Profile of the Atlantic Shrimp Industry

Submitted to:
The Atlantic Council of Fisheries and Aquaculture Ministers (ACFAM) – Task Group on Northern Shrimp

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This report is the work of an independent consultant and is provided to ACFAM for its consideration. The conclusions and options contained in the report do not necessarily reflect the views of ACFAM or any of its constituent members.

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ABOUT THIS REPORT

1. BACKGROUND

The shrimp industry in eastern and northern Canada faces major challenges heading into 2007, despite several years of increasing resource abundance, rising TACs and landings.

The TAC has doubled since the late 1990s, rising from 80,000 to 160,000 t. Most of this growth has occurred in the waters off Newfoundland & Labrador where the inshore and offshore sectors share a TAC of about 120,000 t. The cooked & peeled sector (C&P) – plants supplied by inshore vessels – expanded rapidly after 1997 in response to resource conditions and the increased inshore allocation. The offshore sector also benefited from the rising TAC, though capacity remained relatively stable at 17 licences and 13 vessels.

The Gulf shrimp resource has supported fishing and processing sectors since the mid-1970s, with fleets and plants in Québec, New Brunswick and Newfoundland and Labrador. Harvesting and processing capacity have remained fairly stable over the past few years, with increased TACs allowing average landings and plant throughput to increase. Temporary access to the fishery has been permitted on condition that TACs reach specified thresholds (there has been some sharing in each year since temporary allocations were introduced).

The Scotian Shelf shrimp fishery supports 20-25 vessels but landings are too low and variable to sustain a processing industry. Instead, landings are sold to New Brunswick plants.

The challenges facing the industry can be traced in part to markets – shrimp prices have declined steadily for much of the past decade as global supplies have grown faster than demand – and in part to industry capacity and structure. Both factors to a greater or lesser degree affect fleet and plant viability across the region.

2. ISSUES

The price issue is common to all industry participants; processors because they receive less for their products, harvesters because they are paid less for their landings, and skippers and crews because they earn lower incomes. While market prices have dropped by 40-50%, harvesting and processing costs have increased.

The capacity and structural issues also affect industry throughout the region. The Newfoundland & Labrador north east coast fishery is highly seasonal due to the characteristics of the harvesting sector. This affects plant capacity and operations, raising costs and limiting flexibility. On the other hand, the Gulf fishery extends over several months, and though this presents processors in Québec and New Brunswick with more favourable raw material supply conditions, average capacity utilization is low. Low capacity utilization coupled with low prices place the industry in a difficult financial position.

In brief, the main issues affecting the industry are:

- Price: how this affects industry viability
- Harvesting capacity: how this affects the rate of landings
- Vessel design: how this affects the timing of the fishery, raw material quality and costs
- Seasonality: how this affects plant capacity, operations and costs
- Workforce: how vessels and plants are affected by declining prices and revenues
- Markets: the need for diversification and collaboration
- Policy: how policy must change to facilitate a more market sensitive industry

3. OBJECTIVES

The Atlantic Council of Fisheries and Aquaculture Ministers (ACFAM) created a Shrimp Task Group to address the issues facing the sector. Its main objectives are to provide an integrated overview of the shrimp industry, and if instructed, to identify approaches and mechanisms that could possibly be considered in developing policy to address the issues and challenges facing the industry.

This report responds to the first requirement, namely, to provide ACFAM with an up-to-date profile of the Canadian shrimp industry covering the 1995-2005 period. The specific objectives are to provide overviews of each component of the industry using a regional or provincial focus as appropriate. The C&P sector forms the main focus of the report, and the description and analysis concentrate on the inshore fishery and the processing plants dependent on it.

This focus does not mean that other component of the industry – the offshore sector – does not face similar challenges. It does, including declining prices, reduced revenues and rising operating costs resulting in weak financial performance. These issues are touched on in this report, but exploring them and their impact on areas directly dependent on the industry lies beyond the scope of this study.

4. CONTENTS

Following this introduction, Chapter II provides an overview of resource conditions, examining trends in stock status, including effort, exploitation rates, recruitment and biomass. Markets are the focus of Chapter III, with detail on global supply and demand of shrimp and substitutes along with a close look at market structure in the U.S. and the U.K. Chapter IV contains a profile of the harvesting sector, providing fleet profiles and fishery data by province, and outlining key issues and challenges. The processing sector is reviewed in Chapter V, with a look at industry structure, raw material supply, production and employment, and key issues and challenges. And finally, Chapter VI draws the various threads together with an overall assessment of industry issues, challenges and options for addressing the issues.

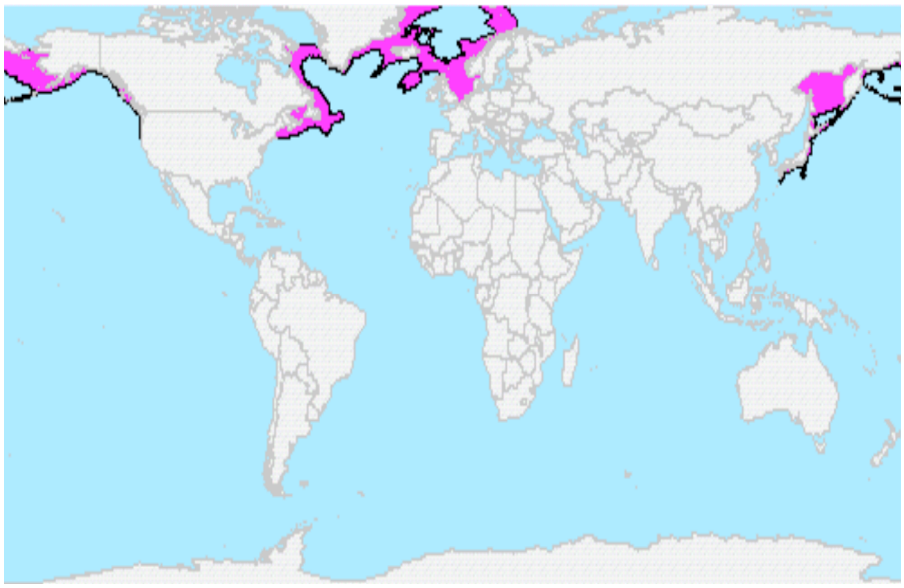
II

RESOURCE AND STOCK STATUS

1. HABITAT AND BIOLOGY

Northern or pink shrimp (*Pandalus borealis*) are found in areas where the ocean floor is soft and muddy and where bottom temperatures range from about 1 to 6^0C. In the Northwest Atlantic, this coldwater shrimp species ranges from Davis Strait into the northern Gulf of St. Lawrence and as far south as the Gulf of Maine (Fig. 2.1). There are also coldwater shrimp fisheries in Icelandic, Faroese and Norwegian waters in the northeast Atlantic, and Russian, U.S. and Canadian waters in the Pacific. The bulk of production (70%) originates in the waters off eastern Canada and Greenland.

Fig. 2.1: Coldwater shrimp global distribution



Source: FAO

The Science Advisory Reports for the Canadian stocks provide a good description of the characteristics and life cycle of northern shrimp. Shrimp live 5-8 years, depending on conditions. During their 3-4 month larval stage, they feed near the surface. They then move to the bottom, entering their adult stage.

They mature at about age two, maturing first as males and then at about age four, changing to females. They produce eggs in the late fall and carry them through winter and spring when they hatch. Shrimp are found at depths of 150 - 600 m. They are important prey for such species as Atlantic cod, Greenland halibut, skates, snow crab and harp seals.

2. DEVELOPMENT AND MANAGEMENT OF THE FISHERY

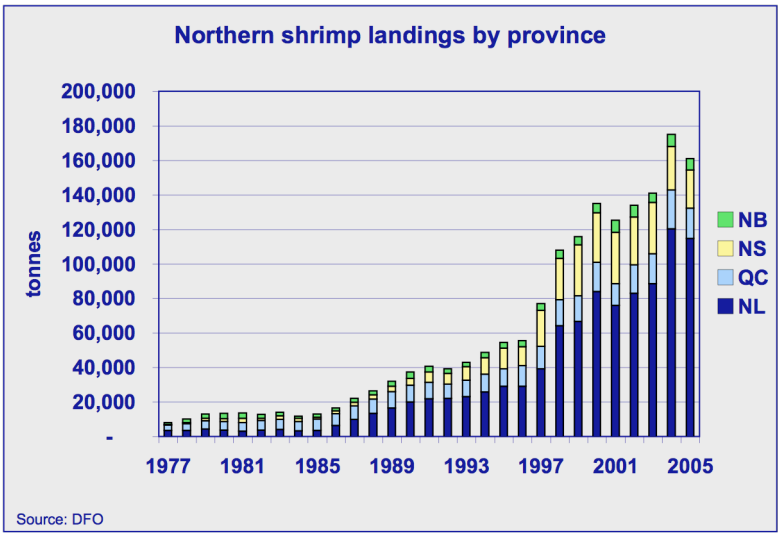
The shrimp fisheries in Atlantic Canada began in the mid-1960s in the northern Gulf of St. Lawrence and on the western Scotian Shelf. In the mid-1970s, shrimp fisheries developed off northeast Newfoundland and Labrador and on the eastern Scotian Shelf (Fig. 2.2).

- Following a substantial increase in abundance and an expansion of its spatial distribution during the 1990s, the shrimp resource off Newfoundland and Labrador today provides the basis of a major industry with large harvesting and processing components. The 2006 TAC was set at 150,000 t, up from about 22,500 t in 1994. Separate allocations are made to inshore and offshore fleets, with about 325 active inshore wetfish shrimp enterprises in 2005 supplying 13 processing plants producing mainly C&P product. The offshore fleet of 12-13 factory freezer trawlers produces raw and cooked shell-on product ready for export.

- The Gulf resource also expanded over the years, and today also supports significant harvesting and shore-based processing capacity. The 2006 TAC was set at 36,180 t, up from about 16,000 t in 1994. A 112-vessel fleet conducts the fishery, with participants based in Québec (45), New Brunswick (21) and the west coast of Newfoundland (57). Landings provide raw material to regional C&P plants.

- The Scotian Shelf resource is at the southern limits of the species' range and has not developed at the same rate as in the more northern areas. The stock on the western Scotian Shelf collapsed in 1977 and has not recovered. The eastern stock was fished at a relatively low level (<500 t) up to the early 1990s (due to by-catch problems and poor economics), with TACs varying between 3,000 and 5,500 t over the past several years. The fishery is conducted by 28 Nova Scotia-based vessels and seven based in New Brunswick. The stock also supports a small trap fishery in Chedabucto Bay.

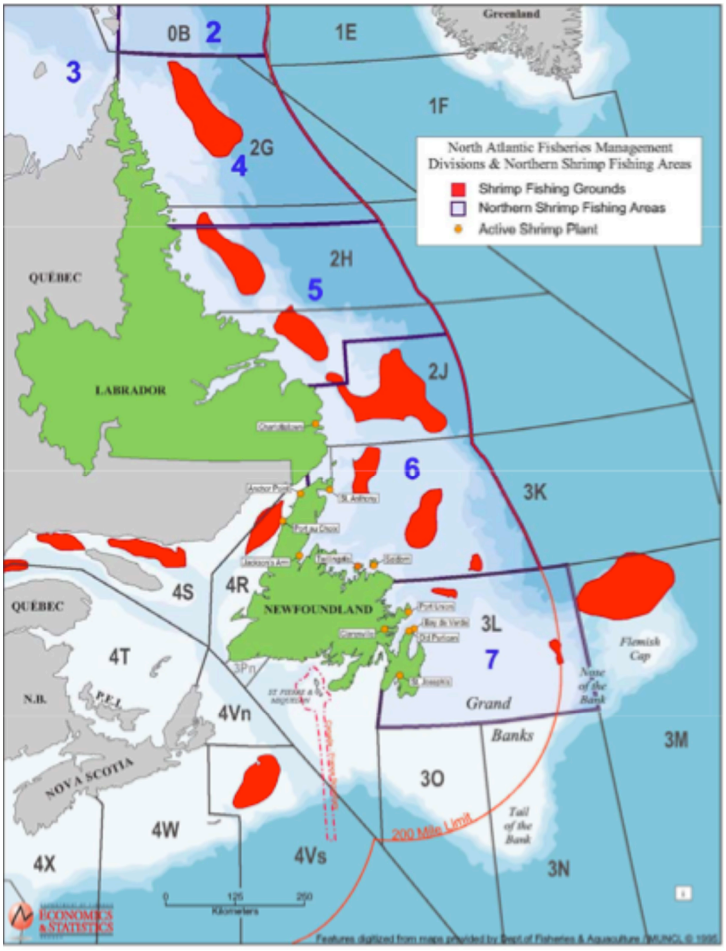
Fig. 2.2: Landings climbed steadily during the late 1980s and mid-1990s, then rose sharply in the late 1990s with the growth in stock abundance off Newfoundland and Labrador. Landings in NS reflect participation in the northern fishery, while landings in NB and QC reflect growth in Gulf stocks. Overall, landings almost quadrupled in a decade, rising from about 45,000 to 175,000 t.



All shrimp fisheries in eastern Canada are subject to a range of management measures designed to promote resource sustainability of shrimp as well as potential by-catch species. Regulations include a minimum 40 mm mesh size, the mandatory use of a sorting grate to minimize by-catch of non-target species, discarding rules, mandatory dockside monitoring of landings, and specified levels of observer coverage.

All fisheries are managed with output controls in the form of TACs, coupled with either Individual Quotas (IQ) or Individual Transferable Quotas (ITQ) for the inshore sector and Enterprise Allocations (EA) for the offshore. Limited entry licencing is also in place, though there has been some expansion. Temporary permits in Scotia Fundy were converted to licences in 2005.

Fig. 2.3: Major shrimp fishing grounds in Atlantic Canada



Source: Review of the Cooked and Peeled Shrimp Industry, Report of the Inshore Shrimp Panel, Newfoundland and Labrador, 2002,

3. STOCK STATUS

Basis of the estimates

Scientific advice on the status of the shrimp resource in the various Shrimp Fishing Areas (SFA) forms the basis of TACs set by fisheries managers. DFO scientists prepare stock advisory reports (SAR) annually, taking into consideration fishery dependent and independent data. Fishery dependent data captures information from actual experience in the fishery, including catch and effort data provided by harvesters, catch sampling data from observers and information obtained from dockside monitoring programs. Fishery independent data captures the results of scientific surveys (trap or trawl surveys) conducted by scientists.

Using these sources of data, scientists generate annual estimates of key indicators of the health of the shrimp population including: fishing effort, catch per unit of effort (CPUE), stock abundance indices including trawlable biomass, abundance of males and females, female size, and recruitment trends (abundance of pre-recruits).

The certainty with which stock abundance and changes in abundance can be estimated depends on the quality of the underlying data and the scope for variance due to unforeseen changes in the ecosystem and environment. For example, where inadequate survey data are available (as in SFA 2 and 4), biomass index estimates have to be interpreted with caution. Also, scientists are unclear on the effects of differences in stock density on growth.

In light of these limitations, stock advisory reports provide sufficient information to gauge prospects for the fishery for no more than a year or two into the future. The biomass index provides the basis for setting TACs, with recruitment data influencing the TAC decision by providing a basis for looking ahead to see how biomass may change.

Stock Advisory Reports

Generally, the outlook in the Stock Advisory Reports remains positive. Of key importance to fisheries managers and the industry is information on stock abundance and biomass, distribution and recruitment:

- **Newfoundland and Labrador**: resource abundance and biomass indices reached record levels in recent years. The outlook is positive with high abundance, strong recruitment and broad distribution of the resource in the main Shrimp Fishing Areas in the south (SFA 5 and 6). The exploitation rate index remains relatively low (in the range of 10%). Inshore vessels report high catch rates in these areas. Status appears positive in the more northern areas (SFA 2 and 4), but future prospects are uncertain due to inadequate research data.

- **Northern Gulf of St. Lawrence**: most indicators of abundance and biomass have been positive over the past decade, largely the result of strong 1997 and 1999 year-classes. This explains generally rising TACs. The exploitation rate index remains relatively low (10-20%). The 2000/01 year-classes were lower than in 1997/99, so a slight decline in the abundance and biomass can be expected in 2007. Based on recruitment indices, the medium-term outlook is positive in all areas.

- **Scotian Shelf**: increases since 2002 in the eastern Scotian Shelf have resulted in record biomass estimates in 2004 and 2005. This should continue as a large 2001 year-class recruits to the fishery in 2006 and 2007. Slightly smaller year-classes in 2002 to 2004 are expected to result in lower biomass after 2007. This stock is expected to follow a cyclical recruitment pattern often seen in developed shrimp fisheries. Uncertainties about growth rates suggest a conservative approach to setting TACs.

