Credit: Jan Vozenilek.jpg

ECOLOGICALLY SIGNIFICANT AREAS | CASE STUDY:

THE HEART OF THE FRASER

Produced by Northern Confluence Initiative[1]

Case studies have been developed to inform the federal government consultation on the regulatory process to establish "ecologically significant areas" under Section 34 of the *Fisheries Act*. An ESA designation could provide additional conservation and long-term protection, through regulation, to better protect fish and fish habitat in candidate areas that are sensitive, highly productive, rare or unique.

I. OVERVIEW

The Fraser River is the largest salmon producing watershed in Canada and stretches across the ancestral and unceded territories of the Dakelh, Secwepemc, Tsilhqot'in, St'atl'imc, Nlaka'pamux, Stó:lō, and Coast Salish Peoples. Major tributaries of the Fraser include the Nechako, Quesnel, Chilcotin, Thompson, and Nicolum Rivers.

Conservationists and the Stó:lō Nation have long advocated for the protection of the Heart of the Fraser[2]. In recent years, different populations of Fraser River salmon, including coho, sockeye and Chinook have been designated as threatened, endangered, or of special concern, with Interior Fraser River steelhead on the brink of extinction[3]. The Big Bar rockslide of 2019 has further threatened most upper Fraser salmon stocks that migrate through the Heart of the Fraser[4].

Fraser salmon are an important economic driver as the value of salmon harvested in the Lower Fraser are estimated at a value of $12 million dollars per year. The current value of harvested salmon that originate from the Lower Fraser is only a fraction of their full potential as most populations have suffered long declines in abundance which has drastically reduced the quantity of salmon harvested[3]. Designating the Heart of the Fraser as an Ecologically Significant Area could support the protection and restoration of the watersheds abundance.

II. DESCRIPTION OF AREA

The Fraser River is over 1,300 kilometres long and the watershed makes up a quarter of the size of the entire province of B.C. With headwaters in the Rocky Mountains, hundreds of tributaries join the mainstem which are primarily driven by snow melt. This results in the Lower Fraser rising by several meters in the spring, which connects and creates important habitats in parts of the Heart of the Fras-

[1] Authored by Nadia Nowak and Nikki Skuce. Reviewed by Lina Azeez, Watershed Watch Salmon Society; Justine Nelson and Roberta Webster, Rivershed Society of BC.

[2] "Heart of the Fraser Development Stopped," 2019, https://bcwf.bc.ca/heart-of-the-fraser-development-stopped/.

[3] Raincoast Conservation Foundation, "Toward a Vision for Salmon Habitat in the Lower Fraser River," (2020).

[4] UVic Environmental Law Centre, "Submission to Bc's Minister of Forest, Lands, and National Resources and Rural Development to Designate the Fraser River from Hope to Below Chilliwack as a Provincial Wildlife Management Area.," (2021).

er that are unconstrained by dikes[3]. The Heart of the Fraser is within the Lower Fraser River which makes up only 5% of the whole watershed but supports more than half of the watershed's Chinook and chum, 65% of its coho, 80% of its pink, and significant stocks of sockeye salmon[3].

The Heart of the Fraser is an over 80 kilometre stretch of the river that extends from Hope to Mission and is within the unceded traditional territory of the Stó:lō Nation. The Heart of the Fraser begins just upstream from Hope where the river turns into a broad flat valley known as the gravel reach. As the river slows here, the majority of gravel the river is transporting settles out. This process is what created much of the Fraser Valley over the past 10,000 years[3].

