

SARA LISTING SUMMARY

Species:

- Cultus Lake Sockeye
- Pacific Region

Description, Status, Threats¹:

- Single-lake (Cultus Lake, lower Fraser Valley) genetically distinct population of sockeye which migrates with other late-run sockeye populations.
- COSEWIC assessment is Endangered. Assessment is not disputed, as the population of returning adults declined by 92% between 1995 and 2002.
- Primary threats have been and are: high pre-spawn mortality due to early migration into freshwater and *Parvicapsula* parasite infestation; overexploitation prior to 1995; pike minnow predation within Cultus Lake; and ecological impacts to the lake habitat from colonization by Eurasian Water Milfoil, land development, stream channelization, nutrient input and recreational use.

Key Listing Considerations**Probability of Recovery**

- The future status of this population will depend to a large degree on late run migratory behavior and pre-spawn mortality levels, but otherwise, if pre-spawn mortality remains at the level of recent years (less than 50%), recovery may be rapid with continued implementation of recovery measures, even withstanding some exploitation.
- Long-term declines in productivity on sockeye are predicted from effects climate change and ocean conditions.
- Recent climate change modeling indicates a long-term trend to decreasing sockeye spawner success, stating: "By the end of the century it is expected that at least every second year will have conditions that are more detrimental to spawning than the worst year in the normal period."

Biodiversity

- Cultus Lake sockeye is a genetically and biologically unique population of salmon, considered a 'species' by COSEWIC and SARA.
- Cultus Lake is one of about 220 lakes with anadromous sockeye populations in British Columbia.
- the loss to biodiversity of this one population would be small but irreplaceable, experience with re-introduction of sockeye salmon demonstrates a very low success rates.
- Actions to protect this population may lead to increased abundance of similar migratory stocks.

¹ COSEWIC, in the published reason for designation.

Economic Impacts

***Note: at the date of this writing, August 20, 2004, the following estimates of impacts on the fisheries are being refined to better reflect a range of incremental effects of legal listing on various harvesting scenarios. The incremental effect of listing hinges to a large degree on the likelihood of the ability to issue incidental harm permits under s.73 of the Act in any given year.**

- Current restrictions to fisheries required to protect and recover Cultus sockeye is estimated to create potential lost revenue of up to \$28M in the commercial harvesting, processing and recreational fisheries over the next four years.
- In 2006, when higher returns of Fraser River sockeye are expected, the potential loss of revenue to the harvesting and processing sectors in this one year may be more than \$15M.
- Many of the restrictions associated with protecting Cultus sockeye are already in place and some economic losses are occurring. Fisheries restrictions and economic losses may be further realized by implementation of the Wild Salmon Policy regardless of whether these species are legally listed or not.
- Under legal listing, these economic losses will persist and may increase to up to double the current level if the populations do not recover. Once listed on schedule 1 of SARA, a species designation can only be changed by another assessment by COSEWIC.
- With a listing there would be very limited flexibility to mitigate the socio-economic impacts during the recovery process. The ability to issue incidental harm permits under s. 73 of SARA is questionable. Therefore current restrictions on fishing to protect the stocks may have to be extended both geographically and in duration in order to prevent any capture of fish, either directed or as a bycatch.
- The science is unclear as to what would constitute a viable self-sustaining population. What is clear is that fishing restrictions would be in place until such time as COSEWIC lowers their designation once the stock has recovered to a point yet to be determined, or deems that the stock has gone extinct. In either case the length of time the restrictions would be in place would be extensive.
- Of the predicted revenue loss, an estimated loss of \$10 million will be foregone value-added revenue to BC processors and an estimated foregone expenditure of \$5 million in the recreational sector over a four-year salmon cycle.
- First Nations participating in commercial fisheries will be impacted as they hold 25% of southern commercial licences and 30% of employment in the processing sector.

First Nation FSC Impacts

Marine and Approach Areas Downstream of the Vedder River

- It is anticipated that fisheries access to certain stock groupings may be limited by time restrictions. It is also anticipated that FSC allocations can still be reached by providing access to other Fraser River stock grouping or other stocks, however, this may not be consistent with the First Nations preferred fishing locations and/or time.

