First Nations, Salmon Fisheries and the Rising Importance of Conservation

Report to the Pacific Fisheries Resource Conservation Council

Kerri Garner and Ben Parfitt

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TABLE OF CONTENTS

TABLE OF FIGURES

INTRODUCTION

In the past few decades, concerns have mounted about the future fate of various runs of salmon and in particular the declining strength of certain runs. The reason for the concern is obvious. Each run of salmon is unique, highly adapted to the particular waters the adult fish spawn in, the same waters that the next generation of fish will be born in.

While there are only a handful of salmon species, there are numerous distinct populations within each. This is what makes a chum salmon born in the fresh water of Vancouver Island different from the chum salmon born in the cold northern waters of the Nass River watershed. Each run of chum is uniquely adapted to the waters it emerged from—a reality that explains the tremendous biological diversity in salmon throughout British Columbia.

As a result of a host of factors, some salmon populations have become dangerously depleted. While certain runs retain their vigor, others are clearly in trouble. In the last decade, this reality led to significant advances in the idea of "conservation-based" fisheries management.

The most pronounced changes occurred as a result of dwindling populations of coho salmon, which gave rise to concerns about fishing methods. The so-called "coho crisis" of the 1990s also coincided with changing ocean regimes which may have affected salmon survival rates. It triggered fisheries closures and, in many cases resulted in new fisheries management regimes, often centred around selective fishing initiatives that sought to ensure that coho salmon were not caught and killed as by-catch when other salmon species, such as sockeye, were targeted for harvest.

Fisheries conservation issues are, to say the least, an ongoing concern and pose big challenges for all involved. Both for those who are active participants in salmon fisheries—the commercial, First Nation and recreational or sport sectors—as well as fisheries managers.

This short document is one of three commissioned by the Pacific Fisheries Resource Conservation Council. Each is devoted to one of the three main participants in salmon fisheries. The first report, published in December 2004, looked at the commercial sector, salmon fisheries and conservation challenges. This report examines First Nations, and various challenges concerning salmon fisheries and related conservation issues. A third will focus on the recreational sector.

An obvious and ongoing challenge relating to present-day conservation issues is how it impacts fisheries resources but also people who have been directly involved in fisheries for long periods of time.

In the latter respect, no one in present-day British Columbia can lay claim to having fished salmon resources for as long as First Nations have. First Nations communities in the province have literally co-evolved with salmon and have a long documented history of fishing particular runs of salmon in particular places at particular times of the year, that go back, literally, thousands of years.

Perhaps one of the greatest challenges confronting modern-day fisheries managers is that as concerns for salmon conservation became heightened in the 1990s, so did public recognition that First Nations' people had constitutionally protected rights to fish for food, social and ceremonial purposes, rights that court rulings tell us are superceded only by conservation.

It is no understatement to say that the dovetailing of these two realities pose significant challenges and, it is hoped, opportunities in the years ahead as fisheries managers and the main participants in the fishery learn to both conserve salmon, ensure that First Nations rights and interests are respected, and that when wider fisheries are prosecuted they are done so in an equitable manner.

One of the promising things noted throughout this report is that there are indeed numerous examples of conservation-based initiatives underway. These initiatives include efforts to protect specific salmon populations that are being driven by:

- Partnerships between First Nations and federal fisheries officials in the Department of Fisheries and Oceans as well as between First Nations and other sectors in the salmon fishery including the recreational and commercial sectors,
- First Nation umbrella organizations such as the Skeena Fisheries Commission,
- Partnership initiatives involving individual First Nations and elements within the commercial fishing sector, and
- Individual First Nations.

In addition, mechanisms to more effectively "co-manage" fisheries resources are becoming a reality. Co-management can and will be interpreted differently by different people. In this report, however, we define it as a management regime consisting of a partnership at varying levels between DFO and other interests such as First Nations. Later, we profile three different co-management models—one on the Nass River, the second on the Skeena, the third on the waters off the West Coast of Vancouver Island.

While much work remains to be done on co-management and new governance structures, it is safe to say that we will see more of these management structures in the years ahead. For one thing, conservation of specific runs of salmon in specific places would seem to demand some fairly significant involvement of local people in various aspects of the management regime. Working in cooperation with regional fisheries officials and other players in salmon fisheries, First Nations people and communities would seem among the prime candidates to do such work given that their communities have, historically, been very close to where populations of salmon spawned. Over time, this proximity has given First Nation communities a tremendous body of knowledge about what is happening to particular populations of fish in particular places. Knowledge that is best shared with others and used to inform conservation based initiatives.

No one, least of all First Nations themselves, would argue with the proposition that adequate numbers of salmon must make it to the spawning grounds in order to perpetuate future generations of fish. Therefore, improperly conducted and timed harvesting—no matter who conducts it—can have tremendously negative consequences for all involved. For that reason, all who *are* involved need to do so in a matter of cooperation and respect, never losing sight of the fact that the resource itself is what matters most.

The following report is divided into three major sections with accompanying side stories. The first deals with First Nations and their historic connection to salmon fisheries. The second briefly enumerates the changes that occurred with the evolution of salmon fisheries into commercial ventures. The third looks at present-day conservation issues and the challenges they pose for First Nations. It is hoped that when this report is viewed with the other two sectoral reports, it will help to enliven discussion on ongoing conservation-focused initiatives as they regard what is arguably our most important fisheries resource.

1. SALMON PEOPLE

Stories abound about the central importance of salmon in the lives of First Nations people, be they on the Coast or deep in the Interior of British Columbia, and for good reason. Aboriginal communities located in northwest North America are among the oldest known fishing cultures in the world.

Without the salmon, many aboriginal communities would have been hard-pressed to live where they did for as long as they did. Salmon were *that* important to their dietary, social, economic and cultural needs.

One story illustrates just how vital salmon were to First Nations, and while it is a story involving a Coastal First Nation, it could as easily apply to any number of Interior Nations whose villages were often located at or near where fish harvesting and curing activities took place.

The Cowichan people of southeast Vancouver Island tell a story of Syalutsa, the first man to fall from the sky. Syalutsa, along with his wife and children, subsequently made his home on the banks of the Cowichan River. The site later became a Cowichan village known as Somenos, near the present-day community of Chemainus. Soon after, Syalutsa built a weir in the river in order to catch fish. But day after day, when Syalutsa journeyed to the weir he found no fish trapped behind the wooden structure spanning the river.

Then one day Syalutsa placed his baby daughter into a wooden basket that he floated on the river. After securing the basket by a long cedar bark rope to the weir, Syalutsa waded out of the water and returned home. The next day when he returned, he found the cradle-basket floating empty. While his daughter had been sacrificed to the river, Syalutsa discovered that the trap not too far distant was filled with salmon, more than enough to provide for his family. Syalutsa's daughter was gone, transformed into a salmon. And from then on, Syalutsa's descendants, the Cowichan people, were forever favored with returning salmon.

The Cowichan people, like First Nations in many other regions of the province, had special fishing spots that they returned to generation after generation and, indeed, continued to return to well after the first Europeans arrived on the West Coast of North America.

Throughout the pre-contact era and for some time after, the fishing technologies they favored had a conservation component to them. In other words, they allowed for both the capture and release of salmon. Weirs were one of the most commonly employed of these methods, and there is abundant evidence of their usage up and down the Coast and deep into the Interior. In most cases, these structures, made from driving a series of poles into the riverbed, were located at or very near to village sites where abundant quantities of fish would later be cured to provide food throughout the rest of the year and, in some cases, to trade with neighboring people.

In *Fish, Law, and Colonialism* Douglas Harris, an assistant professor in the Faculty of Law at the University of British Columbia, cites voluminous archaeological evidence as well as early reports of various Indian Agents, Dominion Government Fisheries officials, oblates and others who had early contact with the Cowichan people and other First Nations. Of the Cowichan, for example, Harris reports that they lived in "as many as fifteen winter villages along the lower course of the Cowichan and Kiksilah rivers around Cowichan Bay", with six of those villages appearing repeatedly in historical records dating from the late 19th century.

Not only did they have well-established village sites that were proximate to their traditional fishing grounds, but the Cowichan people shared a close connection through the Hul'qumi'num language with First Nations on the lower Fraser River that spoke a similar dialect. This helped to explain why the Cowichan made "seasonal rounds" from the Cowichan Valley by boat to nearby

islands in the spring and from there onto the mouth of the Fraser River in the summer where they fished.

In recent decades interest in just how many fish, and in particular salmon, First Nations people relied on became a subject of intense scientific inquiry. The evidence gathered strongly suggested that marine-based foods, and in particular salmon, were of unsurpassed importance for aboriginal people living in villages all up and down the Coast and deep into the Interior.

In 1983, for example, a team of scientists from Simon Fraser University in Burnaby and McMaster University in Hamilton, Ontario, completed a study using a newly developed analytical tool that allowed them to arrive at figures on the relative amount of terrestrial and marine protein in the diets of aboriginal people prior to European contact. The information derived from readings of stable carbon isotopes in unearthed human bones.

As Brian Chisholm, Erle Nelson and Henry Schwarcz reported in the journal *Current Anthropology*, Coastal First Nations people in present-day British Columbia "obtained about 90% of their protein from marine sources." The significance of the finding was that it greatly exceeded what had previously been thought to be the marine contribution to Coastal First Nation diets. Not only was the scientific team's estimate about 40 per cent higher than estimates previously made, but the trio's findings also suggested that there had been "little, if any, change in this proportion for the last 5,000 years."

The significance of such a finding is more than what it seems at face value. While marine food sources—notably salmon—were obviously of huge importance to First Nations, the fact that there was little variation in that food source's abundance for so many years suggests that aboriginal communities—and the fish on which they relied—were in some state of equilibrium. The conclusion, then, is that fishing methods were not unduly diminishing salmon stocks over time—stocks that often moved great distances from fresh water bodies out to the ocean and from the ocean back again.

Continuity of supply and regularity of movement, within known variations such as one-in-four-year cycles of abundance in various sockeye salmon runs, proved of immense importance to societies that were focused largely (but not exclusively) on hunting or fishing and gathering. As Gordon Hewes reported in another journal article on the importance of fisheries to First Nations' people living on the West Coast of what is now the United States and Canada from present-day California through to Alaska, it is generally believed that the region's overall aboriginal population had not grown markedly for "several centuries" prior to the arrival of Europeans. This, Hewes noted in a 1973 article in *Northwest Anthropological Notes*, suggested that "the exploitation of the fisheries had been continuing at a fairly even rate at the time of the first white contact. We are, therefore, in a position to project certain known demand factors against the known resources of the fisheries."

Based on a host of factors including the caloric requirements of people generally and more specifically (pre-contact aboriginal people did not, for example, have good access to vegetable sources of energy, or to many of modern-day dietary staples such as sugar, starch, eggs and dairy products), as well as historic accounts of salmon consumed in aboriginal communities as early as 1870, Hewes derived estimates on historic salmon consumption in what is now Coastal and Interior BC. The noteworthy thing about the figures is that they showed that salmon were important to First Nations across a broad landscape. People in widely dispersed Coastal communities, stretching from remote Haida Gwaii (the Queen Charlotte Islands), to the Heiltsuk people near present-day Bella Bella to the Cowichan people of southeast Vancouver Island all relied on somewhere between 400 and 500 pounds of salmon per person year in and year out.

The number climbed even higher in known salmon-rich waters such as the Fraser River Delta, where per-capita consumption reached 1,000 pounds. Strikingly, such numbers were also replicated or near replicated in Interior regions far distant from the mouth of major rivers. For example, the Gitksan people near present-day Hazelton, well up from the mouth of the Skeena River were estimated to consume 500 pounds of salmon per capita, while in the Thompson/Nicola region in the dry Interior well north of the Fraser River canyon, per capita consumption was an estimated 900 pounds.

Such figures are far, far higher than more modern-day salmon consumption levels among First Nations people—a response, in part, to dramatic changes in the prosecution of fisheries resources from the late 19th century onward, changes that to a large extent saw more and more salmon being caught and processed in commercial fisheries in response to increased overseas market demands.