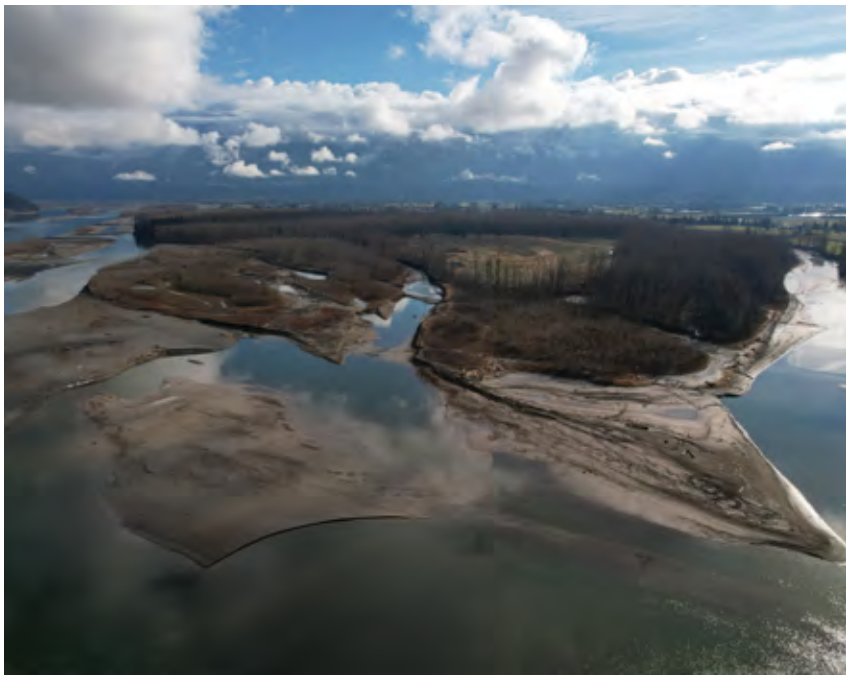

Figure 1: Aerial view of the Heart of the Fraser (copyright Watershed Watch).

It is known to be one of the most productive stretches of river in the world and includes the last few un-diked islands within the Lower Fraser River. The Heart of the Fraser is a complex and dynamic landscape of floodplains, side channels, wetlands, gravels bars and islands. Hundreds of millions of juvenile salmon from populations throughout the watershed feed, adapt to the marine environment, and evade predators in habitats within the Heart of the Fraser. It is a unique and sensitive ecosystem that supports more than 30 species of fish, extensive bird populations, amphibians and wildlife. This includes the endangered Thompson River Steelhead, the endangered white sturgeon, and millions of pink salmon that spawn directly in the Heart of the Fraser every second year.

The Heart of the Fraser contributes to the health of the whole watershed as it provides both rearing and spawning grounds for fish that are of significant cultural, ecological and economic value throughout.

III. ECOSYSTEM SERVICES PROVIDED

- The Heart of the Fraser is a critical rearing ground for hundreds of millions of Chinook and other juvenile salmon as they make their journey to the ocean in the spring. Eddies, shallows, side channels, sloughs and islands provide important refuge.
- During the spring freshet, islands within the Heart of the Fraser become submerged and create a vegetation rich nursery habitat for juvenile salmon to feed and hide from predators.
- Gravel bars within the Heart of the Fraser are spawning grounds for salmon and white sturgeon.
- The region provides important overwintering habitats for Pacific White Sturgeon who burrow in gravel beds between islands. The largest concentration of white sturgeon in Canada is found within the Heart of the Fraser[4].

IV. CONSERVATION AND PROTECTION OBJECTIVES

In line with the federal and provincial government's commitments to UNDRIP and DRIPA, all efforts to conserve and protect the Heart of the Fraser should be done in government-to-government collaboration with Indigenous Nations.

