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Economics and Trade Flows of Selected Northwest Atlantic Fisheries

Gardiner Pinfold Consulting

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Submitted by:
Gardiner Pinfold Consulting

ACKNOWLEDGEMENTS

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WWF-Canada wishes to thank the following generous supporters who make our marine work possible:

Francine and Robert Barrett

WWF-Netherlands

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Layout: Mystique Creative
Printing: bromoc

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ACRONYMS AND ABBREVIATIONS

Bel: Belgium
Can: Canada
CFIA: Canadian Food Inspection Agency
Chn: China
CSAS: Canadian Science Advisory Secretariat
Den: Denmark
DFO: Department of Fisheries and Oceans Canada
EU: European Union
FAO: Food and Agriculture Organisation
FIGIS: FAO Fisheries Global Information System
Fin: Finland
Fra: France
FRCC: Fisheries Resource Conservation Council
GDR: German Democratic Republic
Grl: Greenland
H&G: Headed and gutted (product form)
Ice: Iceland
IQ: Individual quota
ITQ: Individual transferable quota
Ind Can: Industry Canada, Government of Canada
Jpn: Japan
Kor: South Korea
NAFO: Northwest Atlantic Fisheries Organisation
Nor: Norway
NB: New Brunswick
NL/Nfld: Newfoundland and Labrador
NS: Nova Scotia
NZ: New Zealand
PE/PEI: Prince Edward Island
Pol: Poland
Que: Quebec
Rus: Russia
Spa: Spain
SSB: Spawning stock biomass
Swe: Sweden
t: metric tones
TAC: Total allowable catch
Tai: Taiwan
U.K./UK: United Kingdom
Ukr: Ukraine
U.S./USA: United States of America

GLOSSARY

Definitions provided by DFO in the Glossary of Fisheries Management Terms in the Maritimes Region (online: http://www.mar.dfo-mpo.gc.ca/) have been adopted for this report and are included here alongside other terms specific to this report.

- **Allocation:** The amount or share of the fisheries resource and/or effort that is distributed or assigned by the Minister of Fisheries and Oceans to those permitted to harvest the resource, i.e. a fleet or sector, a defined set of resource users or an individual. (Also known as Quota, Catch Share, Fleet sector shares, Fleet quota shares or Resource Shares)

- **Biomass indices:** Index of the weight of all or a portion of the fish in a stock, generally used within the context of stock assessment reports.

- **By-catch:** Fish caught incidentally when in pursuit of a directed species. Directed species are the permitted species, or combination of species, caught by the fisher.

- **Catch:** The number or weight of fish caught.

- **Demand trend:** Consumer demand may change according to the number of consumers participating in the (global) market (e.g. population growth or new market development), or according to the willingness to pay in the existing market (price change for a given level of supply due to changing incomes of consumers, perceived benefits, relative availability of substitutes).

- **Draggers/Trawlers:** Vessels that drag nets behind them in order to catch fish. This is a type of mobile gear (See Mobile Gear). Examples include Otter, Mid-Water, Atlantic Side, Stern.

- **Exports:** Figures here may not always be specific to the species of interest, in some cases more general figures may be used as proxies (e.g. DFO does not report northern shrimp exports, but the proportion of all shrimp that is northern shrimp may be used to approximate these exports). Export values generally reflect prices offered by distribution companies or brokers in export countries to Canadian distributors, brokers, or processors.

- **Export product forms:** Percentages of exports by product form presented in fact sheets here, are only for those exports reported by the source (Industry Canada). These may not include all product forms or specific product forms for the species of interest in this report (e.g. Shrimp exports reported by Industry Canada represent only 56% of total exports reported by DFO), however these still serve as an indication of export trends.

- **Exports to U.S.:** Price and product trends for U.S. exports are presented in fact sheets here since the U.S. is often a major market for Atlantic Canadian fisheries products. This may not be true for all species in this report, but U.S. figures are still presented as an indicator of export trends for all species.

- **Fixed gear:** (see also mobile gear) A type of fishing gear that is set in a stationary position. Examples include longline, handline and gillnets (See Long-line, Hand-line / Jigging and Gillnet).

- **Fishing effort:** The amount of fishing used to obtain the catch. It can be expressed in numbers of traps hauled, hours or days trawling, numbers of hooks on longlines, etc.

- **Global waters (FAO):** Landings are reported according to FAO figures in metric tones (t). Some discrepancies exist between figures reported by FAO and other jurisdictions.

- **Individual quotas:** A percentage share of the total allowable catch (TAC) divided among individual fishers, fishing units, or enterprises before the start of the fishery. This is converted to a weight of fish once the TAC is set for a given year. Generally applies to vessels under 65 feet long.

- **Individual transferable quota:** This is an individual quota in which the share can be transferred or traded to another licence holder. Generally applies to vessels under 65 feet long.

- **Landed Values/Prices:** Landed value is the monetary value of the fish caught, landed price is the price received by harvesters (often referred to as the shore price).

- **Mobile gear:** (see also fixed gear) A type of fishing gear that is drawn through the water by a vessel to entrap fish. Examples include Otter, Mid-Water, Atlantic Side, Stern Trawls, Seines and Dredges. Vessels using this type of gear are often referred to as draggers or trawlers (see Draggers / Trawlers.)

- **NAFO waters:** NAFO regulates 11 species in FAO statistical area 21, but does not set regulations for those portions that lie within Canadian waters. However, landings reported by NAFO include catches in Canadian waters (inside 200 mi limit) as applicable, and NAFO incorporates these figures as they are provided by DFO regional offices. Some unexplained discrepancies exist between figures reported by NAFO and other jurisdictions.

- **Price trend:** Price varies along the value chain from landing on shore to dinner plate for the final consumer. Increasing supply and increasing demand pressures generally affect prices (downward or upward respectively) along the value chain in a cascading manner, keeping in mind that the relative magnitude of the pressures is important for understanding price trends (e.g. demand for shrimp has been increasing but supply has been increasing more rapidly, supply pressures have dominated causing prices to decline).

- **Spawning stock biomass:** The total weight of sexually mature fish in the stock.

- **Stock:** A population of fish of one species found in a particular area, which is used as a basic unit for fisheries management. All of the fish in a stock should share similar growth and migration patterns.

- **Supply trend:** The trend in species stock biomass as characterized in stock status or stock assessment reports has been used as the basis for supply trends. Supply may be affected by other factors, but biomass trends have predominantly driven fishery product supply.

- **Total Allowable Catch (TAC):** The total amount of fish allowed to be caught from a particular stock by all resource users over a particular period of time.

- **Trip limit:** The maximum catch that each boat is allowed to bring back from any one trip.

- **Value chain:** When a (fishery) product passes from it's natural form as a raw resource to a finished product sold to consumers, it may be exchanged for money many times from harvesters to buyers, to processors, to distributors, to retailers, then finally to consumers. At each exchange along the chain, value has generally been added through processing, packaging, or marketing so that the price increases as the product moves along to the final consumer.

- **Wholesale price:** The wholesale price is offered by foodservice (restaurant, buffet, cafeteria) or retail (supermarket, specialty seafood shop) enterprises to distributors or brokers, generally representing the price for the last exchange before final sale to the end-consumer.

KEY FOR SPECIES FACT SHEET INFORMATION

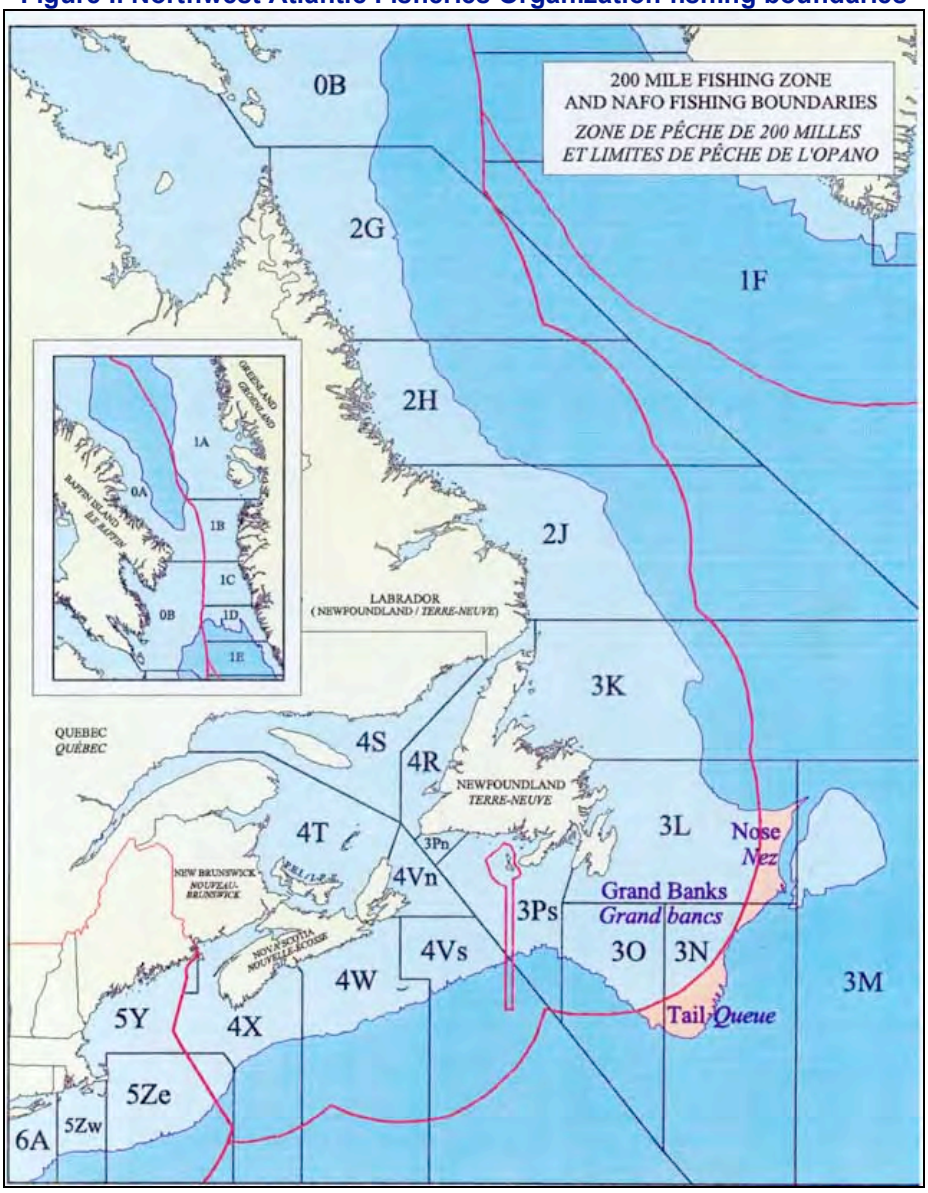
Shrimp fact sheet tables used as example ⇒ Explanatory notes for headings and entries

2004 Landings and Values			
Global waters*		⇒	**Worldwide fishery** data as reported by FAO, 2004
Global landings (mt)	446,138	⇒	Total 2004 catch by all nations worldwide
Top 3 nations	Can, Grl, Nor	⇒	Top 3 nations according to 2004 landings
Canada landings (mt)	172,586	⇒	Canadian landings (including catches outside Canadian waters as applies to some fisheries)
Can % of global	39%		
Can % of peak year	100%	⇒	2004 Can catch as a % of Can historic peak catch
NAFO waters** (includes DFO figures)		⇒	**NAFO fishery** data including DFO data, 2004
All nations landings (mt)	190,218		
Top 3 nations	Can, Nor, Den	⇒	Top 3 nations according to 2004 landings
Canada landings (mt)	141,357		
% of NAFO	74%	⇒	Can catch as % of all nations NAFO catch, 2004
% of peak year	100%	⇒	2004 Can catch as a % of Can historic peak catch
Atl Canada***		⇒	**Atlantic Canadian fishery** reported by DFO, 2004
Landings (mt)	135,035	⇒	Landings reported by Atlantic provinces & Quebec
Values ($CDN)	$189,049,000	⇒	Total values reported by Atlantic provinces & Quebec
Land price ($CDN/kg)	$1.40	⇒	Values divided by landings converted to kg
Exports (mt)	69,894	⇒	Exports reported by DFO
Exports ($CDN)	$331,298,110	⇒	Export values reported by DFO
Export price ($CDN/kg)	$4.74	⇒	Export values divided by export landings in kg
Note: Landings reported as live weight in mt *FAO, 2005. Yearbook of fisheries statistics: Capture and Aquaculture ** NAFO annual fisheries statistics databases ***DFO Statistical Services, figures derived from available sources on a pro-rata basis		⇒	Notes and data sources In some cases, species landings data were used to estimate export figures where specific figures were not available for WWF selected species

Export markets			
2004 Global*		⇒	**Industry Canada** reports exports to all countries (total number, 2004)
Destination countries	21		
Top 3 countries (%)	Den 28%, Chn 20%, Jpn 10%	⇒	Top 3 according to export volumes
Product forms (%)	frozen 94%, fresh/other 6%	⇒	Proportion by product form by volume
2006 U.S.**		⇒	**Urner Barry** U.S. market data, 2006
July 2006 Price ($US/kg)	$5.54	⇒	Most recent monthly average price
5 yr average ($US/kg)	$6.16	⇒	5 yr average price as reference
Peak Price ($US/kg)	$9.68	⇒	Peak price since 1994 as reference
Principal products	cooked/raw, tail on/off, fresh/frozen	⇒	Principal products entering U.S. market
*Industry Canada (not all specifically P. Borealis product forms)		⇒	Eg. Figures for shrimp not P. Borealis
**Urner Barry (note: prices are for selected products)		⇒	Urner Barry reports on many product forms, prices shown here are for an indicative product form

Harvesting method	⇒	Fixed or mobile gear and vessel type provided
Supply trend (rising/stable/declining)	⇒	Assessment based on FAO, NAFO, and DFO trends since all are relevant in market context
Demand trend (rising/stable/declining)	⇒	Global and dominant market trends assessed
Price (rising/stable/declining four-year US trend)	⇒	Price data obtained on a subscription basis from U.S. Urner Barry source, not possible for all markets
Dominant market segment (foodservice/retail)	⇒	General market segments provided to differentiate between selected WWF species

Figure I. Northwest Atlantic Fisheries Organization fishing boundaries



Source: DFO

INTRODUCTION

The purpose of this report is to provide WWF-Canada with information and analysis required to engage the seafood industry and other relevant stakeholders in initiatives aimed at:

- Identifying, improving and rewarding sustainable fisheries;
- Providing market-based incentives for all fisheries to continuously and measurably improve their performance;
- Educating consumer and seafood professionals and providing them with clear sustainable seafood choices.

To that end, this report provides specific resource, harvesting, product and trade information on eleven Northwest Atlantic fisheries specified by WWF-Canada. These eleven species were selected based on certain criteria, and as such fall into one or more of three categories: a) commercial importance, b) poor resource status, and / or c) ecosystem impacts. The species and their associated grouping are summarized in the following table.

SPECIES	**Commercial Importance**	**Poor Resource Status**	**Ecosystem Impacts** (e.g., bycatch, habitat)
Shrimp (*Pandalus borealis*)	✓		
Snow crab (*Chionocetes opilio*)	✓	Declining trend evident in some populations	
Scallop (*Placopecten magellanicus*)	✓		✓
Lobster (*Homarus americanus*)	✓		✓
Greenland halibut (*Reinhartditius hippoglossoides*)	✓	✓	✓
Atlantic cod (*Gadus morhua*)	✓	✓	
Yellowtail flounder (*Limanda ferruginea*)	✓		✓
Redfish (*Sebastes spp.*)	✓	✓	✓
White hake (*Urophycis tenuis*)		✓	✓
Skates (*Raja spp*)			✓

The findings are based primarily on information found in publicly available data sources and reports, as well as from contacts in the fishing industry. While product form and general trade information are available for the major commercial species fished and processed by Canadian interests, determining market channels in any detail proves a more daunting challenge. This is because most of what Canadian fish processors produce is sold to distributors or importers, rather than to final retail and food service customers. The large distributors and importers in major markets are well known, but there are hundreds of smaller regional distributors who also take product for local markets.

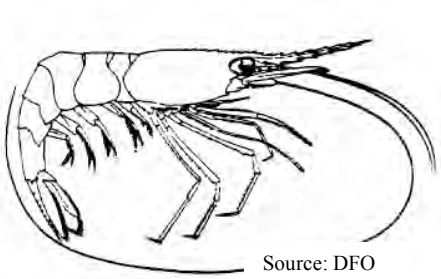
The task is much more complicated in the Far East because of the complexity of market structures. A few major trading companies control imports, and then fish is distributed through many layers and disappears in local markets and supermarkets. Similar challenges occur in the case of species fished by non-Canadian vessels in NAFO waters. Marketing channels in Eastern Europe are not well known, particularly for species of low commercial value (e.g.. grenadier). These instances are noted in the report.

The report presents a separate section for each species that could serve as independent documents as needed. Each section starts with key statistics condensed to one fact sheet for quick reference. Supporting text follows each fact sheet, providing more detail on the main topics of interest. Sources of data are provided throughout to help with follow-up regarding findings and gaps.

