A quota together and to form a coalition to hold this quota. Thus, the founding members included the following:

- Amarak HTO, Iqaluit
- Mayukalik HTO, Kimmirut
- Pangnirtung HTO, Pangnirtung
- Mittimatalik HTO, Pond Inlet
- Nativak HTO, Qikiqtarjuaq
- Namautaq HTO, Clyde River
- Cumberland Sound Fisheries Inc., Pangnirtung
- Aqviq Marine (Johnny Mike), Pangnirtung
- Kabva Marine (Russell Chislet) Iqaluit
- Qikiqtaaluk Corporation

The shareholder structure of the company is not publicly reported. The BFC members signed a MOU amongst themselves setting out their agreement in how revenues generated by their quota would be invested:

- 30% to a vessel purchase fund
- 20% to exploratory fisheries
- 20% to the Pangnirtung Fisheries plant for purchase of fish

The remainder would be applied to the organisation's operations and other activities. The BFC revenues are significant—between \$1.75 and \$2.0 million per year.⁴⁸ As a private company, the BFC Board is able to reallocate the way they spend their quota revenues as they see fit. In 2002 the coalition hired a consultant from Newfoundland to prepare a business plan. This plan set out the key elements needed to develop a successful fishing industry. These included:

- Access and allocation
- Organization and management
- Research and development
- Training
- Vessel Acquisition
- Marketing and distribution
- Infrastructure development

The BFC hired the consultant as its Chief Executive Officer, and has made considerable progress in fishing the OA turbot quota. It has built up a significant fund to be used in acquiring an offshore factory trawler. The BFC has also used some of the revenues generated from quota sales to leverage additional funds for a wide range of training and development initiatives. As an organization governed by a board made up of a rather diverse membership, the BFC executive is accountable for how quota is used. Thus, discussion and debate, while not public, is becoming more broadly engaged than it has been in the past with individual organisations accountable to themselves for these decisions.

The BFC has added a level of strategic focus to Nunavut fisheries not previously seen in the region. With access to a large allocation of quota, they are in a position to implement an action plan that will see moving from selling quota and gaining crew positions, to chartering a vessel and gaining profit share, knowledge, and crew positions, to purchasing a vessel.

Through the coalition MOU, HTOs essentially agreed to forego the on-going revenues they could have obtained from OA quota sales for medium and long-term developmental benefits. The BFC executive recognises that it needs to keep its constituent members well informed of the potential benefits they will gain from this strategy. They plan to hire a senior Inuit staff person who can help to carry out this important communications function.

⁴⁸ Revenue estimates are based on public statements made at the Senate hearings.

Government of Nunavut

The Department of Sustainable Development⁴⁹ (DSD) has been—until the recent restructuring—the primary department within the GN with responsibility for fisheries. Fisheries and sealing development and diversification has been identified as a high priority by the GN, with a total budget of some \$1 million allocated for staffing and programs.

DSD has identified five guiding principles for fisheries development in Nunavut. These are:

- Increased access to the Atlantic fishery
- Increased Nunavut proportion of quota allocation
- Invest in the infrastructure required to land and process our resources within Nunavut
- Invest in the training and development of our people so they may increasingly participate in the fishery
- Invest in a thorough and responsible science and exploration strategy to determine the extent and sustainability of our resources.

In 2002 DSD established the Fisheries Development and Diversification Program with an annual funding allocation of \$350,000. Contributions of up to \$50,000 are primarily available for community-based projects related to fisheries development. These funds have been used alongside funds from BFC Inc., DIAND, DFO and other partners. During 2002/03 a total of 11 projects valued at over \$900,000 were funded through the program.

The Department also manages several other programs of importance—or potential importance—to fisheries development. The Commercial Fishery Assistance program is designed to help offset the high freight and production costs associated with Nunavut fisheries. The Inter-settlement Trade Fishery component of this program provides up to 50% of the freight costs between communities in Nunavut.

DSD sponsors a number of community development and business development programs that could be harnessed to support fisheries development activities. The Community Initiatives Program provides funds for community-based projects in the \$10,000 to \$20,000 range. Some \$100,000 of these funds were allocated to fisheries projects in 2002/03. The Grants To Small Business program provides small grants (up to \$5,000) on a one-time basis to small businesses. A Business Development Fund provides a suite of contribution funds ranging up to a maximum of \$150,000. The Nunavut Business Credit Corporation is a Crown Corporation of the GN, reporting to the Minister responsible for DSD. It can provide loans guarantees to a maximum of \$1 million.

Department staff have played active roles in advocating on behalf of Nunavut for greater allocation of shrimp and turbot quotas, for multi-year fisheries science, and for developmental funding programs. The department has carried out marketing activities and has helped to coordinate the Nunavut Fisheries Working Group.

Nunavut Development Corporation

The NDC is a Crown corporation established under territorial legislation, with a board of directors appointed by the Minister of Sustainable Development. Annual contributions from the GN amount to some \$3.5 million. The mission of the NDC is described as follows:

⁴⁹ Under the recent restructuring of GN Ministries, DSD has been divided into a Department of Economic Development and an Environment Department. The fisheries unit—probably as a Directorate—falls within the new Environment Department.

“The Nunavut Development Corporation is committed to working in partnership with Nunavut communities to develop, maintain and stimulate local economies through the responsible development of the meat and fish, arts and crafts market sectors. The Nunavut Development Corporation, through financial support by way of direct purchasing, subsidy funding and capital and venture investments will work to responsibly develop these territorial market sectors by establishing an economic presence in Nunavut communities....

“The NDC understands that many of the businesses that operate in these market sectors are not, and may never be, profitable and hence unable to survive without the ongoing financial support of the NDC. The NDC evaluates its fiscal standing in each investment by measuring the ongoing economic return generated through job creation and the cost to create such jobs.”⁵⁰

Kitikmeot Foods (Cambridge Bay), Kivalliq Arctic Foods (Rankin Inlet), are owned by the Nunavut Development Corporation (NDC). Pangnirtung Fisheries (Pangnirtung) and Whale Cove Fisheries (Whale Cove) are each 51% owned by the NDC. In the case of Pangnirtung Fisheries, 49% of voting stock is held by Cumberland Sound Fisheries. Whale Cove Fisheries (933261 NWT Inc.) stock is 49% held by the Issatik HTO.⁵¹

In addition to direct subsidies received from the GN, these plants take advantage of the fish freight subsidy to partly off-set the high costs of transporting fish by air.

⁵⁰ 2003 Annual Report of the Nunavut Development Corporation.