III

SHRIMP MARKET

1. OVERVIEW

This chapter examines the conditions of demand and supply of northern shrimp in the international market. Northern shrimp (*P. borealis*) is one of about six species of coldwater shrimp caught in the northern latitudes in the Atlantic and Pacific Oceans. It is sold in a global market dominated by 15 main species of warmwater shrimp (there are about 60 species in total). Coldwater shrimp accounts for about 7% of global shrimp production.

Coldwater shrimp is something of a niche product, valued for its excellent flavour, but only in narrow market segments in a relatively few countries. Just 10 countries account for 85% of consumption. Coldwater shrimp is produced in essentially two forms, cooked and peeled (C&P) and shell-on (either raw or cooked), with country-specific preferences for each product (the U.K. and U.S. for C&P, and China and Japan for shell-on).

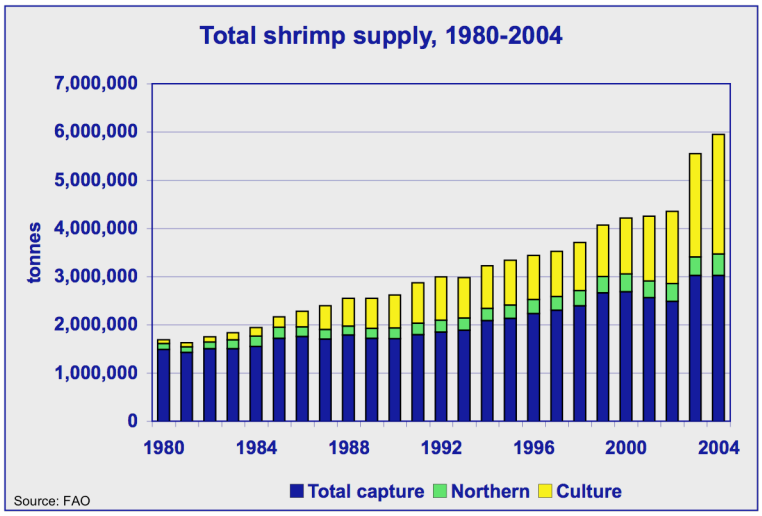
Canada ranks as the leading producer of coldwater shrimp, followed closely by Greenland. Other producing countries include Norway and Iceland. Though Canada holds a dominant position in the market, its producers have limited power in the market. This is due to structural issues in the industry and the resulting competitive environment.

Steadily declining prices forms the major challenge facing the global shrimp industry. Prices for coldwater shrimp have dropped by 40-50% over the past decade as growth in supply has outstripped the increase in consumption. These trends are expected to continue as the coldwater product faces intense competition from the warmwater varieties, particularly farmed production.

2. GLOBAL SUPPLY

The global supply of shrimp is estimated at about 6.0 million t. Just over half of this originates from the wild fishery, with the balance from farmed production. Farmed shrimp is the most rapidly growing source of supply.

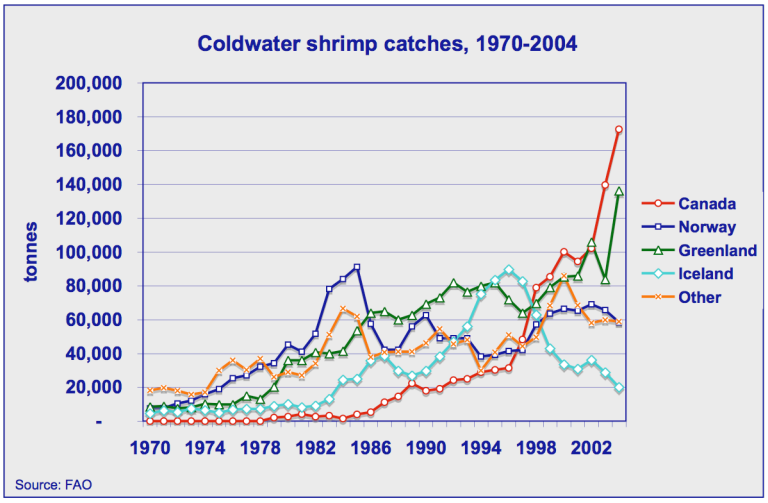
Fig. 3.1: Global shrimp supply has doubled in just over a decade, rising from 3 to 6 million t. Coldwater shrimp supply at 450,000 t accounts for just 7% of total supply.



Coldwater shrimp is produced from the northern waters of 15 fishing nations, with five accounting for 85% of production. Catches have been increasing steadily since the 1970s, with production doubling between 1990 and 2004 (from 225,000 to 450,000 t).

The productive waters in Davis Strait and off northeast Newfoundland and Labrador account for much of the growth in supply. These waters, fished by fleets based in Canada and Greenland, currently produce about 70% of total coldwater shrimp supply. The sharp rise in Canadian production is evident from Fig. 3.2. In 2004, Canada produced 39% of the total with Greenland at 31%.

Fig. 3.2: The sharp growth in coldwater shrimp supply over the past decade is due to the strength of the stocks off Canada and Greenland. Icelandic catches have dropped off to just 25% of their peak in 1996.



The Greenland C&P sector consists of 7-8 plants supplied by about 40 inshore or coastal wetfish trawlers. This fleet sector, which is allocated about 45% of the TAC, has declined from over 100 vessels since 1995. The fleet also consists of about 12 factory freezer trawlers (down from 25 or so in 1995). So, despite rising quotas, the fleets have rationalized considerably. Greenland's C&P production was about 16,500 t in 2004, of which 7,000 t was exported to the U.K. and 5,500 t to Denmark, with the balance going elsewhere in the EU.

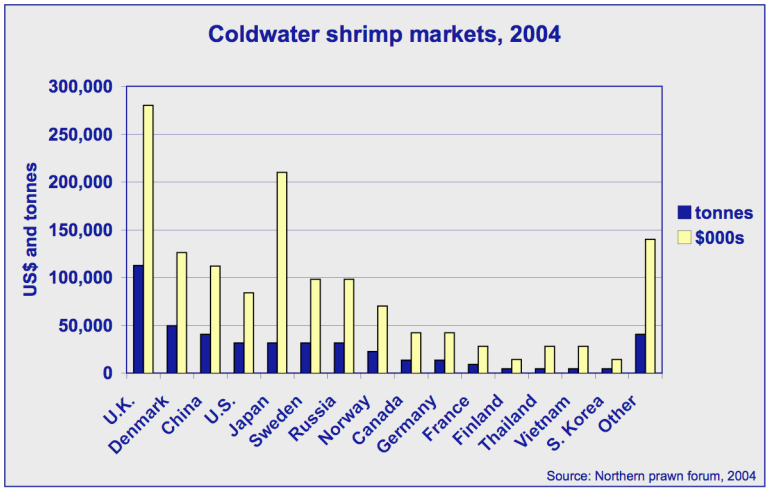
Stocks in Icelandic waters have declined sharply since 1996, causing a fairly precipitous drop in production. The Icelandic processing industry, once a major force in C&P production, has virtually disappeared. The number of peeling plants dropped from about 30 at peak, to fewer than five in 2005. In recent years, the industry had been sustained largely through imported raw material, principally from Norway. With declining catches in Norway, Icelandic plants are finding it more difficult to compete with Norwegian C&P facilities. The U.K. is Iceland's main market, taking about 80% of its C&P production.

3. GLOBAL DEMAND

Market overview

Global markets consumed about 450,000 t (live weight equivalent) of coldwater shrimp in 2004, with a wholesale value in the US$1.4 billion range. The U.K. is the largest single market, consuming about 25% of total supply (Fig 3.3). The other major markets are Denmark, China, the U.S., Japan, Sweden, Russia and Norway.

Fig. 3.3: Ten countries account for 85% of coldwater shrimp demand. The U.K. and U.S. are the leading C&P consumers. The high ratio of value to tonnage in Japan reflects the export of larger higher priced shrimp to that market.



Coldwater shrimp is processed into three main forms: C&P (processed in shore plants), shell-on raw and shell-on cooked (processed on board factory freezer trawlers - FFT). All Canadian C&P production is single frozen using raw material supplied by wetfish trawlers. Most production in European plants is also frozen, though some is shipped fresh to local markets. The industrial size shrimp caught by FFT is generally shipped frozen to peeling plants, thawed for C&P processing, and then re-frozen. A breakdown of product by form is shown in Table 3.1.

Table 3.1: The 450,000 t of coldwater shrimp is broken down into three main categories: 280,000 t of industrial (this yields 95,000 t of C&P as the final product form), and 120,000 and 50,000 t of cooked and raw shell-on, respectively.

Coldwater shrimp by product form (tonnes round weight equivalent)

Industrial		**280,000**
C&P (product weight)	**95,000**	
Single frozen	**45%**	
Double frozen	**55%**	
Cooked shell-on		**120,000**
Raw shell-on		**50,000**
Total		**450,000**

Source: Globefish

Shrimp markets tend to be product specific, with demand for each product form concentrated in just 2-3 countries (Table 3.2). While high market concentration makes product prices subject to considerable volatility, the positive implication is that demand has considerable potential to grow in other markets.

- **C&P:** The market consists almost exclusively of the EU (80%) and North America (20%). Within the EU, the U.K. consumes half the EU total (35-40,000 t), with the other half spread across another 8-10 mainly northern countries. The U.S. dominates the North American market (10-12,000 t), with Canadians consuming an estimated 4-5,000 t.* European producers (Norway, Iceland and Denmark) are the main suppliers to the EU market (90%), with Canada making up the balance. A substantial share of Canadian exports is in the form of shell-on frozen to Denmark where it is re-processed in brine for re-export to the EU.

* Precise figures on Canadian consumption are difficult to estimate with confidence, but this figure represents a conservative estimate of Canadian consumption. Over 40% of Québec production alone (about 2,500 t) goes to the Canadian market.

- **Cooked shell-on:** China and Russia are the main markets, each taking 25-30% of the 120,000 t produced. Several northern European countries consume most of the balance. Most of the exports to China are consumed in the local market, though some is processed for re-export. The Canadian offshore sector has become a major supplier to both markets, shipping over 20,000 t to China and over 5,000 t to Russia/Estonia in recent years.

- **Raw shell-on:** Japan is the dominant market, taking 50-60% of the 50,000 t produced. Several other Far East countries, including China, Thailand and South Korea, take the balance. The Canadian offshore sector supplies about 10,000 t to this market.

Table 3.2: Coldwater shrimp markets by country and product

	Total Weight		Cooked & Peeled		Cooked shell-on		Raw shell-on	
	tonnes	%	tonnes	%	tonnes	%	tonnes	%
Europe								
United-Kingdom	112,500	25%	37,386	40%	2,440	2%		
Denmark	49,500	11%	15,810	17%				
Sweden	31,500	7%	5,580	6%	13,420	11%		
Russia	31,500	7%			30,500	25%		
Norway	22,500	5%	4,092	4%	9,760	8%		
Germany	13,500	3%	4,092	4%	1,830	2%		
France	9,000	2%			7,320	6%		
Finland	6,300	1%	1,860	2%				
Asia								
China	40,950	9%			35,380	29%	4,800	10%
Japan	31,950	7%			1,830	2%	26,880	56%
Thailand	5,850	1%					6,240	13%
Viet Nam	4,500	1%					3,840	8%
South Korea	4,500	1%			3,660	3%		
North America								
United States	31,950	7%	11,160	12%				
Canada	13,500	3%	4,650	5%				
Other Markets								
	40,500	9%	8,370	9%	15,860	13%	6,240	13%
Total	**450,000**	**100%**	**93,000**	**100%**	**122,000**	**100%**	**48,000**	**100%**

Source: Globefish, 2005

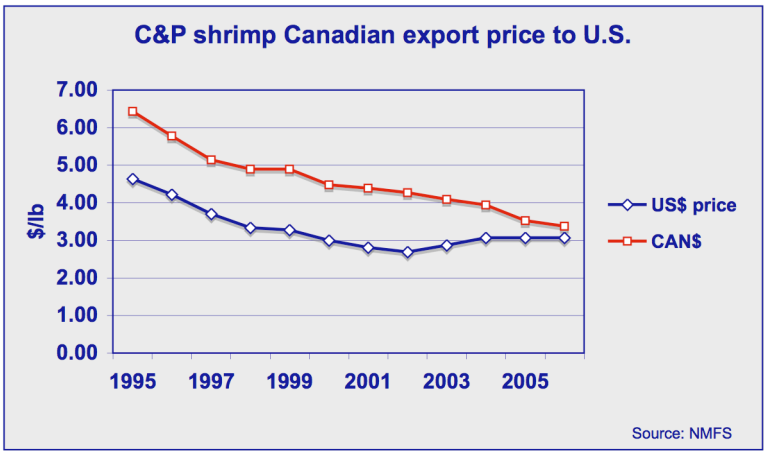
The U.S. market

The U.S. is Canada's largest C&P market, in recent years accounting for upwards of 25% of total production of 25,000 t (product weight). The U.S., the world's leading shrimp consumer, imports over 600,000 t of shrimp per year with an import value in the US$3.5-4.0 billion range. About 99% of this is warmwater shrimp imported from Thailand, China, Indonesia and India. The remaining 1% (about 5-7,000 t) is coldwater shrimp imported from Canada (almost exclusively C&P). The U.S. shrimp fisheries (mainly the Gulf of Mexico) produce about 200,000 t. Net U.S. supplies (after exports) are in the 650,000 t range. Shrimp consumption has *doubled* in under 10 years.

The U.S. market for coldwater shrimp is mainly on the west coast, with Seattle, San Francisco, San Diego and Los Angeles the main markets. The coldwater shrimp fishery on the U.S. west coast (Washington, Oregon and California) produces 20-25,000 t annually. The species, *Pandalus jordani*, is similar in taste (though generally smaller) to our northern shrimp. Because there is a developed market for coldwater shrimp on the west coast, this is where Canadian C&P exports are mainly consumed (primarily a retail market). One Canadian producer is having some success in the food service sector with a branded C&P product. Canadian producers of shell-on products have tried to develop a U.S. market, but consumers have shown little interest in the challenge of shelling these smaller shrimp when larger and relatively inexpensive shelled varieties are available.

At over 600,000 t consumed, the U.S. is a huge shrimp market (per capita, shrimp is the leading seafood consumed in the U.S.). Even a very small percentage increase in demand for Canadian C&P outside the traditional market areas would result in a substantial increase to Canadian producers. Expanding the market could help to support prices that have declined steadily since the mid-1990s. Prices for Canadian C&P exported to the U.S. are shown in Fig. 3.4

Fig. 3.4: The U.S. market for shrimp (all species) has doubled since 1996 in part due to declining prices. The U.S. dollar price for Canadian exports of C&P shrimp has dropped by 35% since 1995. Adding the effect of the exchange rate, the Canadian dollar price has dropped by 50%.



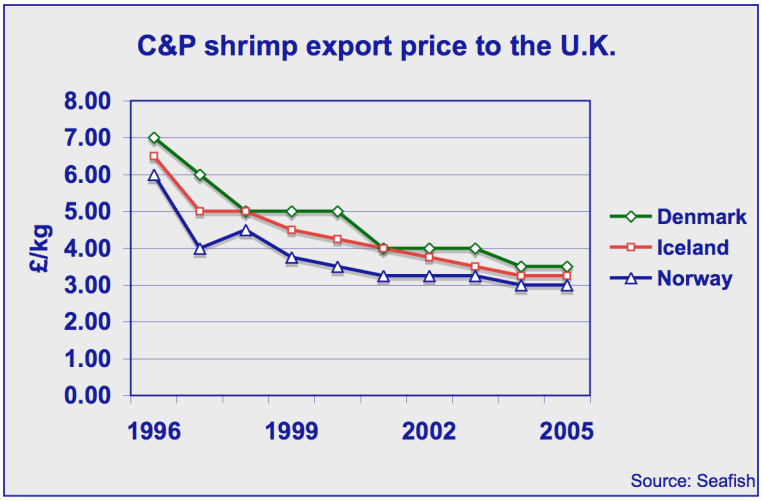
The U.K. market

The U.K. is the leading market for C&P shrimp, with consumption at about 40,000 t annually. It represents Canada's second largest market, taking 3,000-4,000 t annually. The main suppliers are Iceland (about 50% in recent years), Norway, Greenland/ Denmark and the Faroes. Iceland has managed to maintain its export position (despite greatly reduced domestic landings) by importing raw material from Norwegian and Canadian factory vessels. Greenland and Iceland export to the U.K. (and EU) duty free, and Norway gets a reduced tariff rate of 0% on the first 5,000 t and generally 7.5% thereafter. Canada faces a 20% tariff on all exports after an initial 7,000 t quota at 6% is filled (this quota is shared by all exporters who do not have a preferential trade position).

The U.K. market is divided about equally between the retail and food service sectors. Canada supplies product to both, selling directly to the several large retailers (Marks & Spencer, Tesco, Sainsbury, etc), or to one of about 10 large importers/distributors. At the retail level, C&P shrimp is sold in bulk, small packs, or in the substantial sandwich trade.