1. SHRIMP (PANDALUS BOREALIS)

2004 Landings and Values	
Global waters*	
Global landings (t)	446,138
Top 3 nations	Can, Grl, Nor
Canada landings (t)	172,586
Can % of global	39%
Can % of peak year	100%
NAFO waters** (includes DFO figures)	
All nations landings (t)	190,218
Top 3 nations	Can, Nor, Den
Canada landings (t)	141,357
% of NAFO	74%
% of peak year	100%
Atl Canada***	
Landings (t)	135,035
Values ($C)	$189,049,000
Land price ($C/kg)	$1.40
Exports (t)	69,894
Exports ($C)	$331,298,110
Export price ($C/kg)	$4.74

Note: Landings reported as live weight in tonnes
*FAO, 2005. Yearbook of fisheries statistics: Capture and Aquaculture
** NAFO annual fisheries statistics databases
***DFO Statistical Services, figures derived from available sources on a pro-rata basis



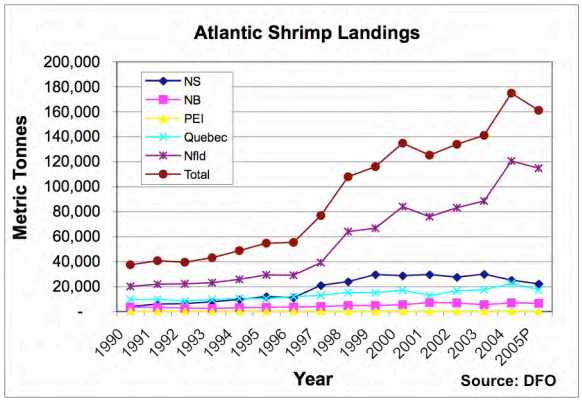
Source: DFO

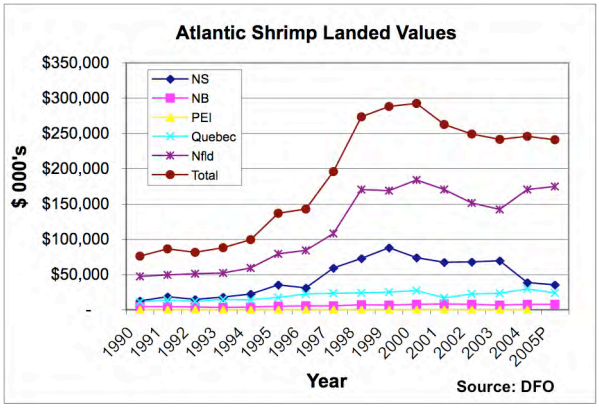
Export markets	
2004 Global*	
Destination countries	21
Top 3 countries (%)	Den 28%, Chn 20%, Jpn 10%
Product forms (%)	frozen 94%, fresh/other 6%
2006 U.S.**	
July 2006 Price ($US/kg)	$5.54
5 yr average ($US/kg)	$6.16
Peak Price ($US/kg)	$9.68
Principal products	cooked/raw, tail on/off, fresh/frozen

*Industry Canada (not all specifically P. Borealis product forms)
**Urner Barry (note: prices are for selected products)

Harvesting method……..factory freezer trawler/wetfish trawler, otter, beam trawls
Supply trend (rising/stable/declining)…….…… rising
Demand trend (rising/stable/declining)…… rising, but less rapidly than supply
Price (rising/stable/declining four-year US trend)…….. declining
Dominant market segment (foodservice/retail)…….. foodservice (larger sizes)/retail (smaller sizes)

Figure 1.1 Atlantic Canada shrimp landings and values 1990-2005



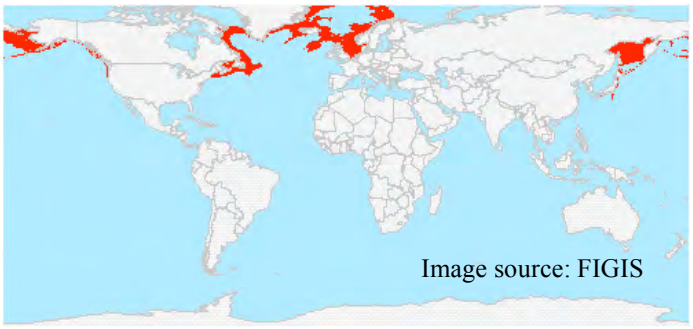


Pandalus is the main coldwater shrimp species, accounting for about 80% of the global coldwater shrimp catch of about 450,000 t. Landings have more than quadrupled in Atlantic Canada since the early 1990s, exceeding 175,000 t in 2004. About 75% of the catch is taken in waters off Newfoundland & Labrador, with most of the balance taken in the northern Gulf of St Lawrence. There is also a small fishery on the eastern Scotian Shelf.

Driven primarily by increased landings, the landed value of shrimp more than tripled between 1993 and 2000. Since then, oversupply and less favorable exchange rates with the dominant US export market have contributed to depressed prices and declining values. Weak prices affect all segments of the shrimp market – coldwater and warmwater species – because supply (including aquaculture) has increased faster than demand.

THE FISHERY

In the Northwest Atlantic, the species ranges from Davis Strait into the northern Gulf of St. Lawrence and as far south as the Gulf of Maine. Northern shrimp is also fished in Icelandic, Faroese and Norwegian waters in the northeast Atlantic, and in Russian and U.S. waters in the Pacific.



Canada's shrimp fishery is concentrated off Newfoundland and Labrador (NAFO 0, 2GHJ, 3K) where over 75% of the catch is taken. The Gulf of St. Lawrence fishery (NAFO 4RS) accounts for about 20%, while the Scotian Shelf (NAFO 4Vs) typically contributes under 5% of the total.

Table 1.1 Atlantic shrimp quotas (DFO) and landings (t) by division ('90, '95, '00, '05)

		1990		1995		2000		2005	
NAFO Division	Gear	Quota	Catch	Quota	Catch	Quota	Catch	Quota	Catch
0AB	mobile	13,300	9,512	12,500	5,082	15,203	5,851	32,025	14,957
2G	mobile	1,500	1,475	5,200	5,104	8,320	8,130	10,401	10,247
2H,2Jn	mobile	6,000	5,361	7,650	7,616	34,128	**35,034**	23,301	22,900
2Js,3K	mobile	5,475	5,475	11,050	10,914	42,080	**43,203**	31,515	**75,198**
3L	mobile	0	0	0	0	4,191	**4,250**	10,837	**11,109**
3M	mobile	0	0	0	**970**	0	**618**	0	0

Note: Bold figures indicate where catches exceeded quotas
Source: DFO: www.dfo-mpo.gc.ca/communic/statistics/

STOCK STATUS

Shrimp abundance and TACs have risen sharply in northern areas since the mid-1990s. Two factors account for this: reduced predation and environmental conditions conducive to strong recruitment. The Canadian Science Advisory Secretariat (CSAS) advisory reports indicate that overall catch per unit effort has remained stable or increased with record catches recently in most areas. Landings have fallen below TACs in some areas in recent years primarily due to fishing decisions reflecting weak prices and poor harvesting economics.

In the NAFO Area, the 2006 stock assessment provides the following advice:

> "…[3M shrimp] stock size indicators have been stable since 1998. The 2001 and 2002 year-classes are both above average, but 2003 year-class appears weak. Recommendations for 3M shrimp state that the stock appears to have sustained an average annual catch of about 48 000 tons since 1998 with no detectable effect on stock biomass. The Scientific Council advises a catch of 48 000 tons for 2007.
>
> …[3LNO shrimp exhibit] an increasing trend in SSB and biomass since 1999. The stock appears to be well represented by a broad range of size groups, and the exploitation index is low. Recruitment is anticipated to decline. Scientific Council recommended that the 2007 TAC should not exceed 22,000 tons and that this TAC should not be raised for a number of years to allow time to monitor the impact of the fishery upon the Div. 3LNO shrimp stock."

FISHERIES MANAGEMENT

The fishery is prosecuted subject to a range of management measures imposed by Canada and NAFO. These measures, designed to limit fishing effort and conserve stocks, include: TACs (based on biomass indices), enterprise and individual quotas, limited entry licensing, vessel size restrictions, gear restrictions (required Nordmore grate to minimize by-catch and min 40mm mesh size), quota monitoring, bycatch limits, trip limits, at-sea observers, dockside monitoring, hailing and logbook reporting.

Processing is managed provincially through licence requirements. Entry is restricted in some provinces (subject to raw material availability and related criteria), while unrestricted in others. Some provinces restrict the movement of raw material for processing in order to protect scarce jobs in coastal communities. The Canadian Food Inspection Agency (CFIA) maintains a registry of processors, distributors, and exporters, and inspects facilities to enforce health standards for product entering international trade.

A summary table of management measures across species is provided in Appendix B.

INDUSTRY STRUCTURE

The harvesting sector is comprised of an inshore sector with about 420 vessels (most of these measure less than 20 m), and an offshore sector with 13 factory freezer trawlers operating in northern waters (NAFO 0A/B, 2GJH and 3KL). Most of the inshore fleet (380 vessels) is based in Newfoundland and Labrador where the resource is most abundant, with most of the balance based in ports in the northern Gulf of St. Lawrence. The inshore fleet supplies shrimp to 20 processing plants (NL 13, QC 5, NB 2). These plants produce mainly cooked and peeled frozen product. The offshore vessels process on board, with product packed and ready for shipment upon landing. Eight of these vessels land in NL and the other five in NS.

The inshore sector in NL was allocated most of the growth in the TAC after 1995, resulting in a substantial expansion in the number of fishing licences and processing plants. Most vessels in the NL inshore fleet are converted groundfish draggers or longliners; few are purpose built. Vessels and plants in the inshore sector are independently owned. Most of the offshore fleet with its high capital costs (a new factory trawler typically would cost in the $25-30 million range) is owned by fishing companies, many of which operate in other sectors of the fishing industry.

PRODUCTS AND MARKETS

Products and processing are divided along inshore and offshore fishery lines. The inshore fleets fish coastal waters, landing iced catches for onshore plants producing cooked and peeled shrimp. Production had an export value of $150 million in 2005. The offshore fleet lands finished product (in-shell frozen raw and cooked) packed and ready for shipping. Offshore production had an export value of $280 million in 2005.

North America and the EU are the principal markets for Canadian cooked and peeled shrimp, with the U.S., the U.K. and Denmark the major export destinations. The EU is a challenging market for Canadian producers because exports are subject to a 20% tariff designed to protect EU members also active in shrimp fishery or processing (Denmark is the major beneficiary). Because of this and in spite of adverse movements of the exchange rate, the U.S. has become the dominant market, taking 40-50% of Canadian exports.

China and Japan are the major export markets for shell-on frozen shrimp. China has emerged as a market in its own right, though some shrimp is processed for re-export. Denmark is a major export destination for both cooked and peeled and shell-on frozen, not because the Danes are such large consumers, but because Danish companies carry out further processing and also play a key role in distribution throughout the EU.

VALUE CHAIN AND MARKET DESTINATIONS

Shore-based cooked and peeled processing plants acquire raw material from vessels at competitively determined prices. In NL, plants have an incentive to pay top dollar for shrimp because most vessels also fish crab, generally a more valuable species from the processors' standpoint. Most product landed from offshore trawlers is fully packed and ready for shipment, though depending on market conditions, some of the smaller shrimp (termed "industrial") may be directed to shore plants for the cooked and peeled market.

Markets, distribution channels and final consumption patterns for coldwater shrimp tend to be highly product and size specific.

- For the cooked and peeled segment (28% of total Canadian exports), two markets dominate: the U.S. and the EU (mainly the U.K.), with most of the product ultimately sold through retail outlets (either in branded retail packs or in the sandwich trade). Cooked and peeled product sells mainly through retail because the shrimp tends to be too small for foodservice. Sales to the U.S. (mainly to the west coast) follow a range of distribution channels including distributors such as Sysco and U.S. Foodservice who resell to retailers; directly to larger retailers such as Costco, Albertson's, Safeway and Kroger; and through regional traders (brokers) who sell on to retail customers. Sales to the U.K. tend to be directly to major retailers. The top five UK retailers of coldwater shrimp are Sainsbury, Tesco, Marks & Spencer, Asda and Safeway.

- For the shell-on product – raw and cooked frozen – (72% of Canadian exports in 2005) three markets dominate: China, Japan and the EU. Product entering China and Japan is sold through large import and trading companies where it enters the traditional market system. Product entering the EU is sold either through Danish companies who distribute to retailers throughout the EU, or directly to companies who carry out further processing (mainly packing the product in brine for the retail market). Royal Greenland is the largest European company in the shrimp business, with integrated harvesting, processing and marketing interests.

INDUSTRY PERFORMANCE

The Canadian shrimp industry – both the cooked and peeled and shell-on segments – faces difficult market conditions. Prices have declined for several years, reaching levels where harvesting has become a marginal proposition and where processors claim to be breaking even at best. The decline in prices is not unique to Canada, but affects global producers of all shrimp species whether farmed or wild. Unless new markets are developed and demand expands in existing markets, continued supply growth would result in continued downward pressure on prices.

2. SNOW CRAB (CHIONOECETES OPILIO)

2004 Landings and Values	
Global waters*	
Global landings (t)	178,623
Top 3 nations	Can, Kor, Rus
Canada landings (t)	103,354
Can % of global	58%
Can % of peak year	97%
NAFO waters** (includes DFO figures)	
All nations landings (t)	70,833
Top 3 nations	Can
Canada landings (t)	70,671
% of NAFO	100%
% of peak year	67%
Atl Canada***	
Landings (t)	103,354
Values ($C)	$612,874,000
Land price ($C/kg)	$5.93
Exports (t)	53,702
Exports ($C)	$659,026,000
Export price ($C/kg)	$12.27

Note: Landings reported as live weight in tonnes
*FAO, 2005. Yearbook of fisheries statistics: Capture and Aquaculture
** NAFO annual fisheries statistics databases
***DFO Statistical Services

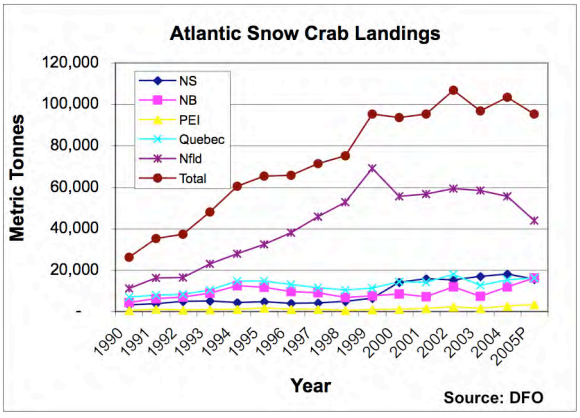
Source: Squires

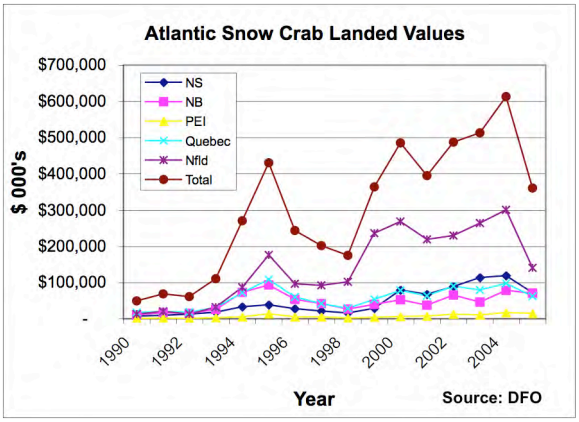
Export markets	
2004 Global*	
Destination countries	15
Top 3 countries (%)	USA 63%, Chn 18%, Jpn 15%
Product forms (%)	frozen 99.8%, fresh/other 0.2%
2006 U.S.**	
July 2006 Price ($US/kg)	$6.78
5 yr average ($US/kg)	$8.11
Peak Price ($US/kg)	$11.66
Principal products	sections or clusters (U.S) / live by size, frozen sections, meat (Japan)

*Industry Canada (not all specifically C. Opilio product forms)
**Urner Barry (note: prices are for selected products)

Harvesting method……..……..inshore boats/traps
Supply trend (rising/stable/declining)……..……stable
Demand trend (rising/stable/declining)…….stable
Price (rising/stable/declining four-year US trend)…..……..stable
Dominant market segment (foodservice/retail)…….....foodservice (restaurants/buffets)

Figure 2.1 Atlantic Canada crab landings and values 1990-2005



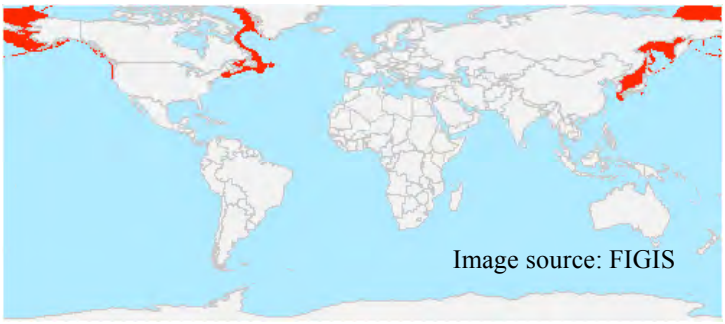


Snow Crab landings increased from 1990 to 2000, driven by two key factors: increased abundance and increased fishing effort. The increased fishing effort followed collapse of groundfish stocks, particularly cod, in the early 1990s. With most of the growth in crab abundance occurring in NL waters, many of those affected by the collapse were granted access to the fishery through temporary and permanent licensing arrangements.

Snow crab values have been influenced by overall economic conditions, where rising values generally reflect strong market conditions in the U.S. and Japan. Price was also influenced by the collapse of the Alaskan snow crab stocks in 1999, resulting in a sharp price spike. Distributors misjudged demand in 2004-05, bidding up prices to unprecedented levels. Consumer resistance caused a build-up of inventory and depressed prices in 2005 and 2006.

THE FISHERY

Canada is currently the world's largest producer of snow crab (70%). The resource ranges from southern Labrador in the north to the Scotian Shelf in the south, with extensive distribution in the Gulf of St. Lawrence. There are also snow crab fisheries in U.S. (Bering Sea), and Russian, Korean and Japanese waters in the north Pacific.



The fishery in Canada is concentrated in the waters off Newfoundland and Labrador (NAFO 2J, 3KL) where over 60% of the catch is taken. The Gulf of St. Lawrence fishery (NAFO 4RST) accounts for about 30%, while the Scotian Shelf (NAFO 4VX) contributes under 10% of the total.

Table 2.1 Atlantic snow crab quotas (DFO) and landings (t) by division ('90, '95, '00, '05)

		1990		**1995**		**2000**		**2005**	
NAFO Division	Gear	Quota	Catch	Quota	Catch	Quota	Catch	Quota	Catch
2J	trap	920	645	3,050	**3178**	3410	**3811**	1425	1576
3K	trap	3280	**3473**	11450	**12850**	13493	**15398**	12860	8798
3L	trap	6800	5342	11650	**12420**	19865	**21676**	24138	25113
3MNO	trap			1500	**1370**	5100	**5174**	5610	5352
3Ps	trap	700	553	1525	**1853**	7767	**7904**	4100	3693
4S	trap	0	**3495**						
4T	trap	7500	**8367**						
4R,3PN	trap			0	**200**	1442	**1465**	1845	857
4X	trap					0	**138**		
Zone 12	trap			20,000	19,939	16,737	16,304	33993	33918
Zone 13	trap			889	883	0	**858**	0	0
Zones 14:17	trap			6771	6362	2542	**7272**	5677	5686
Zones 25,26	trap			1000	981				
Areas 18,19	trap	2012	1995	2286	2271	3846	3697	3444	3392
Areas 20:24	trap			350	**1404**	9718	9718	6935	7228

Note: Bold figures indicate exceeded quotas (may be due to lack of quotas in some areas)
Source: DFO: www.dfo-mpo.gc.ca/communic/statistics/

STOCK STATUS

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 estimate or 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. Bearing in mind the cyclical nature of crab populations, recruitment forms an important leading indicator of turning points in resource abundance.

