

Heart of the Fraser Strategy Session Report

When: January 25th, 2022, from 9:00 AM – 4:00PM (PST)

Where: Online via Zoom

Facilitation: Jason Hwang (PSF) & Justine Nelson (Rivershed)

Notes: Emily Pearson & Keeley Nixon (Rivershed), Kayla Read & Connor Yee (DFO)

Executive Summary

On January 25th, 2022, the Pacific Salmon Foundation and Rivershed Society of BC, under the direction of a coalition, convened the Heart of the Fraser Strategy Session. The objectives of the session were to support attendees with understanding the:

- significance of the area from a variety of perspectives
- threats and issues that the area is facing
- various options for management and protection from federal, provincial and Indigenous Protected Areas perspectives

This collaborative, multi-sector, multi-agency session was an opportunity to develop a comprehensive list of issues, identify actions and provide recommendations for consideration to a broad audience. One hundred and one people participated in the session with attendance from First Nations groups, federal, provincial, municipal, academic, non-governmental organizations and more.

This initial meeting saw the beginning of the development of a shared vision for the gravel reach of the Fraser River between Hope and Mission, an area highly valued for its cultural, ecological, social, and economic importance local communities. This first session featured presentation and panel discussions covering a range of topics such as the cultural and ecological perspectives of Sto:lo Nations, an overview of habitat values, fish values and river morphology. Solutions were also presented such as opportunities presented through fish-friendly flood control and overall floodplain management, Indigenous protected areas and governmental legal tools for conservation and protection.

While the long-term goal is to develop a collaborative conservation strategy for the gravel reach of the Fraser River, there was underlying agreement that no actions were feasible or allowable without appropriate First Nations engagement and support.

A summary of recommendations: *See the notes from each presentation for more details*

- 1) Indigenous lead and formal inclusion of Traditional Ecological Knowledge
- 2) Engagement with Lower Fraser Fisheries Alliance Member Nations
- 3) Create a collaborative river management plan: understanding changes in the morphology of the river and predicting how it will change to inform management.
- 4) Promote and adopt fish-friendly/nature-based flood management solutions and strategies to reduce flood risk and improve protection of the floodplain habitat
- 5) Support natural defense solutions that provide multiple benefits - renaturalization, dike setbacks, wetland creation - improves holding capacity for high water events, creates habitat
- 6) Identify and explore legislative, regulatory, jurisdictional, and other management options with potential to improve conservation and protection in the Heart of the Fraser
- 7) Collectively identify and define conservation objectives for the Heart of the Fraser
- 8) Further explore opportunities for Indigenous-led protection

Next Steps:

- Start planning for a follow up meeting to develop objectives
- Identify and confirm collaborative partners, invite more people and organizations into the process
- Collect information and data on the current state of the Heart of the Fraser and document, including spatial mapping

Watch the YouTube playlist here:

https://www.youtube.com/watch?v=XFhMygpjf4U&list=PLpgjIHFGQN2yLs_Aw6lrmfeOYqBg4fxCy

Acknowledgments

We would like to acknowledge the people who kept the event running smoothly and captured the proceedings:

- Oh Boy Productions!
- Facilitators: Jason Hwang (PSF) and Justine Nelson (Rivershed)
- Note takers: Emily Pearson and Keeley Nixon (Rivershed), Kayla Read and Connor Yee (DFO)

We also thank the Heart of the Fraser Coalition for countless hours spent in respectful conversation framing the workshop and finding opportunities of collaboration:

- Pacific Salmon Foundation
- Rivershed Society of BC
- Lower Fraser Fisheries Alliance
- Department of Fisheries and Oceans
- Ministry of Forests, Lands, Natural Resource Operations and Development
- Watershed Watch Salmon Society
- Fraser River Sturgeon Conservation Society
- BC Wildlife Federation
- Outdoor Recreation Council of BC

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Session #1: Habitat Values & Threats (9:15 – 12:00)

9:15. First Nations Perspectives. *Murray Ned, Councillor, Sumas First Nation and Executive Director, LFFA. Importance of the area, First Nations perspectives and priorities* (Watch video [here](#))

LFFA Background

LFFA was formed in 2010 and today it serves 34 First Nations within the Lower Fraser, 23 which are formally affiliated with the LFFA governance protocol. The LFFA has four regions of governance: Ocean-Port Mann, Port Mann – Mission, Mission-Hope, Hope-Sawmill Creek. 19 First Nations are encompassed within the Mission-Hope region (Heart of the Fraser).

