
Challenges and Opportunities of Fisheries Globalization: Perspectives from Canada's Pacific Coast

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Introduction

The Organisation for Economic Cooperation and Development (OECD) Fisheries Committee is tapping into the knowledge and experience of fishing industry participants around the world to gain insights on the effects of fisheries globalization. This paper, offering a perspective from Canada's Pacific coast, is prepared by Stuart Nelson of Nelson Bros Fisheries Ltd on behalf of Fisheries and Oceans Canada for presentation at the OECD/FAO workshop on the challenges and opportunities of globalization in the fisheries sector to be held in April, 2007.

To shed light on how British Columbia's fisheries are variously faring under globalization, three capture fishery case studies are explored: pink salmon, hake (Pacific whiting), and groundfish (trawl). Examination of these fisheries provides sharp contrasts in terms of the nature of underlying fishery resources, fisheries management regimes, and industry responses and financial results under an increasingly globalized business environment.

About Fisheries Globalization

Before commencing an exploration of the case study on Pacific fisheries, a brief encapsulation of fisheries globalization, pertinent to the ensuing analysis, is provided.

Globalization in fisheries is a centuries-old occurrence, a product of the fact that "fisheries resources are not necessarily located in the vicinity of major consumption centres.¹" Though a flow of fish from regions of capture to sites of consumption is historical, "the market has undergone substantial change at a very fast pace in the last two decades. This is caused by numerous factors including the growing importance of the aquaculture sector, cheaper and faster modes of transport, improved marketing, lower market access barriers, more competition, constantly increasing consumer demand for fish and fish products in OECD countries, combined with declining fish stocks, the emergence of new players (especially China) in world fisheries markets as well as technological improvements.²"

The OECD has taken an interest in fisheries globalization, recognizing that the process represents both exciting opportunities, for seafood businesses and seafood consumers, and serious threats, to economically disadvantaged participants and to vulnerable marine resources.

¹ Globalization and the Implications for the OECD Fisheries and Aquaculture Sectors." Aug 30, 2005. AGR/FI(2005)13

² same

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Fisheries globalization creates a market "force" that is drawing fish and fish products to their highest value/lowest cost destinations. "Consequently, the fishing industries in OECD countries today are very internationally focussed, sourcing from all oceans, processing raw material in many countries and trading fish products all over the world."

Taken to its logical conclusion, fisheries globalization will see "trans-border production networks emerge where different elements of the value chain, to varying degrees, take part in the globalization process by using the most profitable location for their activities."³ "In theory, a fully globalized and integrated fisheries economy is characterized by fully transferable (national and international) access rights to fish, no tariffs and trade barriers, no restrictions on foreign direct investments and fisheries services, and no nationality requirements on flags of fishing vessels and fisheries."⁴

The "force" of globalization is (partially) frustrated by domestic regulations intended to encourage local utilization of resources. In some jurisdictions, "domestic operators and fisheries management authorities see the fisheries resources as a national endowment that should only be exploited by their own nationals. This is, however, contrary to the process of "globalization" where market interdependence and liberalization suggests that the best, most cost effective producer with a comparative advantage undertakes the operation."⁵

The spectre that globalization-related demand pressures may negatively impact fish stocks is (hopefully) negated by sound fishery management practices that ensure conservation of seafood resources. However, "during the last decade over exploitation of fish resources has added a further dimension to the globalization process. While consumers in OECD markets have been told that eating fish is healthy, their domestic resources have been dwindling, inter alia, due to poor management. Through necessity, fishing vessels and fish processing companies have been forced to look for raw material further afield."⁶

There are three globalization themes introduced in the above passages, with relevance to the Pacific experience described subsequently:

1. Fisheries globalization, an accelerating phenomenon driven by increasing integration of markets, the growth of aquaculture, and technological advances

³ Globalization and the Implications for the OECD Fisheries and Aquaculture Sectors." Aug 30, 2005. AGR/FI(2005)13

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- (among other factors), brings tremendous economic opportunities and pressures to seafood businesses.
2. While globalization may be seen as an unstoppable force, some jurisdictions use legislation, regulation, policy, or domestic practices to encourage local resource access and utilization. In other words, seafood resources are "protected" from global exploitation in order to serve national socio-economic objectives.
 3. Fisheries globalization may result in unsustainable fishing pressure on stocks that are not properly managed.

The OECD, through work with fishery sectors and governments in member nations, is seeking to encourage the positives of globalization - economic efficiency and enhanced profitability - while mitigating the negatives, such as undue displacement of local participation and over-exploitation of seafood resources.

The balance of this paper presents perspectives on fisheries globalization from Canada's Pacific coast. So that the subject fisheries - pink salmon, hake, and groundfish - can be considered in their proper context, an overview of the British Columbia seafood industry is first provided.

Context - A Recent History the BC Fishing Industry (1970s – mid 1990s)

From the early 1970's through the mid 1990's, the salmon and roe herring sector substantially *comprised* the BC seafood industry, accounting for 85% of landed value in the 1970s. Salmon provided the bulk of harvest volume and revenues, while roe herring was generally a more lucrative fishery, bringing higher margins for fishermen and processors alike.

Key Elements of Salmon/Herring Industry

Highly Seasonal

Salmon are a migratory species, entering BC inshore waters each summer upon their return from the Pacific Ocean to spawn in the stream of their birth. The salmon migration affords a relatively brief harvesting window - the bulk of the fishery occurs between early July and early September.

The roe herring fishery is even shorter in duration than salmon, substantially occurring in as few as five fishing days during the month of March. Because herring are harvested for their roe, fisheries are mounted proximal to spawning grounds immediately preceding (or during) a spawn to maximize roe content.

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Thus, BC's "anchor" fisheries were highly seasonal. This necessitated substantial fleet and processing capacities to handle large bursts of production in a relatively short time. It also implied considerable down-time when assets were substantially un-utilized.

Fishing Fleet

Commercial salmon fishing is prosecuted by three gear types: seine, gillnet, and troll; roe herring is harvested by seines and gillnets. There is considerable overlap in the assets and individuals involved in the two fisheries.

As with inshore fleets in many fishery jurisdictions, the BC salmon and herring fleet was characterized by substantial numbers (about 4500 vessels until the late 1990's), and duelling objectives: economic returns (to investment and labour), and social benefits such as employment and access to Employment Insurance. Salmon and herring fishing was an important socio-economic activity for harvesters living in BC's many remote coastal communities, including First Nations fishers, who comprised about 1/3 of the fleet.

Fleet size and configuration evolved from historical participation levels. Dividing the available catch amongst the sizeable BC fleet meant marginal financial returns on average, though periodic "boom" years raised expectations that an annual income could be earned from a few weeks' work. It was often observed that "too many boats were chasing too few fish," to the possible detriment of both the resource and harvester incomes, but initiatives to bring economic efficiency to the fleet typically faced strong resistance. The tug between social and economic objectives remains unresolved today.

Processing Sector

The processing sector structured around the need to handle the perishable production of thousands of vessels in a short time. The relationship between processors and harvesters has been described as patriarchal, with processors providing much of the infrastructure (fuel, stores, net-lofts, marine repairs, and revolving lines of credit) associated with small vessel operations in remote areas.

The "cannery in every cove" distribution of processing locations gave way to centralization in Vancouver and Prince Rupert (the urban centres at the south and north borders of BC's coast) by the 1980s. Tender vessels ferried the catch from the fishing grounds to the plants. The processing sector was highly concentrated, with a very few firms accounting for the bulk of fish purchases and wholesale receipts in the industry. Processing sector representatives lamented that BC comprised a high cost salmon/herring production environment: both fish prices paid to fishermen and wages paid to shoreworkers were among the highest in the world.

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The salmon/herring business is aptly described in the following quote from a 1979 OECD Report on Fisheries: "at the best of times uncertainty is an inescapable feature of the fishing industry from the opening action of dipping in to the sea to harvest its raw material until exposing the product for sale to an often incalculable demand on an uncontrolled market." This speaks of a speculative business, one with high reliance on factors beyond the control of producers, such as commodity market prices, currency exchange rates, and interest rates. To play the salmon/herring game was to roll the dice and trust that circumstances would align favourably. Sometimes they did, and sometimes they didn't. On average, returns to the BC processing sector were less than those earned in more conventional industries. Long term participation required patient, well-capitalized shareholders willing and able to endure a number of lean years in order to reap occasional windfalls.

Markets

The local (Greater Vancouver) market is minuscule, and Canadians, though voracious consumers of canned salmon, consume less than half of BC's canned salmon production. Japan is the only outlet for herring roe. Thus, the BC seafood industry has always exported the bulk of its seafood production.

Canned and frozen salmon (headed and gutted) were the primary product forms. The UK and ANZA were the primary export canned markets, with Europe and Japan the main frozen markets.

Throughout much of the period, frozen sockeye and herring roe were the most lucrative items in the BC seafood product mix; a high level of dependency on the Japanese economy and market had developed.

Vertical Integration/Value Chain

The BC seafood industry featured a high degree of vertical integration. Its two largest firms, accounting for about 60% of the BC salmon catch, were owned by parent companies whose primary business was retailing food. Canned salmon was thus kept "in-house" from capture until placement on retail shelves⁷.

Fishermen, typically, had little participation in the value chain other than delivering their catch to a processing company, and trusting that a fair and competitive price would be paid. They had little access to, or interest in, market information. Competition

⁷ in practice, the fishing companies and retail outlets were autonomous businesses operating under an umbrella corporate structure.

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amongst fish buyers was the mechanism that fishermen believed ensured them a fair portion of the market value of end-products.