Prior to the explosion in coastal canneries, however, it is important to reiterate that First Nations throughout the province harvested significant numbers of salmon. And yet, field reports by various fisheries officials and Indian Agents suggested that despite all that harvesting activity salmon stocks remained relatively robust. They were not generally being over-exploited.

Take, for example, members of the Lake Babine Nation or Ned'u'ten Nation who lived at points along the shoreline of that long L-shaped lake well to the east of present-day Prince Rupert. For centuries they fished the lake's waters, primarily but not exclusively for sockeye salmon.

Returning salmon then as now spawn in the Babine River at points just above or below Nilkitkwa Lake, which is just to the north of Babine Lake, or in tributaries of the bigger lake itself. For their first year of life, emerging salmon fry move into Babine Lake where they remain for a year before making their lengthy journey down the Babine River into the Skeena River and from there down the Skeena River and out into the Pacific Ocean. For the next two years, the sockeye remain at sea before returning to their native spawning grounds in their last year of life.

Harris' richly detailed book notes how early white observers saw weirs being employed by members of the Lake Babine Nation at several points in the area and that an abundance of sockeye were caught in this manner and later cured. "The Babine dried or smoked the sockeye in vast quantities, enough to last until the following year's harvest and longer if, as occasionally happened, the sockeye did not reappear."

Portions of preserved fish were also used as a valuable trade item, "that the Babine exchanged with neighbouring peoples, particularly those to the east on Stuart and Takla lakes, whose sockeye runs were less reliable," Harris writes.

Even though members of the Babine Nation historically caught enormous quantities of fish, the historical record suggests that there were plenty of sockeye that were allowed past the structures in order to spawn and perpetuate future runs. As Indian Agent R.E. Loring noted in a dispatch in 1905:

> *"Many times, before and after fishing, also during the curing of salmon have I been below that point [the weirs at the outflow of Nilkitkwa Lake] with only here and there a post found standing to indicate the locality. The Indians did not at any time begin fishing there till 3 or 4 weeks after the salmon had begun going into the lake."*

This, as writers who have studied the historic prosecution of First Nation fisheries attest, was far from an isolated phenomenon (see sidebar *A Tradition of Restraint*).

Other early accounts by white observers such as William Brown, a Hudson's Bay Company trader who was in the Lake Babine area in 1825, suggested that while such fisheries were generally well prosecuted, they were not without their internal disputes. That year, Brown recounted, one group within the nation accused the other of blocking off the entire river and keeping fish from moving upstream. To prevent the dispute escalating further, one of the nation's hereditary chiefs held a feast to which other disputants were invited. It was at the feast, Brown reported, that the dispute was resolved and fishing resumed both at the disputed weir site and also farther upstream.

In light of present-day tensions over the harvesting and conserving of salmon, it is worthwhile to reflect that such tensions likely always existed and were—and are likely to remain—only overcome by parties coming together and learning to cooperate.

A Tradition of Restraint

In *King of Fish: The Thousand-Year Run of Salmon*, author David R. Montgomery notes several instances where First Nations in the Pacific Northwest delayed fishing efforts in order to ensure that an abundance of salmon made it to the spawning grounds, thus perpetuating healthy future runs.

Sextas Ward, speaking of the approach to salmon fisheries by members of the Quileute First Nation, observed, for example:

"When the Indians had obtained enough fish they would remove the weirs [salmon traps spanning a river] from the river in order that the fish they did not need could go upstream and lay their eggs so that there would be a supply of fish for future years.

Citing from historical records, Montgomery notes the testimony of a 79-year-old Umatilla Indian named James Kash Kash. Born in 1863 and intimately familiar with Umatilla fishing methods, Kash Kash said:

"It was customary for the Indians not to catch the salmon in the tributaries until after they had spawned for the reason that they knew there would be no salmon in the future if they did not permit the females to lay their eggs, be hatched and available in future years."

Throughout the Pacific Northwest region, Montgomery writes, "ritualized limitations on the duration, and therefore the intensity, of fishing institutionalized safeguards against overexploiting salmon. For example, on the northern California coast, catching salmon for general consumption was forbidden at the start of the spring salmon runs."

"The salmon season opened for general fishing only after a ceremonial period following ritual preparation and eating of the first salmon. The waiting period lasted from several days to weeks. On the Klamath River fish weirs were built in the 10 days after the first salmon passed and then were dismantled 10 days after fishing. In addition, weirs were opened each night to allow salmon to pass upstream until fishing resumed the next day. Some weirs even had open gaps to allow some passage of salmon at all times."

"The restraining effect . . . appears to have been a widespread phenomenon—and there appears to be no evidence that natives over-fished salmon runs."

2. THE RISING COMMERCIAL SALMON FISHERY

Long before the post-contact commercial fisheries began in earnest in British Columbia, First Nations depended on salmon as a major source of food as well as for spiritual and ceremonial purposes and as a good to trade. Salmon was by far the most important fish to tribal economies, with the most populous and wealthy tribes located near the major spawning grounds of rivers and streams.

As developments in the emerging commercial fishing industry began to accelerate in the early 19th century, commercial endeavors between First Nations and non-First Nations began. Many First Nations traded with settlers and fur traders and vice versa. In the mid 1800's, for example, the Hudson's Bay Company had developed an overseas market for smoked and cured salmon, a market that was supplied almost exclusively by First Nations. Increasing and more accessible markets in England, Australia and other parts of the British Empire, however, prompted changes in the salmon fishing industry, and a rapid transformation up and down BC's Coast.

By the late 1800's, the commercial fishery in BC was well underway, with the establishment of canneries along the Coast. In 1876, the Northwest Fishing Company opened its first cannery near the mouth of the Skeena River. By 1904, no less than eleven canneries operated in that general area, with more than 2,500 workers employed seasonally in fish-processing jobs and numerous others working as crew on some 700 fishing boats. Nearby on the Nass River, another three canneries operated.

Rapid, market-fuelled changes up and down the Coast had major implications for First Nations and their traditional economies, implications for ways of living as well as the traditional prosecution of fisheries. Age-old aboriginal fishing methods, most importantly the use of weirs, had been outlawed in 1877. Although for practical purposes weirs continued to remain in use for years and in some cases decades after they were banned. Nevertheless, in a series of often bitter and sometimes violent disputes between representatives of the Dominion, and later federal and provincial governments, weirs were removed from systems such as Babine Lake. This, as history shows, was done in order to facilitate the maximum collection of fish in open-water net fisheries and the processing of those fish in nearby canneries—activities, which for a considerable time benefited aboriginal and non-aboriginal people alike, but which had a profound effect on fishing techniques and where salmon fisheries were prosecuted.

A half century into the commercial salmon fishing industry in BC, Percy Gladstone estimated that as many as 10,000 First Nations people derived their primary livelihood from commercial fishing and processing, providing a vital component of the labor associated with the industry. It took only half a century for the boom to fade to bust. Canneries up and down the Coast were abandoned and, in many cases, were literally collapsing into the ocean and/or being overtaken by the vigorously growing coastal forest encroaching around them. As of 2003, a review on employment levels for the provincial government estimated that First Nations people accounted for 31 per cent of the commercial fishing jobs. But the total number of First Nations jobs—many of which were seasonal and not providing steady incomes—was only 2,684.

First Nations and the Commercial Fishery Today

The commercial fishing industry has seen significant change in the past many years, both in terms of numbers of people employed, the allocation of licences, permanent retirement of licences through programs such as the Mifflin Plan, and the financial ability of licence holders to keep afloat. Decreases in certain fish stocks, too, made it more and more difficult for independent fishermen to succeed in the commercial fishery. Employment within the industry decreased overall by fifty percent in the last 10 years, with 8,142 registered commercial fishermen in 2003.

In 2003, a report on First Nation participation in commercial fisheries, including salmon, commissioned by BC's Ministry of Agriculture, Food and Fisheries found that there were 595 First Nation-owned and operated commercial vessels in the province. Of those vessels, First Nations' members owned 564. The remaining 31 were owned by non-First Nations, but operated by First Nations' interests. This equated to 21 percent of the commercial fleet. The number of commercial licences held by First Nations in 2003 was 2,007 out of a total of 7,468 equating to 27 percent. The total landed value of all First Nations commercial catches (including salmon) was $52 million. This represented 14 percent of the total landed value of all commercially caught fish species (see Figure1).

Figure 1. Aboriginal Participation in Overall Commercial Fishery

Source: McRae and Pearse

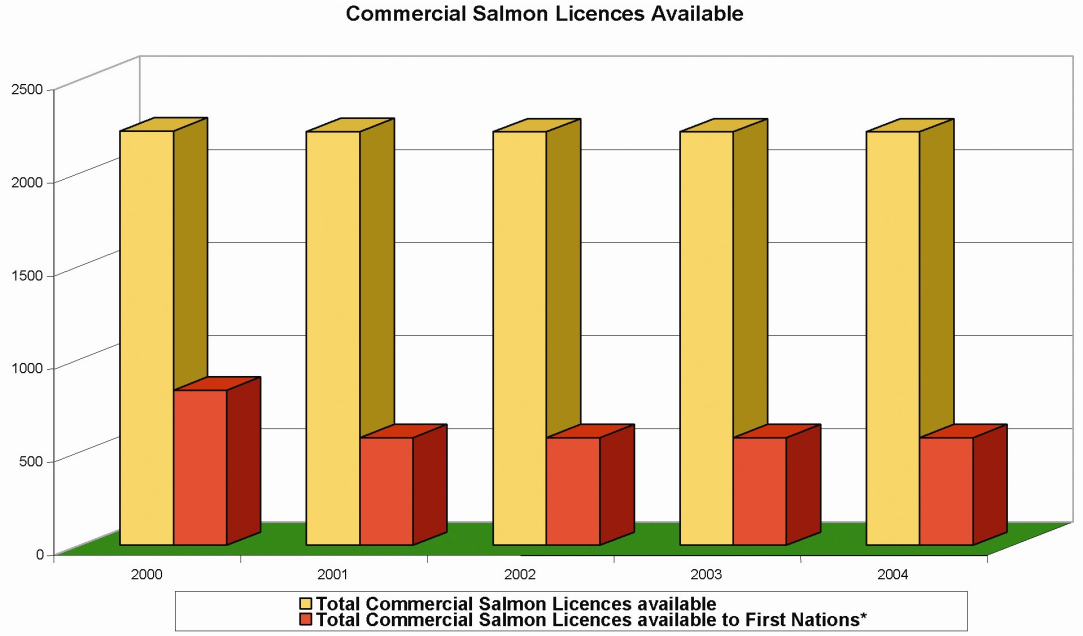
	Total Number	Aboriginal Number	Aboriginal Share(%)
Number of Registered Commercial Fishers*	8142	2100	26
Number of Vessels	2885	595	21
Number of Commercial Licences	7468	2007	27
Landed Value of Catch ($ Millions)	364	52	14

**Excludes employment in fisheries that does not require a Fisher Registration card, particularly some clam fisheries, the Nisga'a fishery and fisheries based on escapements surplus to spawning requirements.*

In terms of the commercial salmon catch alone, 40 percent of the landed value was taken by aboriginal commercial licencees who held approximately one third of the licences. The following figures (Figures 2 and 3), show a breakdown of commercial salmon licences over the past 5 years and a further breakdown of how many of those licences First Nations are eligible to hold.