Following several years of rising catches and some recent declines, a review of the 2006 stock advisory reports provides limited basis for short-term optimism. Stocks are at various stages of their cyclical variation, though no area is experiencing a strong recruitment pulse that would provide the basis for significant growth in exploitable biomass in the next 2-3 years. A summary of general conclusions by region is set out below:

- **Newfoundland and Labrador**: the TAC reached 61,500 t in 1999 following steady growth of the fishery into offshore areas. The TAC declined thereafter, and with some fluctuation dropped to 46,233 t in 2006. Biomass indices have declined in several areas, and while short-term recruitment has improved in some areas, long-term recruitment prospects are uncertain. DFO is following a cautious approach in setting the TAC and has introduced new management measures following the advice of the FRCC in its 2005 report. These measures include earlier season start and end to reduce mortality due to soft-shell, and enhanced soft-shell crab monitoring.

- **Eastern Nova Scotia**: abundance (fishable biomass) has declined since 2001, and continues to decline despite reductions in the TAC (these have declined by about 50% between 2004 and 2006). Recruitment into the fishery has been weak for the past few years. Recovery could begin as early as 2007, though this is dependent on reducing fishing pressure on immature and soft-shelled crab in 2006. A lower exploitation rate coupled with a more stringent soft-shell crab protocol would result in lower TACs in the short-term, but provide the basis for growth in the future.

- **Southern Gulf of St. Lawrence**: the stock is in a declining phase in recruitment to the fishery until 2010. The TAC was set at 25,869 t in 2006 (a 20% drop from 32,336 t in 2005), and lower TACs can be expected for the next few years. Since about 2000, the fishery has become largely dependent on annual recruitment rather than remaining biomass, reflecting relatively high fishing pressure on the resource. Continued high fishing pressure on the recruitment would accelerate the decline in the commercial biomass after 2006 and require aggressive management in future years to restore abundance.

- **Northern Gulf of St. Lawrence**: most populations are nearing the end of a recruitment wave, reflected in high commercial biomass and weak recruitment. TACs remained stable in the years 2003-2006 (in the 6-7,000 t range), following a sharp drop from 2002 when the TAC was over 10,000 t. It is likely that exploitable biomass will begin to decline in 2007.

The fishery in many areas is characterized by increasing effort, high exploitation rates, and pressure from the industry to maintain TACs at unsustainably high levels. These conditions pose considerable risk for the biological and economic components of sustainability. In its 2005 report, the FRCC made several recommendations including setting specific opening and closing dates that avoid periods of mating and post-moult soft-shell conditions, and setting specific exploitation rates according to biological assessments of the resource.

FISHERIES MANAGEMENT

The fishery is conducted subject to a range of management measures designed to limit fishing effort and conserve stocks. They include: TACs (based on biomass estimates and indices), individual quotas, season limits, limited entry licensing, vessel size restrictions, gear restrictions

(trap size), quota monitoring, trip limits (some areas), closures due to soft shell (10-20% threshold), legal size limits (95mm minimum carapace width), a prohibition on retaining females, at-sea observers, dockside monitoring, and hailing and logbook reporting.

Processing is managed provincially through licence requirements. Entry is restricted in some provinces and unrestricted in others. Some provinces restrict the movement of raw material for processing in other jurisdictions in order to protect scarce jobs in coastal communities. The Canadian Food Inspection Agency (CFIA) maintains a registry of processors, distributors, and exporters. The CFIA also inspects facilities to enforce health standards for product entering international trade.

A summary table of management measures across species is provided in Appendix B.

INDUSTRY STRUCTURE

Harvesting is conducted exclusively by independent inshore enterprises (boats less than 19m in length), with a fleet of some 4,000 vessels. Most of the fleet (3,400 vessels) is based in Newfoundland and Labrador where the resource is most abundant. The balance of the fleet is distributed throughout the other Atlantic Provinces and Québec.

The harvesting sector supplies about 80 processing plants in the region. These plants compete intensely for raw material, using a variety of price and non-price incentives to attract and maintain the loyalty of vessels. With a short harvesting season (generally 8-10 weeks) and strong competition, shore prices tend to be high, imposing difficult cash flow demands on processing companies.

PRODUCTS AND PROCESSING

Virtually all snow crab in Atlantic Canada is processed as frozen sections (clusters of legs) for export to the U.S. and Japan. The process is straightforward: butchering the crab (breaking off the leg sections), cooking, freezing and packing. Plants generally operate two ten-hour shifts to deal with the highly peaked seasonal landings. The large processing capacity (which sits idle most of the year) contributes to the intensity of competition for raw material.

With a highly seasonal consumption pattern in the major U.S. market, the crab is sold and shipped immediately. For product destined for Japan, technicians employed by the large importing companies work in the plants to ensure product meets specifications. Some of the product for the Japanese sushi market is first shipped to China for extraction of meat. This can be done in China at much lower cost than in Atlantic Canada.

VALUE CHAIN AND MARKET DESTINATIONS

Processing plants acquire raw material from independent vessels at competitively determined prices. Processors sell and ship to distributors in the U.S. and trading companies in Japan more or less as soon as the crab is processed and packed. Processors do not hold inventory as they do with shrimp. Distributors and importers essentially “take a position in the market”, dealing with crab as a commodity product and absorbing the risks this entails. It is left mainly to distributors to make the sales to restaurant chains and retailers in the U.S.

Distribution of food products is becoming more highly concentrated in the U.S., so Canadian processors find themselves increasingly at a disadvantage in price negotiations. Among the major importers of Canadian snow crab are U.S. Foodservice, Sysco, Aqua Star and Beaver Street. Some processors try to deal directly with customers, but this requires considerable market clout and sophistication which most of the smaller processors lack. One or two of the processors sell directly to Darden Restaurants, operator of the Red Lobster chain. A summary of the top ten distributors, retail vendors, supermarket chains, and restaurant chains is provided in Appendix A. Because of the complexity of the Japanese market and distribution channels, all sales of crab are to major trading companies who contract with Canadian processors at the beginning of the season. Among these companies are Mitsubishi, Maruha, KKK-Tokyo and Nippon Suisan.

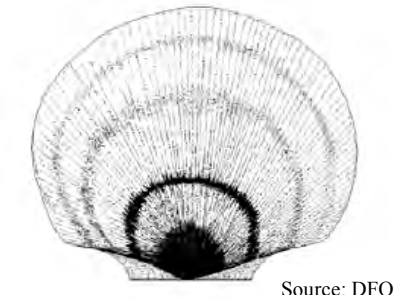
INDUSTRY PERFORMANCE

After several years of good performance, the crab industry in Atlantic Canada faced a major downturn in 2005 that extended into 2006. Distributors in the U.S. had bid up the price of crab to a level unacceptable to retail stores and restaurants, causing the latter to shift to substitute products. The market price crashed resulting in sharply reduced import and shore prices in 2005. Throughout much of the region, shore prices dropped by 50%. This carried through to 2006, as inventories had not yet been cleared. The market began to recover in late 2006 just as the fishing season ended. A return to more typical pricing is expected in 2007, particularly in light of strengthening demand in Japan and stable supplies from Alaska (the 2007 TAC has been set at just under the 2006 level).

3. SCALLOP (PLACOPECTEN MAGELLANICUS)

2004 Landings and Values	
Global waters*	
Global landings (t)	325,087
Top 3 nations	USA, Can, Fra
Canada landings (t)	81,222
Can % of global	25%
Can % of peak year	86%
NAFO waters** (includes DFO figures)	
All nations landings (t)	3,449
Top 3 nations	Can
Canada landings (t)	3,449
% of NAFO	100%
% of peak year	4%
Atl Canada***	
Landings (t)	82,120
Values ($C)	$113,919,000
Land price ($C/kg)	$1.39
Exports (t)	8,218
Exports ($C)	$131,167,000
Export price ($C/kg)	$15.96

Note: Landings reported as live weight in tonnes
*FAO, 2005. Yearbook of fisheries statistics: Capture and Aquaculture
** NAFO annual fisheries statistics databases
***DFO Statistical Services



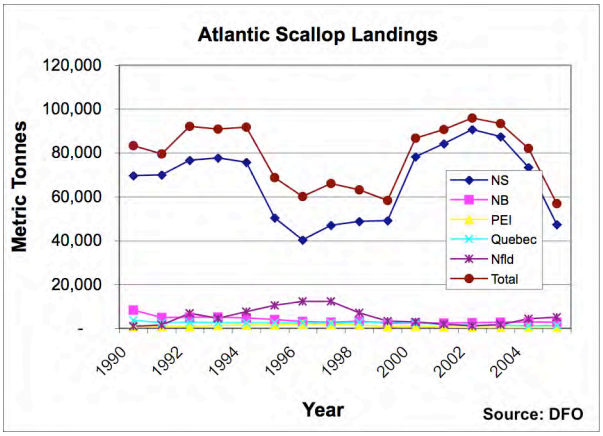
Source: DFO

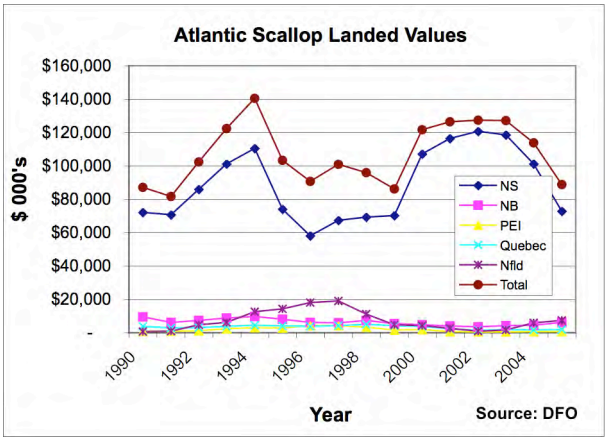
Export markets	
2004 Global*	
Destination countries	25
Top 3 countries (%)	USA 69%, Fra 23%, Bel 0.4%
Product forms (%)	frozen, salted, dried, or in brine (72%), live, fresh, or chilled (28%)
2006 U.S.**	
July 2006 Price ($US/kg)	$19.14
5 yr average ($US/kg)	$14.15
Peak Price ($US/kg)	$20.79
Principal products	shucked / peeled by size

*Industry Canada (not necessarily all product forms)
**Urner Barry (note: prices are for selected products)

Harvesting method……freezer trawler / dredge
Supply trend (rising/stable/declining)……..……stable
Demand trend (rising/stable/declining)……stable
Price (rising/stable/declining four-year US trend)…..……..rising
Dominant market segment (foodservice/retail)……...retail (supermarkets), foodservice (restaurants)

Figure 3.1 Atlantic Canada scallop landings and values 1990-2005





Scallop landings have fluctuated in recent years, ranging from 50,000 – 90,000 metric tonnes (round weight). Over 90% is landed in NS, with most of this harvested from Georges Bank. Since the creation of the Hague Line delimiting the U.S. and Canadian portions of the Bank, the Canadian fleet has dropped from about 78 to under 20 vessels, reflecting management measures aimed at a more efficient fishing fleet.

Total landed values primarily reflect NS landings, with some influence from rising prices. While landings in 2005 were some 25% less than in 1990, the landed value was slightly higher. This has occurred despite less favorable exchange rates in recent years.

THE FISHERY


Image source: FIGIS

Scallops range along the east coast from northern Labrador to South Carolina in the U.S. The Canadian scallop fishery is concentrated on Georges Bank in the Gulf of Maine, with much smaller fisheries on the Grand Banks and in the Gulf of St. Lawrence region. The latter stocks have not generally been managed under quota in Canadian waters. DFO figures for quota and landings are presented below according to NAFO divisions where scallop quotas are set.

Table 3.1 Atlantic scallop quotas (DFO) and landings (t) by division ('90, '95, '00, '05)

		1990		1995		2000		2005	
NAFO Division	Gear	Quota	Catch	Quota	Catch	Quota	Catch	Quota	Catch
3Ps	Mobile	150	**153**	150	65	50	29	250	**285**
4S	Mobile	0	0	287	181	0	**145**	235	**372**
4X Full Bay	Mobile	200	**207**	0	0	786	**795**	1,755	775
4VW	Mobile	0	0	150	**151**	200	195	250	235
4Vs	Mobile	0	0	0	0	150	147	100	10
4X Brn	Mobile	0	0	2,000	**2,002**	950	948	1,175	1,106
4X Ger	Mobile	0	0	400	400	600	599	200	199
5Z	Mobile	5,200	**5,574**	2,000	1,985	6,800	**6,813**	2,700	2,685

Note: Bold figures indicate where catch exceeded quota
Source: DFO: www.dfo-mpo.gc.ca/communic/statistics/

STOCK STATUS

Recent landings have been fluctuating and they are at lower levels than historic averages. Recent stock status/assessment reports indicate that scallop biomass estimates across all fishing areas are at levels ranging from 0-40% of peak historic landings in Canadian waters. Georges Bank had fallen below historic levels in 2005, but began to recover in 2006 following strong recruitment. Stocks in the heavily fished Bay of Fundy are also well below long-term averages. Short and medium-term recruitment is expected to be low, and low or no harvesting is recommended in many areas. The only exception is where higher scallop densities have been observed near Quebec inshore aquaculture seeding areas.

There is some uncertainty in stock assessment given spatial heterogeneity of age distribution and sparse aging data, lack of multi-year comparable data, and the unknown extent to which dragging of the seafloor may disturb settling of juveniles.

FISHERIES MANAGEMENT

The fishery is prosecuted subject to a range of management measures imposed by Canada designed to limit fishing effort and conserve stocks. In recent years, a significant concern being addressed by the fishery is the potential impacts of gear on the sea floor. Some improvements have been made through more efficient targeting of scallop beds in order to limit the areal extent of fishing.

In general, fishing effort is managed by limited-entry licensing, area closures, net towing and setting restrictions, TACs and enterprise quotas, quota monitoring, by-catch limits, required discarding of Yellowtail flounder, legal size limits (95/100mm minimum carapace width depending on area), minimum meat content requirements (meats per lb), at-sea observers, dockside monitoring, hailing and logbook requirements.

Scallop undergoes limited onshore processing since most of the catch is shucked at sea. Processing is managed provincially through licence requirements, and although there is unlimited entry, investment criteria may be set for establishing or enhancing facilities. The Canadian Food Inspection Agency (CFIA) maintains a registry of processors, distributors, and exporters. The CFIA also inspect facilities to enforce health standards.

A summary table of management measures across species is provided in Appendix B.

INDUSTRY STRUCTURE

Vertically integrated companies operating about 16 vessels in offshore areas account for most of the catch. Six of these vessels conduct all processing at sea on freezer vessels. The inshore sector consists of hundreds of vessels, though only the Bay of Fundy fleet (fewer than 100 vessels) fishes a significant quantity. These vessels supply a handful of independent processing companies in Nova Scotia.

PRODUCTS AND PROCESSING

Scallop processing remains relatively simple. Scallops are typically shucked at sea, and washed, sorted and packed onshore. They are shipped in either fresh/chilled or IQF form. The companies operating factory vessels produce a frozen-at-sea product.

VALUE CHAIN AND MARKET DESTINATIONS

The larger and fresher the scallop the more likely it is to be sold directly to high-end restaurants, primarily in the U.S. northeast, or to specialty seafood shops where they command premium prices. Smaller scallops enter the retail trade, often in frozen or “re-freshed” (thawed) form. Scallops may be packed under company brand (e.g., Clearwater), or for various house brands.

The U.S. is the dominant market, taking upwards of 50% of Canadian exports, with much of the balance going to the EU. The sea scallop is one of the highest valued species by weight, with U.S. import prices typically in the US$10-12.00/kg range. The impact of declining Canadian catches in 2005 is evident from the market with import prices jumping to the US$16-17.00/lb range. With the industry concentrated in few hands in Canada, integrated harvesting-processing companies manage supply carefully to ensure prices remain as high as possible. A summary of the top ten U.S. distributors, supermarket chains, and restaurant chains is provided in Appendix A.

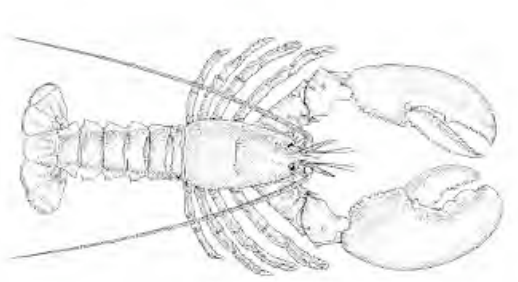
INDUSTRY PERFORMANCE

After several years of strong performance, the scallop industry suffered a set-back in 2005 with the sharp reduction in TAC on the major fishing grounds (scallop catches in the U.S. have also been reduced). With limited substitution available for this species (other species such as bay and calico scallops tend to be much smaller and not as desirable), the cuts resulted in a 25% increase in export prices. Prices are expected to remain high until stocks recover.

