

7.0 BC SEAFOOD PROCESSING

Processing involves the transformation, packaging, transportation, and distribution of harvested and farmed seafood. In 2002, there were about 220 licensed fish processing plants in BC of which 182 were active operations.

This section builds on the seafood processing profile of Section 2.4 and describes the business environment of the BC seafood processing industry, recent trends, business challenges, and emerging opportunities. In so doing, the study compares and contrasts the BC seafood processing sector with other seafood processing sectors in the world, most notably Alaska, and with other protein producers and distributors.

7.1 Markets

In 2002, the BC seafood processing sector had estimated revenues of \$1,147 million from sales of a variety of canned, roe, surimi, fresh, frozen, and other products such as smoked, fillets, portions, and fishmeal.

7.1.1 BC is a Small Player

BC seafood production is very small on a world scale.

British Columbia comprises a very small share of world seafood production, both at the primary harvest or growing stage and at the processed stage. Total BC seafood primary production is 0.3 million tonnes or only 0.2% of the 140+ million tonnes of total world production from capture and aquaculture sources.

	2001 Production		
	BC ('000s tonnes)	World ('000s tonnes)	BC Share (%)
Salmon			
Capture	23	844	2.7%
Aquaculture	68	1,200	5.7%
Herring			
Pacific	23	407	5.7%
Other	0	2,549	0.0%
Flatfish			
Pacific Halibut	5	40	12.5%
Other, e.g., soles	14	934	1.5%
Cod, Hakes, Haddocks			
Sablefish	3	23	13.0%
Pacific Cod	1	331	0.3%
Pollock	2	3,136	0.1%
Other	80	5,758	1.4%
Shellfish			
Geoducks	2	4	50.0 %
Shrimps & Prawns	5	4,222	0.1 %
Oysters	7	4,607	0.2 %
Clams, Cockles, etc.	3	3,918	0.1%

Exhibit 23: World Salmon Production and Consumption 2001

	2001 World Salmon Production ('000s tonnes) ^{1,3}							
	Wild				Farmed			Total
	BC	US	Other	Total	BC	Other	Total	
Chinook	1	7	1	9	8	15	23	32
Sockeye	6	79	25	110	0	0	0	110
Coho	0	19	3	22	2	149	151	173
Pink	11	195	177	383	0	0	0	383
Chum	5	66	249	320	0	0	0	320
Atlantic	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>58</u>	<u>967</u>	<u>1,026</u>	<u>1,026</u>
Total	<u>23</u>	<u>366</u>	<u>455</u>	<u>844</u>	<u>68</u>	<u>1,132</u>	<u>1,200</u>	<u>2,044</u>

2001 World Salmon Consumption ('000 tonnes) ^{2,4}				
		Wild	Farmed	Total
Fresh & Frozen	- US	38	174	212
	- European Union	24	431	455
	- Japan	248	140	288
Canned		118	3	121
Other		<u>158</u>	<u>282</u>	<u>440</u>
	Total	<u>586</u>	<u>1,030</u>	<u>1,616</u>

Note:

1. production is round weight
2. consumption is processed weight
3. production excludes 192,000 tonnes of farmed rainbow trout raised in saltwater pens (so-called "salmon trout")
4. consumption excludes 144,000 tonnes of salmon trout – 114,000 tonnes fresh and frozen (2,000 tonnes US, 6,000 tonnes EU, 106,000 tonnes Japan), and 30,000 tonnes other (19,000 tonnes EU, 11,000 tonnes other).

Source: Estimates by Gunnar Knapp, ISER University of Alaska, Anchorage based on FAO data.

Total BC seafood exports are about \$US 0.6 billion or 1% of the \$US 60+ billion in annual seafood trade around the world. Exhibit 23 illustrates the small BC share of the world markets for salmon, a signature seafood product from the province. Alaska capture production is more than five times greater than BC production of salmon, halibut, sablefish, and groundfish (including more than 1 million tonnes of pollock).

For certain species – e.g., Pacific halibut, sablefish, geoduck – BC produces 10% or more of world supply. But generally, BC has only a marginal presence in the world seafood market. Even a 10% market share confers little market power or influence to BC producers

7.1.2 Continued Expansion of Seafood Production and Demand

Increases in world seafood production will come from aquaculture.

World seafood production is projected to grow with almost all of this growth derived from aquaculture as most of the world's wild fish stocks are fully exploited or overexploited.

World Seafood Production Will Continue To Expand

A model of food supply and demand to the year 2020 projects the following:

- global production of food fish will expand by 1.5% annually with almost all of the additional production coming from aquaculture
- real fish prices will rise by 4 to 16% by 2020 with the largest price increases experienced for high valued finfish and crustaceans
- prices for meat (poultry, beef, pork, sheep meat) and eggs will decline by about 3% in real terms
- the rate of technological change for the conversion efficiency of fishmeal and oil to protein in aquaculture is a key determinant of both seafood production levels and prices in the future.

Source: Christopher Delgado et al. "Fish as Food: Projections to 2020", Paper Presented to IIFET conference, Auckland, New Zealand 2003.

Aquaculture production, akin to poultry and other farmed products, can increase or expand to meet world demand for food. Technological innovations such as improved breeding and lower feed conversion ratios can lower costs of production and reduce prices and increase consumer demand. For example, US per capita consumption of poultry has doubled over the past 30 years primarily because of these types of technical innovations.

Consumer tastes are changing.

As discussed in Section 3, overall demand for seafood will grow and be shaped by a variety of consumer tastes and preferences:

- preference for more healthy, wholesome foods (and seafood is an excellent sources of omega-3 oils that reduce the risk of heart disease);
- convenience and ease of preparation;
- greater trend to eating out and growth of food service relative to retail;
- evolving, increasing global conservation ethic with consumers making food choices based not only on price and quality issues but also on sustainability, animal welfare, "naturalness", celebrity chef endorsements, ecological footprint, and other issues;
- increased preference for fresh and live fish and decreased demand for breaded and battered fish.

Exhibit 24: Wholesale Value of BC Seafood Products by Product Form 2002

		Wholesale Value (\$ millions)							
		Canned	Roe	Surimi	Fresh Whole	Frozen Whole	Live	Other*	Total
Capture									
	Salmon	62	18	0	29	54	0	36	199
	Herring	0	121	0	0	2	0	5	128
	Other Finfish	0	0	28	64	45	3	112	252
	Shellfish	<u>0</u>	<u>18</u>	<u>0</u>	<u>4</u>	<u>27</u>	<u>105</u>	<u>26</u>	<u>180</u>
	Subtotal	62	157	28	97	128	108	179	759
Aquaculture									
	Salmon	<1	3	0	242	13	0	101	359
	Herring	0	0	0	0	0	0	0	0
	Other Finfish	0	0	0	<1	0	0	0	<1
	Shellfish	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u><1</u>	<u>22</u>	<u>7</u>	<u>29</u>
	Subtotal	<1	3	0	242	13	22	108	388
Total Seafood									
	Salmon	62	21	0	271	67	0	137	558
	Herring	0	121	0	0	2	0	5	128
	Other Finfish	0	0	28	64	45	3	112	252
	Shellfish	<u>0</u>	<u>18</u>	<u>0</u>	<u>4</u>	<u>27</u>	<u>127</u>	<u>33</u>	<u>209</u>
	Total	<u>62</u>	<u>160</u>	<u>28</u>	<u>339</u>	<u>141</u>	<u>130</u>	<u>287</u>	<u>1,147</u>

* Fillets, portions, smoked, cooked, peeled meat, fishmeal, etc.