LFFA's role is to provide advocacy, coordination, communication, and tech support – with a growing biologist department (called the Biosphere) that focuses on resource management, habitat restoration and contract services.

Perspectives on Governance

LFFA has no mandate in decision making and authority – like other groups such as the First Nations Fisheries Council, Union of BC Indigenous leaders, etc. LFFA respects the authority of and decisions of the 23 First Nations affiliated with its governance protocol.

Most of mandate/authority in government resides in Ministry of Fisheries, locally with the RDG. Resource management staff within the Fraser River have delegated authority. The problem is that most engagement happens between 30 First Nations in the Lower Fraser (mandate) and resource management staff (delegated authority) – an “inverted” system with a disparity of authority that requires reform.

Indigenous people live in two worlds: Indigenous governance and the federal/provincial governments – having two very different approaches to decision making. The question is, how do we harmonize these two governments? (Potentially via UNDRIP, DRIPA, reconciliation, devolution)

First Nation Priorities Moving Forward

Declines in salmon populations are a major concern:

- 2009 – 1.2 million Sockeye escapement: worst returns on record since late 1800s, resulted in Cohen Inquiry (\$30 million)
- 2019 – less than 470k escapement: no inquiry and limited public/government outcry. Big Bar Slide and added challenges.
- 2020 – less than 360k escapement

FN fishery reductions result in lack of food security, limited ability to practice the fishery and inability to share knowledge (loss of cultural identity). In 1990, fishing 3 days/week = 3744 hours annually declined to 2021, 15 days of fisheries = 360 hours annually (~10% of 1990 hours).

There have been large investments in plans and initiatives to protect salmon, but these have a top-down approach with mandates from ministries. These initiatives have siloed coordination and unilateral implementation, without involvement of First Nations in program development. The approach to the salmon crisis is not organized with a lot of redundancy and overlap.

First Nation Priorities:

- 1) Need to have a G3 (government to government) approach with the implementation of UNDRIP, DRIPA and Reconciliation, the devolution of authority and resources, enabling First Nations to resume resource management and establishing a Lower Fraser centre of excellence.
- 2) Strengthening of First Nations governance
- 3) Addressing the salmon crisis by strengthening working relationships with stakeholders, e/NGOs, industry
- 4) Lower Fraser Watershed management model and restoration of tribal governance.

9:30. First Nations Perspectives cont. *Ian Hamilton, LFFA, priorities for habitat restoration*

(Watch video [here](#))

LFFA Habitat Restoration Dept.

LFFAs Habitat Restoration Department partners with Tsawwassen, Ducks Unlimited Canada, Southcoast Conservation, Land Management Program, and others. Restoration work can include removing outdated flood infrastructure, focusing on juveniles, and opening habitat with an adult spawner-based approach. LFFA mostly focuses on supporting First Nations in their restoration interests. This can involve physical work, engagement, monitoring, discussion with knowledge holders and elders or helping with planning.

First Nation priorities and threats in the Heart of the Fraser

The Heart of the Fraser (Mission – Hope) is biologically significant for all salmon stocks that migrate to and from north of Mission. There are 19 First Nations within the Heart of the Fraser, all with overlapping territories and varying perspectives, worldviews, and opinions so it's important to recognize rights and title. This area has multi-stakeholder interest and experiences issues such as gravel build-up, flood impacts and others.

Watershed-based Management & Two-Eyed Seeing

LFFA approaches management with a watershed-based approach, which divides the Fraser River into quadrants or “watersheds” – Lower Fraser, Harrison River, Chilliwack River and Fraser Canyon. Each watershed is biologically and ecologically unique, each requiring a different approach for management and restoration. The Watershed-Based approach is more reflective of traditional management by First Nations pre-contact and isn't based on infrastructure, which is how government approaches management.