4. LOBSTER (HOMARUS AMERICANUS)

2004 Landings and Values	
Global waters*	
Global landings (t)	79,795
Top 3 nations	Can, USA, Fra
Canada landings (t)	45,623
Can % of global	57%
Can % of peak year	89%
NAFO waters** (includes DFO figures)	
All nations landings (t)	5,353
Top 3 nations	Can
Canada landings (t)	5,349
% of NAFO	100%
% of peak year	10%
Atl Canada***	
Landings (t)	47,375
Values ($C)	$588,863,000
Land price ($C/kg)	$12.43
Exports (t)	44,164
Exports ($C)	$951,815,000
Export price ($C/kg)	$21.55

Note: Landings reported as live weight in tonnes
*FAO, 2005. Yearbook of fisheries statistics: Capture and Aquaculture
** NAFO annual fisheries statistics databases
***DFO Statistical Services



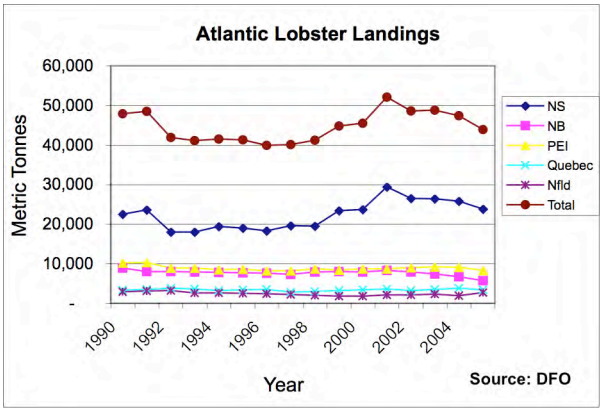
Source: DFO

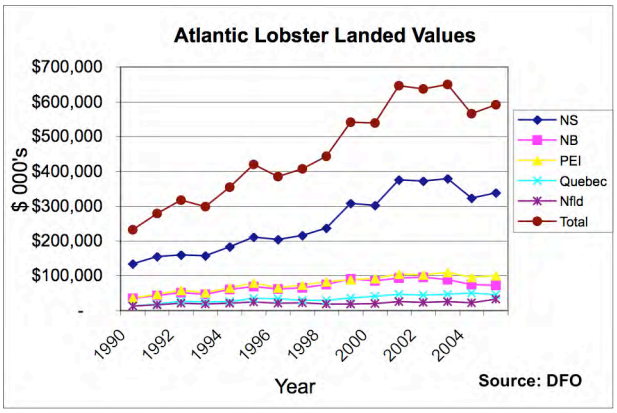
Export markets	
2004 Global*	
Destination countries	60
Top 3 countries (%)	USA 79%, Jpn 4%, Bel 3%
Product forms (%)	fresh, not frozen (61%), frozen (29%)
2006 U.S.**	
July 2006 Price ($US/kg)	$14.78
5 yr average ($US/kg)	$14.88
Peak Price ($US/kg)	$17.40
Principal products	live whole by size or fresh / frozen tail, claw & knuckle, leg

*Industry Canada (not all specifically H. Americanus product forms)
**Urner Barry (note: prices are for selected products)

Harvesting method……inshore open boats, traps
Supply trend (rising/stable/declining)……..……stable
Demand trend (rising/stable/declining)……stable
Price (rising/stable/declining four-year US trend)…..……..stable
Dominant market segment (foodservice/retail)……....foodservice (restaurants/buffets)

Figure 4.1 Atlantic Canada lobster landings and values 1990-2005





The lobster fishery has endured environmental change and high exploitation rates, while still providing stable landings through the 1990s and 2000s. Total Atlantic Canada landings have generally ranged between 40,000 and 50,000 tonnes with a peak of just over 51,000 tonnes in 2001. Nova Scotia accounts for 50% of total landings in Atlantic Canada.

Prices have risen steadily over the last 15 years, driven primarily by U.S. demand. Landed values have more than doubled over this time, despite the decline in landings since 2001 and the decline in value of the U.S. dollar.

THE FISHERY

The lobster resource is among the most widely distributed of all commercial species in Atlantic Canada, ranging from Southern Labrador, into the Gulf of St. Lawrence, along the Scotian Shelf into the Bay of Fundy, onto Georges Bank, and further into U.S. waters. About half the Canadian catch is taken on the Scotian Shelf.


Image source: FIGIS

STOCK STATUS

The Canadian Science Advisory Secretariat (CSAS) reports for 2005 and 2006 indicate that landings continue to be higher than long-term averages throughout most of Atlantic Canada. There is concern in some areas with high exploitation rates, but recruitment and numbers of berried females in particular continue to rise. Also, size/weight of lobster is improving after introducing increases to minimum required carapace size. Scientists can offer no definitive explanation for the long-term improvements in stock abundance, but suggest broad-scale environmental change and absence of predators are contributing factors. Some areas, notably in parts of the Northumberland Strait and North Shore of Quebec, have seen recent declines in catches. Reductions in fishing effort of 15% or more are proposed.

FISHERIES MANAGEMENT

The fishery operates with extensive input controls at harvesting and processing levels. Management measures for harvesters include: limited-entry licensing, regulated seasons, vessel size restrictions, gear restrictions (limits on numbers and size of traps as well as mandatory use of biodegradable panels), legal size limits (varies by area), no (berried) females retained and dockside monitoring.

One concern being addressed in this fishery is by-catch involving federally listed species-at-risk (primarily cusk on the Scotia Shelf).

Processing is managed provincially by licensing and, although there is unlimited entry, investment criteria may be set for establishing or enhancing facilities. The Canadian Food Inspection Agency (CFIA) maintains a registry of processors, distributors, and exporters. The CFIA also inspect facilities to enforce health standards.

A summary table of management measures across species is provided in Appendix B.

INDUSTRY STRUCTURE

The industry is generally characterized by independent ownership of vessels and processing plants, with keen competition amongst plants for raw material. The harvesting sector consists of 9,700 licensed vessels, with approximately 25,000 employed skippers and crew. Processors include approximately 500 buyers, 50 processing plants, and 400 shippers/exporters. Product may pass through one or more additional distributors for export to major markets, ending up in thousands of restaurants, casinos, supermarkets, and specialty seafood shops.

PRODUCTS AND PROCESSING

Lobster is sold either live or cooked and processed in one of several shell-on or meat product forms. The product form is determined mainly by lobster size. The minimum size is 82.5 mm carapace length for the Atlantic fisheries outside the Gulf of St. Lawrence. These lobsters generally enter the live trade (this is the legal size in the U.S.). Holding lobster may be important for re-timing markets to avoid gluts (and avoid depressing prices) during peak seasons.

The fisheries in the Gulf of St. Lawrence operate with a smaller legal size because lobsters in the Gulf reach maturity at a smaller size. These smaller lobsters are generally processed in one of the region's 50 or so processing plants. This industry also imports up to half the lobster catch from the U.S. northeast for processing and re-sale back to the U.S. and Europe.

VALUE CHAIN AND MARKET DESTINATIONS

The U.S. is the major export market, taking upwards of 70% of Canadian supply. The lobster industry is highly fragmented with hundreds of shippers and processors in Canada dealing with a wide range of buyers in the U.S. Those in the live trade sell to regional brokers and distributors who in turn sell to major retailers and restaurants. Some of the larger Canadian shippers operating dry-land pounds would sell direct to larger retail chains. The market is somewhat seasonal with the harvesting seasons in Canada timed reasonably well to match demand (and to avoid the U.S. harvest which peaks in August-September). Also, the Canadian industry has developed extensive holding facilities to avoid gluts.

Those in the processed trade sell a commodity product, working mainly through distributors and brokers. Cruise lines and casinos have become a dominant segment of the market, particularly for specific products such as frozen lobster tails.

A summary of the top ten distributors, retail vendors, supermarket chains, and restaurant chains is provided in Appendix A.

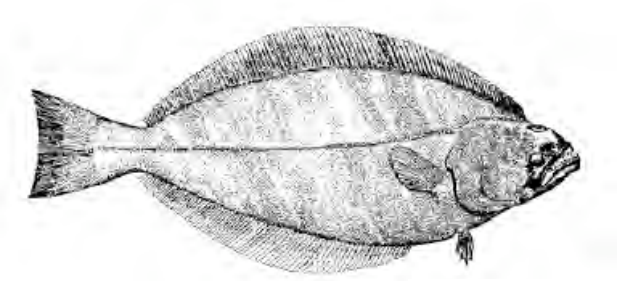
INDUSTRY PERFORMANCE

This is a highly competitive industry, with shippers/processors engaged in a constant struggle to obtain raw material. While this benefits harvesters, it causes major challenges for shippers/ processors who must contend with market fluctuations, high carrying costs and narrow margins. The past few years have been difficult ones for the shipping/processing sector, with some failures and several consolidations in the industry. This stems in part from buying aggressively in 2004 and selling into a stable market, and also to some quality issues (low meat content) with live lobster caught on the Scotian Shelf during the winter season. Conditions improved in 2005 with strengthening export prices.

5. GREENLAND HALIBUT (REINHARDTIUS HIPPOGLOSSOIDES)

2004 Landings and Values	
Global waters*	
Global landings (t)	24,751
Top 3 nations	Den, Fra, Spa
Canada landings (t)	13,645
Can % of global	55%
Can % of peak year	35%
NAFO waters** (includes DFO figures)	
All nations landings (t)	27,768
Top 3 nations	Can, EU, Rus
Canada landings (t)	12,991
% of NAFO	47%
% of peak year	33%
Atl Canada***	
Landings (t)	14,682
Values ($C)	$21,809,000
Land price ($C/kg)	$1.60
Exports (t)	7,936
Exports ($C)	$39,320,000
Export price ($C/kg)	$4.95

Note: Landings reported as live weight in tonnes
*FAO, 2005. Yearbook of fisheries statistics: Capture and Aquaculture
** NAFO annual fisheries statistics databases
***DFO Statistical Services



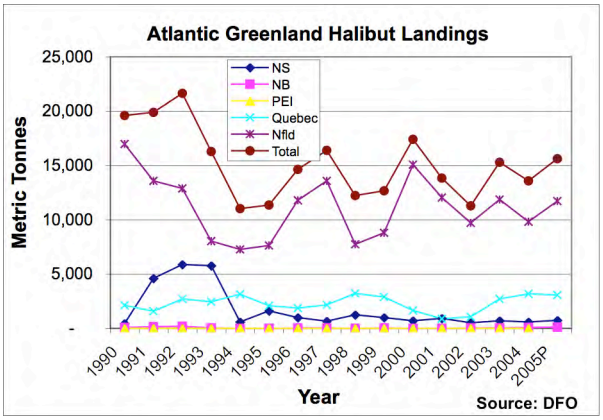
Source: DFO

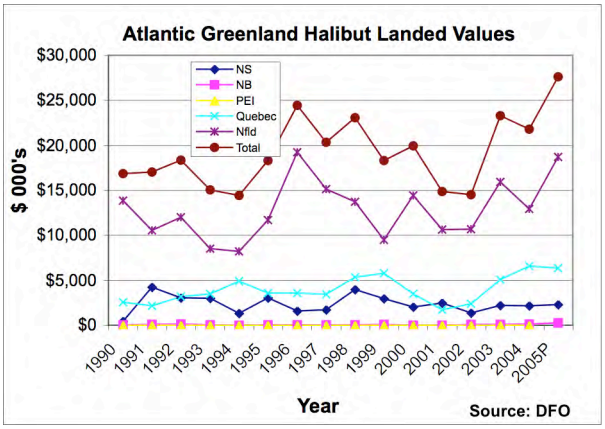
Export markets	
2004 Global*	
Destination countries	9
Top 3 countries (%)	USA 49%, Chn 20%, Tai 11%
Product forms (%)	frozen (56%), fresh or chilled (44%)
2006 U.S.**	
July 2006 Price ($US/kg)	$11.06
5 yr average ($US/kg)	$8.69
Peak Price ($US/kg)	$11.06
Principal products	fresh or frozen, dressed

*Ind Canada (not all specifically R. Hippoglossoides product forms)
**Urner Barry (note: prices are for selected products)

Harvesting method……....freezer trawler / wetfish trawler, otter trawl, gillnet, long-line
Supply trend (rising/stable/declining)……...……..decline
Demand trend (rising/stable/declining)…….stable
Price (rising/stable/declining four-year US trend)…..……..rising
Dominant market segment (foodservice/retail)……...retail (supermarkets), foodservice (restaurants/buffets)

Figure 5.1 Atlantic Canada Greenland halibut landings and values 1990-2005

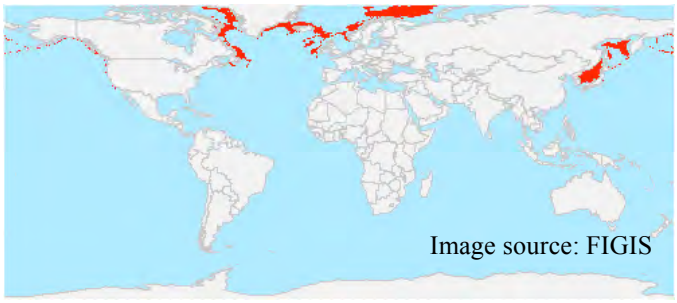




Although landings have been stable since the mid 1990s, they are only 30-40% of historically higher landings prior to 1980. NL is currently catching 70% of the total, followed by Quebec with 20%.

A 35% decline in catch from 1990 to 2004 (coupled with reduced landings in other areas) has resulted in rising prices and increased landed value (up by about 37% over the same period). In the US market, 2006 yielded the peak price in over a decade. Returns are strong despite unfavourable exchange rates in recent years.

THE FISHERY



Canadian inshore and offshore vessels fish Greenland halibut in the waters off NL and in the Gulf of St. Lawrence. It is also fished by Icelandic, Faroese and Norwegian fleets in the waters of the northeast Atlantic. The fishery, once a major one in Canada, has declined in all areas. DFO figures for quota and landings indicate the source of catches over time and instances where quotas have been exceeded.

Table 5.1 Atlantic G. halibut quotas (DFO) and landings (t) by division ('90, '95, '00, '05)

		1990		1995		2000		2005	
NAFO Division	Gear	Quota	Catch	Quota	Catch	Quota	Catch	Quota	Catch
0	Fixed	5,880	**6,686**	4,500	4,204	1,900	1,717	2,013	1,704
0	Mobile	20	0	1,000	**1,143**	3,600	2,298	8,387	8,247
2+3	Fixed	33,550	7,756	3,655	463	5,198	4,826	4,669	4,480
2+3	Mobile	950	19	6,135	2,648	4,939	4,814	2,301	2,234
4RST	Fixed	8,000	1,918	2,670	2,016	3,709	1,876	3,751	**3,873**
4RST	Mobile	2,500	365	952	25	791	105	749	171

Note: Bold figures indicate where catch exceeded quota
Source: DFO: www.dfo-mpo.gc.ca/communic/statistics/

STOCK STATUS

Recent stock status reports do not cover the largest fishery in NAFO 0 and 2+3, only the Gulf of St Lawrence and Scotian Shelf areas. These indicate that Greenland halibut biomass estimates are stable but may be subject to poor recruitment in the Gulf of St Lawrence. For this area, abundance and landings may be maintained for 2006 but lower in future years. There are also signs of reduced age of maturity in both areas, which can indicate overfishing. The reports project a limited potential for a commercial fishery on Scotian Shelf.

The most recent assessment from NAFO reports the following for the 3LMNO stock:

> "The exploitable biomass of 3LMNO stocks has been declining in recent years and is presently estimated to be at its lowest level. Recent recruitment has been below average, and fishing mortality has increased substantially in recent years, and is currently estimated as the highest in the time series.
>
> The Council reiterated its concern that the catches taken from this stock consist mainly of young, immature fish of ages several years less than that at which sexual maturity is achieved."

FISHERIES MANAGEMENT

The fishery is prosecuted subject to a range of management measures imposed by Canada and NAFO. Measures highlighted from 2004 and 2005 management plans and stock assessment reports are designed to limit fishing effort and conserve stocks. They include: TACs and quota monitoring, limited entry licensing, season opening and closing dates, closures during cod and

redfish spawning, vessel number and size restrictions, gear restrictions (minimum 152mm mesh size, hook type and size requirements), minimum legal size (44cm), by-catch limits, minimum 10 day closure for exceeding 15% small size fish limit per trip, dockside monitoring, at sea observers, hailing and logbook requirements.

Processing is managed provincially by licensing and, although there is unlimited entry, investment criteria may be set for establishing or enhancing facilities. The Canadian Food Inspection Agency (CFIA) maintains a registry of processors, distributors, and exporters. The CFIA also inspect facilities to enforce health standards.

A summary table of management measures across species is provided in Appendix B.

INDUSTRY STRUCTURE

The groundfish sector of the Canadian fishing industry is a mix of vertically integrated companies and independent harvesters. Both segments participate in the Greenland halibut fishery, with the company-owned trawlers operating either subject to company quotas or in a competitive fishery, and the independent inshore vessels (both draggers and longliners) operating subject to individual quotas. The fishery is concentrated in NL and QC, with vessels supplying plants in those provinces or with the fish shipped frozen (headed and gutted) for processing in China.

PRODUCTS AND PROCESSING

Canadian plants process Greenland halibut into several product forms including fresh and frozen fillets, frozen blocks and frozen headed and gutted (H&G) or frozen head-on. Much of the trawler-caught fish is processed at sea to either the H&G or head-on stage and frozen on board for direct shipment to market, with the inshore fish processed onshore mainly for the fresh market.

VALUE CHAIN AND MARKET DESTINATIONS

The major markets are in the Far East with Japan, Taiwan and China the main destinations. Much of the product is shipped H&G or head-on, and either sold in this form directly to consumers in the region's many fish markets, or sent for further processing into steak cuts or fillets. Exports are handled initially by the large trading companies and then distributed to regional markets and retail outlets.

Processors dependent on inshore-caught fish would ship Greenland halibut to the U.S. in a range of forms, with fresh and frozen fillets the main product. Many regional distributors handle the fish before it reaches retail outlets and the food service sector, with most of the product sold in the northeast market.

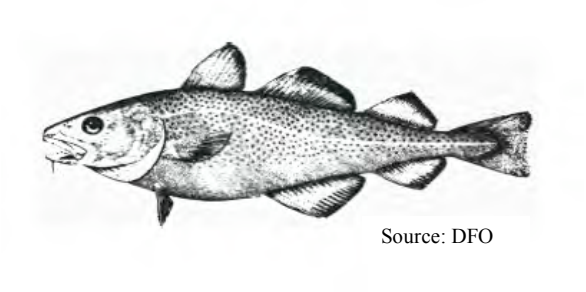
INDUSTRY PERFORMANCE

The Greenland halibut market has been strong in the past few years, with U.S. import prices (fresh fillets) rising from the US$7.50/kg range in 2000 to just under US12.00/kg in 2005. This more than compensates for decline in the U.S. dollar and reflects the growing importance of the fresh market in the U.S. Though markets have improved for many groundfish species, there are few vessels and processing plants left in the industry in Canada. Low quotas and high costs of obtaining raw material have gradually reduced the capacity of the industry.

