

SUSTAINABILITY HIGHLIGHTS

Fish are a key component of the Fraser River ecosystem. They also play an important role in the economic well-being and social fabric of First Nations and other BC communities. The health of fish stocks in the Basin is influenced by the quality of the water (including temperature), the volume and timing of flows, and other elements of habitat. The status of fish stocks is influenced not only by harvest rates and fishing practices, but also the protection of habitat and management of forestry, agriculture, urban development and other human activities. Fish stock abundance has a direct impact on the quality of life of those individuals and communities that rely on fishing for their livelihood.

Sockeye Salmon		GETTING WORSE - Between 1980 and 2006, run size, catch and harvest rates have generally declined after 25-year highs in the early 1990s.
Coho Salmon		GETTING WORSE - Between 1986 and 2004, run size, catch and harvest rates have declined significantly for both Interior (mostly Thompson) and Lower Fraser Coho.
Chinook Salmon		MIXED RESULTS/POOR - Between 1982 and 2004, catch and harvest rates have been higher and more consistent for Interior Fraser stocks than for the Lower Fraser "fall-run" stocks, especially in recent years. Harvest opportunities for fall-run stocks have been reduced because of conservation measures for other salmon stocks and steelhead. ⁱⁱ
Steelhead		POOR - Virtually all summer and winter run stocks are classified as of "Extreme Conservation Concern."
Fraser River White Sturgeon		MIXED RESULTS/POOR - All four Fraser Basin sturgeon stocks were designated as "endangered" by COSEWIC in 2003. Abundance estimates for the Lower Fraser sturgeon population show an increasing trend from 1999-2003 and a declining trend from 2003-2005.
Freshwater Fish Habitat		MIXED RESULTS/POOR - Freshwater habitat has been adversely impacted by a wide range of human activities, including: agriculture and flood management in the Lower Fraser region, forestry and agriculture in the Thompson region, forestry in the Cariboo-Chilcotin and Upper Fraser regions, and hydroelectric dams in the Upper Fraser and Greater Vancouver-Sea to Sky regions.

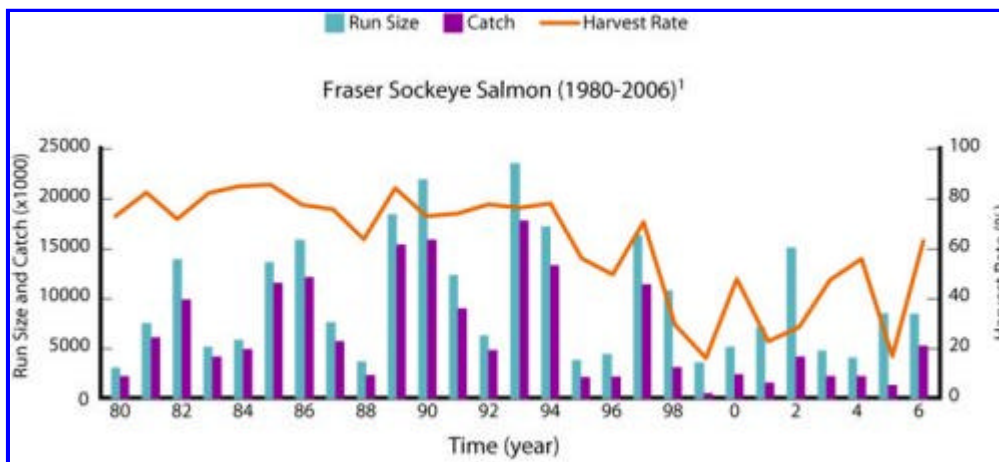
ISSUES AND TRENDS

Salmonid Stocks

The Fraser River is home to one of the most productive salmon fisheries in the world. Salmon are a keystone species in that their migration and numbers influence and reflect the abundance and activity of numerous other species in the ecosystem. They carry special cultural significance for First Nations in the Fraser Basin where a variety of salmon stocks live and spawn. Each of these stocks plays a distinct role in the ecosystem and is subject to different environmental and human pressures. As a result, trends for the different salmon species and stocks vary considerably ([See Aboriginal and Non-Aboriginal Relations](#)).