Up River of Vedder

- Depending on location, many of these First Nations are likely to have access to large returns in local areas due to increased returning salmon.

Local Area

- In the terminal area, there is no local First Nation who has, in recent years, requested harvesting access to this stock. However, should such access be requested, harvesting would be restricted, or possibly prohibited. The Sto:lo Nation support listing of the Cultus Lake sockeye and have supported the current restrictions on harvesting this stock. In addition, the local First Nation, the Soowahlie Band, supports listing and understand the implications on harvesting in the area. Other impacts: The Soowahlie Band operates a RV/campsite on Swelzer Creek, which Cultus sockeye use to access Cultus Lake. There may need to be a need to restrict recreational access to the creek in August/September months when water temperatures are high, as recreational activities have the potential to delay migrating sockeye in sub-lethal temperature water.

Distributional Analysis

- Restrictions to Juan de Fuca, Johnstone and Georgia Straits, and Fraser River (downstream of the Vedder River) fisheries would result in an increased return of sockeye to more terminal areas in the Fraser River, resulting pressure to review allocation policies in light of emerging treaties and the Joint Task Group recommendations.
- However, restrictions will have significant impacts on fisheries-dependent north-east Vancouver Island coastal communities.

Costs to Government

- Fishery management and enforcement costs are expected to increase with legal listing.
- Costs for recovery measures, such as broodstock collection, habitat improvement, monitoring and science, are potentially substantial, and would be expected to occur whether the population is legally listed or not (e.g., \$250K per year based on 2004, though a portion will be spent on one-time capital expenditures). Costs may increase if population continues to decline.
- Litigation costs are anticipated if legal challenges from environmental and Aboriginal groups proceed.

Public and Stakeholder Positions

- Some aboriginal fishery stakeholders, particularly those involved in the commercial fishery are largely opposed to this listing, but others, like Soowahlie Band members, are very supportive, and were sponsors of the emergency listing of Cultus by COSEWIC.
- Most commercial fishery stakeholders strongly oppose this listing.
- A low level of opposition from recreational fishery stakeholders is anticipated.

- Environmental and stewardship groups strongly support this listing.
- The government of BC may oppose the listing because of potential impacts on economic development, but the department is waiting for a response from a letter sent in early August formally requesting their position on legal listing.

SARA BENEFIT AND COST ANALYSIS OF LISTING

Benefits:

- Maintain and strengthens the genetic biodiversity of the species.
- Would demonstrate to Canadians the government is committed to Species at Risk legislation and protecting biodiversity.
- Demonstrates Canada's commitment to living up to its obligations under the Biodiversity Convention.
- Actions to protect this population may lead to increased abundance of similar migratory stocks which would provide an increase supply of salmon for present and future harvesters as well as an increased source of jobs, income and profits in direct and indirect affected sectors.
- Reduced exploitation rate resulting from listing would result in larger returns for First Nations upstream of Cultus Lake.
- Increased marine-derived nutrients to Cultus Lake would contribute to the productivity of the Cultus Lake ecosystem.
- Habitat and stewardship activities would result in better water quality for human consumption.
- Listing this population, and the resulting recovery efforts, could help support initiatives to certify BC salmon fisheries under the Marine Stewardship Council, as one of the MSC criteria examines impacts on co-migrating stocks.

Summary of impacts and risks

Sector	Impact	Risk
First Nations	Medium	High
Fishing Industry	High	High
Land Use & Development	High	Medium
Tourism & Recreational	Low	Low
Forestry	None to Low	Low
Agriculture	Low	Low
Mining	Low	Low
Aquaculture	N/A	N/A
Coastal Communities	High	High

Costs:

First Nation FSC Impacts

Marine and Approach Areas Downstream of the Vedder River

- **Impact: Medium**
- Nature of Impact: It is anticipated that fisheries access to certain stock groupings may be limited by time restrictions. It is also anticipated that FSC

allocations can still be reached by providing access to other Fraser River stock grouping or other stocks, however, this may not be consistent with the First Nations preferred fishing locations and/or time.