⁵¹ Although these subsidiary companies are currently losing money, minority share-holders are protected from these losses. This is explained in the NDC Annual Report Notes to the consolidated financial statement: “The applicable losses are limited to the non-controlling interests’ capital investment in the subsidiaries. The excess, and any further losses, applicable to the non-controlling interest are allocated only to the parent’s interest. Subsequent earnings will be allocated proportionately to the non-controlling interest when the parent’s previously absorbed losses are recovered.” Thus, should the plants with private ownership shares become profitable at some point, there is potential for profits to be earned by these shareholders.

The following tables summarise operations of these plants:

	Pangnirtung Fisheries	Kitikmeot Foods	Kivalliq Arctic Foods	Whale Cove Fisheries
<i>Total Sales</i>	\$2,154,968	\$590,097	\$1,411,571	\$36,993
<i>Subsidy Contributions from NDC</i>	\$306,000	\$225,000	\$350,000	\$40,000
<i>Profit (loss) after subsidy</i>	(133,163)	(\$101,346)	\$118,126	(\$2,410)
<i>Purchase of char from local fishermen</i>	400,000 lbs (plus 500,000 lbs from offshore)	91,000 lbs	11,000 lbs (from Chesterfield Inlet HTO) 18,500 lbs (from Whale Cove Fisheries)	18,500 lbs (from fishermen from Rankin Inlet, Whale Cove and Arviat.)
<i>Jobs</i>	46.7	13.1	32.9	1.5
<i>Subsidy per Job</i>	\$6,552	\$17,176	\$10,638	\$26,667

Source: 2003 NDC Annual Report.

Following an inspection by the Canadian Food Inspection Agency, Kitikmeot Foods had to make repairs to the floor of its plant. These are a temporary measure only, however, and a new plant may be required. The cost of such a plant would require government assistance.

Concern over the disposal of fish waste at Pangnirtung Fisheries has been raised by Environment Canada. A two-year temporary solution has been arranged for, however a longer-term solution will need to be found if the plant is to remain in operation. Estimates of the cost involved are reported in the March 31, 2003 NDC Financial Statement to range from \$500,000 to \$2 million.

Outlook for profitability

Several challenges must be overcome in order for these plants to reach a point of profitability:

- High administration costs relative to total sales is a major challenge.
- High costs of production is another major challenge. The price of raw fish paid by the plants is in the range of \$1 to \$1.30 /lb. Wholesale prices in the south for similar product (salmon, for example) is typically under \$2/lb. On top of this are higher plant wages, high labour force turnover, transportation costs, high facility operation costs. With high fixed and high variable costs its not unusual for the cost of goods sold to equal gross revenues—before administration costs are looked at.

As a result, profitability will require targeting high value markets through product differentiation, gaining cost efficiencies through expansion and increased labour productivity, and—potentially—seeking better prices for fish and for labour.

Some of these challenges can be mitigated through permanent subsidy. Subsidies for jobs created can adjust the cost-benefit analysis related to labour productivity towards more jobs.

The Nunavut Economic Forum

The Nunavut Economic Forum is a broad coalition of government, Inuit organisations, non-governmental and private sector groups that share a common desire to see Nunavut build a solid foundation for economic development and growth. In June 2003, a working group of the Forum—the Sivummut Economic Development Strategy Group—prepared the “Nunavut Economic Development Strategy: Building a Foundation for the Future.” This strategy document points to areas where the Forum partners will focus their collective efforts.

Within the Strategy are contained a number of “expectations” for commercial fisheries to be achieved by 2013. These targets are:

- We will reach the goal of 85% ownership of Nunavut adjacent resources.
- At least 200 new jobs will be created in our offshore fisheries.
- There will be at least two new fish processing facilities operating in Nunavut.
- Nunavut’s fishing industry will include a small fleet of inshore and offshore-based fishing vessels to support both sectors of the industry.
- We will successfully develop and diversify emerging fisheries such as clams, flounder, and scallops, providing significant employment opportunities.

These targets are set within a strategy that recognises the developmental context of Nunavut’s economy. A major part of the Strategy sets out how a focus needs to be placed on four fundamental areas — the environment (‘natural capital’), our people (‘human capital’), organisational development (social/organisational capital), and infrastructure (physical capital). Balanced formation of capital in each of these four areas will create the solid foundation for long-term and sustainable economic growth.

Building on this broad ‘capital formation’ strategy, the Nunavut Economic Development Strategy sets out thirteen *strategic priorities* related to the ‘land’, ‘people’, ‘community economies’, and to the ‘territorial economy’. Each of these priorities are relevant to fisheries development, so they are listed briefly here:

1. Respecting the Land
2. Maintaining Our Mixed Economy
3. Building on the Knowledge of Our Elders
4. Economic Development For Our Youth
5. Education & Training
6. Basic Needs — Housing, Hospitals and Schools
7. Community Capacity Building and Organisational Development
8. Small and Inuit Business Development
9. Building the Knowledge Base in Our Communities
10. Putting the Nunavut Land Claims Agreement to Work
11. Sector Development and Support Systems
12. Infrastructure — From Buildings to Broadband
13. Accessing the Global Marketplace.

A fisheries sector development strategy for Nunavut should be designed to address each of these strategic priorities in tangible ways.

Currently, the Nunavut Economic Forum is preparing to incorporate and hire an Executive Director who will provide organisational capacity to continue working on implementation of the Strategy.

Department of Fisheries and Oceans

The Department of Fisheries and Oceans (DFO) is the key federal department involved in Nunavut's adjacent marine fisheries. It is responsible for management of the shrimp and turbot fisheries within Zones I and II of the NLCA, outside the NSA. DFO is also Canada's representative at the international NAFO level, where decisions related to overall TAC levels are made.

DFO is able to influence fisheries development in Nunavut through a variety of policy and program instruments. Most significantly, DFO controls both the management of offshore stocks (Zone I and II), determines who has access to these stocks, and assigns the amount of quota that each player in the fisheries is allocated. Essentially, DFO determines how much 'wealth' can be generated by the fisheries and how this 'wealth' will be distributed amongst private interests.

Determining how much 'wealth' can be generated from a potential fishery is a question of science. Stock assessment research and marine ecology research leads to an understanding of what is 'out there' and how much of this resource is available for commercial harvesting. If this science is not carried out, harvesting activity cannot be initiated and DFO has no subsequent management responsibilities. Once a stock is identified, DFO has the responsibility to ensure it is managed in a way that distributes wealth according to established policy and promotes conservation of the stock over time.

