VI

Approaches to Greater Diversification and Value-Added Processing

It is generally acknowledged that the fishing industry in Atlantic Canada is being hampered by its failure to add sufficient value to its basic resources. For a long time, mass production was the guiding principle of the processing sector, which is to say that profit margins were based more on volume than on anything else. In the wake of the groundfish crisis, however, that strategy has proven to be unfeasible, since processors now have to deal with resource scarcity, which makes them more vulnerable to price wars. Today, the markets for seafood products are more segmented than ever before, and the shelf life of these products has never been as short. Overall, consumers clearly prefer natural products that retain as much of their original appearance and taste as possible, which explains their preference for fresh and chilled shellfish that has not been shelled. The market for shellfish meat, particularly value-added products, tends to become rapidly glutted following a rise in prices, thus opening the door to similar products and substitutes such as imitation products, which are essentially made of minced fish.

That does not mean there is no place on the market for high value-added fresh and chilled products, precooked dishes, and combinations of products that include ingredients other than fish and seafood. What we know about production on the East Coast is that it must move away from specializing in a limited number of products that are aimed at mass consumption and toward a more extensive product line, if possible with added value. In a sector that has become extremely competitive, innovation is more important than specialization. With major improvements in industrial techniques and increased food safety, new avenues for innovation in the industry are gradually opening up. Without going into detail on the array of techniques now available for canning and freezing or about other methods of preparing dishes and value-added products in eastern Canada (cooking, dehydration, ionization, analytical biotechnology, etc.), the main innovations by processors involve the following strategies:

- Product composition: new ingredients, new recipes, and combinations, with new names sometimes being given to existing products so that they can be repositioned in the market
- Manufacturing processes and techniques: improved profitability, quality (in terms of standardization), and sometimes industrialization of a product manufactured on a small or large scale
- Packaging and services incorporated in the product: marketing tools designed to improve product image among distributors and consumers (colour codes, legibility, and ease of handling either singly or in batches)
- New industrial uses of seafood products for nonfood purposes, which so far is not part of diversification (i.e., fine chemicals, pharmaceuticals, biomedicines, and water treatment)

As we can see, innovation does not necessarily mean designing new products, but it does require a better-orchestrated and in particular a more effectively targeted marketing approach. Clearly, this involves a better presentation (packaging and size), an improved recipe (addition of new ingredients such as spices and sauces), and new ways of attracting consumers (targeted marketing strategies and effective advertising campaigns).

This is how Fishery Products International (FPI) in Newfoundland was able to rebuild its markets after the cod moratorium. By adopting an import-export strategy and focusing on marketing new, mainly high value-added products, the company repositioned itself as a world leader in processed fish and seafood products. Now, FPI is processing double the volume it processed prior to the moratorium, using products imported primarily from Russia, Alaska, the Nordic countries, China, and Thailand. Although the FPI case is unique, other companies and many industry segments have been exploring more value-added processing for several years.

In light of the above facts, this section describes the status of the products themselves throughout the processing phases. The following data are from a previous statistical study based on product classification by industrial-processing stage. The classification uses the equivalent of sixty-nine product codes contained in Industry Canada's product classification database under the seafood products category. We list three import-export groups classified according to three industrial-processing stages, ranging from the simplest (fresh and chilled, frozen, and lightly prepared) to value-added preparations (extracted, precooked, and canned foods). In each of the three phases

described, we distinguish between fish and fish products; seafood, crustaceans, and their products; and various seafood products.

In reviewing provincial exports of seafood products from eastern Canada in 1999, we note that primary-processed products dominated at approximately 75 percent, secondary-processed products represented 8.5 percent, and tertiary-processed products totalled 16 percent (see table 29). Provincial differences are clearly more evident in the case of secondary- and tertiary-processed products. In exports of secondary-processed products, Nova Scotia dominated with 16 percent, Quebec and New Brunswick followed with 10 and 5 percent respectively, Newfoundland was fourth with a mere 3 percent, and Prince Edward Island was last with negligible exports in this category. Nova Scotia is clearly behind the other provinces when it comes

Table 29

Value of Exports of Seafood Products from Eastern Canada, by Level of Processing, and by Province, 1999

Province	Export Value					
	Primary Processing[a]		Secondary Processing[b]		Tertiary Processing[c]	
	Value (in millions of dollars)	Proportion (%)	Value (in millions of dollars)	Proportion (%)	Value (in millions of dollars)	Proportion (%)
Newfoundland	531	78.9	20	3.0	122	18.1
Prince Edward Island	142	75.7	–	0.2	45	24.0
Nova Scotia	799	79.9	160	16.1	40	4.0
New Brunswick	479	70.3	33	4.8	169	24.9
Quebec	90	54.5	17	10.2	58	35.3
Total (Eastern Canada)	2,041	75.4	230	8.5	434	16.1
Canada	2,876	77.1	348	9.3	507	13.6

Source: STRATEGIS, Industry Canada; compiled by the author.

[a] Primary processing means initial processing (basic packaging); products are marketed fresh, chilled, frozen, and in some cases separated, dried, and salted.

[b] Secondary processing involves further preparation; the raw material itself undergoes significant handling, with the ultimate objective of product preservation and/or presentation. Often these are raw products that have not been mixed with, or incorporated into, other food substances. They include products that are routinely salted (different degrees of seasoning), dried, minced (fine or coarse), cut up (steaks, slices, or strips), smoked (basic smoking or flavoured), semiprocessed (milt, meal, or feed pellets), and semipreserved.

[c] Tertiary processing involves further processing using various technical and technological processes that are more elaborate than those used in the previous stages. Some of these products must be marketed in compliance with strict industry requirements and included in families of high value-added products (prepared, precooked dishes and food served by caterers, such as seafood delicatessens).

to additional processing, i.e., tertiary-processed products. Tertiary processing is naturally very important regionally, because it generates products with high value added, which, moreover, involve a more extensive network of interindustry links. In fact, this type of production requires a much greater variety of products and services and thus raises income and employment multipliers. That does not mean, however, that the processors' profit margins are necessarily higher.