6. ATLANTIC COD (GADHUS MORHUA)

2004 Landings and Values	
Global waters*	
Global landings (t)	903,380
Top 3 nations	Nor, Ice, Rus
Canada landings (t)	24,696
Can % of global	3%
Can % of peak year	5%
NAFO waters** (includes DFO figures)	
All nations landings (t)	18,739
Top 3 nations	Can, Fra, EU
Canada landings (t)	15,999
% of NAFO	85%
% of peak year	3%
Atl Canada***	
Landings (t)	24,729
Values ($C)	$35,708
Land price ($C/kg)	$1.44
Exports (t)	16,746
Exports ($C)	$121,011,000
Export price ($C/kg)	$7.23

Note: Landings reported as live weight in tonnes
*FAO, 2005. Yearbook of fisheries statistics: Capture and Aquaculture
** NAFO annual fisheries statistics databases
***DFO Statistical Services



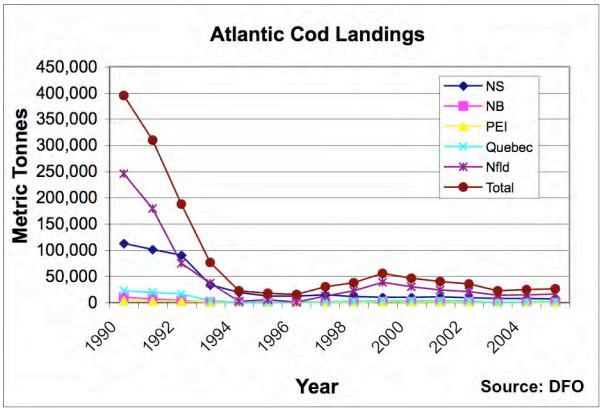
Source: DFO

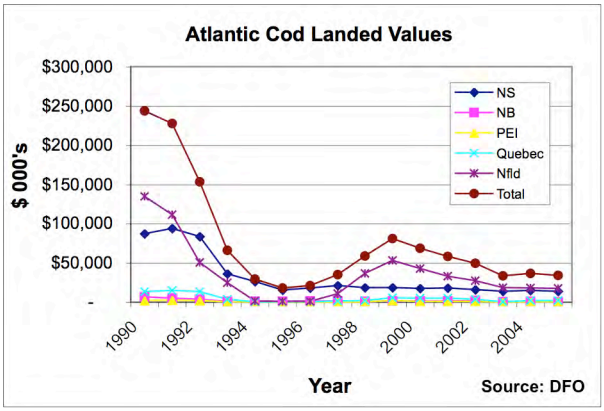
Export markets	
2004 Global*	
Destination countries	9
Top 3 countries (%)	USA 45%, UK 20%, Por 8%
Product forms (%)	fresh or chilled (19%), frozen (20%), dried (31%), salted/brine (28%)
2006 U.S.**	
July 2006 Price ($US/kg)	$5.17
5 yr average ($US/kg)	$4.73
Peak Price ($US/kg)	$5.59
Principal products	whole / pieces, or frozen skinless, boneless fillets by size

*Industry Canada (not all specifically G. Morhua product forms)
**Urner Barry (note: prices are for selected products)

Harvesting method……...freezer trawler / wetfish trawler, otter trawl, gillnet, long-line
Supply trend (rising/stable/declining)……..……..decline
Demand trend (rising/stable/declining)…….stable
Price (rising/stable/declining four-year US trend)…..……..stable
Dominant market segment (foodservice/retail)……...retail (supermarkets), foodservice (restaurants/buffets)

Figure 6.1 Atlantic Canada cod landings and values 1990-2005

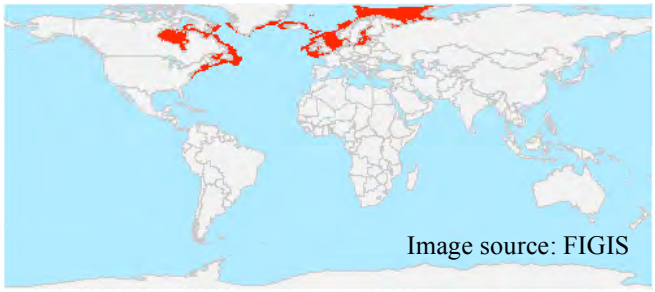




Cod were fished heavily over the past 50 years. Landings peaked in the mid-1980s, remained relatively high into the early 1990s when stocks collapsed. Despite a moratorium introduced in 1993, stocks have not recovered.

The trend in wholesale values closely followed the path set by landings through the 1990s stock collapse. There was a small surge in prices with nearly a doubling from 1993 to 1994, but prices settled just above historic levels without providing any significant contribution to overall value as the supply continued to remain low.

THE FISHERY



In the Northwest Atlantic, Atlantic cod occur from inshore shallow water (about 5 m) to the edge of the continental shelf, in water as deep as 600 m. The northern limit is off Frobisher Bay and extends into Ungava Bay. They become more abundant along the Labrador coast and off Newfoundland. They are distributed on the Flemish Cap, Grand Banks, Gulf of St. Lawrence, Scotian Shelf, Gulf of Maine, and as far south as Cape Hatteras. TACs and catches by NAFO Division are set out in the table below. The stock collapse throughout the Atlantic fishery is clearly indicated by the shift between 1990 and 1995. In only one area, NAFO 3Ps, is a significant fishery conducted.

Table 6.1 Atlantic cod quotas (DFO) and landings (t) by division ('90, '95, '00, '05)

		1990		1995		2000		2005	
NAFO Division	Gear	Quota	Catch	Quota	Catch	Quota	Catch	Quota	Catch
2GH	Fixed	8,340	219	0	0	0	0	0	0
2GH	Mobile	240	0	200	0	0	0	0	0
2J,3KL	Fixed	117,320	113,860	0	**10**	400	21	0	**1,126**
2J,3KL	Mobile	79,680	74,378	0	**159**	6,600	4,645	0	**3**
3NO	Fixed	1,995	1,913	0	**74**	0	**62**	0	**55**
3NO	Mobile	8,923	8,828	85	0	0	**132**	0	**410**
3Ps	Fixed	24,055	20,521	0	**351**	13,548	12,527	10,049	**9,647**
3Ps	Mobile	5,850	4,723	0	**55**	3,332	1,881	2,821	**1,808**
4RS,3Pn	Fixed	25,940	7,378	0	**92**	1,361	1,130	4,542	4,162
4RS,3Pn	Mobile	29,472	27,720	0	**6**	1,279	435	458	281
4T	Fixed	8,610	5,301	0	**121**	2,250	**2,606**	1,505	1,213
4T	Mobile	34,277	**34,905**	0	**179**	3,636	2,496	1,984	1,553
4Vn (J-A)	Fixed	5,310	2,744	0	**11**	27	**40**	87	**192**
4Vn (J-A)	Mobile	11,390	10,735	0	40	89	11	528	12
4VsW	Fixed	10,389	**10,445**	0	153	0	**77**	0	**37**
4VsW	Mobile	24,811	23,662	0	**124**	0	**17**	0	**10**
4X, 5Y	Fixed	13,801	**14,856**	5,344	**5,583**	3,904	3,388	3,472	2,293
4X, 5Y	Mobile	8,038	7,457	3,656	3,301	2,042	1,329	2,055	1,574
5z(j,m)	Fixed	75	**6,389**	601	**613**	1,058	1,038	473	377
5z(j,m)	Mobile	435	**7,840**	395	395	543	532	267	251

Note: Bold figures indicate where catch exceeded quota
Source: DFO: www.dfo-mpo.gc.ca/communic/statistics/

STOCK STATUS

Canadian Science Advisory Secretariat (CSAS) advisory reports for 2006 respecting the Southern and Northern Gulf of St. Lawrence and Northern cod stocks, indicates that total biomass and recruitment levels were at all-time lows and the lowest possible TACs or no catch were recommended. Offshore biomass estimates are only 2% of historical peaks, while inshore areas are somewhat more positive with recent increases in catch rates. Reports from 2005 for subdivisions 3Ps and Scotian Shelf were similar, projecting further decline in stocks despite very low catch levels. There are also recommendations to constrain other fisheries in an effort to rebuild cod stocks. The reports note that traditional cod prey includes capelin and these are at very low levels such that they may not be able to support recovery of cod stocks at this time.

The advisory reports note the uncertainty associated with stock assessment including recruitment, shrimp by-catch and dumping of small cod at sea, fate of cod passing through shrimpers' Nordmore grates, difficulty comparing trawl surveys due to boat problems, uncertain effects of seal diets, uncertain natural mortality rates, effects of seismic surveys, changes in water temperature, changing maturation of females, fish movements and spawning productivity.

The most recent NAFO assessment reports the following:

> "All stocks remain at a very low level and it is recommended that there should be no directed fishing for cod in 2006 and 2007. Efforts should be made to reduce current levels of by-catch. Scientific Council also expressed its concern that fishery (by-) catches of cod have increased substantially since 1995."

FISHERIES MANAGEMENT

The moratorium is the main management measure covering much of Canadian waters. In active areas, the fishery is subject to a range of input controls designed to limit fishing effort. The following management measures are highlighted from 2004/2005 management plans and stock assessment reports: limited entry licensing, TACs and quota monitoring, season opening and closing dates, area closures, vessel number and size restrictions, gear restrictions (limited number of nets, 50 fathom maximum net length, minimum 140mm mesh, depth limits, hook and line length and number limits), legal size limit (43cm), bycatch limits, minimum 10 day closure for exceeding 15% small size fish limit per trip, dockside monitoring, at-sea observers, aerial observers, hailing and logbook requirements.

A summary table of management measures across species is provided in Appendix B.

INDUSTRY STRUCTURE

Until the early 1990s, the Atlantic Canada groundfish sector was divided into two distinct segments. The offshore sector consisted of essentially two large integrated companies operating a fleet of some 100 offshore trawlers supplying their own processing plants, and thousands of inshore draggers and longliners supplying both independent and integrated plants. The collapse of the cod stocks (and other groundfish species) caused most of the trawler fleet to be retired or sold off, with the cod fisheries now conducted exclusively by inshore vessels. The 3Ps cod fishery is conducted mainly by fixed gear (longline or gillnet), with vessels selling to plants along the south coast of NL. Both longliners and draggers conduct the Scotian Shelf and Georges Bank cod fishery, with landings sold to Nova Scotia plants or simply dressed and iced by harvesters for direct shipment to the U.S. northeast for further processing.

PRODUCTS AND PROCESSING

Plants produce a full range of fresh and frozen products including fillet, whole dressed fresh and frozen, and frozen block. To maintain their viability after the moratorium, many plants imported raw material from Russia, Norway and Iceland. This became less profitable in recent years as a result of competition from China for raw material from these same sources. A considerable proportion of the catch (the larger cod) is directed to saltfish production in the region's few remaining plants. Cod is either salted to an intermediate stage and exported to drying plants, or salted and dried and shipped directly to markets.

VALUE CHAIN AND MARKET DESTINATIONS

After harvesting and processing, over 70% of product is shipped to export markets. The 30% staying in Canada is shipped to regional wholesalers for distribution to retail outlets and restaurants, or sent directly to the major grocery stores. Many vessels engaged in the Scotian Shelf cod fishery by-pass local plants and ship dressed fresh cod directly to distributors in the U.S. northeast for processing into fillets.

The U.S. continues to be the largest export market. Fresh cod is shipped either in whole dressed form and filleted in plants in the U.S. northeast for local consumption, or filleted in local (NS) plants for sale to regional distributors. The larger NS cod is salted and shipped either to the U.S. or Portugal, with small quantities going to traditional markets in the Caribbean. Much of the NL cod is salted to an intermediate stage ("wet salt") and exported either to Portugal or Spain where it its dried to a finished product for local consumption. The U.K. is the other main export market. Canadian cod is shipped mainly in fresh fillet form and distributed through major companies such as Young's Bluecrest.

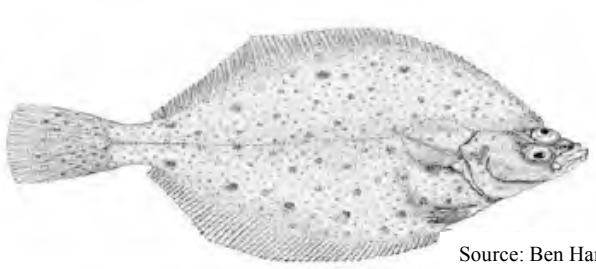
INDUSTRY PERFORMANCE

With the collapse of groundfish stocks, few harvesters have sufficient quota to participate in the remaining cod fisheries and few plants are able to buy sufficient raw material to make it worthwhile to continue in the groundfish business. Competition from China has also taken its toll. Chinese plants are able to process fish at a small fraction of the cost of plants in North America and Europe. This has enabled them to enter the global market for frozen groundfish (cod, pollock, haddock) and bid up global prices of raw material to levels that are uneconomic for traditional producers.

7. YELLOWTAIL FLOUNDER (LIMANDA FERRUGINEA)

2004 Landings and Values	
Global waters*	
Global landings (t)	20,803
Top 3 nations	Can, USA, Spa
Canada landings (t)	12,907
Can % of global	62%
Can % of peak year	76%
NAFO waters** (includes DFO figures)	
All nations landings (t)	13,464
Top 3 nations	Can, EU, Rus
Canada landings (t)	12,772
% of NAFO	95%
% of peak year	61%
Atl Canada***	
Landings (t)	12,883
Values ($C)	-
Land price ($C/kg)	-
Exports (t)	3,723
Exports ($C)	$16,120,000
Export price ($C/kg)	$4.33

Note: Landings reported as live weight in tonnes
*FAO, 2005. Yearbook of fisheries statistics: Capture and Aquaculture
** NAFO annual fisheries statistics databases
***DFO Statistical Services, figures derived from available sources on a pro-rata basis



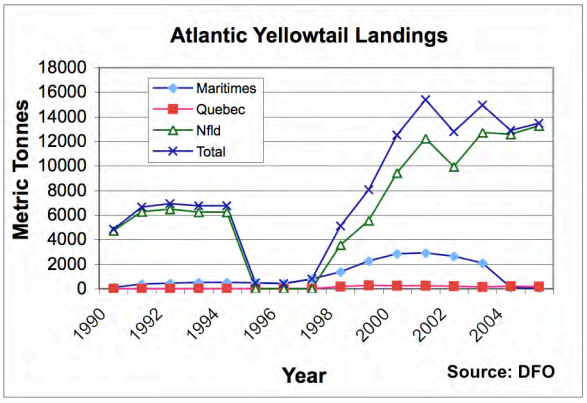
Source: Ben Harriot
WB Scott & MG Scott

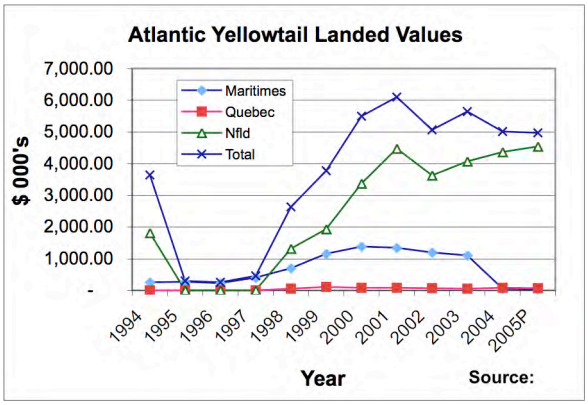
Export markets	
2004 Global*	
Destination countries	-
Top 3 countries (%)	-
Product forms (%)	-
2006 U.S.**	
July 2006 Price ($US/kg)	$14.10
5 yr average ($US/kg)	$9.99
Peak Price ($US/kg)	$19.94
Principal products	fresh fillets

*No Industry Canada data, No FAO data
**Urner Barry (note: prices are for selected products)

Harvesting method……...freezer trawler / wetfish trawler, otter trawl, gillnet, long-line
Supply trend (rising/stable/declining)……..……stable
Demand trend (rising/stable/declining)…….stable
Price (rising/stable/declining four-year US trend)…..……..rising
Dominant market segment (foodservice/retail)……...retail (supermarkets), foodservice (restaurants)

Figure 7.1 Atlantic Canada yellowtail flounder landings and values 1990-2005





Landings have doubled since the early 1990s to levels approaching pre-moratorium conditions. NL has caught 95-100% of all Atlantic landings, with some smaller catches by NS vessels fishing on Georges Bank.

Landed values follow the same general pattern as landings, with markets strongly influenced by regional supply. Prices doubled during the late 1990s as supplies dropped, and prices have since declined with rising supply.

THE FISHERY

Distribution in the Northwest Atlantic extends from the Strait of Belle Isle to Chesapeake Bay including the Gulf of St. Lawrence and the Grand Banks. The largest abundance is on the Grand Bank, especially in NAFO 3N0. Except for relatively small populations on St. Pierre Bank and the Georges Bank, distribution throughout the remainder of Canadian waters is sparse. All landings are made using mobile (trawl) gear. The quota in NL is allocated to integrated companies, while NS-based inshore draggers fish the Georges Bank quota.

Table 7.1 Atlantic Y. flounder quotas (DFO) and landings (t) by division ('90, '95, '00, '05)

		1990		1995		2000		2005	
NAFO Division	Gear	Quota	Catch	Quota	Catch	Quota	Catch	Quota	Catch
3LNO	Fixed	0	0	0	0	0	0	0	1
3LNO	Mobile	4,875	4,832	0	0	9,750	9,452	14,625	13,279
4T	Fixed	0	0	0	0	0	0	0	0
4T	Mobile	0	0	0	0	300	251	300	159
5Z(j,m)	Fixed	0	0	0	0	0	0	0	0
5Z(j,m)	Mobile	3,000	0	400	479	3,000	2,812	1,740	29

Note: Bold figures indicate where catch exceeded quota
Source: DFO: www.dfo-mpo.gc.ca/communic/statistics/

STOCK STATUS

Recent stock status reports indicate that since 1997, catches and modal length for yellowtail flounder in the Southern Gulf of St Lawrence have been reduced, but remain stable at current levels. Stocks on Georges Bank appear to be stable, with some uncertainty arising from sampling methods.

The most recent NAFO assessment reports the following:

> "…yellowtail flounder stock size has increased slightly since 2002 and is perceived to be at a level well above that of the mid-1980s. Scientific Council recommended that total catches should not exceed 15,500 tons in 2007 and 2008. Scientific Council noted that catches exceeded TACs in 1998-2001, but were lower than the TACs in 2002 and 2003. Scientific Council again notes that the advice applies to all removals (directed plus by-catch)."

FISHERIES MANAGEMENT

Management measures are designed to limit fishing effort and conserve stocks and include: limited entry licensing, TACs and quota monitoring, gear restrictions (minimum 140mm mesh size), area closures, legal size (25cm), by-catch limits, minimum 10 day closure for exceeding 15% small size fish limit per trip, dockside monitoring, at-sea observers, hailing and logbook requirements.

A summary table of management measures across species is provided in Appendix B.

INDUSTRY STRUCTURE

The yellowtail fishery in Canada is limited to a few vessels: 3-4 trawlers in 3NO and a handful of draggers on Georges Bank that supply a few NS plants. A few companies hold much of the quota. Similarly, only a few processors handle yellowtail, with the bulk of the catch sent frozen to China.

PRODUCTS AND PROCESSING

Most of the yellowtail landed in NL is frozen at sea and either processed on shore (larger fish) or sent to China (smaller fish) where it is filleted, custom packed and shipped directly to markets in the U.S. and Europe. In the U.S. it may be further processed into various branded value-added packs (e.g., ready-to-cook) for distribution to national retail outlets (e.g., Kroger, Costco, Safeway, Albertson's). NS plants process fresh or chilled product (fillet) for export to the U.S.