Both the initial resource identification activities and the subsequent resource management activities combine both science and politics. In the first instance, political choices are made as to where science research dollars will be spent. If the research is done, knowledge of new fisheries stocks may emerge and new wealth potential created. Once fishery stocks are known, managing these stocks becomes a highly political exercise that is mediated by science—who gets to fish? How much does each player get to fish? Will assistance be provided to enable new players to enter the 'game'? How will the industry be managed when stocks increase or decline? These are some of the challenges that DFO is responsible for mediating.

DFO has gone through several phases over the past decades. Following the period of Canadian jurisdictional expansion in the 1970s that came with Canada's declaration of its 200-mile limit, DFO policy was oriented toward the support of a rapidly expanding industry. Now that Canada claimed its offshore fisheries, it needed an industry capable of fishing throughout this area. Major policy and funding program efforts were put in place during the 1980s through the Department to support massive expansion of fishing and processing capacity.

By the 1990s, a major policy shift was required. The Independent Panel on Atlantic Fisheries (IPAC) and DFO's Atlantic Fisheries Policy Review (AFR) were both initiated to bring Canada's fisheries policy inline with the new realities of Canada's Atlantic fisheries. DFO began to change its focus from industry development to industry stabilization and capacity reduction. Integrated management, public participation and resource sustainability have become key themes in DFO policy. These have been augmented with a focus on Aboriginal participation, co-management of fisheries between DFO and industry, and cost-recovery initiatives.

Nunavut's political clout is diluted in DFO's structure

DFO has four offices involved in Nunavut's fisheries—Iqaluit, Winnipeg, St. John's, and Ottawa. Iqaluit is the main office involved in partnership activities with other Nunavut organisations such as the NFWG. The Winnipeg office houses DFO's Central and Arctic region, in which Nunavut lies. St. John's manages the Atlantic fishery, including Nunavut's adjacent offshore shrimp and groundfish fishery. The Ottawa headquarters office reviews management plans and manages overarching policy issues. There is a perception within Nunavut that the fragmentation of DFO's

organization vis-à-vis Nunavut contributes to the difficulty Nunavut organisations have had in engaging DFO in Nunavut's strategic development issues.

Developing an Aboriginal fishery—but excluding Nunavut

DFO's overall policy focus has shifted away from developing new capacity toward supporting stability amongst existing industry players. However, various legal events over the past decade have led to the department undertaking a developmental role with respect to Aboriginal fisheries. The department has established several programs that serve to fund Aboriginal fisheries development. The Aboriginal Fisheries Strategy provides a package of assistance that helps Aboriginal communities to gain influence over fisheries management and to gain economic benefits from their adjacent fisheries. The program has provided over \$325 million in funding since 1992, including nearly \$80 million spent to transfer licenses to Aboriginal interests. More recently, DFO announced the Aboriginal Aquatic Resource and Oceans Management Program (AAROM). This program supports greater Aboriginal participation in decision-making through fishery officer training. It is available to groups that have not signed comprehensive land claims agreements that already address the matters under AAROM. In February, 2004, the Minister announced a new At-Sea Mentoring Initiative to develop skills of First Nations members in the Maritime Region. This program will focus on safe and effective fishing skills and learning vessel maintenance.

Nunavut Inuit have been excluded from the benefits of DFO's Aboriginal fisheries development programs based on DFO's assessment that the NLCA already addresses the issues targeted by these programs.⁵²

Precautionary approach in 0A

Nunavut's allocation of 4,000 t experimental quota in 0A represents half of the NAFO-assigned TAC of 8,000 t for the 0A + 1A sub-areas. It is believed, however, that Greenland is not fishing its half of the TAC. DFO could, perhaps, increase the allowable catch for Nunavut interests, so long as the total catch did not exceed the NAFO limits.

However, DFO is involved in other international management issues that make this option risky and undesirable. Concerns about declining turbot stocks in NAFO Areas 2 and 3 have led to decreases in TAC for these areas. Canada doesn't catch the full allocation provided by NAFO in these areas, and is respecting the NAFO call to reduce its TAC. However, parts of these areas fall outside Canada's 200 mile territorial limit and are fished by foreign trawlers. Canada places strong pressures on these other nations to similarly respect the NAFO TAC limits. Playing the role of the 'environmental good-guy' in this region, however, places pressure on DFO to take a consistent, and therefore conservative, approach to quota allocations in sub-area 0A.

Foreign vessels, conservation, and business development.

DFO generally does not allow foreign vessels to be used to fish Canadian stocks. This may be an issue, since the availability of foreign vessels—particularly long-liners—is much greater than that of Canadian vessels. As a result, commercial arrangements with foreign vessel owners anxious to keep their boats productive may be more lucrative for the quota-holder.

⁵² This position is not shared by Nunavut organisations. The GN, for example, has contended that while the NLCA does address Inuit participation in fisheries management through the NWMB, it does not provide any assistance to gain access to the economic benefits arising from these fisheries. They argue the federal government should not exclude Inuit from programs aimed at supporting Aboriginal involvement in economic benefits from the fishery, pointing to Article 2.7.3 of the NLCA that indicates an agreement that the land claims agreement would not affect the ability of Inuit to benefit from government programs for Aboriginal people generally.

However, opening things up to foreign vessels would put pressure on Canadian vessels, leading to less profitable business in these sectors. If DFO allows Nunavut quota-holders to fish with foreign vessels, they'd be pressured to allow others to do the same. The department does not seem to have any policy in place that would support the consideration of regional development as a factor in making the determination vis-à-vis allowing the use of foreign vessels.

Conservation arguments do, however, hold considerable persuasive value with DFO. Foreign long-liners have been allowed to fish northern quota when it has been demonstrated that no Canadian long-line vessels were available. Turbot catch by trawlers bring in a high percentage of small fish. Long-liners, on the other hand, take in a much smaller percentage of small fish. It is believed that leaving small fish will ensure a future spawning population.

Indian and Northern Affairs Canada

DIAND is the lead federal ministry in the North. Its responsibilities are delivered through the programs and services of the Northern Affairs Program. These fall into two key areas: 1. supporting northern political and economic development through the management of federal interests, and 2. promoting sustainable development of the North's natural resources and northern communities.

Thus, DIAND has an interest in the development of Nunavut's fisheries sector through its responsibilities for northern economic development. DIAND's current programming in this area includes an 'Innovation and Knowledge' fund to support territorial government projects. This provides \$350,000 per year in each territory. Of twelve projects funded in Nunavut between 2001 and 2003, six were focused on fisheries development. These accounted for 35% of the total \$403,000 funded under the program. Several of these projects have been focused on developing a clam fishery in Qikiqtarjuaq. The success of these projects has helped to build a good relationship between the Department and other Nunavut organisations.