Sockeye (1980-2006) ¹

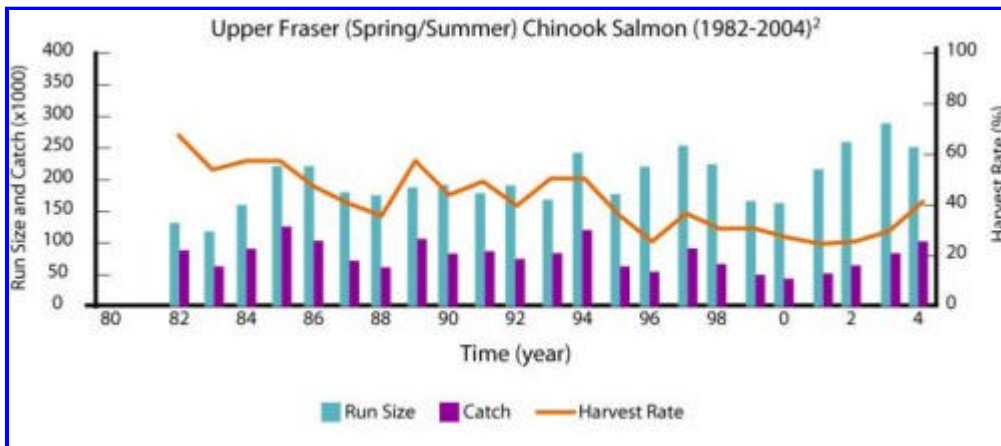
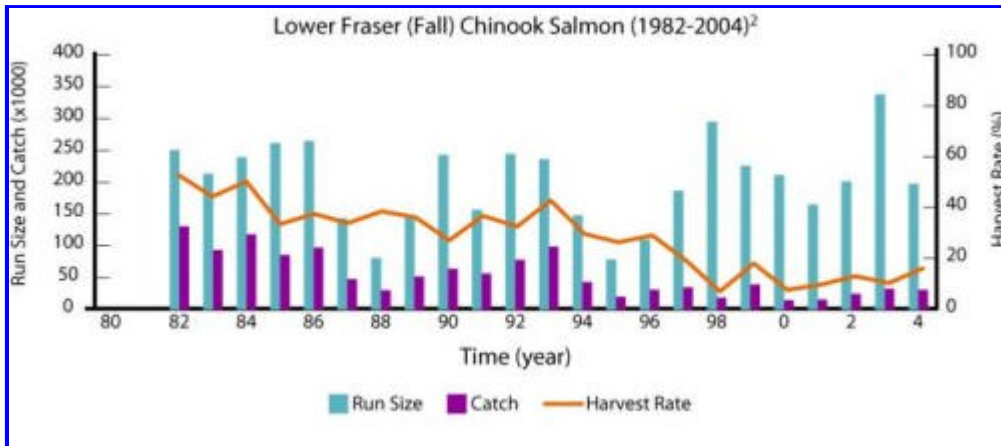
Total annual returns of Fraser River sockeye show a clear four-year cyclic pattern.¹ Since 1981, abundances have been largest on the 2005 and 2006 cycle lines. Abundant cycle lines peaked in the early 1990s at 23.5 million, but have declined in recent years to 8.5 million. The allowable harvest has decreased even more dramatically because of concerns related to high river temperatures, elevated pre-spawn mortality and management measures to protect other depleted stocks (i.e., Cultus and Sakinaw sockeye, Interior coho and steelhead). Preliminary estimates for 2006 indicate that the total sockeye return (8.4 million) was roughly half the expected level. Fortunately, water temperatures were not excessive in 2006, so in-river survival should be higher than that estimated for 2004 and 2005. Recent tagging and tracking studies have documented that in-river survival to spawning grounds is poor (<15%) for late-run sockeye that enter the Fraser River in early August, but good (>90%) for sockeye that enter in mid-late September.