Source: MAFF

Traceability is increasingly important.

In addition, world seafood production, demand, and trade will be influenced by the necessity for increased traceability in food shipments from the producer to the consumer. Globalization is resulting in the shift of labour-intensive seafood processing to low wage countries in southeast Asia. Seafood demand is also affected by population growth, incomes, and other socio-economic factors.

7.1.3 Domestic and Export Markets

The majority of BC seafood is exported from Canada. Exhibit 24 presents the product mix of BC seafood for 2002.

Geographic Distribution of Sales

The approximate geographic distribution of BC processed seafood product sales is:

	Capture	Aquaculture
BC	10%	10%
Rest of Canada	15%	5%
Outside Canada	75%	85%

Most BC seafood is exported, mainly to the US.

There is wide variation among species and products. For example, traditionally about half of canned salmon is sold in Canada but the majority of frozen whole salmon is exported. Over 95% of herring roe and herring spawn-on-kelp is exported to Japan. Several specialty shellfish products such as live geoduck, sea urchin roe, and frozen whole prawns are sold to Japan, Hong Kong, and other Southeast Asian countries.

The US is the major market for farmed salmon, both whole fish and fillets and portions, and groundfish fillets such as soles and rockfish. The Canadian market for BC farmed salmon is restricted to Western Canada as New Brunswick producers, because of transportation cost advantages, serve central and eastern Canada.

Other traditional export markets have become less important.

As noted in Section 2.4.3, the overall export market is increasingly dominated by the United States, presently with over 60% of total export value. Traditional markets in Japan and Europe have declined in importance. Export market share to these regions has fallen mainly due to increased competition from farmed salmon worldwide (Chilean imports to Japan, Norwegian and UK imports to Europe).

Market Cooperation in the Value Chain

Cooperation through the value chain helps to meet market demand.

Cooperation in the seafood value chain does exist for several capture fisheries segments, mainly IQ fisheries, in matching supplies to market demand. For example, groundfish processors will coordinate with vessel operators as to scheduling deliveries and suggested maximum trip length to ensure quality. These same processors will coordinate with California buyers to ensure product deliveries to San Francisco and Los Angeles, for example, in time for weekend sales.

In addition, herring processing plants have had Japanese technicians to ensure the product grading meets markets needs and standards. Herring fisheries are timed to maximize the roe content of the fish.

The capture salmon seafood sector is less able than other capture seafood sectors to meet market needs because under present harvest management practice, it has extreme difficulty in producing the consistent supplies, quality, and price of products to meet customer specifications.

The BC farmed salmon sector sees more value chain cooperation than the farmed shellfish sector.

The BC farmed salmon industry is characterized by significant value chain cooperation. Part of this reflects the vertical integration of growout, processing, and marketing functions for several companies. More important, though, is the practice of harvesting and processing fish to meet customer orders. In essence, producers are able to keep farm inventory in the water. The industry will also offer specialized processing or cuts to meet the needs of specific customers, e.g., a “Costco cut” fillet which has much of the belly flap removed.

As noted in Section 6, there is much less cooperation in the farmed shellfish value chain, mainly due to the small size and fragmented nature of producers.

Increased Role of Trading

Buying and selling already processed seafood, so-called “trading”, is an increasing share of the BC seafood business for several companies such as Ocean Fisheries and Calkins and Burke. (Some of the processed product is imported from Southeast Asian countries such as Thailand.)

7.1.4 Generic Seafood Marketing

BC Seafood Marketing

Limited funds are available for generic marketing of BC seafood.

Commercial salmon fishermen in BC are levied 0.5% of landed value to fund generic marketing activities by the provincial BC Salmon Marketing Council (BCSMC). The Council was established under the Farming and Fishing Industry Development Act in 1991. At one time, the Council had significant extra monies from outside sources, for example, a five year agreement with Western Economic Diversification (WED) for \$3.3 million in matching funds for export and quality improvement programs. The lapsing of these agreements combined with the approximately 75% decline in salmon landed value since the mid-1990s has forced the BCSMC to greatly reduce its scale of operation.

No other BC seafood industry sector has a levy for generic marketing. The Province of BC has sponsored an investigation of the merits of a broad-based generic marketing organization for all seafood in BC (Salmon and Nelson, 2003).

Under the Canadian Agriculture and Food International (CAFI) program, Agriculture and Agri-Food Canada has provided some funds for five-year generic export marketing initiatives for specific products such as herring roe and herring spawn-on-kelp, geoducks, sardines, and wild salmon. (The program requires industry to match funds.)

Alaska Seafood Marketing

Other global seafood producers have more marketing funds.

In Alaska, levies of 1% of salmon ex-vessel value and 0.3% of the value of all seafood species are used to fund the seafood marketing activities of the Alaska Seafood Marketing Institute (ASMI) both in the US and abroad. ASMI also has attracted substantial federal grants in recent years to fund its activities. The federal US Department of Agriculture has also helped the Alaskan industry through purchasing large quantities of canned pink salmon for institutional markets.

Nevertheless, even the Alaskan marketing dollars, which are many times larger than BCSMC funding, are still significantly less than marketing funds by the Norwegian farmed salmon industry and other global seafood producing nations.

7.1.5 Prices Received

Market prices determine prices to harvesters and growers.

Prices received for BC processed seafood, so-called “wholesale prices”, depend on the expected value of these products in the marketplace. Wholesale prices to BC seafood processors in turn affect prices paid to harvesters and growers for raw fish and shellfish material.

The interrelationships among prices at different elements of the value chain are illustrated by Exhibit 25, where the price patterns in Tokyo wholesale markets, to the Alaskan processor, and to the Alaskan fishermen for sockeye mirror one another. The implication is that if value and prices to seafood consumers can be increased, then processors and fishermen would see financial benefits. Exhibit 26 displays BC wholesale prices for selected seafood products from 1982 to 2002.

Salmon

Increased salmon production has resulted in price declines since the 1980s.

Wholesale prices for all capture salmon products – canned, frozen, fresh, smoked, etc. – have decreased significantly since the 1980s. The major reason is the growth of both farmed and capture salmon production (see Exhibit 10, Chapter 3). Total world production of salmon at over 2 million tonnes today is more than triple what it was 20 years ago.

Japan used to be a premium market for frozen whole salmon and set a benchmark price for Canadian sockeye, but farmed salmon, specifically Chilean coho, has made significant inroads. The poor Japanese economy also has affected the price of all salmon imports. As a result of the decline in the Japanese market, both BC and Alaskan producers have been putting larger shares of their sockeye raw material into the can with resulting downward pressure on canned sockeye prices.

Markets for canned salmon, especially pinks, is glutted and prices have decreased.