DIAND also oversees a suite of economic development funds that are generally available to Canadian Aboriginal businesses and organisations. These programs are managed by the local CEDOs and include the Major Business Projects Program (provides between \$500,000 and \$3 million, where this is not more than 25% of project value, and where the Inuit applicant puts up at least 10% cash); The Resource Acquisition Initiative (to help communities obtain funds for businesses in natural resources sector, including purchase of licenses); Opportunity Fund (up to \$500,000 for Aboriginal businesses to gain access to bank loans); Resource Access Negotiations Program (support for negotiations to gain benefits from natural resources through business, increased access or management control); Resource Partnerships Program (up to 90% funding for strategic planning and 50% for subsequent eligible activities such as project implementation, negotiating working agreements, feasibility studies, analysis and so on); Regional Partnerships Fund (up to 66% funding to make a project viable, may include economic infrastructure).

DIAND also advocates for the North on economic development matters within the federal system.

Appendix D: Profiles Of Fisheries In Other Jurisdictions

PROFILES OF FISHERIES IN OTHER JURISDICTIONS

The purpose of this section is to highlight fishing operations (i.e., inshore, offshore and processing) in other northern jurisdictions for comparison purposes with Nunavut. Each profile focuses on unique characteristics that may be of interest to Nunavut. Six key jurisdictions were briefly examined:

- Iceland
- Greenland
- Alaska
- Labrador
- Nunavik
- Lapland (the Sami people of Norway)

Iceland⁵³

Iceland can be considered a major fishing power in the North Atlantic (12th in the world in catch in tonnes). This country of over 280,000 people has abundant natural resources, a strong fleet, a strong processing sector, and access to markets. Iceland can also be considered a leader in fishing innovation on several grounds. First, it has developed a unique way to allocate licences to fishers (discussed below). Second, its industry is very productive. It has one of the lowest costs relative to both value and volume of production among OECD countries. The country also has one of the lowest costs per tonne of capacity. Third, the country allocates considerable resources to research and enforcement. Whereas Canada spends most of its fisheries management expenditures on management services and only 30 per cent of this on research, Iceland devotes half of its total budget on research, and over 40 per cent on enforcement (Canada allocates 30 per cent on enforcement).⁵⁴

Iceland's fishing waters are blessed with large fish stocks due to being located where the warm Gulf Stream and the cold nutrient currents from the Arctic meet. The fishing industry is Iceland's most important economic activity. 70 per cent of Iceland's exports of goods are fish and fish products. Fishing and fish processing represent approximately 12 per cent of GDP down from 1980s levels where it was approximately 16 per cent. Its main fish harvested are cod, haddock, saithe, redfish, herring and capelin. Cod has accounted for between 40-50 per cent of total value of fish and fish product exports. A catch rule for cod remains in effect (annual quota cannot be set at more than 25 per cent of the fishable stock). Icelandic catches of turbot have decreased by 50 per cent over the past 20 years. The harvesting of fish for fishmeal and oil is the country's second largest source of export value.

Fishing employed 3.9 per cent of the labour force in 2000 and fish processing contributed another 4.3 per cent, representing a continued decline for decades (it was 23% in 1930).

The Icelandic fleet had 1,993 vessels on register in 2001, 55 per cent were undecked and nearly 40 per cent of the decked vessels are more than 20 years old.⁵⁵ Most of the new trawlers in the fleet have onboard processing capacity and are equipped for salting or freezing the catch. Jobs on freezer trawlers are preferred by labourers due to higher pay. The fleet has been decreasing

⁵³ Sources: Iceland.is (www.iceland.is); Information Centre of The Icelandic Ministry of Fisheries (www.fisheries.is); OECD, *Review of Fisheries in OECD Countries: Policies and Summary Statistics*, 2002 Edition (Paris: OECD, 2003). OECD, *The Cost of Managing Fisheries* (Paris: OECD, 2003).

⁵⁴ OECD, *The Cost of Managing Fisheries* (Paris: OECD, 2003).

⁵⁵ FAO, 2002.

since the mid 1990s due to oversupply. In 2000, about 45 per cent of the total catch value was landed by trawlers.

The Fisheries Management Act of 1990 is the cornerstone of Iceland's fisheries management system. Iceland uses a system of Individual Transferable Quotas (ITQs): each vessel is allocated an annual catch quota from the TAC of specific species in proportion to that vessel's quota share for the species. Each fishing year begins on September 1 to discourage summer fishing when the quality of catch and processing is poorer (catch quality suffers more quickly and many workers are on vacation). The TAC is set by the Minister of Fisheries annually based on scientific evidence from the Icelandic Marine Research Institute. The quotas represent shares in the TAC. The quotas are permanent, perfectly divisible and fairly freely transferable. Catch quotas for individual species can be transferred between vessels, and to a certain degree between fishing years. Vessels that catch a species they are not targeting can thus obtain for themselves a catch quota for the species.

There is a lively market for quotas: it is estimated that as much as 45 per cent of annual quotas issued are traded. All catches by Icelandic ships are recorded at the port of landing, which are then required to forward information on the catch to Ministry officials, ensuring that Iceland has reliable data on its fishing industry. As of 2001, hook and line fishing boats were included in the catch quota system. Exceptions to the ITQs are in place for smaller boats (i.e., instead of a quota, they are restricted to the number of days they can fish).

Foreign ownership of fishing quotas is prohibited and with a few exceptions, no foreign fishing vessel (owned or operated) may operate in Icelandic waters.

Processing

It is Iceland's policy to increase the processing of fish and to discourage the exports of unprocessed fish. The fisheries management policy stipulates that vessel operators landing catches in foreign ports will be subtracted 1.15-1.2 tonnes from their fishing quota for each tonne landed

Frozen fish products is the most lucrative form of processing in Iceland, representing about two-thirds of the total value of fish exports, 40 per cent of which is cod. The principle markets for frozen products are North America, Europe and Asia, particularly Japan. The largest freezing plants have a capacity of 6-7,000 tonnes. The plants are highly automated with rapid throughput and use computer technology to scan, weigh, grade and fillet the fish. However, an increasing amount of the catch is being frozen at sea on board trawlers with freezing capacity for either groundfish or shrimp (approximately 50). For instance, in 1986 less than 5,000 tonnes of groundfish was processed on board. In 2002, 146,000 tonnes were processed! This method is more lucrative than land freezing due to higher quality and therefore higher prices are received. As a result, many land freezing operations have started production of oven-ready fish dishes, often in cooperation with overseas food distributors and retail chains. In addition, there has been some consolidation of processing operations with older plants closing down.

