

Economic Dimensions of Skeena Watershed Salmonid Fisheries

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COUNTERPOINT
CONSULTING

ECONOMIC DIMENSIONS OF SKEENA WATERSHED SALMONID FISHERIES



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EXECUTIVE SUMMARY

This report presents an economic snapshot of contemporary fisheries for Skeena salmon and steelhead. The work was commissioned by the Pacific Salmon Foundation and funded by the Gordon and Betty Moore Foundation.

Separate sections present, in varying amounts of detail, economic snapshots of the aboriginal, commercial and sport fisheries for Skeena salmonids. In accordance with the Statement of Work, the commercial fishery is most intensively analysed; the sport fishery less so; the aboriginal fishery is only briefly profiled.

Economic value was defined for the purposes of this report as Economic Efficiency, reported in industry and sector Income Statements, and Economic Impacts, the expenditures created by economic activity in those industries and sectors.

First Nations of the Skeena watershed fish for salmon for food, societal and ceremonial (FSC) purposes and for economic (market) purposes. Economic/market fisheries include those on escapement that is surplus to spawning requirements (ESSR), primarily but not exclusively at the Babine fence, and what are now called Economic Opportunity (EO) or Total Allowable Catch (TAC) fisheries, inriver and occasionally in Lake Babine.

The harvesting and processing sectors of the commercial fishery are profiled extensively. The economics of the harvesting and processing sectors are examined and the value chain described in detail. The impacts of market prices and product mix on returns in the processing sector and their implications for landed prices are assessed.

The commercial fishery for Skeena stocks in salt water is primarily a net fishery for sockeye and pink salmon. Diminished harvests and prices in the most recent cycle have eroded the viability of the commercial fishery. There are a significant number of commercial licences—estimated to be one-third of gillnet licences—that are idle; those remaining active benefit from the reduced competition. If/when fortunes improve, that will simply bring some inactive vessels back to work. A much bigger upside or more significant change in how the fleet is structured and managed is required to make the active fleet, whatever its size, more profitable, economically viable, and sustainable.

In the realm of global salmon markets, Skeena salmon has a world class reputation. Skeena salmon processors and marketers advise that their customers have a high level of awareness and appreciation of the quality attributes of Skeena salmon. Skeena salmon is often specifically requested for custom orders.

For commercial processors, Skeena salmon are but a fraction of the overall throughput. Stakeholders worry that loss of that fraction could undermine the health of the processing sector in Prince Rupert.

The period chosen for the commercial portion of the study, the most recent cycle for which data are available (2004-2007), has a strong bearing on results; previous cycles saw much higher levels of harvest, profitability and economic activity.

Challenges to improved economic performance and value-adding are identified, as are a number of opportunities for effecting positive change. In moving forward toward a more prosperous commercial Skeena fishery for watershed participants, it is necessary to acknowledge and address impediments and exploit legitimate opportunities. Case studies provide contrast and lessons learned from successes and failures in other fisheries.

Skeena salmonid sport fisheries are examined in three segments: the marine fishery and the freshwater fisheries in the lower and upper river, divided at Cedarvale. Within those segments, lodges, guides/charters and independent anglers are separately assessed. Economic profiles are constructed for sport fishing businesses and anglers, and economic impacts are quantified.

The Skeena sport fishery is world renowned, a brand that sells itself. About 70 percent of the customers of fishing lodges and guides return to the Skeena every year to try their hands at hooking a salmon or steelhead. The strengthening of the Canadian dollar against the US dollar over the past several years (recently reversed) hurt business somewhat. Guides and lodges are ever alert to business threats including: lack of fish, bad weather or water conditions, crowding, high costs and perceptions of mismanagement.

Revenues and costs of public sector agencies related to Skeena salmon and steelhead are enumerated to provide a full cost accounting.

Economic results are presented in Table 1.

TABLE 1: ECONOMIC VALUE OF SKEENA SALMON AND STEELHEAD FISHERIES

| | Commercial Harvesting & Processing | Sport Fishing | Total |
|---------|---|--------------------------|--------------|
| | <i>(\$millions)</i> | | |
| Revenue | \$14.1 | \$16.5 | \$30.6 |
| Costs | \$17.2 | \$16.4 | \$33.6 |
| Income | -\$3.0 | \$0.1 | -\$3.0 |

Source: Counterpoint estimates.

The adverse economic state of the commercial harvesting sector is due in large part to the reduced harvests and prices seen in the last cycle relative to previous cycles. What the future holds in terms of abundance and harvest remains to be seen but DFO managers believe the future will be more like the most recent cycle than those that preceded it.

Given the caveats above, under a Full Cost Accounting, Skeena commercial and sport salmonid fisheries show a net loss of \$3.0 million.

Table 2 shows the direct, indirect and induced economic impacts of the Skeena salmon and steelhead commercial and sport fisheries. The sport fishery includes lodge, guide and charter boat businesses as well as the expenditures of independent anglers.

TABLE 2: ECONOMIC IMPACTS OF SKEENA SALMON AND STEELHEAD FISHERIES

| | Commercial | Sport | Total |
|----------|---------------------|-------|-------|
| | <i>(\$millions)</i> | | |
| Direct | 9.8 | 34.0 | 43.8 |
| Indirect | 4.0 | 14.0 | 18.0 |
| Induced | 1.4 | 4.9 | 6.3 |
| Total | 15.2 | 52.8 | 68.0 |

Source: Counterpoint estimates.

Skeena salmon abundance is increasingly volatile, but more important for users is the shift to lower harvest rates on Skeena stocks. Conservation is the primary goal and precautionary management is the tool used to achieve it.

The Wild Salmon Policy will likely drive harvests to become more stock selective. This will entail moving fisheries towards more terminal areas. Fisheries in the Skeena river mainstem are not necessarily more selective, at least in the lower reaches, but fisheries in the Skeena tributaries certainly are.

In all fisheries, good data on catch and effort are essential. Management agencies cannot hope to manage fisheries resources well and achieve their conservation and allocation objectives without solid data to support them. Data disparities were apparent throughout our work. Efforts should be made to improve the quality of data on Skeena fisheries.

Cooperative campaigns can provide an umbrella for individual initiatives; they would appear to be well suited to the Skeena fisheries. Participants in all sectors could benefit from leveraging the already high level of awareness and demand for the world class Skeena fisheries and fish products to enhance economic benefits.

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INTRODUCTION

Skeena salmon and steelhead are a vital component of the economy of the Skeena watershed and the north coast of British Columbia. Skeena salmonid resources support aboriginal, sport and commercial fisheries in the marine environment and in the rivers and lakes of the watershed.

The Skeena Independent Science Review Panel was established in 2007 to address the controversy and conflict that arose over management of the Skeena salmon fishery in 2006. The [Report of the Skeena Independent Science Review Panel](#) was published May 15, 2008.

A study of the economics of Skeena watershed salmonid fisheries was proposed in late 2007. Following a competitive tender, Counterpoint Consulting Inc was retained to prepare the Skeena salmon economic analysis.

This report presents a retrospective snapshot, focused on the most recent four year cycle, of the economics of contemporary fisheries for Skeena salmon and steelhead. The work was commissioned by the Pacific Salmon Foundation, supported by the Department of Fisheries and Oceans (DFO) and the British Columbia Ministry of Environment (MoE), and funded by the Gordon and Betty Moore Foundation.

MANDATE

This study is retrospective: the Terms of Reference specified a snapshot of recent economic dimensions of Skeena salmonid fisheries. The mandate was not to look into the future but to provide a base from which such investigations could begin.

The Statement of Work for this study included six elements. As set out in Table 3 below, not all elements were to be addressed in each sector.

TABLE 3: SKEENA ECONOMIC STUDY ELEMENTS BY SECTOR

| Item | Aboriginal | Sport | Commercial |
|-----------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Overview/Description | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Harvests/Landed Value | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Economic Value | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Economic Impacts | | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Value Chain | | | <input checked="" type="checkbox"/> |
| Case Studies | | | <input checked="" type="checkbox"/> |

Source: Counterpoint Consulting

A separate and much more detailed analysis of Skeena watershed aboriginal salmon fisheries may well be required as future possibilities for reconfiguring Skeena fisheries are considered.

THE ECONOMICS OF FISHERIES

Aboriginal, commercial and sport fisheries are intrinsically very different endeavours.

Aboriginal fisheries include those for food, societal and ceremonial purposes, constitutionally protected in Canada under section 35.1 of the Constitution Act, and those to create economic opportunities. As shown in Table 3, in this report, the economics of aboriginal fisheries are not addressed beyond landings and landed values of economic opportunity fisheries.

Commercial fisheries are most commonly analysed by considering Economic Efficiency, typically measured by the juxtaposition of revenues and economic costs, similar to an Income Statement for any commercial enterprise (the difference being the use of economic costs in the former and financial costs in the latter). Sport fisheries, in contrast, consist mostly of independent anglers, the value of whose output (the pleasure of the experience) is difficult to measure. As a result, economic analyses of sport fishing tend to focus on Economic Impacts, the economic activity that results from the expenditures of anglers and the subsequent rounds of spending that ensue.

In this report, both Economic Efficiency and Economic Impacts are included, to maximise the usefulness of the analysis, and to provide the widest possible base of information for those wishing to gain a better understanding of the economics of Skeena salmonid fisheries.

ECONOMIC MEASURES

Indeed, there are a number of economic measures that might have been employed in a study such as this, and it is important to understand their meaning and, in particular, the uses to which they can be put.

Resources are efficiently allocated—Economic Efficiency is achieved—when the net value of production (output) is as high as it can be, and any adjustment to that allocation of resources (inputs) diminishes, or at least does not increase, output value. This is the economics of Benefit-Cost Analysis, often applied to public policies and projects to ensure that limited resources are put to their best use.

The Economic Impacts of public policies and projects are measured by expenditures. The building of a new project or the provision of goods and services by an existing industry creates expenditures on inputs to the production process.

- Direct economic impacts measure the economic activity of businesses that sell the goods and services in question (here, fish for consumption or angling days).
- Indirect economic impacts measure the purchases of commercial and sport fish businesses on inputs: food and fuel for commercial fishing vessels, labour and materials for processors, boats and tackle of anglers, guides and lodges.
- Induced economic impacts measure the economic activity of households spending income earned from direct and indirect employment in the commercial and sport fishing sectors in British Columbia.

GDP is a measure of the economic activity in a country (or province or region). GDP measures the total value of final goods and services produced by an economy (or sector of an economy) over some unit of time (year, quarter, month). GDP is calculated by summing the total value of a country's annual output of goods and services; all interme-

mediate products are excluded. Only goods used for final consumption or investment goods are included in GDP because the values of intermediate goods are included in the prices of final goods (eg, the value of the fish harvest is included in the wholesale value of processed fish production). If intermediate goods were included, there would be double counting. For this reason, GDP can also be described as a measure of value added in an economy.

Finally, resource allocation depends on marginal, not total, economic value. The banking industry may have a greater total economic value than the cement industry, but a shift in input resources (principally labour and capital, but including material inputs, land and other natural resources) from banking to cement might well increase the total value of output. A fourth interpretation of economic value is the marginal, rather than total, economic value of input resources. Marginal values are the ones that should be used when discussing how best to allocate resources and inputs.

These four interpretations of economic value are summarised in Table 4.

TABLE 4: FOUR INTERPRETATIONS OF ECONOMIC VALUE

| | |
|------------------------------|--|
| Economic Efficiency | Income Statement / Benefit-Cost Analysis |
| Gross Domestic Product (GDP) | Value-added through economic activity |
| Economic Impacts | Expenditures resulting from economic activity. |
| Marginal Economic Value | Value of resources in different uses at the margin |

Source: Counterpoint Consulting

However measured, the level or magnitude of Economic Efficiency or Economic Impact does not speak to questions of allocation. From an economic point of view, the allocation of Skeena salmon among sectors would be optimised when Economic Efficiency is maximised. This requires that the value of *additional* fish in any sector be equalised; if it were not, then Economic Efficiency could be increased by reallocating a fish from the sector where its value is lower to the one where it is higher.

Whether the bottom line in the commercial fishery is larger or smaller than in the sport fishery, reallocating a fish from one sector to the other could increase or decrease Economic Efficiency. Total Economic Efficiency says nothing about Economic Efficiency at the margin. Readers should be careful not to confuse or misuse Total Values, which are presented in this report, and Marginal Values, which are not, in their discussions about how Skeena salmon and steelhead should be allocated among the sectors.

STUDY OVERVIEW

The focus in this study is on Economic Efficiency and Economic Impact.

Aboriginal, commercial and sport fisheries for Skeena salmon and steelhead are described and introduced via basic statistics on landings and, where appropriate, landed values. Aboriginal fisheries are briefly profiled. Many of the values associated with aboriginal fisheries are not purely economic and no attempt is made to quantify them in economic terms.

Skeena salmon and steelhead commercial and sport fishery businesses are further investigated by estimating Economic Efficiency and Economic Impacts. Every effort has been made to make those estimates consistent between sectors but the reality is that they are fundamentally different so use of identical methodologies is confounded.

In the commercial fishery, there is extensive analysis of the value chain and commercial fishing case studies that highlight commercial fishery successes and failures are presented.

A full cost accounting is completed by presentation of public sector revenues and costs related to Skeena salmon and steelhead.

METHOD

Representatives of aboriginal, commercial and sport fisheries were interviewed. Data were gathered from public management agencies (DFO and MoE) and from participants in commercial and sport fisheries.

Based on those data, economic models of commercial and sport fishery businesses, and of independent anglers, were constructed. Models included: income statements for commercial and sport fishery businesses; average daily expenditures of independent anglers; and economic impacts of the commercial and sport fisheries based on Skeena salmon and steelhead.

REPORT STRUCTURE

This report begins with presentations on the aboriginal, commercial and sport fisheries based on Skeena salmon and steelhead. The aboriginal fishery is briefly profiled in Section 2. The commercial fishery is extensively analysed in Section 3. The sport fishery is assessed in Section 4. Public sector revenues and costs related to Skeena salmon and steelhead are the focus of Section 5. Section 6 provides a synthesis and conclusions.

Aboriginal harvests in food, societal and ceremonial, Excess to Salmon Spawning Requirements and Economic Opportunity fisheries are presented along with economic values of the latter two, are presented in Section 2.

In Section 3 the commercial harvesting and processing sectors are investigated. In the harvesting sector, individual vessels are first profiled with those results used to prepare fleet-level profiles for gillnets and seines. Issues facing the Skeena net fleets are then discussed.

The processing sector is presented next. The current product mix is examined first, then economic results by product type for sockeye and pink salmon are presented, as building blocks to the later analysis. Product form decisions by processors are discussed as well as the determination of fish prices. Impacts of fluctuations in market prices on product forms and overall economics are analysed, as is the impact of product mix on economic returns to processors.

What does Value Added mean? The term is defined and the process is investigated, as are impediments to Value Adding in the salmon fishery. Instructive approaches in other

jurisdictions and fisheries are investigated by means of five case studies. The commercial section of this report concludes with the estimation of Economic Impacts.

The sport fishery is presented in Section 4. The Skeena sport fishery is introduced and described in three segments: the marine sport fishery, and the freshwater sport fisheries on the lower river and the upper river. Each segment is analysed in turn.

Within each segment, the economic analysis focuses on the different participants: Lodges, Guides (freshwater)/Charter Boats (salt water) and independent anglers. Data on angler-days are presented first. In salt water, the impacts of Skeena salmon and steelhead from other salmon and other sport-caught marine species are isolated.

Business profiles are presented for each business type in each segment, culminating in an overall economic profile of the Skeena salmon and steelhead sport fishery businesses. Keys to business success in the Skeena salmon and steelhead sport fishery are discussed along with challenges and opportunities.

The sport section concludes with the presentation of the sector's economic impacts attributable to sport fishing businesses and independent anglers.

Public sector revenues and costs, include federal departments and provincial ministries, are presented in Section 5.

The report concludes with a Synthesis and Conclusions in Section 6.

A map of the Skeena river watershed, courtesy of the BC Ministry of Environment, is provided in Figure 1.

ABORIGINAL FISHERIES

The Aboriginal Nations of the Skeena watershed include:

- Tsimshian Nation—6 communities¹
 - Metlakatla (include Prince Rupert)
 - Lax Kw'alaams (with a reserve at Prince Rupert as well as Port Simpson)
 - Kitkatla
 - Hartley Bay
 - Kitsumkalum (Terrace downstream)
 - Kitsalis (Terrace in town)
- Gitanyow Nation (at Kitwancool Lake, top of Gitwangak River)
- Gitxsan Nation—5 villages
 - Gitwangak (Kitwanga)
 - Gitsegukla (Skeena Crossing)
 - Gitanmaaz & Hagwilget (Hazelton)
 - Glen Vowel (Sika Doax—Skeena mainstem above Hazelton)
 - Kispiox (confluence of Skeena and Kispiox rivers)
- Wet'suwet'en—4 communities
 - Hagwilget
 - Moricetown
 - Nee Tahi Buhn (Burns Lake)
 - Broman Lake
- Lake Babine Nation—3 main villages
 - Burns Lake
 - Tachet (Fulton River)
 - Old Fort and Fort Babine (on Lake Babine)
- Yekoochee Nation²
- Takla Nation²

Aboriginal fisheries for Skeena salmon and steelhead include:

- Constitutionally-protected fisheries for food, societal and ceremonial (FSC) purposes.
- Escapement Surplus to Spawning Requirements (ESSR) fishery.
- Economic Opportunity (EO) fisheries.

First Nations of the Skeena watershed fish for salmon for food, societal and ceremonial (FSC) purposes and for economic (market) purposes. Economic/market fisheries include those on escapement that is surplus to spawning requirements (ESSR), primarily but not

¹ Also includes Klemtu/Kitasoo, partly Tsimshian but politically independent.

² Yekoochee and Takla Nations are in the Skeena watershed but are quite different culturally, being closer to Sekani in language and economy, but both communities have ethnic Gitxsan and Wet'suwet'en people in residence. They are not part of the Skeena Fisheries Commission.

exclusively at the Babine fence, and what are now called Economic Opportunity (EO) or Total Allowable Catch (TAC) fisheries, inriver and occasionally in Lake Babine.

About 90 traditional fishing sites are in use in the Skeena watershed at present. All species of salmon can be caught at each of these sites but only sockeye and pink salmon are permitted to be commercially harvested. Quality fishing sites in the watershed are mostly subscribed; there are good quality fish wheel and beach seine sites downstream of Terrace that are not currently being used.

Fisheries in the Skeena watershed operate under traditional tribal organisation rather than contemporary political divisions. Fishing sites are the equivalent of real property.

Aboriginal fisheries on the Skeena are prosecuted according to traditional law, organised and controlled through mechanisms of traditional authority. All aboriginal fisheries are prosecuted according to a fishing plan that is developed in collaboration with DFO. They are controlled and enforced by local aboriginal management agencies in collaboration with DFO.

Throughout the watershed, First Nations use a variety of fishing methods and techniques, including traps and weirs, dip netting and beach seining. Fishing methods have to be customised to local conditions (eg, flows, depth, migration patterns of fish).

The Tsimshian Nation fishes below Lorne Creek (above Terrace). They primarily harvest fish for FSC purposes. Because of the characteristics of the Skeena in the lower reaches, the development of selective gear suitable to the lower river and estuary has been an ongoing challenge.

The Gitanyow Nation fishes Skeena watershed stocks in the Gitwangak (Kitwanga) River. This is their only traditional access to Skeena stocks. Given the current weak state of the Gitwangak sockeye stock, the bulk of the food fish taken by the Gitanyow comes from the Nass watershed, where active fisheries are maintained. Some food fish does come from the Skeena through marriage relationships with Gitxsan houses that have fishing rights on the Skeena. The Gitwangak is avoided due to the weakness of the sockeye stock.

The Gitxsan First Nation harvest area is the mainstem Skeena above Legate Creek to its headwaters, including the ancient village of Gisgegaas (Kitsegas) on the Babine River above its confluence with the Skeena. All fishing within this part of the river is controlled by the Gitxsan Watershed Authority (GWA).

The Wet'suwet'en First Nation fishes on the Bulkley River from a spot about 10 miles upriver from its confluence with the Skeena past Moricetown down the Nanika River to the top of the Fraser River headwaters. Their focus is fishing for FSC purposes but there is certainly interest in economic fisheries with a current focus on pink salmon which sometimes return in large numbers but can vary significantly from year to year. The sockeye run on the Bulkley has been depressed in recent years but the Wet'suwet'en have had ESSR fisheries for pinks in past years.

The Lake Babine First Nation fishes in the upper reaches of the Babine River and in Babine Lake. Dipnets are used at the Babine fence and beach seines and mini-seine boats

are used in the Fulton and Pinkut spawning channels. The quality of fish harvested at the fence is usually high enough to be sold into commercial markets; by the time the fish reach the spawning channels (a trip that takes 10-14 days), their flesh quality has dropped significantly.

The Skeena Fisheries Commission (SFC), created in 1986, is a regulatory and organising body for the Skeena watershed First Nations. Currently, all of the Nations on the Skeena are signatories to the SFC MOU. The Tsimshian Nation has focused on dealing with local topical issues while building internal capacity.

FOOD, SOCIETAL AND CEREMONIAL FISHERY

Fisheries for food, societal and ceremonial purposes are conducted according to traditional law. There are about 90 active traditional fishing sites on the mainstem Skeena and its tributaries. All species of Skeena salmon can be harvested at each of those sites.

Food, societal and ceremonial fisheries are a matter of law. They are protected under the Constitution and have priority second only to conservation, and before recreational and commercial fisheries.

Annual allocations average about 130,000 sockeye, 20,000 chinook and 20,000 coho. Allocations of chum and pink salmon are zero but some pinks are taken, perhaps 10,000 pieces. Steelhead is harvested for FSC purposes; this harvest is typically less than 2,000 pieces.

Fisheries for FSC purposes involve up to 500 people in harvesting, transporting, and processing the catch into smoked, canned or frozen products. All processing is home-based activity producing products for in-culture consumption.

ESCAPEMENT SURPLUS TO SPAWNING REQUIREMENTS FISHERY

Historically, the Escapement Surplus to Spawning Requirements (ESSR) fishery occurred at the Babine fence and in Babine Lake. Today, those sites are prevalent but ESSR fisheries could be, and are occasionally, prosecuted at other inriver locations.

ESSR fisheries are a matter of policy, not law. It is currently DFO's intention to generate a surplus in the Babine system; if this were not so, it would imply that co-migrating non-Babine sockeye and many other species and stocks of Skeena watershed salmon would be subjected to undue fishing pressure.

The ESSR fishery is labour intensive, employing several hundred people directly in all aspects of the harvest. The fishery provides employment for community members in remote villages and is extremely popular with villagers.

By the time salmon begin migrating upstream to their spawning beds, they have stopped feeding. Surviving on stored resources of body fat, which are depleted as they migrate, the characteristics of their flesh change as they migrate. At the same time, the ripening of the roe provides a different economic opportunity. In the future, First Nations fisheries for ESSR fish (or EO fish taken in terminal areas) are expected to increase emphasis on researching and exploiting markets for salmon roe.

ECONOMIC OPPORTUNITY FISHERY

The Economic Opportunity fishery, sometimes called the TAC fishery, is a fairly recent innovation: 2008 was the third year of the EO fishery.

Economic Opportunity fisheries are inland commercial fisheries. Potential catch of commercial gillnet or seine licences are transferred inland to the Skeena River. To facilitate these transfers, licences are contributed from the Allocation Transfer Program or commercial licences are leased in private transactions between a First Nation and a licence holder.

The Tsimshian at Terrace, the Gitksan in the mid-river area, and the Lake Babine Nation at the Babine weir each participate in Economic Opportunity fisheries.

Selective fishing methods, including beach seine, fishwheel, dip net and the Babine weir, are employed in Economic Opportunity fisheries. Gillnetting is not permitted in this fishery. Sockeye and pink may be retained but all other species are to be returned to the water with the least possible harm.

All inland commercial sockeye and pink salmon are monitored through a compulsory landing program. No FSC fishing or retention is allowed while participating in the Inland fishery.

In-river harvesting has an advantage over ocean harvesting in that a fishing vessel, with its attendant costs, is not required. In contrast, where access to Economic Opportunity fisheries is provided by leasing commercial fishing licences, net landed values are reduced by the cost of the leases.

In-river fishing in many locations remains a mixed stock fishery. Certainly below Kitwanga, an in-river fishery would be a mixed stock fishery although it is highly selective by species, with very low mortality rates on non-target species. As in-river fisheries grow, a trend that many view as inevitable, more-terminal locations will likely have to be considered.

HARVESTS

Recent average harvests in Skeena aboriginal fisheries are summarised in Table 5.

TABLE 5: ABORIGINAL AVERAGE ANNUAL HARVESTS OF SKEENA SALMONIDS (2002-2006)

| | Sockeye | Coho | Pink | Chum | Chinook | Steelhead |
|----------------------|-----------------|-------|--------|-------|---------|-----------|
| | <i>(pieces)</i> | | | | | |
| FSC | 181,058 | 4,938 | 22,330 | 2,359 | 12,192 | 2,100 |
| ESSR | 62,315 | NA | 3,708 | NA | NA | NA |
| Economic Opportunity | 81,790 | NA | NA | NA | NA | NA |

Source: Fisheries and Oceans Canada

The ESSR fishery has averaged about 200,000 pieces over the long term but recent harvests have been down considerably from that level.

LANDED VALUES

Fisheries and Oceans Canada provided average weights that were used to translate the harvests (in pieces) in Table 5 into landed pounds.

Landed prices, adjusted to reflect product quality and mix at Skeena mainstem, Babine fence and Babine lake harvest sites, were then applied to the estimated landed pounds. Skeena sockeye maintain their quality and value as they migrate upriver to a much greater extent than do sockeye in many other river systems (eg, Fraser River). Based on consultations with Skeena watershed stakeholders, harvests in the Skeena mainstem were valued at 100 percent of landed prices in the ocean. At the Babine fence, harvests were valued at 85 percent of landed prices in salt water. Prices at Fulton Creek were set at 60 percent of those in salt water.

The economic value of food, societal and ceremonial harvests is not estimated. While salmonids caught in food, societal and ceremonial fisheries serve food purposes, until such time as reliable methods of valuing societal and ceremonial harvests are established, no such values will be assumed.

TABLE 6: LANDED VALUE OF ABORIGINAL ESSR AND E/O HARVESTS OF SKEENA SALMONIDS

| | Sockeye | Coho | Pink | Chum | Chinook | Steelhead |
|----------------------|-----------|------|------|------|---------|-----------|
| | (\$,000s) | | | | | |
| ESSR | \$393 | NA | \$2 | NA | NA | NA |
| Economic Opportunity | \$658 | NA | NA | NA | NA | NA |
| Total Economic Value | \$1,051 | NA | \$2 | NA | NA | NA |

Source: Fisheries and Oceans Canada

Skeena watershed First Nations have recently harvested sockeye and pink salmon with an estimated value of just over one million dollars. The vast majority of this value (99.9%) is derived from sockeye salmon. The commercial value shown may not represent the complete value of salmon to aboriginal people for whom salmon is an essential part of their culture.

In-river commercial fisheries provide significant economic benefits to upriver First Nations' communities that suffer from high unemployment. Such benefits are even more important since the downturn of the forest economy in the area.

COMMERCIAL FISHERIES

The commercial fishery comprises three sectors for descriptive purposes:

1. The harvesting sector—including gillnet, seine, and troll salmon fishing fleets.
2. The processing sector—firms that purchase, process, and sell the salmon catch.
3. Alternative Channels—a general term to describe a rather small minority of harvesting, processing, and marketing arrangements that fall outside traditional channels.

The harvesting and processing sectors are profiled in detail. Alternative channels—which defy profiling by their diverse nature—are simply identified and briefly described.

HARVESTING SECTOR OVERVIEW

Salmon fleets in Prince Rupert are licensed to fish north coast salmon, not just Skeena salmon. In some cases, vessels have multiple licences authorising fishing for salmon elsewhere in British Columbia and/or for other species.

NORTH COAST COMMERCIAL LICENSING

The commercial fleet operates under an area licensing system, whereby a single salmon licence authorises fishing in one commercial salmon fishing area on the BC coast. Table 7 shows the general organisation of the commercial salmon fleet for the BC coast.

TABLE 7: COMMERCIAL SALMON LICENCES BY GEAR/AREAS

| Gear | Location | Area Designation | Number of Licences |
|---------|---|------------------|--------------------|
| Seine | North Coast | A | 108 |
| Seine | South Coast | B | 168 |
| Gillnet | North Coast | C | 658 |
| Gillnet | Lower WCVI, Johnstone Strait, Strait of Georgia | D | 355 |
| Gillnet | Fraser River | E | 393 |
| Troll | North Coast | F | 265 |
| Troll | West Coast Vancouver Island | G | 166 |
| Troll | Johnstone Strait, Strait of Georgia | H | 107 |
| All | Coastwide | | 2,220 |

Source: Fisheries and Oceans Canada.

There are 2,220 commercial salmon licences coastwide: 276 seine, 1,406 gillnet and 538 troll. The areas of geographic interest for this Study are Area A (north coast seine), Area C (north coast gillnet) and Area F (north coast troll).

Commercial salmon licences are further broken down into four categories, all but the first being restricted to First Nations:

TABLE 8: COMMERCIAL SALMON LICENCE CATEGORIES

| Licence Category | Description |
|--|--|
| Full Fee | Persons or corporations paying the full annual license fee for a commercial fishing licence. |
| Reduced Fee | Status Indians may apply to pay a reduced fee for their salmon and herring licences. Reduced fee salmon and herring licences are transferable only to other status Indians. |
| Communal Commercial (F licences) | Fisheries and Oceans Canada creates Communal Commercial fishing licences by purchasing regular commercial fishing licences from industry, retiring them, and then re-issuing an F licence for the same (species) fishery to a First Nation as a communally held commercial fishing licence. Communal commercial fishing licences are non-transferable. |
| Northern Native Fishing Corporation (N licences) | Category N commercial salmon fishing licences originated when a processing company sold its gillnet fleet to a Native development corporation. Category N licences are sub-let annually by the Northern Native Fishing Corporation to harvesters (almost exclusively First Nations persons living in the Skeena watershed region). |

Source: Fisheries and Oceans Canada and Counterpoint research.