Globalization During the Period

As an exporting industry, the BC seafood industry has always been deeply affected by events occurring outside the Canadian border. A relatively few variables exerted a large impact on financial results:

- *Exchange rates* - fluctuating rates strongly influenced marketability of product and prices realized in Canadian dollar terms.
- *Interest rates* - with the salmon pack put-up in a couple of months but sold throughout the year, financing requirements were substantial. Interest rate levels were determined by global economic conditions, and had a major impact on annual financing costs (and profitability).
- *Alaskan salmon production* - as the major supplier in the world salmon market, the level of Alaskan salmon harvests had a direct effect on export price levels - low production meant firmer prices, high production meant softer prices.
- *Strength of national economies* - the varying fortunes of economies in key markets had a substantial influence on the attractiveness (pricing, sales volume) of Canadian seafood products.

Collectively, these four factors - all entirely beyond the control of the BC industry - had a huge bearing on the success or failure of BC fishing enterprises. Recognition of the role of luck caused at least one BC participant to humbly observe that: "our good fortune is usually a result of someone else's bad fortune;" and "when we succeed... it's often in spite of ourselves!"

Regulatory Environment

Fishery Management

Fisheries and Oceans Canada (DFO) is responsible for management of marine fisheries in BC. By and large, DFO has managed BC's commercial fisheries conservatively, preserving generally healthy stock conditions. Of course, there is significant variability in fish abundance from year to year related to ocean conditions, natural cyclicality, habitat, and fishing pressure. Salmon populations are particularly volatile.

In managing BC's fisheries, DFO has always sought a balance between ensuring conservation of stocks, while allowing for reasonable economic opportunities. Over time, advances in fishing technology led to enhanced catching power and efficiency of the fleet. The traditional fishery management toolkit allowed few alternatives other than: shorter openings, smaller fishing areas, and limits on effort (gear specifications, size of vessels, number of vessels). Actions of this nature by DFO were inevitably greeted by further innovations by the fleet to ensure that as much fish as ever (if not more) could

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be caught under the new, restrictive, conditions. Restrictions had the unintended effect of *fuelling* fishing pressure rather than *curbing* it.

By the mid-1990s it was evident that in the salmon/herring sector, the very core of the industry, neither conservation nor economic objectives were being met, and that reform was needed.

Provincial Regulation

The provincial government regulates the buying and processing of the seafood harvest. In the late 1970's two key developments caused the Province to review its policy role with respect to the fishery. First, the extension of the EEZ to 200 miles in 1977 meant that BC fleets would have virtually unimpeded access to the Pacific coast's marine resources. Second, Japanese seafood firms, in order to secure supplies of raw material (mostly sockeye salmon and roe herring) began to invest in the BC seafood processing sector.

This combination of an opportunity to "Canadianize" the fishery, along with the perceived threat that foreign ownership in the processing sector could pose to a Canadianized industry, influenced the Provincial government to re-enforce its policy direction that:

- BC marine resources should to the greatest extent be harvested by the BC fishing fleet.
- The BC marine harvest should to the greatest extent be processed by the BC-based processing sector.
- That the harvest would be largely processed ashore, with processing at sea extremely limited.
- That export of un-processed fish (from fishing vessels or tenders) be tightly restricted.

The Pacific coast marine fisheries were thus viewed by the Province as supporting employment and economic activity within BC.

The Province's stance to encourage a "made-in-BC" fish buying and processing sector comprised a competitive shield of sorts for the Canadian shore-based industry, allowing it to develop somewhat sheltered from undue foreign or at-sea competition for resources.

Fully/Over Subscribed Resources

Both the salmon and herring resources in BC have long been "fully subscribed" with the total demands of users and would-be users greater than the available abundance of fish.

These key fish stocks, but particularly salmon, face strong demand from both First Nations (for commercial and food/ceremonial purposes), and from the recreational

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sector (both sport-fishermen and charter/lodge operators). First Nations and the recreational sector have received escalating allocations - and heightened allocation priority - over time, at the expense of the commercial sector.

The public-at-large is also a major stakeholder in salmon - the salmon resource is viewed as an endowment to be protected and preserved. Salmon are embedded in the culture and values of British Columbians (or so the media reports). The public takes solace when salmon stocks are healthy, and express outrage when they are in distress. They expect that salmon can support healthy aboriginal, recreational, and commercial fisheries, but are intolerant if high catch levels are perceived to compromise conservation levels. Given the incredible complexity of salmon - the high number of natural and man-made variables influencing their abundance - the public can never really grasp the overall health of salmon stocks at a point in time.

Thus, the demands placed on salmon, and the governments charged with managing them, are impossible to meet: every user demanding more salmon, concurrent with heightened conservation and protection measures. Over-subscription is yet another reason why considerations other than economics apply to commercial fishery management.

Secondary Fisheries

During the 1970s and 1980s, BC's fisheries excluding salmon and roe herring were small scale and slowly developing. These fisheries tended to be conducted by the salmon/herring sector as "sidelines" - as ways of stretching the fishing season - or by very small fishing operations and processing firms comprising the "fringe" of the industry.

The groundfish trawl fishery was probably the most common "diversification" fishery practiced by the major players in the seafood industry. As a year-round, relatively high volume fishery, groundfish was attractive in terms of asset utilization - deploying vessels, plants, and employees that were otherwise idle for much of the year - and a means of absorbing a portion of annual overheads. Major seafood processors were ambivalent about the groundfish trawl fishery. A common sentiment: "absorbing overheads is a polite way of saying we're losing money." One company leader (whose firm is now a major presence in the renewed groundfish trawl industry) said, "I spent a large part of my career trying to get out of the groundfish business."

Summary of the Salmon/Herring Era

This encapsulation describes the state of the BC seafood industry preceding an onset of globalization factors in the early-mid 1990s. The BC seafood industry was dominated by

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salmon and herring, both highly seasonal fisheries. Capacities in the industry were geared to peak production, meaning full utilization was achieved only a few days per year, and over (or idle) capacity was the norm.

The fishing industry was a major employer in BC's coastal communities and amongst First Nations. Both DFO and the Province considered social objectives - provision of resource access to competing users and employment opportunities to BC residents - when managing and regulating the fishery. Economic efficiency was rarely an explicit objective of policy. The industry, faced with high wages and raw material costs, was a chronic "high cost producer."

Despite taking a rather insular view of resource utilization, BC was an exporter of fish products, reliant on access to foreign commodity markets for the bulk of sales.

Under a traditional business environment, and using a speculative business model, the BC seafood industry generated financial results that were volatile, but generally acceptable (as long as the measurement goalposts weren't too high). Under a traditional business environment, the speculative game played by the BC industry made sense, but the industry, lacking internal efficiency, was vulnerable.

Indeed, the business environment was poised for fundamental change, and the prevailing structure of the BC seafood industry was soon to be over-turned.

The "Onslaught" of Globalization

Beginning in 1990, when farmed salmon first made inroads into wild salmon markets, a succession of events, many of them falling under the globalization category, conspired to undermine the fragile salmon/herring sector that had dominated the BC seafood industry.

Globalization – More Variables

Over the course of the 90s and early 2000s, the litany of external variables impacting the BC seafood industry along the value chain grew to include (but was not limited to):

Global Economic Conditions

- The bursting of the Japanese bubble economy, meaning downward pressure on prices for luxury fishery products like sockeye salmon and herring roe.
- Strengthening of the Canadian dollar against the US dollar (from \$0.62 in 2003 to \$0.90 in 2006) means lower effective prices for BC seafood exporters in most global markets.
- Rising fuel prices impacting harvesting costs.
- Reductions in tariffs of seafood products.

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- A Japanese scandal concerning corporate gift-giving (bribery), that ravaged the market for high-end roe herring gift-packs (the mainstay of the BC industry).
- Consolidation of seafood distribution - fewer wholesalers and retailers, each with greater clout.

Global Fish Production

- The dramatic growth of farmed salmon (in Norway, Scotland, Chile, and Canada), from alternative to wild, to the pre-eminent product form. Farmed salmon first crimped wild salmon prices, then displaced wild salmon from traditional markets like Europe and Japan. Farmed salmon also stimulated new demand for fresh salmon in the USA market, and conditioned consumers to expect consistency and quality from salmon products.
- Development of other finfish aquaculture species, such as basa and tilapia, increasing the array of high quality seafood alternatives for consumers.
- Record wild salmon production levels in Alaska, Russia, and Japan, even as BC production levels slumped.
- Collapse of cod fisheries in the Atlantic.
- Collapse of groundfish fisheries in the west coast of the United States.
- Development of the Alaskan pollock fishery into the largest volume fishery in the world.

Global Political Events & Rise of Developing Countries

- With the fall of the Soviet Union, Russian wild salmon was no longer restricted to domestic consumption, but was offered on global markets.
- The end of apartheid in South Africa, allowing that country access to foreign markets (eg hake).
- The emergence of China, Russia, Thailand, and other developing countries as low-cost re-processing centres, especially for value-added products.

Shifting Consumer Preferences

- Increasing per capita consumption of seafood in OECD countries.
- A burgeoning consumer concern about the sustainability of wild fish harvests, and awareness of supporting only sustainable fisheries. The growth of "eco-labelling." The establishment of the Marine Stewardship Council as one body providing a "seal of sustainability."
- A consumer awareness - preference in some cases - about "wild" vs. "farmed" seafood... providing the wild fishery is sustainable.
- Consumer acceptance of twice-frozen fish products.
- Traceability - tracking the catch from "boat to throat" as a stringent health and safety requirement.

Globalization – A New “Game”

For the BC seafood industry, the process of globalization meant more business variables, more complexity, and more competition. It meant that the advantages brought by access to local stocks were diminished; seafood players could access raw material, purchase

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processing services, and source finished product from anywhere in the world. Proximity to resources and fixed assets were no longer prerequisite to participation in the seafood business; a mere "cell phone" equipped a knowledgeable seafood participant to "play the game".