LFFA engagement with First Nations is based on their traditional territories, allowing for collaborative opportunities and the inclusion of place-based traditional ecological knowledge (TEK) in the decision-making process and restoration planning. This is a First Nations-led or “Tier-1” initiative which develops a restoration plan within each of the four watersheds.

LFFA did a project to identify restoration priorities based on return on investment for restoration works. Working in partnership with PSF and consultants from ESSA technologies, they use a “Two-Eyed Seeing” approach which combines TEK and Western science and creates an inclusive, holistic process for conservation planning and restoration. This Tier-1 process is Indigenous-led but opens opportunities for engagement, collaboration and larger-scale planning with government and other groups within the Lower Fraser with different capacities. It provides an alternative to the siloed approach of groups working independently, instead providing an adaptable framework for effective/collaborative conservation and restoration planning.

Next steps

- 1) Indigenous lead and formal inclusion of TEK
- 2) Engagement with LFFA Member Nations
- 3) LFFA Restoration and Climate Adaptation Framework (Watershed-Based, Two-Eyed Seeing)
- 4) Introduction to [RELAW Project](#)
- 5) Collaboration on conservation goals for the Heart of the Fraser

9:45. Overview of habitat values, the need for conservation and available tools.

Mark Angelo, Outdoor Recreation Council and Conservationist

(Watch video [here](#))

Significance of the Heart of the Fraser

The Heart of the Fraser is one of the most productive stretches of river in the world, hosting ~30 species of fish. Pink salmon and white sturgeon spawn within the HoF, and it's used as a migration corridor and rearing habitat for other salmon species. The islands become fish habitat and provide refuge for juveniles during high flows. The area hosts a variety of other wildlife including birds, mammals, and others.

The Heart of the Fraser holds cultural value for 19 First Nations, sustaining them for thousands of years. The area also holds recreational value for anglers, boaters, fishers, paddlers and nature enthusiasts.

Threats to the area include land clearing, urbanization, industrial development and the lack of a collaborative conservation strategy.

Tools for conservation and protection

Inspiration from the increasing Rights of Nature movement and other inspiring movements. The recent Confederated Salish and Kootenai Tribes Tribal Council establishing the Cultural Waterways Ordinance

(designating the Lower Flathead River below Séliš Ksanka Qíispé Dam to the western border of the Flathead Indian Reservation), Magpie River given rights to legal personhood (from the work of the Mutehekau-shipu Alliance).

Within the Heart of the Fraser, we can use provincial tools (Land Act Reserves, Wildlife Management Areas), federal tools (Ecologically Significant Areas, under the Fisheries Act), and Indigenous Protected Areas (IPCAs).

Other strategies can include habitat restoration, the removal of impassable flood gates, and acquiring lands for conservation purposes (such as the work being done by the [Nature Trust of BC](#))

Next Steps: Come together to create a collaborative strategy

10:30. Values of fish and fish habitat. *Mike Pearson, Pearson Ecological*
(Watch video [here](#))

Glacial and First Nations History of the Heart of the Fraser

[A Sto:lo-Coast Salish Historical Atlas](#) gives the glacial history of the Heart of the Fraser. 14,500ya the entire territory was covered in ice, by 11,000ya most of the ice was melted but largely remained in the Heart of the Fraser region creating an ice dam. 10,000ya the ice dam in the Heart of the Fraser has melted. 220ya (pre-contact), Sumas Lake was still present, and the area was densely populated by Indigenous communities.

Current state of the area & habitat value

Habitat in the core part of the Heart of the Fraser is still largely intact, serving as a migration corridor, nursery habitat, spawning grounds and overwintering habitat. The area has complex gravel bars that provide microhabitats, hosting different fish communities. The summer freshet floods the forested area surrounding the river, creating floodplain forests or sloughs that hold thousands of fish for spawning and/or rearing (sturgeon, redbelt shiner, pikeminnow, peamouth). The floodplain forests provide very productive habitats with an abundance of insects and invertebrates as food for fish. Prolonged flooding results in algal blooms that promote insect productions, providing additional food for fish.