The breakdown of north coast commercial salmon licences by category is shown below.

TABLE 9: NORTH COAST SALMON LICENCES BY CATEGORY, FIRST NATIONS % BY CATEGORY

| Licence Category | Gillnet (Area C) | Seine (Area A) | Troll (Area F) | North Coast |
|--------------------------|------------------|----------------|----------------|-------------|
| Full Fee | 319 | 89 | 254 | 662 |
| Reduced Fee | 99 | 9 | 3 | 111 |
| Communal Commercial (F) | 47 | 10 | 8 | 65 |
| NNFC (N) | 193 | 0 | 0 | 193 |
| <i>Total North Coast</i> | 658 | 108 | 265 | 1,031 |
| First Nations categories | 339 | 19 | 11 | 369 |
| <i>FN category %</i> | 52% | 18% | 4% | 36% |

Source: Fisheries and Oceans Canada.

First Nations categories are prominent in the north coast commercial salmon fishery, particularly in the gillnet fishery where they exceed 50 percent.

Table 10 provides a licence fee schedule, along with calculation of total licence fees payable to DFO by the fleet for the north coast salmon fishery.

TABLE 10: INDIVIDUAL LICENCE FEES AND FLEET LICENCE FEES PAID—COMMERCIAL FLEET, NORTH COAST

| Licence Category | Licence Fees | | | Licence Revenues | | | |
|------------------------|--------------|---------|-------|------------------|-----------|-----------|-----------|
| | Gillnet | Seine | Troll | Gillnet | Seine | Troll | Total |
| Full Fee | \$710 | \$3,880 | \$710 | \$226,490 | \$345,320 | \$180,340 | \$752,150 |
| Reduced Fee | 650 | 2,670 | 650 | 64,350 | 24,030 | 1,950 | 90,330 |
| First Nations Communal | - | - | - | - | - | - | - |
| NNFC | 650 | NA | NA | 125,450 | NA | NA | 125,450 |
| Total | NA | NA | NA | \$416,290 | \$369,350 | \$182,290 | \$967,930 |

Source: Fisheries and Oceans Canada; Counterpoint estimates.

Licence revenues shown in Table 10 include the entire North Coast including salmon fisheries other than the Skeena.

NORTH COAST COMMERCIAL CATCH

The figures used in the following analysis are average annual catches for the period 2004-2007. It is difficult to identify a time period that is representative, since commercial harvest levels change so much over time. The most recent four-year cycle captures a distinct downturn in the commercial fishery, featuring dramatic annual variations in catch. The period-low catch, in 2005, was near-nil, and the high catch, in 2006, approached one million fish.

Since DFO Catch Statistics track catches by Fishery Management Areas, not by river system of origin, the catch of Skeena-bound stocks was estimated. These harvest data are shown in Table 11.

TABLE 11: COMMERCIAL SALMON HARVEST—2004-2007 ANNUAL AVERAGE

| | Sockeye | Pink | Chum | Coho | Chinook | Total |
|-------------------------|-----------------|-----------|---------|---------|---------|-----------|
| | <i>(pieces)</i> | | | | | |
| Skeena-bound Catch | 390,487 | 541,915 | 12,710 | 17,340 | 5,082 | 967,533 |
| Other North Coast Catch | 291,736 | 3,376,558 | 756,928 | 250,805 | 137,537 | 4,813,565 |
| Total North Coast Catch | 682,223 | 3,918,473 | 769,638 | 268,145 | 142,619 | 5,781,098 |

Source: Fisheries and Oceans Canada; Counterpoint estimates.

Although the majority of the region's sockeye catch originates in the Skeena, overall Skeena salmon account for only one-sixth of the total piece count of north coast salmon.

Table 12 shows how the above catch is broken-down by gear type, using historical catch shares by gear type.

TABLE 12: SALMON CATCH BY SPECIES (PIECES) BY GEAR TYPE—2004-2007 ANNUAL AVERAGE

| Gear | Area | Sockeye | Pink | Chum | Coho | Chinook | Total |
|---------|-------------------|---------|---------|---------|--------|---------|-----------|
| Gillnet | Skeena | 292,866 | 81,287 | 5,719 | 1,431 | 4,675 | 385,978 |
| | Other North Coast | 204,215 | 135,062 | 264,925 | 25,081 | 1,375 | 630,658 |
| | Total | 497,081 | 216,350 | 270,644 | 26,511 | 6,050 | 1,016,636 |

| Gear | Area | Sockeye | Pink | Chum | Coho | Chinook | Total |
|-------|-------------------|---------|-----------|---------|--------|---------|-----------|
| Seine | Skeena | 97,622 | 433,532 | 6,990 | 4,292 | 51 | 542,486 |
| | Other North Coast | 87,521 | 3,207,730 | 492,003 | 25,081 | 1,375 | 3,813,710 |
| | Total | 185,143 | 3,641,262 | 498,994 | 29,372 | 1,426 | 4,356,197 |

| Gear | Area | Sockeye | Pink | Chum | Coho | Chinook | Total |
|-------|-------------------|---------|--------|------|---------|---------|---------|
| Troll | Skeena | - | 27,096 | - | 11,618 | 356 | 39,069 |
| | Other North Coast | - | 33,766 | - | 200,644 | 134,786 | 369,196 |
| | Total | - | 60,861 | - | 212,262 | 135,142 | 408,265 |

Source: Fisheries and Oceans Canada; Counterpoint estimates.

The troll catch of Skeena salmon is slight, limited to an incidental harvest of chinook, coho, and pink salmon in outside fisheries. North coast troll fisheries predominantly target chinook and coho bound for a multitude of non-Skeena river systems.

Of the Skeena watershed salmon stocks, sockeye and pink are the relevant species; chum is an avoidance species due to chronic low abundance, and access to chinook and coho is extremely limited.

Five species of salmon, plus steelhead, return to the Skeena watershed, and three commercial gear types work north coast waters. The focus here is on:

- Gillnet and seine fleets (collectively known as the net fleet), with gillnets accounting for the majority of sockeye catch and seines the bulk of the pinks.
- Sockeye and pink salmon, with sockeye by far the predominant species by value.

The value of the average annual harvest is shown in Table 13. The figures presented were derived using average weight per piece and estimated average ex-vessel fish prices (key fish prices are \$1.50 per pound for sockeye and \$0.17 per pound for pinks).

TABLE 13: NET FLEET LANDED VALUE—2004-2007 ANNUAL AVERAGE VALUES (\$)

| Gear | Area | Sockeye | Pink | Chum | Coho | Chinook | Total |
|-------------------|-------------------|-----------|---------|-----------|---------|---------|-----------|
| Gillnet Area C | Skeena | 2,525,965 | 55,275 | 25,737 | 6,437 | 187,003 | 2,800,418 |
| | Other North Coast | 1,761,357 | 91,482 | 1,192,162 | 112,862 | 55,015 | 3,213,238 |
| | Total North Coast | 4,287,322 | 147,118 | 1,217,899 | 119,300 | 242,018 | 6,013,656 |

| Gear | Area | Sockeye | Pink | Chum | Coho | Chinook | Total |
|-----------------|-------------------|-----------|-----------|-----------|---------|---------|-----------|
| Seine Area A | Skeena | 841,988 | 294,802 | 31,456 | 19,312 | 2,033 | 1,189,591 |
| | Other North Coast | 754,867 | 2,181,257 | 2,214,015 | 112,862 | 55,015 | 5,318,016 |
| | Total North Coast | 1,596,855 | 2,476,058 | 2,245,472 | 132,175 | 57,047 | 6,507,607 |

| Gear | Area | Sockeye | Pink | Chum | Coho | Chinook | Total |
|--------------|-------------------|-----------|-----------|-----------|-----------|-----------|------------|
| Net Fleet | Skeena | 3,367,953 | 350,077 | 57,193 | 25,750 | 189,036 | 3,990,009 |
| | Other North Coast | 2,516,224 | 2,273,099 | 3,406,177 | 225,725 | 110,030 | 8,531,254 |
| | Total North Coast | 5,884,177 | 2,623,176 | 3,463,371 | \$251,474 | \$299,065 | 12,521,263 |

Source: Fisheries and Oceans Canada; Counterpoint estimates.

The landed value of Skeena salmon harvested by the net fleet totals \$4.0 million per year for the period. The landed value of non-Skeena salmon landed in north coast fisheries is \$8.5 million. Skeena landings represent about 32% of the value of north coast net landings.

The primary north coast fisheries in terms of economic importance to the fleet are:

- Skeena sockeye (mostly gillnet).
- Nass sockeye (mostly gillnet).
- Central and north coast chums (majority seine, strong minority gillnet).
- North and central coast pinks (mostly seine).

The selection of a representative timeframe for presenting commercial economic data is problematic. Use of the period 2004-2007 captures the recent sharp downturn in landings levels, and describes the fleet at an economic low ebb. Use of an earlier timeframe would depict a far more prosperous fleet having a greater economic impact. Given trends in management (allocation) and impact of climate change on salmon stocks—high variability of runs seems to be the norm—a recent cycle was chosen. Additionally, the Terms of Reference for this study sought a recent economic snapshot. Figure 2 shows how Skeena sockeye landings, the strongest influence on economic results, have varied over the past three cycles.

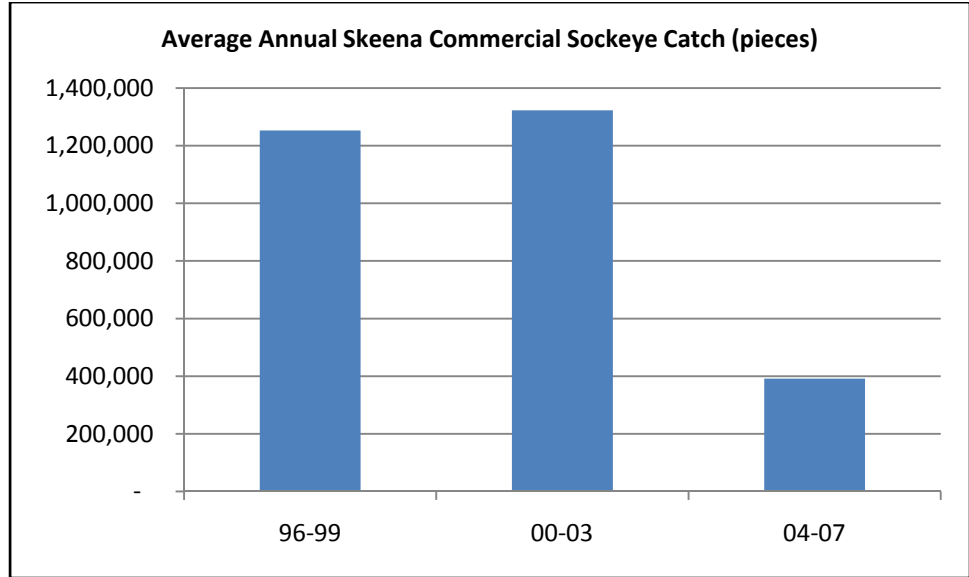


FIGURE 2: AVERAGE ANNUAL SKEENA SOCKEYE CATCH OVER THREE CYCLES

The use of an earlier timeframe (either of the prior two cycles) would result in an assessment of economic benefits for the commercial sector of 2-3 times the magnitude of that shown in this study.

DFO managers believe that the future will look more like the most recent cycle than the previous two.

GILLNET FLEET STRUCTURE

Vessels licensed to gillnet in the north coast may also possess licences to participate in other commercial fisheries. Fisheries and Oceans Canada (DFO) has provided moral encouragement for fleet diversification since the advent of fleet restructuring programs in 1996 as a prudent business strategy to reduce reliance on the salmon fishery.

About 55 percent of north coast (Area C) gillnetters are licensed for this single fishery, with 45 percent enjoying at least one other fishing opportunity. The following tables provide an assessment of Area C fishery diversification.

TABLE 14: NORTH COAST GILLNET LICENCE DIVERSIFICATION

| Licensing Arrangement | Percent | Number |
|--------------------------|---------|--------|
| C only | 55% | 359 |
| C + one other licence | 36% | 240 |
| C + two other licences | 6% | 41 |
| C + three or more others | 3% | 18 |
| Area C total | 100% | 658 |

Source: Fisheries and Oceans Canada; Counterpoint estimates.

A glimpse at the breakdown of Area C fishery diversification reveals that most of the vessels with additional licences are licensed for south coast salmon fisheries (Areas D and E).

TABLE 15: NORTH COAST GILLNET FLEET—AREA C PLUS OTHER SALMON OPPORTUNITIES

| Licensing Arrangement | Percent | Number |
|-----------------------|---------|--------|
| C only | 55% | 359 |
| C + D | 20% | 134 |
| C + E | 9% | 58 |
| C, D and E | 3% | 17 |
| Salmon only | 86% | 568 |

Source: Fisheries and Oceans Canada; Counterpoint estimates.

In addition to salmon fisheries, there are a host of other licences aboard Area C vessels.

TABLE 16: NON-SALMON LICENCES ON THE NORTH COAST GILLNET FLEET

| Non-Salmon Licences | Percent | Number |
|---------------------|---------|--------|
| Halibut | 9% | 56 |
| Shrimp | 4% | 32 |
| Rockfish (ZN) | 2% | 16 |
| Prawn | 0.5% | 3 |
| Various | 2% | 12 |
| Non-salmon total | 17% | 120 |

Source: Fisheries and Oceans Canada; Counterpoint estimates.

The structure of the north coast (Area C) gillnet fleet is summarised as follows:

- A high proportion of vessels—55 percent—fish only in the north coast for salmon.
- 86 percent of vessels fish only salmon (Area C plus one or more other salmon areas).
- 17 percent of vessels are also licensed to participate in a non-salmon fishery.
- First Nations harvesters, who are the least likely to enjoy economic diversification opportunities, constitute a high proportion of the fleet.

Overall, the Area C fleet is not very highly diversified; its reliance on the north coast salmon fishery is high.

SEINE FLEET STRUCTURE

The north coast (Area A) seine fleet is much more diversified than the north coast gillnet fleet. The following tables were assembled using the same methodology employed in the gillnet profiles above.

TABLE 17: NORTH COAST SEINE LICENCE DIVERSIFICATION SUMMARY

| Licensing Arrangement | Percent | Number |
|--------------------------|---------|--------|
| A only | 10% | 11 |
| A + one other licence | 25% | 26 |
| A + two other licences | 13% | 14 |
| A + three or more others | 52% | 56 |
| Area C total | 100% | 108 |

Source: Fisheries and Oceans Canada; Counterpoint estimates.

The picture for seines is much different from that of gillnets. Only 10 percent of the Area A fleet rely on their northern salmon licence as their sole fishing opportunity. Greater than half of the vessels have three fishing opportunities.

TABLE 18: NORTH COAST SEINE FLEET – AREA A PLUS OTHER SALMON OPPORTUNITIES

| Licensing Arrangement | Percent | Number |
|-----------------------|---------|--------|
| A only | 10% | 11 |
| A + B | 22% | 23 |
| Salmon only | 32% | 35 |

Source: Fisheries and Oceans Canada; Counterpoint estimates.

Relatively few north coast salmon seiners rely only on salmon fisheries. Table 19 shows the principal non-salmon fishing licences held by northern salmon seiners.

TABLE 19: NON-SALMON LICENCES ON THE NORTH COAST SEINE FLEET

| Non-Salmon Fisheries | Percent | Number |
|-------------------------|-------------|------------|
| Roe Herring Seine | 56% | 60 |
| Sardine | 25% | 28 |
| Halibut | 18% | 19 |
| Groundfish Trawl | 6% | 6 |
| Sablefish | 2% | 2 |
| Shrimp | 1% | 1 |
| Non-salmon total | 107% | 115 |

Source: Fisheries and Oceans Canada; Counterpoint estimates.

Total exceeds 100 percent because some Area A vessels have more than one category of non-salmon licence.

The most common profile for an Area A salmon seiner is:

- Both A and B licences (81 vessels have both north and south coast salmon opportunities), plus
- Two roe herring seine licences (the 60 vessels that harvest roe herring use 115 licences, an average of nearly two herring licences per vessel).

In addition, a portion of the vessels utilise at least one other licence. While this degree of diversification is promising, the roe herring fishery has in recent years suffered a decline of similar magnitude to that seen in the salmon fishery, reducing the advantages of diversification.

HARVESTING SECTOR SUMMARY

The commercial harvesting sector can be summarised as follows:

- The commercial salmon fleet is organised into three gear types and 8 areas. The north coast area, including Skeena watershed fisheries, features three salmon licence designations: seine (A), gillnet (C), and troll (F).
- The gear type harvesting the bulk of Skeena catches is the gillnet fleet, followed by the seine fleet. The troll fleet is not a material exploiter of Skeena salmon. Sockeye is by far the most commercially valuable Skeena species, followed by pink.
- The value of annual commercial Skeena net fleet catches for the most recent cycle (2004-2007) is about \$4.0 million. Fisheries in other portions of the north coast account for a further \$8.5 million. These values are markedly lower than values seen in earlier cycle(s) due to reduced harvests and downward pressure on prices from competition by farmed salmon.
- The gillnet fleet, over half of which is First Nations harvesters, is highly reliant on the Skeena/north coast

About Salmon Value

The value of the commercial harvest has fallen in recent years. A host of competitive and market changes have contributed to the decline in value, among them:

- The explosion of salmon aquaculture, with farmed product both displacing wild salmon from traditional markets, and establishing a (lower) ceiling for the price of salmon.
- The growth of wild salmon fisheries in Alaska, Russia, and Japan. Wild salmon production from the north Pacific is at or near historic highs, meaning plenty of wild salmon competing with farmed salmon and, consequently, downward pressure on price.
- The decline of Japan as a high-value outlet for wild salmon. A soft economy, changing demographics, and a growing acceptance of farmed salmon and trout have softened demand for sockeye.
- The emergence of China and Russia as importers and re-processors of salmon along with consumer acceptance of twice-frozen products. Paltry labour costs mean low offering prices.

These and other global forces have compounded the difficulty of marketing salmon at prices enjoyed in the past.

salmon fishery, though 45 percent of the fleet enjoys some form of diversification (usually south coast salmon).

- The seine fleet is far more diversified, with most vessels also involved in south coast salmon and roe herring.

PROCESSING SECTOR OVERVIEW

Unlike the harvesting sector profile, for which a regulatory structure is in place and licensing data are available, there is very little publicly available data from which to prepare a processing sector profile.

Representatives of most of BC's major salmon processing firms were interviewed for this analysis. They provided an appreciation for the fact that, although the processing sector is sometimes thought of as a single entity, in fact no two processors have the same business plan for salmon. Every processor has a different customer base, product mix, and goals and objectives. Individual firms often have proprietary salmon outlets about which they are not keen to divulge details. Collectively, the processing sector covers a broad spectrum of products and product forms. Among other things, this means that, although this analysis is necessarily presented in terms of averages, Skeena salmon have a more significant impact on some processors (and some parts of the fleet) than others. For example, although Alaskan salmon is brought to Prince Rupert for processing, not all Prince Rupert processors import Alaskan salmon. As a result, Skeena salmon are more important to some Prince Rupert processors than others.

LOCATION

For the purposes of this study, the focus is on processing activity in the Prince Rupert region (hereinafter referred to simply as "Prince Rupert") including nearby Port Simpson and Port Edward.

Prince Rupert is the hub of processing activity in northern BC, with a processing presence second in BC only to that of the Lower Mainland.

In spite of its importance as a processing center, Prince Rupert operations are usually branch or feeder plants for facilities in the Lower Mainland. A portion of marine and in-river caught Skeena salmon are trucked south for processing.

FISH STOCKS DRAWN-UPON

Just as fishing fleets that harvest Skeena salmon catch other north coast salmon, the processing sector in Prince Rupert draws upon a host of salmon and non-salmon fisheries for throughput. Major fisheries proximal to the Skeena/Prince Rupert area (PR) are described in Table 20.

TABLE 20: DESCRIPTION OF MAJOR SKEENA-AREA FISHERIES

| Fishery | Description | Key Species | Prince Rupert Processing Role |
|--------------------------------|--|---|---|
| Skeena Watershed Salmon—Marine | Net fisheries in Area 4 and outside Area 3 | Sockeye, pink | Most of production is landed and/or processed in the PR area. |
| North BC (non-Skeena) Salmon | All other commercial salmon fisheries north of Cape Caution | Sockeye (Nass) pink & chum (net); chinook & coho (troll) | Much of production is landed and/or processed in the area. |
| North BC Shellfish | A variety of capture fisheries north of Cape Caution. Many distinct licence categories. | Crab, geoduck, prawn are highest value. Also, urchins, sea cucumber, shrimp and clam. | Limited processing required for these species (many are live); a portion of production is unloaded in PR and trucked south. |
| North BC Groundfish | Trawl, trap, and hook and line fisheries north of Cape Caution. | Halibut, sablefish, rockfish, sole, hake, lingcod. A large variety of other groundfish species. | Some filleting of rockfish and sole (trawl). Most production landed in PR is trucked south. |
| Southeast Alaska Salmon | Large scale salmon fisheries in the region immediately north of PR. Pink and chum stocks are extremely abundant. Some interception of BC-bound sockeye (include Skeena). | All species of salmon. Pink and chum are key species imported to BC. | BC processors actively bring in SE Alaska salmon because of relatively low cost and consistent high volume levels (surplus to Alaskan processing capacity). Significant amount of processing in PR. |

Source: Counterpoint research.

The Prince Rupert processing sector has evolved to exploit North Coast salmon, roe herring, groundfish, shellfish, and Southeast Alaska salmon. In recent times, Canadian-sourced inputs to Prince Rupert processing—particularly salmon and roe herring—have diminished drastically, and the importance of imported Alaskan salmon has increased.

Figure 3 shows the landed value of various salmon and non-salmon fisheries in the vicinity of Prince Rupert, including the Pacific north coast of Canada and southeast Alaska. The commercial harvest of Skeena salmon is quite small relative to total landed value in the area.

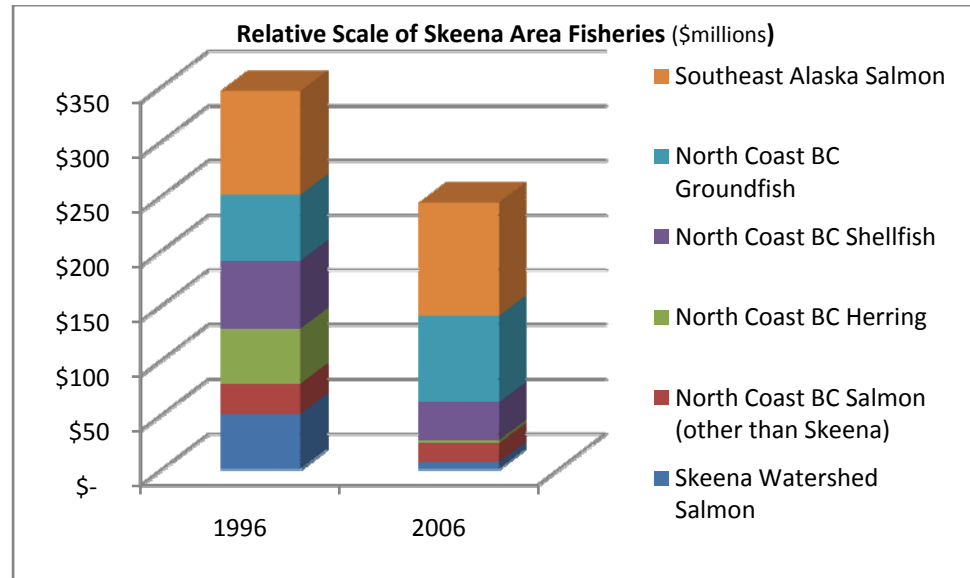


FIGURE 3: LANDED VALUE OF SKEENA-AREA FISHERIES—1996 VS 2006

Figure 3 shows the landed value attributable to different fisheries. These landings do not all necessarily flow into (or through) Prince Rupert: the bulk of southeast Alaska production, for example, stays in Alaska, though significant poundage is directed to Prince Rupert. The bulk of northern BC shellfish merely passes through Prince Rupert for processing further south.

Figure 3 highlights the following key points:

- The relatively small stature currently of Skeena salmon in the scheme of commercial harvests in the vicinity of Prince Rupert. The value and importance of Skeena salmon to Prince Rupert processors was much higher until the current cycle.
- The diminution of north coast BC salmon and herring fisheries (the bottom three bars in Figure 3) recently (from \$125 million in 1996 to \$25 million in 2006).

Although dwarfed by harvests in other local fisheries, Skeena salmon—along with the commercial salmon fishery on the Nass River—are nevertheless an important source of processing throughput for plants located in Prince Rupert. This is particularly true in the month of July when little other work is available for plants and shoreworkers (The Bristol Bay run is over by early July and SE Alaska runs do not peak until August). Salmon processing affords higher margins than many other processing activities, such as handling halibut or shellfish.

PROCESSING ACTIVITY IN PRINCE RUPERT

While virtually every BC seafood processing company utilises Prince Rupert facilities for some aspects of its operations, not every firm has a processing footprint in the region. For companies with limited participation in north coast and southeast Alaska fisheries, the cost of a Prince Rupert operation cannot be justified. Firms with surplus processing capacity in another location may similarly be unwilling to maintain additional facilities. Many companies purchase fish from the area using tender vessels as buying stations, and avail themselves of local services (such as ice and unloading) provided by Prince Ru-

port facilities. Some of BC's major processing firms (eg, Bella Coola Fisheries, Lions Gate Seafoods and North Delta Seafoods) elect not to maintain facilities in the Skeena region.

LIST OF PROCESSING OPERATIONS & ACTIVITIES

Table 21 provides a list of commercial seafood processing facilities in the Skeena watershed area and describes their key activities.

TABLE 21: PROCESSING FACILITIES IN THE PRINCE RUPERT REGION

| Location | Company/Plant | Key Activities |
|---------------|--------------------------------|---|
| Port Simpson | Port Simpson | Dressing salmon. |
| Prince Rupert | Canfisco – Seal Cove | Unloading various species. Dressing salmon. Processing roe herring. |
| | Canfisco – Oceanside | Canning salmon (¼ pound, skinless boneless, other canned products). Freezing roe herring. |
| | Ocean Fisheries – Royal Plant | Dressing salmon, filleting salmon. Processing roe herring. |
| | JS McMillan – “Co-op” Plant | Dressing salmon, filleting groundfish. Reduction plant. Cold storage. |
| | Odin Seafoods | Custom unloading shellfish. |
| | Porcher Seafoods | Custom unloading seafood. |
| | Prince Rupert Seafood Products | Unknown. |
| Port Edward | Grand Hale | Salmon processing. |
| | Aero Trading | Salmon processing, seafood unloading. |
| | Tenerife | Seafood unloading. |

Source: Counterpoint research.

Employment provided at these processing facilities is highly variable from one year to the next, as well as highly seasonal. It falls within a range of 1,000 - 2,000 people. Over half of those employees are First Nations people.

PROCESSING ACTIVITIES

Prince Rupert processing activity can be viewed as falling under two approaches:

- **Processing in Prince Rupert.** A portion of the seafood landed in the region is processed there. The lone salmon canning plant in Prince Rupert is one of the largest salmon canneries in the world. There are a few sites with dressing lines, and at least one with a filleting program. Roe herring and groundfish are also processed in Prince Rupert facilities. Salmon processing requires substantial labour, so the employment associated with local processing is significant.
- **Prince Rupert as forwarding station.** A portion of fish and shellfish harvested in the region is unloaded, put in totes and forwarded by truck to another location for processing. This may be fish purchased by a firm without a local presence, or it may

be fish purchased by a firm with a Prince Rupert plant that opts to process it elsewhere. Unloading of fish requires very little labour.

Firms with facilities in Prince Rupert have varying utilisation plans:

- Some process only their own production—the plants are a proprietary asset used to gain competitive advantage.
- Some are strictly customer processors—the owners do not purchase fish on their own account, they merely provide a service to others in the industry.
- Some combine in-house throughput with custom processing services. Increasingly, owners of plants are willing to be flexible in order to improve asset utilisation and lower operating costs.

PRODUCT FORMS

Salmon harvested from the Skeena River are processed into a multitude of product forms. The vast majority of fish in Prince Rupert is processed into primary products (canned, dressed). Fish that is forwarded to south coast processing sites more often is processed into secondary products (specialty, value-adding).

ALTERNATIVE CHANNELS

The harvesting and processing sectors—fishermen selling their catch to processors, who in turn sell to wholesale markets—account for the vast majority of arrangements in the Skeena salmon fishery.

A small minority of players—fishermen or small-scale processors—skirt the regular channels. Alternative Channels is the term used to describe participants who differentiate their products in order to gain higher prices (eg, live harvest) or those who bypass the regular distribution channel (eg, fishermen direct sales to the public, or direct sales to restaurants and retailers).

Alternative channels cannot be considered a sector—it is too small and fractured—but is included in our profile because alternative channels, in the view of some, hold promise for future value growth.

COMMERCIAL SECTOR ECONOMIC PROFILES

This chapter presents economic profiles of the commercial salmon sector in Prince Rupert including:

- The economics of each sector. How the funds flow, the scope and nature of economic activity, and assessments of profitability (where applicable).
- How the sectors actually work. What are the prevailing strategies, what is the flow of activities?
- Answers to some specific questions posed by our Project Authority with respect to values and value-adding in the commercial sector.

There being little published data available, economic modeling was employed to profile the Prince Rupert commercial salmon sector. Because individual participants—fishermen and processors—have widely varying strategies, these profiles may not reveal the particulars of any single business; rather, they show results for similar clusters of businesses.

In portraying the economic picture for the commercial sector, it is problematic, but necessary, to isolate economic impacts attributable to Skeena-bound salmon from those derived from other salmon operations (north coast, Alaska, and south coast). Vessels and processors seldom (if ever) participate strictly in Skeena salmon—their operations, and therefore costs, are structured to exploit various coastal fisheries.