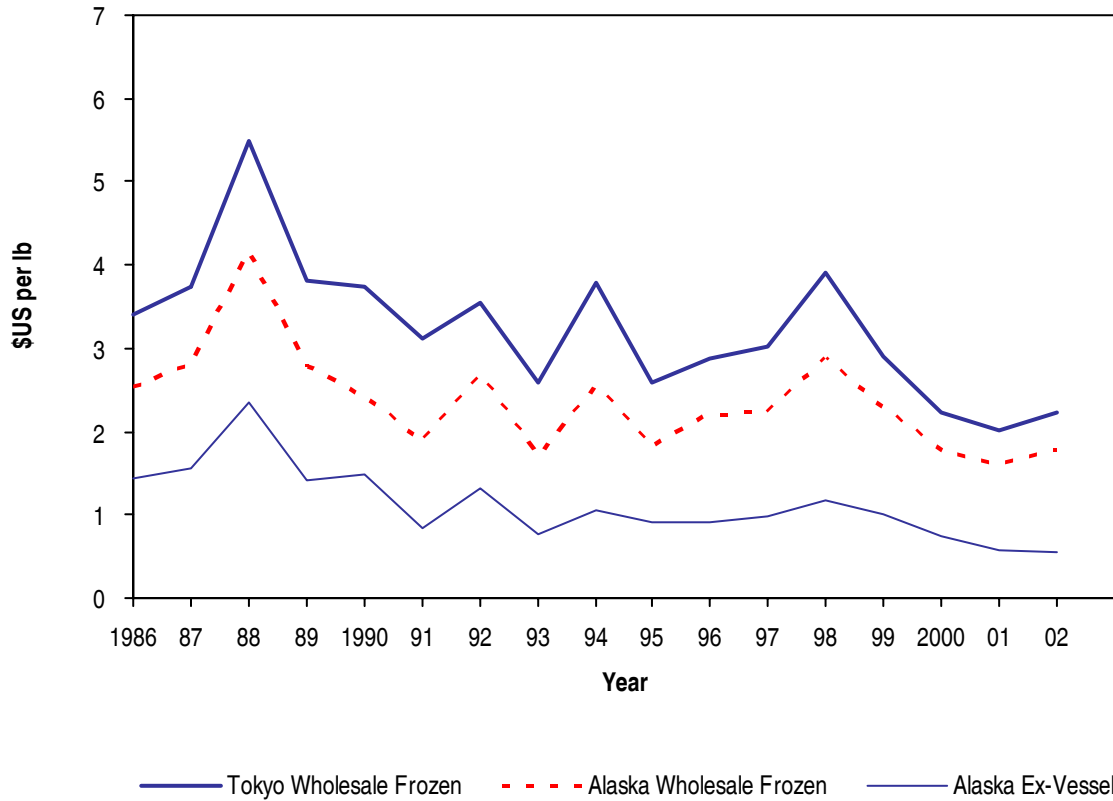
The canned market for pink salmon is very weak. Alaska has produced very large volumes of canned pinks in recent years thereby depressing prices. From the mid-1980s to the mid-1990s, BC seafood processors purchased increasing amounts of Alaskan salmon, mainly pinks, to supply their canning lines. But, in view of the depressed canned salmon market, these same producers have recently curtailed these purchases.

The price of canned pinks in 2002 of \$3.60 per kg product weight (\$78 per 48 lb case) was one-third less than in 1982, without taking inflation into account. And, since canned pinks are a commodity priced in US dollars, prices fell even further in 2003 as the Canadian dollar rose in value.

Previously frozen and farmed salmon are showing up as canned product.

Southeast Asia is producing increasing amounts of canned salmon from previously-frozen salmon. This canned fish sells at a discount compared to cans produced from fresh salmon such as BC produces, but the availability of canned previously-frozen fish drags down the prices and markets for all canned salmon.

Exhibit 25: Alaska Sockeye Salmon Prices



Source: Gunnar Knapp, "Change, Challenges and Opportunities for Wild Fisheries", Presentation to Conference on Marine Aquaculture, Seattle November 2003.

Thailand and other Asian countries are also producing innovative flavoured canned salmon and tuna products. These products are making inroads into Australian and other markets. Recently Chile has started to can farmed salmon. This product compares favourably on price and quality and/or taste with canned pinks from North America. BC producers have been at the forefront in producing skinless, boneless, canned sockeye, a quality niche product that has been well-received in the UK and elsewhere.

Traditionally much of the BC chinook, coho, and chum caught by fishermen was sold as frozen whole fish to Europe for smoking and other value-added products. This market was lost due to the influx of farmed Atlantic salmon from Norway and the United Kingdom, salmon which was perceived to have advantages in consistent supply, quality, and price. However, BC producers report that there is increasing interest in BC wild salmon in Europe over the past year.

Farmed salmon, once a niche product, has become commonplace.

Farmed salmon started as a high priced novel food product serving niche markets. Today, it is a mass market protein. The BC industry in response has been shifting production from whole dressed fish to value-added fillets and portions. Nevertheless, large production increases from Norway and Chile since the year 2000 caused prices in 2002 to be about 30-40% lower than in the late 1990s.

Herring

The herring market in Japan has changed because of consumer preferences and a weak economy.

The herring roe market in Japan has been transformed over the past decade with the decline of the high value year-end gift pack market and the growth of the (cheaper) flavoured or marinated roe market (Johnson and Knapp, 2000). The flavoured product can be produced from lower quality material, such as that from Atlantic herring, but the flavoured market is year-round, growing (especially with young consumers), and more price stable. The Japanese market has also been affected by the influx of low priced herring roe from Russia in recent years. Canadian herring roe sells at a premium over Alaskan herring roe due to better quality that derives in part from the fisheries management system in BC.

BC spawn-on-kelp is also well-recognized in Japan for its quality, but has experienced significant price declines recently. These declines reflect both changes in the Japanese economy and consumer tastes as well as production increases (Edwin Blewett & Associates Inc., 2002).