Figure 2. Commercial Salmon Licences Available

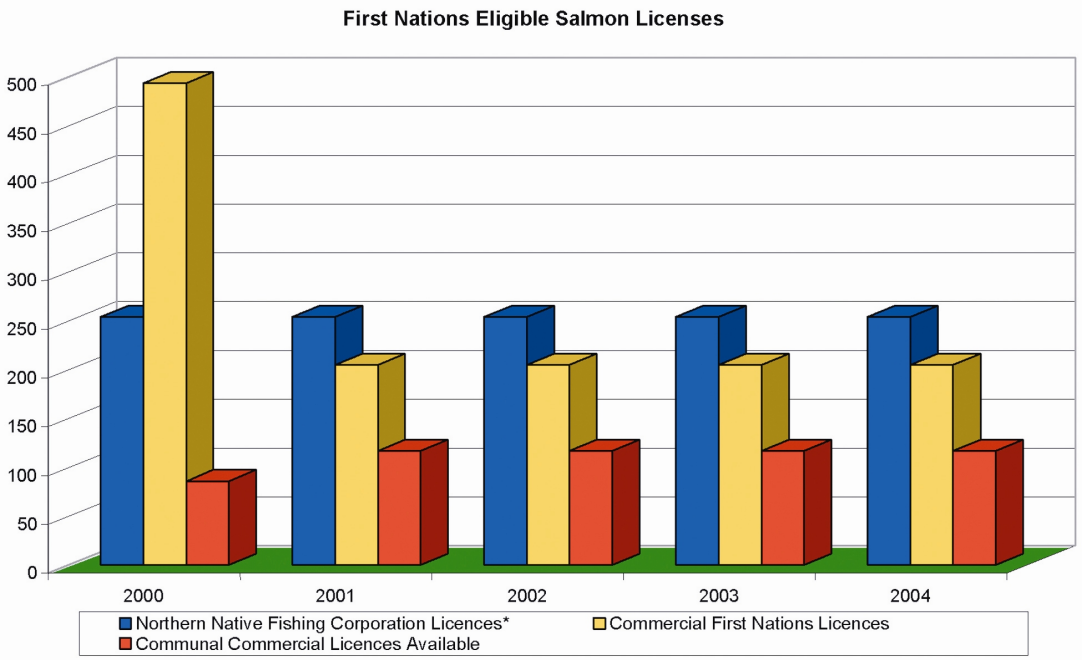
Source data: www.pac.dfo-mpo.gc.ca



** This graph includes all eligible licences available to First Nations both as independent and communal commercial licences, and the Northern Native Fishing Corporation Licences*

Figure 3. First Nations Eligible Salmon Licences

Source data: www.pac.dfo-mpo.gc.ca



** In 1982, BC Packers Ltd. Sold 252 salmon vessels to the Northern Native Fishing Corporation (NNFC), whom are owned and operated by the Nisga'a Lisims Government, the North Coast Tribal Council and the Gitksan-Wet'suwet'en Tribal Council. The NNFC has sold the fleet to individual Native fisherman, while still retaining the licence privilege. These licences are made available to the Native vessel owners every year.*

Since the 1990s, there have been significant changes in the ownership of commercial salmon fishing licences, resulting in a halving of the commercial fishing fleet. In addition, under the Allocation Transfer Program or ATP, some commercial salmon licences were retired from the commercial sector and made available to First Nations communal commercial fisheries. The number of licences in all respects has essentially evened out now as the graphs above show. There are unlikely to be new licences created in commercial salmon fisheries, although they may continue to change hands as they are voluntarily retired from the commercial fleet and made available to First Nations communities. Hence, the numbers will likely remain the same or decrease over time.

> *"Since the 1990s there have been significant changes in the ownership of commercial salmon fishing licences, resulting in halving the commercial fishing fleet."*

With the number of commercial licenses declining and with conservation concerns rising, both aboriginal and non-aboriginal licence holders are confronting the need for change and showing a willingness to experiment with new fishing methods that conserve desired stocks while still providing fishing opportunities (see sidebar *A Wheel of Fortune?*).

Under the Aboriginal Fisheries Strategy, launched in 1992 in response to the 1990 Supreme Court *Sparrow* decision, First Nations were given greater access. The Allocation Transfer Program (ATP) was the way in which the greater integration of First Nations into the commercial fishery was achieved, without applying increased pressures on this precious albeit renewable resource. The ATP was created in 1994, with an operating mandate of $4 million.

Under it, voluntary retirement of commercial licences was undertaken with those commercial fishers choosing to retire their licences receiving financial compensation. This then allowed for the reallocation of licences to First Nations communities, such licences being considered communal in nature.

In order for First Nations to be eligible for the program, the licences were given to those that demonstrated good business practices, the potential of the licence to contribute to long term aboriginal employment, community economic development and the increase of aboriginal participation in the fishery. Re-investment of a portion of the profits from the ATP into fisheries management and fisheries-related economic development of the Nation was expected as well.

Since the program began in 1994, 87 community commercial licences have been issued to aboriginal groups.

In 1996, then federal Fisheries Minister Fred Mifflin announced the Pacific Salmon Revitalization Strategy. This multi-pronged strategy involved:

- An $80-million DFO-funded voluntary licence retirement program (such initiatives are often referred to as buyback programs),
- A move to single gear licensing so that only one gear type could be used by one licence holder,
- Area licensing, whereby defined areas were established for seine, gillnet and troll fishing, and
- A provision for stacking, which allowed licence holders to obtain multiple licences in order to fish various areas using various gears.

Overall, the plan resulted in a halving of the commercial fleet.

Finally, in 1998, more changes were made to the BC salmon fishery. The $200-million Pacific Fisheries Adjustment and Restructuring Program (PFAR) was unveiled. Under the program, commercial licencs holders could voluntarily relinquish the licences. Monies were also distributed to assist in more selective fishing techniques as well as habitat restoration and stewardship projects.

In summary, the result of these programs was a significant reduction in the overall commercial fleet. According to various federal government reports including Western Economic Diversification Canada and the Department of Fisheries and Oceans, the number of active or potentially active commercial salmon licences in the province went from 4,367 in 1995 to 2,200 in 2005.

A Wheel of Fortune?

Rick Bailey and Barry Manuck have fished their entire lives and are intimately familiar with the Fraser River and the salmon species swimming through the river's lower reaches. Both are long time Area E commercial gillnet fishermen. During their time fishing, they have seen a marked decline in fish abundance and diversity and have, like many commercial fishermen, had to scale back the time they fish dramatically.

Bailey is a member of the Katzie First Nation in Pitt Meadows. Manuck, a non-native, lives nearby. Both believe that the world of salmon fishing has changed for good and must continue to evolve in response to new realities. Salmon aren't as abundant as they once were and certain stocks are at risk.

Together, the two have supported alternative fishing methods on the lower river. Most recently, they obtained a scientific license to operate a fishwheel that they anchored in the river, adjacent to the Katzie's reserve. While both men are committed to the project, they are carrying out the work of their own accord, without the wider participation of the Katzie Nation or the Gillnetter's Association. They are, however, supported in their conservation-focused efforts by the Sierra Club's BC Chapter and the Department of Fisheries and Oceans, which granted them the license to operate the test fishery, albeit somewhat late in the season.

The overall intention of the fishery was to show that it was possible to use the wheel to target pink salmon runs - which are among the healthiest of all runs in British Columbia and are generally underutilized partly because they fetch low prices—while releasing, unharmed other salmon species that are from weaker stocks. But because they were awarded the license late in the season, Bailey and Manuck intended instead, to show that it was possible to use the wheel to catch chum salmon, while live-releasing any other fish that were caught.

Fishwheels are either powered by engines (as is the case with this project) or by river currents. Either way, wheels anchored on floating platforms turn round and round with three or four net baskets attached to the wheel dipping into the river and out again. As the baskets exit the water, any fish caught in them can be taken out and either kept for use or released back into the river unharmed.

The wheel Manuck and Bailey operated has had a commendable record on the river. Its construction was funded with money provided by the Department of Fisheries and Oceans through its Selective Fishing Program (discussed elsewhere) and was put into use on the Stave River in the late 1990s, when concerns over drastically declining coho salmon prompted aggressive conservation initiatives. Like other wheels that came into use at this time, it was designed to allow for the live release of threatened or endangered stocks, particularly coho salmon and steelhead. After its initial use, however, it was anchored at Manuck's dock and taken out of commission for four years, until the latest license was granted.

Fishwheels are considered something new in BC, but have in fact been in use for quite some time, particularly on northern rivers such as the Nass, where they are an integral part of communal and First Nation fisheries today.

They also had a long history on rivers like the Columbia. There, wheels were anchored in the river in the 1800s. The wheels were, however, much larger than those used on the Nass and other BC rivers today, in fact three to four times larger. And they were not used selectively, but as a method of catching the maximum number of fish possible. So efficient were they, that their use was eventually disallowed.

3. BACK TO THE FUTURE: CONSERVATION AND THE RISING IMPORTANCE OF SELECTIVE FISHERIES

One of the great challenges facing modern-day fisheries managers is how to protect and rebuild weakened runs of salmon while potentially rebuilding economically viable salmon fisheries.[1] This is a particularly daunting task since salmon move great distances between their natal streams and the ocean and from the ocean back again.

Often, salmon from weaker runs swim or co-mingle for periods of time with salmon from larger runs. This co-mingling can be dangerous. Because when larger runs of salmon are targeted for partial capture in commercial, recreational or First Nation fisheries, members of weakened runs swimming with the targeted run may also be captured, weakening their numbers further still.

In the mid 1990s, concern grew that this phenomenon was contributing to what many viewed as a dangerous decline in coho salmon numbers, particularly but not exclusively coho stocks on the Thompson River and in the upper reaches of the Skeena system.

Coincidentally, rising conservation concerns also dovetailed with a number of important court decisions that affirmed and reaffirmed the aboriginal priority right to fish, a right superceded only by conservation (see sidebar *The Aboriginal Right to Fish*).

This lead to the implementation of a number of selective fishing trials launched on the Lower Fraser River beginning in 1996. Not coincidentally, some of the selective fishing methods employed borrowed ideas from earlier First Nation fisheries including the use of weirs and traps.

Don Lawseth, who retired from the Department of Fisheries and Oceans late in 2005, was extensively involved in selective fisheries trials and the monitoring thereof in the late 1990s and early 2000s. He said a nod to the past in order to chart a future for salmon populations whose numbers were dangerously low had a circular appeal, particularly to First Nations.

“First Nations adapted to the program very readily because they saw it as a way to reinvigorate traditional fishing methods,” says Lawseth, who worked out of Nanaimo and monitored a number of selective fisheries that were funded under a DFO program that halted in 2002. “Even with the program ended,” Lawseth says, “there has not been a lot of slippage from that view.”

Two years after the first selective fisheries began in response to an emerging “coho crisis”, DFO unveiled a formal conservation policy. Two main objectives underlay the policy. The first was that there would be “zero mortality” of upper Skeena River and Thompson River coho stocks in any fisheries prosecuted. The other was that even where Skeena and Thompson coho stocks were not thought to be at risk of being caught, fishing methods would still have to be demonstrably selective and not resulting in the unwanted by-catch of coho or other stocks of concern.

Despite an end to funding of the DFO’s Selective Fisheries Program in 2002, various First Nations across BC remain involved in a number of conservation-based fishing and enumeration initiatives. The measures are focused primarily on conserving particular salmon runs, while providing a supply of fish for food or commercial purposes when, for example, a sufficient number of salmon have made it to the spawning grounds and the remainder are deemed to be in excess of spawning requirements. And some have involved creative working agreements between interests in the commercial fishing sector and First Nations (see sidebar *The Nanika: Confronting a conservation challenge*).

1. In an earlier report to the Pacific Fisheries Resource Conservation Council—The Evolution of Commercial Salmon Fisheries in British Columbia (Dec. 2004)—authors Stuart Nelson and Bruce Turris describe weak stocks as ‘those lacking the productivity to sustain themselves in the face of fishing and other pressures; not all small stocks are weak—some small stocks are highly robust.”

The Aboriginal Right to Fish

Since the entrenchment of section 35 in the Constitution Act of 1982, Canadian courts have made a number of rulings that acknowledge the comprehensive nature of Aboriginal rights as they relate to fisheries for food, social and ceremonial purposes. Such fisheries are often referred to by the acronym FSC. In addition, there continues to be an evolution in law pertaining to First Nations and commercial harvesting rights.

Section 35 states in part that "the existing aboriginal and treaty rights of the aboriginal peoples of Canada are hereby recognized and confirmed."

A series of cases affirmed this right, but the decision in Regina v. Sparrow is generally felt to have set the tone. In that decision, rendered in 1990, it was found that a "fiduciary relationship" existed between the Crown and aboriginal peoples as far as fisheries were concerned, and that aboriginal interests took precedence over others.