HARVESTING SECTOR

The following tasks are undertaken in this section:

1. Identify relevant vessel profiles.
2. Provide an income estimate for individual vessel profiles.
3. Provide an income estimate of the aggregate north coast fleet.
4. Assess economic results and identify keys to success.

Although we are using an Income Statement format, and use that term throughout this report, the focus here is on economic rather than financial analysis. As a result, amortisation, a non-cash expense, is included, as it represents the annual use value of capital assets such as vessels and equipment in production. In contrast, interest and principal payments are excluded. Principal and Interest payments do not reflect the use of economic inputs in production but rather the financing costs of so doing.

GILLNET

Economic projections for a variety of north coast gillnet profiles are presented. The purpose of this profiling is to convey the diversity of arrangements and results seen in the fishery. Table 22 shows an estimate of the number of Area C vessels in each profile.

TABLE 22: AREA C GILLNET FLEET PROFILES

| Gillnet Profiles | # Vessels |
|---|------------|
| Area C only— Salmon (top producers) | 43 |
| Area C only—Salmon (mid producers) | 51 |
| Area C only—Salmon (bottom producers) | 77 |
| Idle | 161 |
| Area C only—Total (active only) | 171 |
| Area C & other salmon (all producers) | 185 |
| Area C, D, E salmon (all producers) | 18 |
| Area C, D (all producers) & halibut | 54 |
| Idle | 69 |
| Total Area C fleet (active and idle) | 658 |

Source: Fisheries and Oceans Canada; Counterpoint estimates.

The first grouping isolates gillnet vessels licensed to operate only in the north coast salmon fishery. This includes active and inactive vessels. The number of vessels opting out of the fishery each season, due to poor economic expectations, is considerable. The absence of about a third of the fleet from the fishery each year confers a considerable benefit on active vessels.

In the competitive fishery, the productivity of individual harvesters varies significantly, and production yields a large impact on profitability. Active vessels are differentiated based on production levels—top, middle and bottom.

The second grouping stratifies those Area C vessels that have other fishing opportunities. To keep the number of profiles manageable, only average production levels are presented for all producers in Area C, D, and E salmon fisheries, though productivity does in fact vary.

For each profile described in Table 22, an economic projection was produced, with salmon results based on 2004-2007 averages catches and prices (the same prices as were used in Table 13). Table 23 shows the typical economic performance of a high-producing, north-coast-only gillnetter.

TABLE 23: ECONOMIC PROJECTION FOR AREA C GILLNET—HIGH PRODUCER

| High Producer | Area C (Skeena) | Area C (Other North Coast) | Total Area C | Total |
|---------------------------------------|-----------------|----------------------------|--------------|----------|
| Gross Fish Value | \$9,167 | \$5,364 | \$14,531 | \$14,531 |
| Variable Fishery Expenses | | | | |
| Fuel | 1,500 | 1,500 | 3,000 | 3,000 |
| Licence Fees | 355 | 355 | 710 | 710 |
| Ice | 100 | 100 | 200 | 200 |
| Other | 300 | 200 | 500 | 500 |
| <i>Total Fishery Expenses</i> | 2,255 | 2,155 | 4,410 | 4,410 |
| Fishery Contribution | \$6,912 | \$3,209 | \$10,121 | \$10,121 |
| Fixed Vessel Expenses | | | | |
| Amortisation | | | | 5,625 |
| Insurance | | | | 2,000 |
| Gear & Vessel Repairs & Maintenance | | | | 4,500 |
| Moorage/Gear Storage | | | | 1,250 |
| Other | | | | 500 |
| <i>Total Fixed Expenses</i> | | | | 13,875 |
| Income from Fishing Operations | | | | -\$3,754 |

Source: Counterpoint estimates.

The economic projection in Table 23 provides insight into the fishing operations of a north coast gillnetter:

- The Skeena area provides roughly two-thirds of the revenue and contribution for Skeena fishermen operating in Area C.
- The bulk of non-Skeena revenue derives from the Nass sockeye fishery, with various other fisheries providing small contributions (eg, central coast or fall chums).
- Economic performance is negative.

A tabular summary of economic results for the identified profiles is shown in Table 24. The \$710 expense (and loss) shown for idle vessels represents the licence fee, which must be paid regardless of participation to keep the licence in good standing.

TABLE 24: INDIVIDUAL VESSEL PROFILES FOR THE AREA C GILLNET FLEET

| Individual Vessel Profile | Area C only Salmon, top producer | Area C only Salmon, mid pro- ducer | Area C only Salmon, low pro- ducer | Area C & D Salmon (mid pro- ducer) | Area C, D, E salmon (mid pro- ducer) | Area C, D (mid pro- ducer) & halibut | Idle |
|-------------------------------|--|--|--|---|---|---|--------|
| Total Revenue | \$14,531 | \$10,379 | \$7,784 | \$21,775 | \$31,608 | \$81,775 | \$0 |
| Less: Fishery Direct Expenses | 4,410 | 4,410 | 4,410 | 7,520 | 10,630 | 35,270 | 710 |
| Less: Vessel Fixed Expenses | 13,875 | 13,875 | 13,875 | 14,625 | 15,375 | 17,625 | - |
| Income | -\$3,754 | -\$7,906 | -\$10,501 | -\$370 | \$5,603 | \$28,880 | -\$710 |
| Skeena Value of Revenue | \$9,167 | \$6,548 | \$4,911 | \$6,548 | \$6,548 | \$6,548 | \$0 |
| Skeena Percent of Revenue | 63% | 63% | 63% | 30% | 21% | 8% | 0% |

Source: Counterpoint estimates.

In the gillnet fleet, Income constitutes the return to labour and investment, since the vast majority of vessels are operated by their owners. In years past, many gillnet owner/operators hired deckhands, to improve efficiency and safety but current economics dictate solo operations for most vessels.

The individual profiles are extrapolated to the fleet level in Table 25.

TABLE 25: FLEET PROFILES FOR THE AREA C GILLNET FLEET

| Fleet Profile (\$millions) | Area C Salmon top producers | Area C Salmon mid pro- ducers | Area C Salmon bottom producers | Area C & D Salmon mid pro- ducers | Area C, D, E salmon, mid pro- ducers | Area C, D mid pro- ducers & halibut | Idle | Total |
|-------------------------------|-----------------------------------|--|---|--|---|--|--------|---------|
| Est. Number of Vessels | 43 | 60 | 68 | 185 | 18 | 54 | 230 | 658 |
| Total Revenue | \$0.62 | \$0.62 | \$0.53 | \$4.03 | \$0.57 | \$4.41 | \$0.00 | \$10.78 |
| Less: Fishery Direct Expenses | 0.19 | 0.26 | 0.30 | 1.39 | 0.19 | 1.90 | 0.16 | 4.40 |
| Less: Vessel Fixed Expenses | 0.59 | 0.83 | 0.95 | 2.71 | 0.28 | 0.95 | - | 6.30 |
| Income | (0.16) | (0.47) | (0.72) | (0.07) | 0.10 | 1.56 | (0.16) | 0.08 |
| Skeena Value of Revenue | \$0.39 | \$0.39 | \$0.34 | \$1.21 | \$0.12 | \$0.35 | \$0.00 | \$2.80 |
| Skeena Percent of Revenue | 63% | 63% | 63% | 30% | 21% | 8% | 0% | 26% |

Source: Counterpoint estimates.

Gillnet vessels harvest Skeena stocks valued at about \$2.8 million. The value of their total catch is \$10.8 million. Skeena salmon therefore represents 26 percent of total landed value. Intuitively, vessels fishing only on north coast salmon are most reliant (63 percent) on Skeena stocks; Skeena-reliance declines as diversification improves. An estimated 500 people are employed on north coast gillnetters

ASSESSMENT OF RESULTS

Given the diversity of the Area C gillnet fleet, it is difficult to summarise results. The figures shown in this analysis capture the following circumstances:

- Revenues reflect the low catch levels and fish prices seen in the recent cycle.
- Expenses have been slashed to adapt to low revenue levels. Expense levels shown reflect crisis spending levels; a significantly higher budget may be required to properly maintain a vessel for sustainable operations. Fuel costs are lower than may be intuitive because fishermen are adjusting their practices (“throttling back”) and because there are fewer and shorter openings during the study period than previously.
- The down-sized fleet is generating fewer economic benefits and impacts than has historically been the case.

While economic results are generally weak, they are abetted by the fact that a substantial portion of the fleet is idle. Poor expectations and high operating costs (particularly fuel) keep many vessels tied to the dock, to the benefit of those willing to take the risk of participating in the fishery.

The volatility seen on the Skeena is also seen in other river systems, particularly the Fraser. South coast diversification for a north coast gillnetter may mean negligible opportunities (as in 2007 on the Fraser). For the 2008 season, a gillnetter possessing coastwide salmon licences (C, D, and E) saw very few fishing opportunities for sockeye, and only sporadic chances to fish other species.

Given the generally negative incomes earned by north coast gillnetters, salmon fishing is a part-time activity for many individuals. Some gillnetters have other jobs, and some collect EI benefits in the offseason. For many, salmon fishing has become an opportunistic activity—any contribution is welcome, but individuals will necessarily carry on with other activities. To an extent, commercial salmon fishing is a lifestyle choice, and gillnetters may take great pleasure in exercising their annual rite of dipping the net—for better or worse.

For a core of local First Nations fishermen (the bulk of the NNFC fleet), however, salmon fishing in Area C represents the key economic activity for the year. In remote villages in the watershed, alternative employment opportunities are scarce. The value of a dollar of income in such communities may be more important than in larger communities where there are more and better alternative economic opportunities.

The lifestyle and opportunistic approach held by some fleet members partly explains why the commercial industry is having difficulty reforming the fishery to a more businesslike footing. Some members of the fleet, in spite of poor or uneven economic results, are content with the status quo, fearing that reform would rationalise them out of the fishery.

SEINE

Table 26 provides an analysis of the seine fleet in a format similar to that shown for gillnets.

TABLE 26: AREA A SEINE FLEET PROFILES

| Seine Profiles | # Vessels |
|--|------------|
| Area A only | 11 |
| Area A and B | 23 |
| Area A, B and Roe Herring (2 licences) | 58 |
| Idle | 16 |
| Total | 108 |

Source: Fisheries and Oceans Canada; Counterpoint estimates.

Individual vessel economic profiles are shown in Table 27. Although the seine fleet features a high degree of variation in landings levels (high, medium, low), Table 27 includes averages only to keep the number of profiles presented to a manageable level.

Table 27 shows a full economic schedule for a single vessel, licensed for areas A and B and utilising two roe herring licences. This is the most common profile for a Skeena-area seiner.

TABLE 27: ECONOMIC PROJECTION FOR AREA A SEINE VESSEL WITH AREA B & ROE HERRING OPPORTUNITIES

| Average Producer | Area A (Skeena) | Area A (Other North Coast) | Total Area A | Area B | Roe Herring | Total |
|---------------------------------------|-----------------|----------------------------|--------------|----------|-------------|-----------|
| Gross Fish Value | \$12,959 | \$40,551 | \$53,510 | \$60,309 | \$90,000 | \$203,819 |
| Variable Fishery Expenses | | | | | | |
| Fuel | 2,500 | 5,000 | 7,500 | 5,000 | 10,000 | 22,500 |
| Monitoring (EM, offload) | | | | | 500 | 500 |
| Licence Fees | 700 | 3,000 | 3,700 | 3,700 | 7,960 | 15,360 |
| Licence/Quota Leases | | | | | 15,000 | 15,000 |
| Ice | 150 | 350 | 500 | 500 | 500 | 1,500 |
| Other | 200 | 400 | 600 | 500 | 500 | 1,600 |
| <i>Total Fishery Expenses</i> | 3,550 | 8,750 | 12,300 | 9,700 | 34,460 | 56,460 |
| Net Fish Value | 9,409 | 31,801 | 41,210 | 50,609 | 55,540 | 147,359 |
| <i>Less - Crew Shares (Seine)</i> | 4,704 | 15,901 | 20,605 | 25,305 | 36,000 | 81,910 |
| <i>Less - Gear Shares (Seine)</i> | 941 | 3,180 | 4,121 | 5,061 | 6,000 | 15,182 |
| Fishery Contribution | \$3,763 | \$12,721 | \$16,484 | \$20,244 | \$13,540 | \$50,268 |
| Fixed Vessel Expenses | | | | | | |
| Amortisation | | | | | | 18,750 |
| Insurance | | | | | | 10,000 |
| Gear & Vessel Repairs & Maintenance | | | | | | 20,000 |
| Moorage/Gear Storage | | | | | | 2,000 |
| Other | | | | | | 500 |
| <i>Total Fixed Expenses</i> | | | | | | 51,250 |
| Income from Fishing Operations | | | | | | -\$982 |

Source: Counterpoint estimates.

For a typical seiner, the Skeena component of the catch is modest. Despite a reasonable level of fishery diversification, economic results for a seiner are marginal. It takes a number of activities to assemble a near break-even operation. While Skeena salmon is not a predominant activity, it is one that a seiner nevertheless relies upon—the opportunity to make a sizeable set of Skeena sockeye is valued. Because of the nature of the revenue sharing arrangement between vessel owners and crews, sockeye is far more profitable than other species of salmon.

The roe herring fishery was long a lucrative activity that effectively carried the seine fleet economically but now contributes only thin margins for seine vessels. Downturns in the salmon and herring fisheries have severely impacted seine fleet profitability.

Additional single-vessel seine profiles are shown in Table 28.

TABLE 28: INDIVIDUAL VESSEL PROFILES FOR THE AREA A SEINE FLEET

| Individual Vessel Profile | Area A | Areas A & B, | Areas A & B + 2 Roe Herring Licences | Idle |
|-------------------------------|-------------------|------------------|--------------------------------------|------------------|
| Total Revenue | \$53,510 | \$113,819 | \$203,819 | 0 |
| Less: Fishery Direct Expenses | 12,300 | 22,000 | 56,460 | 3,700 |
| Less: Crew & Gear Shares | 24,726 | 55,092 | 97,092 | - |
| Less: Vessel Fixed Expenses | 43,750 | 46,250 | 51,250 | 0 |
| Income | \$(27,266) | \$(9,522) | \$(982) | \$(3,700) |
| Skeena Value of Revenue | \$12,959 | \$12,959 | \$12,959 | \$- |
| Skeena Percent of Revenue | 24% | 11% | 6% | 0% |

Source: Counterpoint estimates.

For a minority of Area A vessels, the skipper is also the owner of the vessel. For the bulk of the fleet, vessels are owned in whole or in part by processing or other companies that retain a skipper as an independent contractor.

In the seine fleet, there are typically four crewmen including the skipper aboard each vessel. Approximately half the north coast seine vessels is crewed by aboriginal people.

Proceeds from the net catch are distributed among the vessel owner and the crew according to a relatively standard industry formula.

Individual seine vessel economic results are extrapolated to the Area A fleet level in Table 29.

TABLE 29: FLEET PROFILES FOR THE AREA A SEINE FLEET

| Fleet Profile (\$millions) | Area A | Areas A & B | A & B + 2 Roe Herring Licences | Idle | Total |
|-------------------------------|--------|-------------|--------------------------------|--------|----------|
| Est. Number of Vessels | 11 | 23 | 58 | 16 | 108 |
| Total Revenue | \$0.59 | \$2.62 | \$11.78 | \$- | \$14.99 |
| Less: Fishery Direct Expenses | 0.14 | 0.51 | 3.26 | 0.06 | \$3.96 |
| Less: Crew & Gear Shares | 0.27 | 1.27 | 5.61 | - | \$7.15 |
| Less: Vessel Fixed Expenses | 0.48 | 1.06 | 2.96 | - | \$4.51 |
| Income | (0.30) | (0.22) | (0.06) | (0.06) | \$(0.63) |
| Skeena Value of Revenue | \$0.14 | \$0.30 | \$0.75 | \$0.00 | \$1.190 |
| Skeena Percent of Revenue | 24% | 11% | 6% | 0% | 8% |

Source: Counterpoint estimates.

Skeena-licensed seiners catch \$15 million worth of fish, with \$1.2 million (8 percent) of this catch consisting of Skeena-bound salmon. About 375 people are employed on north coast seiners.

ASSESSMENT OF RESULTS

For the seine fleet, the context for the results presented above is the same as for the gillnet fleet: catch and revenue levels are low and expense levels are artificially curbed to allow continued operations during a period of transition.

For seiners, Skeena salmon represent a relatively small portion of revenues. There are two reasons:

1. Seiners receive a minority commercial allocation of Skeena sockeye (25% vs 75% for gillnets).
2. Skeena sockeye generally return in scattered schools, whereas seines shine when working more tightly compacted schools. Seines catch the majority of Skeena-bound pinks but these fish are of far lower value than sockeye.

In contrast to gillnets, seines are larger-scale business enterprises requiring substantial capital investment and crew complement. Seine vessel owners generally cannot endure (in the case of individual vessel owners) or tolerate (in the case of corporate vessel owners) years of losses.

HARVESTING SECTOR SUMMARY

Combining the preceding analyses provides an economic profile of the harvesting sector (including gillnet and seine fleets) attributable to Skeena stocks. A key step in this section is to isolate those revenues and costs attributable solely to Skeena salmonids.

TABLE 30: SKEENA NET FLEET—CONSOLIDATED RESULTS FOR SKEENA SALMON

| | Gillnet | Seine | Total |
|---------------------------------------|--------------|--------|--------|
| | (\$millions) | | |
| Gross Fish Value | \$2.8 | \$1.2 | \$4.0 |
| Variable Fishery Expenses | | | |
| Fuel | 0.6 | 0.2 | 0.9 |
| Monitoring (EM, offload) | - | - | - |
| Licence Fees | 0.2 | 0.1 | 0.3 |
| Licence/Quota Leases | - | - | - |
| Bait | - | - | - |
| Ice | 0.04 | 0.01 | 0.06 |
| Other | 0.1 | - | 0.1 |
| Deckhand (Gillnet) | - | - | - |
| <i>Total Fishery Expenses</i> | 1.0 | 0.3 | 1.4 |
| Net Fish Value | 1.8 | 0.9 | 2.6 |
| <i>Less - Crew Shares (Seine)</i> | - | 0.4 | 0.4 |
| <i>Less - Gear Shares (Seine)</i> | - | 0.1 | 0.1 |
| Fishery Contribution | 1.8 | 0.3 | 2.1 |
| Fixed Vessel Expenses | | | |
| Amortisation | 1.0 | 0.2 | 1.1 |
| Insurance | 0.3 | 0.1 | 0.4 |
| Repairs & Maintenance | 0.8 | 0.1 | 1.0 |
| Moorage/Gear Storage | 0.2 | 0.0 | 0.2 |
| Other | 0.1 | 0.0 | 0.1 |
| <i>Total Fixed Expenses</i> | 2.4 | 0.4 | 2.9 |
| Cash Flow from Skeena Salmon | -\$0.7 | -\$0.1 | -\$0.8 |
| <i>Source: Counterpoint estimates</i> | | | |

ISSUES FOR THE SKEENA NET FLEET

The economic profiles highlight some fundamental issues facing gillnet and seine fleets harvesting Skeena salmon.

NOT ENOUGH REVENUE, TOO MANY VESSELS

Although the number of vessels in the commercial salmon fleet has been halved through government-funded licence retirement programs, catch levels and catch values have declined by a much greater percentage. At current catch and value levels, there is simply too little revenue to share amongst the existing fleet. This suggests the need to

address both the value of the catch and fleet size and structure.

Additionally, rising fuel costs are impacting results. Whereas fuel was seldom a consideration in planning and executing fisheries (a minor cost of doing business) it is now a major consideration influencing travel times/speeds, attendance at fisheries, and running from one spot to another during an opening.

INACTIVE VESSELS WILL ENGAGE IF ECONOMICS IMPROVE

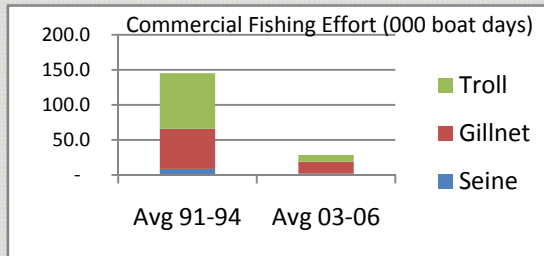
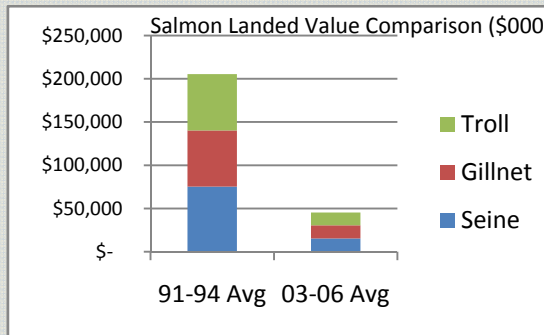
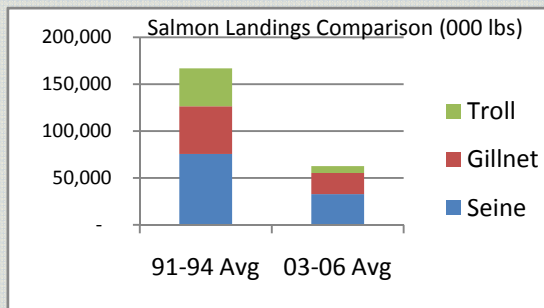
If, as some participants hope or trust will happen, the economics of the Skeena salmon fishery improve, inactive vessels will return to the fishery, thus mitigating improvement in economic results. There is a widely but not universally accepted need for further fleet reduction in the commercial salmon fleet.

CONSTRAINTS TO HIGHER CATCHES

Some commercial participants believe that increased access to stocks, resulting in higher harvest levels, would resolve economic problems and preclude the need for reform. As much as commercial participants long to see catch levels return to past levels, there are formidable constraints precluding a dramatic rally in harvests. A series of factors have combined in recent years to significantly crimp the duration, frequency and area of commercial openings in general and Skeena salmon fisheries in particular. The large-scale mixed stock fisheries that characterised the 1980s have given way to more limited opportunities in the 2000s. Among the factors responsible for this trend:

Coastwide Commercial Catch Indicators

There are repeated references to the declining scale and value of the commercial fishery in recent years. The following graphs show the coastwide trend for commercial catch, catch value, and fishing effort (# days fished).



(note: there are some seine boat-days in the last graph above but too few to register at this small scale).

- **Allocation priority to other sectors.** The Sparrow Decision of 1990 and the Allocation Policy of 1998 spelled lower allocation priority for the commercial sector relative to First Nations and sport fisheries than had been seen in prior years.
- **Precautionary fishery management approach.** A series of conservation concerns, particularly for coho, chinook, steelhead, chum and weak-stock sockeye systems, along with a growing conservation ethic, have resulted in an increasingly precautionary approach by DFO to salmon management. This is driven both by forces within DFO (need to fulfill conservation mandate) and external forces (Species at Risk Act, environmental organisations, public pressure). The Wild Salmon Policy requires a more-precise (stock-specific) management approach that limits opportunities for large scale mixed stock fisheries.
- **Consumer demands for sustainability.** Consumers, while keen to purchase wild seafood, are increasingly informed and concerned about the sustainability of commercial fisheries. The Marine Stewardship Council provides sustainability certification for fisheries meeting its criteria, though many environmental groups weigh in with their own lists of seafood items to enjoy or avoid. Regardless of regulatory requirements, consumer demands are increasingly causing fisheries to observe and document sustainable harvesting and ecosystem management programs.
- **Environmental conditions.** Ocean conditions are considered to be a key factor driving the variability of salmon returns in BC. Climate change may well impose further unpredictability on Skeena and other salmon returns, exacerbating the need for precautionary fisheries management.

Given these factors, it is pure optimism to believe that a return to past fishing practices is in the offing, though harvest growth through selective, sustainable fisheries remains a prospect.

SELECTIVE FISHING

Over the past 10-15 years, in response to evolving conservation concerns and DFO's fishery management approach, the Skeena-area net fleet has conducted research and adopted a series of measures to address selectivity (avoidance of non-target stocks, and ability to release non-targeted species with minimal harm). A partial list of selectivity studies and initiatives follows:

- Weed-lines—no mesh on the surface to avoid shallow-swimming steelhead (gillnet).
- Mapping studies—assess where/when coho are caught to assist avoidance (close hot spots).
- Revival boxes—equipment and protocols to facilitate live release of non-target species (especially coho and steelhead).
- Steelhead release barge—collect steelhead from revival boxes for release after the fishery to reduce incidence of release & recapture.
- Night time closures—daytime only fishing to reduce encounters of coho.
- Short nets, hot sets—use of ½-length gillnets and short (30-40 minute) soak times (the duration that the net is left in the water after setting and prior to retrieval).
- Hot set studies—examination of factors contributing to avoidance and live-release effectiveness.
- Mandatory brailing (seines) and live-release of non-target species.

It is well documented that fishermen who are motivated and equipped to fish selectively can do so with good results but equally that un-motivated and/or ill-equipped harvesters do a much poorer job (DFO's Selective Fishing web site—<http://www.pac.dfo->

mpo.gc.ca/ops/fm/selective/default_e.htm—includes reports and publications on the development and testing of selective fishing in the Pacific salmon fishery). The current fleet includes both types of fishermen. The ISRP cast suspicion on the effectiveness of selective fishing by gillnets. The key to an effective selective fishery is providing appropriate incentives, supported by regulations and enforcement, to channel the energy and ingenuity of the fleet toward selective fishing practices. These incentives are not currently in place.

The limitation of a properly implemented and monitored selective fishing regime is that it is largely species-specific. The ability to differentiate stocks within a species (eg, ascertaining which of 28 conservation units a Skeena sockeye comes from) is very low.

MORE-TERMINAL HARVESTS

To address the need to harvest selectively on target stocks, there is increasing pressure to move commercial fisheries further upstream. This may mean fisheries in more terminal areas of the commercial boundaries, or moving them upstream of commercial boundaries altogether, which implies harvest by First Nations.

CATCH VALUE

Harvest value is a function of both catch volume and price. Fishermen have seen fish prices drop in recent years, despite a reduction in Skeena and other BC salmon volumes. This seems counter-intuitive to the supply-demand relationship but reflects profound competitive changes in the global salmon business, including fierce competition from farmed salmon. Getting the best price for every pound of salmon is key to success but the true value of salmon—and how value is distributed along the value chain—is not well understood by fishermen or observers of the fishery.

PACIFIC INTEGRATED COMMERCIAL FISHERIES INITIATIVE

The federal government has introduced a five-year \$275 million program, the Pacific Integrated Commercial Fishery Initiative (PICFI), under which commercial fishing licences will be purchased from willing vendors and transferred to First Nations as communal commercial fishing licences. It is widely held that a high proportion of the licences retired will be those that have been idle recently, and that the First Nations receiving licences will be inclined to utilise them. Thus, PICFI is likely to encourage higher participation in the commercial fishery by bringing inactive licences back into operation. This places further urgency on the need to re-align fleet size with catch value.

On the Skeena, it is believed, at least by First Nations interests, that some ocean-based commercial capacity will be transferred under PICFIC to up-river locations. If harvests are increasingly transferred up-river, new ways of doing business for both the harvesting and processing sectors will need to be found.

NORTHERN NATIVE FISHING CORPORATION FLEET

The Northern Native Fishing Corporation (NNFC) fleet makes up a significant portion of the Area C gillnet fleet—over one-third of the vessels. Gillnetting for Skeena and north coast salmon is an extremely important economic activity for about 200 First Nations vessel operators that may have few other employment or earnings options.

The NNFC fleet is the least-diversified segment of the Area C fleet with very few vessels possessing licences for other fisheries in other areas. The condition of fishing vessels is problematic—limited fishing opportunities mean poor economic returns, leaving inadequate funds to properly maintain vessels in safe and efficient working order.

Any economic programs or allocation schemes that result in migration of commercial fishing opportunities upstream will have the greatest impact on First Nations marine commercial harvesters. Similarly, there is concern that fleet rationalisation schemes aimed at improving economic viability could most impact this large but vulnerable segment of the northern gillnet fleet.

Any measures to improve the level of economic benefits and activity in the north coast commercial sector must address the NNFC and its fishermen.

FISHERY MANAGEMENT REFORM

Most agree that to accommodate current and emerging conservation requirements, both industry and DFO need to find new approaches that allow the fleet to exploit more frequent small scale opportunities (since large scale opportunities rarely materialise).

- Some favour an individual transferable quota (ITQ) program, whereby individuals can organise themselves to fashion viable enterprises. A strength of this approach is facilitating transfer of access amongst participants and sectors to improve utilisation and economic returns.
- Some favour approaches that preserve the opportunistic nature of the fishery and avoid the pitfalls they believe accompany ITQ programs.

Most recognise that fleet reduction is a necessity, though the means of achieving this—through self-adjustment under an ITQ plan or via a government funded licence buy-back—are hotly debated.

Inability to bridge this division is an impediment to moving forward towards improved viability.

PROCESSING SECTOR

To shed light on how products flow and how proceeds are divided amongst participants, Skeena salmon are tracked from harvest to market,. The large number of product forms, coupled with the fact that each processor follows a distinct strategy, makes analysis of the product mix complex. As with the harvesting sector analysis, this section requires informed estimations and blending of results, so the analysis presented will show how the Skeena processing sector operates in general without divulging proprietary information of individual firms.

In this analysis, the focus is on the two key Skeena salmon commercial species: sockeye and pink. For the companies involved with Skeena watershed salmon, chum (harvested in non-Skeena fisheries) is also an important species.

The economic model used in this analysis contains a large number of variables, meaning that an enormous number of combinations and permutations could be shown. In the interests of streamlining, however, reporting is limited to five key areas:

1. Identifying the array of sockeye and pink salmon product forms, and showing the estimated current product mix (percentage of raw material allocated to each product form). These are industry-wide estimates.
2. Providing a per-pound (incremental) income statement estimation, showing selling price, production costs, processor margins, and fish values yielded by each product form. This methodology shows that landed prices of fish are generally a derivative of market values: fish prices are in part set by what remains after processors' costs and margins are deducted.
3. Showing how fluctuations in market prices affect landed prices of fish: when selling prices are high, both processors and fishermen benefit; when selling prices are low, the downside is shared.
4. Estimating the economic upside for fishermen and processors of a more favourable product mix than the current mix, and the downside of a less favourable mix than the current one.
5. Showing economic impacts for Skeena salmon only (sockeye and pink), Skeena plus other north coast salmon (sockeye, pink, and chum), and Skeena/North coast plus Alaskan salmon (sockeye, pink, and chum).