- **Risk: Medium**

Up River of Vedder

- **Impact: None**
- Nature of Impact: Depending on location, many of these First Nations are likely to have access to large returns in local areas due to increased returning salmon.
- **Risk: None**

Local Area

- **Impact: Medium**
- Nature of Impact: In the terminal area, there is no local First Nation who has, in recent years, requested harvesting access to this stock. However, should such access be requested, harvesting would be restricted, or possibly prohibited. The Sto:lo Nation support listing of the Cultus Lake sockeye and have supported the current restrictions on harvesting this stock. In addition, the local First Nation, the Soowahlie Band, supports listing and understands the implications on harvesting in the area. Other impacts: The Soowahlie Band operates a RV/campsite on Swelzer Creek, which Cultus sockeye use to access Cultus Lake. There may need to be a need to restrict recreational access to the creek in August/September months when water temperatures are high, as recreational activities have the potential to delay migrating sockeye in sub-lethal temperature water.
- **Risk: Low**

Fishing Industry

- **Impact – High**
- Nature of Impact: Mixed-stock fishery restrictions will be necessary, primarily in Johnstone and Georgia straits.
- Restrictions to protect Cultus sockeye will result in an estimated loss of gross revenue of 28.0 million² (decrease of 12% of projected industry revenue value) over a salmon cycle (four years) which will be borne by the commercial harvest sector (48%), salmon processing sector (35%) and recreational sector (17%). If listed, Cultus sockeye would require more than one generation to recover.
- Fish not harvested in Johnstone and Georgia straits may be harvested in more terminal areas under new allocations rules.
- Commercial harvest: Fraser River sockeye provide an estimated 75%-80% of the total landed value in the following commercial fishing management areas: B, D, E and H.
- These four areas consist of 1,012 eligible salmon licences, which are owned and operated by 906 licence holders. Almost 50% of these licence holders relied on Fraser

² \$2.0 million revenue loss in 2004; \$9.0 million revenue loss in 2005; \$15 million revenue loss in 2006; and \$2.0 million revenue loss in 2007.

⁵ Source: BC Stats, "2001 Economic Dependencies and Impact Ratios for 63 local Areas."

River sockeye for less than 25% of their fishing income in 2003; the majority had fishing incomes of more than \$30,000.

- First Nations will also be affected by foregone commercial fishing revenues, as they hold 25% of southern commercial salmon licences.
- Southern salmon harvesting processing sector: The sector will continue to suffer, as 2004 is anticipated to be the tenth consecutive year that economic returns have been negative. There are 103 wild salmon processing plants across BC however, it is anticipated that only those in the following geographic areas will be significantly affected: North Vancouver Island, Mid Vancouver Island, South Vancouver Island, Victoria & outlying areas, Sunshine Coast, and Vancouver & outlying areas. These 6 geographic areas account for 75% (77 plants, 13 of which process only wild salmon) of the entire wild salmon processing plants in B.C. which provide an estimated 1,141 to 1,205 person years of employment. Seafood processing (including wild salmon) accounts for nearly 20% of the value of food manufacturing activity in the province.
- First Nations will also be affected by loss of employment opportunities or income, as they hold 30% of the positions within the processing industry. Future commercial fishing opportunities may also be lost.
- Recreational Sector: This will be less severely affected, with impacts primarily in the Juan de Fuca and Georgia straights due to sockeye non-retention restrictions.
- **Risk – High**

Land use and development

- **Impact - High**
- Nature of Impact: Future developments surrounding Cultus Lake will need to be reviewed by DFO to ensure they will not adversely affect recovery. Water use is a potential concern; alternative water management systems may need to be considered. This could include upgrading septic tanks and developing sewage treatment facilities.
- **Risk – Medium**

Tourism and recreational

- **Impact – Low**
- Nature of Impact: Cultus sockeye spawn on the beach of Cultus Lake in late fall, so beach use restriction is anticipated to be minimal. Listing may result in increased costs for campground owners and other tourist facilities through water use concerns (see land use and development, above)
- **Risk - Low**