Fresh seafood (both whole fish and fresh fillets) sent to market by air represents 8-12 per cent of total value of seafood exports. Europe is the market for whole fish on ice, while fresh fillets are exported by air are sent to the US, UK and Germany.

Iceland still processes approximately 15 per cent of its harvested cod by wind-drying whereby the fish is hung on racks to dry and is preserved for months. Salting is also still used, representing 16-21 per cent of total value of seafood exports. Primary markets are southern Europe and America. Much of the catch is exported to Germany and the United Kingdom.

Marketing of Icelandic fish products is mainly handled by several sales organizations, most of which were originally producers' associations.

Depleting fish stocks have led to an investment in fish farming, particularly for salmon and char—although it still represents less than one per cent of total value of exports.

The Government of Iceland has imposed a cost-recovery plan for its fishing management system. It plans to levy a fishing fee in 2004 on all vessel owners in recognition of the fact that all of those who benefit from this natural resource should help to pay for its management.

The country recognizes that its economic growth cannot rest on the fishing industry. It is attempting to diversify in such areas as software production, biotechnology and tourism.

Greenland⁵⁶

Greenland is situated next to the Baffin Region sharing Baffin Bay and the Davis Strait with Nunavut. While its population is greater than Nunavut (Greenland's population in 2002 was 56,542), it is more comparable than Iceland or Alaska. Furthermore, 88% of the population is either Inuit or Greenland-born white.

Greenland's wage economy is centred on fishing. Fishing and fish products provide for 95% of all exports. Historically, Greenland has tended to centre its fishing activities on a single species principally cod. The main fish exports today are northern shrimp (67 % of exports) and to a smaller extent Greenland halibut (turbot) and some cod. Quotas are set annually based on research findings. An estimated 3,500 people are directly involved with fishing while an additional 2,300 persons are employed in other aspects of the fishing industry.

A second observation is that Greenland's fishing and marine infrastructure is much more developed than that of Nunavut. Most of its fishing is in the form of off-shore trawling, primarily for shrimp. There is no aquaculture industry. Greenland's active fleet is relatively large with approximately 997 fishing vessels including 40 shrimp trawlers. The number of people employed in the fishing sector has been decreasing due to more efficient fishing methods and the falling cod population. The highest amount of fishing activity is in the island's central region on the west coast which is adjacent to Nunavut but the coast is navigable all year round—a significant difference.

Harbour facilities are located in 16 towns, many of which also have container handling facilities and are used to support the country's only industry—fishing and fish processing.

As with Iceland, Greenland's fishery has shifted to a system of tradable quotas for both offshore and inshore fisheries. "This system has allowed for the reduction of excess capacity as the owners of the least profitable vessels have the option of selling their quota to other, more efficient, ship owners and possibly transfer their own vessels to other kinds of fishing."⁵⁷

Greenland's economy is supported by a few relatively large publicly owned companies within the fishing industry. For instance, Royal Greenland, a limited company which is wholly owned by the Home Government, controls almost the entire fishing industry in Greenland. It is the world's largest retailer of cold-water prawns. The company operates 11 factories and 16 smaller plants located in the smaller settlements. It also owns a few plants in Denmark and one in Germany. Another large company owned by the Home Government is NUKA A/S. It runs 26 plants in the settlements and two factories. Polar Seafood A/S, a private company, runs one large factory and

⁵⁶ Sources: Statistics Greenland, *Greenland in Figures*, 2002; Royal Danish Ministry of Foreign Affairs, Denmark – Greenland and the Faeroe Islands (www.um.dk/english/danmark/danmarksbog/kap7/7-1-8.asap)

⁵⁷ OECD report on Greenland, 1999.

two small plants. In addition, approximately one third of the jurisdiction's 2000 small and medium-sized enterprises are related to fishing.

The peeled prawns are sold to the north European market (Germany, the UK and Denmark) and Japan. The company's trawlers produce un-peeled sea-cooked and raw frozen shrimps. Since 1985, Greenland has had an agreement with the EU that allows the former to sell its fish products as non-dutiable goods on the European market. The EU has a 12% tariff on whole cooked shrimp and a 20% tariff on cooked and peeled shrimp.

Despite the fishing infrastructure and access to markets, Greenland's fishing industry has been in decline. There has been considerable over-fishing for a decade. Export earnings have been falling since the 1990s due to falling prices for shrimp. Shrimp prices hit an all time low in 2003. To adjust, Royal Greenland has instituted layoffs and plans to do more of its own processing, particularly of Canadian shrimp. However, the company wants to process the shrimp in Denmark due to lower production costs, creating considerable controversy.⁵⁸

An examination of Greenland's fishing industry suggests that sound infrastructure and access to markets is not enough to guarantee a healthy industry. Strong fish stocks are also needed. Furthermore, today's global economy has led to fierce competition among harvesting nations and low margins that make the industry vulnerable to international exchange rates.

Alaska⁵⁹

The fishing industry in Alaska is massive: it's the state's largest private employer, employing over 65,000 workers for seasonal and year-round employment. Salmon makes up the largest component of the fishing industry. Just under 60 per cent of fishery jobs are filled by non-residents of the state (summer employment).

The Alaskan fishing industry, primarily the salmon fishing industry, has been in serious trouble in recent years, causing its governor to declare it a "disaster" due to decreasing fish stocks, competition from other countries, cheaper farmed salmon, and the high US dollar.⁶⁰ The number of salmon harvested is now about half of what it was a decade ago. During the 1980s, Alaska supplied almost half of the world's salmon catch—today it is less than 20 per cent.

Of perhaps greatest interest to Nunavut is Alaska's use of the fishing industry to support community economic development. The Western Alaska Community Development Quota Program (CDQ) is a federal program that began in 1992. The program was intended to provide the means for starting and supporting commercial

The CDQ program began with pollock but has since been expanded to include groundfish species and crab. The objectives of the program are:

- To provide the participating communities with the means to develop ongoing commercial fishing activities
- To create employment opportunities
- To attract capital

⁵⁸ *Nunatsiaq News*, "Danish shrimp processing plan angers Greenlandic fishermen," October 3, 2003.

⁵⁹ Sources: National Research Council, *The Community Development Quota Program in Alaska*, 1999. <http://books.nap.edu/books/0309060826/html/47.html> and OECD, Review of Fisheries in OECD countries.

⁶⁰ Mike Chambers, "Governor Declares Western Alaska Fishing Industry a 'Disaster'". The Associated Press, 2003. IMDiversity.com

- To develop infrastructure
- To promote positive social and economic conditions.