Globalization placed greater emphasis on efficiency and adaptability. It meant daunting new challenges and exiting opportunities for the seafood industry.

At the same time, other factors were combining with globalization to shape the BC seafood sector:

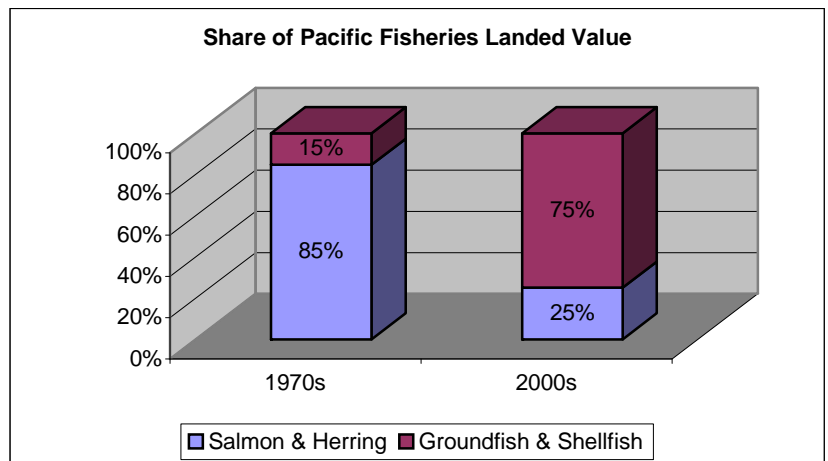
- Anomalous ocean conditions (for example frequent El Nino events) were having negative impacts on salmon ocean survival and recruitment of herring and groundfish stocks.
- DFO fishery management was becoming increasingly precautionary, with conflicts between conservation and economic objectives resolved increasingly in favour of conservation.

Impact on BC Fisheries

Globalization, combined with shifting ocean conditions and evolving fishery management philosophy, has created challenges effectively crippling the salmon/herring sector. Yet, over the same period, this very business and resource environment has provided opportunities allowing other Pacific fisheries – specifically groundfish and shellfish – to grow and flourish.

Groundfish comprises four distinct fisheries⁸: groundfish trawl, sablefish (also known as blackcod), halibut, and hook and line (rockfish, lingcod, and dogfish). The groundfish trawl fishery includes two of the subject fisheries for this study, hake and bottomfish. Shellfish includes shrimp, prawn, crab, sea urchins, geoduck, and sea cucumber.

The adjacent chart shows the dramatic reversal of fortunes that has occurred in the last 15 years. The "core" and "secondary" sectors of the BC fishing industry have virtually reversed themselves in terms of relative stature.



⁸ The fisheries are distinct in terms of licensing structure and fishery management; in reality, there is significant overlap in terms of species encountered and harvested.

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The values underlying these percentages confirm the extent of the diminution of the salmon industry and the startling pace of growth in the groundfish and shellfish sectors⁹.

The salmon sector, unable to cope with the pace and scope of change facing it, has withered.

<i>Average Annual Landed Value (\$millions)</i>					
Period	Salmon	Herring	Groundfish	Shellfish	Total
70's	99	35	19	5	158
80's	199	53	50	21	322
90's	146	55	112	86	398
00's	47	36	132	116	331

A substantial fleet rationalization program (\$285 million government funded licence buyback) reduced the eligible licences by 50% over the period 1996 to 2000, but failed to restore viability. Acrimonious relations between stakeholders - including the commercial and recreational sectors, First Nations, and DFO - preclude meaningful reform. The commercial salmon industry has lost a great deal of its former infrastructure, as exit and cost-cutting became necessary responses to tumbling revenues.

The groundfish and shellfish sectors, by contrast, have featured many successes. Part of the success is attributable to BC's endowment of species that are in strong demand in global markets: sablefish and prawns in Japan, geoducks in China, fresh groundfish fillets in the USA, and Dungeness crab throughout the world. Much of the success is because these BC participants have positioned themselves to benefit from opportunities presented by globalization, while weathering its challenges.

Current State of the BC Seafood Industry

The transformation in the BC seafood industry described above - the decline of the industrial-scale salmon/herring sector concurrent with the proliferation of a multitude of groundfish and shellfish businesses - has been accompanied by fundamental changes in business structure and philosophy.

The processing sector, once dominated by four or five firms and united under the "Fisheries Council of BC" banner, is now less concentrated, more specialized, and highly fractured, with each firm pursuing its path independently. Companies avoid the undue risk and high capital requirements of a speculative business model, opting instead for a strategy that promises positive cash flows. The (painful) lessons of the salmon demise have been well-learned: overhead, debt, inventories, and surplus assets are to be avoided. On the positive side, firms are far more responsive to changing market and resource circumstances. On the negative side, access to capital is limited, as is the

⁹ Values are not adjusted for inflation.

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appetite to invest heavily in the business. This means that the bulk of production remains in commodity form, with value-adding initiatives in the minority.

Industry leadership has migrated from the processing sector to the harvesting sector. Most fisheries are organized into harvesting associations, and most harvesting associations work together in the "BC Seafood Alliance" (salmon is the notable exception). The BC Seafood Alliance strives toward forging effective partnerships with government and improving resource access security for harvesters. Fishermen, through harvesting associations, are now immersed in broad industry issues, and more knowledgeable about markets.

Where large processing companies once possessed the majority of fixed assets and expert personnel in the industry, these assets are now dispersed amongst more, smaller processors and a host of service-providers. Custom processors, un-loaders, truckers, and sales brokers abound. The preference for performing all functions "in-house" has been replaced by the practicality of extensive outsourcing. This allows participants to "play the game" without owning a surfeit of assets. A value-chain approach is becoming commonplace, whereby harvesters, custom processors, and brokers coordinate the handling and disposition of the catch, dividing the proceeds according to an agreed-upon formula. A small but increasing number of fishermen market their own harvest, either through public sales floats or direct sales to retailers/restaurants.

Whether the transformation seen in the BC seafood industry in recent years is an improvement or a digression, in terms of ability to cope with a rapidly changing competitive environment, is moot. What is clear is that the impacts of globalization on the BC seafood sector, given historical industry structure, the regulatory regime, and the resource situation, have been *enormous*.

The balance of this paper looks at current performance and future prospects for the three subject fisheries: pink salmon, hake, and bottomfish.

Profile of Subject Fisheries

Following are profiles of the three subject fisheries, providing indications of the scope of each fishery, a summation of its economic stature (past and present) in the BC fishery, an evaluation of the prevailing fishery management program, and an encapsulation of the resource situation.

Pink Salmon

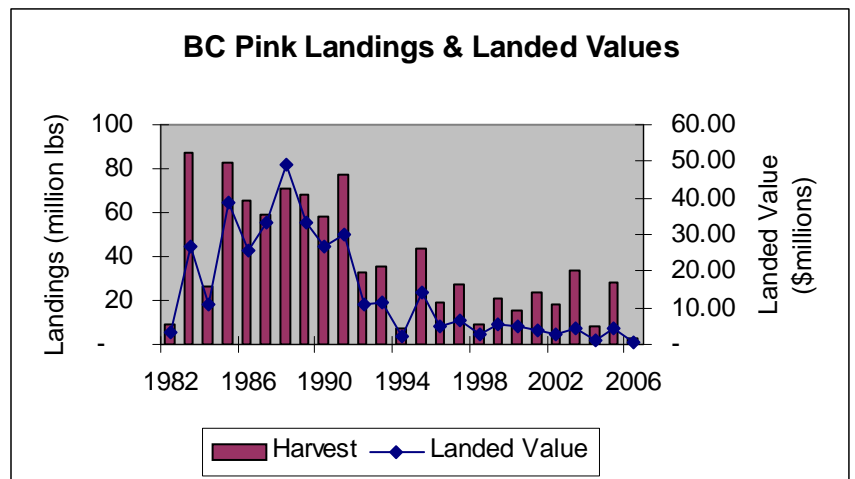
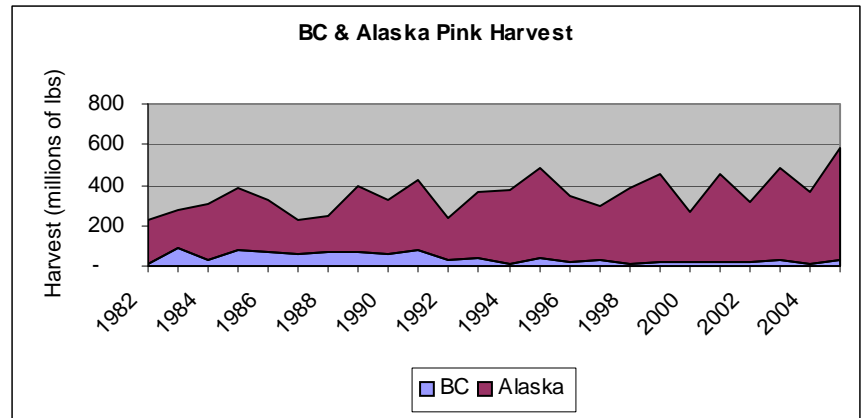
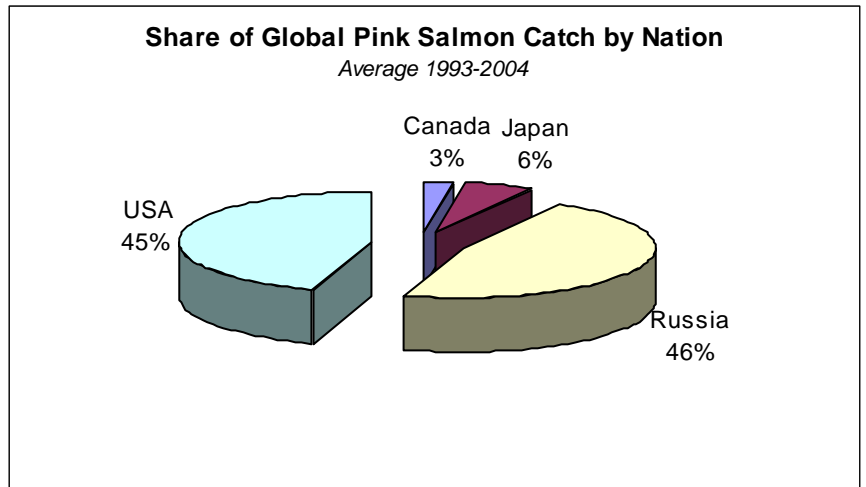
Catch Levels and Values

Pink salmon is the most abundant and least valuable of the Pacific salmon species. Although pinks are BC's most numerous species, BC is a very minor player in the global scheme, averaging only 3% of world supply.