Forestry

- **Impact – None to Low**
- Nature of Impact: Future logging activity on or near Cultus Lake would need to be reviewed by DFO to ensure it is not adversely affecting recovery.
- **Risk - Low**

Agriculture

- **Impact – Low**

- Nature of Impact: There may be costs incurred through pesticide restrictions used in farming practices should water quality be shown to adversely affect recovery.
- **Risk - Low**

Mining

- **Impact - Low**
- Nature of Impact: There is one mining company located on Cultus Lake. There may be restrictions on fuel and lubricant use if future research indicates this activity is adversely affecting water quality.
- **Risk - Low**

Aquaculture

- **Impact - NA**
- Nature of Impact
- **Risk - NA**

Coastal Communities

- **Impact - High:**
- Nature of Impact: Coastal communities, especially on the north-east coast of Vancouver Island are heavily dependent on fishing harvest revenue for economic revenue generation. For example, the percent of basic and non-basic income fishing dependence in the following regions are: Port Hardy (4%, fourth most important industry), Port McNeil (4%, fourth most important industry) Alert Bay (15%, second most important industry)⁵.
- The majority of the impacts (total number of people affected) are expected to be realized in the Vancouver-Lower Mainland region. However, the coastal communities identified are anticipated to be hardest hit due to heavy dependence on the salmon harvest for income and employment within their local economies.
- Impacts to these communities will include direct revenue and jobs, indirect impacts through supporting business and decreased tax revenues.
- **Risk - High**

Federal-provincial considerations:

- It is anticipated the current BC government will react negatively to a decision which implies significant new restrictions on fishing, logging and recreational development, but a letter from the DFO Deputy Minister has solicited a formal response.

Government Issues/Long-term considerations:

- **Impact - High**
- Nature of Impact: There will be a significant increase in costs resulting from developing and implementing recovery strategies. For example, DFO would have to increase enforcement, science, stock assessment and fishery management measures to monitor and take proactive recovery measures to protect Cultus Lake sockeye (i.e. broodstock protection, habitat improvement, monitoring and science which can each cost upwards of \$250K/year - based on 2004).

- Additional domestic fisheries management measures may have to be implemented to take into account US catch of Cultus sockeye.

Other listing considerations:

- The future status of this population will depend on late run migratory behaviour and pre-spawn mortality levels. However, if mortality remains at recent levels, recovery may be rapid with continued implementation of recovery measures.
- Once listed under SARA, the population can only be down-listed via another COSEWIC assessment.
- Once listed on schedule 1, government is committed to recovering and protecting the species until COSEWIC changes the designation down to Special Concern or Not at Risk, or up to Extinct. It is possible that recovery of Cultus may take a very long time, or worse, slowly decline, thereby locking in increasingly harsh restrictions on economic activity that affects survival or recovery of the population.
- Whether or not Cultus is listed will set a precedent for other stock listings. (One precedent has already been set by the listing of Inner Bay of Fundy Atlantic salmon).
- The parties interested in this population have highly polarized positions and any decision will create controversy.
- The Minister of Environment has final decision on what recommendation to make to Governor-in-Council.

Consultations and Results:

- First Nations: Interior groups have expressed support for conservation measures, while coastal First Nations throughout southern British Columbia and in the lower Fraser River have expressed alarm at the impact closures would have on FSC fisheries.
- Commercial fishing industry: It is anticipated this sector will strongly oppose listing this population, believing that fisheries should not be managed to the exclusion of other factors. They are also concerned about First Nations' fisheries, enforcement, recovery feasibility and compensation for lost income as a result of listing. Overall, the respondents predicted severe social and economic hardship as a result of legal listing.
- Recreational fishery stakeholders: Their views depend on the extent to which a sockeye catch and release fishery can be implemented.
- Environmental groups: It is anticipated groups will strongly support this listing, and can be expected to initiate litigation (as will Soowahlie Band) if this population is not listed.

SARA Listing Recommendation:

- Do not add to schedule 1 of SARA.