Approximately 16 percent of the seafood products exported from eastern Canada in 1999 had undergone tertiary processing. The dominant player was Quebec, having exported 35 percent of its products in this form. We should make special mention here of the contribution of companies located in the metropolitan areas of Quebec City and Montreal that concentrate on specialized food products: most of their supply is obtained externally and often consists of already-prepared products that are resold for export via their distribution channels. Prince Edward Island and New Brunswick also do well with tertiary-processed products, having exported 24 and 25 percent respectively of the production in this form in 1999. It is rather curious to note that the two provinces bordering the Atlantic, Newfoundland and Nova Scotia, lag behind in high value-added products; only approximately 18 percent of the seafood products exported from Newfoundland underwent tertiary processing in 1999, while Nova Scotia at 4 percent was hardly even a player.

These results are all the more astonishing because the two largest fish-processing companies in the Atlantic region, Fishery Products International and National Sea Products, are based in Newfoundland and Nova Scotia respectively. The reason for the small proportion of tertiary-processed products exported by these provinces is that the dominant, vertically integrated companies there benefit from large quotas for groundfish and other lucrative species such as shrimp and scallops. To some extent, the supply justifies mass production (products not processed significantly and intended for secondary and especially tertiary processing in the United States) and the production of fresh and chilled products for high-end markets. In the case of Nova Scotia, the situation can also be explained by its large supply of seafood, particularly lobster and scallops, and its proximity to the US market. Most of the time, products in their natural state or slightly processed, generally those that are fresh or chilled, are shipped to the Boston market. That is why the lobster-processing industry has never really become established in southwestern Nova Scotia.

Nevertheless, some progress has been made in this area, particularly in Newfoundland, where the industry is trying to adjust to the effects of the cod moratorium and changes in the structure of its primary supply.[99] Although value-added products (tertiary processing) in the province accounted for only 7 or 8 percent of total export value in the early 1990s, they climbed to 10 percent in the mid-1990s and to more than 18 percent in 1999.

Among the eastern Canadian provinces, New Brunswick has produced good results, second only to Quebec for the highest percentage of value-added seafood products. In fact, although 70 percent of the seafood products exported from New Brunswick in 1999 did not go beyond the primary-processing stage, the value of exports of secondary- and tertiary-processed products in that same year amounted to $202 million (30 percent of total export value). The province also exported the highest absolute value of tertiary-processed products, surpassing the value for the provinces of Prince Edward Island, Nova Scotia, and Quebec combined. New Brunswick owes its excellent performance to canned and seafood products, particularly products intended for high-end markets such as pâtés and other shellfish-based products.

Throughout eastern Canada, the trend is toward greater value-added production in all of the provinces (see table 30). Note that the growth in tertiary processing appears to be at the expense of secondary processing.

We have tried to understand the reason for the shift toward tertiary processing at the expense of secondary processing, and we conclude that in all likelihood it is not the result of deliberate decisions by companies. First of all, it was changes in the primary-supply structure that forced (if we can use that word) processors to import raw materials and, subsequently, to process them beyond the secondary-processing stage. Initially, the abrupt drop in the groundfish supply, cod in particular, considerably reduced production of processed-fish products, such as salted fish, pickled fish, and fish fillets. As a consequence, processors began using fish that in most cases had already undergone primary processing, which obliged them to undertake further value-added processing.

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99. "Atlantic Canada's Fishery: An Industry Reviving or Regressing?" *Atlantic Business Magazine* 10, no. 6 (1999). Precisely the same observation on the fisheries industry in Newfoundland is made in this article.

Table 30

Percentage of Seafood Exports from Eastern Canada, by Level of Processing, and by Province, 1995–99

	Primary Processing			Secondary Processing			Tertiary Processing		
Province	1995	1997	1999	1995	1997	1999	1995	1997	1999
Newfoundland	80.1	76.1	78.9	10.3	7.6	3.0	9.6	16.3	18.1
Prince Edward Island	81.2	73.3	75.7	1.3	1.1	0.2	17.6	25.5	24.0
Nova Scotia	83.3	81.1	79.9	15.4	16.0	16.1	1.3	2.9	4.0
New Brunswick	77.2	72.3	70.3	5.4	6.3	4.8	17.5	21.4	24.9
Quebec	62.9	59.7	54.5	14.3	7.5	10.2	22.8	32.8	35.3
Eastern Canada	79.0	75.5	75.4	10.8	10.3	8.5	10.2	14.2	16.1
Canada	77.2	76.5	77.1	13.5	11.3	9.3	9.2	12.2	13.6

Source: STRATEGIS, Industry Canada; compiled by the author.

We also note the continuous growth (from $444 million to $711 million between 1995 and 1999) in the value of primary-processed seafood products imported into eastern Canada, particularly frozen fish and fresh and frozen seafood (see table 31). As well, there has been a constant supply of approximately $55 million to $60 million worth of imports of secondary-processed products, the majority of which are not intended for the domestic consumer market as such, but go to plants for further processing. The situation for imports of tertiary-processed products (approximately $70 million) is somewhat different; they are mainly prepared and canned products sold on the regional market.

These data help refute the general perception that fish plants in the Atlantic region only export raw materials, which is utterly false. In fact, more than three hundred products and by-products from fifty or more species are produced on the Atlantic coast. The frozen products category alone includes fifteen species of groundfish and forty products, ten species of pelagic fish and thirty products, fifteen lobster products and approximately the same number of snow crab products, ten herring products, and so on. The category of in-brine products includes thirty products, mainly based on herring and other pelagic

fish and groundfish. The fresh and chilled products category covers over fifty different products. And a few canned and nonedible products complete a product list that is nothing less than impressive.[100]

Some products have high market value (e.g., crab sections and peeled shrimp) but are basically primary-processed products. A large percentage of products undergo some processing, such as snow crab, lobster, and shrimp products; however, they are most often shipped whole, in the shell (cooked and frozen), or sectioned but not shelled (crab sections and lobster tails and claws). They thus fall into the moderate value-added processing category (primary and secondary processing). It is much more profitable for a processor to produce, for example, crab sections at $5.82 per pound or whole cooked and frozen crab at $4.37 per pound than frozen crabmeat at $11.90 per pound (DFO 1996 price estimates for eastern New Brunswick).