Groundfish

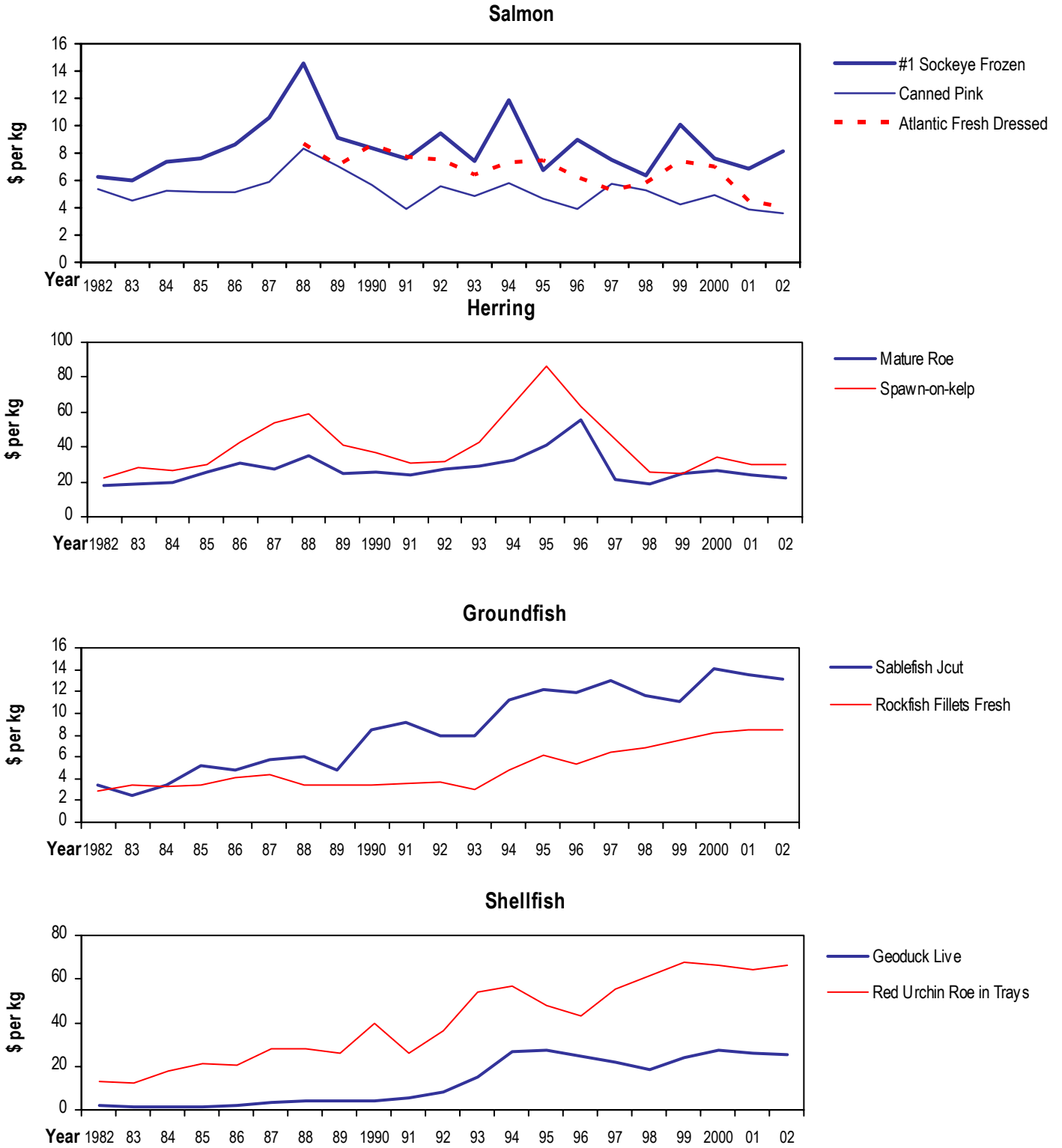
The groundfish market is relatively strong.

The majority of BC soles, rockfish, and Pacific cod are sold as fillets in the Pacific Northwest from BC south to California. The fillet market has been affected by three main developments over the past decade:

- the 1997 IQ groundfish trawl fisheries management program in BC has improved fish quality, allowed processors to schedule deliveries to meet market needs, and directed more fish to the premium fresh market and less to the lower priced frozen market;
- the decline of the Atlantic cod stocks that increased demand for other 'whitefish' seafood products world wide; and
- the weakening of the Canadian dollar against the US dollar that, until this year, increased prices to Canadian exporters for sales denominated in US currency.

As a result, the price of many groundfish fillet products such as rockfish doubled during the 1990s. The strengthening of the Canadian dollar in 2003 has put downward pressure on prices.

Exhibit 26: BC Wholesale Prices for Selected Seafood Products



IQ fisheries have helped to improve product quality and prices.

Sablefish is a specialty product, most of which is exported to Japan as frozen whole head-off Japanese (“J”) cut fish. The price increased steadily through the 1990s after the introduction of the IQ system in 1990. Halibut prices have also increased under the 1991 IQ fisheries management program. Better quality fish delivered over a much longer fishing season has facilitated development of the fresh market.

But, the market for surimi is weak.

Surimi markets worldwide have been hit by a glut of production and resulting soft prices. Consequently, processors including those in BC have been shifting to frozen fillet production from hake. A contributing factor to the price decline has been repercussions from the BSE incidents around the world as many surimi producers use a beef plasma in processing.

A limited but growing market exists for live rockfish, soles, halibut, and other groundfish, a market that pays a significant price premium over traditional dead whole fish.

Shellfish

Prices for geoduck, red sea urchin roe, prawns, and live clams and oysters have increased.

Shellfish prices have been increasing. Geoduck prices have increased ten fold over the past 20 years due to the development of the live market in Hong Kong. Red sea urchin roe has also experienced substantial price increases. However, the negative impact of SARS on prices for BC shellfish sold to Hong Kong and China in 2003 may persist for some time.

Prawn prices have increased due to the development of the frozen whole market in Japan and the live market in the Pacific Northwest. However, prices to BC shrimp processors are depressed due to world oversupply.

Markets for live clams, both wild and farmed, and live farmed oysters appear strong and growing. In particular, many west coast buyers refuse to buy Gulf of Mexico and other southern oysters during the hot summer markets and instead choose BC oysters. Markets for BC shucked oyster meat are flat and the product faces substantial competition from Washington State, a much larger producing region.

7.1.6 Product Quality, Differentiation, and Branding

Product quality from the consumer’s perspective has many different attributes or dimensions (Exhibit 27). Quality is a different attribute than food safety.

BC Generally Has a Good Quality Reputation

BC’s reputation for quality is good but inconsistency can be a problem.

Overall, BC seafood products have a good quality reputation. The reputation was established 20 plus years ago when finfish aquaculture was still in its infancy worldwide, at a time when Alaska was experiencing severe quality problems, and when many nations’ seafood inspection programs were inadequate. Since then, the quality of Alaskan seafood has greatly improved, the quality of so-called “twice-frozen” product has also improved, and food inspection programs around the world have become more stringent. BC still has a quality advantage but the quality gap between BC and its competitors has shrunk. In a real sense, our quality reputation reflects past practices and circumstances.

Some buyers of BC capture seafood note the inconsistent quality of some BC salmon, halibut, and groundfish. The latter two fisheries operate under IQ fisheries management but there is still potential to improve quality through some combination of shorter trips, better on-board handling and icing techniques, and more bleeding of fish onboard.

Exhibit 27: Non-Price Attributes of Seafood

Nutrition

- fat & calories
- protein
- omega 3 oils
- sodium, vitamins, minerals

Value

- appearance & texture
- taste
- colour
- odour
- product form
 - bones in/out
 - skin on/off
 - head on/off
 - ease of preparation
 - “ready to eat”, “ready to cook”
- size
- purity
- composition integrity & flavourings
- shelflife

Packaging

- materials
- labels e.g., best before date
- other information e.g., recipes

Food Safety

- foodborne pathogens
- heavy metals, chemicals
- food additives
- toxins, e.g., PSP
- additives

Process

- sustainability
 - traceability
 - ecolabelling
 - animal welfare
 - plant conditions, worker training
-

Source: Adapted from James L. Anderson “The International Seafood Trade”, CRC Press 2003.