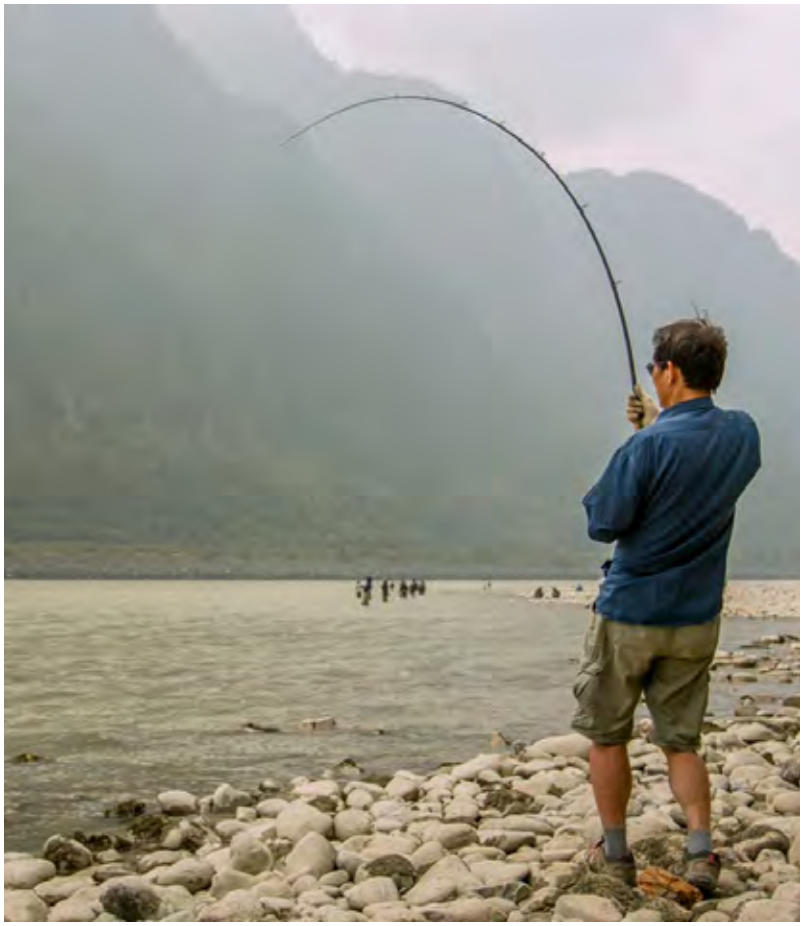

Figure 2: An angler fishing in the Heart of the Fraser (copyright Watershed Water)

- No further loss of salmon habitat within the Heart of the Fraser, including no further diking. Existing diking has changed the flow of water, reduced connectivity and cut off salmon from 85% of their historical floodplain habitat in the Lower Fraser River[5].
- Protect the ecological integrity of all habitat within the Heart of the Fraser.
- Scientists have pointed out that the entire Heart of the Fraser gravel reach needs to be protected as the islands and the riverbed are interconnected and transitory. The five islands today may not be there in 300 years, but could be replaced by five new islands. Thus a conservation objective is needed around maintaining environmental flows in this section of river to allow natural fluvial processes to continue unimpeded so the continual process of deposition, island formation and island erosion is not disrupted[6].
- 100% of shoreline and foreshore vegetation of the river and islands within the Heart of the Fraser must be maintained as it provides critical fish habitat through cover and shading that maintains stream temperature.
- Impact assessments for development projects proposed in the Heart of the Fraser must include the cumulative effects of upstream and downstream activities, including: agriculture, forestry, pipelines, railway and road networks, urban and port development.
- Do not build dikes and bridges in the sensitive habitats and surrounding waters of Herrling, Carey, Strawberry, Paulson and Minto Islands.
- As islands within the Heart of the Fraser are critical fish habitat themselves due to their annual provision of feeding and rearing habitat during the spring freshet, they should be designated as part of the main stem and thus put under protection.

[5] R. J. Finn, Chalifour, L., Gergel, S. E., Hinch, S. G., Scott, D. C., Martin, T. G., "Quantifying Lost and Inaccessible Habitat for Pacific Salmon in Canada's Lower Fraser River," *Ecosphere* 12, no. 7 (2021).

[6] M. Church and P. R. Stephen, "Form and Growth of Bars in a Wandering Gravel-Bed River," *Earth Surface Proceses and Landforms* 34, no. 10 (2009).

V. THREATS:

- There are a number of development proposals that would further establish the Lower Fraser as a corridor for the transportation of fossil fuels, including the Transmountain Pipeline which would run through the Fraser watershed nearly its entire length. In the event of a rupture, it is likely oil would be transported downriver, bind with sediments, and deposit on the river bottom.
- Projects that are not directly within the 80 kilometre stretch of the Heart of the Fraser but would contribute to cumulative impacts include: The Fraser Surrey coal docks, WestPac LNG, the Vancouver Airport Jet fuel terminal, Roberts Bank and the proposed Terminal II expansion[3].
- Further agricultural and urban development would exacerbate existing water quality and quantity issues.
- Development and diking of Carrey, Herrling and Strawberry islands would prevent the natural process of flooding during the spring freshet, which turns the islands into critical rearing habitat for millions of juvenile salmon. In 2019, both Herrling and Carey Islands were slated to be diked and developed with the owners proposing to have bridges built to the two islands. Fortunately, the provincial government denied the bridge permit to Herrling island and, due to public pressure, the owner of Carey Island dropped their application[7]. However, the islands are still at risk as they continue to be logged and prepared for development[8]. Strawberry Island is at imminent threat as the land owner is preparing to build a private dike for a cranberry farm. Riparian habitat has already been removed around the island.
- The influence of climate change on the timing of spring melts and changes to water levels and temperatures, as well as more extreme climate events (such as atmospheric rivers and heat domes).
- Habitat destruction due to irresponsible recreational use of the gravel reaches by off-road vehicles, particularly in the Gill Bar area[9].