PRODUCT MIX

Table 31 and Table 32 show the current product mix for Skeena-caught sockeye and pink salmon, aggregating across the production decisions of all processors. The list is organised by finished product yield, from those products with the highest yields (lowest amount of trim removed) to those with the lowest yield. Where products have an identical yield, the product requiring the least processing is listed first; that is, fresh products are listed before frozen as they require less processing. In general, removing more trim from the fish should result in higher per-pound values for the finished product, meaning that the lists are ranked from lowest value to highest. Given the dynamic nature of markets, however, this relationship does not always hold.

TABLE 31: PRODUCT MIX FOR SKEENA SOCKEYE SALMON

| Sockeye | Percent of Raw Material |
|---------------------------------|-------------------------|
| Dressed Fresh | 5.0% |
| Dressed Frozen | 12.5% |
| 1/2 lb Canned | 10.0% |
| 1/4 lb Canned | 25.0% |
| Portions Frozen | 2.5% |
| Value Added Portions & Products | 2.5% |
| Skinless Boneless Canned | 40.0% |
| Smoked/Niche | 2.5% |
| Total | 100.0% |

Source: Counterpoint estimates.

TABLE 32: PRODUCT MIX FOR SKEENA PINK SALMON

| Pink | Percent of Raw Material |
|--------------------------|-------------------------|
| Butchered | 15.0% |
| 1/4 lb Canned | 25.0% |
| Skinless Boneless Canned | 35.0% |
| Portions Frozen | 25.0% |
| Total | 100.0% |

Source: Counterpoint estimates.

The percentages in the tables above reflect the portion of the Skeena catch directed to each product form. Product forms are explained below:

- Butchered fish (sometimes called “cannery dressed”) are machine-dressed fish destined for re-processing. It is usually bulk-packed in totes. Butchered pinks are often exported to China.
- Dressed fish have the head and guts removed, with a higher level of finish than butchered fish. They may be sold either fresh or frozen, and are packaged in boxes of various sizes. Frozen product typically sells for the same price as fresh, but incurs a higher production cost.
- Portions are most-often fillets (sides of salmon) that have the bones removed. They may be cut into smaller configurations, and may be sold fresh or frozen.
- Value-add portions and products is a general term to describe a range of items that includes ready-to-eat configurations (eg, fish in sauce). Some firms have special products, the details of which they are not keen to discuss.
- Canned salmon comes in a variety of pack-sizes and container-types, with skinless-boneless being the category featuring recent growth.

The product mix is most heavily weighted to canned (¼ lb and skinless boneless), with a mix of dressed, portioned and other products. Although the market for fresh salmon is

surging, the amount of fresh product flowing from the Skeena is relatively light, as distance and time to market, and the fishing plan, offer challenges.

INCREMENTAL ANALYSIS

Table 33 shows the key variables of production—yields, selling prices, production costs, processors' margins, and fish prices—for each of the items in the product mix. Selling prices are in the mid-range—neither high nor low relative to recent ranges. The data show revenues, costs and returns for one pound of sockeye directed to each product form.

Note that prices and costs are expressed in terms of finished product, not round fish, hence costs such as Fish Acquiring differ by product form.

TABLE 33: INCREMENTAL PRODUCT MIX ANALYSIS—SOCKEYE

| | Dressed Fresh | Dressed Frozen | 1/2 lb Canned | 1/4 lb Canned | Portions Fresh | Portions Frozen | Value Added Products | Skinless Boneless | Smoked/Niche |
|--|---------------|----------------|---------------|---------------|----------------|-----------------|----------------------|-------------------|--------------|
| Yield (<i>finished product recovery</i>) | 78% | 78% | 71% | 71% | 56% | 56% | 56% | 56% | 40% |
| Selling Price/finished lb | \$3.10 | \$3.10 | \$3.75 | \$5.13 | \$5.50 | \$5.50 | \$8.00 | \$6.38 | \$13.50 |
| Production Cost/finished lb | | | | | | | | | |
| Fish Acquiring | 0.32 | 0.32 | 0.35 | 0.35 | 0.45 | 0.45 | 0.45 | 0.44 | 0.63 |
| Processing ³ (labour, materials, packaging) | 0.45 | 0.65 | 1.04 | 1.25 | 0.85 | 1.05 | 2.00 | 1.35 | 3.75 |
| Carrying Costs (<i>interest, w/house</i>) | - | 0.12 | 0.23 | 0.26 | - | 0.11 | 0.16 | 0.32 | 0.41 |
| Freight to Customer | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| Production Cost (per finished lb) | 0.89 | 1.21 | 1.74 | 1.98 | 1.42 | 1.73 | 2.73 | 2.24 | 4.90 |
| Selling Price less Production Cost | 2.21 | 1.89 | 2.01 | 3.14 | 4.08 | 3.77 | 5.27 | 4.14 | 8.60 |
| less: Processor Margin (<i>per finished lb</i>) | \$0.26 | \$0.31 | \$0.41 | \$0.56 | \$0.47 | \$0.55 | \$1.08 | \$0.70 | \$1.82 |
| Fish Price (<i>per finished lb</i>) | 1.95 | 1.58 | 1.60 | 2.58 | 3.62 | 3.22 | 4.19 | 3.44 | 6.78 |
| Convert Margin & Price to Round lbs: | | | | | | | | | |
| Processor Margin (<i>per round lb</i>) | 0.21 | 0.24 | 0.29 | 0.40 | 0.26 | 0.31 | 0.60 | 0.40 | 0.73 |
| Fish Price (<i>per round lb</i>) | 1.52 | 1.23 | 1.13 | 1.82 | 2.03 | 1.81 | 2.35 | 1.94 | 2.71 |

Source: Counterpoint estimates.

³ Custom processing rates, somewhat higher than proprietary rates, are used to protect privacy

Product Form Decisions

The processing sector purchases round salmon from Skeena net fishermen and processes it into an array of product forms bound for a host of global markets. How a processor allocates its Skeena salmon purchases to product lines is influenced by many factors, among them:

- **Expected Skeena supply vs customer requirements.** Each company weighs its expected salmon demand against expected sources of supply. In years past, Skeena sockeye was a major component of BC supply; in recent years Skeena volumes—and consistency of volumes—have diminished. Thus, salmon is necessarily sourced from other fisheries, either in BC or, more often, Alaska. Skeena salmon must therefore be slotted in along with other sources of salmon. Although Skeena watershed participants hold fond views of the unique characteristics of their salmon, Skeena production nevertheless fits in a larger picture.
- **Market conditions at time of fish purchase.** While working toward an overall sourcing plan, processors are influenced by market conditions at the time salmon arrives. If, for example, a Skeena opening coincides with a transitory spike in the value of frozen dressed salmon destined for Japan, then a decision might be made to switch to this product. Processors face a dilemma between building a long term program of value-added products, and capitalising on spot opportunities to earn higher returns for themselves and their fishermen.

When considering values for salmon products, it is important to be clear about quantities. At each level of processing—heading, gutting, portioning, cooking, or curing—weight is lost from the fish and additional costs are incurred. Selling prices are typically expressed in “finished pounds” while ex-vessel prices are expressed in “round pounds” (whole fish as they come out of the water). Often, when people discuss the price of salmon, they vacillate between finished and round pounds, creating confusion. In the last two lines of Table 33 values are converted to round pounds—the language most often spoken by fishermen.

Selling prices are wholesale prices. These are the prices that products fetch in the wholesale market; they must not be confused with retail prices, the prices paid by consumers. Retailers tack on their own margins to wholesale prices—often 100 percent or more.

Values shown reflect recent market levels but not up-to-the-minute values. Salmon markets are dynamic. The general workings of the value chain over the last few years are presented herein, not a late-breaking market capsule.

From the first column to the last, Table 33 shows a generally rising value and fish price trend.

The bottom line of the analysis—the fish price per round pound—indicates the fish price for each product line derived from one pound of product, if the assumed margins and costs hold.

There is a link between selling price, processors’ margin and fish price. Generally, raw materials directed to higher-valued product forms provide better returns for processors and fishermen alike.

A key assumption of this analysis is that processors extract a fixed percentage margin—in the 7-15 percent range—depending on the product form.

Table 34 shows analogous data for pink salmon.

TABLE 34: INCREMENTAL PRODUCT MIX ANALYSIS - PINK

| Product Mix Analysis - Incremental | Butchered | ¼lb Canned | Skinless Boneless | Portions Frozen |
|---|-----------|------------|-------------------|-----------------|
| Yield (finished product recovery) | 72% | 63% | 52% | 50% |
| Selling Price/finished lb | \$0.70 | \$2.00 | \$2.38 | \$2.25 |
| Production Cost | | | | |
| Fish Acquiring | 0.09 | 0.10 | 0.13 | 0.13 |
| Processing (labour, materials, packaging) | 0.30 | 1.25 | 1.35 | 1.15 |
| Carrying Costs (interest, w/house) | 0.00 | 0.10 | 0.12 | 0.09 |
| Freight to Customer | 0.12 | 0.12 | 0.12 | 0.12 |
| Production Cost (per finished lb) | 0.51 | 1.57 | 1.72 | 1.49 |
| Selling Price less Production Cost | 0.19 | 0.43 | 0.66 | 0.76 |
| less: Processor Margin (per finished lb) | 0.05 | 0.20 | 0.30 | 0.30 |
| Fish Price (per finished lb) | 0.13 | 0.23 | 0.36 | 0.46 |
| Convert Margin & Price to Round lbs: | | | | |
| Processor Margin (per round lb) | 0.04 | 0.13 | 0.15 | 0.15 |
| Fish Price (per round lb) | 0.10 | 0.14 | 0.19 | 0.23 |

Source: Counterpoint estimates.

While pink salmon price levels are substantially lower than those for sockeye, the relationships between selling price, processors' margin, and fish price are the same.

When the percentages of raw material to each product form (as shown in Table 31) are applied to the incremental analysis shown in Table 33 and Table 34, the weighted average price of sockeye salmon is \$1.75 per round pound and of pink salmon is 17 cents per round pound. These values are roughly in the mid-range of prices seen in the Skeena fishery over the 2004-07 cycle.

SKEENA PROCESSING REVENUES AND EXPENSES

Combining the preceding incremental analysis with the cycle-average volumes of sockeye and pink salmon yields an estimate of Skeena salmon processing revenues and expenses, as shown in Table 35.

TABLE 35: SKEENA SALMON PROCESSING REVENUES AND EXPENSES

| | Sockeye | Pink | Total |
|---|---------|--------|--------|
| Revenue (\$ millions) | \$7.54 | \$2.27 | \$9.80 |
| Production Cost | | | |
| Fish Acquiring | 0.56 | 0.13 | 0.70 |
| Processing (labour, materials, packaging) | 1.71 | 1.27 | 2.98 |
| Carrying Costs (interest, w/house) | 0.34 | 0.10 | 0.44 |
| Freight to Customer | 0.17 | 0.14 | 0.32 |
| <i>Production Cost</i> | 2.79 | 1.65 | 4.44 |
| Selling Price less Production Cost | 4.75 | 0.62 | 5.37 |
| less: Processor Margin | 0.83 | 0.27 | 1.09 |
| Fish Cost (Payment to Fishermen) | 3.92 | 0.35 | 4.27 |
| <i>Convert Margin & Price to Round lbs:</i> | - | - | |
| Processor Margin (per round lb) | \$0.37 | \$0.13 | \$0.25 |
| Fish Price (per round lb) | \$1.75 | \$0.17 | \$0.99 |

Source: Counterpoint estimates.

By applying the preceding incremental analysis to the estimated poundage of North Coast (other than Skeena) and Southeast Alaska salmon that flows into or through Prince Rupert, the level of processing economic activity can be estimated, as shown in Table 36.

TABLE 36: PRINCE RUPERT AREA PROCESSING REVENUES AND COSTS

| | Skeena Only | Skeena, North Coast | Skeena, North Coast, SE Alaska |
|---|-------------|---------------------|--------------------------------|
| Round Fish (million lbs) | 4.3 | 27.0 | 53.0 |
| Revenue (\$millions) | \$9.80 | \$41.42 | \$75.93 |
| less: Production Cost | \$4.44 | \$23.90 | \$45.83 |
| Selling Price less Production Cost | \$5.37 | \$17.52 | \$30.10 |
| less: Processor Margin | \$1.09 | \$4.56 | \$8.32 |
| Fish Cost (Payment to Fishermen) | \$4.27 | \$12.96 | \$21.78 |

Source: Counterpoint estimates.

IMPACT OF MARKET PRICE FLUCTUATIONS

In this section the focus is on wholesale values for Skeena sockeye salmon and how proceeds are distributed under a range of market conditions.

In Table 37, the incremental values shown in the preceding analysis are applied to the entire catch of Skeena sockeye (again using 2004-07 catch levels) to arrive at industry-wide values. Table 37 shows how values vary according to the strength of markets. The analysis assumes that market prices for all products in the product mix move in concert, though in practice this may not be the case (for example, fresh prices may spike independent of other market factors). Market prices (low, mid, high) are based on conditions prevailing in the late fall of 2007 when the research for this work was conducted.

TABLE 37: IMPACT OF MARKET PRICE FLUCTUATIONS

| Skeena Only, Current Product Mix | Market Price Level | | |
|---|--------------------|--------|--------|
| | Low | Mid | High |
| Sockeye Values & Returns | | | |
| Revenue (\$millions) | \$6.84 | \$7.54 | \$8.23 |
| Processors' Margin (\$millions) | \$0.75 | \$0.83 | \$0.90 |
| Fish Cost/Payment to Fishermen (\$millions) | \$3.30 | \$3.92 | \$4.54 |
| Fish Price/round lb | \$1.47 | \$1.75 | \$2.02 |
| Fish Cost as % of Revenue | 48% | 52% | 55% |

Source: Counterpoint estimates.

The data presented in Table 37 demonstrate that:

- Low revenues (derived from lower prices) result in lower margins and fish prices than mid or high prices. The assertion that processors don't care what the selling price is, since they take their margin off the top, is not supported by this analysis.
- The fish prices shown—\$1.47 when market prices are low, \$1.75 when they are moderate and \$2.02 when they are strong—are close to the highs, mid-ranges and lows seen in the last sockeye cycle on the Skeena.
- As selling prices rise, fishermen receive a larger share of the proceeds.

The range of prices for individual products is, overall, much lower than it was in the past. Competition from farmed salmon is a key factor here. The strengthening of the Canadian dollar relative to US and Japanese currencies has also had an impact. Recently, market prospects for wild salmon have rebounded from the depths seen in the early 2000s.

IMPACT OF PRODUCT MIX ON RETURNS

While returns to processors and fishermen are sensitive to changes in market price levels, they are also closely linked to the mix of products manufactured from raw material. Values of Skeena sockeye are compared under three scenarios:

- A favourable mix, generating higher values and returns
- The status quo (current product mix)
- An unfavourable mix.

The favourable and unfavourable scenarios are not utopian vs doomsday cases but rather are chosen to reflect more profitable vs less profitable product mixes, with both scenarios within the realm of possibility depending on market conditions and the configuration and management of Skeena fisheries.

Determination of Fish Prices

In theory, fish prices are a residual of wholesale market values less processors' margin and production costs. In practice, buyers and processors may speculate on the fishing grounds on the end-value of salmon, offering prices that are greater or lower than the "correct" end price. Fish prices may be adjusted upward once the real value of the pack is better understood; they cannot, of course, be adjusted downward, so fishermen may benefit from in-season fishing grounds optimism amongst buyers.

Some participants believe that a cessation of fish price collective bargaining is having a downward impact on fish prices.

TABLE 38: PRODUCT MIX SCENARIOS: FAVOURABLE, CURRENT, UNFAVOURABLE

| Product Mix Scenarios | Dressed Fresh | Dressed Frozen | ½ lb Canned | ¼ lb Canned | Portions Fresh | Portions Frozen | Value Added Portions & Products | Skinless Boneless Canned | Smoked/ Niche |
|---|---------------|----------------|-------------|-------------|----------------|-----------------|---------------------------------|--------------------------|---------------|
| Favourable (eliminate low return items) | 0.0% | 0.0% | 0.0% | 0.0% | 20.0% | 0.0% | 30.0% | 35.0% | 15.0% |
| Industry Blended (current mix) | 5.0% | 12.5% | 10.0% | 25.0% | 0.0% | 2.5% | 2.5% | 40.0% | 2.5% |
| Unfavourable (weight to low return items) | 10.0% | 25.0% | 25.0% | 15.0% | 5.0% | 5.0% | 0.0% | 12.5% | 2.5% |

Source: Counterpoint estimates.

The Favourable Mix is meant to reflect conditions where the harvesting sector delivers a high quality raw material on a processor-friendly schedule (consistent, reliable, numerous landing-days), and the processing sector converts that raw material into product forms yielding the best returns.

The Unfavourable Mix reflects the reverse situation—a fishery where the raw material quality and schedule of landings deteriorates from current levels so that flexibility to apportion raw material to the highest value product forms, as dictated by market conditions, is compromised.

Skeena Salmon Awareness & Branding

In the realm of global salmon markets, Skeena salmon has a world class reputation. Skeena salmon processors and marketers advise that their customers have a high level of awareness and appreciation of the quality attributes of Skeena salmon. Skeena salmon is often specifically requested for custom orders.

It is sometimes suggested that what Skeena salmon lacks is a brand to differentiate it in the marketplace, to enable it to garner premium prices. The two largest processors have each developed national brands (Gold Seal and Ocean’s) under which they currently market Skeena salmon.

Both of these scenarios are untested, and are provided to place some bounds on the upside and downside of value of the Skeena sockeye fishery under different future paths. A summary of results follows (assuming market prices are in the medium-range):

TABLE 39: RESULTS OF PRODUCT MIX SCENARIOS

| Skeena Only, Mid Market Price Level | Product Mix | | |
|--|--------------|---------|------------|
| | Unfavourable | Current | Favourable |
| Sockeye Value & Returns | | | |
| Revenue (\$millions) | \$5.60 | \$7.54 | \$9.05 |
| Processor Margin (\$millions) | \$0.59 | \$0.83 | \$1.08 |
| Fish Cost/ Payment to Fishermen (\$millions) | \$2.80 | \$3.92 | \$4.93 |
| Fish Price/round lb | \$1.25 | \$1.75 | \$2.20 |
| Fish Cost as % of Revenue | 50% | 52% | 54% |

Source: Counterpoint estimates.

The results, not surprisingly show a large gap between the optimal and sub-optimal scenarios, confirming that there is substantial room for improvement, and digression, from the current fishery.

Presenting speculative results such as these can raise pique amongst participants. Some may think the true upside is much higher, given the luxury-pricing seen today in fish markets for wild salmon. Some may think the downside is exaggerated, while others will be convinced that the downside is understated. Results are not presented as definitive

but rather as reflecting a reasoned and conservative analysis to stimulate thought and discussion.

ASSESSMENT OF RESULTS

Skeena salmon processing accounts for about \$10 million in annual wholesale value (2004-07 cycle average). This represents a modest but important component of the value of Prince Rupert area processing activity. Processing representatives believe that the Skeena salmon fishery still holds promise to yield far greater benefits for value chain participants.

Salmon processing in the Prince Rupert area—including all sources of salmon—is a substantial activity (about \$75 million wholesale value). Payroll and other production costs incurred by the processing sector generate sizeable economic activity in the region.

A wide variety of products are produced from Skeena sockeye and pinks, though canned is still the predominant product form. This is because the largest firms maintain a strong canning emphasis.

Today's canned salmon is not the same as yesterday's. Skinless boneless canned salmon, often packed in a pull-top container, is a convenience product requiring substantial value-adding that is geared to modern consumers.

Although not revealed in the quantitative analysis provided herein, and overshadowed by fleet licence retirement programs, the processing sector has undergone a great deal of rationalisation and consolidation in recent years. Many companies have exited or downsized their involvement in salmon, some have diversified beyond salmon, and some have forged strategic alliances aimed at improving asset utilisation and efficiency. The two largest processors in BC (and in Prince Rupert) are involved in such an alliance.

The processing sector to a large extent “plays with the cards it is dealt” in terms of Skeena River salmon species mix, volumes, quality, and landing patterns; results are closely tied to the fishery management system and the physical and economic structure of the fleet. One observer of the Skeena-area fleet described its demographic and economic profile succinctly, if brutally, as “old and broke.”

A processing representative had this to say about the realities of dealing with today's fleet: “We can't make money dealing with fishermen who are broke.”

The processing sector's ability to add value could be greatly abetted by salmon fishery restructuring to improve the overall viability of the fleet.

CONSTRAINTS TO VALUE ADDING

There is a significant constituency of Skeena watershed participants who believe that the commercial sector is mired in old ways; that a simple “catch all you can and can all you catch” approach is practiced, with resultant values and economic returns below a level that could be attained under a more enlightened business model. Opportunities and constraints to value adding are investigated in this chapter.

WHAT DOES VALUE ADDING MEAN?

Economists define Value Added as the value of a commodity over and above the cost of inputs used to produce it from the previous stage of production.

Interviews with industry representatives and others revealed divergent views about the success of the commercial sector in adding value to the Skeena salmon harvest. It quickly became apparent that such differences were *inevitable* because interviewees held widely differing views of what value-adding *means*. At least five different definitions emerged:

1. **Value adding = highest wholesale value product forms.** In this interpretation, value adding implies directing the greatest possible proportion of raw material into product forms and markets that fetch the highest end-prices. In this view, benefits from the resource should be maximised when the catch is sold for the highest price.
2. **Value adding = highest ex-vessel prices to fishermen.** Fishermen may take little solace when their catch is processed into, say, smoked sides, a very high-end product form, if their resultant ex-vessel fish price is less than the price paid by cash buyers on the fishing grounds. Because value-adding also means cost-adding, returns to fishermen are not *necessarily* maximised. Some fishermen view direct sales to the public (round or dressed fish) as the ultimate distribution channel as it allows bypassing the processing sector altogether, and netting attractive fish prices in round pound terms.
3. **Value adding = highest component of labour input.** Another view is that value implies labour content. The highest value product form for a salmon is the one with the highest labour content per finished pound. In this view, the interests of processing plant employees and their community (not just fishermen and plant owners) are integral to the value equation.
4. **Value adding = best returns to processor/marketer.** Another view holds that value adding is achieved when products/markets are exploited that earn the best returns to the processor, with these benefits passed along to harvesters. This implies that production is shifted to products and markets that are most attractive at the time the catch is landed. For instance, if the market for fresh dressed sockeye is “hot” during an opening, indicating better returns than other product forms, then it will be tempting to direct production accordingly. Fresh sales imply immediate cash flow and no inventory risk but are generally not considered to be value-adding.
5. **Value adding = freshest possible product.** Globefish, a website/publication providing seafood market and research information, offers a final definition:

The definition of Value Added products for fishery products is different from the one for other food items. While for all other food items, the value addition takes place in expanded processing, for fishery products, the most important value addition is in the freshness, or even more importantly in (delivering) the fish alive for the high value live fish market.

Lacking an agreed-upon definition of value-adding, participants and observers of the fishery have a difficult time assessing success of value adding initiatives. For example, while delivering live wild salmon could be the holy grail of Value Adding to some, it could be the worst possible scenario for others interested in Prince Rupert-based processing.

CANNED SALMON: COMMODITY OR VALUE-ADDED PRODUCT?

Some interviewees clearly view canning as a very regressive use of precious salmon (having been practiced for over a hundred years) and that continuation of canning reflects a distinct lack of innovation by processing company executives. Further, some feel that the canning sector controls the industry and stifles innovation and progress by would-be value-adders.

The following thread, also expressed during our investigation, provides a counterpoint to the view of canning salmon as a regressive practice:

- Canning is, by nature, a value-adding activity—the fish is headed, eviscerated, washed, portioned, packaged, and cooked. Few salmon products require as much processing.
- Canning is not the default product form. Rather, processors consider an array of products and markets before making product form allocations.
- Processors no longer put up a sizeable canned salmon inventory (called “bright-stack” because it is unlabelled) in hopes of selling it throughout the year; they produce canned product, in a variety of forms, based on orders from customers.
- One of BC’s canneries is a custom processor. Many smaller fish processors and buyers that do not own their own cannery still put a portion of their production in cans. Virtually every company that buys salmon in significant quantities cans fish from time to time, by utilising the services of a custom-canner.
- The number of canneries in BC has declined dramatically in recent years due to contraction and consolidation of the processing sector (in response to resource availability and changing competitive conditions). There are now only four significant canneries in operation in the province (one in Prince Rupert).
- Today’s canned salmon products are not the same as yesterdays: the primary output of BC’s canneries now is ¼ pound and skinless/boneless product. There are many varieties, including easy-open ends (pull-tab lids), no-salt product, kosher product and salmon with sauces.
- Markets for today’s canned salmon products are stable, not shrinking as sometimes asserted.
- Values and returns for today’s canned salmon products compare favourably to prices for alternative salmon products, especially when not all product can be marketed in niche or specialty forms.

Much of the apprehension about the commercial sector’s ability to add value to Skeena salmon flows from lack of current information on the scope and nature of canning in the region and in the province.

Bristol Bay, by far the largest producer of sockeye salmon in the world, for many years produced a predominantly dressed-frozen product for Japan. As Japanese markets for frozen sockeye have dwindled (sockeye has been displaced by farmed coho to a large extent), Alaskan producers have shifted substantial production to canned product. A re-

cent shift by the world's leading sockeye producer to canned salmon should signal that there is still some life, and merit, in this product form.

IMPEDIMENTS TO THE PURSUIT OF VALUE

The nature of the wild salmon business as practiced in British Columbia poses formidable constraints to the objective of maximising (or optimising) the value of the salmon harvest. These constraints are not insurmountable and ways forward are discussed later in this section.

NATURE OF THE WILD SALMON BUSINESS

Practitioners in the salmon business know well that it is an inherently volatile and risky endeavour. The following built-in factors contribute to the unpredictability of the salmon industry:

- Uncertainty of run sizes and harvest levels.
- Cyclicity of run sizes and harvest levels.
- Short, intense seasons.
- In-season volume vs quality tradeoffs.
- Need to expend funds to prepare for the season without knowing outcomes.
- Need to make product form decisions in a very short window (sometimes driven by capacity constraints) but markets can change.
- Working capital intensive.
- Export focus—importance of exchange rates.
- Intense competition—farmed salmon and wild salmon from Japan, Russia and Alaska.

While these factors have historically resulted in wild salmon businesses (whether harvesting or processing) earning lower average returns than other industries, periodic windfalls provide incentives to endure. In the wild salmon business, sound planning and budgeting is critical to success but adaptability to changing circumstances is equally important. “Plan A” is seldom adhered to as the season unfolds in a surprising way, and “Plan B” may even yield to “Plan C” and so on.

In the wild salmon business, maximising the value of the harvest is one part planning and execution, and one part improvisation (possibly with a little luck thrown in). The business, by nature, poses formidable value-adding challenges.

FISHERY MANAGEMENT

With the business inherently volatile, the manner in which the fishery is managed and organised exerts a strong influence on revenues and costs in the wild salmon industry.

In BC, management of the salmon fishery is very briefly summarised as follows:

- The fishery is split into three gear types: seine, gillnet, and troll.
- The fishery is further divided into eight areas: two for seine, three for gillnet and three for troll.
- A commercial licence allows participation in a single area.
- Vessels can “stack” licences for other areas subject to length and other restrictions.

- A vessel licensed in an area can participate in any fishery opening occurring in that area. Vessels compete for their share of the harvest. Terms for this type of fishery include “derby,” “Olympic,” and “competitive.”⁴
- Fisheries and Oceans Canada (DFO) determines the location and duration of fishery openings and prescribes conditions for the fishery (eg, use of coho/steelhead revival boxes and short sets).
- In managing commercial salmon fisheries, DFO operates under significant policy and allocation constraints to accommodate higher-priority uses of salmon, including: spawning escapement targets, First Nations FSC requirements, international treaty obligations and recreational fishery priority access.
- When commercially harvestable surpluses are identified, DFO must balance the magnitude of the harvestable surplus with the expected size and catching capacity of the fleet to determine the nature of the opening or whether an opening will occur. The department must further consider allocation of surpluses among the eight licensed areas/fleets.
- The capacity of the fleet to harvest large quantities of salmon in a short time remains high, despite fleet reduction initiatives undertaken in the late 1990s.

Recent environmental and ocean conditions have heightened the volatility and unpredictability of BC salmon returns. Historical cycles, patterns, and run-timings are increasingly aberrant.

The current fishery management approach in BC thus poses multi-tiered challenges to the commercial industry:

- Environmental conditions are causing increasing fluctuation in salmon abundance and changes in stock behaviour, exacerbating the normal level of volatility. In response, DFO has formally adopted a highly Precautionary Management Approach (see [A New Direction for Canada's Pacific Salmon Fisheries](#); to understand how reality can frustrate these policies and priorities see [Treaties and Transition](#), pages 23-24).
- The commercial fishery has lower allocation priority than First Nations access for FSC purposes, USA treaty obligations, and recreational fisheries for harvest of chinook, coho and steelhead (see [An Allocation Policy for Pacific Salmon](#)). In practice, this means that commercial sector access is focused on opportunistic surpluses that are identified in-season on very short notice. A high proportion of the catch is weighted to less-valuable pinks and chums. There is an onus on DFO to make difficult in-season fishery decisions and little ability for industry to plan ahead.
- The nature of the fishery—large fleets, parceled into eight components, fishing competitively on often-modest surpluses—means that openings are highly restricted in terms of time, area, and fishing practices. Fish are caught and delivered in pulses (all or nothing). There is no advance notice of how many vessels will attend an opening. Catch is divided amongst vessels depending on the individual harvester’s skill, equipment, and luck. Harvesters tend to focus on volume rather than quality when openings are short. Processors enjoy precious-few production days during which to produce a high-value product mix.