Though C&P shrimp enjoys strong demand in the U.K. (and much of the rest of the EU), it nonetheless has to compete with warmwater varieties. Increased supplies of the latter have contributed to steadily eroding C&P prices since the mid-1990s. Trend data on export prices to the U.K. is shown in Fig. 3.5. Reliable price data for Canadian exports are not available.

Fig. 3.5: C&P shrimp export prices to the U.K. have declined by at least 50% for exports from Denmark, Iceland and Norway. Canadian exporters face the same declining trend. The U.K. is the largest single C&P market, accounting for 40% of total production of about 95,000 t. At the current £/$ exchange rate (£1.00=$2.15), the £/kg prices shown are roughly equivalent to $/lb.



Far East

The Canadian offshore fishery produced about 65,000 t of shell-on product in 2004 and 2005. About 40% of this (about 25,000 t) is exported to China (cooked) and Japan (raw). The Chinese market has developed strongly in the last few years (shipments in the 20,000 t range), with Japan relatively steady (shipments in the 5-7,000 t range). Both markets are expected to improve over the next few years; China, because of its economic growth and rising middle class, and Japan, because of the economic turnaround in progress there.

4. KEY ISSUES

For all coldwater shrimp processors, price is the main issue. There seems little prospect of a price recovery with abundant supplies of shrimp of all species on the market.

Canadian producers face a bleak prospect. Not only are they vulnerable to competition from efficient suppliers in the important EU market, but they also face a crippling tariff on exports to that market. In the U.S. market, the single largest for Canada's C&P products, weak prices are exacerbated by the declining value of the U.S. dollar. With the U.S. economy poised for a downturn in 2007, further price weakness can be expected.

Unless and until prices can be strengthened through some combination of improved market diversity and rising demand, the industry will continue to languish. Market development is one area where investment could pay dividends.

IV

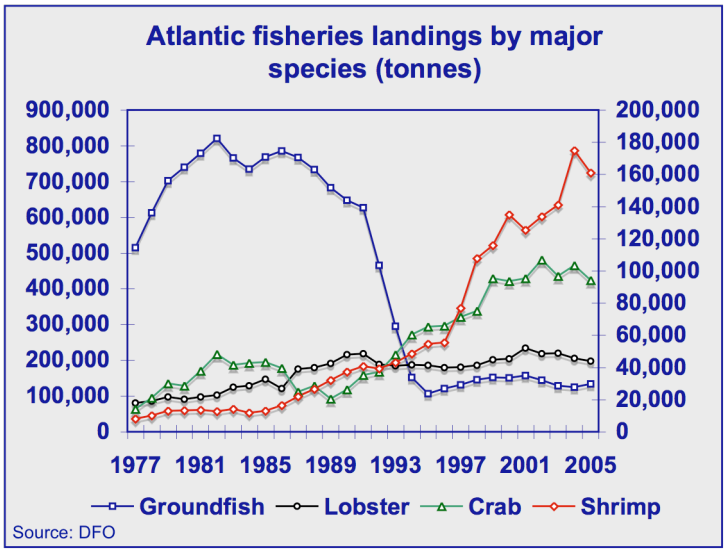
HARVESTING SECTOR

1. OVERVIEW

The fisheries of Atlantic Canada have changed dramatically over the past 25 years. The extension of jurisdiction in 1977 resulted in a massive expansion in fleet capacity, with much of the focus on the groundfish fisheries. Landings increased rapidly and more effort was drawn into the fishery. The introduction of limited entry licencing in the late 1970s slowed capacity growth somewhat, but competitive fishing provided a strong incentive to continue to invest in larger vessels and greater processing capacity.

Though the industry endured financial and market crises along the way, it was not until the early 1990s that the groundfish resource itself collapsed throwing thousands out of work around the region. But almost as swiftly as the groundfish economy was disintegrating, a fishing economy based on shellfish was emerging to replace it (Fig, 4.1). To some extent this had started with lobster in the early-1980s, but the transition did not take off until the 1990s when shrimp and crab stocks increased sharply.

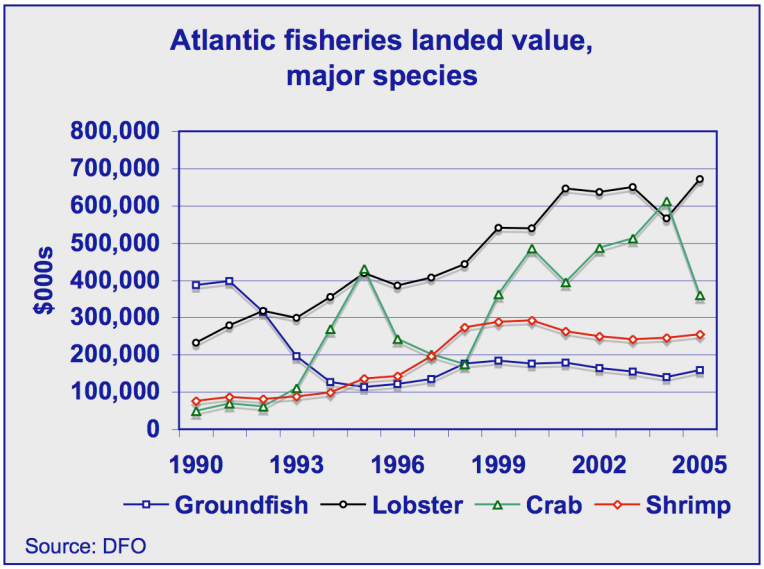
Figure 4.1: The Atlantic fisheries were marked by a collapse of major groundfish stocks in the 1990s. With the rapid growth in shellfish stocks, the fishing economy has become increasingly dependent on three species: lobster, snow crab and northern shrimp. Tonnage of groundfish is given on the left axis. Tonnages of the shellfish species are given on the right axis.



Shrimp leads all species in the rate at which landings increased after 1990, marking a four-fold increase by 2004. In 1977, shrimp accounted for just 1% of total landings, compared with groundfish at 60%. The increase in shrimp landings is attributable to a combination of factors including substantially increased biomass and quotas resulting from favourable environmental and ecosystem conditions, generally favourable markets in the 1980s and 1990s, and an expansion in access to the fishery and in fleet capacity.

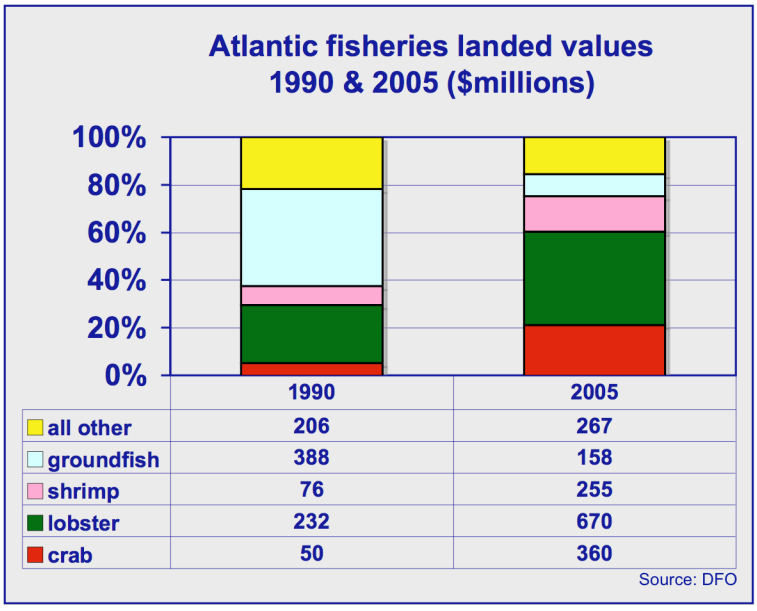
Though shrimp landings increased substantially over the past decade, markets did not keep pace. Despite (and to some extent because of) a tripling of tonnage landed since 1996, the value of landings has actually declined since 2000 (Fig. 4.2). While markets for lobster and crab have expanded with supply, resulting in stable and even rising prices, northern shrimp competes against numerous other shrimp species in a much larger global market. Demand has not kept pace with supply, resulting in steadily declining prices. The net effect is evident from the comparison of Fig. 4.1 and 4.2.

Fig. 4.2: The value of shrimp landings has declined by about 25% since 1999, despite a 40% increase in tonnage caught. A steady decline in world market prices is the main reason, brought about by global shrimp supplies expanding faster than demand.



The shift in the relative importance of species is evident from Fig. 4.3. Shellfish have doubled in relative landed value, rising from 37 to 75% of the total between 1990 and 2005. The share is down slightly from 2004 when shellfish accounted for just under 80% of total landed value. The decline is due to the sharp drop in crab prices in 2005, following three years of steady increase.

Figure 4.3: Three shellfish species – crab, lobster and shrimp – accounted for 75% of total landed value in 2005, up from just 37% in 1990 when groundfish dominated the fisheries. Shrimp accounted for just over 15% of total landed value in 2005, double its relative importance in 1990. By contrast, groundfish currently accounts for just 10% of total landed value.



	1990	2005
all other	206	267
groundfish	388	158
shrimp	76	255
lobster	232	670
crab	50	360

The expansion in shrimp stocks was not distributed evenly across the Atlantic region, but concentrated in the northern waters off Newfoundland and Labrador. Prior to 1997, access to the northern shrimp fishery was limited to 12-13 offshore vessels, most based in Newfoundland. Another 46 inshore vessels based on Newfoundland's west coast fished in the northern Gulf of St. Lawrence.

The rapid expansion of the northern shrimp stock provided a basis for opening access to the fishery to some of the vessels displaced from groundfish. Between 1997 and 2001, the inshore fleet in Newfoundland expanded to about 380 licenced enterprises. The supply of fresh shrimp from this fleet increased 5-fold between 1997 and 2000, providing the basis for a larger processing sector. The number of plants grew from three to twelve by 2001, and subsequently to 13.

Stocks expanded in the fishery in the northern Gulf of St. Lawrence as well, though at a more moderate rate. This fishery supports vessels based in Québec, New Brunswick and Newfoundland and Labrador. Rather than expanding the licenced fleet of 112 vessels, temporary access was provided beginning in 1997. Access is based on a sharing formula, with eligible core licence-holders permitted to participate provided the TAC reaches a minimum level specified in the management plan. Shrimp landed by the Québec, New Brunswick and Newfoundland & Labrador fleets is processed at one of nine plants in the region. The number of plants has remained fairly stable over the years, with some turnover in ownership.

2. THE SHRIMP FISHERY

Newfoundland and Labrador

Fleet structure

The inshore fleet is composed of 380 licenced enterprises <65', up from 50 prior to 1997. Some 350 of these enterprises are reported as active, with 50 or so holding quota in both the northern Gulf of St. Lawrence (Esquiman Channel) and northeast NL fisheries. Some 80% of the inshore fleet (278 vessels) also holds crab licences. Access to the fishery is through limited entry licence and individual quota.

The offshore sector is composed of 17 licences held by 12 companies operating 13 vessels >100' (though one vessel is believed to be in receivership). Of these, eight operate from ports in Newfoundland and Labrador and five from ports in Nova Scotia. The offshore quota is allocated to licence-holders and various community groups who do not hold licences (e.g., SABRI, Fogo Is., PEI Consortium, Nunavut and Nunavik) and who rely on charter arrangements with licence-holders to harvest their allocations. Allocations based on principles of adjacency, historic dependence and viability, are made by Shrimp Fishing Area to specified quota recipients.

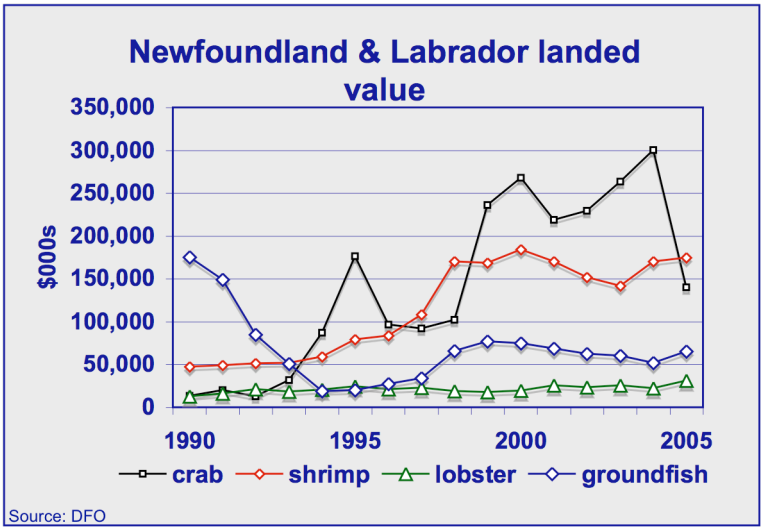
Landings – annual and seasonal

Of all the provinces, Newfoundland and Labrador has experienced the sharpest transition from a coastal economy dominated by groundfish to one dominated by shellfish. As recently as 1990, groundfish accounted for over 60% of the total value of landings ($283 million). The collapse of the northern cod stock and the sharp decline of other groundfish stocks resulted not just in the loss of thousands of harvesting and processing jobs, but of a way of life in many communities. In the space of just a few years, the value of groundfish landings had dropped to below $20 million.

Prior to the late 1980s, shellfish species were of relatively minor importance to the Newfoundland and Labrador fisheries. Shrimp abundance climbed steadily through the early 1990s, with landings doubling between 1996 and 1999, rising from about 30,000 to over 60,000 t. Shrimp landings doubled again over the next five years, reaching 120,000 t in 2004. Poor harvesting economics caused landings to drop slightly in 2005.

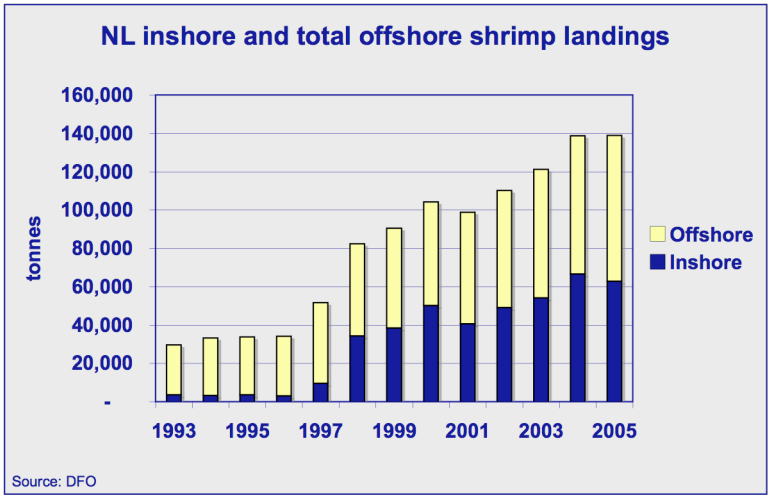
With landed value of $175 million in 2005, shrimp was the leading species, accounting for 34% of the total value of landings of $510 million (Fig. 4.4). This relative position is up considerably from the year before because snow crab landed value plummeted in 2005, dropping to just $140 million (27% of the total, down from 50% in 2004). Three factors explain the drop: reduced landings (down 20% from 2004), weak product markets, and the depreciation of the U.S. dollar (down by 10% against the Canadian dollar). The crab industry experienced an even more difficult year in 2006, suggesting that despite its price weakness, shrimp should gain further in terms of its *relative* importance.

Fig. 4.4: Shellfish have replaced groundfish in the fishing economy of Newfoundland and Labrador. Shrimp led all species in 2005, accounting for 34% of landed value. This put it ahead of crab for the first time since 1998. With continuing price weakness in the crab markets, shrimp is likely to be the leading species again in 2006.



Much of the growth in shrimp stocks after 1997 was allocated to the inshore sector as a means of supporting harvesters after the collapse of groundfish stocks. Inshore catches climbed from about 3,000 t in 1996 to 34,000 t in 1998, reflecting the rapid transition of this fleet to the shrimp fishery. Allocations continued to climb, with landings reaching 66,500 t in 2004. The inshore accounts for about 45% of total landings from the northern shrimp stocks, with the offshore taking the balance (Fig. 4.5).

Fig. 4.5: Inshore harvest of northern shrimp expanded greatly after 1997 as displaced groundfish vessels geared up to participate in the fishery. Increasing stock abundance resulted in both the inshore and offshore sectors increasing their harvest levels. The offshore data captures total activity (vessels landing in Newfoundland and Labrador as well as Nova Scotia).