There is a big difference in the production costs of these two types of products. The preparation of crab sections requires only a few steps, such as splitting (separating the crab in two), cleaning, washing, cooking, and then chilling/freezing. In general, this is done quickly by a small team of nonspecialized workers. Crabmeat requires further, much more complex steps (numerous meat extraction processes, candling and sorting, preparation of crab salad, washing, brining, pressing, packaging, and freezing), during which sanitary and technical standards are strictly applied; this adds considerably to production costs. The price difference between these products is also a result of packaging and marketing costs, especially because they are often intended for different consumer markets; shipping frozen crab sections to the Japanese market is not at all the same as selling frozen lobster or crabmeat to the US market or frozen shrimp to the European market. Finally, quality assurance is increasingly affecting the price difference, because the industrial standards in effect (ISO standards) represent an additional constraint for secondary and tertiary processors. This is particularly the case for lobster processors and for companies that produce precooked dishes and any other value-added products.

Naturally, there is a great temptation for companies to turn as much as possible to producing crab sections and whole crab that are simply cooked and frozen for export to the lucrative Japanese market. These are the types of products Japanese consumers love. The same

100. Review based on plant production statements provided by DFO regional offices in Moncton, Halifax, St. John's, and Quebec City in the winter of 1999.

Table 31

Value of Imports and Exports of Seafood Products from Eastern Canada, by Level of Processing and by Product Group (HS Code), 1995–99

	Import Value (in thousands of dollars)					Export Value (in thousands of dollars)				
	1995	1996	1997	1998	1999	1995	1996	1997	1998	1999
Primary Processing										
Fresh products	41,227	44,680	46,871	48,362	60,164	210,480	239,083	268,804	278,900	295,659
Frozen products	206,228	191,239	193,422	239,586	207,346	178,428	229,154	211,952	250,362	241,295
Fresh seafood	123,073	116,186	152,958	125,511	212,072	463,995	473,091	473,705	502,420	546,936
Frozen seafood	63,956	210,846	132,277	166,657	220,809	750,647	572,909	589,645	622,315	943,943
Other (seaweed)	578	705	522	385	550	6,884	7,573	2,934	5,107	7,759
Various products	9,040	7,451	5,350	8,524	9,974	3,678	4,266	4,730	5,197	4,988
Secondary Processing										
Fish	47,023	39,928	41,023	54,520	44,873	162,638	164,907	158,747	177,272	181,930
Seafood	1,084	1,009	491	452	731	54,891	39,450	47,704	39,917	43,380
Other products	9,040	7,451	5,350	8,524	9,974	3,678	4,266	4,730	5,197	4,988
Tertiary Processing										
Fish	31,785	28,554	29,473	25,541	23,366	49,479	70,626	73,395	88,241	99,458
Seafood	36,357	32,864	30,060	34,462	36,586	155,394	151,304	212,687	247,002	331,526
Other products	6,497	9,916	10,535	11,517	10,210	2,623	2,482	5,836	3,725	3,362

Total										
Primary processing	444,102	571,107	531,430	589,025	710,915	1,614,112	1,526,076	1,555,770	1,664,391	2,040,580
Secondary processing	57,147	43,388	46,864	63,496	55,578	221,207	208,623	211,181	222,386	230,298
Tertiary processing	74,639	71,334	70,068	71,520	70,162	207,496	224,412	291,918	338,968	434,346
Total – all seafood products	**575,888**	**690,829**	**648,362**	**724,041**	**836,655**	**2,042,815**	**1,959,111**	**2,054,869**	**2,225,745**	**2,705,224**
	Share of Total Import Value (%)					**Share of Total Export Value (%)**				
	1995	**1996**	**1997**	**1998**	**1999**	**1995**	**1996**	**1997**	**1998**	**1999**
Primary processing	77.1	82.7	82.0	81.4	85.0	79.0	77.9	75.5	74.8	75.4
Secondary processing	9.9	7.0	7.2	8.8	6.6	10.8	10.6	10.3	10.0	8.5
Tertiary processing	13.0	10.3	10.8	9.9	8.4	10.2	11.5	14.2	15.2	16.1

Sources: Compiled by the author and based on HS industrial codes, STRATEGIS, Industry Canada; see also a detailed list in Appendix A.

logic applies to lobster, where production is largely oriented toward products that involve little preparation, generally lobster pieces, such as tails, shelled or not shelled, rather than extracted lobster meat or claw and joint meat.

Whether producers are involved in cold-pack canning, semifresh products, or fresh or deep-frozen precooked dishes, they face two major constraints: the pressure of large-scale distribution and the level of automation of the production processes, constraints that are fully correlated. With no choice of distribution channel for staple seafood convenience foods manufactured in eastern Canada, the volume/price dilemma, a quandary facing many of the region's producers, invariably presents itself. In this regard, processors in eastern Canada have two choices:

- To create new products to overcome the dilemma, knowing, however, that production will make only limited use of basic products
- To lower costs by automating as much of the production as possible and by increasing industrial concentration

In the final analysis, processing species that are considered lucrative is not necessarily a good business decision for processors, who see their profit margins decrease because of price ceilings for labour-intensive products, especially when there appears to be declining demand for this type of product. It should also be remembered that the purchase price for raw materials is particularly high in the case of seafood. As we have seen, raw materials represent 85 percent of the direct production costs of plants in many industry segments, particularly in the case of lobster. Consequently, the reluctance of processors to offer an extensive range of labour-intensive and prepared products is thus understandable. They prefer to concentrate instead on a few key products that are of more interest to wholesalers in the hopes of increasing profits by maximizing volume.

Value-Added Processing and Product Innovation: The Players

The industrial concerns involved in processing and value-added processing of seafood products in eastern Canada relate not only to the financial and commercial importance of those products but also to their diversity. Rooted until recently in the regional economy, the fish and seafood processing sector must now turn its attention

to world markets. In the face of this change, some segments of the industry, or at least a number of the companies that make it up, will have to shake themselves free of obsolete traditional structures. At the same time, a growing number of others are already adapting themselves to new supply, management, and distribution strategies. The nature of these new strategies is determined, of course, by the kinds of business activities involved as well as by product niches, trade relations, degree of expertise, impact of new technology and innovation, and new marketing concepts being introduced for specific product lines. Overall, however, the processing sector must begin to shift the focus of the industrial facilities and maximize their potential by implementing continuous cycles, establishing more sophisticated contracts with suppliers, looking for lucrative market niches, introducing research and development units and a variety of specialized staff, diversifying their sources of supply so they no longer depend on local resources, and introducing real provincial strategies for promoting the seafood industry. In short, the regional sector is an increasingly important player in the economy of eastern Canada and can no longer afford to content itself with shipping low value-added products to captive markets.