The program involves allocating a portion of annual fish harvest of certain commercial species (ranging from 7.5 per cent of certain groundfish to 100 per cent of halibut) to coalitions of villages that have limited economic opportunities (e.g., communities operating primarily on subsistence economies) and which were not benefiting from the lucrative groundfishery in the Bering Sea during the 1980s. Participating communities must use any earnings to further economic development in their community through investments in fisheries-related industries, infrastructure, and education.

The 56 eligible communities, involving 27,000 residents of whom 79% are Aboriginal, organized themselves into six community groups called CDQ groups. Each CDQ group wrote a Community Development Plan to structure their organization and to outline their economic development strategy within the region, using their estimated income from sales of quota pollock as capital. Their plans are updated on a regular basis. Each group is governed by a board of directors, of which at least 75% must be community residents.⁶¹

The CDQ groups subsequently formed partnerships with established corporations to enter into the fishing industry. The communities can participate in the fishing and processing directly, or they may contract with existing vessels and processors to undertake the work in exchange for royalty payments and employment opportunities in these operations. The estimated value of all of the CDQ quota allocations in 2000 was \$40 million (USD).⁶²

The program has been considered a success in increasing the involvement of residents of these communities in the fishing industry and leading to economic and social benefits. Benefits have included direct revenues from the fishery as well as employment and increased development of fishing infrastructure. Since 1992, approximately 9,000 jobs have been created for western Alaska residents with wages totalling more than \$60 million.

There appears to be a considerable amount of data collected by the Alaskan government and the National Marine Fisheries Service (Alaska Regional Office) on the program and information to assist communities and participants getting involved.⁶³

The Norton Sound Economic Development Corporation (NSEDC)

NSEDC represents the most northwestern portion of fishing communities on the Alaskan coast. The population of this region is approximately 8,500, that includes several Alaskan Native communities. This region has had high rates of poverty and unemployment. In its early years, the CDQ program activity was centred on training and education to enable residents to participate in the fishing industry. In more recent years, attention has been placed on capital acquisition. For instance, as of early 2001, NSEDC owned all or portions of the following vessels:

⁶¹ Northern Economics, *Review and Summary of Community Development Plans and Annual and Quarterly Reports Submitted by CDQ Groups*, Alaska Department of Community and Economic Development, Anchorage, 2001 (http://www.dced.state.ak.us/bsc/CDQ/pub/Linda_Snow.pdf)

⁶² Ibid

⁶³ See for example, <http://www.dced.state.ak.us/bsc/CDQ/cdq.htm>;
<http://www.fakr.noaa.gov/cdq/default.htm>).

- 100 percent of the Golovin Bay and the Norton Bay – two 38' tenders constructed specifically for the region. They are managed by the Norton Sound Vessel Management Program.
- 50 percent of the Glacier Fish Company – a catcher processor company with two factory trawlers and a seafood marketing company.
- 49 percent of the F/V Norton Sound – a 139 ft. long line vessel with processing capability

Source: Northern Economics, *Review and Summary of Community Development Plans and Annual and Quarterly Reports Submitted by CDQ Groups*, December 2001.

Labrador

Labrador and its fishing industry is a good case study to examine from Nunavut's perspective. First, it too is an emerging regional player in the northwest Atlantic offshore fishery. Second, its population size is comparable to that of Nunavut: a population of just over 28,000 with an Inuit population of approximately 5,000. However, it lies further south so it has greater access to ice-free conditions and it has the resources of its considerably larger provincial partner, Newfoundland which has a long history in fishing and a large fishing industry. In recent years, the Government of Newfoundland and Labrador has studied the future of its fishing industry and there are some observations and learnings that may be of benefit to Nunavut as it develops its own industry.

A major contributor in the past to Labrador's small economy has been the inshore fishery. However, it is handicapped by virtue of its short season (six to ten weeks) that inhibits the necessary investments in boats, gear and infrastructure required to support and build the sector. Historically, most fishers earned enough to qualify for unemployment insurance that would support them through the winter months.

For the past several years, a move has been made to expand Labrador's offshore fishery. The Labrador Inuit Development Corporation (LIDC), wholly owned by the Labrador Inuit Association, holds a joint-venture offshore northern shrimp licence with National Sea Products Limited. Six Labrador Inuit are employed on every trip of the shrimp vessel (usually six trips per year, depending on catch rates). The offshore shrimp fishery has been growing each year, and for the last two years LIDC and National Sea Products have had to charter a foreign vessel in order to harvest its shrimp quotas. A vessel is under construction (underwritten by National Sea Products) that will be chartered by LIDC to fish for both shrimp and groundfish that should result in a doubling of positions year-round available to Inuit. Revenues generated by the offshore fishery have been reinvested into both fishing and non-related fishing activities to support efforts to diversify the economy.

Despite the growth in the fishing industry for Labrador's Inuit, it is clearly not their only source for economic development—indeed, it is considered a minor activity in comparison to other economic interests such as mining and tourism.

The Labrador Inuit Association's 1999 Agreement in Principle with the Government of Canada includes preferred rights to harvest fish in the Labrador Inuit Settlement area as well as offshore fishing rights. Inuit are guaranteed a percentage of any new licences issued; that is the Labrador Inuit will be offered the following quotas:

Within the Labrador Inuit Settlement Area fishing Zone:

- 70 per cent of new licences for arctic char, salmon and scallops
- 60 per cent of new licences for most other species including shrimp

In waters adjacent to the Zone:

- 20 per cent of new licences for most species
- 11 per cent of new licences for shrimp.

If the system for authorizing commercial fishing opportunities changes, the Minister shall offer to the Inuit Central Government participation in the new system which is at least as favourable as the current system.

Since 1997, 38 Labrador enterprises in the smaller than 65 feet vessel sector have been issued shrimp permits.

A fish plant owned by Torngat Fish Producers Co-op operates in the community of Makkovik. It operates from June to mid-November and employs about 125 workers at peak periods, some from out of town. It processes crab, turbot and grenadier. These catches were brought in by ten crab vessels and eight turbot boats. Presently, only one local long liner supplies fish to the plant, but six fishermen own crab licenses and lease out-of-town long liners to fish their quota. Several other fishermen work as crew members on turbot, crab, or scallop boats from Newfoundland and southern Labrador.

Both the Labrador Innu Nation and the Labrador Metis Nation are also involved in the offshore fishing industry. The Department of Fisheries latest shrimp plan includes a quota (750 tonnes) for the first time for the Metis.⁶⁴

In the past few years, the Government of Newfoundland and Labrador has been examining the state of its fisheries from all angles including harvesting and processing. As previously mentioned, the province's fishing industry has gone through enormous change. Shellfish have replaced groundfish as the principle fishing source, bringing with it considerable wealth over the past decade. However, in more recent years the industry has suffered from low prices and overcapacity.