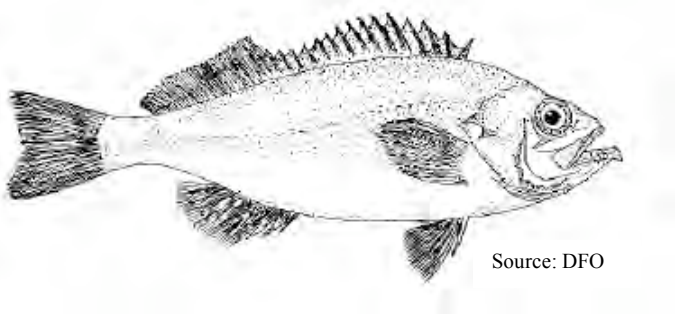
VALUE CHAIN AND MARKET DESTINATIONS

Though the distance to market can be fairly circuitous for yellowtail, the value chain is relatively short. The major producer in NL, an integrated company, holds ownership of the product at each stage: landing, basic processing, shipping for custom processing, re-export to facilities in the U.S. for value-added processing, and finally shipping to directly to major retail grocery chains.

8. REDFISH (SEBASTES SPP.)

2004 Landings and Values	
Global waters*	
Global landings (t)	64,364
Top 3 nations	Can, Ice, Por
Canada landings (t)	12,933
Can % of global	20%
Can % of peak year	13%
NAFO waters** (includes DFO figures)	
All nations landings (t)	37,405
Top 3 nations	EU, Rus, Can
Canada landings (t)	6,293
% of NAFO	17%
% of peak year	6%
Atl Canada***	
Landings (t)	12,930
Values ($C)	$7,892,000
Land price ($C/kg)	$0.61
Exports (t)	1,962
Exports ($C)	$7,810,582
Export price ($C/kg)	$3.98

Note: Landings reported as live weight in tonnes
*FAO, 2005. Yearbook of fisheries statistics: Capture and Aquaculture
** NAFO annual fisheries statistics databases
***DFO Statistical Services, figures derived from available sources on a pro-rata basis

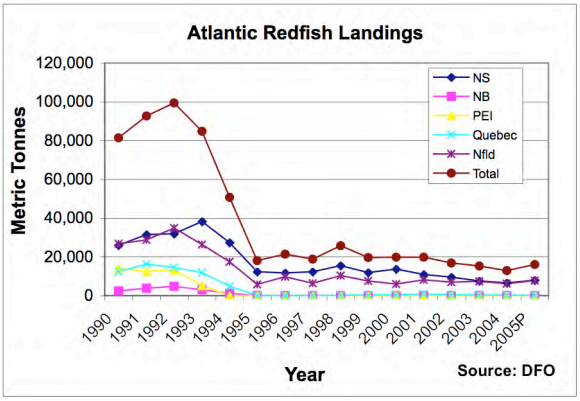

Source: DFO

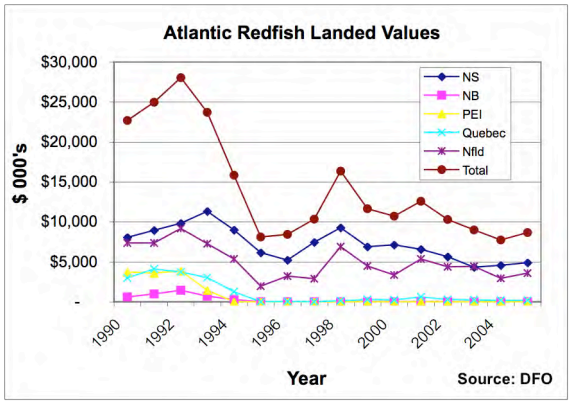
Export markets	
2004 Global*	
Destination countries	6
Top 3 countries (%)	Swe 62%, Fin 13%, Pol 11%
Product forms (%)	fresh (64%), frozen (25%), meal (11%)
2006 U.S.**	
July 2006 Price ($US/kg)	$7.15
5 yr average ($US/kg)	$6.82
Peak Price ($US/kg)	$9.26
Principal products	fresh/frozen boneless skin on/off

*No Industry Canada data, only FAO redfish data
**Urner Barry (note: prices are for selected products)

Harvesting method……....freezer trawler / wetfish trawler, otter trawl, gillnet, long-line
Supply trend (rising/stable/declining)……...……..decline
Demand trend (rising/stable/declining)…….stable
Price (rising/stable/declining four-year US trend)…..……..stable
Dominant market segment (foodservice/retail)……...retail (supermarkets), foodservice (restaurants)

Figure 8.1 Atlantic Canada redfish landings and values 1990-2005





Landings are at historic low levels, having dropped from 100,000 tonnes in 1992 to 18,000 tonnes in 2004. NL and NS fleets have traditionally caught most of the quota.

Landings dominated the trend in values; while landings dropped 80% from the early 1990s to 2005, landed value dropped 70% over the same period.

THE FISHERY

Redfish live in cool, northern waters on both sides of the north Atlantic. The greatest stock abundance historically was in the Gulf of St. Lawrence. Smaller stocks supported fisheries off Labrador and northeast Newfoundland, and also on the Scotian Shelf. Redfish also occur in Icelandic, Faroese and Norwegian waters in the northeast Atlantic.

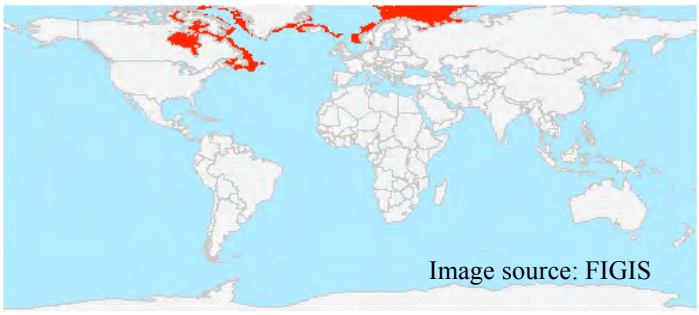


Table 8.1 Atlantic redfish quotas (DFO) and landings (t) by division ('90, '95, '00, '05)

		1990		1995		2000		2005	
NAFO Division	Gear	Quota	Catch	Quota	Catch	Quota	Catch	Quota	Catch
2+3K	Fixed	12,650	38	0	0	0	**18**	0	**14**
2+3K	Mobile	17,990	2,139	200	0	0	0	0	**154**
3LN	Fixed	724	70	179	1	0	**3**	0	**2**
3LN	Mobile	9,926	979	5,785	3	0	0	0	**1**
3M	Fixed	1,230	0	0	0	0	0	308	0
3M	Mobile	20	0	250	0	0	0	192	0
3O	Fixed	4,560	0	0	0	0	0	0	0
3O	Mobile	190	155	5,590	176	8,500	2,147	5,141	**5,502**
4RST	Fixed	6,665	2,986	0	**9**	2,000	1,059	2,000	983
4RST	Mobile	50,163	47,336	0	**12**	0	0	0	0
3P	Fixed	525	**1,683**	217	88	369	**431**	616	**729**
3P	Mobile	9,475	**9,901**	13,783	12,320	9,271	4,934	7,384	5,641
4VWX	Fixed	2,511	0	0	0	0	**408**	425	218
4VWX	Mobile	25,489	16,372	10,000	4,803	8,998	3,761	8,575	3,252

Note: Bold figures indicate where catch exceeded quota
Source: DFO: www.dfo-mpo.gc.ca/communic/statistics/

STOCK STATUS

Recent stock status reports indicate that Redfish biomass is likely stable but at low levels for unit 1, the prospects for commercial fisheries remain poor for the foreseeable future. In unit 2 it is not possible to estimate absolute size of the stock or sustainability of current harvesting due to a lack of recruitment data.

The most recent NAFO assessment reports the following:

> "Stocks in Subarea 1 and Div 3L and 3N are possibly increasing. Scientific Council advised no directed fishing for redfish in Div. 3LN and comments that by-catch of redfish in fisheries targeting other species should be kept to the lowest possible level.
>
> For 3M stocks Scientific Council concluded that the stock decline has been halted, and biomass and spawning biomass are gradually increasing. Nonetheless the total stock and spawning stock are still at a low level."[3]

FISHERIES MANAGEMENT

Management measures include: limited entry licensing, gear restrictions (minimum mesh size ranging from 90-130 mm depending on jurisdiction, hook type and size requirements), TACs and quota monitoring, legal size (22cm), by-catch limits, minimum 10 day closure for exceeding 15% small size fish limit per trip, dockside monitoring, at-sea observers, hailing and logbook requirements.

A summary table of management measures across species is provided in Appendix B.

INDUSTRY STRUCTURE

Once a major fishery, redfish are now targeted by few fleets. Offshore trawlers operating in the Laurentian Channel take the bulk of the catch, but not all the quota is caught because of poor economics (the fish are small and costs are high). Small draggers account for the balance of catch. Trawler-caught fish is directed to company-owned plants. Redfish landed by independent draggers is sold either to independent processing plants or to plants owned by the major fishing companies.

PRODUCTS AND PROCESSING

Processing and product form depend to a large extent on the source of the fish. Redfish landed by trawlers is frozen at sea or in the plants and sent in H&G form to Japan for local consumption, or in head-on form to Korea and China for local consumption or further processing and re-export. Draggers make shorter trips landing fish of sufficient quality to be shipped to the U.S. mid-west either in whole dressed frozen form or as fillets.

VALUE CHAIN AND MARKET DESTINATIONS

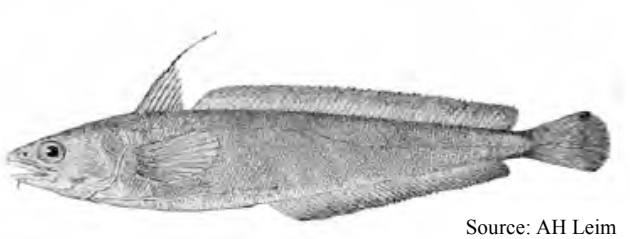
Large trading companies import redfish in round frozen form for distribution in Southeast Asia. It makes its way through the layered marketing structure for sale to consumers in the region's many traditional markets. Several regional distributors handle exports to the U.S. mid-west where it is sold through the major retail chains and smaller specialty fish shops.

A summary of the top ten distributors, retail vendors, supermarket chains, and restaurant chains is provided in Appendix A.

9. WHITE HAKE (UROPHYCIS TENUIS)

2004 Landings and Values	
Global waters*	
Global landings (t)	9,158
Top 3 nations	Can, USA, Por
Canada landings (t)	3,719
Can % of global	41%
Can % of peak year	19%
NAFO waters** (includes DFO figures)	
All nations landings (t)	3,468
Top 3 nations	EU, Can, Rus
Canada landings (t)	1,539
% of NAFO	44%
% of peak year	8%
Atl Canada (exports are for all Canada)***	
Landings (t)	1,928
Values ($C)	$1,554,000
Land price ($C/kg)	$0.81
Exports (t)	860
Exports ($C)	$1,643,000
Export price ($C/kg)	$1.91

Note: Landings reported as live weight in tonnes
*FAO, 2005. Yearbook of fisheries statistics: Capture and Aquaculture
** NAFO annual fisheries statistics databases
***DFO Statistical Services, figures derived from available sources on a pro-rata basis



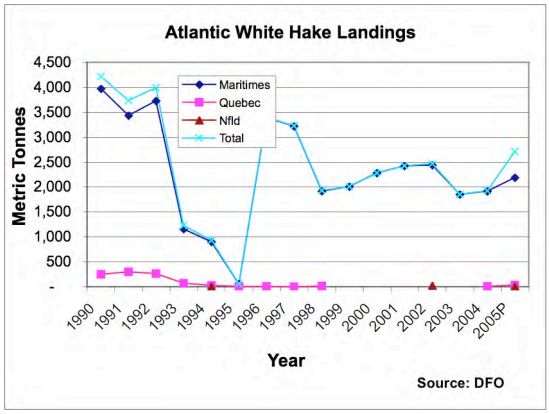
Source: AH Leim & WB Scott

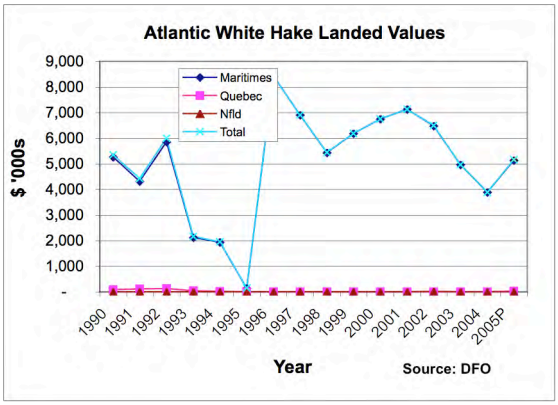
Export markets	
2004 Global*	
Destination countries	5
Top 3 countries (%)	Rus 58%, Ukr 36%, Tai 3%
Product forms (%)	frozen
2006 U.S.**	
July 2006 Price ($US/kg)	$6.47
5 yr average ($US/kg)	$5.17
Peak Price ($US/kg)	$9.68
Principal products	fresh fillet

*Industry Canada (not all specific to Wh. Hake product forms)
**Urner Barry (note: prices are for selected products)

Harvesting method……...freezer trawler / wetfish trawler, otter trawl, gillnet, long-line
Supply trend (rising/stable/declining)……..……..decline
Demand trend (rising/stable/declining)……stable
Price (rising/stable/declining four-year US trend)…..……...stable
Dominant market segment (foodservice/retail)…….retail (supermarkets)

Figure 9.1 Atlantic Canada white hake landings and values 1990-2005





Note: Values shown here are derived from general hake landed values reported by DFO.

White Hake landings are almost exclusively based in NS. Landings declined until 1995 when fishing for white hake began in the 4X5Y area. After initial high catches, landings stabilized between 2,000 and 2,500 t from 1998 onward.

Total values have tracked the landings trend for the most part except that declining prices have also recently contributed to reduced overall values.

THE FISHERY

White hake are restricted in distribution to the western Atlantic Ocean from the Gulf of St. Lawrence and the southern part of the Grand Banks of Newfoundland southward to Cape Hatteras. Areas of greatest abundance are the southern Gulf of St. Lawrence, the Scotian Shelf and the southwest slope of the Grand Banks. The Canadian fishery has recently focused in 4X and 5Z (Georges Bank). Never a major fishery, quotas have dwindled with less than 2,000 t now caught in Canadian waters.

Table 9.1 Atlantic white hake quotas (DFO) and landings (t) by division ('90, '95, '00, '05)

		1990		1995		2000		2005	
NAFO Division	Gear	Quota	Catch	Quota	Catch	Quota	Catch	Quota	Catch
3NO	All gear	0	0	0	0	0	0	2500	758
4T	Fixed	5,500	4,216	0	**62**	0	**98**	0	**46**
4T	Mobile	0	0	0	0	0	0	0	0
4VW	Fixed	0	0	0	0	260	259	0	**163**
4VW	Mobile	0	0	0	0	0	**12**	0	**36**
4X+5Zc	Fixed	0	0	0	0	1,169	**1,226**	0	**1,347**
4X+5Zc	Mobile	0	0	0	0	0	**484**	0	**363**

Note: Bold figures indicate where catch exceeded quota
Source: DFO: www.dfo-mpo.gc.ca/communic/statistics/

STOCK STATUS

Stock status reports suggest that current catch rates will contribute to further decline in 4VWX and 5, and no short-term recovery is anticipated in the Southern Gulf of St Lawrence. There is some uncertainty regarding stock assessments attributable to several factors: efficiencies of survey vessels, stock structure, stock affiliation in the complex, effects of seal diets, trends regarding natural mortality, inability to sample the full geographic range of hake distribution, and understanding of historic status due to misreporting as other species (e.g. red hake).

The most recent NAFO assessment reports the following:

> "Given the intermittent recruitment to this stock, and the change in fisheries between directed and by-catch, it is not possible to advise on an appropriate TAC. However, with lower biomass and poor recruitment after the 1999 year-class, Scientific Council advised that catches of white hake in Div. 3NO at the current TAC of 8 500 tons are not sustainable."[3]

FISHERIES MANAGEMENT

Management measures include: limited entry licensing, TACs and quota monitoring, gear restrictions (minimum 140mm mesh size, hook type and size requirements), legal size (45cm), by-catch limits, minimum 10 day closure for exceeding 15% small size fish limit per trip, dockside monitoring, at sea observers, and hailing and logbook requirements. A summary table of management measures across species is provided in Appendix B.

INDUSTRY STRUCTURE

This represents a very small fishery in Canada, with a few NS-based inshore vessels (longliners) landing this species and few NS plants engaged in processing.

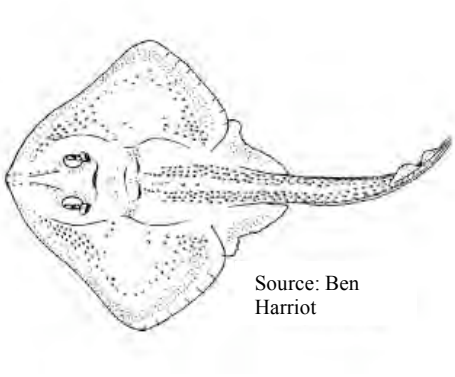
PRODUCTS AND PROCESSING

White hake is processed mainly as saltfish in local plants.

VALUE CHAIN AND MARKET DESTINATIONS

Regional distributors handle exports to the U.S. northeast where it is marketed as a traditional product primarily to ethnic communities. It is available from large retail chains as well as local fish markets.