The players in the value-added processing of seafood products are as varied in their geographic location as in their size, status, and the type of products they offer. In order to impose some order on this variety, we think a classification typology would be useful both to facilitate an initial analysis of what is happening in the industry and to readily identify

- Regional giants in the value-added processing industry
- Specialized groups that focus on basic processing (fresh, chilled, and frozen)
- New players from the agri-food industry who are incorporating seafood products in their manufacturing cycles
- Single-territory firms operating almost exclusively in eastern Canada (small businesses)

Clearly, the basic typology must be adapted to the overall context. In the seafood products sector, the large number of firms and their wide variety, etc., make it somewhat difficult to divide them into strategic groups, as is customary in other agri-food sectors in Canada. In spite of that, however, we can still identify some of their specific characteristics:

- Companies can be differentiated by their degree of horizontal specialization. Some specialize in value-added processing of seafood products, while others also manufacture other types of agri-food products.
- The degree of integration also varies. Some companies have included fishing or, more frequently, were originally fishers; others have preferential trade relationships and subsidiaries; and still others have their own distribution companies.
- Marketing policy is another variable in the company breakdown. Some companies market their own brands; others supply distributors' brands (i.e., Provigo, Atlantic Superstore, Sobey's, and GP) or function as subcontractors; and still others manage all components at the same time. The type of client base can also be very diverse; however, this criterion is only used infrequently in this study, because it appears less important than others.
- Given the current trend toward mergers, the companies' corporate status and their relationships with their parent companies are undoubtedly the most important criteria.

As mentioned before, there are over eight hundred fish-processing companies in eastern Canada, and at least half are exporters. Of these, only approximately sixty companies record sales of $10 million or more, including around fifteen that post over $50 million in annual sales: Fishery Products International, High Liner Foods, Clearwater Fine Foods, Madelipêche, the Barry Group, Connors Brothers, Polar Foods International, Sogelco, Seafreeze Foods, Paturel Seafoods, and Mersey Seafoods. Although we will not provide individual descriptions of all the players, we should point out that many medium-sized and even small businesses that have recently entered the value-added processing industry are leaders among companies of the same size and examples worthy of mention. First, however, let us examine some of the key players, the real builders of value-added processing in the region.

Fishery Products International Ltd., which has nine plants (seven in Newfoundland, one in Nova Scotia, and one in Massachusetts), is a multifaceted group. The company employs 2,600 people (a third of its pre-moratorium workforce), has total sales of $700 million, and ranks number one in seafood products in Canada. Ten years ago, FPI was the world's top producer of flatfish and cod products in North America. Since then, however, it has had to close twelve of its nineteen plants and reduce its staff from 8,600 to 2,600. It has kept only

fourteen of its forty-eight vessels, and its landings have fallen from 140,000 tonnes to approximately 8,000 tonnes.

Today, FPI imports nearly 30,000 tonnes of raw materials for basic and further processing while developing trade in other products. In fact, its activities are so diversified that it is now referred to as the FPI galaxy. This vertically and horizontally integrated company produces over two hundred products, which are distributed through numerous trade offices around the world.

The FPI group has succeeded in increasing its sales considerably with an expansion and diversification strategy. Its biggest coup was the 1989 buyout of Clouston Foods of Montreal, Canada's top seafood company, at which time it gained a particular advantage in the area of prepared foods (salmon pâté, fish fillets stuffed with scallops and crab, etc.), thereby making the company part of a group whose size and trade networks resulted in a tenfold increase in its activities.[101]

Strong growth in the FPI deep-frozen precooked foods division in the United States and the development of shrimp products (the popular Treasure Isle brand) have also boosted sales. With the buyout of Clouston Foods, FPI diversified its supply sources by including Alaska snow crab, scallops and oysters from China, salmon from British Columbia, and shrimp from Thailand, Indonesia, and Ecuador.

The FPI group also produces value-added products under the Sea Wonders brand name, designed for the children's market (portions of honey-flavoured fish moulded in the shape of starfish, anchors, seahorses, fish, and sharks); Healthy Bake 28 (113-gram portions, in which only 28 percent of calories come from fat); and high-end prepared foods, i.e., Seafood Elite and Stuffed Seafood (fish stuffed with a mixture of vegetables and seafood), marketed under the trade name Maripac or Mirabel.

While the United States is the company's primary export market, it also exports to Japan, where demand is greater for fresh and raw products, but more to Western Europe. France, for example, which has become one of the major trading partners of FPI, accounts for over 40 percent of its sales in Europe, particularly for prepared foods and products.

Among the products most in demand are sea scallops and canned crabmeat (approximately 700 tonnes annually), for which Clouston Foods has nearly 85 percent of the market in France. We should also

101. FPI Limited — 1999 Annual Information Form; internal document.

mention that FPI is the sole supplier of fish fillets to the McDonalds chain in Canada.[102]

High Liner Foods Inc. (HLF), formerly National Sea Products Ltd., with its head office in Lunenburg, Nova Scotia, is also one of the largest producers in the region. Once a world leader, HLF has fallen to the status of a secondary player and has watched its workforce drop from 8,000 to approximately 1,600 in the space of a few years. With sales ranging from $250 million to $300 million, HLF has chosen to concentrate its activities in the United States and Canada, carrying out a major restructuring of its foreign subsidiaries in France, Argentina, Portugal, and Australia. By focusing on higher value-added products (entrées, appetizers, and measured portions) and the retail market (fresh fish), HLF is trying to maintain the market shares of its Fisher Boy and Booth brands as well as a line of prepared products from its subsidiary Italian Village (United States) and High Liner (in Canada), supplementing its supply of Canadian cod with imports of Alaska pollock, frozen at sea, from South Korea, Russia, Lithuania, and the United States. The company has also recently implemented a bona fide import strategy with countries that are major suppliers of fresh products but where the processing infrastructure is unstable or inadequate, particularly producing countries in the former Soviet bloc (Baltic countries and Russia).