Chinook (1982-2004) ²

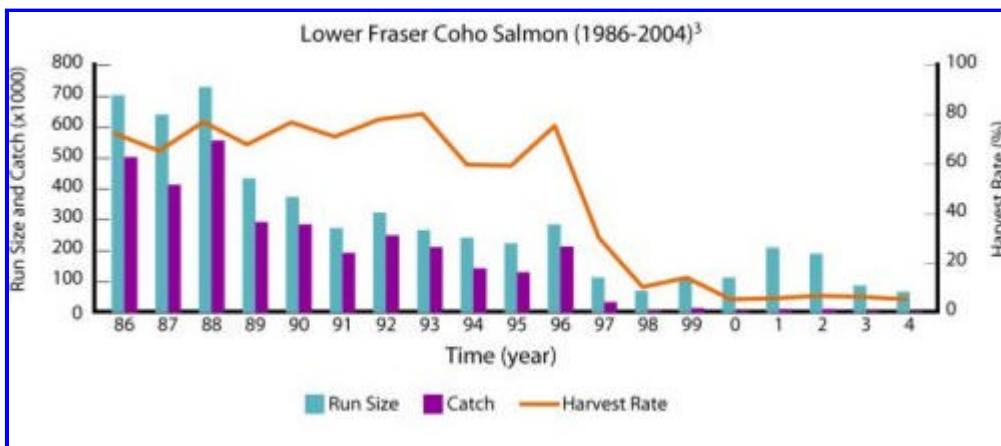
Trends in the abundance of Chinook salmon, catch sizes and harvest rates are very different for Interior Fraser stocks (spring-summer timing) and Lower Fraser (fall timing) stocks. Harvest rates and catches have been higher and more consistent for Interior Fraser stocks than for Lower Fraser stocks in recent years. The lower harvest rates for fall-run Chinook result largely from management measures to protect Cultus sockeye, Upper

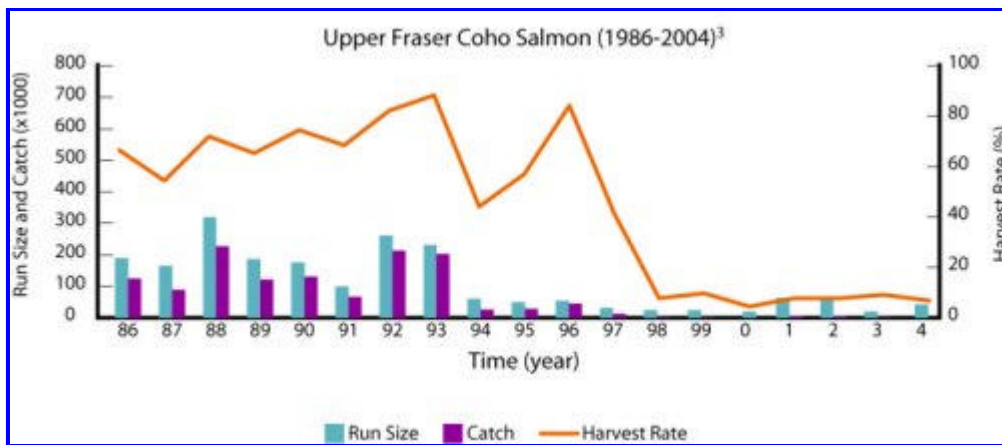
Fraser coho and steelhead.



Coho (1986-2004)³

High harvest rates and poor marine survival in the early 1990s are the prime reasons for the substantial declines in abundance and catches for both Interior and Lower Fraser coho stocks. Continued poor marine survival has kept most coho populations at low levels despite minimal harvests in South Coast fisheries.





Chum (1985-2003) ³

Annual estimates of run size and catch for Fraser River chum have been highly variable since 1996. The abundance of Chum stocks has been increasing since its recent low in 2000, and returns were above the long-term average in 2002 and 2003.

Pink (1981-2003) ³

In many years between 1981 and 2003, the numbers of pink salmon returning to the Fraser River have been greater than the combined abundance of all other salmon species. In recent years, poor market prices have resulted in limited harvesting efforts and record escapements.

Steelhead (2005) ⁴

Most of the Fraser River steelhead populations are classified as "Extreme Conservation Concern," including 12 of 14 summer-run stocks and 12 or 13 winter-run stocks).ⁱⁱ In 2005, the Nicola stock was the only steelhead population to show a significant increase in abundance.