As with many fisheries, BC's direct competitor is Alaska, though in the case of pink salmon, BC poses little true competition to its neighbour. Alaskan catches have been consistently rising, while BC catch levels are in decline (indeed, they appear to have "flat-lined" in the adjacent graph). Reductions in BC pink harvests are attributable to three factors:

- Reduced resource abundance, particularly in north and central coast stocks. Extreme variability is a naturally occurring pink salmon attribute.
- Precautionary fishery management, meaning fewer harvesting opportunities.
- Industry not fully exploiting available pink harvest because of economic constraints.

The adjacent graph demonstrates the magnitude of the reduction in catch volume and value of the BC pink harvest over time. The decline in landed value is steeper than the drop in landings, indicating



that both volumes *and* prices have fallen.

Economic Overview

Historically, pinks accounted for about 30% of the BC salmon harvest (by volume) and 10% of the landed value. Virtually all of the catch was canned, with ½ pound cans on export markets the primary product form/market. In general, pinks made a more important contribution to processor's bottom-lines than to harvester's - modest raw material prices and generally firm markets meant attractive margins. Pink salmon were a very quiet but important contributor to BC processing firms' financial health.

BC processors have always drawn from the generous supply of nearby Alaskan pink salmon to bolster domestic supply when needed¹⁰. With the current level of BC landings at less than 1/3 of historic levels, Alaska is now the primary pink salmon source for BC processors, who cannot count on the local supply to serve their markets.

The stature of BC-caught pinks has digressed from that of an important contributor (a backbone, even) to the processing sector, to a purely opportunistic activity around which salmon participants cannot even plan. Annual wholesale receipts of BC canned pink salmon averaged about \$100 million in the 1980s, compared to just a few million dollars currently¹¹. The decline of the pink salmon business played a large role in the demise of the BC salmon industry.

Fishery Management

Pinks are managed along with other salmon species under a "derby" system. Despite programs to reduce the fleet and mitigate fishing pressure, such as a government funded licence buyback and area licensing, the capacity of the fleet is still excessive when compared to the magnitude of fishing opportunities. Over time, DFO has become increasingly precautionary in its commercial salmon management approach, while other user groups (First Nations and recreational sector) have gained allocation priority over the commercial sector. The pace of First Nations Treaty negotiations is accelerating in BC, and access rights to salmon are a form of settlement currency. Thus, the security of access to the resource perceived by licence holders is tenuous.

Commercial fishing opportunities are few and sporadic when compared to the past. The mixed-stock fishery of old (where a host of co-migrating stocks were targeted) is being

¹⁰ BC can import round pinks from Alaskan tender vessels so long as Alaskan plants are operating at capacity, which is usually the case. BC processors are generally comfortable with their level of access to Alaskan pink salmon.

¹¹ estimates

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replaced by increasingly discrete management. Opportunities to harvest abundant species are routinely forgone to preserve co-mingling weak stocks.

Sockeye, coho, and chinook are the most valuable species in BC, and also the species that are in highest demand from users in all sectors. These species have a much higher profile than lowly pinks. A spawning shortfall in an important sockeye system may spark a frenzy of public outrage, while a similar event for a pink stream would likely go unnoticed. Pink salmon management, then, is perhaps more passive than that for other stocks, and pink harvesting opportunities are at times subordinated to those for more prized species.

The state of fishery management in the salmon fishery is a source of friction within industry and between industry and DFO. The fishery management system results in a pink salmon fishery that:

- Is virtually unpredictable, with openings often announced on short notice.
- Results in few, brief openings, with the bulk of a season's catch landed in a very few days.
- Motivates participants to focus on volume rather than quality.
- Precludes the fleet from accessing all available surpluses.

Initiatives to reform the fishery, to restore a more orderly and quality-driven harvest, have thus far been fruitless. The BC salmon sector has been unable to devise a system that addresses conservation concerns, economic realities, and social objectives. Most salmon industry participants agree that the system is broken... but so far, they have been unable to fix it.

Resource Status & Outlook

Shifting ocean conditions and other, poorly understood, environmental conditions have caused overall pink salmon abundance to decline in BC, though the state of pink stocks is not as dire as the reduction in catch levels indicates. It is not known whether reductions are transitory in nature - part of a long-term productivity cycle - or permanent. BC, especially the south coast, is perilously close to the southern end of the range of pink salmon in the north Pacific Ocean.

Even at current abundance levels, BC pink salmon stocks have the potential to support higher catch levels and more meaningful business activity.

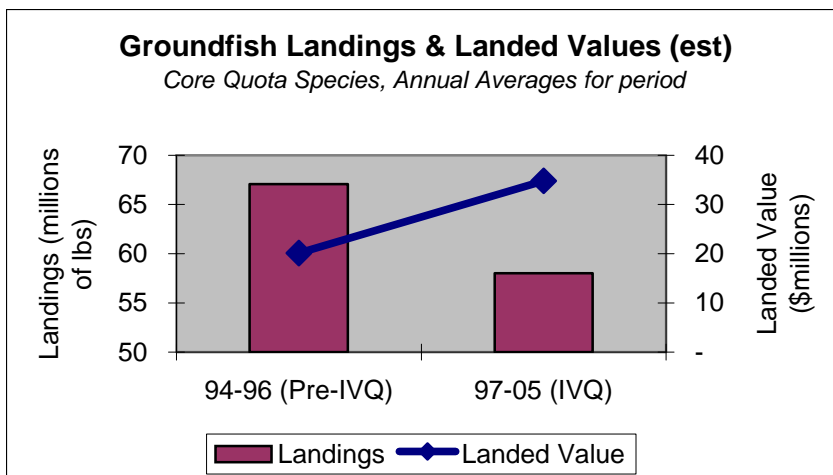
Groundfish Trawl

Catch Levels and Values

The BC groundfish trawl is a year-round fishery harvesting a suite of bottom-dwelling species. This includes a “core” group of species dominated by rockfish and soles (a variety of species) and including lingcod and Pacific cod; and a group of “developing” species, for which utilization is steadily growing, including turbot (arrowtooth flounder) pollock, and dogfish.

This is a year-round fishery that, when compared to pink salmon and hake, offers stable harvesting and market-service opportunities.

The groundfish trawl fishery has operated under an Individual Vessel Quota (IVQ) management program since 1997. Under the program, the catch levels for core species have declined (because catch quotas are no longer exceeded) and catch values (both in per-pound and total terms) have risen. Greater value is being derived from less fish (see adjacent graph).



Economic Overview

Groundfish trawl was a high-volume, low value fishery for many years. The fishery appealed to salmon processors and “big-boat” fishermen as an opportunity to extend asset utilization and amortize fixed costs over a greater production base. The fishery produced frozen fillet blocks at a time when Atlantic cod and lower-48 Pacific groundfish catches were still prolific. BC enjoyed few competitive advantages, and results were marginal.

As groundfish stocks in other jurisdictions were fished to decline, market opportunities improved for BC groundfish. Hard times in the salmon fishery meant greater interest in groundfish. Pressure on groundfish stocks escalated, and a passive fishery management approach was no longer appropriate. A series of increasingly restrictive rules, including periodic trip and species limits, were met with even greater fishing pressure,

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misreporting of catches, and at-sea discarding. The ranks of participants, both vessels and processors, were swelling. The impacts of fishing on the plethora of groundfish stocks were unknown. Thus, DFO took the bold step of closing the fishery. It opened, months later, under an entirely new and unique management system.

The BC groundfish trawl sector is now the preferred supplier of fresh fillets to western USA markets (also known as the "I-5 corridor," for the name of the interstate highway linking Vancouver and California's urban centres).

Given that it is operating comfortably under DFO's precautionary management mandate, it is clear that the groundfish trawl fishery is meeting conservation objectives. Together with the hake fishery, groundfish trawl is not only BC's highest volume fishery, but it is also the highest landed value fishery in BC.

The bottomfish fishery has progressed admirably from its former "marginal" status.

Fishery Management

In the groundfish trawl fishery an individual transferable quota system was implemented in 1997. Prior to that year, groundfish trawl was a derby fishery that combined over-exploitation of the resource and un-even economic results: too many vessels racing for their share of the catch, gluts of fish followed by droughts, and a high percentage of money-losing frozen production. The situation culminated in DFO closing the fishery on conservation grounds in 1996 until industry agreed upon a new system.