This did not mean that aboriginal rights always had priority, far from it. Conservation remained the first and overriding objective. However, once conservation concerns were met, the aboriginal right to fish for FSC purposes superceded all others.

Various court decisions after Sparrow, including a trio of decisions in 1996 called Regina v. Van der Peet, Regina v. NTC Smokehouse and Regina v. Gladstone re-affirmed this right, which is now generally accepted to apply not only to a priority right to fish, but to a right to fish for certain fish stocks in certain places. The latter point gave added weight to those who argued that "terminal" fisheries were more in keeping with aboriginal rights and interests, as those fisheries tend to occur near where the salmon spawn. Moreover, because such fisheries occurred near the terminus of the salmon's final journey from ocean to freshwater spawning habitat, such fisheries usually had the added benefit of providing a greater degree of control over conservation than fisheries prosecuted in open waters. This is changing to some degree, however, thanks to changes in net mesh sizes and other innovations in the commercial fishing sector, changes that have had a demonstrable effect on reducing the capture of non-targeted species.

Another significant legal decision of importance to an understanding of aboriginal rights and title is Delgamuukw v. British Columbia. Rendered in 1997, the Delgamuukw decision stated that government must demonstrate that both "the process by which it allocated the resource and the actual allocation of the resource" itself, takes into accounts the priority interests of the holders of aboriginal title.

In a 2004 report to a First Nation Panel examining fisheries issues, Brenda Gaertner, a lawyer specializing in aboriginal law, noted that the Delgamuukw decision would continue to have a profound influence on issues applying to fisheries.

" . . . the Department of Fisheries and Oceans ("DFO") must ensure that First Nations are consulted in decision-making about the allocation of the resource, and that the actual allocation of the resource accommodates the priority of Aboriginal peoples. This requires that First Nations be consulted on the full range of allocations of the fisheries resources, beyond just issues of allocations for primary food, social and ceremonial purposes."

In addition to case law establishing rights under FSC fisheries, there have been a number of important court rulings on aboriginal rights as they pertain to commercial fishing enterprises, specifically a trio of cases known as Van der Peet, Gladstone and N.T.C Smokehouse.

In both Van der Peet and N.T.C Smokehouse the question to be addressed was whether the sale of certain fish, namely salmon, were linked to the customs, practices and traditions of respectively, members of the Sto:lo and Nuu-chah-nulth nations, pre-contact. In both cases, the court did not find that proof was established that fish were sold in exchange for money or that it was an integral part of pre-contact culture. In Gladstone however, it was found that the Heiltsuk Nation had demonstrated that the sale of herring spawn on kelp was an integral and significant aspect of Heiltsuk life pre-contact. This meant that they had an aboriginal right to sell herring spawn on kelp.

Though Van der Peet and N.T.C. Smokehouse did not succeed in proving an aboriginal right to sell salmon, the door remains open for future court challenges. If First Nations are able to pass the test, they will gain rights to catch and sell fish based on historic aboriginal practices.

The Nanika: Confronting a conservation challenge

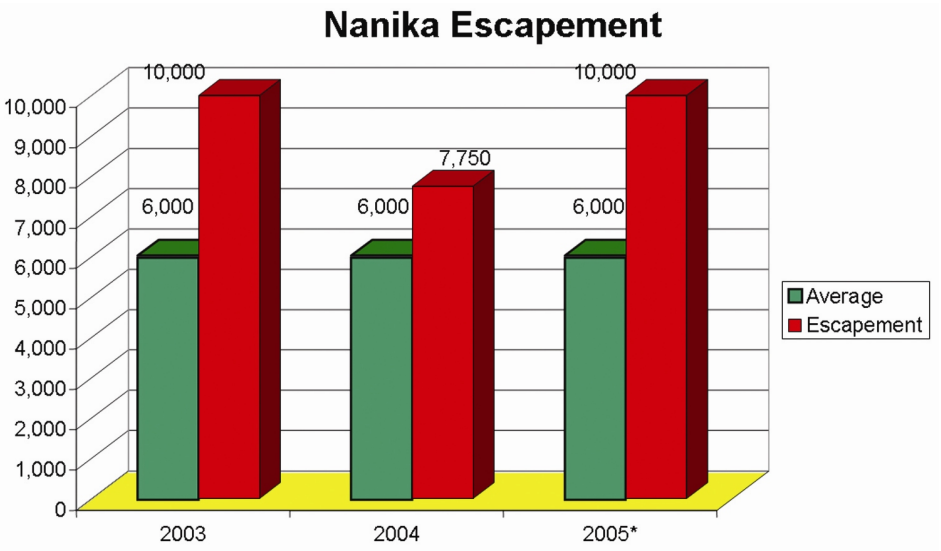
When salmon stocks suffer declines, sacrifices are required to rebuild them. Often, those sacrifices require changes on the part of more than one party. A recent case in point involves efforts to rebuild the Nanika sockeye run. This run splits off from the larger number of sockeye salmon returning to the Skeena River and its major tributaries, heading up the Bulkley River through Moricetown Canyon to Morice Lake. Historically, Nanika sockeye have been a vital source of food fish to the Wet'suwet'en People, in fact their only source of sockeye.

In recent decades, commercial fishing targeting Skeena stocks has focused on the large sockeye runs associated with Babine Lake and environs, where fisheries enhancement efforts have boosted that system's salmon numbers. But these fishing efforts had the effect of reducing populations of weakened stocks such as Nanika sockeye, forcing the Department of Fisheries and Oceans to place limits on commercial openings.

The limits led to what is considered a fairly unique accommodation between the commercial sector and the Wet'suwet'en People in an effort to rebuild Nanika sockeye numbers while still providing commercial fishing opportunities.

The plan was initially conceived by the Area 4 First Nations Commercial Fishers Association and the Northern Native Brotherhood and was brought to the North Coast Advisory Board where the proposal was supported by the United Fisheries and Allied Workers Union (UFAWU), individual fishers, fisheries groups and northern processors. Discussion then followed with the Office of the Wet'suwet'en Chiefs, and after several months of talks an agreement was reached. In exchange for the Wet'suwet'en people foregoing their constitutionally protected rights to a direct harvest of Nanika sockeye for food, commercial gillnetters agreed to deliver 8,000 sockeye per year to the Wet'suwet'en Chiefs for distribution to Wet'suwet'en people.

Since reaching the accord in 2001, spawning Nanika sockeye salmon have been 25 per cent to 66 per cent higher in number than recent average returns. Proof, the program's proponent's say, of what can be achieved when people come together to conserve desired runs while still maintaining fisheries. Still, the "high" number of Nanika sockeye spawning in 2003 and 2005—10,000 fish each year—is one-tenth the level that it once was. So clearly, much work remains.



**Estimated 2005 projections*

Despite temptation at times in the Wet'suwet'en community to pull back from the accord, commercial and First Nation fishers continue to support the agreement, considered by many to be an innovative approach to bringing together and benefiting First Nations, commercial fishermen and salmon stocks. Had, for example, the traditional food fishery on Nanika sockeye occurred in the first year of the agreement, there would have been restrictions on commercial fishing activities on the Skeena. And, because of low returns to the Nanika system, the Wet'suwet'en people would have been unable to harvest any more than 2,500 fish. Instead, they received 8,000 fish from the commercial fishery, and the commercial gillnetters were able to fish.

The methods employed are varied and include fishwheels, beach seines, fish traps, dip nets, selective gillnets and weirs. In the interests of brevity, we look briefly at a few examples from the Skeena, Thompson and Nass regions.

In the **Thompson** region, Fred Fortier of the Scewepemc Fisheries Commission says that all First Nations' communities are employing some form of selective fishing technologies, many of which have been used for generations.

In the North Thompson, dip nets are employed in Wells Grey Provincial Park. Such nets consist of nets attached to hoops at the end of long wooden poles. The nets are then hand-dipped into the water and pulled back out, hopefully with a flapping salmon in tow. Targeted species can be harvested this way, while species considered at risk or of concern are released to continue their journey to the spawning grounds.

Beach seines are also employed in the same area, while in the South Thompson a harvest weir is used. Salmon caught in a weir trap are selected for harvest or released unharmed if they are a species of concern such as coho or steelhead. Similarly on the Raft River in the Barrier region, fish traps and weirs are situated within 2 kilometers of the mouth of the river.

Members of the Siska First Nation, meanwhile, have since 1998 had a fishwheel in the Fraser River, 12 kilometres south of Lytton, to do assessment of salmon stocks, with a principal focus on coho and chinook and, more recently, sockeye. Like many First Nations, the Siska struggle with how to prosecute 'traditional' fisheries in the modern context (see sidebar *Lay of the Land*).

Fish caught in the wheel are tagged, measured, sexed and clipped (so that if the same fish are caught later, it is possible to quickly tell whether or not they are re-captures, thereby allowing for more accurate population estimates before their release.

The wheel has allowed fisheries managers to get a firmer handle on the numbers of fish moving up river. In addition, the Siska employ dip nets and gillnets. Again, these fisheries are selective, and focussed on ensuring the safe release of steelhead and coho. The gillnet fishery is prosecuted with nets of a sufficiently large enough mesh size that only larger chinook are caught, while smaller chinook, other salmon species and resident freshwater fish are able to make it through safely.

Lay of the Land

When it comes to in-river salmon fishing, the world has changed considerably, says Tracy Sampson of the Nicola Tribal Association.

Sampson says her people used to commence fishing based on changes in the landscape. When, for instance, the mock orange blossomed, that was the time to begin fishing. At that point, enough salmon would already have made their way upstream to ensure the perpetuation of the run in future years.

They would then dry their fish when the grasshoppers started singing. This was the time when the winds and temperature were best for preserving fish. Curing activities were also intimately connected with the timing of certain runs, such as some of the Adams River sockeye runs.

Today, this is not an option. Fish timing is dictated largely by federal fisheries officials, and is now heavily influenced by decreased fish availability, as a result of certain stocks having been dangerously depleted, or in some cases by changes in run-timing as a result of changing environmental conditions such as increased water temperatures which can result in high fish mortality. Local First Nations people continue to use traditional selective fishing techniques, but the old signals of when and where to fish are being displaced by new realities.

In the **Skeena** watershed, many First Nations' bands use both traditional fish harvesting techniques as well as more modern methods to selectively fish. Again, the focus is on conserving certain stocks. The Metlakatla, for example, currently use a fish trap, targeting sockeye and pink salmon that are deemed in excess of spawning requirements, while releasing non-targeted species.

The Gitksan Watershed Authority, meanwhile, oversees fisheries management in the Gitksan territories as well as developing and implementing selective fisheries on the Skeena and Babine rivers. With the Authority's oversight, fish traps were developed and tested on the Babine River, but with mixed results. This later led the Gitksan to develop and implement a plan to use a fishwheel on the Babine River, similar to that of the Nisga'a First Nation on the Nass River and the Kitselas First Nation on the Skeena River.

The Babine fishwheel, with its wooden baskets, did record some successes despite the challenges associated with mechanical breakdowns and fluctuating water levels, which meant for inconsistent operation. With knowledge gained from the operation of this relatively large wheel, smaller fishwheels were later deployed in the narrows of Gisgagaas Canyon. Within the canyon, traditional house groups also participate in a selective dip net fishery, with a primary focus on sockeye salmon. The fishwheel was decided upon to aid the Gitksan in harvesting sockeye during commercial ESSR fisheries. The technology was deemed to be a more efficient and safer method of fishing than the dip net fishery. ESSR fisheries (Excess to Salmon Spawning Requirements), occur when there is a demonstrated abundance of salmon excess to spawning requirements. When such is the case, arrangements are often made for First Nations to harvest for FSC purposes. If these fish are not needed for FSC fisheries, they are sometimes offered to First Nations for commercial harvest and sale, or to local community groups, or lastly put out to competitive tender.