2021 freshet sampling in the Heart of the Fraser found fish everywhere, including juvenile Chinook salmon. The fish move laterally off the main channel into marginal areas; sloughs, isolated ponds, floodplain forests – all serving as critical fish habitat for 27 species of indigenous fish in the main stem, 10 salmonid species and very few invasive species. Pacific salmon are a keystone species that migrate inland, providing a subsidy of nutrients to both aquatic and terrestrial habitats.

Chinook Migrations & Fish Diversity in the Fraser River

Ocean type Chinook do not winter in freshwater, but slowly migrate downriver from April to August stopping in tributaries and side channels to feed. Stream type Chinook migrate down from April to May

after overwintering in freshwater to grow. Ocean type Harrison Chinook is the largest population in the Fraser with 100,000-200,000 spawners producing up to 30 million fry annually. However, the population is limited because there aren't sufficient rearing habitats between the Harrison River and the Pacific Ocean. The lower tributaries (the islands, Stave River, Salmon River, Coquitlam River) have been degraded and cut-off by flood infrastructure.

The glacial history limited the opportunity for fish to colonize BC's rivers, resulting in a relatively lower species diversity in the Fraser River compared to similarly sized rivers in the east. However, the diversity of habitats within the Fraser Watershed fosters rapid evolution and species transformations. Eulachon were previously present in the Heart of the Fraser (showed picture of Chief Joseph Pierre with a eulachon net, Katzie, 1968) but are rare, if seen at all in the area anymore.

Resources: Dave Scott research from UBC/Raincoast. Showed map from [this timing point](#) in Matt Foy's chinook video found on YouTube [here](#). See Pearson Ecological site [here](#) for field guide on species

Cumulative Habitat Issues

- 1) Bank hardening: replacing forested and complex habitat with riprap and invasive blackberry, which increases water velocity along the shore
- 2) Impassable flood infrastructure prevents access to many sloughs and tributaries
- 3) Riparian and Island Forest loss e.g. clearcutting on Herrling, Carey and Strawberry Islands
- 4) Dikes: increasing power within the river, causing erosion and faster, deeper waters resulting in more gravel bars, less islands (UBC study). Behind the dikes, the water is warmer with less dissolved oxygen.
- 5) Nutrient loading from agricultural runoff

11:00. Sediment Budgets. *Ryan Bradley, PhD (he/him/his); Adjunct Professor, School of Environmental Science, Faculty of Environment, Simon Fraser University (SFU)*

(Watch video [here](#))

Ryan started his presentation with a recognition of the strong personal connection he has to the Fraser and a deep acknowledgement of the shared territories and the meaning of the river to Indigenous peoples pre-contact, and how they should have power and strong roles in the management of the area.

Fraser Basin: Physical Processes & Sediment Budgets

The Fraser River is the 80th largest in the world (in terms of discharge), 230,000 km² in area, drains interior plateaus and fringing mountains, ~20-fold change in discharge annually, significant annual sediment flux (no mainstem dams).

The Fraser River morphology is a geomorphic recipe for rich salmon productivity:

- 1) adjacent lake and tributaries (= important habitat)
- 2) snowmelt hydrograph (= reliable pattern of flow and cold water)
- 3) moderate turbidity (= protection for fish)
- 4) glacial history (= gravel supply)

Between the Fraser Canyon to Hope there is a steep gradient, resulting in a lot of gravel transport, which flattens out after Hope, leading to a large sediment deposit in the Heart of the Fraser. The river can't continuously transport all the sediment, 2-3 million m³/yr shift but only 200,000 m³/yr newly imputed sediment. A 20-year time-lapse demonstrates how sediment moves and the morphology of the river channel changes over time.

Sediment budget shows how things have changed over time. Attempts to develop sediment budgets for the Heart of the Fraser haven't been very successful or applicable because it requires constant, long-term measurements. Aerial images have been used to observe how morphology changes and infer volumetric changes, but a lot of this work stopped in the early 2000s when Michael Church's group at UBC stopped working on the problem. Referring to Church's research from 1952-1999, there were high sediment inputs because of historical mining activities but in the late 1900s, there was a decrease in sediment input in the upper part of the gravel bedded reach (relative to the mid-1900s).