⁴ In recent years, alternative management approaches have been tested in pilot projects. These are generally Individual Transferable Quota (ITQ) pilots, where each licence receives a prescribed share of the available catch, and shares can be swapped and leased, amongst vessels, and stacked on them.

- An increasing number of sockeye salmon are harvested in-river or in terminal marine areas, often by First Nations. These fisheries necessitate new product/market development initiatives.

BC salmon fishery management poses formidable challenges to participants striving to add value to the salmon harvest. While some of the challenge is related to mother-nature, the balance is a result of government and industry actions and decisions. Restructuring the fishery provides opportunities—such as stretching-out the number of harvesting days—for addressing some of these fundamental challenges.

LESSENERD INFRASTRUCTURE AND INVESTMENT

After more than a decade of environmental, management and competitive changes, the commercial sector is, quite simply, beaten and battered—a fraction of its former stature.

Over the past 10-15 years:

- The volume of the BC commercial catch has declined dramatically.
- The harvesting pattern for the remaining catch has become increasingly volatile and unpredictable.
- The real price of salmon has declined as volumes of farmed salmon and wild salmon from Alaska, Russia, and Japan have proliferated. BC's share of salmon in the marketplace has declined from about 13 percent in the 1980s to less than 1 percent today.
- The BC harvesting and processing sectors have downsized dramatically in response to a lower level of raw material and revenues. Economic results from BC salmon operations have been disastrous.
- New investment in the salmon industry is low—the fundamentals and economics of the business do not support much investment.
- BC salmon participants have pursued a host of strategies—diversification into other fisheries, downsizing, exit, sharing facilities, mergers—aimed at reducing economic reliance on, and exposure to, BC salmon operations.

The preceding points are offered not to dampen enthusiasm for the potential of the Skeena salmon industry but to identify challenges in the current reality facing the BC salmon industry.

COMMERCIAL SECTOR CASE STUDIES

The case studies presented in this chapter are relevant to the commercial sector in the Skeena Watershed. In searching for the most illuminating case studies, it quickly became clear that:

- True role models are difficult to find. Every fishery or business studied featured pros and cons. No other jurisdiction features the same competitive, political and ecological landscape as the Skeena Watershed. If there were a simple template to follow, it would have been done by now!
- While surface investigation (or rumour) may suggest that a venture in another region is wildly successful, closer examination inevitably reveals a more balanced picture. The further away the subject case is, and the less is known about it, the more likely BC participants are to believe it to be a panacea.
- A case study does not have to portray an unqualified success to be useful to Skeena Watershed participants in applying lessons and experiences.

Five case studies are presented that are generally close to home. There are many local experiences, including successes and works-in-progress, to draw upon. The studies chosen are intended to improve the readers' understanding of the challenges and opportunities facing the commercial sector in the Skeena Watershed in the context of the modern global seafood business.

The case studies selected are described in Table 40.

TABLE 40: SKEENA SALMON COMMERCIAL FISHERY CASE STUDIES

| Case Study | Topic |
|--|--|
| Copper River, Alaska | Regional Marketing—benefits (and realities) of a regional branding campaign and cooperative quality program. |
| Bristol Bay, Alaska | World's largest sockeye producer—implications for Skeena. |
| Pacific Seafoods International | Value Added Processing—operating practicalities for a BC seafood value-adding company. |
| River to Plate Report | Inland Fraser River First Nations' initiatives to harvest, process, and market salmon using a business approach. |
| BC Groundfish Trawl Fishery IVQ/GDA Plan | Fisheries Management—consistent supply of fresh fish to market and innovative partnership among stakeholders. |

COPPER RIVER, ALASKA

REGIONAL MARKETING & QUALITY PROGRAM

BACKGROUND

Copper River is a gillnet fishery situated in Prince William Sound in Central Alaska. Cordova is the nearest port and processing site. The Copper River features anomalous run timing for west coast salmon—significantly earlier than any other runs, with harvests beginning in early May and continuing through June. The average commercial catch level is about 1.5 million sockeye, with total run sizes of 2.3 million fish. In terms of piece count, this fishery pales in comparison to the Prince William Sound pink salmon fishery, where catches often exceed 20 million fish.

Despite inherently high quality sockeye salmon—Copper River fishermen, of course, feel they are the finest sockeye in the world—featuring high oil content and distinctive flavour, economic returns to Copper River fishermen were poor. One factor contributing to poor returns was the early timing of the run; as the first, relatively low volume, run of the season, processing plants were in “start-up mode”. With no other volume to offset costs, production efficiencies were low and unit production costs high. This translated, from the fleet’s perspective, into unsatisfactory ex-vessel prices to fishermen. The primary product form was tall (one pound) cans. The infrastructure for handling and transporting fresh fish from remote regions of Alaska to markets was not yet developed; nor was the USA fresh salmon market.

By the early 1980s, stakeholders in the fishery recognised the need—and the opportunity—for doing business differently.

RESPONSE

Over the years, a series of group and individual initiatives have transformed Copper River from an obscure fishery, to a famed, even fabled, one. The Copper River Fishermen’s Cooperative established a brand name for the region’s fish and began an education and training program. Over time, use of ice aboard fishing vessels and refined handling and delivery practices has improved the quality of the product. The Cooper River brand revolved around a powerful marketing edge: “first fresh salmon of the season.” A promise to consumers was forged—that buying Copper River salmon was a rite of Spring, the tastiest salmon in the world, sure to be of premium quality.

Clever entrepreneurs devised a mock race to get the first fish of the season to market, using helicopters from the fishing grounds and cargo airplanes to Seattle. Harvesters, processors, fish markets, and restaurants cooperated on promotions, and exorbitant retail values were garnered for early season production.

Over the past several years, Copper River salmon has benefited from a growing consumer awareness about wild salmon. The fresh market for wild salmon in the USA has blossomed (thanks in part to the marketing efforts of the farmed salmon industry). Infrastructure for producing and transporting fresh salmon from remote Alaska to urban centres has evolved.

RESULTS

The Copper River commercial salmon fishery is clearly a success story in terms of upgrading the value of salmon through cooperative effort, and differentiating a region’s salmon through a unique story (first fish of the season). Copper River fetches the highest ex-vessel prices of any sockeye region in Alaska.

The following excerpt from the Seattle Times aptly summarises the results:

Thanks largely to spirited marketing campaigns developed by some daring Seattleites, Copper River salmon has climbed the fish ladder to our wallets. Over 20 years, it has risen from tin-can fodder to gourmet fare, doing for the humble fish what Starbucks did for coffee.

And while fishermen drive new trucks in the town of Cordova, Alaska, where the Copper River fleet harbours, most of the profit appears to have gone to the middlemen.

People at fish counters say they typically charge double their wholesale cost, in part because they must fillet the fish and discard the head and spine. Retailers are also sometimes a little slow to drop the price, even when the wholesale cost falls.

Records from Alaska's Department of Fish and Game show Copper River salmon selling at the boat has averaged about \$2 a pound over the last 20 years, 50 cents more than it was bringing in the early 1980s, when all the hoopla started.

That doesn't track with what consumers are paying. Prices at the fish counter have tripled from what they were 10 years ago—to as much as \$27.99 a pound for fillets—from about \$8.99.

Copper River prices soar the first of the season, when it commands all the hype that spurs demand. After the initial flurry, however, Copper River prices fall by as much as \$10 a pound.

This quote correctly describes Copper River as a highly successful marketing campaign but with the caveats that:

- The sky-high prices enjoyed early in the season moderate later in the season when Copper River volumes grow and substitute wild salmon products come on-stream.
- The benefits to fishermen (ex-vessel price levels), while significant, are not as great as might be imagined given lofty retail price levels, as margins are extracted at each step of the distribution channel; middle men get a lot of the value from the successful branding program.

APPLICABILITY TO SKEENA WATERSHED

Skeena Watershed stakeholders must view the Copper River case study with proper balance. On one hand, Copper River is a resounding success.

- **Structure the fishery around market requirements.** Copper River participants recognised a potential edge afforded by their ecosystem—“first salmon of the season”—and crafted an effective marketing campaign to gain consumers’ attention, coupled with a quality program to ensure consistent delivery of the brand’s promise. Higher fish prices for harvesters resulted from meeting unfulfilled customer needs. Cleverly, Copper River participants turned their disadvantage (high operating costs associated with early operations on small volumes) into their competitive edge.
- **Cooperative campaign an umbrella for individual initiatives.** The Copper River success combines group effort—the Copper River Fishermen’s Coop, supported by the Alaska Seafood Marketing Institute (ASMI)—to create a positive market environment, with individual initiatives to exploit tangible opportunities. Generic campaigns work well in concert with private enterprise.

On the other hand, there are some sobering realities associated with the Copper River story:

- **Premium market prices are transitory.** The astronomical prices fetched for Copper River salmon in the marketplace—and premium ex-vessel prices for fishermen—are for relatively small volumes of product at the beginning of the season. The specialty niche to support “designer” salmon is finite. Once this niche is filled, the balance of production is slotted into the same products and markets as high-calibre wild salmon from other locales.
- **Ex-vessel prices are a fraction of retail values** – the prices paid to vessels for raw material are linked to wholesale values for finished product (but not necessarily retail values, as retailers operate by their own programs). While lofty prices are earned by fishermen for the first opening or two, prices moderate as harvest volumes grow and more production is slotted into larger (and lower value) market segments.

In Figure 4, ex-vessel sockeye prices paid to Copper River fishermen are compared with those paid to Skeena River fishermen (in Canadian dollar terms). Note that the general trend is the same, since producers in both regions service the same general markets (after the early-season “gold rush” diminishes).

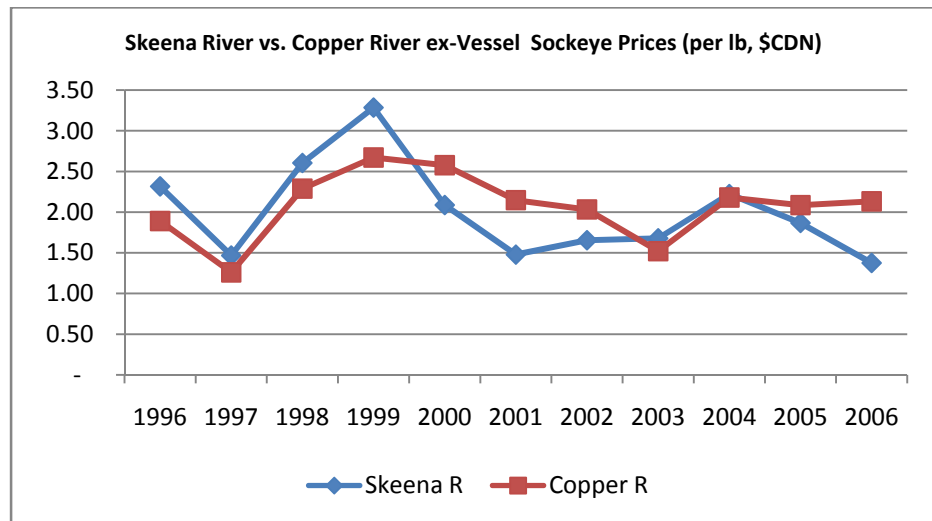


FIGURE 4: SKEENA RIVER VS COPPER RIVER EX-VESSEL SOCKEYE PRICES (PER LB, \$CDN)
 It might surprise readers that Skeena and Copper River fish prices track so closely. This is likely evidence that the Skeena River value-chain is not entirely missing the mark in its effort to add value and that Copper River is not a panacea but an example of earning incrementally higher overall prices through ingenuity and execution. Copper River prices are higher than other Alaskan regions but not necessarily consistently higher than BC sockeye fisheries.

Table 41 provides an example of how Copper River ex-vessel sockeye prices may vary over a typical season:

TABLE 41: COPPER RIVER EX-VESSEL SOCKEYE PRICES

| | Opening | Early Portion | Balance | Overall |
|-----------------|---------|---------------|-----------|-----------|
| Percent of run | 5% | 25% | 70% | 100% |
| Catch (pieces) | 75,000 | 375,000 | 1,050,000 | 1,500,000 |
| Ex-vessel Price | \$4.00 | \$3.00 | \$1.50 | \$2.00 |

Source: Counterpoint estimates.

Success is dovetailed with growth of fresh wild salmon in USA. Part of the opportunity exploited by Copper River is servicing a growing fresh market for wild salmon. This same opportunity has also benefited wild salmon producers throughout BC and Alaska.

Skeena River run timing presents challenges. Alas, Skeena Watershed producers cannot claim the “first fish of the season.” In fact, the Skeena follows Bristol Bay, Alaska, the biggest sockeye fishery in the world by far, which averages harvests of 25 million fish. By the time Skeena fishermen set their gear, the overall price level for sockeye for the season has already been determined. Therefore, Skeena participants need to craft a unique story if they are to carve a Copper River-like niche in the marketplace.

BRISTOL BAY, ALASKA

WORLD’S LARGEST FISHERY, SHIFTING PRODUCT MIX

BACKGROUND

Bristol Bay is by far the largest and most valuable sockeye fishery in the world, with a 20-year average harvest in excess of 25 million pieces and a landed value averaging \$125 million. The 2007 Bristol Bay harvest of 30 million sockeye dwarfs the total coastal BC harvest of 640,000 fish. Bristol Bay is the clear volume dealer in the wild salmon business.

Although harvest values are high in absolute terms, they are low relative to other sockeye fisheries—per pound, Bristol Bay sockeye is the least valuable Alaskan sockeye fishery, with a 20-year average ex-vessel price of only Cdn\$1.00 a pound. The Bristol Bay pack is dominated by frozen dressed fish with the balance canned in talls (1 lb cans) and ½ pound cans. The frozen fish is sold almost exclusively to Japan while the canned product is largely exported, the UK being the largest market.

The harvesting and processing functions could be characterised as a dramatic race for fish (fill the boat with fish, dump them off at the plant or tender, and fill the boat again) and a sprint to shelf-stabilise the product in the most expedient manner. Handling practices were poor, and plant capacity constraints and the imminent perishability of raw material, as much as market conditions, dictated product form allocations.

Although landings levels have remained very healthy, in recent years values have dipped substantially, averaging less than Canadian 70 cents per pound. BC salmon participants are often amazed to hear that a sockeye fishery with such buoyant catch levels is in crisis but that was precisely the state of the Bristol Bay sockeye fishery in the early 2000s. The primary causes of this crisis were a downturn in the Japanese economy and Japa-

nese acceptance of farmed salmon as a substitute for Alaskan sockeye salmon (a theretofore unthinkable occurrence). Although lower values were rooted in market causes, Bristol Bay fishermen launched a class action lawsuit against processors (some of whom were directly connected to Japanese wholesalers) claiming anti-trust (price fixing) practices.

As a volume-first/quality-second fishery that puts up its pack in a very short window (three-week peak season), and is characterised by hostility and mistrust between value chain members, Bristol Bay faced a daunting task to regain competitiveness.

RESPONSE

The Bristol Bay industry has not mounted a cohesive, strategic rally but has rather taken a series of steps to recoup a portion of lost value and secure marketability of products.

The key steps in this turnaround-in-progress include:

- A generic marketing program, under the umbrella of ASMI. Marketing programs have helped raise awareness of Alaskan seafood at a time when American consumers are actively seeking wild salmon alternatives in their diets.
- Shifting product forms and markets—reducing the amount of frozen dressed product bound for Japan (in light of that shrinking market) with a corresponding shift to canned products (including ½ pound, ¼ pound, and, recently, skinless/boneless) and dressed and portioned fresh/frozen products tailored for the US market. This has required shore investment in canning lines and new processing equipment. Increasingly, fresh product is flown from Alaska to US markets. A small percentage of raw material now directed to “value added” products translates into big volumes in relative terms (compared to other sockeye fisheries).
- Incremental improvements in fish handling practices.
- Setting up a Bristol Bay Regional Seafood Development Association with a core purpose of maximising the value of Bristol Bay fisheries through quality improvement, collaboration and cooperation. There is a strong emphasis on onboard chilling of the catch (using ice is not yet standard on Bristol Bay fishing vessels).
- A considerable amount of government support. The Alaskan salmon fishery is extremely important to regional economies and the fishing industry wields considerable influence with state and federal representatives. For example, to encourage innovation in processing:

The Alaska Senate Finance Committee recently passed legislation extending the salmon product development tax credit intended to modernise Alaska’s salmon industry. House Bill 321 will allow processors to deduct up to 50 percent of the cost of some new processing equipment from their annual Fisheries Business Taxes. The Bill should promote a more diverse array of salmon products. (Bristol Bay Times, March 20, 2008)

The Bristol Bay industry’s response to its crisis is very much a combination of taking much-needed steps to improve competitiveness, waiting for fortuitous market circumstances and availing itself of considerable regulatory and financial support from state and federal governments.

RESULTS

The task faced by the Bristol Bay industry was daunting—effective loss of its biggest customer, fierce competition from farmed salmon and a fractured industry mired in yesterdays’ handling practices—so progress has been incremental rather than immediate.

Ex-vessel fish values have rebounded somewhat from lows seen in 2002 though a portion of this rally is attributable to a weakening US dollar. Under today’s values and market conditions, fishermen are willing to harvest and processors are willing to purchase and market the product, a situation that did not always prevail in the early 2000s.

There is evidence of renewed interest and investment in “The Bay.”

One company planning to cash in on the growing popularity of Alaska salmon is Snopac Products.... Its newest processing plant ... reclaimed after seven years of abandonment, is scheduled to begin operations (this season).

Snopac spokesman Norman Van Vactor said the processing line would consist of new equipment, primarily focused on the fresh market and the market for vacuum-packed fillets with the pin-bones out. The plant will feature new gutting machines, placing a higher emphasis on the quality product than the older heading and gutting machines.

Snopac’s push for quality represents a growing statewide trend. (Bristol Bay Times, March 20, 2008)

Many observers feel that the intense derby fishery prevailing in The Bay precludes an even greater quality orientation and inhibits improved ability to schedule landings, utilize assets and direct raw material to highest value products and markets.

The shift in product/market emphasis is the most tangible strategic shift; it is also the development with the strongest implications for Skeena and BC producers.

APPLICABILITY TO SKEENA WATERSHED

A description of changes in the Bristol Bay fishery over the past few years may lack drama but developments in the world’s pre-eminent sockeye fishery are of vital relevance to all sockeye producers and marketers worldwide. Bristol Bay offers a host of lessons for Skeena Watershed participants.

- **Bristol Bay has occupied BC’s traditional sockeye markets.** Because of The Bay’s huge advantage in volume, with a resultant edge in production cost (partly related to low fish prices), BC producers cannot easily compete head-to-head with similar products or in the same markets. BC producers must stay ahead of Bristol Bay, offering a differentiated (higher value) mix to avoid a pricing war that BC, with higher production costs, cannot win. Figure 5 shows how Bristol Bay and BC product mixes have evolved over the past 20 years or so.

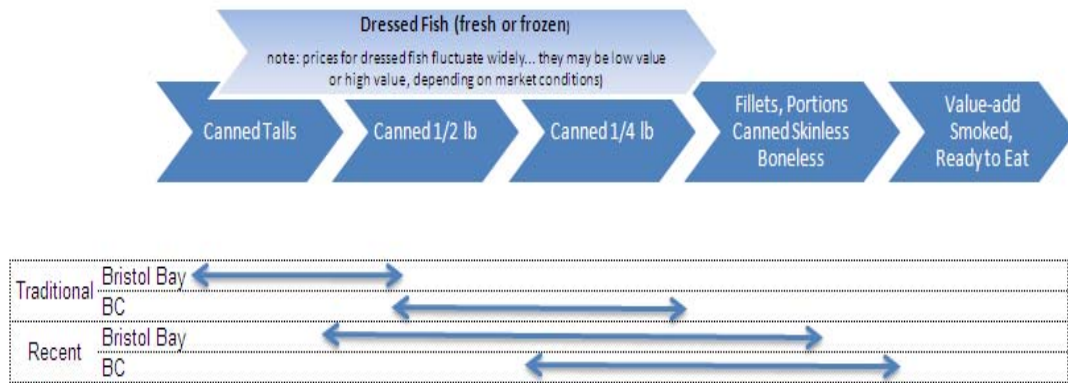


FIGURE 5: EVOLUTION OF BRISTOL BAY AND BC PRODUCT MIXES

In Figure 5, values move from lowest (canned talls) to highest (value-add). The thin arrows denote the majority of product emphasis over time in Bristol Bay and BC. In practice, the progression of value by product form is not that clear-cut since market conditions in different segments may vary somewhat independently. Dressed fish, in particular, has substantial price variation, and is shown to straddle several value categories; that is why many producers jump in-and-out of dressed fish as commodity markets fluctuate. Figure 5 shows how the mix of Bristol Bay and BC sockeye salmon products has evolved over time. BC producers try to minimise any overlap with Alaska since head-to-head competition would bring low prices for BC. Avoiding overlap is increasingly difficult as Bristol Bay upgrades its product mix.

Bristol Bay’s consistently robust harvest volumes (and tax incentives) support investment and a degree of stability. Alaskan producers know they will have large volumes over which to amortise investments and that they will produce an array of products from low-value commodities to high value specialties. BC producers, in contrast, can never be sure if they will face industrial volumes (large catches) or cottage scale volumes (low catches as seen in 2007). This makes planning problematic and investments difficult to justify.

- **Healthy catch levels do not guarantee a healthy bottom line.** Some Skeena harvesters feel that if their catch levels improved their economic woes would be solved. Bristol Bay is an example of how a region seeing record catch levels can experience economic crises. Competitive developments that erode general price levels have an enormous impact on results. These competitive developments, including competition from farmed fish, shifting markets, global economic conditions and exchange rates, affect all worldwide seafood players.
- **Bristol Bay quickly fills value-added niches.** Although the vast majority of Bristol Bay’s sockeye is put up in commodity form, the region has upgraded its product mix to include a full array of cured, packaged, portioned, canned, and dressed product, both fresh and frozen. If only 5% of Bristol Bay’s 2007 harvest of sockeye was put-up in niche products, this would represent 1.5 million fish, more than double BC’s entire sockeye harvest that year!
- **Bristol Bay’s run is earlier than the Skeena’s.** The fact that Bristol Bay’s run is both immense and early (prior to the Skeena’s and virtually all other BC systems), coupled with the reality that high value and specialty market niches are quickly

filled, places Skeena production at a distinct disadvantage. A huge Bristol Bay run generally brings modest ex-vessel prices on the Skeena. A more modest run brings hope for improved market conditions and generally higher prices for Skeena sockeye on the fishing grounds. The Skeena sockeye industry is necessarily opportunistic, having to deal with residual opportunities remaining after Bristol Bay pack is complete.

Bristol Bay, a sockeye industry in transition, very much sets the stage for the Skeena and other later-timed fisheries. To understand the dynamics of the Skeena sockeye business, an appreciation for Bristol Bay is required.

PACIFIC SEAFOODS INTERNATIONAL

VALUE ADDED PROCESSOR

BACKGROUND

Pacific Seafoods International was a local BC company owned by partners Todd Harmon and Mick Farup. For over 20 years the company operated from its processing facility in Sidney, in Greater Victoria. Pacific Seafoods was primarily a smoker of salmon products (hot and cold smoked) both for its own account and as a custom processor for other accounts.

In its early years, Pacific Seafoods' throughput was wild salmon, mostly sockeye, sourced almost exclusively from BC fisheries. Through the 1990s and early 2000s, the Company switched a large portion of its production to farmed salmon and steelhead, reflecting fish availability, price and consumer demand. In the last few years the ratio again flip-flopped with about 70 percent of production being derived from wild salmon sourced almost exclusively from Alaska. Virtually all purchases were of dressed-frozen product.

The Company sold the bulk of its products to customers in Canada and abroad. Virtually all product was in frozen form (vacuum packed, often sliced and gold-boarded). Although markets for smoked products in Europe, Asia and the USA are massive relative to the Canadian market, Pacific Seafoods recognised about 10 years ago that its competitive advantage lay within Canada. With global smoked salmon markets now dominated by farmed product, large producers in Europe (Norway, Scotland) and Chile are better positioned to serve those markets than a small west coast producer.

Pacific Seafoods came to source its wild salmon from Alaska because it required consistent, predictable supplies. Although the oil content of Alaskan fish is 1-2 percent lower than that of Skeena or Fraser sockeye, its attributes are still consistent with high-quality end products.

Pacific Seafoods had annual sales revenues of \$3-4 million, and earned a profit in every year of operation. Pacific Seafoods demonstrates that a value-added processor with BC salmon fishery roots can prosper in a business environment that wreaked economic devastation on much of the BC salmon industry.

KEYS TO SUCCESS/RESPONSE

Pacific Seafoods was able to avoid the pitfalls of other BC salmon businesses for a number of key reasons:

- **Market Approach.** Pacific Seafoods never saw itself as a BC salmon company but rather viewed itself as a provider of a suite of high-quality salmon products to meet its customers' requirements. When the BC salmon fishery began its protracted downturn, serving customer needs through reliance on BC salmon became impossible and a switch to alternative sources of raw material became a necessity. The Company was keenly aware of the price points that its customers required for various smoked products and began its production cycle with precise end-prices in mind.
- **Sourcing strategy.** The Company bought mostly frozen fish, with fish representing the single largest production cost. The Company was an opportunistic buyer, choosing from Alaskan wild salmon inventories (but not Bristol Bay because oil content is too low) as well as frozen farmed product from BC, Chile and Norway. Price was a major factor in sourcing decisions along with quality and reliability of supply. BC fisheries became a minor supplier because of inconsistency of supply (will there be fish or not?) and high prices relative to other sources. In the late 1990s the Company considered establishing direct links with BC fishermen (a value-sharing approach), but abandoned the effort because alternative fish sources provided greater benefits. All five wild species were sourced, with sockeye predominant; primary farmed species were steelhead, Atlantic salmon, chinook, and coho. Expertise in the sourcing function—intimately knowing the attributes and value of salmon from various fisheries—was a strong key to success.
- **Production acumen.** Operating year-round from a federally-approved plant in Sidney, with a workforce of 20-40 persons, Pacific Seafoods meticulously tracked its direct and indirect production costs. Quality and cost-control were the hallmarks of the production function. With a focus on hitting customers' price points while earning satisfactory margins, managing costs was critical. Despite considerable acumen in processing, the Company did not consider itself a processor; it considered itself a marketer.
- **Owner/operator orientation.** The Company's owners were also its operators, ensuring an ethic of urgency and professionalism in all functions. Sound execution of marketing, sourcing, and processing functions was greatly facilitated by the fact that the owners were conducting them. Given the dramatic shifts seen in the seafood business during the past 20 years, nimble decision-making and willingness to re-invent the business, on short notice, were key.
- **Strong finances.** Although a small, privately held enterprise, Pacific Seafoods was consistently profitable, with sufficient cash flow to invest in new processing technologies (to reduce cost and increase efficiency) and withstand transitory market shocks. The Company was able to avoid the defensive posture taken by many BC seafood participants during the period.

CHALLENGES/RESULTS

In spite of satisfactory overall results, Pacific Seafoods faced significant challenges in its efforts to adopt a market-first approach in an industry with high inherent volatility.

- **Regulatory constraints.** Seafood processing in general and salmon smoking in particular are highly regulated processing activities with a very high degree of quality control. Federal and provincial regulations abound. Pacific Seafoods, in the course of conducting prudent business (ensuring consumer confidence), maintained high

quality standards with an associated trail of custody. Yet the cost of accommodating government-required programs was substantial.

- **Accelerating pace of globalisation.** The number of players and interaction among players in the seafood business has escalated astoundingly in the past few years. New farmed species (eg, Tilapia, cod) have been introduced and China and Russia have emerged as buyers and re-processing centers. Globalisation brings both challenges and opportunities: no market is immune from an inundation of new species and purveyors but there are boundless opportunities for sourcing and selling product; it may, however, leave participants longing for the simple days of old (say, five years ago!).
- **Urban processing location, hostile processing environment.** When Pacific Seafoods opened shop, its location was comfortably removed from the quiet borough of Sidney. As the town grew, however, Pacific Seafoods found itself nestled in a residential sub-division. The activity generated by a working fish-plant (reefer trucks, employee parking, odours) became less agreeable. Additionally, real estate values skyrocketed, and property tax assessments grew commensurately. Significant local pressure grew to relocate the fish plant.
- **Dwindling labour pool.** As the Greater Victoria region grew and the economy diversified, seafood processing presence in the region evaporated. Pacific Seafoods' pool of workers to draw upon dwindled as attractive employment alternatives grew plentiful. In recent years, maintaining a functional workforce was untenable—periodically, the Company was unable to fill customers' orders for lack of production capability.

The gentrification of Pacific Seafoods' neighbourhood forced its owners to relocate, for reasons related to politics (peace in the neighbourhood), finances (value of the property) and practicality (lack of a labour force). Given their age and personal considerations, Harmon and Farup opted to forge a relationship with a Port Hardy-based salmon smoking company. Port Hardy is a small coastal community on the north end of Vancouver Island, featuring (relatively) cheap land, and a seafood culture that means a surfeit of potential employees.

APPLICABILITY TO SKEENA WATERSHED

Pacific Seafoods International, in its 20 years of successful operations within a daunting competitive climate and its subsequent re-location to a small coastal community, provides a host of illustrations for the Skeena Watershed. Where observers of the Skeena fishery ponder the likelihood of an increase in value-adding activity in the Prince Rupert region, the thoughts of one of Pacific Seafoods' principals offer some informed context.

- **Value-adders are opportunistic raw material acquirers.** Producers of high-valued seafood products work closely with their customers on volumes, product specifications, and prices. They look to purchase salmon on advantageous terms, and can draw upon supplies from all over the world. Successful value-adders are unlikely to link their sourcing strategy too closely to a particular local fishery unless that fishery features consistent catches and reasonable prices.
- **The BC salmon fishery of today is ill-suited to supporting value-adding.** Despite inherently high quality salmon—Pacific Seafoods favoured BC wild salmon over any other—BC has for many years been a highly unreliable supplier of raw material for seafood marketers. Catches are uncertain, the fishery management approach presents an impediment to proper planning and fish costs are high. BC fishermen may not feel like they are adequately rewarded for their efforts but purchasers of

frozen salmon on commodity markets attest that BC's product is more expensive than alternatives. Value-adders, like other seafood processors and buyers, seek good value from their fish purchases.