The ITQ system¹², crafted by a variety of interests in the groundfish trawl fishery including vessel owners, processors, union reps, coastal communities, the Provincial government, and DFO, sought to ensure achievement of conservation objectives, allow for economic growth, and encourage a fair distribution of economic benefits. This is a unique ITQ system embedded with safeguards in an attempt to "engineer" a groundfish trawl sector that meets the broad and diverse objectives of all stakeholders. These safeguards include quota holdings caps, species caps, curbs on quota transfers, sanctions for vessel owners improperly treating their crews, and incentives (additional quota) for business practices consistent with defined social objectives. Some stakeholders lobbied (and now long for) a more "laissez-faire" plan, while others strove for (and continue to desire) stricter controls on concentration of quota, quota leasing, and accumulation of quota by "armchair" fishermen.

¹² The management system is formally known as the Individual Vessel Quota/Groundfish Development Authority Plan (IVQ/GDA).

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While no one admits to being completely happy, it is a compromise plan that all interests can live with. Though it contains curbs on free enterprise, the Plan paved the way for an orderly harvest, meaningful business planning, and improved responsiveness to markets.

The IVQ/GDA plan is extremely complex, with each vessel endowed with about 50 different quotas (combining about 20 species and five management areas). Because the plan allows vessels to carry over un-caught quota to the following season¹³, few if any of the 50 TACs are reached each year.

Fishermen are individually accountable for adhering to each of the 50-odd quotas. Some quotas are generous (target species) while others are small, amounting to a bycatch allowance. If a fisherman exceeds his quota for any species in any area, he is prohibited from bottom fishing in that area until the quota shortfall has been remedied (through quota transfer from another vessel). To ensure compliance, the fishery features 100% at-sea observer coverage, and 100% offload validation. All catch - whether retained or released - is accounted for.

Groundfish trawl licence holders contribute key advice to fishery managers, and contribute financially to (and co-manage) the research and stock assessment program. Given the stringent conservation measures in the plan, and the high costs borne by the fleet (at-sea observers, offload monitors, research and stock assessment, co-management) the BC groundfish trawl fishery proudly claims to be the best-managed trawl fishery in the world.

Given the complexity of the plan, the socio-economic compromises that it contains, the high degree of monitoring it requires, and the high cost to harvesters it brings, the plan was met, upon implementation, with scepticism and doubt. Participants surprised themselves with their adaptability.

Fishing under the new plan has been transformed. To harvest effectively under a multi-quota plan with full individual accountability requires avoiding non-target species for which quotas are slight and metering out the catch over the season. Selectivity and avoidance are keywords in the fishery. The change in fishing culture is startling. Dragners once boasted of how they loaded the boat in record time, of how they out-produced their comrades. Skippers were chosen for their ability to *produce*. Now, trawl fishermen brag about how "clean" they can fish. Captains are favoured for their knack of *avoiding* certain species of fish. Fishermen cooperate, rather than compete, on the fishing grounds. "Don't set your gear there, Bob... there's a big school of shorttraker rockfish!"

¹³ Up to 30% can be carried forward

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As a counterpoint to the fishery's accomplishments, conservation groups persistently note that the BC groundfish trawl fishery still has room for improvement, particularly with respect to bottom impacts and catch utilization.

Resource Status and Outlook

Many of the groundfish stocks targeted in the bottomfish fishery, such as rockfish and lingcod, are long-lived and relatively sedentary. Fluctuations in population tend to occur over a long period of time. Providing fishing pressure is appropriate, and ocean conditions allow for reasonable survival and periodic strong recruitment, stocks remain quite stable. Indeed, for most species, stock levels and catches have been very stable over the past 10 years.

Other species, most notably Pacific cod, are shorter lived, and abundance is highly variable. For such species, DFO applies its precautionary approach when setting catch levels to mitigate the impact of fishing on year-to-year abundance.

The IVQ/GDA management plan provides stock assessment scientists with a full picture of groundfish removals (including catches and releases) and a large number of biological samples. The task of performing regular stock assessments for the full suite of species is daunting, so research is performed according to priorities jointly established between DFO and industry.

The current scope and nature of the fishery strikes a pleasing balance for industry and DFO, aligning catch levels with both ecological and market objectives. Subject to the good graces of ocean conditions, the outlook for groundfish stocks - continued stability - is positive.

Hake

Catch Levels and Values

Hake (Pacific whiting) is to BC groundfish stocks what pink salmon is to BC salmon - the most abundant but lowest value species. As with pink salmon, BC is a relatively minor player in terms of world hake production, accounting for 5-8% of global supply. BC ranks behind Argentina, South Africa, Chile, and the USA (Washington/Oregon) as a hake producer. Total world production ranges from 1,200-1500 tonnes annually.

Pacific hake is a trans-boundary stock, straddling Canadian and US waters. The two countries in the past disagreed on catch shares, and over-fished the stock to an extent. They have now forged a Treaty, ensuring cooperation in setting harvest levels. Unlike pink salmon, both catch levels and fish values have risen in recent years.

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BC production and landed value is shown in the chart below. Hake is BC's highest volume fishery.

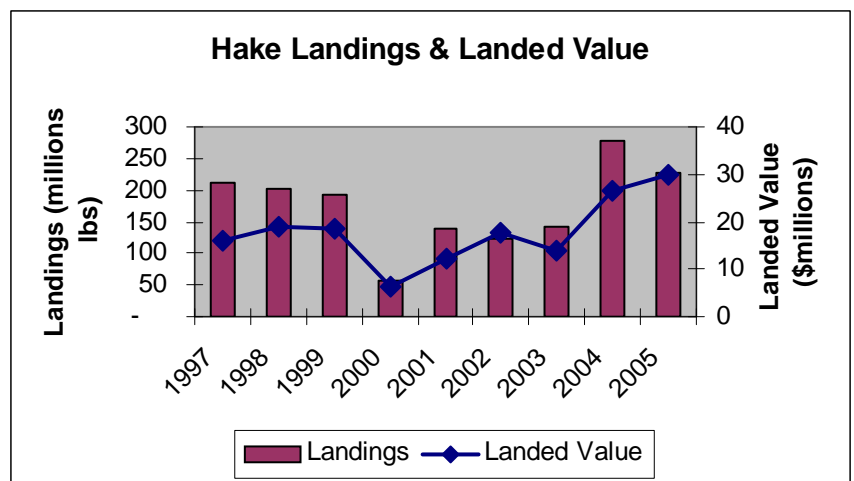
Economic Overview

The BC hake fishery is relatively novel, with participation by the BC fleet commencing in 1978. The BC processing industry showed little interest in handling hake until the early 1990s. The Pacific hake species is plagued by an enzyme that degrades the flesh quality unless

stringent handling protocols are observed (i.e. chilling, prompt processing). And, the BC processing sector was largely focused on more lucrative species, particularly salmon and herring. As an un-utilized resource, the Province made hake an exception to its prohibition on foreign/at-sea processing, allowing foreign motherships to operate offshore, purchasing, processing, and transporting finished hake products overseas. Through the 1980s and early 90s the so-called "Joint Venture" fishery grew in scale and efficiency.

BC trawlers found the Joint Venture fishery to their liking. A local organization called the Hake Consortium of BC oversaw contracting of the factory ships and established delivery timetables and criteria for participating trawlers. A vessel simply towed for hake using its midwater trawl, and pulled alongside the factory ship, which lifted the cod-end of fish aboard for immediate processing. Never a fish scale onboard, and no need to run the fish to town! Although fish prices were low (less than 10 cents), the volumes and efficiency allowed profitable fishing operations.

By the early 1990s, advances in fish handling practices, processing technology, and seafood markets made the utilization of hake by BC shore plants feasible. The downturn in the salmon business provided motivation to find alternative activities. A few shore based plants located in small communities on the west coast of Vancouver Island invested in processing equipment, mostly surimi capacity. Local governments provided infrastructure to support this much-needed injection of industry. Senior governments confirmed that shore-based hake processors would have priority access to the hake resource, and so the Joint Venture became a "safety valve" fishery, handling only quantities of fish not required by the shore sector. Acrimony over domestic hake



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allocation - shore vs. Joint Venture - developed. A strong appeal of shore-based processing was the high level of employment associated with hake - large volumes over a 5-6 month season.

Over virtually the same period as the pink salmon business has fallen, the hake business has developed from scratch to become an important contributor to the groundfish sector and BC seafood industry. It has gone from being an entirely un-utilized resource, to the subject of a spirited annual allocation debate.

Fishery Management

As noted previously, hake is managed under the same IVQ/GDA plan as bottomfish, though in many respects, hake is a distinct fishery, and business, from groundfish.

While the bottomfish fishery digressed into a race for fish with rampant discarding in the years preceding 1997, the hake fishery has taken a different path. This mid-water trawl fishery is virtually "clean" (there is very little bycatch). The BC hake fishery developed under the Joint Venture system, whereby production was effectively scheduled and the quantity of catch per vessel was known ahead of time; the Joint Venture fishery closely resembled a quota system.

With implementation of the IVQ system, an orderly harvest is now facilitated in the shore-based fishery as well. The system supports sound business planning. Implementation of the Canada-US hake treaty will bring joint fishery management, and agreed upon national catch shares, to hake management.

Resource Status and Outlook

Hake is among the short-lived (7-8 years), migratory groundfish species that features widely varying abundance. The Pacific hake biomass fluctuates with ocean conditions and recruitment levels, and catch-ability is linked both to abundance and varying fish distribution. While annual TACs will follow abundance patterns, joint Canada-USA fishery management under the Treaty will ensure improved long term stock sustainability.

Impacts of Globalization on Subject Fisheries

The preceding section provided overviews of each subject fishery. How each fishery has fared under the pressures of fisheries globalization is strongly influenced by its stature, structure, and recent history. In this section, the globalization forces impacting each fishery are identified, the responses to-date are described, and a brief analysis is offered.