Managing Flood Risk

There is always a flood risk associated with the freshet. The largest flood in settler record was in 1894, then the second largest in 1948 prompting the creation of flood mitigation measures. However, Sto:lo oral history has stories about large floods in the area that reach back further in time.

Common methods for flood management:

- 1) Large-scale sediment removal: perceived to reduce flood risk but didn't limit flood risk, instead causing harm to the ecosystem.
- 2) Dikes: to protect dikes, bank modification is required via the dumping of hardening material. This narrows the river
- 3) Closing side channels: Loss and fragmentation of habitat

The Problem: These methods have caused a narrowing of the river and gravel bed reach. Narrow channels are more likely to flood by reducing the capacity to store water. The key would be to maintain natural banks of the river and allow the morphology to shift naturally, while also managing to protect infrastructure.

Recommendation: A collaborative River Management Plan for long-term stewardship: combined data collection with numerical modelling efforts for the entire Fraser River, understanding

- Combined data collection and analysis, with numerical modelling efforts for the entire Fraser
- Understanding changes in the morphology of the river and predicting how it will change, which can then inform:
 - Where to set back dikes and reserve riparian lands
 - Which dikes to upgrade
 - Predictions on response to engineering disturbances
 - Develop an updated sediment budget
 - Targeted local sediment removals
 - Which side channels should be reopened

11:30. Group Discussion and Questions (11:30 – 12:00)

In the consideration of time, there was not a group discussion but rather a series of questions from the audience towards the panel of speakers.

(Watch video [here](#))

Comments: Additional Points from Presenters

- **Murray:** note terminology of “Heart of Fraser”, which may differ between First Nations groups due to their varying relationships to the area and other regions of the Fraser. Also note on how the response to the salmon crisis will require collaboration and will take a long time to rectify.
- **Ian:** This will be a difficult process with varying perspectives and opinion, but discussions must occur to preserve this area. Challenging, heated and intense conversations reflect the passion shared by all.
- **Mark:** There is value in the diversity of groups and organizations attending this meeting, creating an opportunity to have a comprehensive plan that we can start mapping.
- **Mike:** Ryan made excellent point about need for comprehensive plan. Saw a disconnect between creating a comprehensive plan, the speed at which work on the ground is being conducted and the funding available (> \$2 Billion). Planning needs to be fast tracked to ensure a proper use of funding.
- **Ryan:** Grateful many folks are speaking of this, and actions are being taken. UBC research on sediment has really slowed, so nice to hear things actively still going on.

Q: (Scott Barrett, FLNRO) Mike briefly spoke to island forest loss (beyond clearing at Herrling etc.); can he expand on that issue a little? What's the cause? What's the significance (proportion)? What's longer term prognosis?

- **Mike:** Power of the river (increased by flood infrastructure, high dikes, narrowed/deeper river) contributes to loss of forests on islands, but also loss of islands themselves.
- **Ryan:** we don't have the data to demonstrate a definitive cause/effect in entire system. Hope is to have more research to work towards longer term, large-scale measurements to quantify river morphology. HoF is unique, nowhere like it in the world to serve other examples. There is more data downstream of Mission, but we need this data upstream of Mission.
- **Mark:** HoF getting hit hard by rapid changes, highlights the urgency/need to develop a map forward right now

Q: How can we stay informed on the RELAW project? A thought about making the Fraser River, our Stó:lō, personhood? If corporation can be persons, and have rights, is there movement to make our big river a person with rights? Thank you

- **Ian:** LFFA website, West Coast Environmental Law has info. ([RELAW Project](#) just launched last year). Folks can connect with Ian or Murray to stay informed on how traditional stories and TEK can be incorporated into law.
- **Ian:** Recognizing natural entities as legal bodies is an interesting tool but would like to leave those comments to the legal staff.
- **Mark:** Personhood for rivers (and rights of nature movement) has created interesting opportunities from a legal perspective. Inuit in Quebec assigned river whole series of rights

(right to sue, right to clean waters, etc.). Showing some interesting opportunities. At least ten countries embracing this. We'll certainly hear more about this in years ahead.