- **In-river salmon quality is un-even.** From direct experience with in-river salmon, including Babine fence sockeye, Pacific Seafoods' personnel confirm that, while some of the product is suitable for cold smoking (the most valuable use of the fish), other salmon is of lower-value use (eg, hot smoke, candies), while other is unsuitable for their purposes. Therefore, only well graded lots are economic for value-adding, and only at a price commensurate with value.
- **Small players can make it work.** A small company on a global scale, backed only by the finances of two career BC "fish guys," Pacific Seafoods was able to successfully steer through a rapidly changing competitive environment. Successful value-adding does not necessarily imply a massive injection of capital.
- **Find and exploit a competitive advantage.** Pacific Seafoods found its edge in servicing the Canadian market with a shifting variety of wild and salmon smoked products and producing those products with keen attention to cost control. This formula is portable—it can also work in Port Hardy and could no doubt also work in Prince Rupert—but it is not easily executed (it takes expertise, skill and a hands-on approach) and it is not right for everyone. Each company must find its own meshing of core competencies and exploitable opportunities.
- **It could work in the Prince Rupert.** The Pacific Seafoods business model could be applied in any locale with well developed transportation infrastructure and a pool of labour, including Port Hardy and Prince Rupert. If a legitimate value-added processor were to locate in Prince Rupert, it would not be to source only Skeena salmon but rather to utilise a range of raw material with a likely focus on Alaskan product. Alaskan frozen salmon is typically purchased from cold storages in Seattle, so Prince Rupert's proximity to Alaska's fishing grounds may be a dubious advantage; Vancouver and Victoria are closer to stockpiles of Alaskan salmon than Prince Rupert.

RIVER TO PLATE

SUSTAINABLE ECONOMIC OPPORTUNITIES FOR FRASER RIVER IN-RIVER FISHERIES

BACKGROUND

Over the past 20 years or so, DFO fishery management approaches, coupled with initiatives to encourage First Nations economic development, have resulted in fewer ocean-based mixed stock fisheries and increasing in-river catches of salmon. Whether in-river fisheries are Pilot Sales, ESSRs or Economic Opportunity fisheries, the challenge is the same: to extract economic benefit from salmon whose quality characteristics are distinctly different from specimens harvested in the ocean.

In-river commercial salmon fisheries in the Fraser River face a host of hurdles, among them:

- Opposition from the commercial sector which views transfers of commercially available salmon upriver as expropriation (in the extreme view) or acceptance of sub-optimal values (moderate view).
- Unsatisfactory results from collaborations between ocean-based buyers and processors and inland First Nations. The ocean players lament their inability to extract significant economic value from the in-river fish, and the First Nations harvesters

puzzle at the low returns (fish prices) they receive. Relationships between in-river First Nations harvesters and their buyers have often been strained, with parties often questioning each other's ethics.

- First Nations receiving access to in-river allocations may lack the capacity to professionally harvest, handle, process and market the catch. They are further stifled in their attempts to develop the business by unpredictable access to stocks (uncertain catch levels that may materialise on short notice).
- The quality of the fish—ocean participants proclaim it inferior, river participants claim it to be different—presents marketing challenges. The fish is often not marketable through traditional product/market channels.

In the Fraser River watershed the challenges are acute, as the area is vast, First Nations communities are widely dispersed, lower river Pilot Sales fisheries are controversial, opportunities for up-river commercial harvest are sporadic and the stakes are high—Fraser sockeye is the most valuable and high-profile salmon in British Columbia.

There has been a fundamental divide between the mainstream ocean-based industry and the burgeoning in-river fishery. Much of the debate centers on the potential scale of in-river commercial salmon enterprise. First Nations' value-adding successes, with dried or traditional product, or with fresh sales direct to consumers, have been extremely small scale. First Nations believe (hope?) that these small-scale successes can be ramped up to a larger scale. Ocean-based interests, who deal with sockeye customers worldwide, counter with confidence that the marketplace does not covet large volumes of inferior quality salmon.

In some respects the debate over the relative merits of an ocean vs in-river fishery are moot if, as many believe, large mixed-stock fisheries are a thing of the past and a growing portion of harvestable surpluses in the future will be harvested in-river.

RESPONSE

In recent years, Fraser River watershed First Nations have held Best Practices workshops to share information on fish handling, processing and marketing initiatives to upgrade the capacity of in-river commercial fisheries participants. These workshops led to the preparation of an ambitious report, [River to Plate—A Program Vision for Sustainable Economic Opportunities In Fraser River Salmon Fisheries](#) (May, 2008).

[River to Plate](#) is a timely project that offers a framework—a series of implementation steps—for Fraser River fisheries to transform themselves from reliance on wholesale buyers to a modern food-producing industry founded on sound business practices. The report will be used to educate Fraser Basin First Nations on the scope and complexity of the work to be done and to serve as a platform to gain buy-in for the reality that a transformative program such as that outlined in the report is a prerequisite to achieving economic and social goals.

RESULTS

[River to Plate](#) outlines an ambitious and lengthy agenda of initiatives that the report's authors and contributors believe are required to bring economic viability and sustainability to Fraser River salmon fisheries. Those steps are summarised below.

REGULATIONS & MONITORING

An over-riding theme of the paper is the need to meet the plethora of regulatory requirements of agencies such as DFO, BC government (various branches), WorkSafe BC, Canadian Food Inspection Agency, and Health Canada. As well, voluntary practices and procedures with the consumer in mind are embraced (Marine Stewardship Council, traceability of product).

A monitoring program (government and self-imposed) to ensure compliance with regulations and facilitate full traceability of product from harvest to consumer (river to plate) is described in considerable detail.

Meeting (or exceeding) regulatory requirements and confirming compliance through a monitoring program are means of assuring consumers that they are purchasing a healthy and safe product.

RESOURCE ACCESS

In-river harvesters wrestle with security of access just like their ocean-based counterparts. Efforts to secure a consistent, reliable supply tend to override other important considerations like product and market development. The inherent volatility of salmon surpluses at terminal locations is recognised. A share-based approach is espoused to allow transfer of opportunities (between the ocean and the river and within the river) to facilitate longer windows of harvest and improved resource utilisation.

HARVESTING & HANDLING

With sustainability of fisheries a given, harvesting and handling practices must be upgraded to ensure that the catch meets established quality standards.

PROCESSING

River to Plate posits that First Nations' efforts to prosper in the salmon fishery are closely linked to the extent to which they can progress beyond selling their catch wholesale (round fish to fish buyers). The authors acknowledge that the business practicalities of enhanced handling/processing vary according to individual fishery circumstances. They offer a hierarchy of processing options linked to the (consistent) volume of fish available in a particular fishery with profits increasing as one progresses down the list:

- Wholesale to processors.
- Establishing a buying/selling station
- Storefront (sales to public).
- Storefront with freezer (lengthen the window for sales to public).
- Processing plant

Bricks and mortar processing facilities are not suited to every circumstance but even rudimentary processing—for instance, grading and icing in totes—can contribute to higher quality and product values.

MARKETING

The quality pitfalls inherent with in-river Fraser River fish are acknowledged—terminal fish are simply not suited to all products and markets—so the need for innovative mar-

keting supported by rigorous quality control is emphasised. A multi-layered approach is discussed including maximising direct sales to the public, finding innovative uses for flesh that is not suitable for conventional products and making best use of salmon roe.

IMPLEMENTATION BUDGET

To support implementation of an ambitious program, a significant budget is provided: about \$1.5 million per year for four years. A prudent allocation of expenditures is suggested that sees about $\frac{2}{3}$ of the annual budget directed to “soft” initiatives such as training, education, and research, and $\frac{1}{3}$ to “hard” assets and infrastructure. Too often, the critical human side of a business launch is ignored, with financial resources invested only in physical assets that may or may not be needed.

APPLICABILITY TO SKEENA WATERSHED

River to Plate is not an implementation plan but rather a framework being floated to Fraser River First Nations to elicit support and feedback. To the extent that a River to Plate approach is endorsed, the following observations apply:

- **Putting ocean-based and in-river fisheries on the same page.** One of the impediments to good relationships in the two fisheries (aside from the issue of resource allocation) is the perception by the traditional fishing industry that Fraser River in-river enterprises play by an entirely different (more lax) set of rules. The regulatory and health & safety program put forth in the Report would level the playing field, with building and maintaining consumer confidence as the motivating factor bringing in-river businesses onside.
- **Emphasis on planning, training and research.** River to Plate presupposes that viability can be achieved for in-river fisheries but does not presume to know what products and markets will be targeted in the future nor what fixed assets will be required to support market-driven initiatives. It recognises that business strategies will vary with the unique circumstances of individual First Nations and that careful planning is critical. It also recognises that upgrading skills and operating practices is essential.
- **A Pragmatic View of Fish Quality.** The Report recognises that terminal fish present product/market limitations and suggests that developing a brand and accompanying story will be key to differentiating the product and improving its marketability.
- **Focus on roe (caviar)—the “edge” of in-river fisheries.** A key strategy is developing handling protocols and market channels for maximising value from salmon roe. The counterpoint to the deterioration of salmon’s flesh as they migrate to the spawning grounds is, after all, the maturation and ripening of the eggs. Salmon caviar is the logical potential competitive advantage enjoyed by in-river producers.
- **Need for share-based management.** The authors gauge that the current fishery management approach, both in the ocean and in the river, works counter to value optimisation objectives. They offer that share-based management (where participants receive a share of the catch with certain transferability provisions) would permit the fishery to be conducted more slowly, leading to better handling and more opportunities for fresh sales, and enable improved utilisation (ie, the ability to access fish when/as surpluses arise).

The framework provided in River to Plate provides an effective template for First Nations in the Fraser Basin to optimise the values, returns and benefits from participation in in-river salmon fisheries. The immediate question is, will Fraser First Nations be suc-

cessful? The answer will depend upon the extent to which the plan can be effectively executed. Certainly, a pragmatic business approach such as that outlined in River to Plate offers the best chance for long term success.

THE BC GROUND FISH TRAWL FISHERY

INDIVIDUAL VESSEL QUOTA/GROUND FISH DEVELOPMENT AUTHORITY

BACKGROUND

The groundfish trawl fishery operates year-round, harvesting a wide range of groundfish species, particularly rockfish, soles, and cod. Through the 1980s and early-mid 1990s, the BC groundfish trawl fishery was set on an unsustainable path. An increasing number of vessels were participating in the fishery, placing growing pressure on stocks. A series of increasingly restrictive trip limits were instituted, giving trawl skippers a shopping list of species for each trip. Trip limits were routinely exceeded and, in the course of trying to complete a shopping list, discarding of un-wanted fish became rampant. Greater restrictions fuelled further fishing pressure—a classic race for fish was on.

Economic results were volatile: the landings pattern was all-or-nothing, a high percentage of production was frozen (lower values), prices and quality were poor, and harvest volumes were unsustainable.

DFO believed it had lost its ability to manage the fishery within reasonable conservation tests and therefore closed the groundfish trawl fishery. Industry was advised that, until stakeholders agreed upon a plan consistent with stock and area-specific management, and full adherence to TACs, the fishery would remain closed.

RESPONSE

Senior government officials appointed a group of stakeholders—representatives of vessel owners, processors, coastal communities, the Union (UFAWU/CAW), the Province of BC, and DFO—to negotiate, by consensus, a new fishery management approach. It was recognised that interests other than vessel/licence owners had a stake in the fishery and that those interests would have an influence in the development and design of the new system.

Some interests felt that an Individual Quota (IQ) plan could introduce individual accountability to the fishery and lead to vastly improved consistency and quality of landings. Other interests were concerned about pitfalls often associated with quota plans, including leasing by “armchair” fishermen, undue concentration of quota and disruption of existing processing operations (and possible displacement of their employees). There was a strong sentiment among some participants in the negotiation that not all quota should be endowed to vessels/licences but that a portion should be used to pursue social goals. The group devised a compromise plan with the following key elements:

CONSERVATION MEASURES

- 100% at-sea observer coverage (75% industry funded).
- 100% offload monitoring (100% industry funded).

- About 50 individual TACs (5 areas, a multitude of species) to ensure stock/area-specific management.
- Vessels prohibited from fishing if they have exceeded their quota in a given area (individual accountability and responsibility).

SOCIAL MEASURES

- A Groundfish Development Authority (GDA), providing allocation advice to DFO on 20% of the quota. The GDA was divided into two quota pools of 10% each: 1) a Groundfish Development Quota (GDQ) to encourage achievement of broad industry goals and 2) a Code of Conduct Quota (CCQ) to promote fair treatment of crews under an IQ system. Through allocation of quota, the GDA, GDQ and CCQ attempt to steer the industry on a balanced course that includes social considerations.
- Holdings caps (maximum amount of total groundfish holdings on a licence) to prevent undue concentration of quota holdings.
- Species caps (maximum amount of individual species holdings on a licence) to prevent undue control of particular species.
- Periodic review to monitor progress and fine-tune the plan as required.

ECONOMIC MEASURES

- Individual quotas, allowing individuals to pursue their own business paths.
- Transferable quotas, allowing in-season adjustments, specialisation, regionalisation, consolidation or exit. Industry-driven fleet rationalisation was expected, with an anticipated fleet size of 60-80 vessels (vs 110 vessels prior to the Plan).
- An overage/underage allowance on TACs to provide some leeway to harvesters.
- A year-round fishery to facilitate consistent service of the fresh market.

RESULTS

Although the IVQ/GDA Plan was highly complex, industry soon adapted to it. Formal evaluations conducted in 1999, 2002 and 2003 were highly positive. A summary of results is provided as follows:

CONSERVATION

The Plan was an unqualified success from a conservation perspective (in terms of DFO's objectives). All TACs have been adhered to and industry has demonstrated a growing stewardship ethic, including contributing to stock assessment research. While opposition to bottom trawling from some environmental groups persists, the BC trawl industry is well-positioned to rebut false accusations and address legitimate concerns.

SOCIAL

While the industry has shown stability and the goals of the GDA have largely been met, it is not clear what specific effect the GDA has had on this development. Some believe positives have accrued because of the GDA; others, in spite of it.

ECONOMIC

The first several years under the IVQ/GDA Plan brought prosperity to participants: increases in fish prices, market values, asset values, and profitability were seen. Fish handling practices improved, the industry became a stable, consistent supplier to USA markets and utilisation of developing species improved.

The strengthening of the Canadian dollar in recent years (from 65 cents in 2003 to par in the summer of 2008, along with skyrocketing fuel prices, has had a dampening effect on results. While economic results are now marginal, participants believe that the strong fishery management program in place provides them with a solid platform from which to effect an economic revival.

OVERALL

The IVQ/GDA Plan developed by stakeholders with divergent economic and political philosophies is a program where “nobody got what they wanted ... but everyone can live with what they got.” That is an inevitable outcome of a consensus plan developed by diverse interests.

APPLICABILITY TO SKEENA WATERSHED

The groundfish trawl management plan provides many positive illustrations for Skeena Watershed stakeholders. The IVQ/GDA Plan is not a template for the Skeena Watershed or the BC salmon industry; there is continued division over IQ management and the effectiveness of social safeguards built into IQ programs. However, the following elements may be instructive:

- **Government Leadership.** Once a conservation crisis had been identified, DFO exerted strong leadership by appointing a task force of diverse interests to develop a new plan, insisting on a consensus decision-making model and applying pressure to resolve the matter promptly. Without enduring an element of duress, stakeholders would not have willingly (or quickly) made necessary accommodations to their fellow stakeholders.
- **Innovation.** The stakeholders tasked with developing a new groundfish management plan forged entirely new ground. They were undeterred by the novelty or complexity of what they were crafting. They were confident in the capacity of industry participants to grasp the new plan and adapt to it.
- **Address the Market.** It was recognised during development of the Plan that the primary economic objective was to serve customers better (a steady supply of high quality fresh product). Without implementing a plan to better meet market demand, concerns about division of economic benefits would have been fruitless. The fishery management approach, then, exerts a strong influence on the economics of the fishery.
- **Review, Monitor, Fine Tune.** The initial IVQ/GDA agreement contained formal provision for review and refinement of program parameters. The IVQ/GDA plan could be altered but only with consensus agreement of all stakeholders (and approval by the Minister of Fisheries). This assured that the program could change over time while respecting the spirit of compromise and the need to address all interests.

COMMERCIAL SUMMARY & SYNTHESIS

In this commercial fishery section a host of challenges to improved economic performance and value-adding have emerged, as have a number of opportunities for effecting positive change. The project authority for this study is interested, not only in ways of improving overall values derived from the Skeena salmon resources, but in strategies for enhancing local (within the watershed) economic benefits.

In moving forward toward a more prosperous commercial Skeena fishery for watershed participants, it is necessary to acknowledge and address impediments and exploit legitimate opportunities. The primary issues and opportunities identified in the economic analysis and case studies are recast as follows:

ISSUES/CHALLENGES

FLEET

- Not enough revenue, too many vessels; fuel costs rising.
- Inactive vessels will engage when economics improve.
- Constraints to higher ocean catches are many, including allocation policy, precautionary fishery management, and environmental conditions.
- Selective fishing, if implemented properly, is species, not stock, specific.
- Trend to more-terminal harvests.
- PICFI – transfer of commercial capacity to in-river First Nations.
- NNFC – largest constituent in the watershed is also the most vulnerable to deteriorating economics.
- Need for fishery management reform to address above points.

PROCESSORS

- Skeena a component of a bigger seafood sourcing and processing picture.
- Processing fortunes are linked to those of the fleets—difficult to forge innovative business arrangements with a fleet that is “old and broke.”
- There are numerous constraints to value adding, including: multiple definitions (value adding is in the eye of the beholder), the nature of wild salmon business, the current fishery management system, and lessened infrastructure & investment.

CASE STUDY FINDINGS

Findings from the Case Studies are summarised in Table 42.

TABLE 42: SUMMARY OF CASE STUDY FINDINGS

| Case Study | Issues | Opportunities |
|-----------------------------|--|--|
| Copper River | Premium niches are small. Ex vessel prices are a fraction of retail. Skeena run timing presents challenges. | Structure the fishery around market requirements. Cooperative marketing campaign an umbrella for individual business initiatives. Growth in wild salmon demand a positive. |
| Bristol Bay | BB has taken over BC's traditional sockeye markets. Healthy catches don't guarantee a healthy bottom line. BB fills valuable niches. BB run timing is before Skeena. | A fishery—even an extremely large and fractured one—can make significant progress when confronted with crisis. |
| Pacific Seafoods | Value adders are opportunistic raw material acquirers (not looking to pay the highest price for raw material). BC salmon fishery is currently ill-suited to supporting value adding. In-river salmon quality is uneven: some is fine, some is not. | Small players can make it work. Find and exploit a competitive advantage. Value added processing could work in Prince Rupert area. |
| River to Plate | Long learning curve. | Get ocean and river participants on the same page. Emphasis on planning, training, and research. Pragmatic view of fish quality. Focus on caviar... the edge of in-river fisheries. Need for share-based management. |
| BC Groundfish Trawl Fishery | ITQs not acceptable to all. | Government leadership. Innovation. Address the market. Review, monitor, fine-tune. |

Source: Counterpoint research.

Consideration of the preceding list of issues and opportunities yields the following observations:

1. The general business environment in the Skeena salmon fishery (and the BC salmon fishery coastwide) is not conducive to investment and innovation. There is nothing expressly prohibiting entrepreneurial activity in the Skeena watershed but in practice it is discouraged. A fleet that can be described as “old and broke” is not developing new talent, but is withering away. A key to fostering an improved business climate is fishery reform that allows individual businesses to create and implement business plans with increased confidence. Salmon industry leaders possess the talent and ingenuity to devise such a reformed fishery but they must break the stalemate that is stalling the industry. The BC groundfish trawl fishery provides some guidance on the process for implementing a customised, unique approach that meets the needs of all stakeholder groups. A reformed fishery could include the following elements:
 - a. Allow for individuals to create viable businesses, with improved certainty and security. New blood and new ideas are key to revitalising the business.

- b. Entrench selective fishing protocols and monitoring program to preserve to the greatest extent ocean-based fishing opportunities.
 - c. A permanent but flexible transfer mechanism to facilitate movement of fish between the commercial and in-river sectors, and allow for market compensation for such transfers.
2. The trend toward further-constrained ocean fisheries and expanded in-river fisheries, if it continues, necessitates research and investment, and cooperation between ocean-based and in-river interests into ways of optimising the value of in-river fisheries. A major advantage held by the Skeena in this regard is that salmon quality remains acceptable throughout the bulk of the sockeye's migration through the watershed. Further, there appears to be strong potential for roe products that exploit this inherent advantage of terminal fisheries. The ideas found in River to Plate provide a logical starting point for cooperative development of in-river salmon businesses integrated with the traditional commercial industry.
3. Any objective to improve the level of local benefits from Skeena salmon resources should explicitly consider the Northern Native Fishing Corporation. Currently saddled with aging vessels and equipment, an un-healthy lack of diversification (too much reliance on Area C gillnet), and a fishery management and regulatory regime that inhibits flexibility, the NNFC fleet is in decline. Strategies to improve NNFC fleet economic performance will have a significant effect on First Nations' fishermen and communities in the watershed. The PICFI program, with a sizeable allocation of funds to support business planning, could be a funding avenue for NNFC to explore comprehensive approaches for reform and revitalisation of this important fleet.

A reformed commercial fishery, accompanied by a better-developed in-river fishery, can provide an environment for entrepreneurial activity that:

1. Encourages growth of small-scale commerce—the Alternative Channels sector as introduced at the beginning of this section.
2. Does not inhibit the growth of value added processing in the Prince Rupert region.
3. Sees the revitalisation of the NNFC fleet, an important economic driver in the Skeena watershed.

COMMERCIAL SECTOR ECONOMIC IMPACTS

The economics of the commercial fishery are typically assessed in terms of its wholesale value. Since much fish production is exported, the bulk of the economic impacts at the retail level are realised outside the province in any event.

The harvesting sector supplies an input, albeit a crucial one, to the processing sector: fish. Thus the revenues of the harvesting sector, the landed value, is an indirect economic impact stemming from economic activity in the processing sector.

Table 43 shows the Direct Economic Impacts of Skeena-bound sockeye and pink salmon. While the data reflect processing activity for Skeena salmon not all of the processing activity is conducted in Prince Rupert. A portion will be landed in Prince Rupert and trucked south for processing.

TABLE 43: DIRECT ECONOMIC IMPACTS OF SKEENA SALMON COMMERCIAL FISHING

| | Sockeye | Pink | Total |
|---|----------------------|-------------|--------------|
| | <i>(\$ millions)</i> | | |
| Revenue | \$7.54 | \$2.27 | \$9.80 |
| Production Costs | | | |
| Fish Acquiring | 0.56 | 0.13 | 0.70 |
| Processing (labour, materials, packaging) | 1.71 | 1.27 | 2.98 |
| Carrying Costs (interest, warehouse) | 0.34 | 0.10 | 0.44 |
| Freight to Customer | 0.17 | 0.14 | 0.32 |
| Total Production Cost | 2.79 | 1.65 | 4.44 |
| Selling Price less Production Cost | 4.75 | 0.62 | 5.37 |
| less: Processor Margin | 0.83 | 0.27 | 1.09 |
| Fish Cost (Payment to Fishermen) | 3.92 | 0.35 | 4.27 |

Source: Counterpoint estimates.

Processing sector gross revenues of \$9.8 million represent the Direct Economic Impacts of the commercial fishery attributable to Skeena salmon.

TOTAL IMPACTS

Direct Economic Impacts measure the economic activity of businesses that harvest and process Skeena salmon.

Direct Economic Impacts are supplemented by further rounds of spending that create additional economic activity in the local watershed and the greater provincial economy.

Indirect Economic Impacts result from expenditures by processors to purchase inputs from other businesses in British Columbia, including fish harvesters. Only those purchases of goods and services produced within British Columbia are included in this analysis.

Induced Economic Impacts measure the economic activity of households spending income earned from direct and indirect employment in the fish harvesting and processing sectors in BC. British Columbia residents are assumed to spend 75 percent of their gross earned income in BC.

Indirect plus Induced Impacts are together called Secondary Economic Impacts.

Total Economic Impacts are shown in Table 44.

TABLE 44: TOTAL ECONOMIC IMPACTS OF SKEENA & NORTH COAST SALMON FISHING

| Commercial Fishery | Direct | Indirect | Induced | Total |
|--------------------------------------|---------------|-----------------|----------------|--------------|
| Skeena salmon | \$9.8 | \$4.0 | \$1.4 | \$15.2 |
| North Coast salmon | \$41.4 | \$17.1 | \$5.9 | \$64.4 |
| North Coast including Alaskan salmon | \$75.9 | \$31.3 | \$10.9 | \$118.1 |

Source: Counterpoint estimates.

In Table 44, to provide context, estimates of economic impacts for the commercial fishery are shown for

- Skeena salmon
- North Coast salmon
- North Coast salmon including Alaskan salmon

The economic impact information presented in this chapter confirms that processing of north coast and Alaska salmon is a significant endeavour, bringing a large volume of salmon and associated economic activity through Prince Rupert's plants and service facilities.

Skeena salmon is not, in and of itself, big business (at its current size and scope) but it is an integral component of a much larger business that, until the current cycle, played a more prominent role within the North Coast salmon industry.

SPORT FISHERIES

Skeena salmon and steelhead are fished for recreational purposes from salt water to the upper reaches of the Skeena River and its tributaries.

The Skeena watershed supports very strong salmon fishing opportunities and world class steelhead angling. The Skeena holds the world record for sport-caught chinook salmon and for steelhead. Some residents of the region claim to have moved to the watershed simply because of the superb fishing.

Skeena sport fisheries include independent anglers and businesses (lodges, charters, guides) who rely on the sport fishery for their livelihood.

For descriptive and analytical purposes, the Skeena sport fishery can be divided into three regions:

- The salt water fishery
- The freshwater fishery on the lower river (below Cedarvale)
- The upriver freshwater fishery

Anglers typically pursue their sport in one of three ways:

- Independent angling,
- Hiring the services of a fishing guide or charter boat, or
- Visiting a fishing lodge (where the fishing may be guided or not).

Lodges provide all-inclusive packages, typically 3-7 days in length, where anglers enjoy food, accommodation and, of course, lots of sport fishing in boats supplied by the lodge. Charters provide the boat and a guide, but typically not food or accommodation. Independent anglers fend for themselves.

Table 45 shows the presence of lodges, guides, charter boats and independent anglers in each of the Skeena salmon sport fishery regions.

TABLE 45: COMPONENTS OF THE SKEENA SALMONID SPORT FISHERY

| Salt Water | Lower River | Upper River |
|---------------------|---------------------|---------------------|
| Lodges | Lodges | Lodges |
| Charter Boats | Angling Guides | Angling Guides |
| Independent Anglers | Independent Anglers | Independent Anglers |

Source: Counterpoint research.

The assessments of the Skeena salmon and steelhead sport fishery presented herein are based on published data and interviews with participants in each sector of the fishery. As in the commercial sector, models of each sector were constructed to capture the economic essence of each one.

SALT WATER SPORT FISHERY FOR SKEENA SALMON

The Skeena salmon season in Chatham Sound—the body of water adjacent to Prince Rupert—operates primarily from late-May through mid-September. Anglers in the re-

gion catch all species of salmon, though they primarily target chinook and coho, and groundfish such as halibut and rockfish. The salmon harvested in the region draw from a variety of river systems: only a portion, sometimes a rather small portion, originate in the Skeena watershed.

The salt water salmon fishery is primarily a “kill” fishery, also known as a consumptive fishery: anglers keep the salmon they catch. Creel surveys conducted in recent years in Chatham Sound (J. O. Thomas & Associates, 2001, 2003, 2007) confirm anecdotal evidence that the marine sport salmon fishery is growing.

All anglers fishing in salt water in British Columbia must obtain a sports fishing licence, which can be purchased from the Department of Fisheries and Oceans or its authorised agents (including sporting goods stores, marinas, lodges and guides, service stations, marinas and department stores). Juveniles must obtain a licence but there is no charge. Anglers wishing to retain any species of Pacific salmon must affix a Salmon Conservation Stamp to their licence. Sport fishing licences and Salmon Conservation Stamps are issued annually.

TABLE 46: SALT WATER SPORT FISHING LICENCE FEES

| Category | Canadian Resident | Non-Resident |
|----------------------------------|-------------------|--------------|
| Adult Annual (16-64 years) | \$22.05 | \$106.05 |
| 5 day | \$16.80 | \$32.55 |
| 3 day | \$11.55 | \$19.95 |
| 1 day | \$5.51 | \$7.35 |
| Senior Annual (65+ years) | \$11.55 | \$106.05 |
| Salmon Conservation Stamp | \$6.30 | \$6.30 |
| Juvenile Annual (under 16 years) | FREE | FREE |

Source: Fisheries and Oceans Canada.

All retained chinook salmon must measure no less than 45 cm from nose tip to tail fork. All coho, sockeye, pink and chum retained must measure no less than 30 cm (unless otherwise specified in the limits table).

A maximum of four fish of all species of Pacific salmon from tidal or freshwater may be retained daily. The maximum possession limit for all species of Pacific salmon from tidal or freshwater is eight.

The coastwide daily limit for chinook salmon is two. The annual limit on chinook salmon from salt water is thirty (there are lesser limits for sub-regions of the South Coast). All chinook salmon retained must immediately be recorded on one’s sport fishing licence.

Sport Catch—Chatham Sound

The 2006 Creel Survey (J. O. Thomas, 2007), covering the Chatham Sound marine sport fishery, estimated 3,350 boat-trips during a six week period (Aug 1-Sep 15), with almost ⅔ of those occurring on weekends.

Angler effort (boat-trips) has been on an upward trend over the past decade. In the month of August, boat-trips are up from 1,800 in 2001 to 2,600 in 2006. For the first half of September, boat-trips increased from 540 in 2001 to 760 in 2006.