Pink Salmon

Globalization Challenges and Opportunities

A list of key globalization-related challenges and opportunities in the BC pink salmon industry follows:

Pink Salmon Globalization Challenges	Pink Salmon Globalization Opportunities
<p>Growth of world pink harvests (Alaska and Russia), concurrent with decline of BC harvests, means BC market share and market clout has declined.</p>	<p>Growing demand for seafood generally. Growing demand for wild salmon. Pink positioned as "most affordable" salmon.</p>
<p>The vast majority of pink production has historically been canned. Canned pink salmon markets are chronically over-supplied. Canned pink markets are stagnant (not growing). Canned pink price levels have weakened substantially in recent years. BC canned pink production is no longer economic (1/2 pound form); BC is not a low cost producer.</p>	<p>For canned product, BC must focus on other product forms, such as ¼ lb, skinless boneless, easy-open, and others.</p>
<p>Alaska has out of necessity developed frozen pink markets. Up to ½ of Alaska's production is now frozen, generally in round or butchered form, for re-processing elsewhere in the world. A small fresh and value-added business has also developed. While Alaska has been developing new products and markets, BC has been on the sidelines.</p>	<p>BC is in a position to benefit from Alaskan initiatives... let Alaska blaze the trails and make developmental mistakes.</p>
<p>There is a growing consumer movement toward sustainable wild fisheries and eco-labelling. The Alaskan salmon fishery is certified by the Marine Stewardship Council (MSC), while BC is not.</p>	<p>The conservatively managed BC salmon fishery is in the MSC certification process. Certification may offer new market avenues.</p>
<p>Emergence of low cost processing operations in China, Thailand, and other locations with low wage rates. "Developing countries" as major importers of raw material for value-added processing. BC cannot compete with this cost structure. Acceptance by global consumers of "twice-frozen" product.</p>	<p>Developing markets represent an outlet for round or butchered frozen BC pinks. A new low value but high volume business. BC has the advantage of working on fresh fish, can produce once-frozen fillets and other products. BC's proximity to pink stocks and US market provides a differentiation avenue (fresh, once-frozen products).</p>

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Pink Salmon Globalization Challenges	Pink Salmon Globalization Opportunities
<p>With farmed salmon, there is a huge volume of salmon in the marketplace. Farmed salmon sets consumer's expectations of quality and consistency at a very high level.</p> <p>Farmed salmon holds a host of competitive advantages over wild salmon.</p> <p>Widespread availability of farmed salmon relegates pink to the bottom of the salmon value spectrum.</p>	<p>A distinct consumer awareness (sometimes preference) for wild salmon has developed. Pink salmon has the opportunity to fill a niche below farmed salmon in the product/value spectrum.</p> <p>Pink salmon is cheap (inexpensive) enough that it can be used as an ingredient in value-added products such as burgers.</p>
<p>BC processors are already involved in the Alaskan salmon industry. Investment and resources may be directed to Alaska rather than BC.</p>	<p>Pink salmon is not a fishery/business that appeals to all BC participants. Those choosing to participate should be able to source raw material on favourable terms.</p>

BC Industry Response

The BC pink salmon sector has to a much greater extent been floored by the challenges of globalization than it has benefited from its burgeoning opportunities.

The pink business has shrunk dramatically. A marked reduction in wholesale prices in the ½ pound canned market, BC's primary product form, meant dramatically lower ex-vessel fish prices to harvesters. Prices fell below 15 cents per pound, with fish volumes sporadic. The economics made sense for neither harvesters nor processors. Even with limited fishing opportunities, a portion of the available pink harvest has been forgone.

For a large portion of the industry, pink salmon have ceased to be a meaningful business activity. Some simple rationale for dedicating resources elsewhere: a four-pound pink, at 15 cents/pound, is worth 60 cents; a six-pound sockeye, at two dollars/pound, is worth 12 dollars. It takes 20 pinks to equal the value of one sockeye... and there aren't that many pinks available. So where will effort be directed? Sockeye.

Even those with a will to handle pink salmon struggle with the sporadic, uncertain supply. Developing products, building customer goodwill, and supporting marketing programs is frustrating at best, impossible at worst, without a secure and reliable supply of product.

Not all participants have forsaken pink salmon. A few processors still consider pinks to be an important part of their business, and are focusing on strategies to differentiate their product from pure commodity forms. Effecting such as strategy requires substantial investment in equipment, and use of Alaskan pinks as a backstop of production. It also requires courage; said one processor of his pink salmon program, "we've invested millions of dollars we don't have."

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Globalization has provided another intriguing option - being a marketer of product without being a producer. That is, exploiting "long" global supply by buying processed product on the open market for re-sale. Canada's pre-eminent canned salmon brand, "Clover Leaf" was until recently owned by BC's biggest fish processing company, BC Packers. It made sense that BC's largest fleet supplied Canada's biggest label. When BC Packer's parent company opted to exit the BC seafood business, however, the Cloverleaf label was sold to a US company, Bumble Bee, having no footprint in the salmon industry. Cloverleaf, sourcing strictly from the open market, remains Canada's premiere canned salmon brand.

Even companies that market pink salmon but have not shed their fleet connections have altered their business practices. The adage "catch all you can, and can all you catch" has given way to "source the product you need to fill your markets" (not nearly as clever, but a sensible shift nonetheless).

Analysis

BC pink salmon is a case of a business with fragile fundamentals - including an inefficient industry structure, market-indifferent fishery management, and a volatile resource base - buckling under the pressures of globalization.

Industry participants are quick to identify the obvious solution to the pink salmon problem - develop a market-responsive fishery management system for the salmon fishery. Pointing to fishery management as a problem does not imply that DFO takes the (sole) blame; it is widely recognized that industry shoulders the primary responsibility for devising a management system that addresses DFO's conservation constraints, while meeting the diverse socio-economic objectives of the industry. But BC's salmon participants are surprisingly willing to endure year-after-year of dismal financial performance rather than accept some necessary compromises.

Given a sound fishery management footing, the BC pink salmon industry is positioned to exploit either or both two strategic directions:

- Becoming an effective supplier of raw material (round-frozen or butchered) to developing nations such as China and Thailand. That is, a low cost, high volume supplier of raw material for re-processing.
- Value-added pink salmon production, exploiting BC's advantage of working from fresh product to service fresh markets or "once frozen" frozen markets.

The pink salmon business in BC enjoys substantial upside. Though pinks will never be a shining-star of the BC seafood industry, there is little business reason that they cannot return to "quiet contributor" status.

Groundfish

Globalization Challenges and Opportunities

Globalization-related challenges and opportunities in the BC groundfish trawl fishery include:

Groundfish Globalization Challenges	Groundfish Globalization Opportunities
<p>Fluctuating foreign exchange rates have worked against the BC groundfish sector. The Canadian dollar has strengthened against the US dollar from \$0.62 in 2003 to \$0.90 in 2006.</p> <p>BC sells the majority of its groundfish products in fresh fillet form to the USA. Though prices have remained consistent, or even risen, in US dollar terms, effective prices to Canadian producers have plummeted - a \$3.00 US fillet worth \$4.80 per pound (\$CDN) only netted \$3.30 in 2006.</p>	
<p>The primary market for BC groundfish is the western USA, particularly California. This market is being flooded with a host of farmed whitefish species that are being embraced by consumers (eg. basa, tilapia, catfish).</p> <p>BC groundfish products are maintaining sales volume, but losing ground as the overall seafood market grows.</p> <p>BC must work hard to maintain its primary market, given the array of farmed seafood alternatives.</p>	<p>Seafood demand is growing rapidly in BC's primary market (western USA). This provides a partial buffer against growing competition.</p> <p>Fresh wild groundfish is an established product with consumer appeal.</p> <p>The decline of other groundfish fisheries, particularly that off the coast of Washington-Oregon-California, has provided an opportunity for BC to service fresh markets.</p>
<p>The market has a strong preference for fresh product over frozen (especially for wild product).</p> <p>Frozen BC groundfish fillets are dramatically reduced in value vs. fresh, since there is an enormous world supply of low-cost frozen wild whitefish. A high-quality BC rockfish fillet fits in the same (low) value realm as frozen pollock.</p> <p>When the BC groundfish fishery experiences periodic landing "spikes" a portion of production is inevitably frozen. Prices for BC <u>frozen</u> groundfish fillets have declined.</p>	<p>BC is ideally situated to serve the fresh whitefish fillet market in California.</p>

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Groundfish Globalization Challenges	Groundfish Globalization Opportunities
<p>Emergence of low cost processing operations in developing countries with low wage rates.</p> <p>"Developing countries" as major importers of raw material for value-added processing. BC cannot compete with this cost structure.</p> <p>Acceptance by global consumers of "twice-frozen" product.</p>	<p>Developing nations represent a new market outlet for round or headed and gutted low-value (developing) groundfish species such as turbot.</p>
<p>There is a poor public perception of bottom trawling.</p> <p>Despite the strong conservation record of the BC trawl fishery, constant vigilance is required to defend and justify the fishery. Well-intentioned environmental legislation (Species at Risk Act) can prove problematic when applied to multi-species fisheries</p>	<p>The BC groundfish trawl fishery can position itself as a world leader in responsible trawling practices.</p>
<p>The increase in global oil prices has caused marine diesel fuel costs to spiral. Rising fuel costs are a major cost factor in the BC groundfish trawl fishery.</p>	<p>Technology is available from around the world to encourage more fuel-efficient operations: fishing gear, flow metres, high efficiency engines.</p>

BC Industry Response

The BC bottomfish sector has benefited from a combination of good management and good fortune. Concurrent with the BC industry implementing a new fishery management plan to address conservation and socio-economic shortcomings, globalization events *favouring* BC developed. The collapse of competing groundfish fisheries positioned BC as the preferred supplier of fresh fillets to the western USA (it didn't hurt that American consumers failed to realize that the "local" groundfish species they were enjoying no longer came from their local waters). A weak Canadian dollar relative to the US currency allowed sound values for American customers and strong prices for Canadian exporters. Growing seafood demand in the US helped preserve BC's market position.