Two Q's together: A) I've been told there is more gravel deposited in the Fraser and tributaries now than ever before (upstream deforestation) causing higher threats of flooding. Is this accurate? AND B) (Jan Bielenberg) Ryan: With the decline in gravel supply as per one of your slides (post gold-rush), do you anticipate the river to become less active in future decades?

- Ryan: Unclear if this is accurate, no one has linked these two processes with data. In terms of where gravel deposition is going, that 2000 budget did show decline in sediment coming in but not sure if that is long term. In answer to the second question, this would be a great research question to explore. This lack of knowledge is more reason to prevent riparian loss.
- Ian: Forestry has an impact on stability, not about throwing blame but acknowledgement and working to minimize negative impact. The upper pit used to have old growth up to the river's edge and the river was straight. Now, without trees constraining it, it meanders. LFFA works with Katzie in the Pitt: forestry and removal of tree stands is likely cause of the issues of sedimentation in the area.
- Murray: FN has keen interest in gravel deposition, many Nations have lost hectares of reserve land and lots in gravel reach. Change in morphology = change in fishing sites. Need for more collaboration outside of only emergency response.

Q: Do we have anyone present who can speak about climate models for the region?

- Ryan: The general trend = more intense freshets and winter floods, as seen in November 2021. modeling gravel bed reach in lower has been done but often geomorphic component missing, needs to be teased out. In the short term, even if we *had* a stationary climate, we need an immediate plan.
- Mike: From a fish perspective on temperature: Coho salmon migrate upstream earlier, likely won't be impacted by temperature the same way Sockeye salmon would be (since they migrate in August and September). The impacts will be different on each species since each has a different life history.

Q: Can all these Islands be bought up through PSSI [Pacific Salmon Strategy Initiative]. Is there a possibility we could create an immediate moratorium on destruction of Fraser Islands from Mission to Hope to protect from habitat and riparian destruction? Our salmon are in crisis

- Mark: Funding sources often constrained. Would be great to acquire those islands, looking at key areas within the Heart of the Fraser in consult with Nations. Hopefully this will be possible in the future
- Murray: PSSI is an uncertainty. Fund allocation is not clear yet and not likely the best avenue for purchasing. For any investment, Nations need to be engaged.

Session #2: Tools and Strategies for Habitat Protection (1:00 – 4:00)

1:00. Lower Fraser flood infrastructure – priorities for fish. *Lina Azeez, Watershed Watch Salmon Society*
(Watch video [here](#))

Flood Control Infrastructure in the Lower Fraser

Watershed Watch created a map of flood control infrastructure throughout the Lower Fraser watershed. 1500 km of potential salmon habitat is impacted by 156 flood control structures (600km dikes, 100 pump stations, 500 gates. Also 119 additional structures control farmland, urban or industrial areas): map [here](#)

Issues: 1) Costly infrastructure maintenance and upgrades are required 2) Current flood control, structures are aging, undersized, and blocking salmon access to important former habitats 3) Insufficient habitat for salmon's early rearing stage, COSWEIC listed species impacted 4) Current flood control upgrades are not required to be nature-based or fish-friendly.

Solutions: 1) Changing perspective from 'managing flood' to 'managing for floods' 2) Upgrade flood control infrastructure to enhance associated habitat

Creating and upgrading fish-friendly infrastructure

Noted that projects such as Agassiz Slough (updated to open 7km of upstream habitat) are often one-offs.

Watershed Watch and Resilient Waters created a series of educational animations to explain options for flood infrastructure in the Lower Fraser. Impeller pumps can cause high fish mortality but fish-friendly infrastructure such as the axial pump can be used to retrofit existing pump stations. As referenced in session #1, dikes should be set back further from the riverbank to give room for flooding and dike breaches can allow water to flow into shallow wetlands. *Learn more on the Watershed Watch website: [Flood Control In Action](#)*

Numerous hard and soft infrastructure solutions are available, and they must be supported by government direction and appropriate funding criteria. These include green measures (vegetation, staking, woody materials), green-grey measures (vegetation combined with rip rap, reinforced earth and/or concrete blocks), and river management (dike removal, restore meanders, regrading banks, removing or lowering culverts/weirs).