10. SKATES (RAJIDAE SPP.)


Source: Ben Harriot

2004 Landings and Values	
Global waters*	
Global landings (t)	-
Top 3 nations	-
Canada landings (t)	-
Can % of global	-
Can % of peak year	-
NAFO waters** (includes DFO figures)	
All nations landings (t)	13,362
Top 3 nations	EU, Rus, Can
Canada landings (t)	1,425
% of NAFO	11%
% of peak year	23%
Atl Canada (exports are for all Canada)***	
Landings (t)	1,931
Values ($C)	$430,000
Land price ($C/kg)	$0.22
Exports (t)	-
Exports ($C)	-
Export price ($C/kg)	-

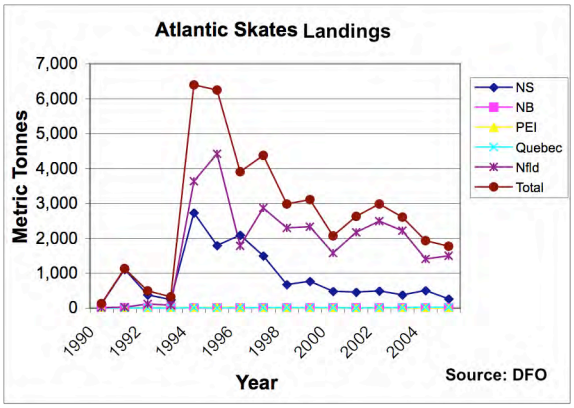
Note: Landings reported as live weight in tonnes
*No FAO data
** NAFO annual fisheries statistics databases
***DFO Statistical Services, no export data

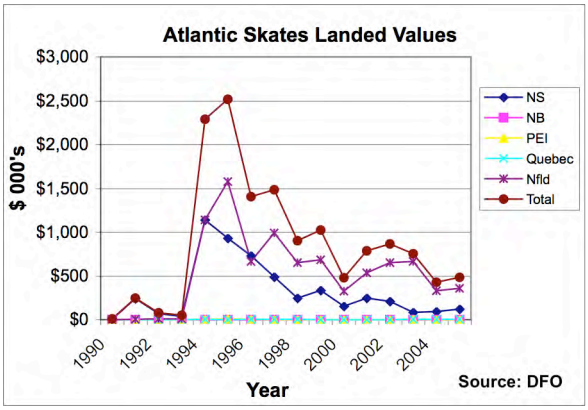
Export markets	
2004 Global*	
Destination countries	4
Top 3 countries (%)	Kor 93%, NZ 6.5%, Ice <1%
Product forms (%)	frozen (99%), fresh <1%
2006 U.S.**	
July 2006 Price ($US/kg)	$2.16
5 yr average ($US/kg)	$1.89
Peak Price ($US/kg)	$2.47
Principal products	fresh wings

*No Industry Canada data, only FAO all skate data
**Urner Barry (note: prices are for selected products)

Harvesting method……...freezer trawler / wetfish trawler, otter trawl, gillnet, long-line
Supply trend (rising/stable/declining)……...……..decline
Demand trend (rising/stable/declining)……...decline
Price (rising/stable/declining four-year US trend)…..……..stable
Dominant market segment (foodservice/retail)…….retail (supermarkets)

Figure 10.1 Atlantic Canada skate landings and values 1990-2005





Despite declines in the NAFO region, landings have been stable in Canadian waters since 1990. Most skates are landed in NS (60%), the remainder is shared among the other Atlantic provinces.

Landed value has tracked landings closely since the early 1990s, reflecting limited price variation. Landed value peaked in the mid-1990s, then declined (with some fluctuations) steadily approaching historic low levels in the early 2000s.

THE FISHERY

These stocks have been managed under quota in Canadian waters, DFO figures for quota and landings indicate the source of catches over time and instances where quotas have been exceeded.

Table 10.1 Atlantic skate quotas (DFO) and landings (t) by division ('90, '95, '00, '05)

		1990		1995		2000		2005	
NAFO Division	Gear	Quota	Catch	Quota	Catch	Quota	Catch	Quota	Catch
3LNO	Fixed	0	0	3,000	499	1,025	332	1,219	682
3LNO	Mobile	0	0	2,000	1,834	925	54	1,031	78
3Ps	Fixed	0	0	500	422	600	508	600	441
3Ps	Mobile	0	0	500	**563**	450	411	450	**586**
4VsW	Fixed	0	0	0	0	1	1	0	0
4VsW	Mobile	0	0	0	0	599	376	200	0

Note: Bold figures indicate where catch exceeded quota
Source: DFO: www.dfo-mpo.gc.ca/communic/statistics/

STOCK STATUS

Recent stock status reports indicate that biomass levels are poor with no imminent signs of recovery for the Eastern Scotian Shelf or Southern Gulf of St Lawrence. Stocks are considered stable or in decline with historic lows for 3LNOP but it is not possible to establish a maximum sustainable yield (MSY) for 3LNOP.

These stock assessments acknowledged uncertainty regarding; bycatch from other finfish directed fisheries (American plaice, redfish, halibut, flatfish, cod, haddock, pollock, scallops, winter flounder, yellowtail flounder), unquantified mortality from offshore clam and scallop fisheries, limited ageing data, population dynamics and life history, survival of discards, impacts of other human activities, seal predation, effects of day/night sampling variation for Eastern Scotian Shelf.

Recent landings presented in stock status reports include; 300 t for Eastern Scotian Shelf, 10 t of bycatch for the Southern Gulf of St Lawrence, 10,000 t for 3LNOP, compared to historic highs of 2,000 t in 1994 for the Eastern Scotian Shelf, 2,000 t in 1971 for the S. Gulf of St Lawrence, 32,000 t in 1988 for 3LNOP.

The most recent NAFO assessment reports the following:

> "Studies on skates suggest a single stock within 3LNOPs. Although the state of the stock is unclear, the biomass has been stable from 1996 to 2005. Scientific Council advised that catches not exceed 11,000 metric tons in 3LNOPs."

FISHERIES MANAGEMENT

The fishery is prosecuted subject to a range of management measures imposed by Canada and NAFO. These measures are designed to limit fishing effort and conserve stocks, they include: limited entry licensing, gear restrictions (minimum 140mm mesh size, hook type and size requirements), TACs and quota monitoring, dockside monitoring, at sea observers, hailing and logbook requirements.

A summary table of management measures across species is provided in Appendix B.

INDUSTRY STRUCTURE

Skates are caught primarily as by-catch by integrated trawlers and draggers based in NL and NS.

PRODUCTS AND PROCESSING

Skates receive minimal processing, ordinarily only to the whole dressed or H&G stage. They are frozen and shipped to various regional distributors.

VALUE CHAIN AND MARKET DESTINATIONS

The small quantities are exported to the EU and Far East and enter the value chain through distribution companies or importers. No information is available on final product form or specific distribution channel (retail or food service).

11. GRENADIERS (CORYPHAENDODES RUPESTRIS)

2004 Landings and Values	
Global waters*	
Global landings (t)	24,751
Top 3 nations	Den, Fra, Spa
Canada landings (t)	136
Can % of global	1%
Can % of peak year	0%
NAFO waters** (includes DFO figures)	
All nations landings (t)	4,536
Top 3 nations	EU, Rus, Can
Canada landings (t)	136
% of NAFO	3%
% of peak year	9%
Atl Canada (exports are for all Canada)***	
Landings (t)	222
Values ($C)	-
Land price ($C/kg)	-
Exports (t)	-
Exports ($C)	-
Export price ($C/kg)	-

Note: Landings reported as live weight in tonnes
*FAO, 2005. Yearbook of fisheries statistics: Capture and Aquaculture
** NAFO annual fisheries statistics databases
***DFO Statistical Services

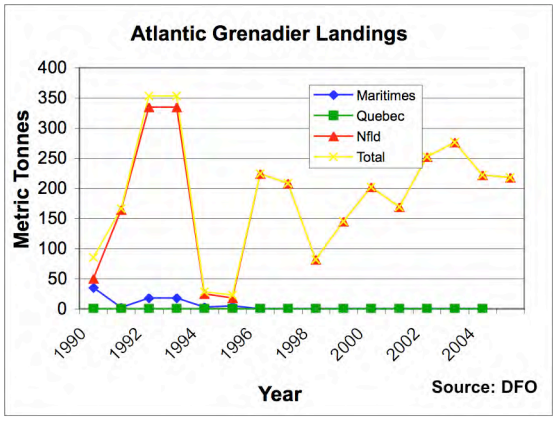
Source: Scottish Assoc for Marine Sciences

Export markets	
2004 Global*	
Destination countries	28
Top 3 countries (%)	Kor 29%, Fra 22%, USA 17%
Product forms (%)	frozen (99%), other (1%)
2006 U.S.**	
July 2006 Price ($US/kg)	-
5 yr average ($US/kg)	-
Peak Price ($US/kg)	-
Principal products	-

*No Industry Canada data, only FAO all grenadier data
**No Urner Barry US data

Harvesting method……...freezer trawler / wetfish trawler, otter trawl, gillnet, long-line
Supply trend (rising/stable/declining)……..……stable
Demand trend (rising/stable/declining)……stable
Price (rising/stable/declining four-year US trend)…..……..NA
Dominant market segment (foodservice/retail)…….retail (supermarkets), foodservice (restaurants/buffets)

Figure 11.1 Atlantic Canada grenadier landings 1990-2005



There is effectively no directed fishery by Canadian vessels, with reported catches presumably taken as by-catch by NL vessels. There are no available figures for landed values, reflecting the limited market information for this species.

THE FISHERY

In the Northwest Atlantic, the species ranges from Davis Strait into the northern Gulf of St. Lawrence and as far south as the Gulf of Maine, staying mainly in cool deeper waters. There has been no Canadian TAC or directed fishery for over a decade. There are also grenadier fisheries in Icelandic, Faroese and Norwegian waters in the northeast Atlantic.


Image source: FIGIS

Table 11.1 Atlantic grenadier quotas (DFO) and landings (t) by division ('90, '95, '00, '05)

		1990		1995		2000		2005	
NAFO Division	Gear	Quota	Catch	Quota	Catch	Quota	Catch	Quota	Catch
0	Fixed	0	0	0	0	0	0	0	0
0	Mobile	500	0	500	3	0	**3**	0	**19**
2 + 3	Fixed	0	0	0	0	0	**199**	0	**167**
2 + 3	Mobile	500	85	3,000	20	0	0	0	**32**

Note: Bold figures indicate where catch exceeded quota
Source: DFO: www.dfo-mpo.gc.ca/communic/statistics/

STOCK STATUS

Recent Canadian Science Advisory Secretariat (CSAS) stock assessment reports are not available for the grenadier fishery, however these stocks border on international waters and a recent NAFO study[1] provides some insights. An annual European Union trawl survey conducted since 1988 in the Flemish Cap area (NAFO Division 3M) indicates that the biomass index for roughhead grenadier increased from low levels to a peak of about 3,000 tons in 1993, then decreased in 1994 and remained around 1,500 and 2,000 tons till 2002. It increased again in 2003 to reach the peak of 3,575 tons in 2004 and the biomass index in 2005 was 2,387 tons.

FISHERIES MANAGEMENT

Grenadier harvesting has been managed by DFO, and the following management measures are highlighted from 2004/2005 management plans and stock assessment reports. Management measures are designed to limit fishing effort and conserve stocks, they include: limited entry licensing, gear restrictions (minimum 140mm mesh size, hook type and size requirements), TACs and quota monitoring, dockside monitoring, at sea observers, hailing and logbook requirements.

INDUSTRY STRUCTURE

There is no directed fishery and no processing in Canada. Little is known about the structure of the Russian and the EU fleets, the main participants fishing grenadier in the NAFO Area. While grenadier is believed to enter the Eastern European market, no information is available on where or how grenadier enters the market, nor specifically to which markets it is directed.

APPENDIX A: TOP U.S. DISTRIBUTORS, SUPERMARKETS, RETAILERS, RESTAURANTS

Top ten U.S. distributors, supermarket chains, seafood retail vedors, seafood restaurant chains

Top ten U.S. broadline foodservice distributors (not specifically seafood)

Company	Location	Centres	Sales ($US M)
Sysco Corp	Houston, TX	156	$30.00
U.S. Foodservice	Columbia, MD	80	$18.70
Performance Food Corp.	Richmond, VA	40	$6.20
Gordon Food Service	Grand Rapids, MI	12	$3.50
Food Services of America	Seattle, WA	15	$2.25
Reinhardt Foodservice Inc.	La Crosse, WI	12	$1.90
Maines Paper and Foodservice	Conklin, NY	9	$1.60
Shamrock Foods Co.	Phoenix, AZ	2	$1.25
Ben E. Keith Foods	Fort Worth, TX	6	$1.12
Cheney Bros	Riviera Beach, FL	1	$0.53

Source: Johnson & Associates, H.M. 2005. Annual report on the United States seafood industry, 13th edition. Jacksonville, OR., USA. pp 103.

Top ten U.S. supermarket chains (not specifically seafood)

Chain	Region	Stores	Sales ($US M)
Wal-Mart	U.S.	1,800	$79,704
Kroger Co.	U.S.	2,534	$54,162
Albertsoons	Pacific, Mountain, West South Central	1,797	$36,734
Safeway	Pacific, Mountain, West South Central	1,572	$29,359
Ahold USA	East	826	$21,052
Publix	South	853	$16,766
Delhaize America	New England, Mid-West, South	1,528	$15,772
Winn-Dixie	South	943	$10,763
Supervalu	Mid-West, Atlantic	617	$8,724
H.E. Butt Grocery	West South, Central	276	$8,427

Source: Johnson & Associates, H.M. 2005. Annual report on the United States seafood industry, 13th edition. Jacksonville, OR., USA. pp 103.

Top ten U.S. retail fish and seafood vendors

Vendor	Market Share	Sales ($US M)
Gorton's Corp	28.8%	$183.1
Private Label	19.2%	$136.3
Pinnacle Foods Group	18.1%	$128.3
Colorado Boxed Beef	3.1%	$21.7
Sea-Est Inc.	1.9%	$13.4
Aqua Star Inc.	1.8%	$13.0
High Liner Foods	1.8%	$12.7
Philips	1.4%	$10.0
National Fish and Seafood	1.3%	$9.5
Bernards Cajun Crawfish	0.9%	$6.7

Source: Johnson & Associates, H.M. 2005. Annual report on the United States seafood industry, 13th edition. Jacksonville, OR., USA. pp 103.

Top ten U.S. seafood restaurant chains

Chain	Region	Outlets	Sales ($US M)
Red Lobster (Darden Rest. Group)	U.S. / Canada	680	$2,400
Landry's Restaurants Inc.	U.S.	300+	$1,168
Long John Silvers (Yum Brands)	U.S.	1,200	$800
Captain D's Seafood	East, Mid-West	560	$506
McCormick and Schmick's	U.S.	57	$238
Bonefish Grill (Outback Steakhouse Inc.)	U.S.	63	$203
Legal Seafood	East	30	$150
McGrath's Fish House	West	17	$68
Bubba Gump Shrimp Co.	U.S.	20	$65
Rockfish Seafood Grill	AZ, NM, TX, SC	25	$50

Source: Johnson & Associates, H.M. 2005. Annual report on the United States seafood industry, 13th edition. Jacksonville, OR., USA. pp 103.

Summary of fisheries harvesting and processing management measures by species *

	Shrimp	Sn crab	Scallop	A lobster	G halibut	A cod	Y flounder	Redfish	W hake	Skates	Grenadiers
Regulator (DFO/NAFO)	both	DFO	DFO	DFO	both	both	both	both	both	both	both
Operations											
limited entry licence	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
regulated season		yes		yes							
area closure	yes		yes		yes	yes	yes				
vessel size limit	yes	yes		yes		yes					
Gear											
gear type	mobile	fixed	mobile	fixed	fix/mob	fix/mob	mobile	fix/mobile	fix/mob	fix/mob	mobile
trap limit		yes		yes							
net/trap design	yes	yes		yes							
mesh size	yes				yes	yes	yes	yes	yes	yes	yes
hook size					yes	yes		yes	yes	yes	
Catch											
TAC	yes	yes	yes	limited	yes	yes	yes	yes	yes	yes	yes
Quota monitoring	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
IQ / ITQ	yes	yes				yes					
bycatch limit	yes		yes		yes	yes	yes	yes	yes		
legal size		95mm	95/100mm	82.5mm	44cm	43cm	25cm	22cm	45cm		
threshold closures		yes			yes	yes	yes	yes	yes		
trip limit	yes	yes				yes					
Compliance monitoring											
logbooks / hailing	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
dockside	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
at sea observers	yes		yes		yes	yes	yes	yes			
Processing											
Provincial licence	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Federal registry	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
CFIA inspections	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Note: Based on recent (integrated) management plans, this table indicates whether the measures are used anywhere in the Atlantic Canadian fishery, even if it is not applied uniformly across regions.

*In addition to DFO measures, species managed by NAFO also require on-board observers and remote vessel monitoring systems for all vessels, random inspections at sea, and port inspections for gear and catches.