With expertise in breaded and coated products (65 percent of the Canadian market) that is unique in North America, the company is currently working to reposition its brands as high-end with the launch of new products made from fillets in blocks and high-quality minced meat. Based on the market's taste criteria, extruded products prepared from minced meat can be adapted to the demand of each client (individual or group).

HLF was also a pioneer in eastern Canada in seafood processing quality, using the HACCP system for total real-time control of production lines. The company is also experimenting with new species both to add to production and for new product lines, mainly black turbot and Stimpson's surf clam, a mollusc in the clam family. Apparently, this type of clam is valued for its composition, industrial processing, and price, which is more competitive than the price of other clams. In addition to processing squid, HLF is also trying to reestablish a market in Europe for smoked pollock (Germany, United Kingdom, and France), while diversifying into deep-frozen scallops.

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102. According to Mark Higgins, "Waste Not, Want Not: Atlantic Canada's Fish Industry Squeezes Every Ounce Out of Its Precious Resource," *Food in Canada* (November–December 1999): 23.

HLF is also very interested in aquaculture, for both technical and commercial reasons. Responding to the dual need to secure supply and to facilitate quality control, the company is providing strong encouragement to the aquaculture sector by developing external farming networks and large internal structures for experimental methods and species. For example, experiments in scallop production have led to a development time that is twice as fast as the five or six years it takes in the wild. Farming cycles remain a problem for producers, and HLF has not hesitated to lend its support to the search for a solution in anticipation of what will be the source of a good part of the processors' supply in the not too distant future.[103]

Clearwater Fine Foods Inc. (CFF) of Bedford, Nova Scotia, can be described as a world leader in high-quality crustaceans. With some ten plants and 2,000 employees, the company posts sales of approximately $200 million. CFF is developing different strategies by focusing on the seafood trade (mainly lobster but also shrimp and scallops). Although the group is moving into new species, such as redfish, silver hake, and mackerel, it is first and foremost one of the world leaders in exports of live lobster, which is shipped by air from Halifax to Europe and Japan and by truck to the United States.

Creator of the Hardshellfresh trademark, Clearwater Fine Foods Inc. has designed a patented lobster holding-tank system, a quality management system that incorporates biotechnology programs. Using this system, which was introduced just a few years ago, the company has been able to develop sales of fresh seafood that maintain its sensory quality.

Through its group of subsidiaries, Atlantic Champion and Pêches Nordiques, CFF also has one of the largest quotas for Canadian Northern shrimp, which is marketed raw, whole, cooked, and frozen at sea. Another of its subsidiaries, Pierce Fisheries, has the largest fishery quota for scallops, which are marketed under the Clearwater and Locket trademarks. And Alder Point Fisheries, a subsidiary dedicated to harvesting Stimpson's surf clams, supplies CFF with this new product. Alder Point Fisheries was established to compete with the other major producer of fresh seafood, Grand Bank Seafood, to date the largest processor of sea scallops in the North Atlantic: it has built a lucrative market on its almost exclusive trade in this mollusc.

CFF is increasingly seen as a leader in product innovation. One of its subsidiaries, Ocean Nutrition Canada, was transformed into a

103. Information from HLF annual reports.

kind of experimental industrial kitchen; another in Arichat, where the company has invested $9 million, specializes in preserving live lobster by recycling seawater.[104]

Madelipêche International Inc. has proven to be another leader in eastern Canada. The company, with its head office in Verdun, is among the major Quebec players who have had to build new value-added niche strategies, often around traditional products. Bolstered by a network in Quebec and Ontario, the company has overall sales of nearly $15 million. It completed its restructuring ten years ago and now has 400 employees.

Madelipêche is unique in that it is developing not only traditional basic products found throughout the Atlantic but also fish oil and a canned mackerel industry targeting the Quebec market. Upward development has been its motto in recent years, especially because 95 percent of its products are exported. Both a producer of canned goods and oils and an exporter of lobster, cod, and mackerel, the company developed its market by creating three popular leading brands, Madeli-Mer, Quali-Mer, and Marco, that are carried by all the distribution giants in Quebec and Ontario.

Its research on deep-frozen, precooked foods (its largest trade item) is a credit to company executives, who turned a traditional, basically not very modernized company into a real producer of value-added seafood products in Quebec. After years of developing its production departments, Madelipêche is now Canada's uncontested leader (with High Liner Foods) in deep-frozen, ready-to-serve seafood. The success of its product lines in the Toronto area and in the eastern United States is proof that industrial and marketing successes are possible in a highly competitive sector. Madelipêche is also one of Canada's top specialized suppliers to the institutional food services industries.

This list is not intended to be in any way restrictive. Our aim is simply to present a few cases to give some idea of the approach and characteristics that distinguish the major players in value-added processing. We could also mention many other companies: Connors Brothers in New Brunswick, a canning specialist, but diversifying into farmed salmon processing; Comeau's Seafood in southwestern Nova Scotia, known for its innovative products such as seafood sauces and pickles; Sogelco of Montreal, which, through its strategic alliance with plants in the Maritime provinces, has secured its sources of supply so

104. See Al Scott, "Clearwater Fine Foods Uses R&D to Redefine the Seafood Industry," in *Nova Scotia Open to the World* (Fall 2000), 20–25.

that it can diversify its production of essentially value-added products; the Barry Group of Corner Brook with twenty plants, whose acquisition strategy (plants recently acquired from the Blue Cove Group in northern New Brunswick and the modern multispecies plant in Canso acquired from Seafreeze Foods Inc.) is giving it a high profile in the region and is allowing it to offer a broad range of processed products; and so on.

Despite their dominance, these companies do not have a monopoly on the processing of value-added seafood products. Scattered around the most remote locations on Newfoundland peninsulas, along the Maritime coastline, and all the way to the Gaspé Peninsula are small family businesses and new businesses that are focusing on differentiated production using either nontraditional species (skate, sea urchin, cocktail oyster, lumpfish, and rock crab) or combinations of value-added products such as herring-based imitation crab and seafood pizza and spreads. Dips, tarama, fish and seafood creams, canned pickled herring, diced salmon, smoked salmon fillets (linguettes), real and imitation crab sticks, fish mousse of all types, seafood and vegetable pâtés, surimi, seasoned crustacean meat, and prepared, ready-to-eat fish pieces, all the so-called deli products, are made by regional producers and processors and found in the display cases of major distributors in Ontario, Quebec, and the Atlantic provinces.