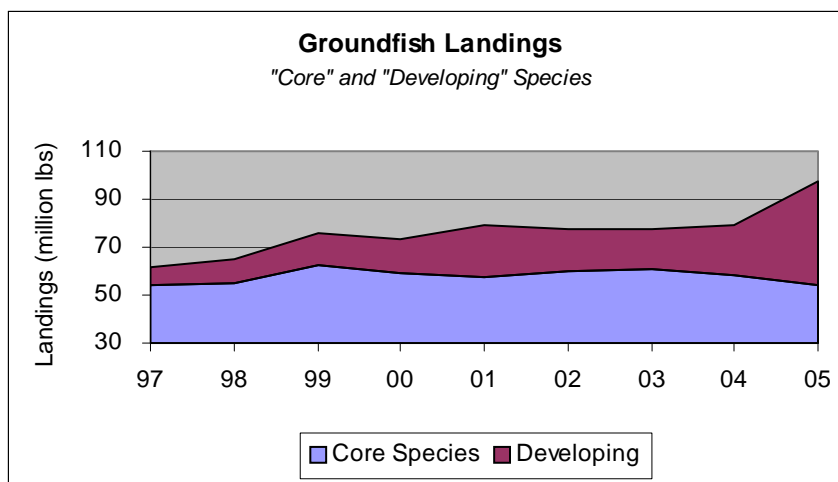
This window of agreeable competitive conditions allowed the BC groundfish sector to gain familiarity with a complex new fishery plan, develop its "fishing-to-market" acumen, and enjoy profitable operations. Participants who had initially resisted the new management plan now lauded themselves as business visionaries. During this period, the strategy for improving financial returns was clear - purchase (or rent) more quota; more quota meant improved returns.

Of course, a competitive climate-change was inevitable, and a host of globalization factors began to heap challenges on the industry. A rapidly strengthening Canadian dollar

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meant rapid devaluation of product values. An array of farmed white fish products quickly gained consumer acceptance. The fresh market was increasingly intolerant of any spot surge in BC fresh fillet production. Prices for frozen products declined. Fuel costs (a major cost-factor in trawling operations) spiked, tracking the price of crude oil in world commodity markets. In the course of a couple of years, the competitive environment turned decidedly difficult, placing pressure on financial returns.

The groundfish trawl sector was bruised, rather than battered, by these developments. Participants recognized that more-precise execution of harvesting-processing functions was necessary. With lower returns from core operations, they turned greater attention to deriving value from heretofore "marginal" species such as turbot (arrowtooth flounder), dogfish, and pollock. Much of this production was exported in frozen h&g form to developing countries for re-processing. The adjacent graph shows how utilization for these developing species has risen. Also, opportunities to have higher-values species out of the fresh-fillet mix were explored. Ethnic markets for whole red-snapper (rockfish) were exploited.



The industry recognized that the "honeymoon" period succeeding implementation of the IVQ/GDA plan was over, and that the future would be characterized by lower margins, the need to further develop products and markets, and the importance of sound execution of business functions.

Analysis

The BC groundfish trawl industry enjoys sound fundamentals - a stable year-round resource, a market-responsive fishery management program, a high degree of industry-government cooperation, and an strong competitive position - and is therefore well-positioned to benefit from the opportunities of fisheries globalization while enduring its challenges.

An important factor giving the groundfish industry competitive strength and resilience is that it is entirely self-adjusting and largely self-reliant. A high degree of fleet rationalization has occurred over the past several years, with quotas fished by fewer

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vessels owned by fewer individuals and companies. There are now 45-50 active trawlers in the fishery, whereas 142 vessels received an initial allocation of quota. There is a high degree on integration between the harvesting and processing sectors. The largest groundfish processors were always significant owners of trawl vessels. Now, successful trawl fishermen have entered the processing fray. The security provided by the quota system motivates vessel owners to pursue their own business paths. There is a great deal of individual initiative taken, so product and market development is not the burden of a few processing companies. Virtually every vessel in the groundfish fishery executes a unique business plan, targeting a different mix of fish and different market avenues. Groundfish trawl is a rather close-knit fishery, with generally cooperative and harmonious internal relations, and an effective working rapport with DFO.

The prospects for the groundfish trawl fishery are strong, abetted by a sound management plan that encourages responsible fishing practices and meaningful business planning. The industry requires further business development in order to best deal with future globalization developments:

- Capital expenditure in the fishery have thus far been dominated by purchases of quota. Investments in vessels and plants have largely been neglected. The industry will need to address physical asset issues in the future to ensure continued competitiveness.
- Over-reliance on the western USA fresh fillet market is recognized, so further product-market diversification measures are required.
- The fishery can continue to improve catch utilization and selectivity in order to pre-empt criticism from the environmental sector, and preclude interruptions under environmental legislation (Species at Risk Act). Further, improved resource stewardship makes sound business sense.

Hake

Globalization Challenges and Opportunities

A list of key globalization-related challenges and opportunities facing the BC hake industry is offered below:

Hake Globalization Challenges	Hake Globalization Opportunities
Canada is a minor global hake fishery. Larger global hake fisheries such as those in Argentina, Africa, Chile and the USA have a strong bearing on price levels, and marketability, for BC hake.	World demand for white fish products is growing. Hake catch levels in other jurisdictions have been down in recent years, allowing BC hake to make market inroads.
Hake is a generic white fish product. Hake markets are influenced by production of other abundant white fishes around the world.	

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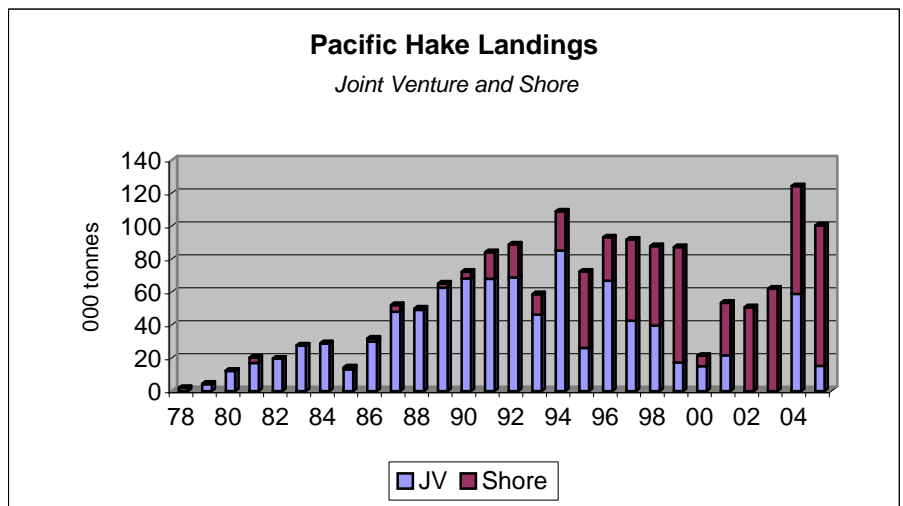
Hake Globalization Challenges	Hake Globalization Opportunities
<p>There has been rapid development of large scale fisheries in the southern hemisphere for low-value species such as threadfin bream, itoyori, and jack mackerel. Products from these fisheries may go head-to-head with hake (particularly in surimi markets).</p> <p>These fisheries provide formidable competition for BC hake from in the surimi business.</p>	
<p>Emergence of low cost processing operations in Russia and China.</p> <p>"Developing countries" as major importers of raw material for value-added processing. BC cannot compete with this cost structure.</p> <p>Acceptance by global consumers of "twice-frozen" product.</p>	<p>Developing markets represent an outlet for round or h&g frozen BC hake. A new low value but high volume business.</p> <p>BC has the advantage of working on fresh fish, can produce once-frozen fillets.</p> <p>BC's proximity to US market provides a cost and differentiation avenue (once-frozen products).</p>
<p>Much of global white fish harvesting and processing is by factory trawlers or motherships. These operations enjoy greater efficiency and lower costs than shore-based plants.</p> <p>BC regulations limit the use of factory trawlers and motherships in fisheries, placing BC at a cost disadvantage.</p>	<p>Joint Venture fishery is used as a "safety net" in the BC hake fishery.</p> <p>BC regulations allow a BC catcher-vessel to head, gut, and freeze its own catch (but not fillet).</p>
<p>Fluctuating foreign exchange rates have worked against the BC hake sector.</p> <p>The Canadian dollar has strengthened against the US dollar from \$0.62 in 2003 to \$0.90 in 2006.</p> <p>The US is a significant customer of BC frozen hake fillets.</p> <p>Many international transactions are conducted in US dollars.</p>	

Industry Response

The pace of change in the BC hake industry has been breathtaking. Thirty year ago, hake was completely un-utilized by the BC fishing industry, exploited only by foreign fleets. Fifteen years ago, there was virtually no shore-based processing of hake by the domestic industry. Five year ago, BC hake processing meant surimi processing. Three years ago, surimi processing virtually ceased. The last two years have been, financially, the best ever enjoyed by the hake sector.