Not only did the fishwheels work in terms of selective harvesting, but they also provided important data on the strength of different salmon runs moving upriver, data that was shared with federal fisheries officials. The Gisgagaas Canyon fishwheels do not employ 'live boxes' where caught fish swim in net enclosures. This means that the wheels must be manned continuously, and that non-targeted species are released immediately back into the river, thereby reducing stress to fish that would otherwise be forced to swim in confined enclosures for periods of time before their release.

The Gitksan have also conducted beach seine and dip net fisheries on the Skeena River. Again, the focus is on the capture of sockeye and the release of species of concern such as coho and steelhead.

Also on the lower Skeena, members of the Kitselas First Nations have made significant adjustments to the prosecution of fisheries in order to assist in the conservation of select salmon stocks. With the so-called coho crisis in the late 90's, federal fisheries officials imposed restrictions on numerous fisheries in the Skeena River in 1998 and 1999. Despite aboriginal rights to fish Skeena salmon stocks in the Skeena River above Terrace, the Kitselas restricted their food, social and ceremonial (FSC) salmon harvest to two days a week during this time.

Given that the FSC catch in the two years was below average, the Kitselas Fishery Program offset low sockeye catches by using selective fishing methods such as fishwheels and fish traps employed for the capture of sockeye and the release of steelhead and coho. The fish harvested from the fishwheel were used both for food, social and ceremonial purposes and in ESSR fisheries, when such fisheries were open. The selective fisheries were established in conjunction with the DFO. Members of the First Nation conducted monitoring throughout the fishery in co-operation with the Department of Fisheries and Oceans.

On the Nass River, meanwhile, the Nisga'a have successfully employed the use of fishwheels dating back to the early 1990s. The wheels are considered by both members of the Nisga'a Nation and federal fisheries officials to be instrumental in providing highly reliable information on stock assessment. The Nisga'a operate six fishwheels in all, two in the lower reaches of the river and four further up river. In addition to providing information on stock assessment, the wheels have

been used for several years both as a source of food fish and for sale under provisions agreed to in the treaty agreement formally concluded between the Nisga'a Nation and the governments of Canada and British Columbia in 2000. The wheels allow for the harvest of targeted species and the release of steelhead, chum or other species of concern. We will look at the Nass and Skeena management systems shortly. But first, we look in more detail at how various First Nations are involved in conservation-based initiatives, including enumeration and habitat protection measures, both of which are critical to maintaining and rebuilding select salmon runs.

Building Capacity, Knowledge and Data

First Nations have been closely tied physically with where salmon runs spawn for millennia, giving them intimate knowledge of run abundance and diversity as well as a unique understanding of what the risks to specific populations of fish are. Physical proximity allows First Nations to play a vital role in enumerating stocks and gauging what works and what doesn't in terms of restoring weakened stocks.

Areas where headway has been achieved are stock assessment, salmon recruitment and habitat restoration. The following offers details on achievements on the West Coast of Vancouver Island, the Thompson and Nass rivers.

Vancouver Island's **Huu-ay-aht First Nation** has done stock assessment, habitat restoration and fisheries enhancement work since 1995. Stock assessment—including swimming the Sarita River in the heart of the Huu-ay-aht's traditional territory—is done collaboratively with the Department of Fisheries and Oceans, and provides invaluable information.

Like other rivers in BC, the Sarita experienced dramatic declines in spawning salmon due in part to fishing pressures, but also to habitat losses associated with intensive industrial logging activities. In the 1980's, some salmon returns were as low as 80, whereas run sizes had once numbered upwards of 20,000. By 1997, the sorry downward trend had been reversed with some returns reaching 500 to 600 fish. And by 2004 and 2005, the numbers were up again, to around 3,000 fish. While nowhere near their historic highs, recent results suggest that conservation-based initiatives are having a positive effect in the region. Why so?

Part of the answer is hatcheries, which while no panacea are considered a valuable tool in the interim to improve stock abundance. To that end, the Huu-ay-aht Nation has been a participant in the Nitnat Hatchery, using some of the hatchery's fish to release as juvenile salmon into the Sarita River as well as directly into the ocean. Their goal is to release 500,000 juvenile chinook salmon into the Sarita each year. The Nation also operates the Sugsaw Hatchery, which was originally geared toward the rearing and release of chum salmon, but is now also rearing and releasing coho and chinook. By tagging hatchery fish, the Huu-ay-aht have determined that about 90% of the salmon returning to the Sarita system are hatchery fish. Stefan Ochman, the Huu-ay-aht's fishery manager, said the hope is that natural recruitment will eventually be high enough that the hatcheries are no longer needed. But for now they are instrumental in aiding the recovery process.

The Huu-ay-aht have also done a significant amount of habitat restoration work in an attempt to restore spawning and rearing habitat that suffered damages or outright losses due to logging and related road-building activities. In 2004, this work included building a new spawning channel on Sugsaw Creek to replace a natural spawning channel that was lost due to altered water flows associated with logging-related activities. This extensive engineering work was funded by the Huu-ay-aht Nation and the Pacific Salmon Foundation at a cost of approximately $70,000. The Huu-ay-aht were also able to recoup at least some of the money and in-kind contributions they made to stock recoveries by obtaining a permit from the DFO in 2005. The permit allowed the Nation to harvest up to 300 chinook and 500 chum salmon from the Sarita River and 500 chum

from the Sugsaw. Using the profits from the sale of some of those fish, the Huu-ay-aht Nation was able to do bone and scale analysis on returning fish. This allowed for better information on the origin of fish (hatchery versus wild), their age, length and sex—all of which will benefit future recovery efforts.

The Huu-ay-aht, as with many other First Nations involved in restoration work, experienced funding declines in recent years due to the collapse of certain programs including the now defunct Forest Renewal BC and Fisheries Renewal BC. The Huu-ay-aht did, however, recoup some of what they lost through signing an Interim Measures Agreement with BC's Ministry of Forests. Under the agreement, they were allocated approximately $700,000 for watershed restoration projects, which further revitalized habitat and salmon stocks in their traditional territory.

In the Nass River Valley, members of the **Nisga'a First Nation** have done stock assessment on the Nass River using fish wheels since 1994, when they began to use the selective fishing and monitoring technology for escapement monitoring. The target of the initial assessment work was sockeye, chinook, coho and steelhead stocks. Chum and pink salmon began to be the focus of assessment work after the conclusion of the Nisga'a treaty in 2000. There are currently six fishwheels on the Nass River, two nearer the mouth and four further up-river. The Nisga'a also use the Meziadin Fishway near where many of the watershed's salmon spawn, to provide mark and recapture data, fish scale and genetic tissue (DNA) analyses for stock identification and aging purposes. Catches and escapement estimates are reported to DFO three times a week during periods when the salmon are running. The Department considers the data to be of a high standard for the entire watershed, although much work remains to be done to quantify numbers on a tributary, by tributary basis.

In addition to the fishwheel, the Nisga'a use a juvenile counting fence at Zolzap Creek where coho smolts are captured, coded, wire tagged and released. Nisga'a Fisheries has also been overseeing the operation of the Kincolith Hatchery since 1995. The hatchery raises chinook salmon for eventual release as smolts into the Kincolith River.

On the Thompson River, the **Secwepemc Fisheries Commission** under the auspices of the Shuswap Tribal Council and its member First Nations, does stock assessment work in a variety of locations in the Thomspon and Okanagan regions. In the North Thompson, at Dunn Creek, Lewis Creek and Lemieux Creek, counting weirs are used for stock assessment of coho and chinook salmon. There is also a stock assessment weir on Scotts Creek. In Sinmax Creek, a tributary to Adams Lake, there is an enumeration fence for coho salmon and Kokanee trout. At Deadman's Creek and Bonaparte River, there are two more fences with electronic counters that enumerate fish swimming through tubes. In the Bonaparte System, there are cameras in the tubes allowing fisheries technicians to download the visual information onto computers that then assist in not only counting the number of fish, but in determining what species are moving through the system.

Figure 4. Sheep Rock Fishwheel

This site is locally known as Sheep Rock and it is located approximately 20 km upstream of the Canada/US border on the Yukon River. DFO has operated a Chinook and chum salmon tagging program using the fishwheel in the photograph and one located further downstream since the early 1980's. Photo credit: DFO.

Emerging Models of Co-management

Modern-day management of salmon fisheries is a daunting task. Not only are there competing interests for finite resources, but there are issues pertaining to habitat loss and change, declining species diversity and climate change that can significantly influence whether fish are caught at all—and if they are—how they are caught, where and by whom.

With the complexity of fisheries management increasing, and with greater onus placed on the Department of Fisheries and Oceans to meet Canada's legal obligations to First Nations people regarding their constitutionally protected rights to fish, more and more attention has focused on the prospects for "co-managing" fisheries resources.

Co-management is, it is best to say, a work in progress. It means different things to different people and it is applied—and will likely continue to be applied—in different ways depending on local geographical, social, cultural and economic conditions. It is also safe to say that co-management may prove to be a whole lot easier or a whole lot more difficult when the range of interests to a passing stock of fish increases in number.

For example, in a watershed where the number of First Nations is relatively low in number (the Nass), it may prove easier to enact co-management regimes than in a larger watershed where there are more numerous First Nations and substantially greater recreational and commercial interests at play—for example, the Fraser. With increased interests in a finite resource, it is more difficult to devise management regimes that will make all parties content. Having said that, both ecosystem-based management and community based co-management systems are generally accepted as having good potential when it comes to achieving certain broad-based conservation

and stewardship goals. Active collaboration and co-operation in management decisions and the implementation of those decisions not only builds trust between parties, but ensures that people learn more about resources and their management because more people are directly involved.

More localized systems of management (with the important caveat that such management systems feed into or inform broader management objectives—for example a local First Nation fisheries program reporting to DFO) can empower local resource users to take greater responsibility for fisheries resources. Provided, that is, that the bigger centralized agency is responsive to the information coming from the ground up and actually acts on it.

Following are three examples of new or emerging co-management or governance structures. They are chosen both for their geographical spread and for the differences in approach that have been taken. All are meant to be examples of how things could be done, not necessarily how they should be done. For obvious reasons, different regions confronted with different resource challenges may have unique needs that demand unique responses.

Models of Co-management Example One: The Nass

The Nisga'a call the Nass River K'alii Aksim Lisims. The river, which flows almost 400 kilometers from its headwaters in northwestern BC to the Pacific Ocean north of the mouth of the Skeena River, has for generations been the social and economic mainstay of the Nisga'a people. It remains the most important salmon river in British Columbia next to the much larger Skeena and Fraser Rivers.

All five species of salmon are found in the Nass as well as steelhead. The river also has numerous other rich fisheries resources including oolichan and crab. But salmon is the species that is most intensely managed and monitored.

Management and oversight of the Nass River's salmon fisheries marks a new form of governance as far as natural resources are concerned. As a signatory to the first comprehensive modern-day treaty settlement in the province, the Nisga'a First Nation conceded to certain set allocations of salmon under the agreement and agreed to a new management model which has been in place now for six years. However, key aspects of fisheries management on the river were in place long before the treaty was finally ratified.

Disagreements are inevitable between First Nations, let alone between individual First Nations and the federal and provincial governments, over what constitutes reasonable provisions in a treaty settlement. It is not the point of this short report to say that the Nisga'a model is one that necessarily fits with the needs of other First Nations or fisheries managers. But it is offered here as an example of one governance structure that has delivered some interesting results, which broadly speaking are supported by the First Nation itself and the federal regulator—the Department of Fisheries and Oceans.

It should also be noted here that by and large the Nass River system is not subject to the complexities of some other river systems in the province. Salmon stocks moving up the Fraser and Skeena systems, for example, pass by the territories of numerous First Nations, and concerns over fishing pressures and related conservation measures in such cases can be far more heated and potentially divisive than is the case in the Nass. And even in the Nass itself, there was and remains opposition to the treaty by members of the Gitanyow First Nation, and some Gitksan members who contend that overlapping claims and interests were not been addressed in the Nisga'a Final Agreement.

With these caveats in mind, then, the highlights of the evolution of this new governing structure are as follows.