The Fish Processing Policy Review Commission (Dunne Commission)⁶⁵ made the following observations that would be of interest to Nunavut:

- There may be a shortage of workers for Newfoundland's fishing industry in the medium to long terms, particularly in the processing sector due to the inability to attract new workers. This is occurring for several reasons: wages are not competitive with other occupations; the ageing of the population; the lack of full-time work throughout the year; and young people are less apt to living in rural communities. One would think that Nunavut may be able to avoid these problems given its young population, and continued desire by many to remain in their communities.
- While the emergence of the shellfish industry has provided harvesters and plant owners with a level of prosperity not seen before in the modern day fishing industry, plant workers by and large have received little benefit relative to the groundfish days.
- There remain several quality issues that need to be addressed by the industry, particularly in regards to shrimp. There is a lack of training on raw product for

⁶⁴ Lawrence O'Brien, "Labrador Benefits from Northern Shrimp Plan," News Release. May 26, 2003. www.lawrenceobrien.ca/press/2003/20030526.htm

⁶⁵ Government of Newfoundland and Labrador, Fish Processing Policy Review. *Final Report*. December 2003.

inspectors including for shrimp, and the quality is often negatively impacted by inadequate icing, transportation for extended periods, overloaded bags, improper onboard handling, long delays between harvesting and processing, and high landings during peak seasons. Increased education of vessel crews and offloading personnel is required on proper handling and holding methods.

Industry operators believe that too many shrimp licences have been issued. In recent months, the province's Minister of Fisheries and Aquaculture has requested the inshore shrimp industry to address its structural problems at all levels (harvesting, processing and marketing). The reforms are felt necessary in what is expected to be a difficult year for its shrimp industry, particularly in light of the rising Canadian dollar.⁶⁶

Nunavik⁶⁷

Nunavut is not alone in its desire to expand its fishing industry in the region. Nunavik, the northernmost region of Quebec with a population of approximately 10,000, most of whom are Inuit, is also interested in further developing a fishing industry.

There are approximately 40 Inuit fishermen from the Nunavik region who are employed in the fishery. Some have received the advanced training required to act as factory bosses or fishing gear technicians, and a few have even become officers."

In 2002, Nunavik Trawl Inc. was created to manage and operate the fishing business owned by Makivik—the Inuit corporation responsible for overseeing the James Bay and Northern Quebec Agreement. Makivik still owns the shrimp licence as well as 35 percent of this new company, which leases a 50-metre factory trawler. This vessel sails with a crew of 18 to 20, most of whom are experienced Inuit fishermen from Nunavik.

The Nunavik Marine Region Agreement in Principle with the Government of Canada contains several provisions (not legally binding) related to fishing in support of Nunavik's fishing industry:

- 7.0% of any increases in TAC for shrimp established by the Minister will be allocated to one or more Makivik Designated Organizations (MDOs) to harvest in the Southern Davis Strait Zone.
- 8.8% of any increase in TAC for shrimp established by the Minister for NAFO Division 0A will be allocated to one or more MDOs to harvest in the Northern Davis Strait Zone.
- Recognition of Nunavik's adjacency when allocating fishing licences within the Hudson Bay Zone.

Employment income generated from the shrimp fishery alone for Nunavik is in excess of \$1.5 million a year. Seventy per cent of the crew operating on these vessels are Inuit from Nunavik or beneficiaries from Nunavik.

⁶⁶ Government of Newfoundland and Labrador, Department of Fisheries and Aquaculture, "Minister puts shrimp industry on notice" News Release, January 22, 2004.

⁶⁷ Sources: Department of Foreign Affairs and International Trade Canada, "Why Trade Matters – Success Stories" <http://www.dfait-maeci.gc.ca/tna-nac/stories46-en.asp#corp>; DFO document; Hansard

The Sami People of Northern Norway

The vast majority of the Sami people live in Norway. Only a small portion of Sami actually earn their primary income from a traditional Sami industry. Nevertheless, fishing is the oldest branch of Sami industry with a long tradition rooted in its culture. Sami sea fishing is undertaken only in Norway and Russia. Sami officials have claimed coastal rights but these have yet to be confirmed in legislation. The fishing situation could change with the development of a Northern Sea Route to Asia across northern Norway waters and the Russian Arctic that would involve the construction of deep sea ports in the region and additional infrastructure.⁶⁸

The Sami work through their own legislative assembly “Sameting” to increase their influence on the process of regulation and distribution of quotas.⁶⁹ The Laps are represented on the Advisory Committee on Regulation which advises the Ministry of Fisheries. Regulations have been put in place that recognize the importance of traditional fishing to the Sami way of life. Funds have been made available to secure the delivery of the catches in the Lap areas of northern Norway.

Lessons Learned

While these jurisdictions have common characteristics with Nunavut, there are several differences as well. First, Nunavut is constrained more by ice conditions than any of the other jurisdictions. In fact, ice is simply not an issue for most communities in these other jurisdictions.

Second, most of these other jurisdictions have been involved in the fishing industry for many decades. They are already key stakeholders or players “in the game.” They are not new entrants like Nunavut.

Third and very much related to the second difference is that most of these other jurisdictions have sound infrastructure—at least compared with Nunavut—to support their industries, both at a jurisdiction-wide level and at a community level. Without any modern offshore vessels, ports and other forms of marine infrastructure, Nunavut is clearly far behind and at a disadvantage compared to these other jurisdictions.

Finally, unlike the other jurisdictions, Nunavut’s adjacent waters and its fishing stocks are not well known. Very little knowledge exists of the fishing stocks—a key ingredient in developing a sustainable fishing industry.

⁶⁸Lars-Nila Lasko, “The Sami People and the Northern Sea Route: Juridical, Social and Cultural Concerns” Summary of Working Paper No. 154-1999, International Northern Sea Route Programme) www.fni.no/insrop/INSROPsummary_of_Working_Paper_No_1541.html

⁶⁹ OECD, *The Cost of Managing Fisheries*, 2003.