Harvests of chinook, coho and halibut have also increased over time.

| August | 2001 | 2006 |
|------------------|-------------|-------------|
| Chinook Kept | 299 | 1,200 |
| Coho Kept | 6,488 | 15,650 |
| Halibut Kept | 3,085 | 8,200 |
| September | 2001 | 2006 |
| Chinook Kept | 61 | 200 |
| Coho Kept | 1,006 | 3,200 |
| Halibut Kept | 222 | 1,800 |

CHATHAM SOUND

There are three lodges, approximately 65 charter boat operators (and some part-time operators) and an indeterminate number of independent anglers who pursue Skeena salmon and steelhead, among other species and stocks, in Chatham Sound.

The lodges provide full service accommodation for patrons on three or four day fishing trips. Over the course of a season, anglers fishing from these lodges account for approximately 2,400 boat-trips.

The charter boats take patrons out typically for one-day trips (with some offering multiple day trips). Charter boats can usually accommodate up to four patrons per boat-trip but average 2-3 patrons per boat-trip. Over the course of the season, charter boats account for about 3,100 boat-trips in total.

Recent creel surveys report that guided anglers in salt water catch salmon at almost twice the rate of non-guided anglers.

Independent anglers account for 6,100 boat-trips.

Altogether, salt water angling in Chatham Sound generates an estimated 11,700 boat trips. About one-quarter of this angling effort is attributable to Skeena salmon. The balance is attributable to non-Skeena salmon and to halibut and other non-salmon species pursued by salt water anglers.

FRESHWATER SPORT FISHERY

The freshwater sport fishery in the Skeena River can be usefully subdivided into upper and lower river sections, with the division at Cedarvale, about 175 kms upstream from the mouth of the Skeena.

The primarily consumptive lower river fishery lasts from March to November, and participation is significant, with crowding being an issue during the peak season of July and early August. The upper river sport fishery, in contrast, is largely non-consumptive, occurs from late August through October (and sometimes into November, weather permitting), is largely focused on steelhead, and features wilderness and remoteness as key elements of the angling experience.

In both fisheries, guided angling tends to focus on steelhead in Classified Waters (ie, streams and periods listed under the MoE's Steelhead Stream Classification Policy). About one-half such guiding occurs in the upper river and one-half in the lower river. Independent anglers, especially in the lower river, tend to target salmon for retention. The upper river guides and lodges charge generally higher rates than their lower river counterparts.

The management of “Sea Coast and Inland” fisheries is the responsibility of the federal government of Canada, as carried out by the Department of Fisheries and Oceans. In British Columbia, the Ministry of Environment licenses and manages freshwater fisheries. All anglers fishing in freshwater must therefore purchase a provincial Non-Tidal Angling Licence. Any angler intending to keep a salmon of any legal size or species must purchase a Salmon Conservation Stamp.

Anglers fishing for steelhead, whether retained or released, must have their Non-Tidal Angling Licence validated with a Conservation Surcharge Stamp. A Steelhead Stamp is mandatory when fishing on most classified waters during certain specified periods, even when fishing for species other than steelhead.

The angling experience, especially for world class Steelhead fishing in the Skeena watershed, depends in part on remoteness and isolation; hence crowding, if it becomes an issue, can be significant. To address this problem, MoE introduced a province-wide Classified Waters sport fishery management system in 1990.

The system created “Classified Waters” in which streams were rated according to the quality of angling experiences they offer. The number of Rod Days available to angling guides on each river (section) were then limited. Originally, guides were allocated Rod Days based on historical use; today, there is a secondary market in which Rod Days are bought, sold or leased.

Guides use up their allocation of Rod Days over the fishing season by taking clients out to fish on Classified Waters. Each angling visit by a client to a classified stream equals one Rod Day; any part of a day fished equals one Rod Day. At the end of each day, guides complete a report detailing their fishing that day, including location and fish harvested, kept and released, by species.

Although guided angling Rod Days remain capped at 1991 levels, the effectiveness of the Classified Waters system was questioned by some anglers who were concerned about crowding at peak times in particular stretches of the river. Figure 6 shows the rise in angling on four Skeena tributaries following the introduction of Classified Waters in 1990.

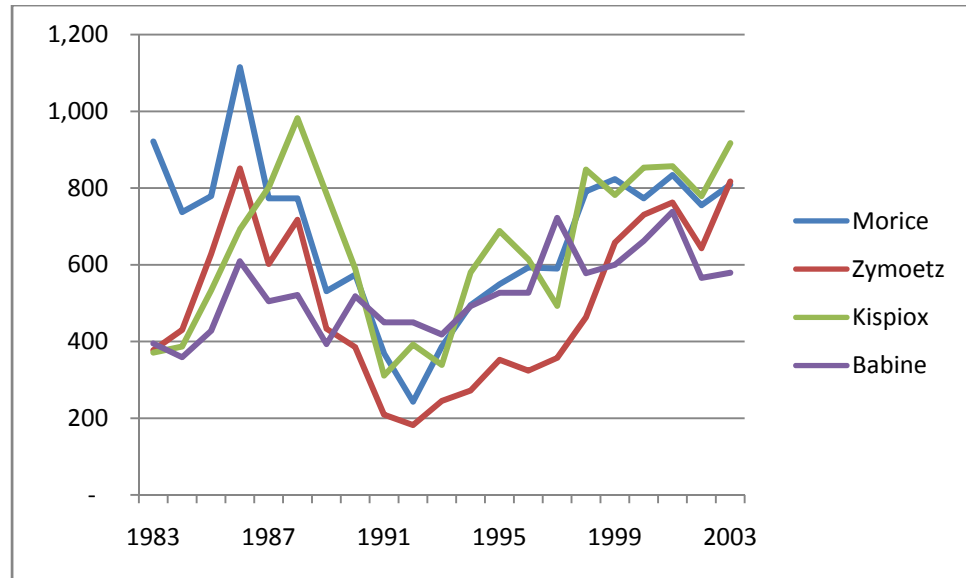


FIGURE 6: NUMBER OF ANGLERS FISHING SELECTED SKEENA TRIBUTARIES: 1983-2003

In 2005, the BC government responded to this problem by introducing its Quality Waters Strategy. The Quality Waters Strategy (QWS) is intended to maintain and improve the angling experience in British Columbia by managing angler use. The new Strategy called for the development of Angling Management Plans for many classified waters. In the Skeena watershed, Angling Management Plans are being prepared for the following rivers:

- Babine
- Bulkley
- Kispiox
- Kitseguecla
- Kitsumkalum
- Kitwanga
- Lakelse
- Morice
- Skeena 4 downstream of Kitwanga
- Skeena 4 upstream of Kitwanga
- Suskwa
- Zymoetz 1
- Zymoetz 2

Hatchery steelhead may be retained but wild steelhead must be released. While there has been no retention of wild steelhead in most of the province for quite some time, under a new policy, effective April 1, 2007, all wild steelhead caught in the Skeena Region must be released. Hatchery steelhead from the Kitimat River may be retained. The annual quota for hatchery steelhead is ten.

All freshwater anglers must obtain a freshwater angling licence, available in tenures of one day, eight days and annual. Fishing for steelhead or non-tidal salmon requires additional Conservation Stamps, for which there is a surcharge. Angling in Classified Waters

requires a special Classified Waters Licence (annual) as well as payment of daily Classified Waters fees. Freshwater angling licence fees are summarised in Table 47

TABLE 47: FRESHWATER SPORT FISHING LICENCE FEES

| Licence Type | BC Residents | Canadian Residents | Non-Canadians |
|------------------------------------|--------------|--------------------|---------------|
| Basic Licences | | | |
| Annual Angling Licence | \$36 | \$55 | \$80 |
| One Day Angling Licence | \$10 | \$20 | \$20 |
| Eight Day Angling Licence | \$20 | \$36 | \$50 |
| Annual Licence for Disabled | \$1 | \$55 | \$80 |
| Annual Licence for Age 65 Plus | \$5 | \$55 | \$80 |
| Conservation Surcharges | | | |
| Steelhead | \$25 | \$60 | \$60 |
| Non-Tidal Salmon | \$15 | \$30 | \$30 |
| Kootenay Lake Rainbow Trout | \$10 | \$20 | \$20 |
| Shuswap Lake Rainbow Trout | \$10 | \$20 | \$20 |
| Shuswap Lake Char | \$10 | \$20 | \$20 |
| Classified Waters Licences | | | |
| Classified Waters Licence (annual) | \$15 | NA | NA |
| Class I Waters Licence | NA | \$40/day | \$40/day |
| Class II Waters Licence | NA | \$20/day | \$20/day |

Source: Ministry of Environment.

Sport fishing is not permitted in any stream in the watersheds of the Skeena River above Cedarvale from January 1st to June 15th each year. The Skeena River mainstem above Cedarvale is closed from January 1st to May 31st only.

Non-Tidal Angling licences and Conservation Stamps sales (number of licences) in the past decade are shown in Figure 7.

Note: the data shown in Figure 7 are indicative only: the Skeena watershed represents only a part, albeit an important part, of Region 6. The data cover lake as well as river fishing and species other than salmon and steelhead. Presumably some Skeena anglers buy their licences elsewhere, while others who purchase their licence in Region 6 also fish in other regions of the province.

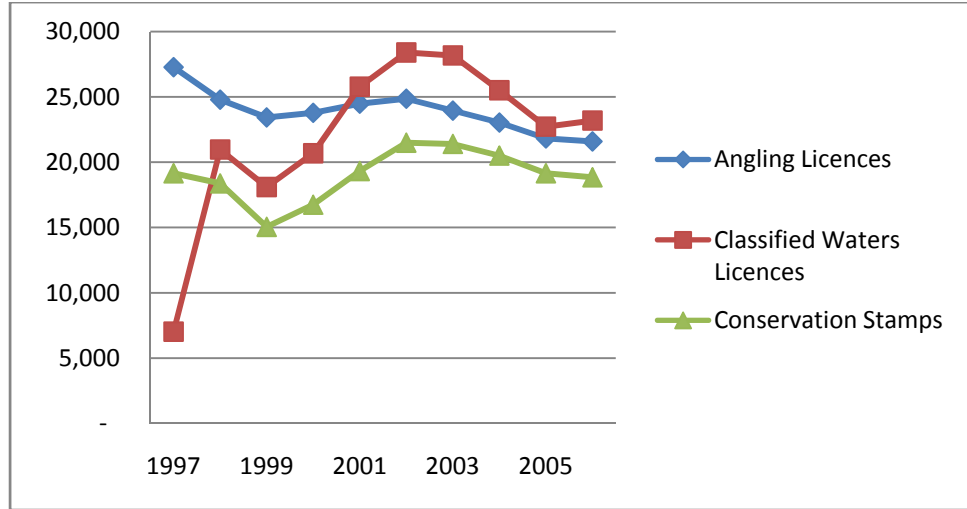


FIGURE 7: SALES OF SKEENA REGION NON-TIDAL ANGLING LICENCES & CONSERVATION STAMPS
 Participation in non-tidal angling in Region 6 (Skeena), based on sales of angling licences and Conservation Stamps, has been declining since 2002.

Revenues from sales of non-tidal angling licences in Region 6 are shown in Figure 8.

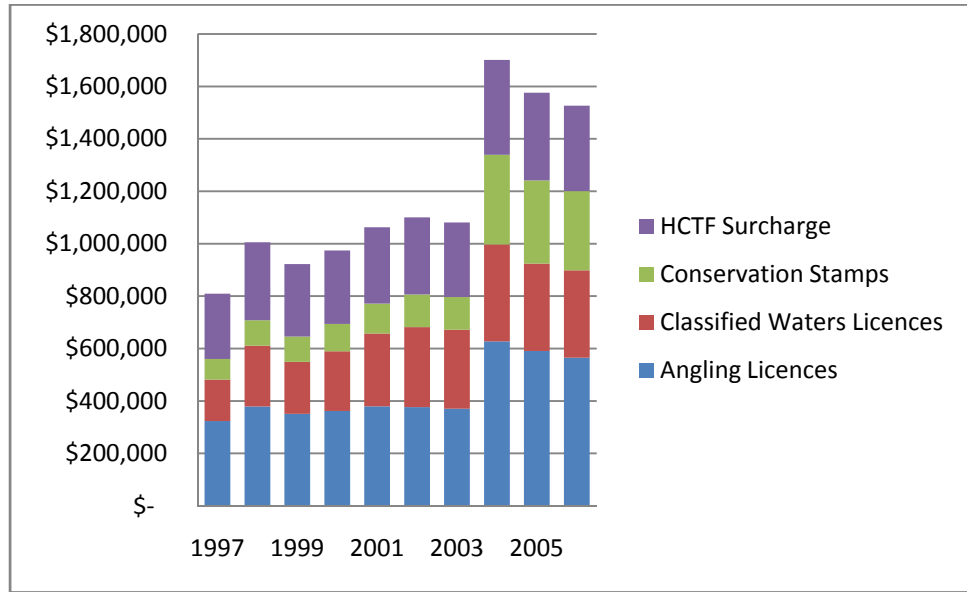


FIGURE 8: NON-TIDAL ANGLING LICENCE REVENUES—REGION 6
 Revenues from sales of angling licences have generally trended up over the past decade, surpassing \$1.6 million in 2004, a height from which they have since receded somewhat. The surge in revenue is related to a higher fee structure for licences and stamps.

LOWER SKEENA RIVER SPORT FISHERY

The sport fishery in the lower Skeena river starts for a few hearty souls in February or March angling for steelhead on the Kalum and lower Copper rivers and other lower Skeena tributaries (April - early May primetime).

The first chinook fishery of the year starts mid-April and runs through the end of May on the Kalum River (late April, early May primetime). Angling for chinook continues from mid-June to mid-August on the Skeena, Kalum and Copper Rivers (July and early August primetime).

The coho recreational fishery starts in early August on the lower Skeena and its tributaries and continues until the end of October (August primetime for the Skeena, Sept – mid-October primetime for its lower tributaries).

The summer steelhead fishery runs from early August until the end of November on the Skeena and Copper Rivers (August - early September primetime on the Skeena, late August – late October primetime on the Copper)

There were ten fishing lodges operating in and around Terrace, the hub of the lower river recreational fishery, but one was washed out last year and another sold as a corporate retreat, leaving eight now. MoE data show twenty licensed angling guides in the lower river and twice that number of assistant guides (although guides are frequently listed as assistants for other guides). Note that the lodges employ guides and/or are owned by guides.

On the lower Skeena River, there are 14,500 guided angler-days and 63,800 independent angler-days. Independent angling in the lower Skeena is the single largest component of the Skeena Watershed recreational fishery.

UPPER SKEENA RIVER SPORT FISHERY

On the upper Skeena River, from Cedarvale upstream and including its world famous tributaries—including the Bulkley, Kispiox, Babine, Sustut and Morice—the prime target of anglers is steel-head and the fishery occurs from late August through October and occasionally in to November.

Fourteen lodges operate in the upper Skeena river and its tributaries. MoE data listed two dozen angling guides and twice that number of assistant angling guides (although, again, guides are frequently listed as assistants to other guides). The fishing tends to be more remote than on the lower river, which explains the predominance of lodges over guides on the upper river relative to the lower river. Note, again, that the lodges employ guides and/or are owned by guides.

The upper river fishery is focused on steelhead and prizes remoteness and a wilderness experience. Skeena watershed steelheading is considered some of the best in the world.

On the upper river, there are 6,200 guided angler-days and 10,400 angler-days by independent anglers.

ANGLER-DAYS

Sport fishing angler-days in marine and fresh water are summarised in Table 48.

TABLE 48: ANGLER-DAYS

| | Guided | Anglers | Total |
|--------------|---------------|---------------|----------------|
| Salt Water | 20,500 | 16,000 | 36,400 |
| Lower River | 14,500 | 65,400 | 79,900 |
| Upper River | 6,100 | 10,400 | 16,600 |
| Total | 41,100 | 91,800 | 132,900 |

Source: Counterpoint estimates based on DFO and MoE data.

In total, the recreational fishery in Chatham Sound and the Skeena River generates 133,000 angler-days. Some adjustments must be made to those figures to capture only those angler-days attributable to Skeena salmonids.

The marine sport fishery on Skeena salmonids occurs in Chatham Sound (Fishery Management Area 4 and parts of Area 3—Sub-Areas 3-1 to 3-7).

In Area 3, DFO estimates that Skeena salmonids account for about 25 percent of the salmonids harvested in the sport fishery. The salmonid sport fishery accounts for one-half the sport fishery (ie, the other half is targeted on or attributable to halibut and other non-salmonid species). The analogous statistics for Area 4 are 50 percent Skeena salmonids and two-thirds salmonid oriented.

The 2002 Areas 3 and 4 Tidal Creel Survey Summary Report (Thomas, 2002) indicates that 40 percent of sport fishing effort in that area occurs in Area 3 and 60 percent in Area 4.

These data and calculations are shown Table 49.

TABLE 49: CALCULATION OF SALT WATER SPORT FISHING ATTRIBUTABLE TO SKEENA SALMONIDS

| Factors | Area 3 | Area 4 | Other |
|--|--------|--------|-------|
| Percent salmonids of Skeena origin | 25% | 50% | |
| Percent of sport fishing that is salmonid oriented | 50% | 67% | |
| Percent of sport fishing effort in each Area | 40% | 60% | |
| Percent sport fishing in Chatham Sound attributable to Skeena salmonids (product of preceding three factors) | 5% | 20% | |
| Skeena salmonids harvested in QCI as a percent of salmonids harvested in Chatham Sound | | | 75% |
| Percent of sport fishing in Chatham Sound and QCI that is attributable to Skeena salmonids | | | 44% |

Source: Counterpoint estimates based on Fisheries and Oceans Canada data and Chatham Sound Creel Surveys

DFO estimates that Skeena salmonids harvested in the marine sport fishery off the Queen Charlotte Islands number about three-quarters of those harvested in Chatham

Sound (even though the proportion of Skeena salmonids harvested in the QCI sport fishery is less than four percent of total salmonids harvested in that fishery).

Combining all these factors leads to a net reduction of 56.5 percent to isolate angler-days attributable solely to Skeena salmonids. These figures are presented in Table 50.

TABLE 50: ANGLER-DAYS ATTRIBUTABLE TO SKEENA SALMONIDS

| | Guided | Anglers | Total |
|--------------|---------------|----------------|----------------|
| Salt Water | 9,000 | 7,000 | 15,900 |
| Lower River | 14,500 | 65,400 | 79,900 |
| Upper River | 6,100 | 10,400 | 16,600 |
| Total | 29,600 | 82,800 | 112,400 |

Source: Counterpoint estimates based on DFO and MoE data.

SPORT SECTOR BUSINESS PROFILES

In salt water, fishing lodges and charter boats offer guided fishing and lodges combine that with accommodation and food. In fresh water, fishing guides and lodges offer guiding angling with lodges again providing room and board. These recreational fishing businesses targeting Skeena salmon and steelhead are profiled in this section.

The customer base for Skeena watershed sport fishing business is very heavily weighted to Americans—between 70-80% of the clientele reside in the USA. The next largest source of clients is Europe (UK and Italy are key markets) with perhaps 10-15 percent. The balance of customers reside in Canada, mostly outside of BC.

SALT WATER LODGES/GUIDES

The business sector in salt water comprises three fishing lodges and approximately 65 charter boat operators. Apart from angling licences for clients and guides, no commercial business licences specific to angling or guiding are required for salt water lodges or charter boat operators. Proprietors can participate in a voluntary log book program to record catches but only about a dozen businesses submit log books. Log book data, unfortunately, is not entered into a computer database and hence is of little utility.

Lodges charge \$3,000-\$4,600 for 4-5 day fishing packages, equivalent to \$675-\$950 per angling day. Charter boat operators show an equally wide range of prices, averaging \$300 per day per angler but ranging from \$165 to over \$800 per angler-day.

The revenues and expenses of salt water lodges and charter boat operators are summarised in Table 51, in which figures shown are in \$,000s. The figures refer to the aggregate revenues, expenses and net incomes of all businesses in each group. Note that no adjustments have been made to the data in Table 51 to identify business revenues and expenses attributable to Skeena salmon and steelhead. That will be done in the next section on Economic Impacts.

TABLE 51: SKEENA SALMON SALTWATER SPORT SECTOR BUSINESS PROFILES

| | Charter Boats | Saltwater Lodges | Business Total |
|----------|---------------|------------------|----------------|
| | (\$,000s) | | |
| Revenue | \$3,358 | \$3,716 | \$7,074 |
| Expenses | 3,185 | 3,191 | 6,376 |
| Income | \$173 | \$525 | \$698 |

Source: Counterpoint estimates.

In aggregate, marine angling businesses offering lodge accommodation and/or guiding generate \$7.1 million in annual sales. With expenses of \$6.4 million, that leaves less than \$700,000 as income (pre-tax and not including debt service payments).

LOWER RIVER LODGES/GUIDES

In the lower Skeena River, lodge/guide businesses are stratified as large, medium or small (a purely relative distinction). The small businesses tend to be the fishing guides

but also include some small lodges. In the Terrace area, 10 fishing lodges and 11 fishing guides working the Skeena watershed were identified. There have been some sales of lodges recently and other sales are pending; one was washed away in the flood of 2007 and has not (yet) been replaced, so there is some flux to these numbers.

The salmon fishery on the lower watershed is predominant; there is certainly some steelheading but it pales in volume (# of angler-days) when compared with salmon angling on the lower river. Salmon fishing on the lower Skeena is largely unguided, in contrast to angling for steelhead in Classified Waters.

The lower river is to a large extent a mixed stock fishery. In the lower reaches, salmon and steelhead from a variety of Skeena watershed streams co-migrate together.

River conditions are an important contributor to the health of these sport fishing businesses. The river rises each year, usually in June, and a significant freshet can bring the sport fishery to a halt for three weeks to a month.

The lower Skeena sport fishery peaks in July through early August. These are the days, around Terrace and a few other easy access points below Terrace, when large numbers of jet boats ply the river and boat launches are crowded as anglers attempt to get their vessels in the water.

Terrace is a 7 day journey from the mouth of the Skeena river for sockeye salmon and steelhead, and a 2-3 day trip for chinook. Guides and lodge owners mentioned that they often notice a lull in their fishery about a week after a commercial opening.

All guides and lodge owners interviewed mentioned crowding as a problem on some parts of the lower Skeena—boat ramps around and below Terrace, and China Bar—during July and early August. Angling is an experience based in part on remoteness and isolation; the quality of the experience wanes the less isolated the experience.

Lodge owners and guides complained about significant and growing illegal guiding. Unlicensed guides—anglers who know the river—bring friends and acquaintances to fish the Skeena watershed. Any monies change hands at home and if anybody asks, it is just a group of friends fishing together.

Guides on the lower river charge anywhere from \$275 to \$450 per guided angling-day. Lodges charge \$300 to \$700 per guided angler-day.

TABLE 52: LOWER SKEENA RIVER SPORT SECTOR BUSINESS PROFILES

| | Large | Medium | Small | Total |
|----------|-----------|---------|-------|---------|
| | (\$,000s) | | | |
| Revenue | \$1,817 | \$1,260 | \$454 | \$3,531 |
| Expenses | 1,560 | 1,132 | 475 | 3,167 |
| Income | \$257 | \$128 | -\$21 | \$364 |

Source: Counterpoint estimates.

There is quite a variation in size from a couple of very large lodges to a number of independent angling guides who house their clients in local hotels, motels and B&Bs.

Altogether, these lower river sport fishing businesses captured \$3.5 million in Gross Revenues against \$3.15million in Expenses, for an aggregate Net Income of about \$350,000.

UPPER RIVER LODGES/GUIDES

The upper Skeena river sport fishery is more focused on steelhead than the lower river. A high proportion of upriver steelheading is in Classified Waters, led by guides with allocations of Classified Waters Rod Days. The steelhead season typically lasts 8-9 weeks.

Accordingly, lodges and guides in the upriver area charge more than their downriver counterparts. Lodges charge their customers \$600 to \$900 per day while guides charge \$375 to \$700 per angler-day.

Here, sport fishing is all about the opportunity to catch steelhead in a pristine environment.

Skeena watershed steelheading is a “brand” recognised around the world that virtually sells itself. Of course, to make the most of this valuable asset, the quality fishing experience must be maintained.

TABLE 53: UPPER RIVER SPORT SECTOR BUSINESS PROFILES

| | Large | Medium | Small | Total |
|----------|------------------|---------|-------|---------|
| | <i>(\$,000s)</i> | | | |
| Revenue | \$1,652 | \$2,700 | \$378 | \$4,730 |
| Expenses | 1,418 | 2,425 | 396 | 4,239 |
| Income | \$233 | \$275 | -\$18 | \$490 |

Source: Counterpoint estimates.

Up river Skeena watershed sport fishing lodges and guides generated gross revenues of \$4.7 million. Their expenses totaled \$4.2 million, leaving \$500,000 in Net Income.

SPORTFISH BUSINESS ECONOMIC PROFILE SUMMARY

The economic profiles of the saltwater, lower river and upper river Skeena salmon sport fisheries are consolidated in Table 54.

TABLE 54: SKEENA SALMON SPORT FISHERY—CONSOLIDATED ECONOMIC PROFILE

| | Salt Water | Lower River | Upper River | Total Skeena |
|-----------------------------------|----------------|----------------|----------------|-----------------|
| | (\$,000s) | | | |
| Revenues | \$7,074 | \$3,531 | \$4,730 | \$15,335 |
| Expenses | | | | |
| Advertising/Promotion | 183 | 66 | 71 | 320 |
| Amortisation | 535 | 136 | 161 | 832 |
| Lodges/Accommodation | 430 | 465 | 686 | 1,581 |
| Commissions (Bookings) | 295 | 281 | 424 | 1,000 |
| Fishing Licences/Rod Days | 64 | 223 | 390 | 677 |
| Fuel (propane, diesel, boat fuel) | 1,018 | 143 | 170 | 1,331 |
| Insurance | 538 | 67 | 77 | 683 |
| Office/Telephone | 117 | 56 | 64 | 238 |
| Professional Fees | 167 | 65 | 81 | 313 |
| Repairs & Maintenance | 483 | 178 | 174 | 834 |
| Transport-In (Guests) | 270 | 185 | 233 | 687 |
| Wages/Contract Services | 1,997 | 1,174 | 1,537 | 4,707 |
| Utilities | - | 20 | 27 | 47 |
| Vehicles | 230 | 39 | 35 | 304 |
| Total Expenses | 6,327 | 3,098 | 4,130 | 13,554 |
| Income | \$747 | \$433 | \$600 | \$1,781 |

Source: Counterpoint estimates.

In aggregate, Skeena salmon sport fishing businesses grossed revenues of \$15.3 million and incurred expenses of \$13.6 million, leaving income of \$1.8 million.

SPORTFISH BUSINESS CONSIDERATIONS & ISSUES

In addition to financial and operating information, interviewees were asked about keys to their success and the major challenges and opportunities they see ahead. Their comments are summarised below.

KEYS TO SUCCESS

Fish and the fishing experience are important contributors to the success of Skeena salmon angling businesses. The presence of fish is important because, as much as angling is about opportunity, anglers pursue their pastime to hook fish. Although fish returns recently have been below average (for a variety of reasons), most guides acknowledge that fishing opportunities in the Watershed remain adequate. Of course, more fish are always preferable to fewer.

The fishing experience, of course, is also important. Crowding is an issue in some spots at some times in the lower river. The extent of crowding differs in different areas of the

watershed and, indeed, from day to day and stream to stream. A high quality, pristine wilderness experience is what keeps anglers coming back, and ultimately contributes significantly to the continuing success of the Skeena salmonid sport fishery.

The Skeena sport fishing “brand” is well known worldwide, mostly because of the steel-heading but also the salmon angling. The Skeena sells itself, a fact that explains in part why business owners, local and independent anglers, and government are all concerned about maintaining and enhancing this valuable resource through programs such as the Classified Waters Management System and the more recent Quality Waters Program.

Skeena lodges and guides average a 70 percent rate of repeat customers. Maintaining a core of return customers provides stability and reduces marketing costs. Anglers who get hooked on the Skeena tend to return each year unless fishing deteriorates or they believe the fishery is not being well managed. Many lodge owners and guides identified the importance of the shoulder seasons to the viability of their overall operations. Revenue from a couple of extra trips before and after the peak season goes straight to the bottom line.

Anglers of course are not entirely insensitive to the prices they must pay to pursue their sport, and businesses are caught, as is so often the case, between covering their costs and keeping their customers. While lodge patrons may generally be affluent, there are also many clients for whom the annual trip to the Skeena represents their entire annual vacation budget.

For lodges especially, all the parts of the business (and nature) must be functioning smoothly for a good year: good weather and water conditions, enough fish to attract anglers, good guides to show them the river, and good food and accommodation at the end of the day. This is the recipe for satisfied customers who, like the Skeena salmon themselves, will return to the streams each season.

CHALLENGES

There is no doubt that Skeena sport fishing businesses have been hurt by the appreciation over the past two years in the Canadian dollar (against the US dollar). Those guides and lodges who charge in US dollars have seen a significant drop in their gross revenues (once converted into Canadian dollars). Some have started to charge in Canadian dollars, passing the cost along to their customers. Of course, the reduced purchasing power (or perceived value) for American customers is an issue.

Along with the Canadian dollar appreciation has been the significant rise in the price of fuel—used in vessels, vehicles, and to power generators—which has also affected economic performance.

More than once business owners mentioned that their clients are keenly aware, or at least have keen perceptions and impressions of, how well fisheries are managed, so much so that stories of conservation concerns or poor management can impact bookings. Sound management and effective conservation is essential for the resource and also for the success of businesses based upon it.

Most of those interviewed also mentioned the importance of managing angler crowding in the Skeena watershed. In some sense, this is another aspect of management—not management of fish but management of the fishing experience—which remains very important to the overall success of the fishery and the businesses that rely upon it. Crowding is especially an issue around Terrace and further downstream in the lower river in July and early August.

Early run steelhead co-migrate with sockeye, which are the principle target of the commercial gillnet fishery. Following commercial openings, with about a one week lag (2-3 days for chinook salmon), there is a lull in the sport fishery at Terrace.