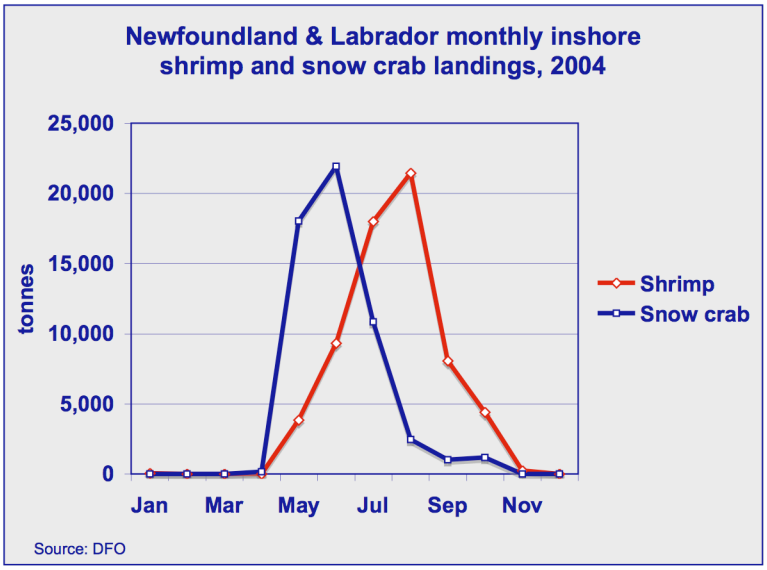


The inshore shrimp fishery, like crab, is highly seasonal (Fig. 4.6). Though the shrimp fishery typically lasts 16-18 weeks, effort and landings are concentrated in July and August when typically 50-60% of the catch is taken (as it was in 2004 and 2005). The fishery is concentrated in July and August for two main reasons: weather and participation in the crab fishery.

- The inshore fishery occurs some distance from shore in an environment where poor weather and ice conditions restrict operations in all but the most favourable months. Inshore vessels, all less than 65', reduce the risk by concentrating effort in June, July and August. The fleet fishes an average of 25 days (35 days at sea), suggesting a longer season is certainly possible. The crab fishery is even shorter – 14 days fished and 20 days at sea – for enterprises holding both licences.

- Owners of 80% of the vessels active in the shrimp fishery also hold crab licences. The crab fishery tends to take precedence because it generates a higher net return and also because there are risks associated with *not* fishing for crab as early as possible in the season. These include missing out on early season high catch rates, being left with smaller crab later in the season, and the possibility of running into a soft-shell closure later in the season.

Fig 4.6: The timing and sharp peak of the shrimp season is driven in part by weather considerations and in part by the factors driving the timing of the snow crab season. Crab fishing usually starts first because it is somewhat less weather dependent (closer to shore) and because harvesters are driven by high net income, high catch rates, and to avoid soft shell. Even if weather were not a factor, dual shrimp/crab licence-holders would have little option but to engage in the crab fishery. Shrimp can wait.



The Newfoundland and Labrador Region inshore fleet in the Gulf holds individual quotas and the industry self regulates trip limits. On the North East Coast the industry self regulates trip limits and individual harvesting caps (percentage shares of the fleet quota by area). The fleet is not managed under a DFO managed IQ regime. Nonetheless, the trip limit and harvest cap approach could provide skippers with some confidence their entitlement is there to be caught when they choose to fish it. In theory this could provide harvesters with the basis for a balanced approach to the fishery, resulting in a smooth flow of raw material to processing plants thereby eliminating the gluts that are all too common in competitive fisheries. This is not the case.

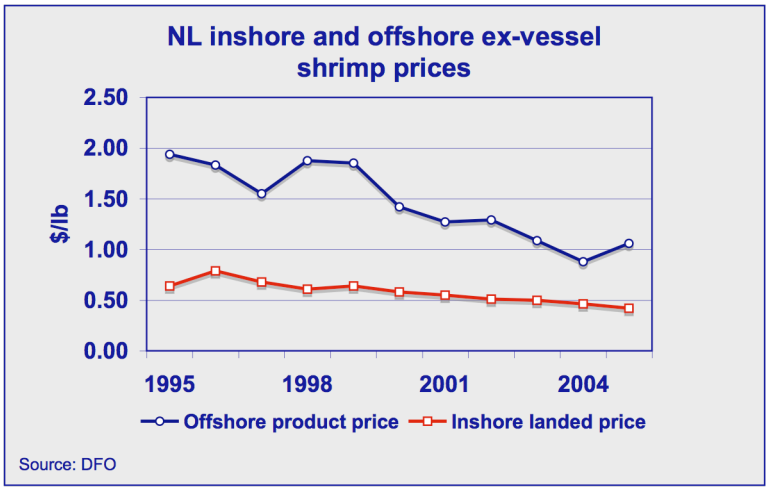
Implicit in the theory is an assumption that other pressures to harvest rapidly are absent. This is not the case with shrimp. That the inshore fleet is composed of relatively small vessels means that risks are lower if fishing in good weather, ideally June to August. The competitive pressure to participate in the crab fishery as early as possible pushes peak activity off to July. With high catch rates, the bulk of the quota can be caught by early September. Though price structure provides some incentive to fish during the shoulder months (May/June and September/October), the incentives would not appear to be strong enough to offset the seasonal drivers. As a result, gluts and poor quality are all too common.

Fleet economics

Global shrimp prices have declined fairly steadily since the late 1990s, causing shore prices paid to vessels to decline as well. Since 1996, the inshore price paid in Newfoundland and Labrador has dropped from about $0.65/lb to an average of $0.42/lb in 2005 (Fig. 4.7).

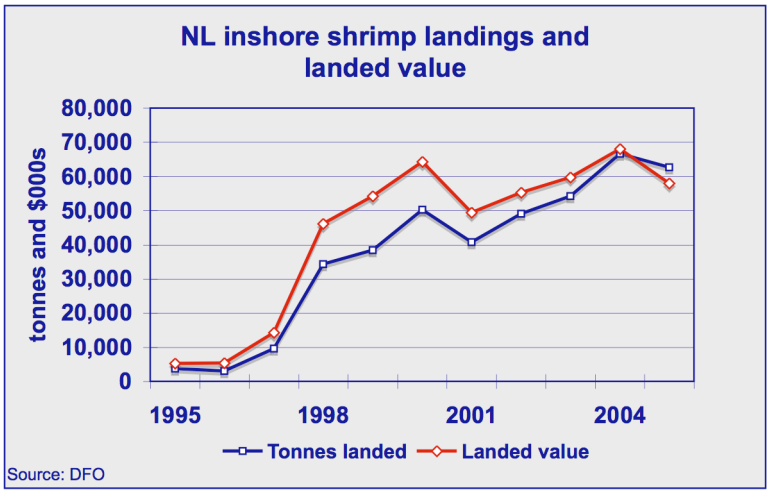
A similar trend faces the offshore sector, though a corresponding raw material shore price is not available because the offshore vessels produce a finished product. Offshore average product prices declined from the $4,200/t range in the late 1990s to about $2,200/t in 2005, bringing the effective ex-vessel product price down from $1.85/lb to $1.05/lb (Fig. 4.7).

Fig. 4.7: Declining world market prices for shrimp have caused shore prices in Newfoundland and Labrador to drop to historically low levels. Average landed value for the inshore was down to $0.42/lb in 2005. Average ex-vessel *product* price for the offshore dropped to the $1.05/lb range. Both sectors express concern that prices are at or near levels where revenues no longer cover operating costs.



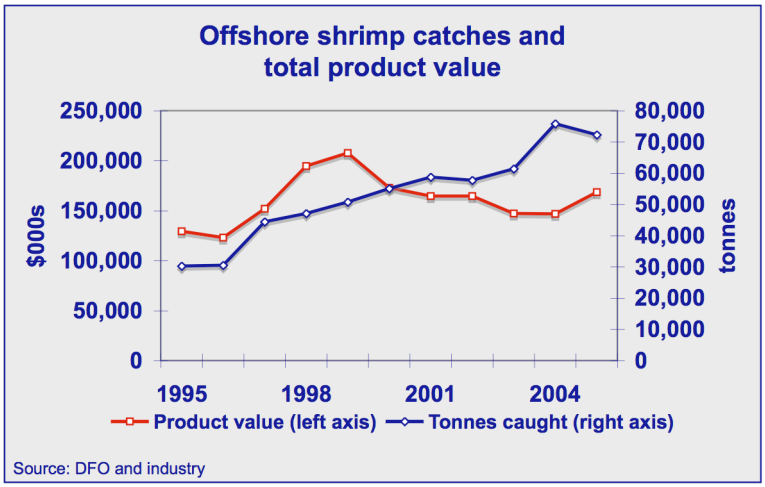
The impact of declining prices on inshore revenues is evident from the comparison of landings (tonnes) and landed value ($). Fig. 4.8 shows landed value climbing faster than landings up to the late 1990s and then the gap starting to narrow in 1999. Revenues increased more slowly than landings thereafter, with a sharp decline in 2005 as both price and landings dropped.

Fig. 4.8: Inshore landings increased from about 10,000 to 66,000 t between 1997 and 2004. The drop in 2001 resulted from a price dispute and late season start. Over the period landed value increased from $14.3 to $68.1 million. Revenues rose more slowly because of steadily declining shore prices.



The impact of declining prices has had a more serious impact on the offshore sector, in part because prices have declined more steeply, and in part because landings have not increased by as much. Total offshore revenue has been declining since 1999 when it reached just over $200 million. It dropped to $145 million in 2004 before taking a slight upturn. This decline occurred in spite of steadily rising allocations and catches (Fig. 4.9).

Fig. 4.9: Offshore revenue dropped steadily between 1999 and 2004 as rising catches were more than offset by declining product prices. These data incorporate total landings and revenues for the offshore fleet, including vessels landing in Nova Scotia.



Nova Scotia

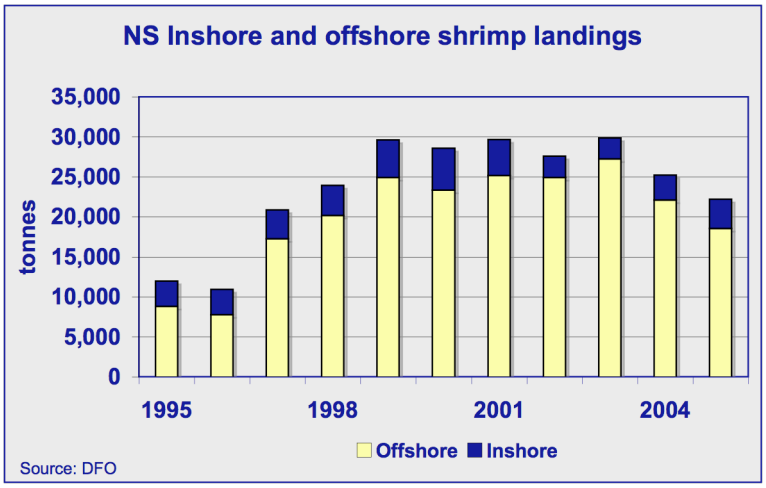
Fleet structure

The inshore fleet is composed of 28 vessels based in Nova Scotia (all but one <65') and seven New Brunswick-based vessels >65'. Included among these licences are several temporary permits converted to permanent status in 2005. Also included are 10 licences issued to First Nations, one under the Aboriginal Fisheries Strategy in 1995 and nine following the Marshall decision.

Landings – annual and seasonal

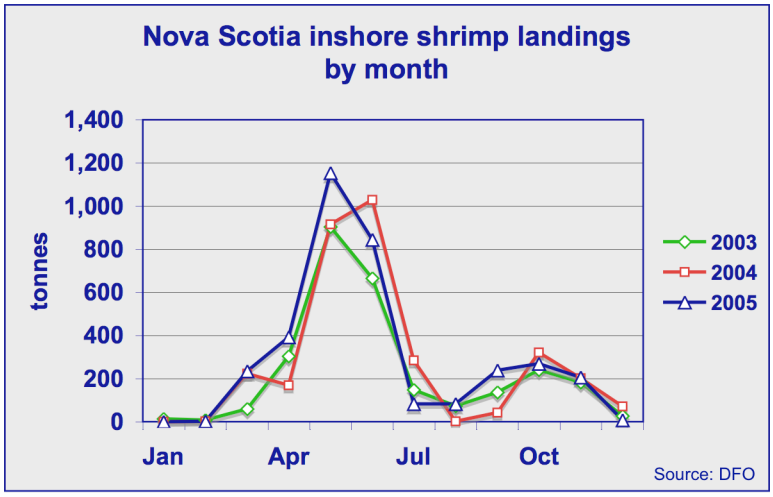
Annual landings from the Scotian Shelf shrimp fishery have ranged from 3-5,000 t since the mid-1990s. Five vessels in the offshore fleet operating in northern waters also land their production in Nova Scotia, with round-weight equivalent generally in the 20-25,000 t range (Fig. 4.10).

Fig. 4.10: Nova Scotia and New Brunswick-based vessels operating on the Scotian Shelf generate annual landings in the 3-5,000 t range. Offshore landings represent shrimp caught by Nova Scotia-based vessels operating in the northern fishery off Newfoundland and Labrador.



The inshore fishery begins in mid-March with the arrival of the Gulf-based fleet. All these vessels are in the 73-85' range and better able than the smaller Nova Scotia vessels to operate in the poor weather conditions common on the Scotian Shelf at this time of year. The Nova Scotia fleet typically begins to fish in mid-April. Most of the TAC is caught by the end of June and the fleets stop fishing in order to avoid poor quality shrimp during the moulting period (Fig. 4.11). The fishery resumes in September and the quota is usually caught by the end of November.

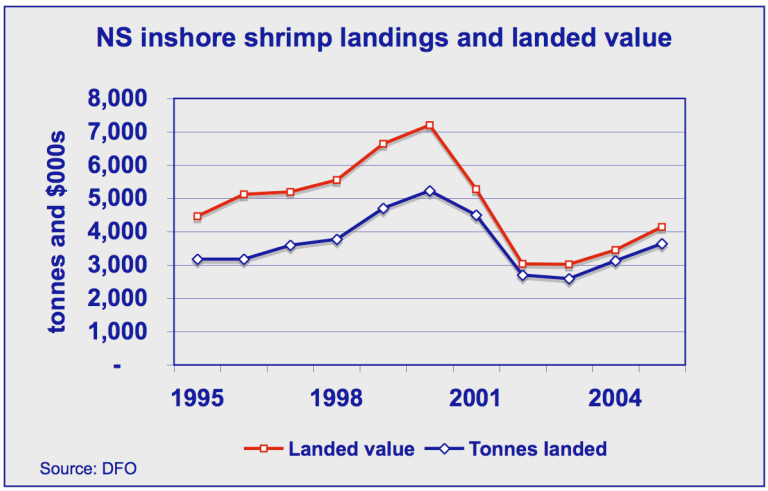
Fig. 4.11: The TAC is taken over several months, with the fleet avoiding poor quality during the summer moulting period.



Fleet economics

The inshore shrimp fishery generates a relatively small proportion of fisheries income and employment in Nova Scotia. Landings climbed steadily after 1995, reaching 5,000 t in 2000. With stable prices, landed value kept pace, rising from $4.5 to just over $7.0 million. Weakening prices coupled with declining stocks caused landed value to drop to the $3.0 million range by 2002, with a recovery to the $4.0 million range by 2005 due to increased landings.

Fig. 4.12: Landings follow a cyclical pattern characteristic of developed shrimp fisheries. Prices declined more rapidly than landings after 2000, causing the trend line between landings and landed value to narrow. All inshore landings in Nova Scotia are trucked to plants in New Brunswick for processing. Nova Scotia landed prices track prices paid to New Brunswick vessels (Fig. 4.15).



The price and revenue trends for the offshore fleet are captured in Fig. 4.9.

New Brunswick

Fleet structure

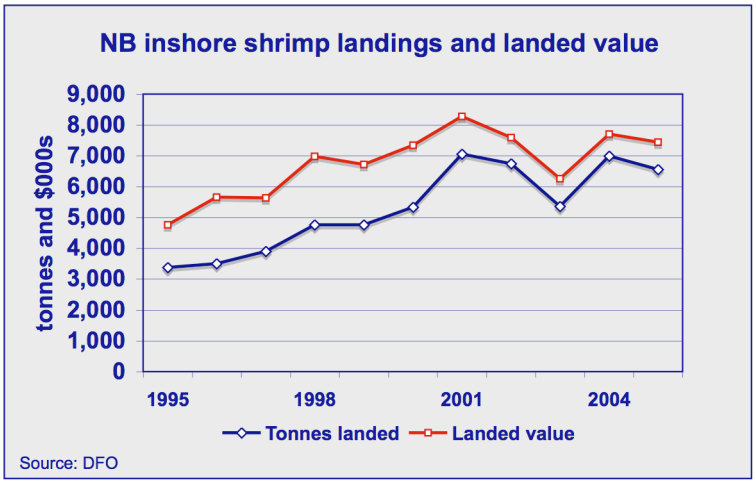
The New Brunswick inshore fleet consists of 21 enterprises, including the seven participating in the Scotian Shelf fishery. Fourteen vessels fall into the 65-100' (midshore) category, with the other seven <65'. This fleet has access to the northern Gulf stocks, forming part of Group B in that fishery. In addition to the New Brunswick vessels, Group B also consists of 38 Québec-based vessels. They share on a prescribed basis three of the four northern Gulf TACs (Sept-Iles, Anticosti and Estuary), and have access to 25% of the Esquiman TAC (Group A, consisting of Québec and Newfoundland vessels, shares the other 75%). Access is based on ITQs. New Brunswick vessels catch about 22% of the Gulf TAC.