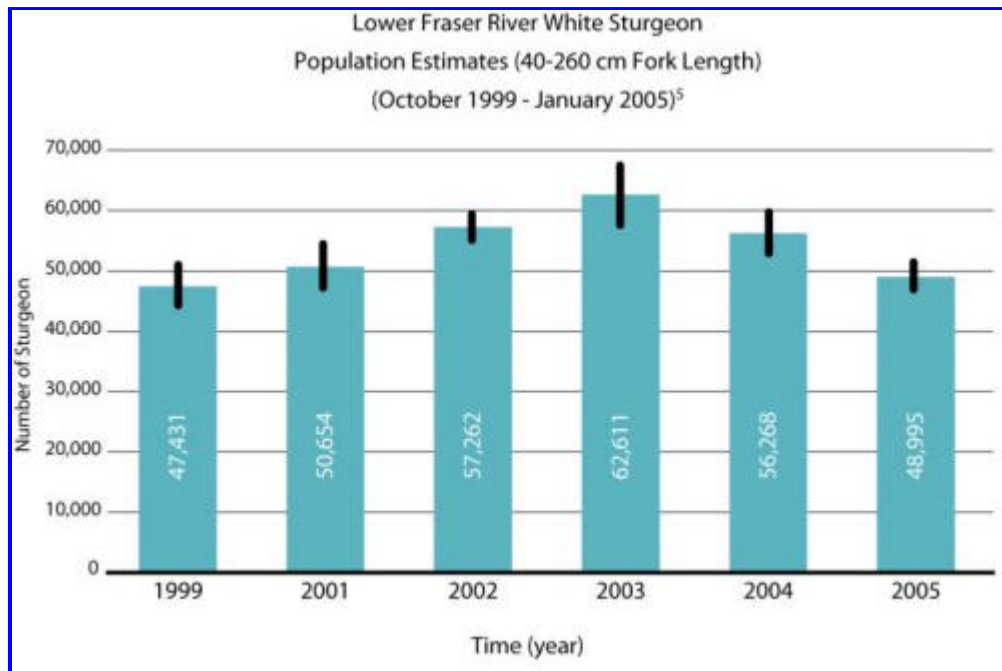
Fraser River White Sturgeon (1995-2005) ⁵

White sturgeon are the largest freshwater fish in North America, attaining lengths in excess of 6 m, weights of over 600 kg, and lifespans of over 150 years. Although they can tolerate both fresh and salt-water environments, white sturgeon spawn only in fresh water; thus, they are entirely dependant on the continued health of the freshwater ecosystem and the integrity of critical in-river habitats.

There are six distinct "stock groups" of white sturgeon in Canada: Kootenay River, Columbia River, Nechako River, Upper Fraser River, Middle Fraser River, and Lower Fraser River. In 2003, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) designated all six of these stocks as "endangered." In 2006 the federal government announced that four of the stock groups were to be "listed" and receive federal protection under the Species At Risk Act (SARA). The decision not to list the Middle and Lower Fraser River stocks of white sturgeon under SARA was based on potential socio-economic impacts of the listing on Aboriginal, commercial, and recreational fisheries.

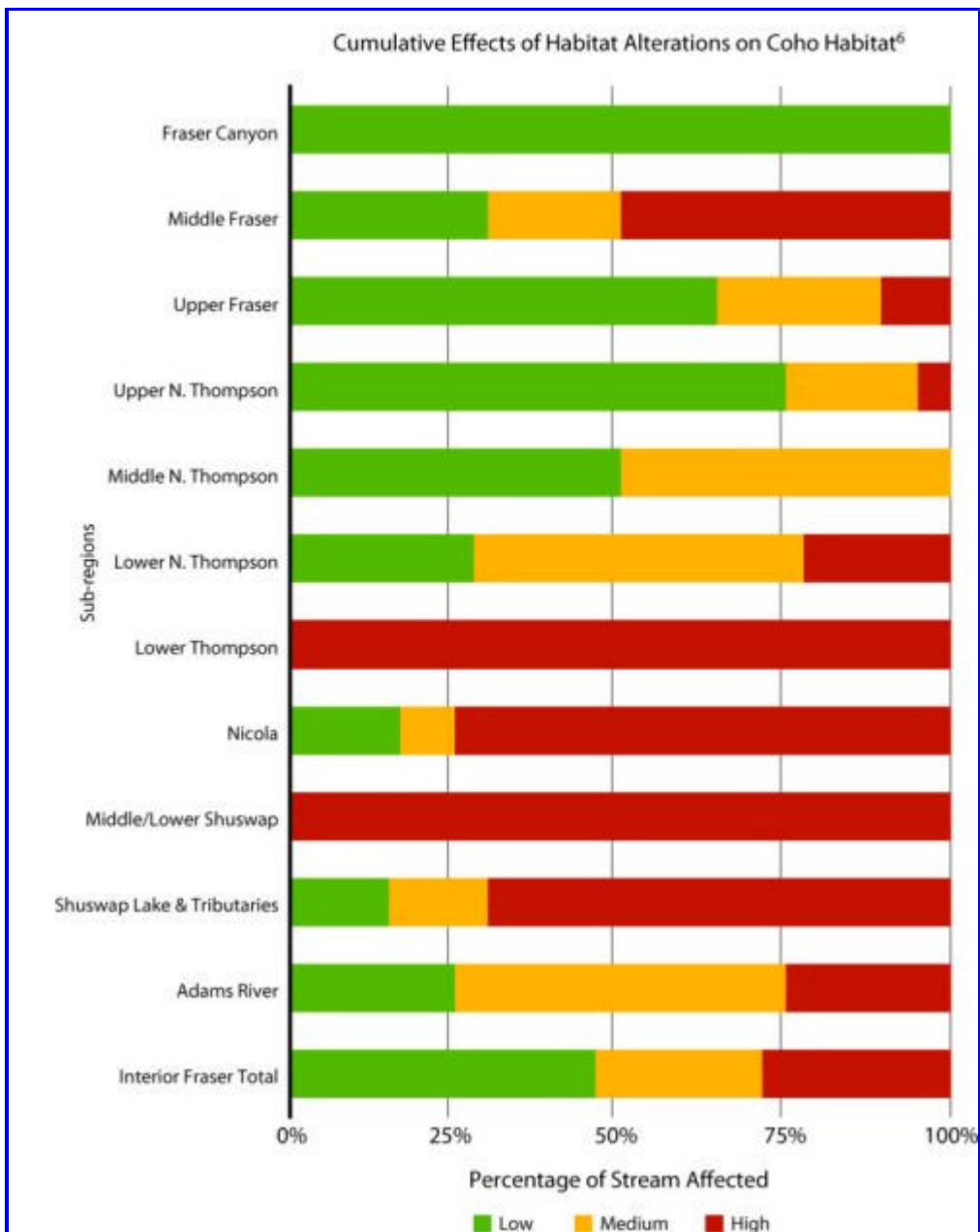
Current stock status information for white sturgeon suggests that the Upper and Middle Fraser stocks of white sturgeon are low (approximately 800 and 3,700, respectively) and stable, but vulnerable to changes in habitat