Some of those interviewed mentioned the demographics of their clientele as a challenge: these trips are not cheap and clients must be able to afford their week (or more) of fishing. The average age of clients all along the river is over 60 years. Indeed the demographic profile of sport fishing, province-wide and nation-wide, reveals an aging and slowly declining pool of anglers, meaning long term challenges to recruit young blood into the client pool.

OPPORTUNITIES

Healthy stocks of steelhead and salmon are of course the number one priority. Good management is the foundation of a healthy fishery.

Guides would like to see the fee structure simplified. They feel there are too many charges for conservation stamps, special licences, rod-days and different elements required to be legally licensed.

Guides believe they should be investing more in stewardship and conservation. They want to resist exploitation of other resources (eg, trees and minerals) to maintain the optimal environment for the fish and a pristine environment for their clients.

Having access to more than one river is a definite advantage. Guides with Rod Days on more than one stream are in a better position than those with but a single option.

Given the strong Canadian dollar vis-à-vis the US dollar, many guides and lodges are considering how to attract more European and non-US clients.

SPORT SECTOR ANGLER PROFILES

Angler expenditures profiles were constructed from published and interview data for:

- Local anglers.
- Anglers from the rest of BC (ie, outside the Skeena watershed).
- Anglers from the rest of Canada.
- Anglers from the rest of the world (ie, Non-Canadians).

Average daily angler expenditures for marine anglers are shown in Table 55. The analysis reflects the fact that visitors (or residents) spend widely varying amounts in their pursuit of Skeena salmon or steelhead. Some are distinctly high-end, extravagantly patronising watershed businesses, while others are budget-minded, substantially self-contained for the duration of their visit. These profiles were blended to yield daily expenditure estimates.

Also, as individuals angle the Skeena watershed waters as well as other regions of the province, country or world, amortisation of assets such as vessels may not be fully applied to the Skeena region.

Sector totals reflect economic impacts (expenditures) in British Columbia. Also shown are expenditures within the Skeena watershed. Economic impacts in the Skeena watershed and in the entire province differ by the value of expenditures made in the province but outside the Skeena watershed (eg, transportation from outside the watershed to the Skeena and fishing gear purchased by anglers outside the watershed).

SALT WATER

TABLE 55: SALT WATER ANGLER EXPENDITURES PER DAY

| Expenditure Categories | Local Anglers | Rest of BC | Rest of Canada | Rest of the World |
|-------------------------------------|---------------|------------|----------------|-------------------|
| Total Daily Expenditure | \$199.67 | \$335.88 | \$254.04 | \$340.84 |
| Expenditure Within Skeena Watershed | \$199.67 | \$268.88 | \$223.61 | \$255.12 |

Counterpoint estimates from published and unpublished data.

These estimates of daily angler expenditures reflect certain realities, such as anglers from the rest of Canada and the rest of the world buying most of their fishing tackle outside BC and outside the Skeena watershed, which is certainly not the case for Skeena watershed and BC residents.

Also, locals tend to own and use their own boats, hence they have boat depreciation to include whereas, again, those from outside the province do not incur boat capital expenditures, nor much in the way of boat operating costs, within BC.

Table 56 and Table 57 show analogous data for lower and upper river anglers, respectively. The same explanations apply regarding different expenditure categories for anglers from different jurisdictions.

LOWER RIVER

TABLE 56: LOWER RIVER ANGLER EXPENDITURES PER DAY

| Expenditure Categories | Local Anglers | Rest of BC | Rest of Canada | Rest of the World |
|-------------------------------------|---------------|------------|----------------|-------------------|
| Total Daily Expenditure | \$101.40 | \$229.95 | \$212.66 | \$285.46 |
| Expenditure Within Skeena Watershed | \$101.40 | \$162.95 | \$182.24 | \$199.74 |

Counterpoint estimates from published and unpublished data.

UPPER RIVER

TABLE 57: UPPER RIVER ANGLER EXPENDITURES PER DAY

| Expenditure Categories | Local Anglers | Rest of BC | Rest of Canada | Rest of the World |
|-------------------------------------|---------------|------------|----------------|-------------------|
| Total Daily Expenditure | \$106.17 | \$271.89 | \$282.68 | \$375.94 |
| Expenditure Within Skeena Watershed | \$106.17 | \$198.39 | \$233.39 | \$290.23 |

Counterpoint estimates from published and unpublished data.

INDEPENDENT ANGLERS—CONSIDERATIONS AND ISSUES

Anglers are engaged in a balancing act, trying to match their desire to catch fish with their equally strong desire to ensure their enjoyment of that fishing (ie, to angle in relatively pristine wilderness, in relatively isolated conditions).

Sport fisheries in the Skeena mainstem are mixed stock fisheries; those in Skeena tributaries are much more discrete stock fisheries, although not always entirely so.

SPORT SECTOR ECONOMIC IMPACTS

Economic Impacts are driven by consumer expenditures for goods and services, which equal business revenues from sales of those goods and services.

For the guided sector, economic impacts are based on the revenues of sport fishing businesses (lodges, charter boats and fishing guides) supplemented by the expenditures of their clients related to sport fishing on their trip (eg, transport to the Skeena watershed, accommodation and a meal on their own at either end of their trip, local purchases of fishing gear).

For the non-guided sector, economic impacts are based solely on the expenditures of independent anglers, as detailed in the previous section.

In both cases, economic impacts attributable to expenditures on fishing gear and tackle, boats and the like, are captured in the expenditures of anglers (guided or not guided) so nothing is missed.

DIRECT IMPACTS

As with angler-days, above, the economic data must be adjusted to isolate the economic impacts attributable to Skeena salmonids. Given the mixed stock nature of the Chatham Sound sport fishery and the different species that anglers pursue, and accounting for Skeena salmonids harvested in the sport fishery off the Queen Charlotte Islands, a net reduction of 56.5 percent in the economic impacts arising from the marine sport fishery is required to isolate the impacts attributable to Skeena salmonids.

The in-river sport fisheries are, by definition, entirely dependent on Skeena salmonids.

The direct economic impacts of sport fishing attributable to Skeena salmonids that accrue in the Skeena watershed are shown in Table 58.

TABLE 58: DIRECT ECONOMIC IMPACTS OF SPORT FISHING IN THE SKEENA WATERSHED

| Skeena Watershed | Guided | Anglers | Total |
|------------------|-----------|----------|----------|
| | (\$,000s) | | |
| Salt Water | \$7,616 | \$2,771 | \$10,387 |
| Lower River | \$4,567 | \$8,718 | \$13,286 |
| Upper River | \$5,249 | \$1,627 | \$6,876 |
| Total | \$17,432 | \$13,117 | \$30,549 |

Source: Counterpoint estimates.

Guided angling generates direct economic impacts in the Skeena watershed of \$17.4 million annually while independent Anglers generate direct economic impacts of \$13.1 million annually.

Total direct economic impacts attributable to sport fishing for Skeena salmonids accruing in the Skeena watershed amount to \$30.5 million.

Some expenditures attributable to Skeena watershed salmonids occur outside the Skeena watershed (eg, gear purchased elsewhere in BC, travel to Skeena watershed). Table 59 captures the Skeena watershed economic impacts shown in Table 58 and additional expenditures in BC but outside the Skeena watershed that are also attributable to Skeena salmon and steelhead.

TABLE 59: DIRECT ECONOMIC IMPACTS OF SKEENA SALMONID SPORT FISHING IN BRITISH COLUMBIA

| British Columbia | Guided | Anglers | Total |
|------------------|-----------|----------|----------|
| | (\$,000s) | | |
| Salt Water | \$8,677 | \$2,895 | \$11,573 |
| Lower River | \$5,550 | \$9,383 | \$14,933 |
| Upper River | \$5,675 | \$1,770 | \$7,445 |
| Total | \$19,903 | \$14,048 | \$33,951 |

Source: Counterpoint estimates.

Guided Anglers generate \$19.9 million in direct economic impacts in British Columbia and independent anglers add another \$14.0 million, bringing the total provincial direct economic impact to \$34.0 million.

TOTAL IMPACTS

Direct Economic Impacts measure the economic activity of businesses that sell goods and services directly to anglers (including Lodges and Guides). This is money spent by anglers to participate in the sport.

Direct Economic Impacts are supplemented by further rounds of spending that create additional economic activity in the local watershed and the greater provincial economy.

Indirect Economic Impacts result from expenditures by Lodges/Guides, tackle shops, boat builders and sport fishing goods and services businesses purchasing inputs from other businesses in British Columbia. Only those purchases of goods and services produced within British Columbia are included in this analysis.

Induced Economic Impacts measure the economic activity of households spending income earned from direct and indirect employment in the sport fishing sector in BC. British Columbia residents are assumed to spend 75 percent of their gross earned income in BC.

Indirect plus Induced Impacts are together called Secondary Economic Impacts.

Total Economic Impacts are shown in Table 60 which captures Total Economic Impacts (expenditures) attributable to Skeena salmon and steelhead in British Columbia.

**TABLE 60: TOTAL ECONOMIC IMPACTS OF SKEENA SALMONID
SPORT FISHING IN BRITISH COLUMBIA**

| | Direct | Indirect | Induced | Total |
|------------------|-----------|----------|---------|----------|
| | (\$,000s) | | | |
| British Columbia | \$33,951 | \$14,000 | \$4,853 | \$52,803 |

Source: Counterpoint estimates.

Direct expenditures of \$34 million are supplemented by \$14 million of indirect expenditures and \$4.9 million of induced expenditures. Aggregate Expenditures in British Columbia attributable to Skeena salmon and steelhead therefore total \$52.8 million.

THE PUBLIC SECTOR

Fisheries for Skeena salmon and steelhead are supported by government expenditures, most notably by Fisheries and Oceans Canada. Government receives some revenues from the fishery, principally from sales of commercial and sport fishing licences. This chapter summarises the public finances attributable to Skeena salmon and steelhead.

FISHERIES AND OCEANS CANADA

Fisheries and Oceans Canada is responsible for the assessment, management and control of Pacific commercial and sport fisheries for salmon. Principal activities include: stock assessment, fishery management, conservation and protection (enforcement) and habitat and enhancement. Canada's Coast Guard provides platforms for fisheries management and enforcement activities.

Further funds are expended through the Aboriginal Fisheries Strategy (AFS) and the Aboriginal Aquatic Resources and Ocean Management (AAROM) Program.

DFO costs related to Skeena salmonids are summarised in Table 61.

TABLE 61: FISHERIES AND OCEANS CANADA SKEENA-RELATED COSTS

| Expenses | Salaries | O&M | Regional Support | Total |
|---------------------------|-----------|-------|------------------|---------|
| | (\$,000s) | | | |
| Stock Assessment | \$355 | \$736 | \$546 | \$1,637 |
| Conservation & Protection | \$1,298 | \$170 | \$734 | \$2,202 |
| Habitat & Enhancement | \$475 | \$258 | \$367 | \$1,100 |
| Spawning Channels | \$474 | \$343 | \$409 | \$1,226 |
| Fishery Management | \$454 | \$119 | \$287 | \$860 |
| Administration | \$262 | \$12 | \$137 | \$411 |
| AAROM | | \$854 | | \$854 |
| AFS | | \$347 | | \$347 |
| Coast Guard | | \$100 | | \$100 |
| Total Expenses | | | | \$8,737 |

Source: Fisheries and Oceans Canada. Counterpoint estimates.

DFO's costs to support Skeena salmon and steelhead total \$8.7 million, consisting of \$5.8 million in wages and salaries (including benefits) and \$2.8 million in O&M (Operations & Maintenance).

In addition to the amounts shown in Table 61, the Northern Boundary Restoration and Enhancement Fund (the Northern Fund) spends approximately \$700,000 per year on Skeena salmon and steelhead but those funds originate with the US government and are therefore omitted.

Public sector revenues are generated from sales of commercial and recreational fishing licences by Fisheries and Oceans Canada. These revenues are summarised in Table 62.

TABLE 62: FISHERIES AND OCEANS CANADA SKEENA-RELATED REVENUES

| Revenues | Total |
|-------------------------------|-----------|
| | (\$,000s) |
| Commercial Fishing Licences | \$329 |
| Recreational Fishing Licences | \$359 |
| Total Revenues | \$688 |

Source: Fisheries and Oceans Canada. Counterpoint estimates.

Sales of commercial and sport fishing licences generates revenues of \$688,000.

MINISTRY OF ENVIRONMENT

The Ministry of Environment manages the Skeena salmonid sport fishery in freshwater. Their revenues from provincial angling licence sales and their costs to support the Skeena steelhead fishery are detailed in Table 63 and Table 64.

TABLE 63: MINISTRY OF ENVIRONMENT SKEENA-RELATED REVENUES

| Revenues | Total |
|-------------------------------|-----------|
| | (\$,000s) |
| Recreational Fishing Licences | \$796 |

Source: Ministry of Environment. Counterpoint estimates.

TABLE 64: MINISTRY OF ENVIRONMENT SKEENA-RELATED COSTS

| Expenses | Salaries | O&M | Regional Support | Total |
|------------------|-----------|-------|------------------|-------|
| | (\$,000s) | | | |
| MoE Expenditures | \$385 | \$250 | \$95 | \$730 |

Source: Ministry of Environment. Counterpoint estimates.

EMPLOYMENT INSURANCE

The federal government provides Employment Insurance to qualifying commercial fishers. By modeling the Employment Insurance rules and applying them to the Skeena salmon fishery, Employment Insurance payments attributable to the Skeena salmon fishery were estimated at \$919,862.

SKEENA PUBLIC SECTOR REVENUES AND COSTS

Public sector revenues attributable to Skeena salmon and steelhead are shown in Table 65.

TABLE 65: PUBLIC SECTOR REVENUES ATTRIBUTABLE TO SKEENA SALMON AND STEELHEAD

| Revenues | Amount |
|----------------|-----------|
| | (\$,000s) |
| DFO | \$688 |
| MoE | \$796 |
| Total Revenues | \$1,484 |

Source: Counterpoint estimates

Public sector costs attributable to Skeena salmon and steelhead are presented in Table 66.

TABLE 66: PUBLIC SECTOR COSTS ATTRIBUTABLE TO SKEENA SALMON AND STEELHEAD

| Expenses | Salaries | O&M | Regional Support | Total |
|----------------|-----------|---------|------------------|----------|
| | (\$,000s) | | | |
| DFO | \$3,318 | \$2,939 | \$2,480 | \$8,737 |
| MoE | \$385 | \$250 | \$95 | \$730 |
| EI | | | | \$920 |
| Total Expenses | | | | \$10,387 |

Source: Counterpoint estimates.

COST ALLOCATIONS BY SECTOR

Public sector costs have been allocated across sectors to permit a full cost accounting of Skeena salmonid fisheries.

While the sector to which some public sector items should be allocated are clear (eg, licence revenues), allocating costs is generally fraught with difficulties. Costs could be allocated based on time spent in various activities, on volume of fish harvested, on revenues derived from harvests, or on the number of participants in each sector.

Counterpoint's estimates of public finances by sector attributable to Skeena salmonids are shown in Table 67. Figures in the table are allocation shares, summing to 1.0 for each category.

TABLE 67: SKEENA PUBLIC SECTOR ALLOCATIONS BY SECTOR

| Licence Revenues | Aboriginal | Commercial | Sport |
|---------------------------|-------------------|-------------------|--------------|
| DFO Commercial | - | 1.00 | - |
| DFO Sport | - | - | 1.00 |
| MoE | - | - | 1.00 |
| Fishery Costs | Aboriginal | Commercial | Sport |
| Stock Assessment | 0.33 | 0.33 | 0.33 |
| Conservation & Protection | 0.33 | 0.33 | 0.33 |
| Habitat & Enhancement | 0.33 | 0.33 | 0.33 |
| Spawning Channels | 0.50 | 0.50 | |
| Fishery Management | 0.40 | 0.30 | 0.30 |
| Administration | 0.33 | 0.33 | 0.33 |
| AAROM | 0.90 | 0.05 | 0.05 |
| AFS | 0.90 | 0.05 | 0.05 |
| Coast Guard | | 0.50 | 0.50 |
| Ministry of Environment | | | 1.00 |
| Employment Insurance | | 1.00 | |

Source: Fisheries and Oceans Canada and Counterpoint estimates.

The allocations shown in Table 67 are relevant only to the current allocation of Skeena salmonids among aboriginal, commercial and sport fisheries. Were allocations of fish to change, then allocations of some public sector items could change as well.

Since some publicly funded activities might well continue even if there were no fisheries (eg, stock assessment and habitat protection/restoration), fisheries could be considered to be overcharged in these allocations. Allocations to groups such as ENGOs and the people of Canada could, but have not, been made.

Although the vast bulk of AAROM and AFS funds are attributable solely to the aboriginal sector, a small portion are used for general stock assessment purposes, as shown in Table 67.

The allocations shown in Table 67 result in the Revenues and Costs by Sector presented in Table 68.

TABLE 68: SKEENA SALMON AND STEELHEAD PUBLIC FINANCES BY SECTOR

| Licence Revenues | Aboriginal | Commercial | Sport | Total |
|---------------------------|----------------|----------------|----------------|-----------------|
| | (\$,000s) | | | |
| DFO Commercial | | \$329 | | \$329 |
| DFO Sport | | | \$359 | \$359 |
| MoE | | | \$796 | \$796 |
| Total Revenues | | \$329 | \$1,155 | \$1,484 |
| Fishery Costs | Aboriginal | Commercial | Sport | Total |
| | (\$,000s) | | | |
| Stock Assessment | \$546 | \$546 | \$546 | \$1,637 |
| Conservation & Protection | \$734 | \$734 | \$734 | \$2,202 |
| Habitat & Enhancement | \$367 | \$367 | \$367 | \$1,100 |
| Spawning Channels | \$613 | \$613 | | \$1,226 |
| Fishery Management | \$344 | \$258 | \$258 | \$860 |
| Administration | \$137 | \$137 | \$137 | \$411 |
| AAROM | \$769 | \$43 | \$43 | \$854 |
| AFS | \$313 | \$17 | \$17 | \$347 |
| Coast Guard | | \$50 | \$50 | \$100 |
| Ministry of Environment | | | \$730 | \$730 |
| Employment Insurance | | \$920 | | \$920 |
| Total Costs | \$3,822 | \$3,684 | \$2,881 | \$10,387 |

Source: Fisheries and Oceans Canada and Counterpoint estimates.

SYNTHESIS & CONCLUSIONS

The analysis presented in this report was commissioned by the Pacific Salmon Foundation and funded by the Gordon and Betty Moore Foundation.

Separate sections present, in varying amounts of detail, economic snapshots of the aboriginal, commercial and sport fisheries for Skeena salmon and steelhead. The commercial fishery is most intensively analysed; the sport fishery less so; the aboriginal fishery is only briefly profiled.

Economic value was defined for the purposes of this report as Economic Efficiency, reported in industry and sector Income Statements, and Economic Impacts, the expenditures created by economic activity in those industries and sectors.

There follows a Synthesis of the key results and Conclusions.

SYNTHESIS

Table 69 provides a Full Cost Accounting, including private and public sector revenues and costs, for Skeena commercial and sport salmonid fisheries.

TABLE 69: ECONOMIC VALUE OF SKEENA SALMON AND STEELHEAD FISHERIES

| | Commercial Harvesting & Processing | Sport Fishing | Total |
|---------|---|--------------------------|--------------|
| | <i>(\$millions)</i> | | |
| Revenue | \$14.1 | \$16.5 | \$30.6 |
| Costs | \$17.2 | \$16.4 | \$33.6 |
| Income | -\$3.0 | \$0.1 | -\$3.0 |

Source: Counterpoint estimates.

The adverse economic state of the commercial harvesting sector is due in large part to the reduced harvests and prices of the last cycle relative to previous cycles. What the future holds in terms of abundance and harvest remains to be seen but DFO managers believe the future will be more like the most recent cycle than those that preceded it.

Given the caveats above, under a Full Cost Accounting, Skeena commercial and sport salmonid fisheries show a net loss of \$3.0 million.

Even unprofitable businesses, as long as they continue operating, contribute to economic activity, presented in Table 70.

TABLE 70: ECONOMIC IMPACTS OF SKEENA SALMON AND STEELHEAD FISHERIES

| | Commercial | Sport | Total |
|----------|---------------------|-------|-------|
| | <i>(\$millions)</i> | | |
| Direct | 9.8 | 34.0 | 43.8 |
| Indirect | 4.0 | 14.0 | 18.0 |
| Induced | 1.4 | 4.9 | 6.3 |
| Total | 15.2 | 52.8 | 68.0 |

Source: Counterpoint estimates.

Table 70 shows the direct, indirect and induced economic impacts of the Skeena salmon and steelhead commercial and sport fisheries. The sport fishery includes lodge, guide and charter boat businesses as well as the expenditures of independent anglers. Economic impacts associated with public sector expenditures would add to the totals shown but are not included in Table 70.

CONCLUSIONS

Skeena salmon abundance is declining but more important for users is the shift to lower harvest rates on Skeena stocks. Conservation is the primary goal and precautionary management is the tool used to achieve it.

Although cycle average harvests have declined for at least the past three cycles, DFO managers believe the recent past is the most likely indicator of the future.

The Wild Salmon Policy will likely cause harvests to become more stock selective. This will entail moving fisheries towards more terminal areas. Fisheries in the Skeena river proper are not necessarily more selective, at least in the lower reaches but those in its tributaries certainly are.

Aboriginal fisheries on Skeena salmonid stocks include constitutionally-protected fisheries for food, societal and ceremonial purposes and commercial Escapement Surplus to Spawning Requirements fisheries and Economic Opportunity fisheries.

The commercial fishery for Skeena stocks in salt water is primarily a net fishery for sockeye and pink salmon. The harvesting sector is limping along, with results reflecting diminished harvests and prices. The fleet and its operators are, described brutally, “old and broke”. There are a significant number of commercial licences—estimated to be one-third of licensed gillnets—that are idle; active licence holders benefit from the reduced competition. If/when fortunes improve, that will simply bring some inactive vessels back to work. A much bigger upside or more significant change in how the fleet is structured and managed is required to make the active fleet, whatever its size, more profitable, economically viable and sustainable. Most participants recognise that fleet reduction is a necessity, though the means of achieving it are hotly debated. Some believe the way forward is through individual quotas; others favour approaches that preserve the opportunistic nature of the fishery and avoid the pitfalls they believe accompany ITQ programs.

DFO is now active on several fronts purchasing commercial fishing licences and transferring them to First Nations under the Allocation Transfer Program (ATP), the Aboriginal Aquatic Resources and Oceans Management Program (AAROM) and the Pacific Integrated Commercial Fishing Initiative (PICFI). For commercial harvesters, these programs have little benefit as they tend to purchase inactive licences and those who are least profitable, to be transferred to First Nations by whom they will be utilised.

Selective fishing has been in place in the BC salmon fishery for at least a decade now, but the Independent Science Review Panel criticised how it is implemented in the Skeena. The key to a successful selective fishery is providing appropriate incentives, supported by regulations and enforcement, to channel the energy and ingenuity of the fleet toward selective fishing practices. Those elements are not currently in place in the Skeena (see the [Report of the Independent Science Review Panel](#)).

The Northern Native Fishing Corporation (NNFC) fleet accounts for over one-third of the Area C gillnet fleet yet it is the least diversified in terms of licence holdings. Gillnetting for Skeena and north coast salmon is an extremely important economic activity for about 200 First Nations' vessel operators that may have few other employment or earnings options. The condition of NNFC fishing vessels is problematic—limited fishing opportunities mean poor economic returns, leaving inadequate funds to properly maintain vessels in safe and efficient working order.

For the processors, Skeena salmon are a part of a bigger picture. Although Skeena stocks are now a fraction of the overall throughput, the fish are prized by customers for their superior attributes. Stakeholders worry that diminished access to world class Skeena sockeye could undermine the health of the processing sector in Prince Rupert.

The Copper River case study illustrates the need to structure the fishery—any fishery—around the market. The Copper River features anomalous run timing for west coast salmon—significantly earlier than any other runs, with harvests beginning in early May and continuing through June. Despite inherently high quality sockeye salmon, financial returns to Copper River fishermen were poor. Exploiting the unusually early run timing, Copper River sockeye are now marketed as the “first fresh salmon of the season.” Co-operative efforts and clever salesmanship can generate awareness of a region's catch and incremental returns for its participants.

The Bristol Bay salmon fishery has taken over British Columbia's traditional sockeye markets. The magnitude and early timing of Bristol Bay's run exerts a huge influence on Skeena price levels and product decisions. The Bristol Bay case study also illustrates the important lesson that healthy catches do not guarantee a healthy bottom line.

The Pacific Seafoods case study demonstrates that value adders in the seafood industry are opportunistic raw material acquirers. The BC salmon fishery is not well suited to support value-adding; the availability of fresh wild salmon is sporadic and overall supply volumes are inadequate. This necessitates purchasing from a variety of local and far-flung fisheries and aquaculture sources. But, small players can make it work if they can find and exploit a competitive advantage, and there is nothing to prevent value-adders from locating in the Prince Rupert region.

The River to Plate case study shows that, for the inland fishery, a key strategy is developing handling protocols and market channels for maximising value from both flesh and salmon roe. The counterpoint to the deterioration of salmon's flesh as they migrate to the spawning grounds is the maturation and ripening of the eggs. Salmon caviar is the logical potential competitive advantage enjoyed by in-river producers.

Finally, the groundfish trawl case study highlights the importance of government leadership on the one hand, and stakeholders taking responsibility and making decisions by consensus to effect change, on the other. Innovation and addressing the needs of the market are important keys to successful fishery reform.

The sport fishery for Skeena salmon and steelhead is discussed in three segments: the marine fishery and the freshwater fisheries of the lower and upper river. Sport fishing is about the experience but also about hooking fish (whether released or killed). Although fish returns recently have been below average (for a variety of reasons), most guides acknowledge that fishing opportunities in the Watershed remain adequate.

The Skeena sport fishery is world renowned, a brand that sells itself. About 70 percent of the customers of fishing lodges and guides return to the Skeena every year to try their hands at hooking a salmon or steelhead. The strengthening of the Canadian dollar against the US dollar over the past several years (recently reversed) hurt business somewhat. Guides and lodges are ever alert to business threats including: lack of fish, bad weather or water conditions, crowding, high costs and perceptions of mismanagement.

Early run steelhead co-migrate with Skeena sockeye harvested in the commercial fishery. Following commercial openings, there is a lull in sport fishing in around Terrace (chinook take 2-3 days to reach Terrace from salt water; steelhead about one week).

In all fisheries, high quality data on catch and effort are essential. Management agencies cannot hope to manage fisheries resources well and achieve their conservation and allocation objectives without solid data to support them. Data disparities were apparent throughout our work. Efforts should be made to improve the quality of data on Skeena fisheries.

Cooperative campaigns can provide an umbrella for individual initiatives; they would appear to be well suited to the Skeena fisheries. Participants in all sectors could benefit from leveraging the already high level of awareness and demand for the world class Skeena fisheries and fish products to enhance economic benefits.

BIBLIOGRAPHY

- ARA Consulting Group Inc (1991), Economic Impacts of the Skeena River Freshwater Sports Fishery.
- ARA Consulting Group Inc (1994), The Skeena Watershed: Fish Resources and the Economy.
- BC Stats/Ministry of Environment (2006), British Columbia's Fisheries and Aquaculture Sector: 2007.
- Fisheries & Oceans Canada (1998), A New Direction for Canada's Pacific Salmon Fisheries.
- Fisheries & Oceans Canada (1999), An Allocation Policy for Pacific Salmon.
- Fisheries & Oceans Canada (2007), Survey of Recreational Fishing in Canada: 2005.
- Fisheries & Oceans Canada (Various), Pacific Region—Integrated Fisheries Management Plan—Salmon—Northern BC.
- de Gisi, J. S. BC Ministry of Environment (1999), Precision and Bias of British Columbia Steelhead Harvest Analysis.
- Gottesfeld, Allen S. and Ken A. Rabnett, Skeena Fisheries Commission (2007), Skeena Fish Populations and their Habitat.
- GSGislason & Associates Ltd (2003), Freshwater Guiding and Lodges in BC—An Economic Profile.
- J. O. Thomas & Associates Ltd (2001), 2000 Area 3 and 4 Sport Fishing Tidal Creel Survey.
- J. O. Thomas & Associates Ltd (2003), 2002 Areas 3 & 4 Tidal Creel Survey Summary Report.
- J. O. Thomas & Associates Ltd (2004), 2003 Lower Skeena River Sport Fishery Survey Summary Report.
- J. O. Thomas & Associates Ltd (2007), Preliminary Results of the 2006 Area 3, 4 Creel Survey.
- Levey, J. Jack B. and Robert Williams (2003), 2000 Survey of Sport Fishing in British Columbia.
- McRae, D. M. and P. H. Pearse (2004), Treaties and Transition: Towards a Sustainable Fishery on Canada's Pacific Coast.
- Moore, David and Rebecca Robertson (2008), River to Plate—A Program Vision for Sustainable Economic Opportunities In Fraser River Salmon Fisheries.
- Morten, K. L., BC Ministry of Environment (1998), A Survey of Kispiox River Steelhead Anglers during the Classified Waters Period of 1997.

Morten, K. L., BC Ministry of Environment (1998), A Survey of Upper Babine River Steelhead Anglers during the Classified Waters Period of 1997.

Morten, K. L., BC Ministry of Environment (1999), A Survey of Bulkley River Anglers in 1998.

Morten, K. L., BC Ministry of Environment (2000), A Survey of Zymoetz (Copper) River Anglers in 1999.

Morten, K. L. and C. K. Parken, BC Ministry of Environment (1998), A Survey of Bulkley River Steelhead Anglers during the Classified Waters Period of 1997.

Morten, K. L. and P. Giroux, BC Ministry of Environment (2006), A Survey of Kispiox River Anglers in 2001.

Nelson, Stuart (2006), Fraser Sockeye Salmon Benchmark Study.

Saimoto, R. K., BC Ministry of Environment (2005), A Survey of Morice River Anglers in 2004.

Skeena Independent Science Review Panel (2008), Report of the Skeena Independent Science Review Panel .



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