Temporary allocations were implemented in 1998 to provide access to Group B quotas to vessels displaced due to the groundfish moratorium. According to the formula set out in the 2003-2007 management plan, temporary permit holders gain access to percentage shares of tonnages to the extent that the TAC exceeds specified thresholds. Sharing has been in effect each year since the program went into effect.

Landings – annual and seasonal

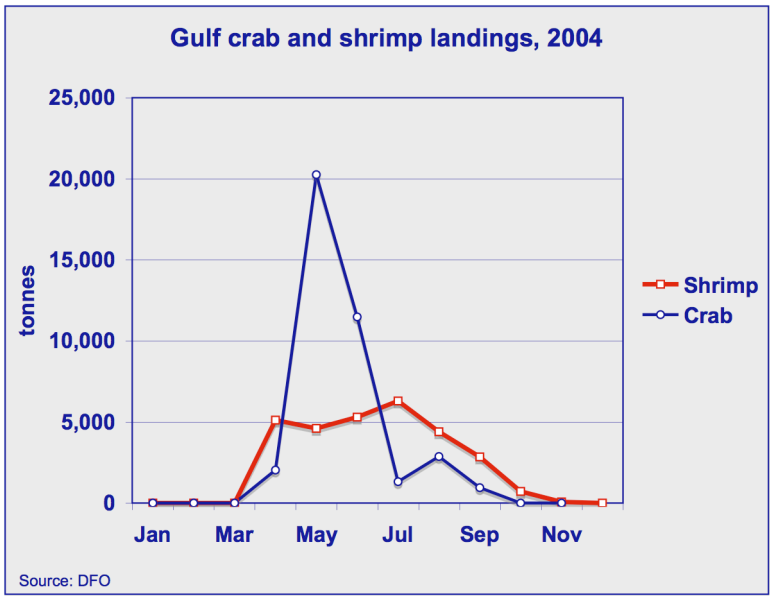
With the exception of a dip in the early 2000s, Gulf stocks have grown fairly steadily. New Brunswick landings have increased accordingly, rising from 3,200 t in 1995 to the 6-7,000 range in all but one year since 2001. Landed values kept pace, rising from about $5.0 million in 1995 to just over $8.0 million in 2000. With some fluctuations and as a result of lower prices, landed values declined to the $7.0 million range in 2005. Shrimp ranks well behind lobster and crab in relative importance in the New Brunswick fisheries, contributing about 4% of total landed value compared with 40% each for lobster and crab.

Fig. 4.13: Generally favourable resource conditions have provided the basis for rising landings and landed values since 2005. Declining prices since 2000 have caused landed value to grow more slowly than landings.



The shrimp fishery in the northern Gulf of St. Lawrence operates in stark contrast with the Gulf crab fishery, with landings spread out over a 6-month season (Fig. 4.14). Most vessels in the New Brunswick and Québec fleets are specialized shrimp enterprises. The data in Fig. 4.14 reflect the combined operations of both fleets.

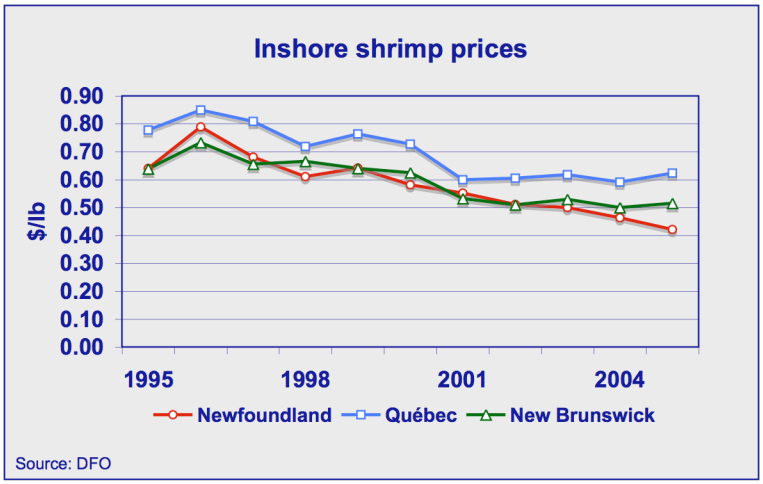
Fig. 4.14: The mainly specialized Gulf shrimp fleet (landings shown are for New Brunswick and Québec vessels, not Newfoundland vessels) operates over a 6-month season, ensuring a steady flow of raw material to the region's seven processing plants. This is in sharp contrast with the crab fishery where the season lasts only 8 weeks or so.



Fleet economics

The economic climate has treated harvesters less favourably than nature for the past several years. Prices have steadily declined for inshore harvesters (Fig. 4.15), while resource abundance and quotas have increased considerably (Fig. 4.13). Fortunately for harvesters, the net effect has been one of generally rising revenues. Not only have resource conditions more than offset lower prices, but they have also acted to offset rising harvesting costs. Nonetheless, the combination of declining prices and increasing operating costs represents a particular challenge for the New Brunswick fleet because it must travel the greatest distance to the fishing grounds.

Fig. 4.15: Shrimp prices in Atlantic Canada have followed the same declining trend since the late 1990s, reaching the lowest level in 15 years. Prices in Québec tend to be about $0.10/lb higher than elsewhere in the region. Processors in Québec say this is because of larger average shrimp size and more intense competition amongst plants for raw material.



The New Brunswick fleet specializes in the shrimp fishery, with just three of the <65' enterprises participating in other fisheries (crab). These vessels, unlike most of those in the Newfoundland and Labrador fishery, have no other fishery to fall back on during difficult economic times.

Québec

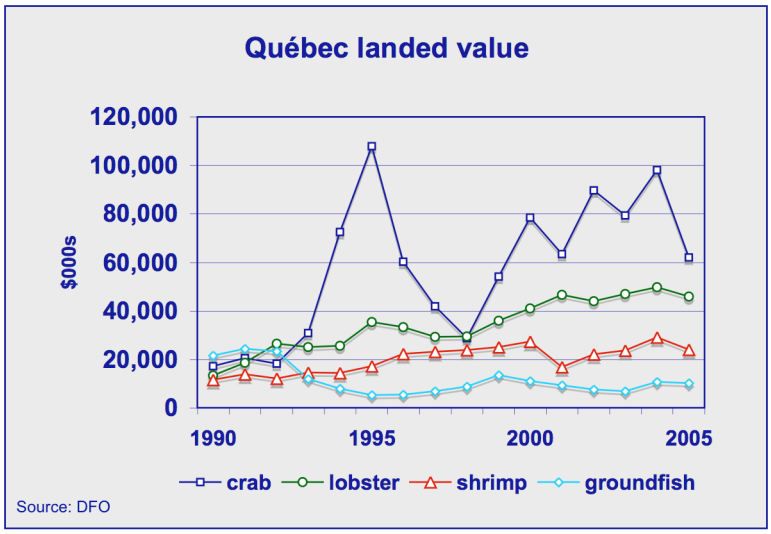
Fleet structure

The Québec inshore fleet consists of 45 enterprises; seven participate in Group A with access to a proportionate share of 75% of the Esquiman TAC (sharing with 46 Newfoundland vessels), and 38 participate in Group B with 21 New Brunswick enterprises each with a proportionate access to the TACs for Sept-Iles, Anticosti and Estuary and a 25% share of the Esquiman TAC. Access is based on ITQs. Québec vessels catch about 60% of the total Gulf TAC.

Landings – annual and seasonal

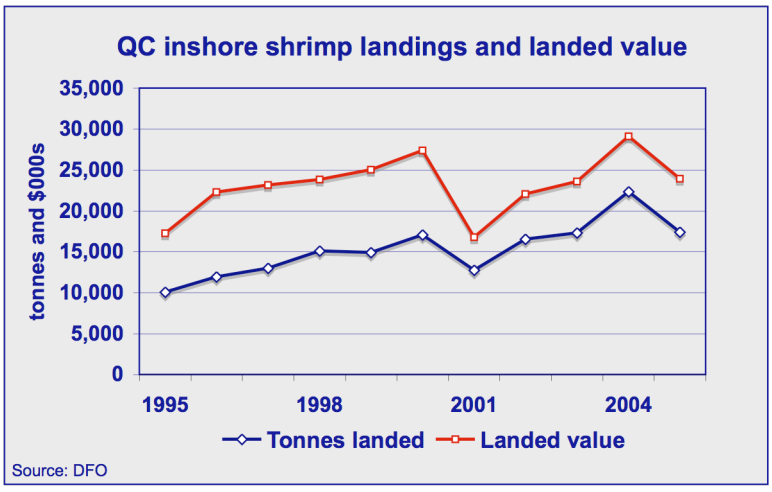
Shellfish dominate the Québec fisheries, with shrimp ranked third behind crab and lobster in relative importance. In 2005, shrimp accounted for about 15% of total landed value (Fig. 4.16).

Fig. 4.16: Shellfish fisheries have expanded greatly since 1990, in 2005 accounting for almost 90% of total landed value. Since the mid-1990s, in all but one year, the shrimp fishery has generated over $20 million for the 45 enterprises in the fleet.



With increasing stock abundance and TACs, landings have followed a generally rising trend since the early 1990s. The upward trend was interrupted in 2001 and 2005 when price disputes with processors resulted in Québec harvesters leaving quota in the water (Fig. 4.17).

Fig. 4.17: The generally rising trend in landings and landed value has seen two disruptions in the past five years as harvesters protest low prices by leaving shrimp in the water. About 25% was uncaught in 2001 and 20% in 2005.



Seasonal landings for the Québec fleet are incorporated in Fig. 4.14 showing the total for the northern Gulf shrimp fishery.

Fleet economics

Like other inshore shrimp fleets in the region, the Québec fleet has endured declining prices since the late 1990s (Fig. 4.15). Though prices are generally higher than in New Brunswick and Newfoundland (attributed by processors to larger average shrimp size and more intense competition for raw material), price setting in Québec has proven to be a challenging process over the years. A dispute arose in 2001 when processors reduced the price by about 20% (down from $0.73 to $0.60/lb). Harvesters left about 25% of the quota (about 3,000 t) in the water. About 20% of the quota was left in the water in 2005 because of low prices (Fig. 4.17).

3. ISSUES

The harvesting sector throughout the Atlantic Provinces and Québec operates in a challenging environment. Though resources are more abundant than at any time in the history of the shrimp fishery, harvesters – particularly those who specialize in shrimp – face a serious threat to the viability of their enterprises. Several largely interdependent issues are at work resulting in a net revenue squeeze as prices decline and costs rise.

- **Price**: this is the main issue facing all harvesters. Market prices have forced shore prices to levels where it is difficult to break even, especially for larger vessels operating some distance from shore. There is no relief in sight as increasing supply keeps prices low.
- **Overcapacity**: The short season in the Newfoundland and Labrador fishery stands as a strong indicator of overcapacity. The average vessel landed 180 t in just 25 days fished in 2004. This is less of an issue for New Brunswick and Québec vessels, where average landings are in the 230-450 t range, depending on whether the vessel fishes in Group A or B. Of course, these are larger vessels with higher operating requirements. And because they are specialized in shrimp, they are more vulnerable than multi-species vessels.
- **Cost**: harvesting costs have increased, with one of the largest components, fuel, going up by 60% in 2004/2005, and currently about 40% above the 2003 level. Rising operating costs provide an incentive to reduce days at sea, thereby driving up the seasonality of landings.
- **Viability**: The links between price, overcapacity, cost and viability are strong. There is little the industry can do in the short term about shore price and input costs. This leaves overcapacity as a factor to be addressed in an effort to improve fleet viability. Steps to facilitate fleet rationalization appear to be essential in light of the realities facing the industry.
- **Seasonality**: Overcapacity and efforts to reduce harvesting costs contribute directly to the timing and brevity of the season in the Newfoundland and Labrador fishery. Inappropriate vessel design also contributes, confining vessels to a relatively narrow weather window. Highly seasonal landings require greater processing capacity than would otherwise be the case, driving up capital costs and creating a poor operating environment. Gluts are common as is poor quality.
- **Crew**: Declining revenues and rising costs have squeezed earnings to a point where recruiting crews has become a challenge. This applies to the offshore as well as the inshore fleets. Though fleet rationalization would cut overall employment in the fishery, the inability to recruit could itself become a factor driving fleet rationalization.

V

PROCESSING AND MARKETING

1. OVERVIEW

Shrimp processing takes place either in one of the region's 20 onshore processing plants, or on board one of the 13 factory freezer trawlers (FFT). The processing plants produce almost exclusively cooked and peeled shrimp using raw material supplied by the 470-vessel fleet of inshore wetfish trawlers. Over 85% of C&P shrimp is exported to two markets, the U.S. and the U.K. The FFTs produce shell-on raw and cooked frozen products. About 50% of the shell-on products are exported to China, Japan and Russia. The other 50% goes to Denmark and Iceland mainly for C&P processing and re-export to the EU.

The processing sector in Atlantic Canada is a study in contrasts.

- The Gulf industry has been in operation for over 30 years, with some fluctuation in the number of plants. Processing takes place over a 6-7 month season, with a fairly even monthly flow of raw material between April and October. Most Gulf-based vessels in the shrimp fishery are specialized. Average plant throughput was about 3,500 t in 2005.

- The Newfoundland & Labrador industry expanded rapidly in anticipation of the strong growth in the resource in the late 1990s, most of which was allocated to the inshore fleet. Between 1996 and 2001 the number of plants increased from 3 to 12 (a 13th is now in operation). The fleet increased from 46 enterprises (exclusively on the west coast), to 380. About 80% of the active vessels in the shrimp fishery also hold crab licences. Processing takes place mainly over a 4-month season (June-September), with 50-60% of landings in July and August. Average plant throughput was about 4,600 t in 2005.

Though the harvesting sector in Newfoundland & Labrador fishes primarily subject to harvesting caps (individual quotas on the west coast), the action on the water simulates a competitive fishery. Gluts and poor handling practices resulting in poor quality raw material are not uncommon. Predictably, the processing sector over a relatively short time adjusted its capacity to meet seasonal peaks. This results in high costs (capital and operating) and excess capacity for much of the season.

Without any control over the timing and rate of raw material supply, plants must buy shrimp as and when it is available creating a volume driven industry. With such a short season in Newfoundland & Labrador, this creates cash flow constraints. Unlike crab, which is sold immediately when it is produced for a highly seasonal market, shrimp is sold at a more uniform rate throughout the year. This creates high inventory carrying costs.

The industry has faced declining prices for a decade because global supply (all species) has outstripped demand. Processing companies and offshore vessel companies claim they are barely covering operating costs, and making little or no contribution to capital. Shore prices are at or below break-even levels for the larger vessels operating on more distant fishing grounds.

There is little in the markets to suggest any upward movement in prices is likely in the near future. The processing sector must broaden its market base if it hopes to see sustained higher prices. It also has to utilize capacity more efficiently in order to reduce costs.

2. SECTOR PROFILE

Industry structure

The shrimp processing sector consists of two distinct components: 20 shore-based processing plants supplied by about 400 independent inshore/midshore vessels, and 13 FFT. The industry is concentrated in Newfoundland & Labrador and Québec, with smaller components in New Brunswick and Nova Scotia. With just a few exceptions, vessels supply the plants in their respective provinces, with the Nova Scotia fleet selling its landings to the New Brunswick plants (landings in Nova Scotia are too small to sustain a plant). Plants and vessels by province are set out in Table 5.1.

Table 5.1: Shrimp processing plants and vessels by province

	C&P Plants	Active enterprises		
		Inshore	Midshore	FFT
Newfoundland & Labrador	13	322	4	8
Québec	5	35	7	
New Brunswick	2	7	14	
Nova Scotia	-	28		5
Total	20	392	25	13

Source: DFO, provincial departments of fisheries and industry data

Many of the plants and most of the inshore vessels are separately and independently owned by local interests. Some of the larger Newfoundland and Labrador companies own or control 2-3 plants and also have interests in the offshore shrimp fishery. Several companies with interests in shrimp processing also own and control crab processing plants in Newfoundland & Labrador. Indeed, several of these companies cite their involvement in crab processing as the reason they invested in shrimp plants. With the intense competition for raw material, they would risk losing the higher margin crab supply to another plant if they did not buy the vessel's shrimp as well.

The over all size of the processing sector has grown, though the growth is confined to Newfoundland & Labrador.