and environmental conditions. The Nechako River stock is critically endangered (less than 600 remaining, with little or no recruitment since the 1960s). The current population of Lower Fraser white sturgeon (approximately 49,000) is a fraction of historic abundance. Abundance estimates for Lower Fraser sturgeon population show an increasing trend from 1999-2003 and a declining trend from 2003-2005. The growth rate of Lower Fraser sturgeon individuals has also declined in recent years. Growth is likely related to availability of key food sources. Eulachon abundance in the Lower Fraser has been at critically low levels since 2002.



Freshwater Fish Habitat ⁶

A wide variety of land use activities have, over many years, resulted in damage and loss of stream habitats for salmonids throughout the Fraser Basin. This is particularly evident in the Lower Fraser region where agriculture and flood management practices have resulted in fragmentation and total loss of rearing habitats. Salmon habitats in the Interior Fraser (particularly the Thompson drainage) have also been heavily impacted by forestry and agriculture, as well as linear and hydroelectric development. Excessive water withdrawals in some watersheds are an impediment to recovery of salmon. In addition, some smaller, genetically unique sockeye stocks have been seriously impacted by habitat alterations since the early 1900s, including extinction (e.g., Coquitlam, Alouette sockeye). Salmon-rearing wetlands on the Fraser have also suffered substantial human-caused losses. These impacts have been cumulative and continue to outstrip habitat recovery measures.



INSPIRED ACTION

What is being done?

→ The Wild Salmon Policy (WSP) is intended to achieve three primary goals: 1) safeguard the genetic diversity of wild Pacific salmon; 2) maintain habitat and ecosystem integrity; and 3) manage fisheries for sustainable benefits. Successful implementation of the policy will require considerable work and leadership from all sectors. Consultations are underway regarding the definition of conservation units and management targets for Fraser salmon. The Pacific Fisheries Resource Conservation Council has commissioned several studies relating to the habitat assessment component of WSP. In 2006, workshops were conducted by DFO to develop a WSP

Integrated Strategic Planning process for Fraser River sockeye. The challenge is to find the common ground among all interested parties and work together towards the successful implementation of WSP.