Quality Standards Have Risen

The growth of aquaculture has helped to raise quality standards.

The growth of aquaculture has raised quality expectations in the marketplace thus affecting quality perceptions and standards for BC and other seafood. For example, whole BC farmed salmon is delivered live to the processing plant, bled, slaughtered, processed, graded, and boxed into 50 lb styro containers, and loaded into trucks within 3 hours of slaughter. The fresh whole fish then reaches California markets within 2 days.

In many cases, traditional capture harvesting, handling, processing, and transport techniques are perceived as inadequate relative to aquaculture techniques. For this reason, the capture fishery, such as the Chignik salmon seine fishery in Alaska (Case Study 3 in Section 5), is exploring a new fisheries management business model. Again for this reason, several capture fishery segments are adopting individual quotas or some other form of property rights management.

Branding is Limited

Branding requires consistency of supply, quality, and price..

Branding of BC seafood is limited. Canned salmon sold in the domestic market is branded under such labels as “Gold Seal” and Ocean’s”. Some smoked salmon products are also branded. Stolt Seafarms has its trademarked Sterling brand of farmed Atlantics. BC oysters sold live are branded by producing region such as Fanny Bay, Deep Bay, or Cortes Island.

It is difficult to brand a food product that is not packaged. It is also difficult to brand a product without consistency of supply, quality, and price. This requires strict quality control and grading.

Product Differentiation Quality is Key to Viability

BC is better suited to offering niche seafood products.

With the forces of globalization and improvements in technology, British Columbia is at a severe disadvantage in commodity seafood markets. Commodity seafood markets are international seafood markets that are driven by volume, economies of scale, low production costs, and low prices. This is the production-driven end of the seafood trade.

The other, smaller end of the seafood trade is characterized by high quality, high priced niche seafood products. This market segment is smaller and more regional in nature. It comprises high quality fresh, frozen, live and roe products that command premium prices for premium quality products that meet the needs of particular market segments. This potentially is where the BC seafood advantage lies.

Stiff competition requires new business models and greater cooperation.

At the same time, many seafood nations around the world, given the limited growth potential for capture fishery landings, are attempting to follow this market-driven seafood path. Success will require a new business model and new institutional standards and cooperation so that all elements in the value chain have appropriate quality and price incentives.

7.2 Government Policies and Regulations

Seafood processing falls under provincial jurisdiction.

According to the *Constitution Act* of 1867, provinces have jurisdiction in property and civil rights. Once wild fish and shellfish are caught and landed, they become private property so the buying, processing, and selling of fish therefore falls under the jurisdiction of the Province of British Columbia.

However, under the same act, interprovincial and export trade and food health and safety fall under the jurisdiction of the federal government. Thus, both provincial and federal governments are involved in regulation and licensing of seafood processing and have developed several Memorandum of Understandings (MOUs) to clarify responsibilities.

7.2.1 Licensing

The BC Ministry of Agriculture, Food and Fisheries (MAFF), in cooperation with the federal Department of Fisheries and Oceans (DFO), the Canadian Food Inspection Agency (CFIA), the BC Centre for Disease Control (BCCDC), and the Ministry of Water, Land and Air Protection, licenses all fish processing plants, fish buying stations, fish brokers, and fish vendors. The type of licence required and agencies involved depends on the nature of each specific operation. In BC, the number of licensed fish processing plants, buying stations, and brokers is not limited by regulations.

BC Plant Licensing

All processing plants, buying stations, brokers, and vendors in BC require licences.

A Fish Processing Licence is required by any company or individual processing fish or aquatic plants (fish processing licence costs range from \$1,800 for a large cannery to \$290 for a non-salmon finfish plant). Processors exporting seafood products outside of BC or processing bivalve shellfish or farmed salmon must also have their processing facility registered with the CFIA. Processors are required to submit to MAFF an Annual Fisheries Production Schedule (AFPS) detailing wholesale product volumes and values for the past calendar year.

A separate Fish Buying Station Licence is required for each vessel, vehicle, or shore station used to receive fish directly from a harvester. The one exception is a fish processing facility with a valid Fish Processing Licence; a separate buying licence is not required for collecting fish at that location provided the Fish Processing Licence includes the category of product being received.

A Fish Broker Licence is required by any person or company purchasing fish directly from the fishermen for resale, or acting as an agent on behalf of another individual or company. The Fish Broker Licence differs from the Fish Buying Station Licence which permits an individual to operate a facility where fish are received directly from the fisher.

Seafood safety falls under the jurisdiction of CFIA.

The Canadian Food Inspection Agency (CFIA) is responsible for seafood safety. Rigid standards exist for product safety, processing plant construction (e.g., cement floors and walls), operating practices, and offal disposal and wastewater treatment. The standards are based on HACCP – Hazard Analysis and Critical Control Point – which identifies potential hazards and critical points during seafood handling and processing. Each federally-registered plant must have a Quality Management Program (QMP) with a QMP officer. In British Columbia, all offal must go to reduction plants or compost and all wastewater must be “fine-screened”.

Alaska Plant Licensing

Alaskan processors must also meet licensing and other regulatory requirements.

In Alaska, a fish processor needs three separate licences or permits – a Fisheries Business Licence, a Seafood Processing Permit, and an Intent to Operate Certificate. The Alaska Department of Revenue (ADOR) permit fee for shore-based operations processing more than 2,270 kg or 5,000 lbs per day is \$US 1,290. Alaska also levies a Fisheries Business Tax, from 1% to 5% of ex-vessel catch value, paid by the buyer. Processors must provide surety for the Fisheries Business Tax due at the end of the year, by prepaying the estimated amount, providing lienable real property, or purchasing a performance bond.

Waste disposal requirements are less stringent in Alaska.

The Alaska Department of Environmental Conservation (ADEC) provides a seafood processing permit at a cost of \$US 25 after receiving and approving a variety of authorizations, e.g., wastewater disposal, US Environmental Protection Agency (USEPA) processing waste disposal, facility plans, etc. Few reduction plants operate in Alaska and processors are often able to obtain USEPA approval to dump ground offal at sea either through a pipe or by using barges. In addition, waste treatment requirements are less onerous in Alaska than in BC and waste water is typically not treated before discharge to the environment.

The ADFG requires processors to identify where they intend to operate and what fish they intend to process. Processors/buyers must acquire code plates and fish tickets to record fish purchase transactions. Processors must also submit a Commercial Operators Annual Report no later than April 1 for the previous year's activity. (The report details purchases and processed volumes and final values by species and form.) There is no charge for fulfilling the Intent to Operate requirements.

7.2.2 Quality Assurance Regulations

BC Quality Regulations

No standardized grading exists for BC seafood products.

There is no standardized grading of BC seafood products by third parties, either government or the private sector. Under the federal *Fish Inspection Act*, Fish Inspection Regulations C.R.C. c802 Section 29.

“No person shall mark or label a container of fish with a quality designation or sell a container of fish that is so marked or labelled unless:

- (a) a standard for that quality has been reflected in these regulations; and*
- (b) the fish in that container meets that standard.”*

Currently there are no quality standards or grades in regulation. The implication is that an individual fish processor or the fish processing industry as a whole cannot make a quality claim on product shipments without a change in federal government regulations and without third party verification that the fish meets the quality claim.