- **Newfoundland & Labrador**: the industry expanded from three to 12 plants between 1996 and 2001 in response to a sharp increase in inshore allocations and landings; 13 were active in 2005, operating about 80 peelers. The growth was also driven by the increase in the number of vessels entering the fishery. From just 46 enterprises on the west coast prior to 1996 (this fleet supplied the original three plants), the fleet grew to about 380 enterprises by 2001. The industry was not deterred by the high costs of gearing up for the fishery. A 2002 report on the shrimp industry prepared for the Government of Newfoundland & Labrador estimated that over $200 million had been invested. Among its many findings, the report concluded that, "Vessel and plant expansion was ad hoc." And further, that the industry, "…installed substantially more capacity than is sustainable."[*]

[*] *Review of the Cooked and Peeled Shrimp Industry*, Report of the Inshore Shrimp Panel, 2002.

- **Québec**: five plants process shrimp, with a total of 26 peelers. They buy directly from harvesters and also from three associated plants whose supplies are too low to support production. Supplies have increased since 2001, but processing economics have deteriorated (as they have everywhere) due to falling prices.

- **New Brunswick**: seven plants hold shrimp processing licences, but only two have been active in recent years (a total of 12 peelers).

- **Nova Scotia**: One plant operated in the late 1990s, but shut down in the early 2000s because the operation was not viable. Two factors adversely affected the operation: a downturn in landings from the Scotian Shelf, a shift in licence-holding in the fishery, and strong competition from New Brunswick processors.

Plants vary by size and processing capacity, with the number of peelers and the number of shifts worked the critical factors in determining throughput. The number of peelers varies between four and eight. The industry average is six.

The industry in Newfoundland & Labrador is sized to accommodate the highly seasonal pattern of landings. This means it operates round the clock during peak times (July and August), and then with underutilized or unutilized capacity the rest of the year. Capacity utilization has been estimated at 32%. With fewer vessels, longer season and lower average daily landings, the Gulf processing sector is able to utilize its capacity more efficiently.

To put this into perspective, the industries that Atlantic Canadian processors compete with in the C&P market – Norway and Iceland – operate year-round. This reduces their capacity requirements allowing more efficient utilization. They are structured much the same as industry here, with independent vessels and plants, and plants have similar capacity (number of peelers). A major difference is that the fleets are purpose-built for the shrimp fisheries, with the size and capacity to operate year-round in offshore waters.

These industries have had to adjust to the prevailing economics facing the C&P sector by greatly reducing the number of plants (and vessels) over the years. In the 1980s, the Norwegian and Icelandic industries each had over 30 plants. The combination of poor markets and resource declines has caused the number of plants to drop to fewer than five in Iceland and just seven in Norway. The Icelandic industry, which has been particularly hard-hit by a resource decline, manages to continue to function largely on the strength of raw material imports from Norway.

Employment

The industry generates employment for an estimated 5,900 people, 3,250 of these in processing and 2,650 in harvesting (Table 5.2). Industry reports increasing difficulty in recruiting both vessel crews and plant workers. Declining prices have taken their toll on vessel revenues and crew incomes, cutting the latter by as much as half since 2000. Turnover is reported to be particularly high on the offshore vessels. For plant workers, sharp seasonal peaks generally result in too few weeks to qualify for EI.

Table 5.2: Shrimp processing and harvesting employment by province

	C&P Plants	Harvesting			Total
		Inshore	Midshore	FFT	
Newfoundland & Labrador	2,200	1,610	24	330	4,164
Québec	750	175	42		967
New Brunswick	300	35	84		419
Nova Scotia		140		210	350
Total	3,250	1,960	150	540	5,900

Source: DFO, provincial departments of fisheries and industry data

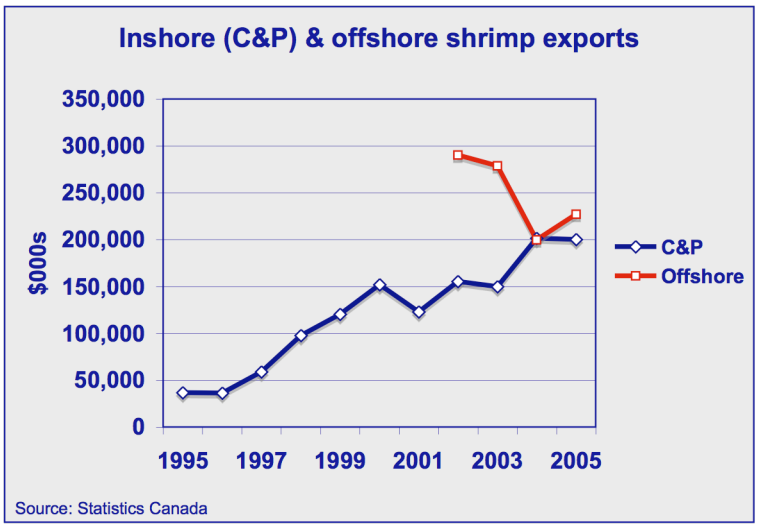
Production and exports

Canada's northern shrimp industry produces outputs currently valued in the range of $450 million. About 90% of this is exported. Though output has increased for both the C&P and offshore sectors over the past several years, declining prices have caused export value to drop from the peak it achieved in 1999, to the $400 million range over the past five years (Fig. 5.1).

The rapid growth of the C&P industry in the late 1990s had processing companies scrambling to find markets for their output (the industry was and is very much supply driven). Exports of cooked and peeled shrimp almost doubled in just three years, rising from just over 9,500 t in 1998 to over 17,000 t in 2000, and up to about 25,000 t in 2005. This had a predictably depressive effect on prices.

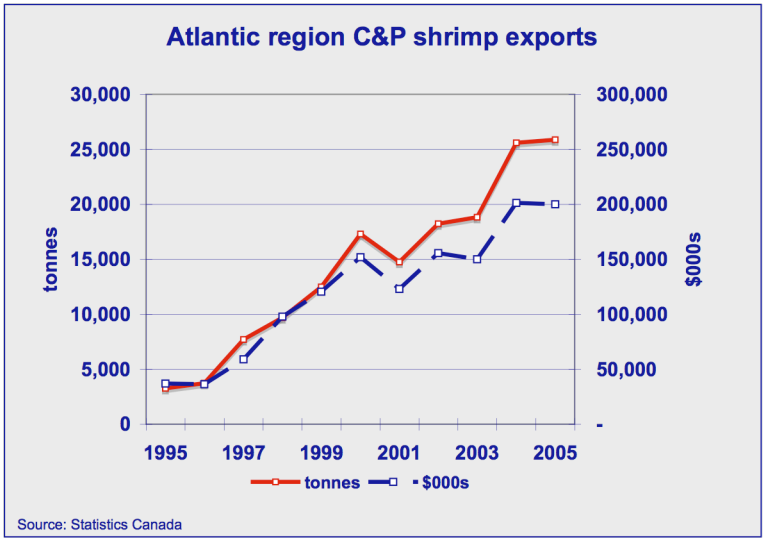
The offshore sector faced similar challenges. Though output had not risen as rapidly, the offshore nonetheless also confronted the dilemma of selling into a steadily declining market after 1998. Though a consistent export data set is not available prior to 2002, price and output data would indicate declining export value after 1999. Fig. 5.1 shows a continuing decline to 2004 and then a recovery as both output and prices increased slightly. *

Fig. 5.1: Shrimp industry exports peaked in 1999 at about $440 million. Declining prices have offset rising production since then, resulting in a drop in export value to the $425 million range in 2005. The C&P sector generated exports valued at about $200 million in 2005. Exports by the offshore sector, declining in value since 1999, hit bottom in 2004 and recovered to the $225 million range in 2005.



* The value of offshore sector exports is not shown for the years prior to 2002 because the official data are inconsistent with actual landings and production data. The inshore data series seems to be more accurate, except for 2005 when exports to the U.S. appear to be overstated.

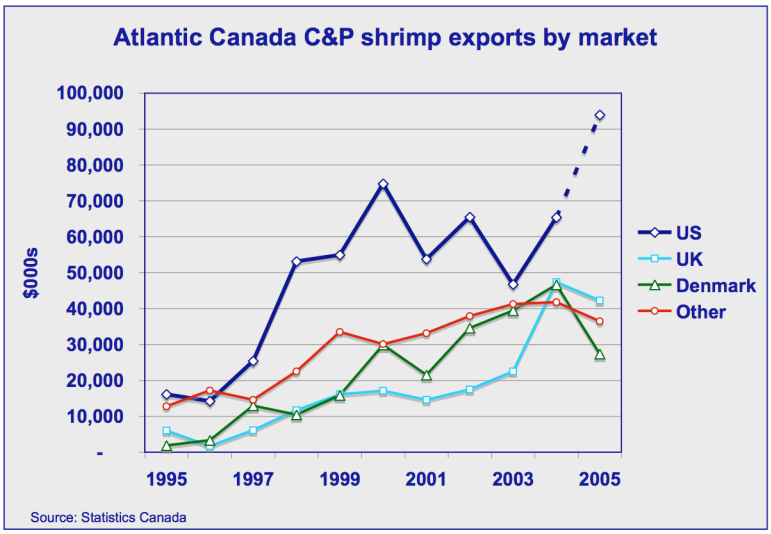
Fig. 5.2: The rapid rise in C&P exports in the late 1990s contributed to the general weakness in shrimp prices. The divergence of the volume and value lines reflects declining product prices after 1999. The drops in 2001 and 2003 were due to disruptions in the fishery because of low prices.



One of the main weaknesses of the C&P industry is its dependence on a narrow range of markets. Canadian producers depend heavily on just two export markets with established demand for the C&P product: the U.S. and the U.K. Denmark is also an important market, but as a re-processor of C&P and shell-on frozen into final product form (brined shrimp).

The U.S. has become the dominant market for Canadian C&P shrimp, with sales rising from about $5.0 million in 1995 to just over $39 million in 2005.* The early 2000s were difficult years because of the declining value of the U.S. dollar. Fig. 5.3 shows exports to the U.S. dropping off until 2004, then recovering as prices strengthened there and weakened in the EU. Exports to the U.K. held steady for the early 2000s and then increased in 2004 and 2005 as *relative* prices warranted a return to that market.

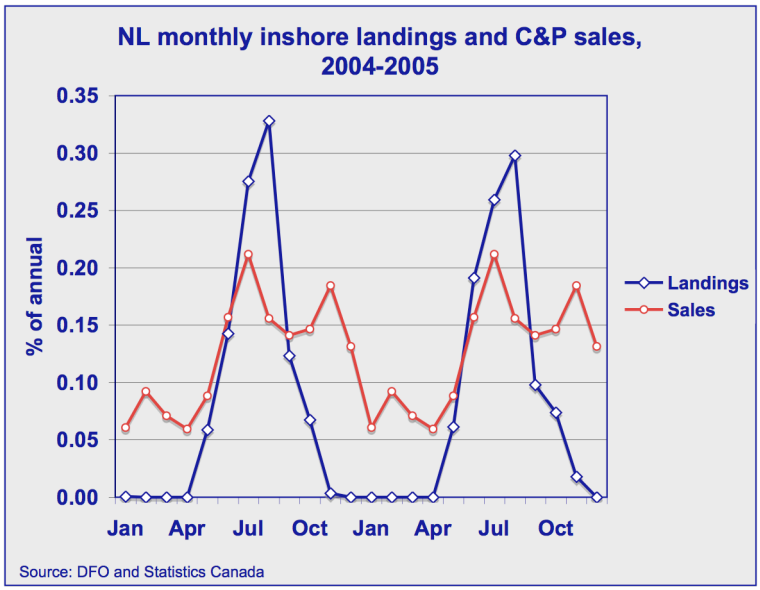
Fig. 5.3: The U.S. is the main market for Canadian C&P shrimp. Weak prices, a weak US dollar and good US pink shrimp catches caused declining trend in C&P exports to the U.S. after 2000. The U.K. became a *relatively* attractive option for exports in 2004 as prices steadied following several years of decline.



* The value of C&P exports to the U.S. in 2005 based on Statistics Canada data is CAN$93.9 million. The 2005 import value of C&P imports by the U.S. from Canada based on U.S. Department of Commerce data is CAN$39.0 million, about the same as 2004. This is a 100% discrepancy for which no explanation is available. U.S. market conditions coupled with industry information suggest that the U.S. figure is likely to be more accurate. The rest of the data series shown in Fig. 5.3 is consistent with U.S. data.

Another area of concern for the processing sector is the high cost of carrying inventory. This affects all processors, but is a more serious issue in Newfoundland and Labrador where the fishing season is not only highly peaked, but it does not coincide with the demand patterns. Demand is fairly steady year-round, with a summer peak in the U.S. and a winter peak in the U.K. Essentially, processors have to pay vessels for the raw material mostly over 2-3 peak months, and then carry those costs plus storage over the balance of the year until the product is sold. This is illustrated in Fig. 5.4 showing the percentage distribution of landings by month against the percentage distribution of sales based on 2004/2005 data.

Fig. 5.4: Landings are concentrated over about three months while sales are spread over the year. A longer fishing season would ease cash flow pressures and allow NL processors to limit distress selling.



3. COMPETITIVE ENVIRONMENT

Why structure matters

Industry structure represents one of the key factors determining competitiveness in raw material and product markets – the key points along the value chain. Structural characteristics – particularly as these influence price formation in the port market – tend to overwhelm all other factors in shaping the competitive environment.

The relevant structural characteristics are:

- **Industry Concentration:** The number and relative size of buyers and sellers provide an indication of market power and reflect the degree of competitiveness in an industry. Market power is normally expressed in terms of industry concentration: the share of sales or purchases accounted for by the largest individual sellers or buyers. In markets characterized by low concentration, each enterprise is a price taker because it accounts for a small share of sales or purchases. In markets characterized by high concentration, a few companies account for a large share of purchases or sales and are able to exert influence over price.

- **Buyer-Seller Relationships:** Formal and informal links between buyers and sellers may limit the independence of each. The relationship is formal, for example, if the buyer owns the vessel and controls the catch. This is not permitted in Canada in the <65' sector, though there are many exceptions in the form of trust arrangements. The relationship is informal if there is separate ownership of the harvesting and processing enterprises, but with arrangements between buyers and harvesters that provide some mutual guarantees. To the extent independent action by fishermen is constrained, transactions would not be subject to price competition from other buyers. This could affect price levels and the speed with which prices change in response to market conditions.

- **Entry and Exit Conditions:** Freedom of entry and exit are fundamental characteristics of a competitive industry. This means any new company or individual may begin selling or buying if it appears profitable to them to do so, or, conversely, may stop and leave the industry. It also means that existing participants have no way of barring the entry of others and there are no legal (regulatory) restrictions on entry or exit. Where barriers exist, industry price setting or investment behaviour may depart from that expected in a competitive industry.

Measured against these indicators, the shrimp industry conforms to the notion of a competitive industry, at least with respect to buying and selling at the initial (harvesting – processing) stage of the value chain. Nonetheless, there are limits on the effectiveness of price as a mechanism to influence activity in the industry. The limited (and declining) number and relative size of major importers/distributors and food service/retail companies in the U.S. and U.K., and importers in Japan, may be a cause for concern because of their ability to dictate price to processing companies. Table 5.3 provides an overview of structural issues and their influence on competitiveness at each stage of the value chain.

Setting the shore price

Maritimes and Québec (excluding Gaspé)

Harvesters act individually when selling shrimp, negotiating directly with buyers or processors. Though they act individually, harvesters effectively act in concert (informally) to drive the shore price uniformly to the highest level possible. Buyers/ processors are obligated to pay the prevailing shore price or lose the vessel's supply, not just for one trip, but *for the season* and possibly indefinitely. Moreover, the buyer risks losing all the other landings from that vessel.

All the structural and operating conditions for both vessels and plants lead inevitably to supply-driven procurement. In short, despite their large numbers, the competitive balance tends to favour harvesters because of strong demand and finite supply over a relatively short season. This limits the effectiveness of price as a mechanism to influence the rate or quality of raw material supply. Perhaps the best analogy is that price acts as a tap. Once it is turned on it stays on until the supply runs out (the quota is caught), assuming the price paid is at least at a breakeven level. Processors generally pay the same price for all deliveries, regardless of timing or quality, or risk losing the vessel to a competitor.

But if the industry conforms generally to the competitive model, it also departs from it in certain key ways. The structure of the fishing industry is such that there is a strong incentive for processors to try to avoid price competition when buying raw material. This is because they know that paying more for shrimp (or any other species) does not generally lead to increased supply for any individual plant, nor for the sector as a whole (because landings are quota-limited). As soon as one processor offers more, others are forced to pay the higher price or risk losing boats. Prices easily can be bid up to unprofitable levels resulting in a transfer of revenue from processors to vessels with no supply gain to any processor. For these reasons, non-price incentives (e.g., bonus payments, rebates, vessel financing, holidays, various gifts) are common in the industry.