From the Sea to the Supermarket

The consumption of seafood products has doubled in twenty years and is still growing, stimulated by the creation of an impressive range of new products capable of satisfying the most discriminating consumer tastes — products that have been promoted using mass-marketing strategies. This change in demand (quantitative and qualitative), together with the fact that a growing number of producers and intermediaries, particularly in Third World countries, have joined the international network of buyers and suppliers, obviously complicates the marketing strategies of producers in Atlantic Canada. In fact, what we are witnessing is a strategic distribution and marketing reorganization in which suppliers, buyers, and distributors of seafood products are working together more effectively.

As well as the need to automate production in order to meet volume requirements and ensure a supply of basic products, the processors of seafood products are confronted with the challenge of developing a distribution and marketing strategy. Before doing that,

however, and even before fishing a species, the question has to be answered as to whether there is in fact a market for the product and under what conditions demand can most effectively be met. As well, processors must clearly understand what is driving the market demand for each of the products and by-products offered and carefully track any changes so that they can rapidly adjust production to meet that demand.

Adjusting to market demand means internal flexibility in production management and organization. Demand is shaped not only by demographic and social factors (urbanization, entry of women into the labour force, increased tourism, higher standard of living, etc.) but also by refining the logistical and technical procedures set in motion to market a product (targeted advertising campaigns, integrated distribution networks, development of product lines, multiple points of sale involving big box retailers, a wider range of products and packaging, etc.). We must concentrate more on niche markets and target products rather than on a mass market, and on product lines rather than on homogeneous production. Also, because there are many substitutes for fish, the level of fish consumption is determined by the price of other foods, particularly meat and poultry.

The seafood sector in eastern Canada has long been content to rely on traditional production: frozen products (groundfish blocks and fillets), salted and dried fish products, and various minimally processed seafoods. These products still account for the lion's share of plant production today; however, in recent years the industry has tried to innovate the areas of technology and new product development. This change in the attitude of processors is due to the fact that markets are becoming increasingly demanding, particularly regarding quality standards, packaging, and product presentation. European buyers (lobster and shrimp) and Japanese buyers (snow crab and herring roe) are especially particular about quality and have no hesitation in sending their own agents to their suppliers' facilities to ensure compliance with standards at all stages of production. The opening of new, more demanding markets and the implementation of industrial standardization in the agri-food industry as a whole are giving businesses the incentive to improve quality management and production techniques.

Until now, processors' attempts at diversification were usually in response to cyclical crises in the industry, and the reflex action of the industry was to redirect businesses into areas for which they were rather poorly prepared or toward opportunities with uncertain potential, such as the use of underutilized species. Despite numerous

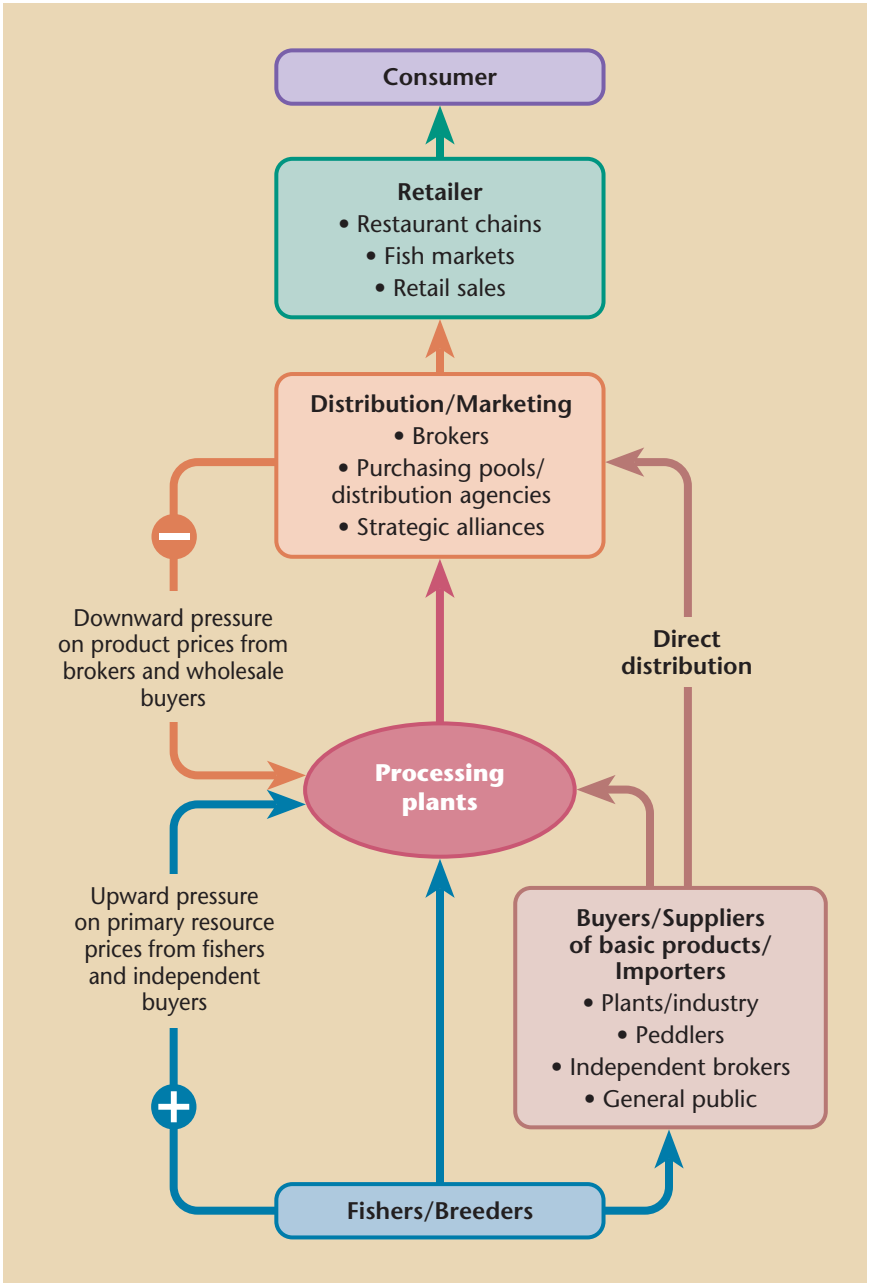
government programs intended to foster technological change, innovation has been slow in coming, no doubt a result of the traditionalism that still persists in many segments of the industry. The fact that programs have generally been conceived in a period of crisis, not at the instigation of business, partly explains their limited results. Nevertheless, improvements in industrial techniques will gradually open new avenues of innovation in the industry. Processors already have at their disposal an array of techniques (cooking, dehydration, ionization, analytical biotechnology, vacuum deep-freezing, etc.), and their main efforts at innovation involve product composition (new ingredients, new recipes, and combinations), manufacturing processes and techniques (quality improvement), and product marketing (improved image among distributors and consumers, attractive colour and flavour, and convenience).