Appendix E: Document List

Document List

- AFPR. 2001. “The Management of Fisheries On Canada’s Atlantic Coast: A discussion document on policy direction and principles.” DFO Atlantic Fisheries Policy Review. www.dfo-mpo.gc.ca/afpr-rppa
- AFPR. 2001. “Atlantic Fisheries Policy Review: What We Heard at Public Consultations.”
- Baffin Fisheries Coalition. 2002. Final Report – 2002 0A Turbot Fishery and the 2002 SFA 2&3 within the NSA *montagui* Shrimp Fishery.
- Bowering, W.R. 1999. “Ecology, Fisheries and Management of Greenland Halibut (*Reinhardtius hippoglossoides* (Walbaum)) in the Canadian Northwest Atlantic. PhD Thesis. Department of Fisheries and Marine Biology, University of Bergen. Bergen, Norway.
- Brubacher and Consilium. 2001. Nunavut Fisheries Training Needs Assessment, Summary Report. Government of Nunavut, Department of Sustainable Development.
- Burke Consulting Inc. 2003. Strategic Fisheries Report: Nunavut’s Offshore Fisheries Resources: Turbot and Shrimp Access and Allocations. Nunavut Fisheries Working Group.
- Burke Consulting Inc. Commercial Fisheries Diving Workshop – Final Report. Iqaluit, March 24-25, 2003. DSD and INAC.
- Centre for Sustainable Aquatic Resources, Fisheries and Marine Institute. 2003. Cumberland Sound Resource Assessment and Fisheries Training Project.
- CSAR, FMI, Clyde River HTA, Pond Inlet HTA. 2003. Training and Preliminary Resource Assessment of Potential Commercial Turbot Fishing Areas in Baffin Inshore Region.
- Canadian Council of Professional Fish Harvesters. 1998. Creating New Wealth From the Sea: Policy alternatives for an economically, ecologically and socially sustainable Canadian fishery. <http://www.ccpfh-ccpp.org>
- Consilium Nunavut Inc. 2002. Kitikmeot Foods Limited: Marketing Study for a Fish and Meat Processing Facility in Cambridge Bay, Nunavut. For Nunavut Development Corporation.
- DFO. 2004. A Policy Framework for the Management of Fisheries on Canada’s Atlantic Coast.
- DFO. 2004. Integrated Fisheries Management Plan – Greenland Halibut – NAFO Subarea 0 2003 – 2005. (DRAFT).
- DFO. 2003. Integrated Fisheries Management Plan — Northern Shrimp Northeast Newfoundland, Labrador Coast and Davis Strait. http://www.dfo-mpo.gc.ca/communic/fish_man/ifmpns-pgipcn/index_e.htm
- DFO. 2003. The Marshall Response Initiative. www.dfo-mpo.gc.ca/communic/marshall/marshall_e.htm
- DFO. 2003. A Strategic Plan for Science in the Department of Fisheries and Oceans.
- DSD. 2003. Presentation Notes (PowerPoint) to NWMB.

- DSD. 2002. GN Response to the report of the Independent Panel On Access Criteria.
- DSD. 2002. The Fishing Industry of Nunavut—Sedna’s Bounty.
- DSD. 2001. “Developing Canada’s Newest Marine Fishery: Charting a New Course for Fisheries Development in Nunavut—GN Response to the Department of Fisheries and Oceans’ Atlantic Fisheries Policy Review.”
- DSD. 2000. Presentation Notes: Building Nunavut’s Fisheries.
- DSD. (undated). Contribution Policy for the Development and Diversification of the Nunavut Fisheries.
- HRDC. (undated). Employment Insurance and Fishing.
- H.M. Johnson and Associates. 2002. Market Outlook in the International Fish & Seafood Sector: Canadian Perspective. Office of the Commissioner for Aquaculture Development.
- IPAC. 2002. Report of the Independent Panel an Access Criteria.
- Jacques Whitford Environment Ltd. 2002. Social and Economic Benefits Assessment of Fisheries and Sealing in Nunavut. Government of Nunavut, Department of Sustainable Development.
- Ketilson, Lou H, and I MacPherson. 2001. Aboriginal Co-operatives in Canada – Current Situation and Potential for Growth. Centre for the Study of Co-operatives. University of Saskatchewan.
- NAFO. 2001. Minutes of December 5-6, 2001 Canada – Greenland Consultations. Nuuk, Greenland.
- Nunavut Development Corporation. 2002. Annual Plan. (Will soon have 2003 Annual Plan)
- Nunavut Implementation Fund. 2003. Project Proposal, Central and Arctic Region: Greenland Halibut Surveys in NAFO Division 0A. Project Lead: Margaret Treble (DFO Winnipeg).
- NFWG. (undated). Proposal to Establish Cumberland Sound Turbot Fishery As Separate Management Zone.
- NFWG. 2002. Nunavut Fisheries Working Group Position Paper for the 2002 Canada-Greenland Fisheries Consultations.
- NFWG. October 2003, Submission to the Standing Senate Committee on Fisheries and Oceans’ Special Study on Quota Allocations and Benefits to Northern Fishers. Iqaluit.
- NFWG and BFC. November 2003. A Long-Term Training Initiative for Nunavut’s Fishing Industry: An Aboriginal Skills and Employment Partnership (ASEP) Proposal—Proposal on Behalf of the Baffin Fisheries Training Partnership.
- NWMB. (undated). Nunavut Wildlife Management Board Policy: Allocation of Commercial Marine Fisheries Quotas in the NSA and Zones I and II. (policy current as of January 14/04).
- Parliament of Canada. 1998. The Nunavut Report: Report of the Standing Committee on Fisheries and Oceans. Parliamentary Standing Committee on Fisheries and Oceans.
- RT & Associates. 2001. Meat and Fish Processing in Nunavut: Issues, Factors and Opportunities for Future Development. For NDC.

- Senate of Canada. 2003. Proceedings of the Standing Senate Committee on Fisheries and Oceans. Issue Nos. 9, 10, 12, 15, 17, 18.
http://www.parl.gc.ca/common/Committee_SenProceed.asp?Language=E&Parl=37&Ses=2&comm_id=7
- Senate of Canada. 2002. Selected Themes on Canada's Freshwater and Northern Fisheries. Report of the Standing Senate Committee on Fisheries. First Session, Thirty-Seventh Parliament.
http://www.parl.gc.ca/common/Committee_SenRep.asp?Language=E&Parl=37&Ses=1&comm_id=7
- Simonsen, Claus S. 2002. *An Assessment of the Greenland Halibut Stock Component in NAFO Division 1A Inshore*. NAFO Scientific Council Meeting – June 2002. NAFO SCR Doc. 02/55 Serial No. N4667. Greenland Institute of Natural Resources.
- Tavel Ltd. 2001. Feasibility Study for a Shrimp and Groundfish Processing Facility in Nunavut. Government of Nunavut, Department of Sustainable Development.
- Treble, Margaret. October 2002. *Presentation Notes: Greenland halibut (Reinhardtius hippoglossoides) biology, distribution and abundance in Baffin Bay and Davis Strait*. Stock Assessment Biologist for DFO.