Newfoundland and Labrador

A different approach to price formation occurs in Newfoundland and Labrador, at least in the initial stage. A minimum price is established through a formal process termed interest-based negotiation (also known as Final Offer Settlement). Though the process has evolved since it was introduced in 1998 (including an experiment with plant quotas), it contains essentially the same key elements:

- Time-limited negotiations between representatives of the harvesting and processing sectors to set a minimum price and to agree on conditions of sale (of shrimp), with the parties sharing market information provided by a three-person Special Standing Fish Price Setting Panel;

- In the event negotiations fail to produce agreement on price, the parties submit their final offer to the Panel;

- The Panel, considering conditions in shrimp markets, selects one or other of the prices submitted (the Panel may not set its own price) as the minimum season opening price to be paid;

- The opening price remains in effect for a specified period (2-3 weeks) and then may be adjusted upwards if market conditions have improved (it remains unchanged during this first adjustment period if market conditions deteriorate). The system has evolved so that three prices are set. Price is higher in the spring and fall and lower in summer in order to reflect the quality differences in shrimp and act as an inducement for harvesters to limit their fishing during the summer months when quality is poorest. This has done little so far to reduce the mid-summer peak, suggesting that greater price differences are required.

The opening price and subsequent adjusted prices represent the minimum processors must pay. Industry representatives indicate that most sales in the shrimp fishery are made at these prices. Economic circumstances in the industry are such that the kind of competition for raw material occurring in the crab fishery is less common with shrimp.

Table 5.3: Structure and competition along the shrimp value chain				
	Harvester-Processor	**Processor-Importer/Distributor**	**Distributor - Food Service/Retail**	**Food service/Retail - Consumer**
Concentration	▪ Low – buyers and sellers ▪ Many vessels (470) ▪ Many plants (20), all with excess capacity	▪ Low on selling side (20) ▪ Moderate to high on buying side (5-10)	▪ Moderate to high on selling side (5-10) ▪ Moderate to high on buying side (5-10)	▪ Moderate to high on selling side (5-10 major retail food service chains) ▪ Low on buying side
Buyer-seller relationship	▪ Mostly independent ▪ Many informal ties, but do not affect need to pay prevailing shore price ▪ Price settlement process in NL/QC sets minimum only; competition sets actual	▪ Independent on both sides ▪ Mostly program selling & season commitments means more of a relationship with customers than with crab ▪ Short season and high carrying costs give customer an advantage	▪ Independent on both sides ▪ Distribution is specialized and companies don't want to compete with their customers	▪ Independent ▪ Some brand loyalties
Exit-entry conditions	▪ Sellers - limited entry, but access possible through licence transfer ▪ Buyers – entry restrictions in one province only; exit has proved difficult where plant is major employer	▪ Sellers – entry restrictions in one province only. Exit often difficult ▪ Buyers – high barriers to entry: capital, scale, knowledge, market share	▪ Sellers – high barriers to entry: capital, scale, knowledge, market share ▪ Buyers – high barriers to entry: capital, scale, knowledge, market presence	▪ Sellers – high barriers to entry: capital, scale, brand, market share ▪ Buyers – low barriers to entry: modest discretionary income
Assessment of competitiveness	▪ Competitive in all provinces ▪ Short season and excess capacity intensify competition in NL ▪ Processors in NL pressured to buy shrimp to gain access to more valuable species ▪ Generally a sellers' market	▪ Fragmented industry leads to strong competition for sales among processors ▪ Few large customers/ distributors play processors off against each other ▪ Short season & strong need for cash drives sales reinforces buyers' market ▪ Narrow processor margins and cash flow needs create a buyer's market	▪ Both sides have strong presence providing basis for countervailing power ▪ Sellers offer range of products including shrimp substitutes ▪ Buyers control the outlets to consumers and select products and establish terms of sale (promotions) ▪ Balanced power means neither buyers' nor sellers' market	▪ Strong competition for the consumer dollar ▪ Coldwater shrimp marketed as a commodity so is highly price sensitive ▪ Availability of warmwater shrimp substitutes imposes a price ceiling

Gaspé Region of Québec

Under the Act respecting the marketing of agricultural produce, food and fishing (L.R.Q. C.M-35.1), if a majority of the harvesters in a region (e.g., Gaspé, Magdalen Islands) wish to bargain collectively, they may apply to the Marketing Board (the "Régie des marchés agricoles et alimentaires du Québec") for authority to negotiate prices and other matters related to the catch. As part of the application they must submit a marketing plan (a "joint plan") covering their area. Once a plan is approved, the harvesters serve notice to negotiate with the processors in the area covered by the plan.

The price is established following a three-stage process:

- Harvesters and processors negotiate a price. If there is no agreement they move to the next stage: conciliation.
- At the conciliation stage, the Régie appoints a conciliator to bring the parties closer to a contract price. If there is no agreement, one of the parties may request an arbitration conducted by a panel consisting of the Vice-Chair and two other members of the Régie.
- The arbitration involves submissions by the parties and is conducted in public. The panel then sets the price, which normally includes a price to market formula so that the price adjusts automatically in response to changes in market conditions. The price is mandatory, though represents the minimum that must be paid. Buyers may pay more.

Since the creation of the Joint Plan for shrimp in Gaspé in 2001, the parties have settled the price at the conciliation stage. Nonetheless, there have been some delays to the start of the season due to incomplete negotiations.

Setting the market price

Coldwater shrimp is primarily a retail item because of its small size. You do not get the "plate coverage" with coldwater shrimp to make it an attractive restaurant option.

The sales channels in the dominant markets – the U.S. and U.K. – are broadly similar. Canadian processors face essentially two options: sell directly to customers or sell through brokers. The customers in the case of shrimp are primarily the large supermarket chains (Table 5-3). A major difference between the markets is that coldwater shrimp in the U.K. is sold on a national basis, while in the U.S., it is primarily a regional (west coast) product.

- **U.S.**– the market is regional because of consumer familiarity with a similar coldwater species caught in the Pacific northwest. Otherwise, the U.S. market, the largest shrimp market in the world, is dominated by warmwater species. The Canadian industry has made considerable inroads to the U.S. market, with sales increasing from $5 million to over $35 million in just 10 years. Sales are directly to retail customers or to regional distributors who sell to smaller retailers. Price in the U.S. market depends heavily on supplies of locally caught shrimp, which is preferred because of its freshness. One Canadian processor is making some headway into the foodservice market with a branded product.

- **U.K.** – coldwater shrimp represents a major retail product in the U.K. It is available through all the major supermarket chains in fresh and frozen form. Shrimp is also highly popular as a sandwich ingredient, around which a specialized industry has developed. Sales are direct to retail chains such as Tesco, Sainsbury and Marks and Spencer, and also through major brokers and distributors. The market is fairly steady at about 2,000-2,500 t per month, with seasonal peaks during major holidays when consumption rises to the 4,000 t range. The U.K. is a mature market exhibiting limited growth. Though the historical preference is for coldwater shrimp, the market has seen an influx of warmwater varieties in recent years, with consumers displaying considerable interest, particularly as prices drop. The chief obstacles for Canadian processors are the combined effects of strong competition from Nordic suppliers and the tariff on all C&P exports to the EU.

The consumption pattern for shrimp carries significant implications for the economics of the processing sector. Shrimp is consumed year-round, with some seasonal highs and lows. Consumers purchase shrimp primarily through supermarkets who program their buying to coincide with consumption patterns. This means processors respond to fairly regular orders, shipping from their Canadian cold stores or from storage in the market area.

For processors in Newfoundland and Labrador, the selling pattern does not coincide with their seasonal processing cycle. This results in cash flow constraints as well as high inventory carrying charges. This is in sharp contrast with crab. Though the season is equally short with a similar raw material buying pattern, the selling pattern conforms to the seasonal consumption pattern for crab resulting in a more balanced cash flow. Moreover, processors do not hold inventories for extended periods. And whereas shrimp is sold largely on a programmed basis directly to supermarket chains, crab is sold mainly to distributors who re-sell on an opportunistic basis. Shrimp prices tend to be more stable and crab prices more volatile.

In assessing the competitive implications of market structure at the processor-distributor/retailer stage of the value chain (Table 5-3), two main factors are key in influencing the bargaining strength of the respective parties.

- **Relative size**: The buyers are relatively large and relatively few with several sources of supply open to them. In short, they have considerable bargaining strength. This strength is all greater given the imbalance between supply and demand. In short, the supply situation reinforces the structural reality that it is a buyers' market.

- **Operating conditions**: Many Canadian processors are vulnerable to price pressure from buyers because they operate in a highly seasonal, high cost environment. Buyers know many are in the position of having to sell in order to manage cash flow. Again, this reinforces the characterization of a buyers' market.

4. ISSUES

The processing sector sits between a difficult market and an even more challenging harvesting sector. Of course, some of the challenges processors face are to an extent self-inflicted. That there is too much capacity in the sector throughout eastern Canada is widely recognized. There is also widespread agreement that the industry is its own worst enemy when it comes to bidding up the price of raw material in an effort to use this capacity to the fullest, and then often having to resort to distress selling to meet cash flow needs.

These issues and the factors contributing to them affect all industry participants in eastern Canada, resulting in weak financial performance and threats to viability. The underlying structural and capacity factors may be more serious in Newfoundland and Labrador, contributing to a highly seasonal industry, but vessels and plants in Québec and New Brunswick are no less affected by low prices and rising costs resulting in low or even negative margins.

- **Price**: A decade of declining prices has left the processing sector financially weakened. International prices are beyond the industry's control, influenced as they are by such factors as overall shrimp supplies and economic conditions in importing countries. But there may be scope to improve the industry's bargaining strength in its dealings with major distributors and retailers. This requires addressing such issues as industry structure and capacity, as well as the fragmented approach taken to selling.
- **Seasonality**: The processing sector operates in an environment where it has limited control over the flow of raw material to the plants. It is driven by supply, and it has had to adjust capacity to accommodate the seasonal peaks. Attempts to moderate the supply of raw material through trip limits, price structure and scheduling have had some success, but gluts and poor quality continue to adversely affect operations and constrain industry's ability to extract maximum value from the resource. Seasonality also drives up costs arising from carrying inventory.
- **Overcapacity:** The processing sector operates at a relatively low capacity utilization rate throughout the Atlantic region. In Newfoundland and Labrador, the capacity the industry needs to meet the sharp seasonal peak is idle much of the year. The higher capital and operating costs associated with this undermine the viability of the industry. Operating over a longer season with fewer plants would improve capacity utilization and reduce overall costs. Previous reports suggest that 8,000 t is a reasonable target for capacity utilization. In Newfoundland and Labrador and New Brunswick, the average now is in the 4,500-5,000 t range, while in Québec it is in the 3,500 t range. Though industry and government recognize the need for plant rationalization, the linkage to the fishery and its processing requirements complicate progress on the issue. An integrated strategy addressing the needs and constraints of both sectors simultaneously is essential.
- **Viability**: The industry is not structured for long-term viability. Price, seasonality and overcapacity are undermining factors. It carries more cost than necessary to operate efficiently, and sells into a market generating declining unit revenues. Improving the prospects for viability requires a strategy aimed at removing costs at both the harvesting and processing stage, and enhancing revenues through product and market development.
- **Markets and marketing**: Developing new markets and improving marketing efforts represent staple advice in all previous reports on the industry. Some of the larger companies are making in-roads in new areas and expanding in existing markets. But more is needed, particularly with respect to taking a more collaborative approach to marketing. The industry recognizes it is its own worst enemy when it comes to driving down prices in order to move product and minimize carrying costs.
- **Workforce**: Many plant owners report difficulties recruiting and retaining workers for the plants. Low wages, short seasons and emerging opportunities elsewhere are taking their toll on many of the smaller communities where plants are located. Finding people with the skills to operate and maintain technically sophisticated machinery is becoming a major challenge. Added to these difficulties is an important demographic factor: the workforce is aging.

VI

ISSUES, STRATEGIES & OPTIONS

1. OVERVIEW

Three issues dominate the shrimp fishery in Atlantic Canada in late 2006 – global shrimp markets and prices, industry structure and its impact on viability, and the policy environment within which the industry functions.

None of these issues is new, though as time passes, they seem to have created more intractable difficulties for the industry. One thing seems to be clear: the combination of these issues leaves the industry *operating at higher cost* than necessary and *extracting less than full value* from the resource. This combination leaves it facing a considerable threat to its economic viability.

A fourth matter – the adequacy of scientific research in support of resource management – is not an issue yet, but it threatens to become one as funding is removed from the science budget. It should not need to be stressed that sound scientific advice forms an essential underpinning for the sustainability of the industry. It is essential that science receive sufficient resources to ensure stock advice is based on reliable research data.

Each of these issues has drawn the attention of the fishing industry, as well as federal and provincial departments with responsibilities for the policy environment within which the industry operates, both on the water and on land.[*] Efforts have been made to address certain of these issues, with varying degrees of success. Others lie beyond the control or influence of the industry or policy-makers.

The issues vary in their scope and severity across the Atlantic region and across the two main segments of the industry: C&P (supplied by the inshore fleet) and shell-on frozen (produced by the offshore fleet). The discussion of issues and options focuses on the C&P segment.

- **Markets and marketing:** Canadian coldwater shrimp supply has doubled over a period when global shrimp supply has doubled. Demand has not kept pace, and as a consequence, prices have dropped to historic low levels. Trying to offset lower prices with increased supply seems self-defeating. Do product and market development hold the key, and if so, are these possible given industry structure and raw material supply conditions.

- **Industry structure and viability:** independence of harvesting and processing in the inshore sector leave processors with limited control over the timing and rate of raw material supply, and over its quality. Adjusting capacity and operations to supply conditions leaves processors with limited ability to respond to market demand other than by default, leaving them vulnerable to the increasing buying power of major buyers. Ultimately, it results in poor quality, higher costs and lower revenues.

[*] Among recent notable reports addressing issues (directly and indirectly) in the shrimp industry over the past few years: Inshore Shrimp Panel, *A Review of the Cooked and Peeled Shrimp Industry,* 2002; Gabe Gregory and Bill Broderick, *An Implementation Plan for the Cooked and Peeled Shrimp Industry*, 2003; David Jones, *A Review of the Fishing Industry Collective Bargaining* Act, 2003; Eric Dunne, *Fish Processing Policy Review Commission, Final Report* 2003; Richard Cashin, *Report of the Chairman, RMS Review Committee*, 2005; Canada-Newfoundland and Labrador, *Fishing Industry Renewal*: *A Discussion Paper*, 2006.

- **Policy environment:** The shrimp industry is not managed as an integrated business with a view to maximizing income on a sustainable basis. Federal and provincial authorities manage its components – fishing and processing – separately, with no unity of purpose or objectives. Even within departments, policy and management measures often act at cross-purposes. A more coherent policy environment would provide stakeholders with a basis to work constructively towards reducing costs and enlarging industry revenues.

2. MARKETS AND MARKETING

Issues

The interaction of supply and demand generates prices and prices in turn act as signals to consumers and producers. Declining prices induce increased consumption, but they may also cause producers either to reduce supply and seek alternative use for capital or try to develop new markets and products.

Consumers of shrimp have increased demand as prices have steadily declined. The world now consumes twice as much as it did a decade ago – six million t in 2005. What is happening in shrimp markets is reminiscent of what has happened with salmon. Once a luxury good, salmon has become a commodity with increased production – most of it farmed – driving down prices to levels where only the most efficient producers survive.

Canadian coldwater shrimp processors have no control over shrimp prices. They are price-takers in international markets producing a very small percentage of the global supply. It is of little consequence that coldwater shrimp can be readily differentiated by its flavour from its warmwater cousin; the final arbiter, the consumer, tends to be unaware or not appreciate the difference, at least in most markets. For most consumers, two factors matter: size and price. In these respects, northern shrimp has a difficult time competing.

Northern shrimp competes in essentially three markets: the U.S, west coast (a small segment of the large U.S. market for shrimp), the EU (mainly the U.K.) and the Far East (mainly China and Japan). Fortunately for Canadian producers, coldwater shrimp production from Iceland and Norway has declined over the past decade, or prices would likely be even lower than they currently are.

Canadian producers readily admit to being their own worst enemies when it comes to marketing shrimp. First, they acknowledge that very little marketing actually occurs. The short production season, coupled with high inventory carrying charges, force many producers into the position of selling to meet cash flow requirements. In short, they sell from a position of weakness. And second, because many producers see each other as the competition, not producers in other countries, they are more susceptible to the buying tactics of the larger importers and retailers who play one off against the other.