APPENDIX C: ATLANTIC PROCESSORS AND DISTRIBUTORS OF SELECTED SPECIES

Nova Scotia-based distributors with declared sales volume over $15 million
Summary: Approximately 40 of the 271 NS seafood distributors report sales over $15 million, 35 of these specify that they process at least one of the eleven species of interest to WWF
Source: NS Seafood Directory http://www.gov.ns.ca/nsaf/marketing/seafood/fishsuppliers.asp

# WWF spp.	Company	Telephone	Email
6	Clearwater Seafoods	(902) 443-0550	
6	Premium Seafoods Limited	(902) 226-2633	esamson@premiumseafoods.ns.ca
5	Barry Group NS Inc.	(902) 762-3292	gdentremont@barrygroupinc.com
5	Pearlmark Foods Inc.	(902) 582-3327	klegpm@xcountry.tv
5	Rio Import & Export Ltd.	(902) 468-9400	rioco@ns.sympatico.ca
5	West Fish Canada Ltd.	(902) 462-0205	chris@westfish.ca
4	Atlantic Pearl Seafood Limited	(902) 745-0333	kggoodwin@eastlink.ca
4	Canadian Gold Seafood Limited	(902) 873-3766	gtully@canadiangold.ns.ca
4	Ceilidh Fishermen's Cooperative	(902) 787-2666	
4	Deep Cove Aqua Farms Ltd.	(902) 228-2002	info@deepcoveseafood.ca
4	Fisherman's Market International	(902) 445-3474	gino@fishermansmarket.com
4	H. Anderson Lobster Sales Ltd.	(902) 747-2746	
4	Harbour View Seafoods Ltd.	(902) 423-0051	geoff.irvine@ns.sympatico.ca
4	Intervest Trading Company Inc.	(902) 425-2018	info@intervest.ca
4	Louisbourg Seafoods Ltd.	(902) 733-2079	jim.k@louisbourgseafoods.ca
4	Newell Lobsters Ltd.	(902) 742-6272	
4	Sambro Fisheries Limited	(902) 868-2140	samfish@hfx.eastlink.ca
3	AJY Fisheries Ltd.	(902) 637-2518	ajyfish@yahoo.com
3	Bakers Point Fisheries Limited	(902) 845-2347	bakersptjanette@accesscable.net
3	BST Lobster Sales Limited	(902) 747-2469	
3	Canus Fisheries Limited	(902) 745-2888	canus@bar.auracom.com
3	Comeau's Seafoods Limited	(902) 769-2101	sandy@comeausea.com
3	Glace Bay Fisheries Limited	(902) 849-3196	
3	H. Hopkins Ltd.	(902) 849-5701	
3	Mersey Seafoods Limited	(902) 354-3467	bill.muirhead@ns.sympatico.ca
3	W. N. Seafoods Unlimited	(902) 742-9825	waden@eastlink.ca
2	A & C Quinlan Fisheries Ltd.	(902) 745-2742	
2	Aquashell Holdings Inc.	(902) 257-2920	frank@aquashell.ca
2	Davis Strait Fisheries Limited	(902) 450-5115	john@davisstrait.com
2	Emery Smith Fisheries Limited	(902) 723-2115	emerysmithfish@klis.com
2	Hall's Harbour Lobster Pound Ltd.	(902) 680-6735	seafood@ns.sympatico.ca
2	ISI Seafood Ltd.	(902) 648-3427	joi@is.is
2	M. V. Osprey Ltd.	(902) 794-1600	mvosprey@mvosprey.com
2	Ocean Mist Seafoods Inc.	(902) 649-2088	
2	Sable Fish Packers (1988) Limited	(902) 745-2500	Sable@sablefishpackers.ns.ca
2	Shag Harbour Fisheries Limited	(902) 723-2361	
2	T. Ito Trading (N.S.) Ltd.	(902) 422-8157	t.ito@ns.sympatico.ca
1	Atlantic Canada Connection Inc.	(902) 423-0787	ACC@atlanticlobster.ca
1	Charlesville Fisheries Limited	(902) 762-2405	
1	D. E. & Sons Fisheries Ltd.	(902) 723-2676	DESons@mail.klis.com
1	Farocan	(902) 747-2727	
1	Ferguson's Lobster Pound Limited	(902) 772-2366	stewart@fergusonslobster.com
1	High Liner Foods Incorporated	(902) 634-8811	
1	Houmard Acadie	(978) 352-6663	Allan@HoumardAcadie.com
1	I. Deveau Fisheries Ltd.	(902) 645-3036	
1	Inshore Fisheries Limited	(902) 762-2522	inshore@inshore.ca
1	Island Marine Products Limited	(902) 745-2222	islandmarine@ss.eastlink.ca
1	James L. Mood Fisheries	(902) 723-2360	info@moodfisheries.com
1	LaHave Seafoods Limited	(902) 688-2773	lahaveseafoods@eastlink.ca
1	Lr. Argyle Fishermans Co-op	(902) 643-2204	fishermanscoop@ns.sympatico.ca
1	Riverside Lobster and Seafood Inc.	(902) 769-3340	riversidelobster@ns.sympatico.ca
1	Ryer & Ryer Lobster Ltd.	(902) 823-2822	Mr. Dean Ryer
1	Sea Merchant Inc.	(902) 477-1973	Elliot@SeaMerchant.ca
1	Sea Star Seafoods Limited	(902) 745-2925	seastar@seastarseafoods.com
1	Stoney Island Fisheries Limited	(902) 745-3043	
1	Tara Nova Seafoods Inc.	(902) 742-7522	taranova@mail.klis.com
1	US Four Fisheries Limited	(902) 645-3455	usfour@ns.sympatico.ca
1	Wedgeport Lobster Ltd.	(902) 663-2551	sales.wedgeport@ns.aliantzinc.ca
1	Woods Harbour Lobster Co. Ltd.	(902) 723-2195	
1	Yarmouth Sea Products Ltd.	(902) 645-2417	

New Brunswick-based seafood distributors

Summary: Approximately 56 of the 90 NB seafood distributors specify that they process at least one of the eleven species of interest to WWF

Source: NB Seafood Prroducts Directory http://www.gnb.ca/0398/export-external/directories/index-e.asp

# WWF spp.	Company	Telephone	Email
9	Carapro Ltée (13)	(506) 727-3462	
9	Island Fishermen Cooperative Association	(506) 344-2204	acpi-po@nb.aira.com
8	McGraw Seafood (1995) Inc. (9)	(506) 395-3374	mcgrawseafood@nb.aibn.com
7	Belle Bay Products Ltd. (13)	(506) 727-4414	info@bellebaie.com
6	Misty Harbour Seafood (14)	(506) 659-2781	coastent@nb.sympatico.ca
6	Newman Enterprises Ltd. (17)	(506) 752-2525	newent@nbnet.nb.ca
5	M.G.Fisheries (18)	(506) 662-3471	
5	Poissonnerie Arseneau Fish Market Ltd. (20)	(506) 783-2195	poisson@nbnet.nb.ca
4	Helshiron Fisheries Ltd. (1 8)	(506) 662-3502	lobfish@nbnet.nb.ca
3	Cape Bald Packers Ltd. (1)	(506) 577-4316	dlosier@capebaldpackers.com
3	C-Gem Seafoods Inc. (13)	(506) 727-6298	cgemseafoods@nb.aibn.com
3	Fundy Bay Seafood Ltd. (14)	(506) 659-2890	cjanes@nbnet.nb.ca
3	Northern Clam Ltd. (17)	(506) 752-2963	
3	Sea Tide Import & Export Ltd. (1)	(506) 577-4070	
2	B. A. Richard Ltd. (5)	(506) 743-6198	barltd@nbnet.nb.ca
2	Baie Ste-Anne Fishermen's Co-op Ltd. (8)	(506) 228-4444	jp@nb.aibn.com
2	Canadian Ocean Products Ltd. (13)	(506) 732-5505	cop@nbnet.nb.ca
2	Captain Dan's Inc. (1)	(506) 523-9792	captdans@nbnet.nb.ca
2	Charlotte Shellfish Ltd. (14)	(506) 659-1994	
2	Crown Seafood Ltd. (7)	(506) 876-2873	crownsea@nbnet.nb.ca
2	Edmond Gagnon Ltd. (1)	(506) 532-2445	carmen.gagnon@nb.aibn.com
2	Ichiboshi L.P. Canada Ltd. (13)	(506) 727-0807	ichibosh@nbnet.nb.ca
2	Leslie Léger & Sons Ltd. (1)	(506) 577-4730	sales@leslieandsons.com
2	Linton Lobster Inc. (18)	(506)-662-9993	lintonlobsters@nb.aibn.com
2	McLaughlin Seafoods Inc. (18)	(506) 662-3812	mclaughlinseafood@nb.aibn.com
2	Ocean Pier Inc. (3)	(506) 532-3010	jeff@oceanpierinc.com
2	Pêcheries Belle Île Fisheries Ltd. (11)	(506) 344-0920	jphebert@pecheriesbelleile.com
2	Pêcheries G.E.M. Ltée (Les) (13)	(506) 727-5217	pgem@nbnet.nb.ca
2	Pêcheries St-Paul (1989) Ltée (Les)(13)	(506) 727-7247	psp89@nbnet.nb.ca
2	Pêcheries W. J. Fisheries Ltd. (Les) (11)	(506) 336-1625	dolly@nb.sympatico.ca
2	Raymond O'Neill & Son Ltd. (8)	(506) 228-4794	jimmoe@nbnet.nb.ca
2	Richibouctou-Village Fishermenen's	(506) 523-4520	cprv@nb.aibn.com
2	Sea Deli 1996 Ltd. (4)	(506) 576-6684	seadeli@nb.sympatico.ca
2	Shediac Lobster Shop Ltd. (3)	(506) 532-4302	gmaillet@nbnet.nb.ca
2	Special K.Fisheries Ltd. (18)	(506) 662-8431	
2	St. Laurent Gulf Products Ltd. (13)	(506) 727-5465	ABC@ABCfishmeal.ca
2	Young's Lobster Co. Ltd. (19)	(506) 747-1999	info@youngslobster.com
1	Adrice P. Cormier Ltd. (1)	(506) 577-2511	adcorm@nb.aibn.com
1	Barry Group NB Inc. (13)	(709) 785-4228	kbaldwin@barrygroupinc.com
1	Connors Bros. Limited (15, 18)	(506) 456-3391	dave.giddens@connors.ca
1	Ferme Ostréicole Dugas Ltée(13)	(506) 727-3226	fodugas@nbnet.nb.ca
1	Harbour de Loutre Products Ltd. (17)	(506) 752-2255	hdp@nb.aibn.com
1	L'Étang Ruisseau Bar Ltée (11)	(902) 462-5884	info@malletoyster.ca
1	Mathews Seafood Ltd. (17)	(506) 752-2309	
1	Michel & Charles LeBlanc	(506) 577-2993	mclefish@nbnet.nb.ca
1	Mills Seafood Ltd. (4)	(506) 743-2444	steven@millsseafood.ca
1	Ocean Legacy Inc. (15)	(506) 755-6640	shane@oceanlegacy.ca
1	Paturel International Company (19)	(506) 747-1888	smckay@myseafood.com
1	Pêcheries de Chez-Nous Ltée (Les) (9)	(506) 395-3292	ngaudet@nb.aibn.com
1	Pêcheries F.N. Fisheries (Les)(10)	(506) 336-2360	robert.gaudet@nb.aibn.com
1	Sealane Gourmet Foods (2001) Ltd. (20)	(506) 783-3620	
1	St. Thomas Fish Market Inc. (4)	(506) 743-5965	titi@nb.aibn.com
1	True North Salmon Company Ltd. (15)	(506) 456-6600	acraig@truenorthsalmon.com
1	Village Bay Sea Products Co. Ltd. (6)	(506) 523-6479	dking@villagebay.ca
1	W.E. Acres Crabmeal Ltd. (1)	(506) 577-6357	tandjoil@hotmail.com
1	Westmorland Fisheries Ltd. (1)	(506) 577-4325	yvon@rogers.com

PEI-based seafood distributors
Summary: Approximately 33 of the 69 listed PEI seafood companies specify that they market at least one of the eleven species of interest to WWF
Source: PEI Seafood Directory at http://www.gov.pe.ca/af/agweb/index.php3?number=77916&lang=E

# WWF spp	Company	Telephone	Email
6	**Cabot Fishermen's Co-op Assoc. Ltd.**	(902) 836-3062	
6	Doiron's Fisheries Ltd.	(902) 963-2442	
5	**Reuben's Fish Mart Ltd.**	(902) 836-3903	
5	Seafood 2000 Ltd.	(902) 652-2316	
5	South Shore Seafoods Ltd.	(902) 853-4052	
4	**Leo MacPhee's Fresh Fish**	(902) 687-4333	
4	Mariner Seafood Inc.	(902) 838-2481	marinerseafoods@pei.aibn.com
4	North Lake Fish Co-op Ltd.	(902) 357-2572	
4	Ocean Choice (P E I) Inc - (Souris)	(902) 687-5200	
4	Queen Street Meat Market	(902) 894-7336	
4	Summerside Fish Mart Ltd.	(902) 436-4644	
4	**W & R Fisheries Ltd.**	(902) 652-2809	
3	Lobster On the Wharf	(902) 894-9311	
3	Acadian Fisherman's Co-op Assoc.	(902) 854-2675	Jeffm@acadianfishcoop.com
3	**C & E Fish Ltd.**	(902) 436-7490	
3	L & C Fisheries	(902) 886-2770	
3	L & C Fisheries - Kensington	(902) 886-2770	
3	Maritime Marketing Services Inc.	(902) 628-6674	mms@pei.sympatico.ca
3	Royal Star Foods Ltd.	(902) 882-2050	sales@royalstarfoods.com
3	**Water Prince Corner Store & Restaurant**	(902) 368-3212	fish_waterprince@pei.aibn.com
2	**Bergayle Fisheries Ltd.**	(902) 687-2841	
2	Ocean Choice (P E I) Inc. (Victoria)	(902) 658-2361	morningstar@oceanchoice.com
2	**Summerside Seafood Supreme Inc.**	(902) 436 9892	
1	Belle River Enterprises Ltd.	(902) 962-2248	
1	Captain Cooke's Seafood Inc.	(902) 437-3621	
1	Colville Bay Oyster Co. Ltd.	(902) 687-3640	jflynn@pei.sympatico.ca
1	**Crossroad's and Area Lion's Club**	(902) 569-3610	
1	**Double K Lobster Pound**	(902) 652-2024	
1	Kildare Fisheries	(902) 853-3412	
1	**Richard's Seafood Inc.**	(902) 676-2733	
1	Steve's Seafood	(902) 961-3200	
1	**Vuozzo's Lobster Pound**		

Note: Companies in bold text are licenced processors

NewFoundland and Labrador-based exporters with declared sales volume over $15 million
Summary: Approximately 17 of the 67 NFLD seafood distributors report sales over $15 million, all of these specify that they process at least one of the eleven species of interest to WWF
Source: NewFoundland and Labrador Seafood Products Directory http://www.geosurv.gov.nl.ca/fishaq/directory/

# WWF spp	Company	Phone	Email
8*	Ocean Choice International Inc.	709-782-6244	sscott@oceanchoice.com
8	Woodman's Sea Products Ltd.	709-582-2830	geoff@woodmanseaproducts.com
7	Allen's Fisheries Ltd.	709-789-3139	info@allensfisheries.com
7*	Barry Group Inc.	709-785-7387	bgi@barrygroupinc.com
7*	Fishery Products International Ltd.	709-570-0125	rbishop@fpil.com
7	Labrador Fishermen's Union Shrimp Co. Ltd.	709-927-5816	
6*	Beothic Fish Processors Ltd.	709-753-6884	pgrant@beothic.com
6	Quin-Sea Fisheries Limited	709-587-2702	quin-sea@nf.sympatico.ca
5	Icewater Seafoods Inc.	709-463-2445	bwareham@icewaterseafoods.com
5	Notre Dame Seafoods Inc.	709-758-0002	jeveleigh@notredameseafoods.com
5	P. Janes and Sons Ltd.	709-586-2252	info@pjanes.com
4	Fogo Island Co-operative Society Ltd.	709-627-3452	kenbudden@nf.aibn.com
3	Independent Fish Harvesters Inc.	709-528-4000	ifh@personainternet.com
2	Breakwater Fisheries Ltd.	709-754-1999	rrbarnes@nf.sympatico.ca
2	Newfound Resources Ltd.	709-579-7676	nrl@nfld.com
2	St. Anthony Seafoods Limited Partnership	709-454-2642	cdavis@clearwater.ca
1	Grand Bank Seafoods	709-832-1550	aroff@clearwater.ca

*Largest volume of sales

Quebec-based seafood exporting processors and distributors
Note: No information regarding WWF species of interest by company
Summary: 58 of 111 seafood processors and distributors in Quebec are exporting products
Source: Quebec Food Products Directory (http://www.carrefouralimentaire.com/prod-que.asp)

Company	Telephone
ALIMENTS CONAGRA CANADA INC.	450-433-1322
ALIMENTS FONDUE PAYSANNE INC.	418-831-9397
ALIMENTS PROLIMER INC. (OCEAN TO OCEAN)	418-681-0263
ARNEG CANADA INC.	450-246-3837
ARTHUR ROGER & ASSOCIÉS INC.	450-963-5080
BLANC SABLON SEAFOODS	418-461-3220
BOUCANERIE DES ÎLES	418-986-4861
CAVIARS ÉMERANCE INC.	1-418-752-2992
CHARCUTERIE LA TOUR EIFFEL INC. (CHARCUTERIE DE BRETAGNE)	450-979-0001
CIVETS DE LA NATURE	418-364-3333
COQUILLAGES NORDIQUES INC.	418-587-6647
CORPORATION ALIMENTAIRE WHYTE'S INC.	450-625-1976
CRABIERS DU NORD INC.	418-238-2132
CREVETTE DU NORD ATLANTIQUE INC.	418-368-1414
CRUSTACÉS BAIE-TRINITÉ INC.	1-418-939-2510
CRUSTACÉS DE MALBAIE INC. (HOMARDS GASPÉSIENS ENR.)	418-368-1414
CUSIMER (1991) INC.	418-797-2728
DISTRIBUTIONS ARNAUD INC.	418-723-2552
E. GAGNON ET FILS LTÉE	418-385-3011
ÉCHINORD INC.	418-724-9591
FERME PISCICOLE DES BOBINES INC.	819-844-2418
FISHERY PRODUCTS INTERNATIONAL LTÉE	514-636-5114
FRUITS DE MER ASSELS INC.	418-752-3524
FRUITS DE MER DE L'EST DU QUÉBEC LTÉE (1998)	418-562-1273
FRUITS DE MER GASCONS LTÉE	1-418-396-5500
FRUITS DE MER INTERCONTINENTAL INC.	450-796-5297
FRUITS DE MER MADELEINE INC.	418-986-6016
FUMOIR GRIZZLY INC.	1-418-878-8941
FUMOIR KANATA INC.	450-628-2520
FUMOIR LA FÉE DES GRÈVES INC.	418-666-1892
FUMOIRS HJS	514-842-4631
GASPÉ CURED ENR.	1,418-683-2011
J.W. DELANEY LTÉE	418-969-2633
KAI CONVENI GLOBAL INC.	450-901-0112
LELIÈVRE, LELIÈVRE ET LEMOIGNAN LTÉE	418-385-3310
LYO-SAN INC.	450-562-8525
MADELIMER INC.	418-985-2753
MADELIPÊCHE INC.	418-986-3535
MANTAB INTERSPICE	514-697-3550
MARCHÉ BLAIS INC.	418-689-3564
MARCHÉ TRANSATLANTIQUE INC.	514-287-3530
MARINARD LTÉE (LES PÊCHERIES)	514-286-1977
PÊCHERIE MANICOUAGAN INC.	418-589-8800
PÊCHERIES GASPÉSIENNES INC.	418-269-3331
PÊCHERIES GROS-CAP INC.	418-986-2710
PÊCHERIES NORPRO 2000 LTÉE	1-418-937-2061
PÊCHERIES RIVIÈRE-AU-RENARD INC.	418-269-3386
PÊCHERIES VAL-MER INC.	418-325-2236
POISSON FUMÉ ST-TIMOTHÉE	450-371-8714
POISSON SALÉ GASPÉSIEN LTÉE	418-385-2424
POISSONNERIE COWIE INC.	450-375-7500
POISSONNERIE DE CLORIDORME INC.	418-395-2545
POISSONNERIE DU HAVRE (1988) INC.	418-538-2515
POSÉIDON - LES POISSONS ET CRUSTACÉS INC.	418-949-2331
RICHARD BOILY	418-829-2874
SOCIÉTÉ DE COMMERCE MANATCO INC. (LA)	450-229-4262
SOGELCO INTERNATIONAL INC.	514-849-2414
UNIPÊCHE M.D.M. 1988 INC.	418-752-6700

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