- The Fraser Salmon and Watersheds Program presents new opportunities to implement priority activities to advance sustainable fish stocks and fisheries in the Fraser River Basin. This program is a collaboration of the Pacific Salmon Foundation, the Fraser Basin Council, First Nations and local project partners, with funding from the provincial government, federal government, the Pacific Salmon Endowment Fund Society and others.
- The Fraser River Sturgeon Conservation Society is a not-for-profit charity dedicated to the conservation and protection of wild Fraser River white sturgeon and their habitat. This goal is addressed through stewardship activities, public education, research, communication of results and by addressing key issues facing sturgeon. The Society's volunteer-driven Lower Fraser River White Sturgeon Monitoring and Assessment Program has coordinated activities and in-kind contributions from all fishing sectors to produce one of the most comprehensive data sets on white sturgeon in the world: www.frasersturgeon.com/home.html.
- BC Hydro's Bridge-Coastal Restoration Program (BCRP) has funded over 100 projects addressing footprint impacts to fish and wildlife and their habitat. In accordance with BCRP watershed restoration objectives, these projects reduce impacts by maintaining or restoring natural habitat-forming processes. BCRP also supports research to fill information gaps in strategic planning, identify limiting factors and define restoration objectives and conservation measures.

What else can we do?

- Access the Think Salmon initiative to learn what individuals and communities can do to safeguard sensitive ecosystems (see cover story): www.thinksalmon.com.
- Support sustainability in the fishing sector by making informed consumer choices about seafood purchases: see Canada's Seafood Guide at www.seachoice.org.
- Contact a local stewardship group and volunteer with a habitat restoration or species recovery initiative.
- For those in government, establish incentives to promote and reward sustainable fishing practices, including the use of precautionary management principles in the fisheries, less by-catch, and better habitat protection.
- Governments can ensure that land use planning considers environmentally sensitive areas and that waste water systems do not harm fish or their habitat.
- For those who own or manage land, ensure that riparian areas are well stewarded and that water conservation measures are used.

Adams River Salute to the Sockeye

In October the rich red colours of fall accent both the landscape-and the waters-of the Adams River. Sockeye salmon, dressed in crimson and green, come here to spawn and die after a gruelling 500-km river journey from the Pacific Ocean. It's a natural drama, witnessed by visitors from all over BC, other parts of North America and as far away as Japan, Taiwan and Europe. The Adams River Salmon Society hosts a "Salute to the Sockeye" at Roderick Haig-Brown Park (outside Chase in the Thompson region) during the migration. The event is becoming ever more popular with families and school children who arrive in busloads to learn about salmon. With the number of visitors climbing, one of the Society's current projects is to transform a log house on the site into a permanent interpretive centre.



MOU a significant step for First Nations and Commercial Fishery

In 2006 representatives of First Nations and the commercial fishery found common ground through collaborative efforts. For the first time, the Commercial Salmon Advisory Board and First Nations on the Fraser River negotiated an MOU on conservation, management and allocation of Fraser River salmon, with an initial focus on Cultus Lake sockeye. The MOU calls for the establishment of a "Salmon Table" where the parties will work together to improve the management of Fraser River salmon fisheries through respectful dialogue, learning and action. Conservation initiatives related to Cultus sockeye include: increasing the release of smolts from 50,000 to 150,000, removing milfoil and predatory pikeminnow from Cultus Lake, and monitoring groundwater and water quality. Through the sale of sockeye in 2006, the commercial salmon industry raised \$700,000 to help fund the initiatives.



REFERENCES

1. Sockeye run size, catch and harvest rate estimates 1980-2004 (Paul Ryall, DFO, pers. comm.), 2005-06 (Mike Lapointe, PSC, pers. comm.).
2. English, K.K., R. E. Bailey, and D. Robichaud. 2006. Assessment of Chinook returns to the Fraser River watershed using run reconstruction techniques, 1982-04. Report prepared by LGL Limited for Department of Fisheries and Oceans, Nanaimo, BC.
3. English, K.K., A.C. Blakley, C. Sliwinski, and S. Humble. 2006. Fisheries Resource Manuals - South Coast. Report prepared by LGL Limited for Department of Indian Affairs and Northern Development. Vancouver, BC.
4. Steelhead Status-Ahrens, R. 2004. The status of steelhead trout in British Columbia (winter 2004). Report prepared by University of British Columbia for Pacific Fisheries Resource Conservation Council, Vancouver, BC.
5. Sturgeon Status. Troy Nelson, Fraser River Sturgeon Conservation Society, pers. comm.).
6. Freshwater Habitat-Interior Fraser Coho Recovery Team. 2005. Species at risk proposed recovery strategy: Coho salmon interior Fraser River populations, Fisheries and Oceans Canada.

FOOTNOTES:

- i. Four-year cyclic pattern-a pattern in the annual sockeye returns reflecting that most Fraser sockeye mature and return to spawn at age four.
- ii. Extreme Conservation Concern-Steelhead stocks believed to be at 15% or less of habitat capacity and likely subject to extinction.