Alaska Quality Regulations

Alaska has a voluntary grading program for salmon.

Similar to BC, Alaska has no regulated third party grading of seafood products. However, the private sector recently launched a voluntary third party grading and certification program for Alaska fresh and frozen salmon. The intent is to ultimately extend the program to other products.

Alaska Quality Seafood – Grading for Quality and Value

Alaska Quality Seafood (AQS) established in 2001 as a non-profit division of the Alaska Manufacturer's Association (AMA) provides training and certification of fishermen, tenders, and processors to improve quality and consistency of Alaskan seafood. Participation in the AQS Program is voluntary and has four principles: 1) adoption of rigid handling practices, 2) openly-known product grades ("premium", "choice", "select", and "standard"), 3) third party verification of procedures, handling, quality, and grading, and 4) a marketing program to communicate the value of the "quality seal". Fish must be bled to have a chance of achieving the premium grade but not all bled fish necessarily will achieve the premium grade.

The program certifies both product and participants. Becoming a AQS Certified Processor normally involves a two to three-year certification process. Certified Processors undergo random audits to verify compliance. The Program provides documentary evidence as to product quality and enhances product traceability, features that provide business benefits in marketing, dispute resolution, and other areas.

7.2.3 Regulation of Seafood Packaging Materials

Canadian Packaging Regulations

The safety of all materials used in packaging foods is controlled under Division 23 of the Food and Drugs Act and Regulations Section B 23.0001 of Health Canada. Companies can submit voluntarily to Health Canada an application for a premarket assessment of the chemical safety of a food packaging material, including gas for modified atmosphere packaging (MAP). The application should provide research and/or documentation that the material or additive is safe and that the material will achieve its intended technical effect.

US Packaging Regulations

Ozone is not approved for use in Canada because no company has applied.

The regulations of the US Food and Drug Administration or USFDA mirror those in Canada. In 2001 the USFDA approved the use of ozone as an antimicrobial agent on food, including meat, poultry and seafood. The approval was in response to a petition and documentation filed by the Electric Power Research Institute, Agriculture and Food Technology Alliance.

CFIA reports that no Canadian company has applied to Health Canada with the appropriate research/ documentation for use of ozone in food packaging and for this reason, ozone is not approved for food packaging use in Canada. Washington State producers can use ozonated water to clean oyster meat but BC producers cannot.

7.2.4 Incentive Programs and Subsidies

BC Assistance Programs

There are no specialized assistance programs for BC seafood processors such as grants, low interest loans or tax holidays. Some plants, located in coastal communities, did receive loan guarantees in the late 1990s. The BC government does not fund seafood marketing programs.

As noted earlier, WED no longer provides marketing assistance to BC seafood producers. However, its federal counterpart on the east coast, the Atlantic Canada Opportunities Agency (ACOA), does provide assistance for plant upgrade and other seafood industry endeavours. In addition, provincial governments in Atlantic Canada provide funds that qualify as a matched contribution for the Agriculture and Agrifood Canada's CAFI program.

Alaska Assistance Programs

The major assistance programs in Alaska relate to market support and market development although several plants have received generous grants and/or financing, e.g., a large cold storage facility in Anchorage.

Government market support in Alaska includes:

- up to \$US 20 million in funds under the Alaska Salmon Grants Program to assist in marketing and new product development (this comprises one component of the larger \$US 50 million Fisheries Revitalization Strategy, so-called "disaster relief");
- the federal Market Access Program or MAP, an export development program to simulate demand for a broad array of Alaskan seafood products (ASMI received \$US 2.4 million in 2001); and
- guaranteed purchases of canned pink salmon by the US Department of Agriculture, purchases that have amounted to more than \$US 10 million annually in recent years.

The last program also encourages uneconomic Alaskan production, increased supply, and declining prices in world markets to the detriment of BC producers.

7.2.5 Federal-Provincial Cooperation

Improved federal-provincial cooperation would help in developing new fisheries.

The federal and provincial governments do cooperate on plant licensing and seafood health and safety issues (see Section 7.2). The two levels of government have also cooperated on some seafood product development initiatives such as the dogfish processing initiative for the North Coast and, much earlier, the launch of hake surimi processing operations in Ucluelet and Port Alberni.

However, as noted earlier, seafood business opportunities that the Province supports, related to new and emerging fisheries or fisheries management reform for example, can be stymied by DFO's narrow focus on resource management and conservation issues. The Province and DFO, as well as industry, are cooperating on the federal Agriculture and Agri-Food Canada seafood value chain round table, a comprehensive assessment of competitiveness issues and how to address them in order to improve export performance.

7.2.6 Aboriginal Issues

There is limited aboriginal ownership of processing plants.

Very few processing plants are owned by aboriginal interests. The Kitsoo Band in Klemtu operates a small processing plant (see Case Study in Section 6). The salmon that are caught in-river through Pilot Sales Agreements (PSA), Excess to Salmon Spawning Requirements (ESSR), and Nisga'a Treaty aboriginal commercial fisheries are mainly processed in traditional plants or sold/exported directly.

Much of the ESSR sockeye catch from the Babine Fence on the Skeena River system is custom canned by third parties and sold on world markets but the canned product is of

poor quality. BC processors interviewed during this study asserted that this poor quality product, labelled as a “Product of Canada”, sullies BC’s quality reputation. The processors also noted that such in-river commercial aboriginal fish should be subject to the same catch monitoring and inspection requirements as other fish produced in BC.

Land claims settlements would reduce uncertainty and provide processing opportunities.

The uncertainty surrounding aboriginal land claims tends to temper investment and business planning in the processing sector. If claims were settled, there would be new opportunities for aboriginal and non-aboriginal processing ventures alike. Joint ventures offer the advantage of shared risk sharing and the joint venture partner usually provides industry knowledge, marketing expertise, and business skills which are essential in today’s competitive industry.

7.3 Human Resources

The 182 processing plants active in 2002 vary greatly in employment size. The 84 smallest plants, with an average monthly employment under 10 workers, comprise only 5% of total sector employment. The 38 largest plants, with an average monthly workforce of at least 50, comprise two-thirds of total employment

Employment Size (PYs)	No. of Plants	Employment (PYs)
0-4	60	110
5-9	24	165
10-19	20	255
20-49	40	1,315
50-99	24	1,640
100+	<u>14</u>	<u>2,205</u>
	<u>182</u>	<u>5,690</u>

Source: MAFF processing Plant Employment Survey 2002

7.3.1 Labour Utilization and Wages

In 2002 the labour profile of the BC seafood processing industry was:

	Jobs	Employment (PYs)	Wages & Benefits (\$ millions)
Capture Processing	6,940	4,035	143
Aquaculture Processing	<u>2,160</u>	<u>1,635</u>	<u>59</u>
	<u>9,100</u>	<u>5,690</u>	<u>202</u>

The above figures are based on the processing employment survey conducted by MAFF. The payroll burden on top of base (T4) wages in each of the capture and aquaculture processing sectors was about 25% overall and is included above (including 5% or more for WCB). The average annual wage rate in each sector, including benefits, is about \$35,000.