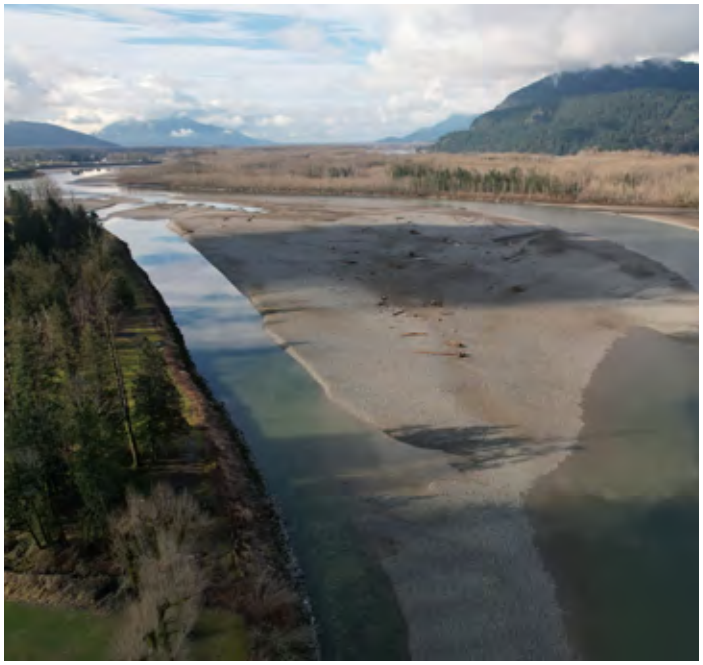

Figure 3: Copyright Watershed Watch

VI. RESTORATION OPPORTUNITIES

- Restore natural flows including the maintenance of flows in smaller creeks where water is being extracted.
- Upgrade existing flood control measures to fish-friendly standards[10,11].
- Restore floodplain habitats along riparian zones as well as identify and restore lateral connectivity across the floodplain.

[7] Chris Pollon, "The Uncertain Fate of the Lower Fraser River's Last Salmon Island Strongholds," *The Narwhal* 2019.

[8] "Defend the Heart of the Fraser Pledge," 2022, https://www.heartofthefraser.ca/.

[9] S Little and Paul Johnson, "Feds Failing to Protect Key Fraser River Spawning Ground from Off-Road Vehicles: Biologists," *Global News* 2021.

[10] Q. Bender, "B.C. Municipalities Pass Resolution for Salmon-Safe Flood Control," *Langley Advance Times* 2021.

[11] "Reconnecting Habitats, Restoring Wild Salmon: Connected Waters," 2022, https://watershedwatch.ca/connected-waters/.

VII. JURISDICTIONAL ISSUES

- The Heart of the Fraser is within a multi-jurisdictional space that includes Indigenous, international, federal, provincial and local laws. Regulations on activities within the Heart of the Fraser come from the Pacific Salmon Treaty, the federal *Fisheries Act* and *Species at Risk Act*, the provincial Water Sustainability Act and Agricultural Land Reserve, municipal bylaws[3], and regional planning through the Fraser Valley Regional District.
- Fish are within federal jurisdiction whereas the freshwater and islands of the river are within provincial jurisdiction[12].
- The un-diked islands within the Heart of the Fraser – Carrey, Herrling and Strawberry - are within the Agricultural Land Reserve and are privately owned4.
- Indigenous Title has been recognized in Section 35 of the Canadian constitution, and both the federal and provincial governments have made important commitments to implement the United Nations Declaration on the Rights of Indigenous Peoples which includes gaining the Free, Prior, and Informed Consent of the Stó:lō Nation on whose territories may be impacted by development within the Heart of the Fraser[13].

VIII. MONITORING & RESEARCH NEEDS [3]

- The establishment of a regional planning body and the development of a collaborative conservation management plan with Indigenous governments, experts and relevant stakeholders.
- Rebuilding of capacity for water quality and salmon escapement monitoring.
- The establishment of a network of indicator streams throughout the Lower Fraser in order to collect systematic and comprehensive data to inform management.
- Research on the extent of historic and existing salmon habitat including mapping of important rearing habitats.
- Integration of Indigenous knowledge into management plans and actions.

Figure 4: Salmon migrating upstream (copyright IPGGutenbergUKLtd)

[12] L. Nowlan, Hewson, S., "Faq: Provincial Jurisdiction of British Columbia over Coastal and Ocean Matters," (West Coast Environmental Law, 2019).
[13] UN General Assembly, "United Nations Declaration on the Rights of Indigenous Peoples," ed. United Nations (UN General Assembly, 2007).