Strategy and action

The market strategy is directed at extracting higher prices, a challenge under the best of circumstances with a commodity product in a narrow range of markets. The challenge is that much greater if structural and policy issues are not addressed that would provide improved terms of access to raw material, reduce the seasonality of production, reduce cash flow constraints, and give processors greater latitude in dealing with buyers. The strategic initiatives are: a) market development; b) product development; and c) collaborative marketing. These are not mutually exclusive; all three are likely to be required to address low prices.

a) Market development

Under this option, a concerted effort would be made to diversify and extend markets using a generic marketing approach. Currently, the industry sells mainly into markets with a developed taste for coldwater shrimp. In each case, demand is relatively small given the overall size of the market. The C&P product is popular in a narrow market segment in the U.S. (the west coast) because a regional fishery in the Pacific northwest produces a similar coldwater species. The U.S. is a vast market, the largest shrimp importer in the world, so with an established foothold, expansion is possible. The EU also represents a vast market for C&P shrimp, with only the northern countries currently significant consumers. The 20% tariff is a problem, but this could change with further pressure from Canada. New markets are emerging for shell-on product, including China, Russia and Estonia.

In short, there is potential and producers admit they have done relatively little to expand beyond established markets. Even with recent availability of public funds to support a marketing campaign, little was done because the industry could not agree on the best approach. This does not mean a generic marketing campaign would not be helpful. It does mean the industry will continue to fall short of its potential if it cannot get beyond the internal competition undermining industry-wide solutions.

b) Product development

Investigating product development is always an option, though this is one where individual companies have to take the lead, possibly with program support. In light of the commodity nature of the product and its ultimate forms of consumption, the options may be limited.

c) Joint or collaborative marketing

Under this option, processors would engage in collaborative efforts to market product. The underlying assumption is that a joint or collaborative approach would provide a measure of countervailing power against increasingly powerful buying interests, while reducing overall marketing costs. Pursuing this option pre-supposes that structural issues are resolved so that processors are able to meet supply commitments and quality standards without fear of being undercut by distress sales. In short, the industry must be placed on a sound operational footing before collaborative approaches are likely to stand any chance of success.

3. INDUSTRY STRUCTURE AND VIABILITY

Issues

One of the main consequences of the shrimp industry structure, specifically the independence of the inshore harvesting and processing sectors, is the processors' lack of influence over the conditions of raw material supply. Price, the usual arbiter of supply conditions in other industries, carries limited meaning in the inshore fisheries. Control over the timing, rate and quality of raw material supply rests largely in the hands of harvesters. In the Newfoundland & Labrador fishery, they are driven by several factors to fish over a short season, with gluts and poor quality among the main characteristics of raw material supply. To secure supply, the processing sector has had to respond by building sufficient capacity to meet the peaks, capacity which sits idle most of the year.

It does not have to work this way. The shrimp fishery in the northern Gulf is a case in point. Where fleets are specialized and vessels appropriate for the conditions in the fishery, the harvesting and processing sectors can find a balance that works. The season lasts over six months and raw material is supplied to plants at a manageable rate. It may not work smoothly all the time (e.g., the price disputes in 2001 and 2005), but reasonably well over the long term (albeit, the plants in the Gulf did not have to contend with a rapid expansion in the fishery as happened on the north east coast of Newfoundland & Labrador). From a supply standpoint, the major problem facing the processing sector in the Gulf is low average plant throughput.

But in the Newfoundland & Labrador north east coast shrimp fishery, industry structure combined with operational constraints in the fishery, provide the basis for a dysfunctional processing sector:

- The industry developed rapidly in response to the growth in the resource and the decision to allocate most of this growth to develop an inshore sector and C&P industry.
- Too many licences were permitted to enter the fishery. In fairness, at the time (the late 1990s) prices were relatively high and viability was not considered an issue given the resource available. But at today's low prices, the inshore fleet as it is currently configured is regarded as non-viable. There appears to be limited prospect for higher shore prices in the near future given conditions in final product markets.
- Licence-holders had to gear up at relatively short notice in order to meet the entry deadline. Most vessels are converted from groundfish and are not designed for shrimp fishing (too small and not configured for quality landings). Poor design limits the weather window to the months between late spring and early fall with a peak in the 2-3 summer months when intrinsic shrimp quality and yield are at their lowest.
- A large number of vessels fishing and achieving high catch rates contribute to a short season.
- Most shrimp licences were issued to vessel owners holding crab licences. Crab takes precedence over shrimp in the order in which the fisheries are conducted. This contributes to a compression of the shrimp season.
- Many owners of crab processing plants who wished to hold on to their crab supply felt compelled to invest in shrimp plants. Plant owners report that this motivation, rather than the intrinsic economic merit of the investment, drove many decisions. Nevertheless, expectations of a profitable shrimp industry may also have played a role in the expansion of plant capacity.

- Plant capacity is geared to meeting the seasonal peak. With excess capacity at other times this creates a highly competitive environment.
- The market for shrimp products is fairly stable year-round. With a short production season, this means plants have to carry inventory for much of the year. These carrying costs create cash flow difficulties, often inducing plants to sell product at distress prices thereby undermining the whole industry and contributing to its economic weakness.

Strategy and action

The challenge is to make operational and economic sense of the industry. Adopting a strategy of moving the industry to a 7-9 month operating season is widely regarded as essential. The starting point lies in fleet structure and slowing down raw material supply. A fleet with fewer and more appropriately designed vessels would be able to fish safely during the spring and fall months when shrimp quality is at its highest. Not having to meet sharp seasonal peaks would, then, provide a basis for reducing the number of plants allowing them to operate more efficiently at higher average capacity utilization.

These are key steps to take costs out of the industry. They would also provide a basis for stronger revenue performance on export markets.

Various methods are available to achieve these outcomes, some more direct and effective than others. Some methods (short-term) could be initiated within the existing policy framework governing fisheries management, while others (medium- to long-term) could only be accomplished with changes to long-standing and fundamental policies governing industry structure. These are discussed under "Policy Environment", below.

Harvesting

a) Short-term – rationalize fleet through licence retirement

Simply reducing the number of active vessels in the shrimp fleet would allow the season to be extended, at best, perhaps by 1-2 months. This could be achieved by combining licences on a single vessel (possible under existing rules), a fleet-funded licence buy-out (not likely because of fleet economics), or a publicly-funded licence retirement program.

Any such program would have to be accompanied by some mechanism to control further capacity increases, because without this, remaining vessels would gradually be replaced with ones of larger capacity thereby defeating the purpose of the program (to extend the season). Fleet reduction by way of licence retirement is at best a short-term measure, a way of allowing remaining vessels to improve their financial position (assuming that the quota remained unchanged and was redistributed amongst the remaining licence-holders).

b) Medium-term – introduce transferable quotas

Shifting to a system of transferable quotas would promote further rationalization as capacity is withdrawn from the fishery. This approach has worked in other Atlantic fisheries (e.g., groundfish, scallop, crab). The main impediment is agreement by licence-holders that this would be an acceptable basis for future access to the fishery. Again, for this to work, there has to be sufficient capital in the fleet to provide the basis for quota purchases.

Transferable quotas would further the objective of extending the season, but only marginally as long as the remaining fleet were simply a sub-set of the original fleet. Indeed, at the extreme, the gains could be negative if the licence-holders who buy additional ITQ were those who also hold crab licences (a distinct possibility, since it is this group that is likely to be better capitalized).

c) Long-term: Allow optimal fleet development

Allowing licence-holders in IQ or ITQ fisheries to select the vessel design most suited to the requirements of a particular fishery would make an important contribution to fleet viability and the safety of fishing crews. For shrimp, this could mean allowing licence-holders to invest in appropriately equipped vessels >65'. This would require fleet (licence) rationalization, and also possibly fleet specialization, if the objective of a 7-9 month season were to be achieved. The main obstacle to rationalization and specialization is the high proportion of shrimp enterprises also holding crab licences. Full-time and large supplementary crab enterprises are unlikely to give up their crab IQs to specialize in a shrimp fishery that could be marginal even with an extended season.

Creative methods of financing would be required to facilitate the transition if a publicly-funded licence buy-out were to be avoided. For example, financing through processing companies (or even customers) could be tied to raw material supply contracts specifying quantities, schedules and quality. Underlying a shift to an optimal fleet would be the abandonment of existing restrictions on inshore vessel length (assuming that fleet separation were to be maintained). In other words, recognizing the realities of modern fisheries, the definition of the inshore would effectively jump a category to include the 65' to 100' vessels (existing licences would be grandfathered).

Processing

a) Market-based attrition

This approach leaves government out and allows market forces to determine who stays and who goes. All plants would want to stay in business as long as possible, so plant rationalization could take some years. Each plant would wait for another one to go, relying on cross-subsidization from other operations (e.g., crab) to support this strategy. Some companies may agree to consolidate their operations.

But regardless of the approach, the decision would be complicated by existing arrangements with harvesters, particularly since protecting the crab "buy" provided an important part of the rationale to invest in shrimp capacity in the first instance. Of course, the crab industry faces its own capacity issues (both harvesting and processing), so taking an integrated approach could have much wider implications.

An extended period of attrition would, of course, weaken the whole industry as plants on the way out could disrupt markets with desperation sales. Also, the industry could lose valuable time in establishing a more effective marketing approach. From a social perspective, a sudden closure would have devastating effects on the isolated communities where many plants are located.

While the outcome may have the virtue of not costing taxpayers anything to buy-out capacity, it would be purely coincidental if it accorded with provincial policy aimed at achieving a regional balance in industry activity. Also, there is the interaction with the harvesting sector to consider. Any restructuring/rationalization of the processing sector would have to make logistical sense in light of the geographic redistribution of a restructured/rationalized harvesting sector.

b) Planned attrition

Planned attrition would take some of the randomness out of the result, but would come at a price since it would likely involve a publicly funded buy-out of plants whose owners could be enticed to withdraw them from the industry. This would serve government policy in the short run by having the decision conform to regional balance principles. But the risk is that unforeseeable shifts in any or all of resource, harvest, market, and demographic conditions could undo the best-laid plans. The planned approach would also come at a significant cost.

4. POLICY ENVIRONMENT

Issues

Maintaining the independence of the harvesting and processing sectors in the inshore fisheries forms the foundation of Atlantic fisheries policy, and has done so for over 25 years. It defines the respective sectors; how they are structured, how they operate and how they compete.

- Harvesters conduct their fishing operations to suit their purposes (within the limits of the management framework for any specific fishery) and sell their catch on competitive terms to whom they wish.
- Processors have the opportunity to buy as much raw material as they can from whom they choose on the most favourable terms they can secure, and then sell their output where it is most profitable.

In his 1977 speech announcing fleet separation (as it became known), the Minister set out the following rationale:

> "…that creating a truly independent fleet should improve the efficiency of vessel operations, improve the matching of catching and processing capacity, raise fish prices and fishermen's incomes, increase the fishermen's bargaining power, create a healthier balance of forces in the industry, and invigorate fleet development by the fishermen…"[*]

While several of these objectives have clearly been met, it is less clear that the industry is better off. Vessels have become much more efficient, so much so that seasons in key fisheries are measured in weeks, in some cases requiring trip limits to extend effort and minimize gluts. With the focus on efficiency (volume), quality has remained elusive.

It is also true that catching and processing capacity have been matched, but at what cost. In the competitive dynamic, it is processing capacity that has increased to match harvesting peaks. This is unlikely to be the balance envisaged by the Minister, a balance driven by the high volumes landed by the more efficient (and larger) fleets.

[*] Roméo LeBlanc, Minister of Fisheries and the Environment, notes from a speech in Yarmouth, Nova Scotia, November 28, 1977.

Fleet development was invigorated, so much so that limited entry and vessel replacement rules had to be implemented to try to control fishing effort. Regrettably, most of the energy in fleet development went towards catching capacity, not the capacity to produce quality. In the competitive fisheries of the day (the 1970s and 1980s), this should not have been surprising. But even with individual quotas, little has changed in some fisheries.

There is little question that fishermen's bargaining power has been increased, resulting in generally higher fish prices and incomes. But whether this translates into a healthier balance of forces in the industry is another question. In the Newfoundland and Labrador north east coast fishery at least, it is difficult to square the many price disputes and delays in season openings, as well as the short seasons, gluts and often-poor quality landings, with a "healthier balance of forces". Against these indicators, the balance seems somewhat healthier in the Gulf, though even there, the industry in both Québec and New Brunswick has not been without its price disputes.

Fleet separation policy compromises the ability of the shrimp industry to extract maximum value from the resource in another way. The inshore shrimp fleet is in a kind of developmental straightjacket imposed by vessel replacement rules that limit inshore vessels to under 65'. A strong case can be made for allowing larger and more technologically appropriate vessels into the shrimp fleet. This would provide the basis for longer seasons and higher quality raw material. But vessels over the 65' limit are outside the traditional inshore classification and free of many of the strictures governing licencing (owner-operator rules) and technology (processing at sea). There has been resistance in the industry to allowing such a development because it could undermine the objectives of policy.

The federal government has jurisdiction over fisheries and international trade. The provincial government has jurisdiction over land-based fish processing and is responsible for the well-being of hundreds of coastal communities and their thousands of residents. The two levels of government work closely in addressing issues in the fishing industry, but are not always of one mind on specific matters.

A coherent policy environment with respect to structural issues in the fishing industry is essential as stakeholders assess strategies for tackling the two areas where progress could be made in enhancing the viability of the shrimp industry: removing unnecessary costs from harvesting and processing and, generating higher net revenues.

Strategy and action

The rigidities resulting from the rules governing industry structure lie at the root of many of the challenges facing the C&P shrimp sector as it tries to compete in an increasingly difficult global market. Restructuring of the harvesting and processing sectors is required to allow the industry to compete effectively. To achieve the kind of restructuring outlined in Section 3, above, certain modifications to federal and provincial policy are needed.

Several options for discussion are set out below. Policy makers could take a more or a less radical approach to modifying policy. The more radical approach would see the phasing out of fleet separation and its restrictions, and letting market forces determine the most resilient industry structure and operations. Such a policy shift would be highly controversial. The less radical approach would be to maintain but redefine fleet separation, with modified vessel replacement rules and terms of resource access.

Harvesting

a) Phase out fleet separation and its restrictions

Under this approach, restrictions on who could hold commercial shrimp fishing licences would be removed. This would allow processing companies to hold inshore shrimp licences and operate vessels. This would be accompanied by the elimination of vessel replacement rules. The introduction of ITQs would allow ongoing capacity adjustment.

The implications of such a policy change would be far-reaching and controversial. Existing licence-holders and companies would be able to invest in larger vessels, purpose-built for a 7-9 month shrimp fishery. These vessels would produce higher quality shrimp based on superior handling and holding methods. This could improve the economics of the fishery and also enhance crew safety (though if current market conditions continue, the economics of any move to larger vessels would have to be very carefully assessed). It would also allow companies direct control over the flow of raw material.

The number of vessels in the fleet would be expected to decline to one-third or so of its current level. On shore processing capacity would also decline to a level consistent with average supply over the longer season. The longer season would ease cash flow constraints arising from carrying inventory. It would also allow processors more latitude to market (rather than sell), and give them greater bargaining strength in dealing with large importers, distributors and retailers.

b) Modify terms of resource access

Under this approach, IQs or harvesting caps would be converted to ITQs. This would provide the policy basis for fleet rationalization. This approach could take some time, particularly if funding for quota purchases is to be internally generated. The rationalization process may have to be accompanied by a licence-buy out similar to that for groundfish in the 1990s. For a variety of reasons, the harvesting sector in Newfoundland and Labrador has been reluctant to embrace transferability, but history suggests there would be little alternative if the industry wishes to avoid future increases in capacity.

c) Modify vessel replacement policy

Under this approach, the current rules limiting inshore vessels to <65' would be modified in favour of an approach that allowed licence-holders discretion to adopt the vessel size that most suited the circumstances in which they operated. Such a policy shift would be restricted to quota fisheries managed using ITQs or an equivalent rationalization regime. In the case of non-specialized fleets, impacts of larger vessels on competitive fisheries would need to be mitigated. In light of the overall of objective of improving the viability of the shrimp industry (i.e., harvesting *and* processing), consideration would have to be given to whether freezing at sea also would be permitted (as it currently is with vessels >65'). This would give vessels the opportunity to by-pass processing plants altogether and market directly. Any licence-holder wishing to act on a less restrictive vessel replacement policy would have to assess the economics carefully given current and anticipated prices.

Processing

What a rationalized processing sector would look like is a matter of considerable concern to the provinces. The implications of the process are somewhat more serious in Newfoundland and Labrador given the wide geographic distribution of the plants and their economic significance to coastal communities. This is not to suggest the significance of plants in Québec and New Brunswick is any less, it is not. Rather, given that the plants in these provinces are concentrated in the Gaspé and Acadian Peninsulas, any steps towards rationalization are less likely to cause difficult decisions that put one community before another.

In Newfoundland and Labrador, any rationalization process would have to take into consideration regional balance and the strategic location of plants.

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