Benefits of investing in fish-friendly flood control

Benefits of investing in fish-friendly flood control include 1) Protecting, restoring, reconnecting wild salmon and other at-risk fish & wildlife populations through improved water & habitat 2) Adapting to

climate change 3) Climate justice/reconciliation: First Nation communities are disproportionately impacted by flooding & salmon declines 4) Improved recreation and aesthetics.

Proposed actions: *to boost resilience of Lower Fraser salmon through habitat restoration & flood control modernization*

- 1) Promote and adopt fish-friendly/nature-based flood management solutions and strategies to reduce flood risk and improve protection of floodplain habitats
- 2) Proactively fund the inclusion of ecological and social objectives through new dedicated funding and improving criteria in existing infrastructure funding programs
- 3) Ensure collaborative conservation and protection plans incorporate lateral floodplain connectivity, nature-based solutions, and fish-friendly values
- 4) Support natural defense solutions that provide multiple benefits - renaturalization, dike setbacks, wetland creation - improves holding capacity for high water events, creates habitat
- 5) Ensure the forthcoming watershed security strategy addresses flood management and salmon habitat restoration in managed floodplains like the lower Fraser

1:15. DFO; management perspectives, tools & possibilities. *Bruce Runciman, Manager, Integrated Planning, Fish & Fish Habitat Protection Program, DFO*
(Watch video [here](#))

Fish and Fish Habitat Protection Provisions

DFO is a steward of *legislative* tools – it can help advance what is needed to be done in conjunction with other tools and support initiatives on the ground.

Fish and fish habitat protection provisions include:

- **Protection requirements:** protection for all fish and fish habitat
- **Authorities for improved regulatory clarity:** designated projects, codes of practice, habitat banking, modernized regulatory framework for authorization of projects
- **Prohibition Section 34.4 (1) and 35(1):** Return of former prohibitions against "death of fish, by means other than fishing" and "harmful alteration, disruption or destruction" of fish habitat.
- **Restoration:** increased focus on habitat restoration
- **List of consideration factors:** clarified authority for broad considerations when making fisheries management decisions. Listed in Section 34.1 (1) - Referencing these factors in applications and messaging is a good tool to use.
- **Transparency:** online public registry for increased transparency

*The *Fisheries Act* is about prohibitions (obstruct passage of fish, death of fish, etc.), duties (provide plans and specifications, notify death of fish, etc.) and exceptions (when authorized) which act as the "stoplight" of proceeding.

Common approaches and outcomes

Historically, fish and fish habitat protection authorities in the *Fisheries Act* have been applied in 2 ways: *proactive* (triage, regulatory review, monitoring) and *reactive* (occurrence response).

- **Triage**
 - WAs, fish species, fish habitat
 - Fish and fish habitat sensitivity (AIS, SAR)
 - Avoidance / mitigation measures (generic)
 - Risk assessment (pathways of effects)
 - Response (e.g., LOA)
- **Regulatory review**
 - Risk documentation (WAs, species, habitat components, residual pressures)
 - Avoidance / mitigation measures (specific)
 - Risk evaluation (sensitivity, spatial extent, persistence)
 - Risk treatment (LOA vs. Authorization)
 - Indigenous consultation
 - Response (e.g., Authorization with conditions, securities and offsetting)
- **Monitoring**
- **Occurrence response:** Structured approach to potential violations of the *Fisheries Act* involves inspection, investigation (evidence collection, witness statements, case brief, expert reports), corrective measures, court proceedings, judgements and case law, remediation and effectiveness monitoring. **Note that there are no violation tickets for the habitat provisions or reporting of occurrence response/corrective measures. Aiming to apply equitable judgement to projects and situations. While responses may be slow or under-reported, intent is purposeful, effective and progressive response.*

Resources: see [Projects Near Water](#) website for links to legislation, policy and guidance documents, incl.: [FFHPP Regulatory Review Process Map](#) and [Pathways of effects, Request for review form and guidance, Authorizations Concerning Fish and Fish Habitat Protection Regulations](#)

New tools and opportunities

New tools and opportunities include Standards of Codes and Practice (s.34.2), regulations (many) and engagement – a key interest for many is the Ecologically Significant Areas Framework (ESA).