Long before a concluding treaty was ratified in 2000, a fairly comprehensive Nisga'a Fisheries Program was in place. In fact, the program began 14 years ago at the time that an agreement in principle between the Nisga'a Nation, the federal and provincial government was reached. The main feature of that program was an aggressive ramp-up in monitoring of Nass salmon stocks, which began with the placement of fishwheels into the Nass River at some key places.

The wheels remain a vital part of fisheries monitoring today as well as delivering substantial numbers of fish to Nisga'a people both for food, social and ceremonial purposes as well as for commercial use.

With the signing of the Final Agreement in 2000, a Joint Fisheries Management Committee (JFMC) was formed to co-manage the fishery. The JFMC comprises representatives from DFO, the Province of BC and Nisga'a fisheries department. The plans that the committee arrives at are sent to the federal Fisheries Minister for ultimate approval.

Under the treaty, the federal and provincial governments do, in fact, retain authority for management and conservation of fish and fish habitat. However, this must be done in a manner consistent with the treaty and the Nisga'a are granted authority with respect to internal regulation of the fishery established. Among the more important work done by the JFMC is recommending an annual fishing plan to DFO, drawing up operational fishery guidelines, and producing an annual management report to DFO for all fisheries prosecuted on the Nass. The fishing plan is the only requirement under the Treaty.

A Joint Technical Committee (JTC), comprising representatives from the three levels of government, provides relevant information and recommendations to the JFMC regarding the fishery. This includes information on stock assessment, catch accounting, pre-and in-season fishing and escapement goals, fishing methods and timing of fish harvesting, as well as how funding will be spent.

Upon the initial signing of the Nisga'a Treaty, a trust fund was set up with $10 million in federal funds and $3 million in Nisga'a funds. The Nisga'a Fisheries Program is essentially funded from the fund's accumulated interest. The JTC recommends how those funds should be spent with the JFMC making the final call.

Within the treaty agreement, the Nisga'a aboriginal fishery is allocated 10.5 percent of the allowable Nass sockeye catch and 0.6 percent of the pink salmon catch. The treaty also provides for a separate harvest for commercial purposes, with the Nisga'a entitled to 13 percent of the allowable catch of sockeye and 15 percent of pink salmon. (A breakdown both of salmon harvests and numbers of spawning salmon in the Nass system is captured in the following two charts.)

Figure 5. Nisga'a Fisheries

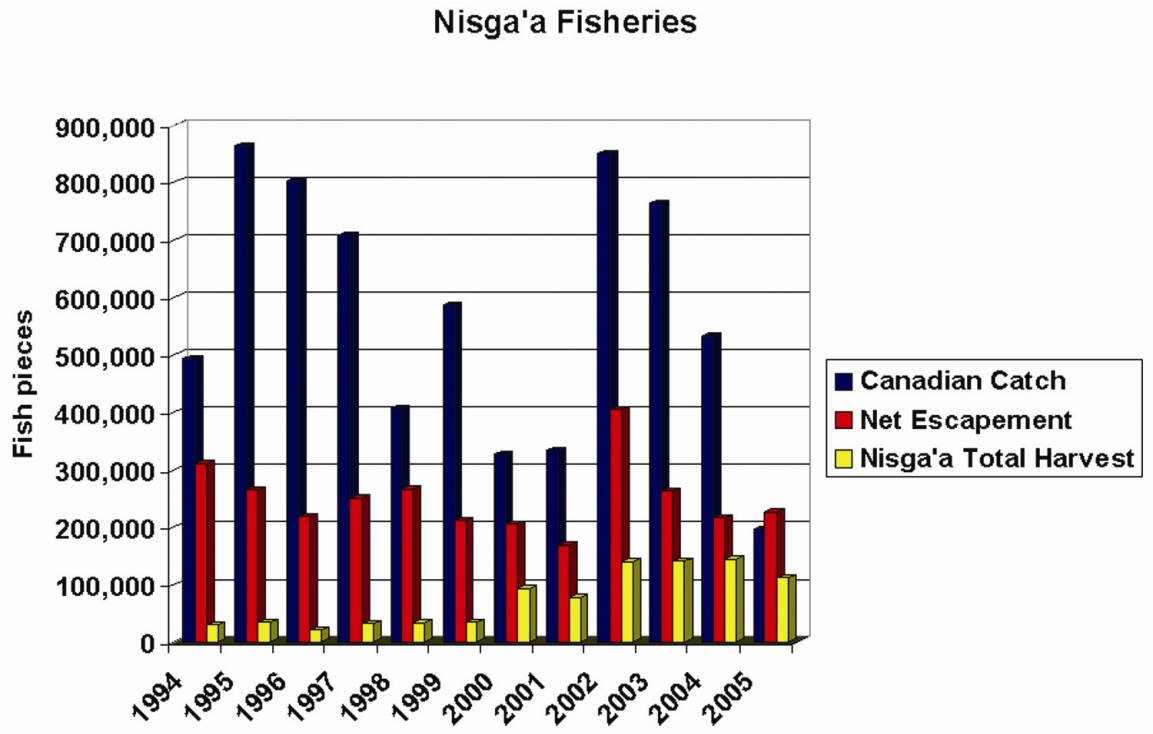
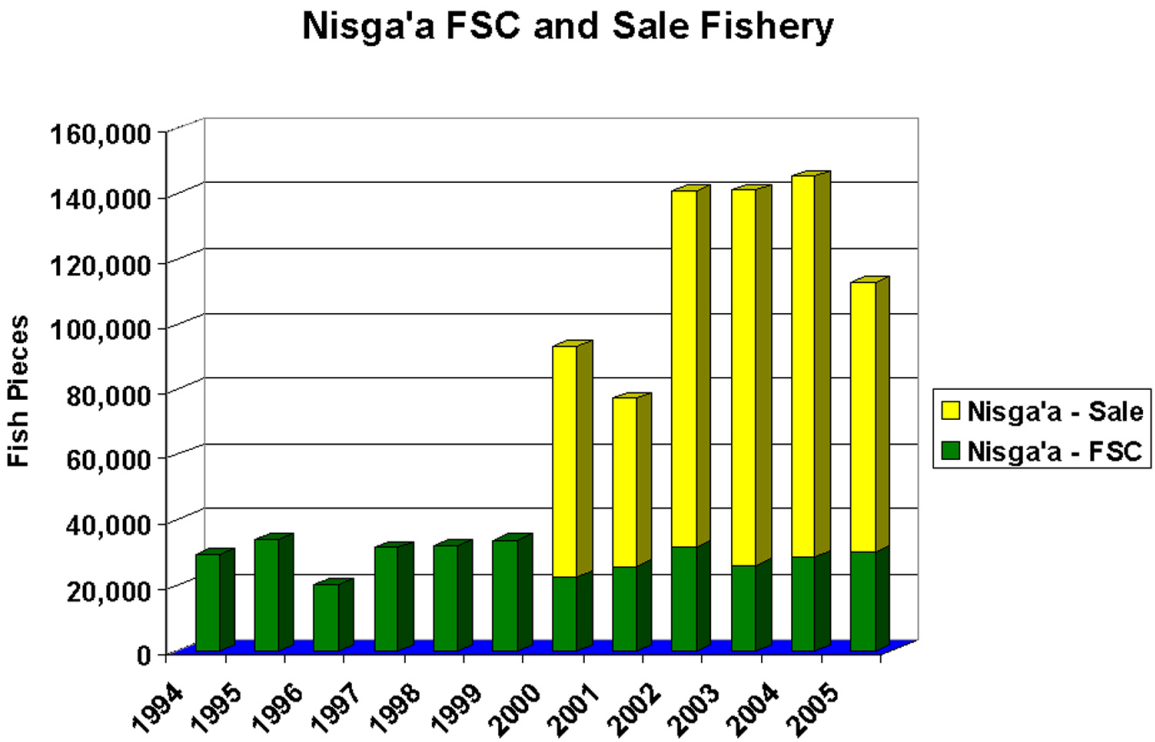


Figure 6. Nisga'a FSC and Sale Fishery



In 1992, the Nisga'a began using fishwheels for enumeration. In 1994, the program expanded and moved towards more detailed escapement monitoring by tagging approximately half of the salmon and using recovery wheels 16km upstream to determine the number of salmon that were making it up the river. In 2000, the wheels began to be used for harvesting as well.

Today, along with their extensive monitoring programs, the wheels are used for communal and commercial harvesting. Approximately two thirds of that catch (the wheels are also used to harvest fish for food purposes) benefits individual Nisga'a fishers while the other third benefits a communal fishery, where fish are caught and sold to fund the work of Nisga'a Fisheries Limited. Nisga'a Fisheries Limited is a corporation set up by the Nisga'a Lisims government to maintain the responsibility for harvesting and landing sites and working and establishing relationships with fish processors and specialized markets. What does this mean in practical terms? First, assured opportunities for Nisga'a individuals and communities to be involved in fisheries and fisheries monitoring. Second, as a result of a dedicated catch for commercial purposes, in 2003, a total of $984,708.75 in revenue was made by individual Nisga'a fishermen and $297,468.60 in revenue was made for Nisga'a Fisheries Limited. The Fisheries Program also provides employment opportunities. For example, the Nisga'a have hired an environmental consulting company to run their fisheries management program. Two members of LGL Limited do that work today. The program also employs 2 Nisga'a biologists full time as well as a fluctuating number of seasonal Nisga'a fisheries technicians, usually between 30 and 50 people. In addition to the jobs created, people at the local level gain expertise in—and take greater ownership of—fisheries management responsibilities.

In terms of conservation, the Nisga'a currently operate 6 fishwheels on the Nass, designed and built by Nisga'a Fisheries. They selectively fish almost all of their sockeye this way, releasing steelhead and chum salmon. The fishwheels provide escapement data for salmon and steelhead, helping the Nisga'a in stock assessment and the management of their fisheries.

The fishwheels, in conjunction with the Meziadin Fishway, provide reliable escapement data for sockeye, Chinook, Coho, pink, chum and steelhead in the Nass watershed. These data are reported to DFO three times a week in season, and have increasingly improved in the last six years.

According to Dave Peacock, who works in the DFO's regional offices in Prince Rupert, the Nisga'a fisheries program represents a very co-operative venture, and one of its underlying strengths is the quality and reliability of its data. Under the treaty it has allowed for informed decisions with very little conflict. "In general," says Peacock, "I would give it an A."

The Nisga'a are also involved, along with the commercial salmon fishing sector, in a certification process by the Marine Stewardship Council whose internationally recognized symbol shows that a river and fishery are managed in an environmentally sound manner. The Nass sockeye fishery was, with the exception of an opening in Barkley Sound on the West Coast of Vancouver Island, the only directed commercial sockeye fishery open in 2005. All others were closed.

Models of Co-management Example Two: The Skeena

The Skeena River is northern British Columbia's most important salmon river and next to the Fraser, ranks as the second-largest salmon producer in the province. It has large stocks of sockeye and pink salmon, smaller stocks of chinook and steelhead, and rebuilding stocks of coho and depressed stocks of chum. In terms of fisheries management, the Skeena has many challenges, not the least being that certain of its strongest sockeye runs are hatchery-enhanced runs and that historic fishing pressures on those runs have, at times, contributed to declines in the health of

smaller runs. Like elsewhere in the province, this led to certain conservation-oriented changes in fishing methods and timing on the river and, in some cases, outright prohibitions at certain times.

With both conservation concerns and aboriginal rights issues becoming more and more important in the Skeena system, the Skeena Watershed Committee came into being in 1996/97. At the time, it was a multi sectoral committee that lasted only about a year before representatives from the commercial fishing sector pulled out. Today, fisheries in the Skeena Watershed are managed in a mostly collaborative way between DFO and First Nations, through a consultative process involving the Department, the Skeena Fisheries Commission consisting of aboriginal representatives, and members of a commercial and sport fishing advisory board.

From 1992–2004, the SFC was funded under an Aboriginal Fisheries Strategy agreement. Today it is funded under an Aboriginal Agriculture Resources and Ocean Management (AAROM) agreement.