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The shore hake sector in BC developed around the surimi business. The proximity of prime hake fishing grounds off the west coast of Vancouver Island to the communities of Ucluelet and Port Alberni provided strategic opportunities to accommodate hake processing. Government strongly supported development of a BC shore-based hake sector, according the shore sector priority access to hake stocks (vs. the Joint Venture fishery). By the late 1990s there were three plants operating in the area. As surimi is a pure commodity product, and BC producers were enduring a production learning curve, results were uneven. When market demand was strong, the plants operated to capacity; when demand slackened, the plants reduced throughput. This pattern frustrated fishermen, who were accustomed to the greater reliability and higher prices of the Joint Venture fishery. The evolution of the hake fishery, from Joint Venture to shore-based, is charted in the adjacent figure.



Recognizing the frailties of the surimi business, some hake processors began to develop fillet programs.

In both surimi and fillet production, processors faced the challenge of dealing with Pacific hake's high perishability. Quality and recoveries improved over time owing to investments in equipment, improvements in fish-handling practices, and experience in dealing with this finicky species.

BC hake producers developed significant acumen as surimi producers. On a "technology sharing" mission to Chile, a group of BC hake processors magnanimously offered to share some of their surimi insights with their Chilean counterparts. Instead, they found that the Chilean industry had largely progressed beyond surimi, focusing on a host of fillet and value-added products. "We went to see a third world country... and found that we were it," lamented the mission leader.

Indeed, surimi-reliance proved problematic. Markets were chronically over-supplied. "Junk fish" like jack mackerel in Chile, and itoyori in the Indian Ocean, were used to

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supply an acceptable quality of surimi, at a price that BC could not match. The pattern of volatile utilization by the BC shore sector continued.

The surimi business in BC hit its nadir in 2003, when sales of BC surimi were stalled owing to, of all things, an outbreak of "mad cow disease." Because of a BSE-infected cow originating at an Alberta cattle farm, Canadian beef was, for a period, banned from Asian and American markets. BC surimi uses, as a minor ingredient, a beef-plasma binding agent. This additive was sourced from a US company. BC surimi therefore contained trifling amounts of (American) beef. In the eyes of the international trading community, however, BC surimi effectively became a Canadian beef export, and was treated as such. Even sales to the USA (where the beef additive originated) were prohibited. Globalization gone mad! Surimi production was halted during the 2003 fishing season, and never re-commenced. Growing fillet production ensured some utilization of hake stocks in 2004, and a substantial Joint Venture fishery was allowed that year.

At the same time, BC hake participants saw sudden, strong interest from Russian and Chinese firms in the purchase of headed and gutted frozen hake. H&g production is very simple, requiring dressing machinery commonplace in BC (much of it idle salmon equipment). Both volumes and prices soared. Though margins were slim for processors, ex-vessel prices exceeded that supported by surimi. Surimi capacity has now been largely dismantled.

Strong demand, low capital entry requirements, and a healthy supply of fish attracted new BC participants to the h&g hake business. Shore utilization has reached record levels. Two entrepreneurs have fitted "factory-scale" trawlers to catch and freeze hake on a scale greater than that previously seen in the BC fleet (operating under Provincial rules, they are not permitted to fillet). The largest fishing operations in the hake fishery are also the largest processors. The sector is now enjoying a "high."

Analysis

The story of BC hake takes many twists because hake is a pure commodity product, highly subject to the shifting forces of globalization. Globalization has presented opportunities, snuffed them out, and offered entirely new prospects. Further challenges are clearly on the horizon.

While the BC hake sector is currently enjoying strong results, the industry is clearly vulnerable to shifting global supply and demand conditions. At least half of production is put up in h&g form. The h&g business is highly sensitive to small changes in price, and demand shifts are likely as global fisheries production varies by jurisdiction. A primary

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appeal of hake for h&g processors is that they can enter and exit with little notice or risk. This suggests an opportunistic activity, not one that is sure to endure.

The largest firms in the hake sector have vertically integrated in vessels, quotas, plants equipment, and market development. They have invested heavily, though they are by no means "heavyweights" in the global seafood business. Fillets and other value added products make up an increasing portion of their product mix. They are attracted by the solid fundamentals of the fishery, including the management plan, the relatively long fishing seasons (May-October or longer), and the growing white fish market segment. This approach, accounting for less than half of the current hake catch, is the one that offers enduring business security.

The hake sector is still in a maturation process - after all the industry is brand new by historical standards - and needs to address outstanding issues:

- Recognizing that the h&g sector of the industry is fragile. It emerged from nowhere, and could return there if globalization circumstances conspire against it. Complacency would be a mistake... full utilization in the future is not a given.
- The ongoing role, if any, of the Joint Venture fishery. There are those that feel it is anachronistic, and others who believe it is a necessary safeguard for the industry until industry has further matured. Either way, the annual acrimony of the "shore vs. JV" debate is an unproductive disruption.

Pacific Fisheries in the Global Environment

At the outset of this paper three themes of fisheries globalization, drawn from OECD publications, were identified. Subsequently, globalization in the BC seafood industry in general, and for three subject fisheries specifically, was examined. To conclude this paper, the BC experience is considered in light of globalization "theory".

1. *Fisheries globalization brings tremendous economic opportunities and pressures to seafood businesses.*

The BC experience fully supports this notion. As an exporter of seafood products, the BC seafood industry has always been subjected to global economic forces. In simpler days, a relatively few factors, such as exchange rates, Alaskan fishery volumes, interest rates, and general economic conditions, influenced results. Though entirely beyond the influence of seafood participants, these factors collectively comprised a tolerable level of risk.

The acceleration of fisheries globalization, beginning with salmon aquaculture but including a lengthy list of factors, produced a far more complex and risky business environment prompting a fundamental re-structuring of the BC industry. The industry of old was largely dismantled. Capital intensive and speculative strategies were replaced by

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low risk, cash-flow-positive ones. The industry became by necessity nimbler and more responsive to markets. It also became more fractured, and less willing (and able) to summon capital.

In the various BC fisheries, impacts of fisheries globalization are closely related to the applicable fisheries management framework. A fishery providing secure and reliable access to the resource, that supports business planning and market service, positions a fishery for success in confronting a complex and challenging environment. A fishery lacking these characteristics sets up a fisheries sector for failure.

In the pink salmon fishery, where fishery management is judged by participants to be a failure, fisheries globalization has virtually grounded the business. Pink salmon, always a quiet contributor to salmon financial results, has become an economic non-entity. In the groundfish trawl fisheries - bottomfish and hake - an innovative fishery management plan has allowed industry to exploit the opportunities afforded by globalization and to withstand the challenges. Though still vulnerable to shifts in the competitive landscape, the groundfish fisheries are only ten years into a unique management plan, and will continue to evolve.

2. *Some jurisdictions retain legislation, regulation, policy, or domestic practices to encourage use of local resources to serve national socio-economic objectives.*

British Columbia is also a prime example of this statement. In BC, the idea that Pacific fish stocks could be handled by a network of global service providers, with the functions of the value chain (harvesting, processing, marketing, distribution) carried out by the most efficient player, has received little support. The federal and provincial governments, and industry itself, view fish resources as an instrument of social, as well as economic, policy. In BC, the issues of "how fish are shared", and "who benefits from the fish", have received as much attention as the issue of "how to be viable in the fish business." Although globalization requires seafood businesses - especially businesses that are dwarfed by global competition - to be efficient and flexible, the debate over fish in BC is dominated by non-economic considerations.

BC's industry was for many year insulated from some of the realities of the world marketplace; either sheltered by regulation, or un-concerned because of internal concerns. BC's approach to resource management has clearly placed constraints on its seafood industry's ability to compete in the face of accelerated fisheries globalization. The demise of the salmon/herring sector, and the emergence of a host of fisheries like groundfish (bottomfish and hake) is in part a product of this approach. Today's industry is in some respects successful, but also highly vulnerable.

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This is not to say that BC's approach is right or wrong. "Social" fish policy has preserved a mostly "made in BC" seafood industry. The industry may not be a world leader in technology or product development, and it is certainly not the most prosperous in the world (a glimpse at the BC Exhibit in the European Seafood Exposition confirms this), but it is largely owned and controlled by BC interests.

3. *Fisheries globalization can result in unsustainable fishing pressure.*

With DFO adopting a precautionary fishery management approach in the late 1990s, and with the advent of environmental legislation such as the Species at Risk Act, BC fisheries are relatively safe from the pressures to over-harvest that may accompany fisheries globalization.

A lack of responsiveness to markets, in this respect, is a virtue. Virtually all of BC's commercially exploited fish resources are in reasonably healthy condition. However, it is clear from BC's groundfish fishery that designing fisheries that mutually meet conservation and economic objectives is possible, and that doing so better positions businesses to meet the challenges, and exploit the opportunities, of globalization.

Outlook for Pacific Fisheries

The fundamentals of the BC seafood business - healthy resources, growing global demand for seafood, and a strategic location for servicing Pacific Rim markets - suggest boundless opportunities for the industry. The tendency of this exporting industry to focus inward, to allow resource access and allocation conflicts to fester, and to struggle over an acceptable balance between social and economic objectives, suggests an industry stifled from realizing its full potential. The recent track record of this industry composed of players that are diminutive on a global scale is, indeed, spotty; there are sectors performing well, such as groundfish and hake, and sectors performing poorly, such as pink salmon.

A common-denominator of now-prosperous fisheries sectors is that they have resolved internal differences, and established effective, cooperative relationships with regulators and members of the value chain. A sustainable, co-managed fishery provides a foundation from which to forge viable businesses. Participants that build on a solid fishery foundation by engaging in meaningful business development initiatives, such as product and market development and best-practices in fish-handling and processing, stand the best chance of flourishing in an ever-changing global competitive environment. Sectors failing to adopt a cohesive, cooperative, business-minded approach are destined to flounder.