The entry of major agri-food producers into the fisheries contributes to greater consistency of supply and standardization of quality. Major distributors of both fresh and canned seafood products require the upstream industry to supply large volumes of basic products of superior freshness. At the same time, the push is on to develop farmed products to gain greater control over both the supply and the quality of fish and seafood, especially because local supplies are still too vulnerable to price wars and to the vagaries of the fisheries.

The direct clients of regional producers are wholesalers, retailers, brokers, purchasing pools, and other food industries that redistribute and sometimes reprocess products en route to the point of sale and the end consumer. Purchasing pools have carved out a place for themselves on North American markets — fairly recently in Canada and to a lesser extent in the United States, which for the most part still uses the broker system. Still, purchasing pools play an important role in the US because of the large quantities of products involved. The dual policy of large buyers is very important from the perspective of markets for value-added seafood products, the reason being that purchasing pools require abundant, consistent supplies that are satisfactory in both quality and price, which is why they award supply contracts that in a sense turn producers into subcontractors. Purchasing pools are therefore important players in the industrial and commercial promotion of value-added seafood products. To get a better idea of the various stakeholders and their interaction in the marketing system for seafood products, see figure 15 for an organization chart that gives an overview of the suppliers, sellers, and other intermediaries in eastern Canada.

Figure 15

Purchase/Sale, Marketing, and Distribution Channels for Seafood Products in Eastern Canada



Wholesalers-dealers-brokers, the usual intermediaries between manufacturers and retailers, facilitate the producers' task by keeping orders streamlined and by underwriting part of the storage both physically and financially. Wholesalers-dealers also provide retailers with a full range of products and delivery schedules that the processors are not generally able to do themselves. However, in the new business environment, characterized by the explosion of new products and in particular by low profit margins, retailers have a tendency to bypass the wholesaler-dealer and buy directly from the producers. According to estimates, producers directly supply retailers with between 20 and 30 percent of the products they sell.[105] Still, the fact remains that the vast majority of processors and manufacturers in eastern Canada — with the exception of large groups such as National Sea Products, Fishery Products International, Sogelco International, Connors Brothers, Comeau's Sea Foods, and Clearwater Fine Foods — are not big enough to set up their own independent marketing department, which is why using the services of commercial agents is still the rule.

In the United States, with its much larger population, the food-marketing system is distributed more effectively. Brokers are essential there, particularly for value-added products (cold-pack and canned products); however, they are facing increasing competition from purchasing pools that work directly with manufacturers in the fresh and semifresh product sectors.

East Coast processors face a double challenge: strengthening their position in terms of industrial standardization and streamlining product distribution and marketing. In this respect, public and private undertakings appear to be the most effectively structured in Nova Scotia. There, international quality standards are a primary concern of the leading processors of food products. They were introduced to this facet of the business by the early attempts of National Sea Products, the largest manufacturer in the Atlantic provinces, to install a fully integrated computerized system capable of managing all standardization in real time. NSP introduced just-in-time seafood products in the region when it implemented the HACCP system and is the leader in this area in eastern Canada. The company underwent a fundamental restructuring in recent years and completely re-engineered its processes.

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105. CIRRD survey of the National Seafood Sector Council, Agriculture and Agri-Food Canada, the Canadian Association of Fish Exporters, New Brunswick Fish Packers' Association, and some processors in the Atlantic provinces and Quebec.

Following in the wake of National Sea Products, a number of specialized, medium-sized producers are emerging, such as Arisaig Fisheries, Comeau's Sea Foods, Intervest Trading Company, IMO Foods, Innovative Fishery Products, Kenney and Ross, Clearwater Fine Foods, Inland Fisheries, and Seabright Smokehouses, who are making industrial standardization a strategic issue. It appears, however, that most Nova Scotia processors are still not concerned.

In the other Maritime provinces, there are plans among manufacturers' groups to embrace standardization, but they are not as developed as in Nova Scotia. The truth is that these provinces, which can always rely on certain exclusive markets, still lack a realistic strategy. Provincially granted quality certification would give their products greater visibility and above all greater consumer confidence. Newfoundland is unique in the sense that its fisheries sector was completely disrupted by the cod moratorium. However, the major producers and a growing number of medium-sized players are successfully producing a line of value-added products by incorporating new quality standards and rethinking their supply, management, and distribution strategy. A number of them have moved into diversified production, and to supplement traditional production, some are offering new products that combine a variety of inputs, either underutilized species, such as sea urchin, skate, and herring (e.g., herring-based imitation crab), or farmed products.

With the exception of a few players, however, it is obvious that until now the region as a whole has failed to develop a realistic overall strategy for seafood products, particularly those that are value-added. Just in terms of promotion, the systematic use of advertising opportunities is difficult due to the fragmentation of the processing sector, the diverse types of production, and especially the fact of companies being in different provinces, with each jurisdiction competiting with the other. Only big businesses have the consistent volume and quality monitoring that can gain them a foothold in foreign markets and allow them to benefit from a major advertising strategy.[106] Clearly, most fish-processing companies on the East Coast are not big enough to ensure the profitability of value-added processing (secondary and tertiary processing). That is why it is in the interests of producers to form alliances and groups to increase the visibility of regional prod-

106. Given that a Canada-wide promotional campaign costs approximately $2 million, a company that spends 1 percent of sales on advertising should realize sales of $200 million to finance a campaign of that kind. The $200 million threshold was thus chosen by sector associations as the objective for manufacturers' groups.

ucts by creating a common brand or developing a particular niche market. A number of efforts in this direction in Nova Scotia, Quebec, and New Brunswick have produced convincing results, and producers in Prince Edward Island have come in from the sidelines with the emergence of the Polar Foods International consortium.