Seasonality is a characteristic of plants processing capture species.

The capture sector has more seasonal labour and a higher ratio of peak monthly employment to average monthly employment, than does the aquaculture sector. Capture salmon and herring processing is very seasonal. In contrast, farmed salmon plants offer workers year-round employment.

Wages in BC seafood processing plants appear to be 40% or more higher than in east coast plants (Tavel, 2002).

7.3.2 Skilled Labour and Training

Processing workers tend to be older, female, and of a visible minority.

The socio-economic characteristics of the seafood processing workforce are very different than other manufacturing industries, including food manufacturing, in BC. According to the Census of Canada (Tavel, 2002):

- over one-half of the plant workforce is female;
- about one-half of the plant workforce has less than a high school education;
- over one-third of the plant workforce consists visible minorities, primarily aboriginal but also with significant Chinese, Vietnamese, and East Indian components;
- about one-half of the seafood processing jobs are in the Lower Mainland area with most of the remainder in Prince Rupert and on Vancouver Island (almost all aquaculture processing jobs are on Vancouver Island); and
- the plant workforce is older than the workforce of the province as a whole.

Many capture plants have an older workforce because, as a result of reduced salmon landings, they are not hiring new workers. The aquaculture processing workforce is younger than the capture processing workforce.

Skill Requirements and Recruitment

Plants tend to value reliability and hard work rather than specific skills.

There does not appear to be a formal recruitment process for plant workers except for highly specialized jobs such as refrigeration and stationary engineers and accountants. There is little recruitment from technical institutes. Rather, recruitment occurs from the communities at large and from families with a tradition in the industry.

Key attributes sought in recruits are reliability and a good work ethic, rather than specific skills. Most training takes place on-the-job. Production jobs in capture plants tend to be more repetitive than in aquaculture plants.

Some BC farmed salmon processing plants have made concerted efforts at implementing job rotation for production employees e.g., feeding fish to the production line, cutting, washing and grading, and packing fish. This requires that employees be trained in a multitude of job functions. Some plants also have stretching breaks to cut down on injuries and boredom.

BC has a shortage of skilled groundfish filleters.

In the capture sector, groundfish filleting remains one of the few skilled production jobs. There is a shortage of local filleters and plants often recruit workers from Newfoundland. Filleters are paid on a piece rate basis and some filleters work at more than one plant.

Training Available

BC lacks the formalized training culture of other seafood producers.

Most training is on-the-job rather than off-site at institutions. The British Columbia Institute of Technology (BCIT) and Malaspina University College in Nanaimo do offer some courses targeted at the seafood processing sector – the majority of these are at most a week in length.

The National Seafood Sector Council (NSSC) has become an important agent in seafood workforce training, particularly in HACCP, QMP, and some sanitation-related topics. Over the 1998 to 2001 period, a total of 938 individuals participated in NSSC courses (Tavel, 2002). However, formal training is still very limited. As one BC processor commented, “we do HR in this country very badly, most of our investment in training is to avoid liability not to increase productivity and profitability”.

UK Group Training Associations

To ensure that the UK seafood industry has access to the training it requires, the Sea Fish Industry Authority (Seafish) supports a network of industry Group Training Associations (GTAs) that promote, develop and deliver training opportunities within their regions. Launched in the early 1980s, this network has grown to 17 GTAs covering almost the entire country.

Administrative funding comes from the Seafish levy on all first-hand purchases of sea fish, shellfish and sea fish products landed in the UK.

Each GTA is run by an industry management committee drawn from the four sectors of fishing, processing, retailing and food service. Training staff act as the contact point for industry training enquiries and coordinate the delivery of cost-effective training on a variety of topics in their region. Among its other functions, the GTA undertakes regular training needs analyses, establishes close relationships with training providers, accesses external funding support and promotes career opportunities with the industry.

Industry-led GTAs offer a comprehensive, integrated training program across all sectors that seems to meet the needs of both existing workers and new entrants. Secure funding is important to the development of an organization that can provide cost-effective training on an ongoing basis.

Countries such as the UK, Norway, and New Zealand appear to have more formalized and advanced training programs for seafood industry workers than does Canada.

The processing sector needs workers with better skills and education, but younger workers do not view processing as a career.

The BC capture seafood processing sector has a dilemma. On the one hand, it has trouble recruiting young workers because it cannot offer interesting year-round work. Young people do not see seafood processing as a career. On the other hand, it has a high proportion of older workers who have substantial experience and capabilities in existing plant practices but who also have limited ability and inclination to learn and retrain for new job functions. When these older workers retire, there will be immediate job openings that may be difficult to fill, but new recruits offer the potential for a better skilled and educated workforce.

The BC seafood processing workforce needs to reskill in order to assist the transition of the industry to a market-driven business. This will require enhanced skills in quality control and grading, food safety and HACCP, and in traceability procedures that will frame the industry of the future. These in turn require higher education, better technological skills, and the ability to embrace “lifelong learning” practices to adapt to future industry requirements. Attracting such workers requires the ability to provide year-round job opportunities at competitive wages.

7.3.3 Labour and Management Environment

Labour-management relations have improved somewhat in the large unionized plants.

The labour-management environment in BC unionized plants traditionally has been volatile and confrontational. However, the harsh realities of the salmon marketplace in recent years have tempered this animosity to a large degree. There is greater cooperation and understanding of each other's position. The UFAWU, representing workers in several large plants, has agreed to a lower wage scale, in some instances, for processing non-traditional species. The UFAWU and some companies, such as the Canadian Fishing Company, have also signed multi-year agreements.

There is still a substantial division of opinion on job flexibility with plant management wanting individuals to be able to fulfill more than one job function if needed, e.g., to work on a forklift and also on a production line in a single shift, while the union wants to maintain the status quo of rigid job descriptions for each worker. The lack of flexibility can result in a large seafood company such as the Canadian Fishing Company having part of their herring custom processed at a non-union operation.

As noted earlier, farmed salmon plants have this flexibility. In part because they are newer operations, farmed salmon processors do not appear to have significant labour-management issues. This is also true for non-unionized plants in the capture seafood processing sector.

7.4 Investment, Financing and Capital

7.4.1 Investment Levels

Financial information is difficult to obtain as most processing companies are private.

Fish processing companies in BC are typically private rather than public companies. Accordingly, little financial information on investment levels and on return on investment is readily available for the sector. For this study, Statistics Canada was contracted to conduct special financial analysis of selected income statement and balance sheets items from corporation financial statistics for the BC "Seafood Product Preparation and Packaging" sector (NAICS Sector 3117).

The results suggested the 2002 investment base to be \$250 to \$300 million on a net fixed assets basis with industry equity pegged at about a third of this figure.

7.4.2 Viability and Financial Performance

Many processors do not have financial targets for their business. They indicate that the characteristics of the business, especially the salmon and herring business, defy traditional business assessment. Moreover, with the perilous financial state of the industry, their primary concern is not return on investment but rather short term cash flow. Two typical comments are:

- ...we have financial targets but we only achieve them 1 in 5 years.
- You can't form a business plan for the salmon industry today.