The SFC consists of aboriginal representatives from several First Nations including the Lake Babine Nation, Wet'suwet'en, Gitskan, Gitinyow and the Tsimshian Tribal Council. Monthly technical committee meetings are held between the respective First Nations' fisheries technicians and DFO, in order to reach general agreement on how fisheries should be prosecuted in the watershed.

Management decisions apply both to fisheries conducted for food, social and ceremonial purposes (FSC) and to commercial fisheries conducted by First Nations who access fish stocks that are deemed to be excess to spawning requirements. Within the overarching collaborative management of these fisheries, each individual First Nation community has allocation agreements usually for food and commercial purposes with the DFO.

While capacities vary, as a rule all nations in the Skeena play a significant role in various aspects of fisheries management including stock assessment, catch monitoring, ESSR fisheries, stream assessment, stream and habitat enhancement, and fish hatcheries. Fitting into overall conservation-based management objectives, First Nations fishing in the Skeena watershed are also involved in a variety of selective fishing endeavors.

In interviews with DFO officials and First Nations representatives on the Skeena Watershed Commission, three important reasons are identified for the success to date in this evolving co-management regime. First, the initial focus was directed at the technical rather than the political. In other words, looking at enumerating and understanding fisheries resources themselves, rather than getting bogged down in the potentially divisive issues of what First Nation was entitled to what fish and where and how that might impact another Nation's interests upriver. This allowed many Nations and the DFO to improve their scientific and technical capacity, and to be able to act more authoritatively when it came to fisheries management decisions. According to the DFO's Jim Steward, the Gitksan and SFC have a strong science and research team with solid, reliable data. More importantly, they willingly share this data with DFO and work co-operatively with the agency.

A second contributor to this success is capacity building within First Nations communities. Many DFO fishery officers in the Skeena region are in fact members of First Nations communities. This results in greater trust and cooperation between local communities and DFO and greater incorporation of Traditional Ecological Knowledge in fisheries management decisions.

Lastly, while the Skeena River and its myriad tributaries constitute a large area, there are, relatively speaking, fewer bands in the region than in the Greater Fraser River system, making the goal of a more co-operatively managed fisheries regime more readily achievable.

The fact that all of the Nations are working together on fisheries issues under the SFC is also of importance. Why? Because it is far easier and less bureaucratically cumbersome for the DFO to deal with one body than five separate First Nations and numerous aboriginal communities, making it easier to exchange information and knowledge. The relationship between the SFC and DFO continues to improve, with bridges between the two agencies continuing to be built.

Models of Co-management Example Three: Vancouver Island's West Coast

On the West Coast of Vancouver Island, the Nuu-chah-nulth Tribal Council, has been intensively involved in co-management discussions over fisheries resources with the Department of Fisheries and Oceans for more than a decade.

Negotiations have had their ups and downs. But by 2005, at least, Don Hall, the NTC's Fisheries Program manager, said relations were the best they had ever been.

In the early to mid 1990's, a steering committee was formed, called the Nuu-chah-nulth/Regional Aquatic Management Society (RAMS). Society members went on to develop an institutional framework to guide their relations with the Department and from there to convince the Department that they were the regional body to be dealt with when issues of fisheries management and tribal fisheries arose.

The initiative came to be viewed by both members in Nuu-chah-nulth communities and within the DFO as helping to transform attitudes about how both groups could partner with and learn from each other. As a result of those efforts, support grew for a more regionally focused fisheries management regime involving aboriginal, local commercial, sport and recreational fishing interests.

RAMS eventually evolved into the West Coast Vancouver Island Aquatic Management Board (WCAMB) (http://www.westcoastaquatic.ca/Home.htm). This was and still is a community focused board, consisting of First Nations, community and government representatives. Originally supported by three years of funding from the DFO, the funding was extended for a fourth year. The Board has been and is still looking for support from other quarters.

The future of the WCAMB is somewhat uncertain because of ongoing discussion within the board about its future role, which in turn has resulted in funding issues. .

As those concerns continue, however, DFO is investing resources into building relationships with First Nations through a new structure—the Aboriginal Aquatic Resource and Ocean Management (AAROM) program. The Nuu-chah-nulth AAROM body is called Uu-a-thluk, which in Nuu-chah-nulth means to take care of. This body consists of a council of hereditary chiefs or, Ha'wiih. There are 15 Nuu-chah-nulth First Nations represented on Uu-a-thluk, including all 14 member nations of the NTC, plus the Pacheedaht First Nation.

Members meet three to four times a year with the DFO. Supporting the Ha'wiih is a joint technical working group. This group consists of both Tribal Council fisheries staff and DFO staff who meet about every six weeks to deal with aquatic resource issues on the West Coast of the Island. They also deal with policy issues and a number of other things too.

What was once the NTC Fisheries Program is now transitioning to the Uu-a-thluk. With greater capacity within the Uu-a-thluk, there is an improved ability to participate more fully in co-management initiatives, Hall said.

Is this co-management? Don Hall claims that it is a significant step in the right direction. The NTC is involved in decision making and information sharing with DFO to a greater degree than

ever before. It is working more closely with DFO to manage fisheries resources. And Hall feels that it is well on its way to working. Both a combination of new DFO staff as well as the development of AAROM and additional funding, has allowed the NTC to be involved more directly in management of local fisheries.

Models of Co-management Conclusion

Versions of the three co-management models briefly discussed in this report are almost certain to be replicated or built on in future agreements between individual First Nations and the governments of BC and Canada or in agreements reached between First Nation umbrella organizations and the other two levels of government.

The point in discussing the three examples here is to show that such agreements are resulting in a fair degree of support within such agencies as the Department of Fisheries and Oceans. As these examples continue and as new examples emerge, broader governmental and public support are likely, simply because more people will be directly involved in fisheries management and conservation initiatives.

In the last section of this report, we deal with what is certain to be a great challenge as new co-management and governance initiatives move forward. And that is the whole area of how First Nations themselves deal with one another when cooperating in the management and sharing of passing stocks. To a certain extent, a model of sorts has already been established in the Skeena. But it remains to be seen how it can be replicated in what might be called more troubled waters. Specifically, bigger landscapes where returning salmon must migrate far up river systems, passing commercial, recreational and First Nations' fisheries along the way. Such a system is, of course, the Fraser River. As the events of 2004 attest, the Fraser's salmon stocks remain a challenge to manage, let alone to allocate between sectors or within sectors. The challenges only mount when the wild card of climate change is factored in.

The Fraser River—A sprawling watershed with big co-management challenges

As home to the largest number of salmon in British Columbia, the Fraser River and its tributaries are of immense ecological, social and economic importance. Take the most sought after salmon species—sockeye. There are no less than 150 separate Fraser River populations, many with sub-populations in terminal areas.

This reality poses obvious management challenges. For example, the first sockeye leaving the main river for their spawning beds originate from below Mission and move up the Pitt River. The last sockeye populations to leave the main river, on the other hand, do so hundreds of kilometres to the north, spawning in the Bowron, Stuart and Nadina rivers and their tributaries upstream of Prince George. In between the lower and upper reaches of the Greater Fraser system—there are large mid-river sockeye runs returning to the Adams, Quesnel and Chilko systems.

The Fraser's abundance of salmon has been well documented for more than a century, with the number of spawning sockeye salmon as far back as 1901 and 1905 being estimated at 100 million fish.

With such a rich resource, it is no surprise that there has been and continues to be, intense interest in both harvesting and conserving salmon populations throughout the system. As a rule, the challenges associated with conservation and harvesting increase dramatically the further up-river one goes for the simple reason that as the migration distances increase there is at least the potential for fishing pressures to increase as well.

From a management perspective, this poses significant challenges. There must be at least a measure of confidence that pre-run estimates are correct (both in terms of the run-timing and returning fish) and a reasonably good understanding of a host of other things including but not limited to:

- What fishing pressure is to occur where,
- What fishing methods are to be employed,
- What the catch numbers are,
- Whether stocks co-mingle or swim together and whether in catching a portion of a targeted stock, members of a non-targeted and possibly weaker stock are caught too,
- Whether adequate numbers of fish are making it upstream, and
- Whether ocean conditions and in-river conditions are such that fish may be vulnerable to death before they reach their spawning grounds.

Layered on top of all of this is the need to adjust management and allocation decisions based on changing conditions. For example, if evidence emerges that run timing or fish behavior has changed as a result of warmer water temperatures, then expected fishing openings may have to be altered or cancelled in order to ensure that adequate numbers of returning salmon make it to their spawning beds. Allocation issues also must be taken into account. Next to conservation, First Nations have a legally protected priority right to salmon for food, societal and ceremonial purposes. This is an extremely important right and it poses great challenges from a management perspective in a system such as the Fraser, where there are nearly 100 First Nation communities.

In order for escapement objectives to be met, there must be confidence about the number of returning salmon, appropriate fisheries prosecution (including an accurate accounting of fish caught), and reasonably effective monitoring and enforcement. There must also be cooperation between the manager—the Department of Fisheries and Oceans—and the various sectors, between sectors, and within the sectors themselves. Throughout it all, when fisheries *do* occur it is incumbent on the manager to ensure that allocations follow in accordance with the rules, which rank allocation priorities as follows:

- Conservation first,
- First Nations food, social and ceremonial fisheries second,
- USA requirements under the Salmon Treaty third,
- Recreational fisheries priorities for chinook and coho salmon fourth, and
- Fifth commercial fisheries.

In years gone by—and almost certainly in years to come—conflict has been the order of the day regarding fishing openings, timing and allocation on the Fraser. Such was the case in 2004, when the Fraser River's sockeye fishery became an object of great controversy when an estimated 1.3 million sockeye salmon went "unaccounted" for.

Given the challenges inherent in conserving sockeye stocks in such a large river system, it is perhaps no surprise that this would be the case, particularly when profound environmental changes such as increased water temperatures are layered on top of an already complex management task.

A panel convened by the federal Fisheries Minister to study the problems on the river in 2004, found that two factors likely explained why so many fish may have failed to make it to the

spawning beds. The first was elevated water temperatures, which the panel reported would have been lethal to many returning fish, causing them to expend too much energy before they reached their ultimate destination. "The temperature researchers are quite convinced that much of the discrepancy ("missing fish") in 2004 can be attributed to mortalities associated with high water temperatures," the panel reported. The panel also reported on testimony of various people, noting the weakened state of fish caught in nets as well as high mortality rates, which strongly suggested that high water temperatures were the cause of far lower returns than previously expected.

The second explanation, the panel concluded, was the "illegal catch and sale of fish, in the face of inadequate enforcement," which it described as "a significant contributing factor" to the missing fish. Citing the testimony of various people, the panel suggested that the bulk of these illegal fisheries were attributed to certain First Nations members and that the Department of Fisheries and Oceans knew this to be the case. However, there was insufficient DFO staff or resources to do adequate monitoring and enforcement work. Little gear was seized, let alone counts done of fish in seized nets and few charges were laid. The panel also reported that in the view of one fishery officer there was at least the prospect for "rampant" and "illegal" catches in the river's recreational sockeye fishery. And that trend lines in the sale of commercially caught fish (from boats to individual buyers at dockside as opposed to sales to fish processors), made adequate enumeration of catches more difficult.

"It is obvious from the evidence," the panel stated toward the end of its report, "that the extraordinarily high water temperatures, especially during the summer run, killed a large number of these fish during their migration. But it is equally clear that the illegal catch and sale of fish, in the face of inadequate enforcement, was a significant contributing factor."

"How much is attributable to each of these factors is impossible for us to determine on the evidence we have."

What is clear, however, from a conservation perspective, is that management of Fraser River salmon stocks is a complex and ongoing challenge. (An example of just how complex emerged in February 2006, when it was reported that the Pacific Salmon Commission (PSC) miscalculated the number of returning Fraser River sockeye in 2005. The problem arose as a result of pink and sockeye salmon moving upriver simultaneously, leading to counting errors. When the data was later reanalyzed, it turned out that initial suggestions that large numbers of sockeye were unaccounted for were simply incorrect.) Part of the challenge is to ensure that fisheries are properly conducted and that there is cooperation between sectors and the agency tasked with ultimate management authority. To the extent that poaching or illegal fishing activity is a problem, it is incumbent on all involved to honor the need for properly conducted fisheries and full accounting of what is caught. In the absence of reliable information on harvesting efforts, it becomes very difficult to conserve salmon stocks and to ensure an equitable sharing of resources.