When we consider the range of new products developed in eastern Canada, we can see that there are regional differences, mostly related to the status of value-added processing among producers. Although processors in the Atlantic provinces are trying to distinguish themselves with product composition and processing, little effort has gone into their manufacturing processes and services. In Quebec, however, there is a greater commitment to new product creation. There, new products are much more advanced (e.g., fish and seafood mousses, which require extrusion techniques, from Aliments Prolimer and Culimer Inc.). Furthermore, Quebec demonstrated the earliest awareness of the seafood standardization issue. Companies that participated in establishing a universal set of standards for manufacturing processes include Sogelco International, Gaspé Cured Enr., Conserveries Notre Dame, Les Pêcheries Gros Cap, Madelipêche International, Pêcheries Norpro, Assels Seafoods, Bacalao Del Castillo, Les pêcheries Marinard, and the Montreal Fish Company. We should also mention the efforts of producer associations (Association québécoise de commercialisation de poissons et de fruits de mer) and export cooperatives (Club Export Agro-alimentaire du Québec), which are recognized in the industry for their assistance with US and European standardization requirements.

These kinds of groups are an excellent way to encourage participation by governments, whose institutional guidance role is the way of the future. Governments are being asked to play a primary role in promoting regional expertise in the area of value-added processing of seafood products and in the financial, regulatory, and logistical aspects of the business. It is often through associations and sectoral groups that governments can best fulfill their support role. The Gourmandises marines program, developed in the mid-1990s in the Gaspé Peninsula to promote fish products in the local restaurant market, is a good example. Bringing together producers, distributors, and restaurants, this promotional campaign, one of the first of its kind, is still a benchmark for experiments in providing support for the marketing of value-added seafood products.

Apart from those few examples, the various stakeholders have yet to achieve the desired promotional and marketing synergy to market

regional products. An obstacle to the effectiveness of groups of companies, for example, is an apparent dichotomy between industrial activity (fishing and processing) and the distribution and marketing sectors. A report resulting from a forum organized by Quebec's ministère de l'Agriculture, des Pêcheries, et de l'Alimentation points out numerous weaknesses in the various stages of the production chain from catch to consumer's plate: production and distribution costs that are too high; transportation problems; poorly defined products and discount sales, resulting in a loss of revenue and value added; lack of synchronization of product shipments with ideal reception times on the domestic market; insufficient effort devoted to new product research and new market prospects; and an absence of marketing agreements and contracts, particularly for prepared products.[107]

In concluding the discussion on changes underway in the seafood industry, we should reiterate that over and above the technological change and globalization of markets there are basic demographic and social trends. In advanced economies (Europe and Japan in particular), the consumption of seafood products will be affected by aging populations, smaller families, and the increased presence of women in the workforce. These changes could encourage consumers to turn to processed, ready-to-eat products, take-out and delivery services, and restaurants. In developing countries, sustained demographic growth, urbanization, and rising standards of living will be dominant factors in the volume and especially the type of food products consumed. These countries should become even more active on the world market for food products, both as buyers and suppliers, thus helping to increase the globalization of production and trade. In China, according to projections, demand for meat should increase by 85 percent in the next twenty years.[108] This country of more than a billion people has also made enormous efforts in recent years to develop and especially to market its aquaculture products, which already represent 60 percent of its aquatic production as a whole.[109] We should point out

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107. See *Le diagnostic des pêches maritimes au Québec*, discussion paper from the marine fisheries forum secretariat of Quebec's ministère de l'Agriculture, des Pêcheries et de l'Alimentation (Quebec City, December 1994), 11.

108. According to the proceedings of the OECD conference entitled "The Agri-Food Sector on the Threshold of the 21st Century," in *The Future of Food: Long-Term Prospects for the Agri-Food Sector* (OECD Publications, 1998).

109. With 17.6 million tonnes of aquaculture products in 1995 (63 percent of world production), China remains the undisputed leader in this area. Chinese production, which until recently was geared mainly to its enormous domestic market, is increasingly becoming oriented toward external markets. Consult FAO. INFO/PECHES (www.fao.org), "Review of Production: A Statistical Perspective" (May 1995).

in passing that because of remarkable technical and organizational progress, aquaculture now supplies a constantly growing percentage of food products from aquatic sources. In 1995, according to FAO data, more than a quarter of the world production of edible seafood products came from aquaculture,[110] and it continues to grow. For processors in Atlantic Canada, however, the ever-increasing competition on the international market and the introduction of aquaculture products pose a threat to their prosperity.

Added to these trends are new scientific applications of biotechnology, a field with enormous potential over the next twenty years, particularly in the food industry. Indeed, biotechnology (molecular biology, genetic engineering, and enzymology) can be credited with the huge strides that have been made in developing techniques for processing and value-added processing of animal proteins and fish and seafood by-products. We only have to think of the success of surimi, for example, a natural fish paste, artificially flavoured, that is in increasing use in contemporary cuisine. In the past ten years, biotechnology has opened up new worlds of possibility, such as the industrial use of bacteria and more generally of molecules that could be used in a broad range of high value-added sectors, particularly sectors integrated into the new economy (pharmaceuticals, fine chemistry, new materials, and bioinformatics). Today, marine biotechnologies appear to be a focus of important technical, scientific, and commercial development in such countries as Japan, South Korea, the United States, Germany, the United Kingdom, and France.

What we have offered in this study is an overview of the fisheries in Atlantic Canada at the turn of the century. During course of our inquiry, we have explored some of the important issues and challenges of concern to the industry and at the same time shed some light on its current structure, which, we have suggested, offers encouraging signs for the future of fisheries-based maritime regions.

110. For fish and shellfish farming (excluding aquatic plants), the contribution of aquaculture rose from 11.7 percent in 1989 to 18.5 percent in 1995. Including marine plants, the percentage for aquaculture increased from 14.4 to 23.0 percent. Ibid., 1.