We suggest that BC seafood processors need to earn an EBITDA (Earnings Before Interest Taxes Depreciation and Amortization) of 10% of sales. This would translate into a target of 3-5% net income before taxes.

Overall, financial performance is inadequate, particularly for salmon.

The consensus from study interviews is that the overall financial performance of the BC fish processing sector has been inadequate for close to a decade. Wild salmon plants have seen low volumes and soft markets with the result that overhead costs represent a larger share of each sales dollar. In contrast, herring processing returns have been good

since the processing sector can predict the timing, quantity, and quality of herring catches under the pool management system, and since the Japanese market has been relatively stable over the past few years.

	EBITDA		
	1999	2000	2001
BC Seafood Processors	6.9%	6.1%	4.5%
Canadian Seafood Processors	7.6%	7.6%	6.0%
Canadian Food Manufacturers	7.5%	8.2%	8.3%
US Food Manufacturers	14.5%	14.4%	14.9%

Source: *Seafood - Special tabulations by Statistics Canada*
Food - Deloitte & Touche "Benchmarking for Success: Food Processing in Canada 2002"

More predictable volumes help in business planning.

Hake processors indicate that the uncertainty and late announcements by DFO as to fishing plans wrecks havoc with their business plans and bottom line. The recently-signed hake treaty with the US should allow more timely fishing plans. Some specialized groundfish processing plants and farmed salmon processing plants, many of which are custom processors, have fared better due to more predictable volumes throughout the year and higher quality raw material.

Financial performance lags behind other food manufacturing industries in North America.

Available evidence from Statistics Canada and other sources indicates that the financial performance of BC seafood processors lags behind the total seafood processing sector in Canada, and the overall food manufacturing industries in Canada and the US.

7.4.3 Access to Financing and Equity

There is limited financial information on BC seafood processing operations. Most of BC seafood processors are not public companies. Many farmed salmon processors are owned by multinationals that do not produce stand alone financials for BC operations.

Uncertainty limits financing options.

However, the poor financial returns in recent years and the uncertainty related to domestic raw material supply, reflecting regulatory and aboriginal land claims issues, suggest that equity investment is scarce. Financing is dependent on a viable business plan. Constructing such a plan is problematic in light of this uncertainty.

7.4.4 Research and Development (R&D)

Research and development in new products and new production technologies is presently limited. Some advances have been made over the past decade, e.g., essentially all herring roe is extracted or “popped” by machine today, retort pouches for smoked salmon products are common. Skinless boneless canned salmon has met market acceptance. In addition, several new state-of-the-art farmed salmon processing plants have been constructed.

Developing value-added products can be costly.

Past attempts by BC producers to develop and market value-added products other than fillets and portions have generally been unsuccessful. Flavoured canned fish products, frozen fish dinner entrées, specialized dogfish products for the UK market, etc. have been tried. In most cases, the cost increases have exceeded the price increases over traditional products.

In addition, tariff and non-tariff trade barriers make BC processed seafood products such as smoked fish uncompetitive in many international markets (see Section 3.2.2).

7.4.5 Overall Investment Climate

The overall investment climate in BC seafood processing is poor. The capture salmon processing sector has short term cash flow issues and not long term investment and returns as their primary focus. The fact that salmon does not make a contribution to overhead drags down the overall financial performance of these operations.

SARA could significantly reduce sockeye raw material volumes available to BC seafood producers with a resulting erosion of market share and viability in key export markets such as the UK and Japan.

To avoid the risk of carrying large overhead, many seafood processors are using custom processors.

Many seafood processors are avoiding risk and avoiding risk means avoiding fixed costs, such as using custom processors. As a result, custom processors without large fixed overheads and some specialized groundfish processors are faring better.

The strengthening of the Canadian dollar during 2003 has had a major detrimental effect on the processing sector's viability and outlook, especially for several businesses such as groundfish plants heavily dependent on the US market.

All processing industry segments are affected by the uncertainty surrounding aboriginal land claims. Aboriginal issues can critically affect raw material volumes for plant operations. This uncertainty tends to limit major investment.

7.5 Supply Chain Issues and Services

To ensure adequate volumes, BC processors are increasingly sourcing raw material from outside the province.

The major supply chain issue is an adequate supply of raw material for processing. With the downturn in domestic supply from BC sources, specifically for salmon, BC processors are increasingly accessing raw material outside BC. Some plants with canning lines are importing fish from Alaska for processing. Some BC seafood distributors are buying salmon canned in Southeast Asia using frozen raw material, and distributing it under their own trade label. Other specialty producers of value-added smoked products, for example, are importing frozen whole salmon from Norway and Chile to serve their product lines. Herring and halibut are also imported from Alaska for processing in BC.

The introduction of quota management systems during the 1990s in some cases has resulted in new processors rather than existing processors accessing the raw material supply, e.g., SM Products did not exist in the 1980s but is now the largest buyer/processor of halibut in BC.

There do not appear to be any major supply constraints for important goods and services such as cans, packaging materials, and trucking services, to the BC seafood sector.

7.6 Production Monitoring

A condition of the provincial fish processing licence is the completion of the Annual Fisheries Production Schedule (AFPS) at calendar year-end. The AFPS reports wholesale weights and values for a variety of product forms by species. The Ministry of Agriculture, Food & Fisheries (MAFF) publishes the results in their annual 8 page Seafood Year in Review document.

7.7 Industry Liaison and Relationships

There is not a high degree of industry liaison and strategic alliances in the BC seafood sector.

7.7.1 Industry Associations

The BC Seafood Alliance represents a diverse group of seafood industry organizations.

Industry associations for seafood processors are limited. The Fisheries Council of BC (FCBC), the voice of the large capture industry processors, disbanded in the late 1990s. Some ex-FCBC members are members of the Fisheries Council of Canada. There are no industry associations for medium or small sized processors.

As explained in Section 5.7.1, the BC Seafood Alliance, consisting of more than a dozen seafood industry organizations, has the goal of growing the total value of the processed seafood sector and engaging the diverse interests to cooperate in achieving that goal.

7.7.2 Integration and Strategic Alliances

Harvester-processor cooperation is substantial in IQ fisheries, less so in the salmon fishery.

There is substantial cooperation and alliances between fishermen in Individual Quota (IQ) fisheries and their buyers/processors. But the degree of cooperation between harvesters and processors is much less in the competitive salmon capture fishery. In fact, the present management system prevents needed cooperation to a large degree.

There is limited interaction between capture and farmed finfish processing plants although undoubtedly each could learn from one another and benefit from stronger alliances. The major BC salmon farming companies are part of large multinational corporations and hence they have access to marketing and other expertise.

7.7.3 Public Perception

The public awareness of the BC seafood processing industry, as a separate entity from capture harvesting and aquaculture growout operations, is limited.

Public awareness of the seafood processing industry is limited.

The public identifies primarily with the primary production phase of fisheries and aquaculture and their various issues and controversies. Seafood processing alone is relatively anonymous. However, the public perception of capture and aquaculture sectors does significantly affect the fortunes of the processing sector. For example, some farmed salmon processing plants report difficulty recruiting workers due to the public image of aquaculture in the community.