But an even greater conservation challenge may be our present warming trend, one that could prevail for decades to come.

As for questions about conservation and equitable sharing of salmon resources, much work remains to determine how salmon resources are divided among First Nations, let alone between various sectors. Within the broader First Nation community, and in particular on large river systems such as the Fraser, it remains an open question as to how Nation-to-Nation agreements may be reached. The following section of the report provides a brief overview of some recent thinking on this subject.

Because there is a lack of working models on this front, the following is somewhat conceptual, but does nonetheless offer insights into the challenges ahead.

The Challenges of Intertribal Sharing and Cooperation

It comes as no surprise that the largest watershed in British Columbia is also home to numerous First Nations. Indeed, there are eight distinct linguistic groups and 96 First nation communities along the Fraser River's 1375-kilometre length.

According to the 1995 Fraser Basin Management Plan, there are 59 species of fish located in the waters of the 234,000 square kilometre basin, of which salmon are arguably the most important.

With many salmon moving great distances from the river mouth far inland, there is potential for intense fishing pressure on certain salmon stocks and hence tension between commercial, recreational and First Nation interests, to say nothing of tensions between First Nations themselves, long before the fish reach their spawning grounds. These tensions are only certain to increase in light of the recent enactment of federal laws such as the Species at Risk Act, which may come to apply to certain runs of salmon. A formal designation of a salmon population as threatened or endangered would have huge ramifications, not only for if and when fishing occurred but also would have implications at a broader landscape level—for example, at a watershed level—and require commitments to watershed planning processes, which might result in limits being placed on certain developments that were resulting in damage to critical fisheries habitat.

Despite this, there are no formalized decision-making bodies where First Nations from the lower river work with upstream First Nations to reach consensus on issues of mutual concern such as allocation of shared resources, compliance and enforcement, fisheries habitat protection and restoration, and conservation of weakened stocks.

"There are no functional agreements in place amongst First Nations to guide how they will meet and make decisions on matters of mutual concern and interest at the watershed level," Brenda Gaertner, a lawyer specializing in aboriginal law, wrote in a 2003 report commissioned by the Fraser Watershed Aboriginal Fisheries Secretariat.

Furthermore, Gaertner said, "there are no functional agreements in place between DFO and a representative, or at least an operative First Nation group, which are providing on the ground examples of an effective movement forward towards a co-management or co-operative process."

Gaertner believes that part of the reason for this stems from the fact that a very limited number of First Nations gained approval to catch—and sell—portions of salmon harvests for commercial purposes, while the vast majority did not. Known as "pilot sales agreements", the approvals were an offshoot of important court rulings, in particular the *Sparrow* decision of 1990, that established that aboriginal people had constitutionally protected rights to fish.

Following *Sparrow*, the Department of Fisheries and Oceans introduced its Aboriginal Fisheries Strategy or AFS and from there a Fraser Watershed Agreement or WA, which in 1993 became a prerequisite for any pilot sales agreements with Fraser River First Nations. At the end of the day, only those First Nations from the Fraser River Canyon near Yale downstream to the mouth of the Fraser River received the right to catch and sell fish on a limited basis.

This, Gaertner contends, "resulted in an inequality amongst the First Nations in their ability to explore modern forms of economy within the fishery, which in turn serves to create further divisions and competition amongst the First Nations. Arbitrary distinctions between those First Nations on the Fraser who can legally derive an economy from the fishery and those who cannot is not productive."

"In some cases," Gaertner continued, "it appears that positions have solidified into bitter disputes. Distrust has been engendered at a personal, regional and nation level which has lead to significant and continued dysfunction" between First Nations throughout the watershed.

Distrust between First Nations over salmon fisheries is also an issue in Washington State where, unlike British Columbia, a landmark decision by the State Court in 1974 ruled that aboriginal people were entitled to a set percentage of all the harvestable fish swimming through State waters. The figure arrived at was 50 per cent, or half of all the harvestable fish.

Following that decision—known as Boldt—19 tribes in five different treaty areas within the State formed the Northwest Indian Fisheries Commission. While the NIFC's workings have not been without internal tension, Gaertner concludes that it has elements that are worthy of consideration in BC.

The commission employs 70 full time people who work in a variety of areas including:

- Fish and shellfish management programs,
- Data analysis and catch monitoring,
- Enhancement programs such as hatcheries,
- Fish tagging to assist in fish counts, and
- Water quality and fisheries habitat.

Where the commission has run into difficulty, however, is over how to respond to such things as expanded tribal commercial fisheries. This happened in the 1980s and led to considerable tension between various tribes. While the court ruled that half the harvestable fish would go to the State's First Nations, and subsequent court rulings established where different tribes could fish, the court was silent on how the tribal share would be divided. This led to a flurry of intertribal conflicts, Gaertner reports, with a great deal of time getting taken up in crisis negotiations, litigation between tribes, and various emergency court orders.

"Because tribes are competing amongst themselves for portions of increasingly scarce resources," Gaertner wrote, "intertribal conflicts over allocation shares has become time-consuming, inefficient and destructive to both resource stocks and intertribal relationships. Where different tribal groups harvest fish in succession, if no agreements are reached then fishers are encouraged to fish as hard as they can before the fish pass, frustrating management goals. There is a recognition that there is a need for an orderly, predictable and jointly coordinated fishing season, without being disrupted by last minute court challenges and crisis negotiation. The Tribes, fully aware of the desirability of agreeing on a set of institutions or intertribal allocation principles, have made attempts to have discussions to solve this highly contentious issue."

Those attempts have generally taken two forms. The first, Gaertner says, is one in which the Tribes develop overarching principles to solve particular conflicts. The other, Gaertner attributes to author Sara Singleton, who devotes attention to the Boldt decision and its aftermath in her article *Managing Pacific Salmon: The Role of Distributional Conflicts in Coastal Salish Fisheries*. And that is the 'far more mundane, incremental processes through which tribes have found partial solutions to day to day problems . . . [by developing] a messy patchwork of formal and informal, written and unwritten understandings that eventually became the allocational framework that structures the tribes' annual fishing agreements.'

Gaertner contends that cooperation between the Fraser River's First Nations is a "necessary" prerequisite to any viable, long-term and sustainable management of the river's diverse—and in some cases increasingly imperiled—salmon runs.

"In pre-contact times the respectful, cooperative values and principles that governed aboriginal relations to each other and to the resource ensured that the Fishery sustained the people, and was in turn sustained" Gaertner reports. "This has been dramatically disrupted to the detriment of the

Fishery and the aboriginal and non-aboriginal people of British Columbia who rely upon the fishery."

"Whether people are prepared to re-establish right relations is one of the key questions in determining whether a Fraser watershed process will be useful. A facilitated dialogue, aimed at exploring with the First Nations leadership and fisheries personnel what the issues, challenges, strategies and agreements are that could re-build the common ground among the Nations, is a necessary first step."

It is a first step, moreover, that many First Nations themselves acknowledge must be taken. But nobody, including the BC Aboriginal Fisheries Commission, believes that it will be easily resolved.

"A great diversity of viewpoints is represented within these [West Coast] First Nations, from wanting the maximum harvest and economic benefit from these resources, to a strong sense of stewardship for the resources and a strong attachment to local rivers and fish stocks. From the headwaters of the river to where it flows into the ocean, each part of the river provides critical habitat and spawning grounds for the salmon, and thereby equally critical resources for the First Nations."

Conclusion

Conserving salmon resources will always be a challenge, given competing interests for finite resources. Particularly in a day and age when other factors such as climate change and changing ocean conditions are contributing to greater uncertainty about the timing of certain run returns and their estimated strength.

To the extent that we can control outcomes, however, it is clear that conservation-based approaches both in the distant past and in the present show that it is possible to ensure that adequate numbers of salmon do make their way to the spawning beds, helping to perpetuate future runs.

Cooperation between First Nations is vital to ensure that such outcomes are realized. So too is cooperation between various sectors—First Nation, commercial and recreational.

When opportunities have arisen, this report outlines that positive results have been achieved. New models of co-management and cooperation are emerging. Numerous examples of selective, conservation-focused salmon fisheries also abound. The challenge is to build on those achievements and to show through action that conservation objectives can be realized, legally protected rights and interests respected, and fisheries resources equitably shared.

GLOSSARY

AAROM
The Aboriginal Aquatic Resources and Ocean Management program developed in response to a 2002–2003 AFS renewal process. This program provides funding to aboriginal groups to form management organizations that will help them to participate in decision making and advisory processes. It is based on a community driven approach, while adhering to certain requirements related to management practices.

AFS (Aboriginal Fisheries Strategy)
The AFS was a strategy launched by the DFO in 1992. The strategy is meant to provide effective management of the aboriginal fishery, where the DFO manages the fishery and where land claims settlements have not put an effective management regime into place. AFS objectives include greater opportunity for participation in fisheries management by First Nations for FSC fisheries; increased economic opportunity and improved conservation and management of fisheries resources.

First Nations Commercial Fisheries
First Nations have access to the regular commercial salmon fishery through various licence schemes. These include Full Fee Regular Salmon Licences—A Licences, Reduced Fee—A-1 Licences, Northern Native Fishing Corporation Licences and Communal Commercial Licences. First Nations holding any of the above mentioned licences must abide by the same rules and regulations of the commercial fishery as any other commercial fisherman. Within the commercial salmon licences there are licences available to First Nations' fishermen at a reduced fee. But once such a licence is purchased at a reduced fee its value is perpetually locked in at a lower rate than it would command if sold on an open market. This reality means that such licences will not be attractive to all prospective buyers.

First Nations Communal Licences
There are two forms of communal fishing licences held by First Nations. The first is a communal licence for FSC purposes. The second, is a communal/commercial licence, which enables a First Nations community to hold a licence for commercial purposes which may benefit the community holding the licence.

FSC Fishery (Food, Social and Ceremonial Fishery)
All First Nations have a constitutional right to harvest fish and aquatic plants for food, social and ceremonial purposes, subject to measures necessary for conservation and for the purposes of public health or safety. Allocations are defined for species that are important to First Nations and also subject to heavy pressure by other users.

Harvest Agreement
Harvest Agreements are negotiated at the same time as treaties, but are not a part of the treaty, and thereby not protected under the constitution. These agreements create a new form of fishing rights. They set out a First Nations share of the commercial harvest and annual licences to harvest that share. The rights associated with Harvest Agreements mean that aboriginals abide by the same rules and regulations as any other commercial fisherman.

Pilot Sales
Within the AFS, pilot sales were established between the DFO and aboriginal groups. Aboriginal communities were given special communal commercial licences, allowing them to sell specified amounts of fish with consideration of conservation needs as well as monitoring, enforcement and management regimes that were agreed upon between DFO and the Aboriginal communities. Pilot sales were suspended in 2003 following *R. v. Kapp et al.*, which found that these sales were inconsistent with the equality provisions in the "Canadian Charter of Rights and Freedoms". The case is under appeal. The Pilot Sales Program has subsequently been replaced by the Economic Opportunity Program.

Native Brotherhood of BC (NBBC)
Established in 1931 by a groups of coastal villages for the betterment of Native people. The NBBC is Canada's oldest active Native organization and a senior BC fishing organization. The brotherhood has been an influential and powerful voice of Native Fishing Issues on the BC Coast.

Role of Treaty
Various treaty negotiations are underway in BC. The results of each may be different and will have elements that are specific to the First Nations involved and the geophysical environments they find themselves in. Each will likely have impacts on fisheries allocations and management. For example, in the Nisga'a Treaty (which may or may not serve as a model for future agreements), the Nisga'a aboriginal fishery was allocated 10.5 percent of the allowable Nass sockeye catch and 0.6 percent of the pink salmon catch. The treaty also provided for a separate harvest agreement for commercial purposes, with the Nisga'a entitled to 13 percent of the allowable catch of sockeye and 15 percent of pink salmon.

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