Ecologically Significant Areas (ESAs): Area-based management tool under the *Fisheries Act* for the long-term protection and conservation of key areas of fish and fish habitat that are sensitive, highly productive, rare and/or unique. Three phases for implementation: (1) ESA candidate identification, (2) establishment and (3) management.

- Each ESA will have site specific conservation and protection objectives in regulations. **The success of an ESA will be determined, in large part, on how well these objectives are defined.*

- Values and threats assessments, as well as ecological, cultural, socioeconomic, feasibility and ecosystem connectivity are needed to identify objectives and inform any potential ESA regulation.
- ESA regulations can prescribe works, undertakings and/or activities (WUAs) that require authorization or are prohibited.

Resource: see talkfishhabitat.ca for ESA engagement resources and share feedback open until May 2022 – it will take time, but groundwork now is needed to help define objectives and trajectory

Restoration and planning activities

Noting comments from the morning session about the top-down approach to management from the government, DFO directs support and resources towards priorities that are identified by others outside of the program, within the bounds of funding programs. To improve, we can all do better to link these activities to specific place-based priorities and objectives.

Examples of DFO support for third party restoration projects include the Tom Berry Gravel Pit (Coastal Restoration Fund, Fraser Valley Watersheds Coalition), Maria Slough (Salmonid Enhancement Program, Seabird Island Band), Resilient Waters: identifying, upgrading and replacing aging flood control infrastructure (BCSRIF, MakeWay; Tides Canada & Watershed Watch).

Next steps: 1) Identify and confirm collaborative partners 2) Collect information and data on the current state of the Heart of the Fraser and document, including spatial mapping 3) Complete values and threats assessments, develop conservation objectives 4) Complete feasibility, ecological connectivity, socioeconomic, restoration and other assessments 5) Identify and explore legislative, regulatory, jurisdictional and other management options with potential to improve conservation and protection in the Heart of the Fraser.

Recommendation: Call for all of us to tie activities to common objectives - we are all habitat managers, suggestion to collectively identify values tied to place-based objectives and accepted by multi stakeholders that can help all of us in our work at different levels of decision making, funding, regulatory tools.

Q: (Rob Knight): Bruce mentioned Cumulative effects are a consideration but what weight is given to this measure and at what point does DFO say cumulative effects are too great and there should be no more at a watershed scale?

- **Bruce:** When DFO makes a regulatory decision, cumulative effects are considered (check [talkfish website](http://talkfishwebsite)). Formal CE assessments are tied to regulatory decisions. Generally, when you cannot avoid an impact, it is considered to guide mitigations and offsetting. Effects are often quite localized, and decisions are made in that context.

In the future, we could be more proactive and have a better sense of values/threats for a fish population and which habitats are being affected by activities; these could be added to a priority list for projects (restoration, offsetting) that could receive funding.

Regional CE assessments may be completed under the *Impact Assessment Act* for major projects. More often, a group will abandon their idea before reaching that stage of regulatory assessment because technical design and mitigation cost become a barrier for proceeding.

1:45. BC FLNRORD; management perspectives, tools & possibilities. *Scott Barrett, Director, Resource Management, FLNRORD, South Coast Division*

(Watch video [here](#))

FLNRORD management tools

The BC FLNRORD is responsible for the stewardship of crown land, forests management, stream and water management, and fish and wildlife population management. The key legislative tools include:

- [Wildlife Act](#) (Note habitat provisions s.34 (b&c) and s.4(2) - WMA). Wildlife Management Areas (WMAs) are land designated by the minister for the benefit of 'significant' fish and wildlife, with cabinet approval, and the Regional Manager may prohibit certain activities. **They can be heavy tool for time to establish (~20 years for the Chehalis Estuary) and arduous process. It can be an appropriate tool but not one to pick up and use quickly.*
- [Water Sustainability Act](#) - updated from *Water Act* in 2016
 - S.11 changes to stream only with authorization
 - S.46 prohibition on introducing foreign matter into streams
 - Division 4 – Water Sustainability Plan (S. 64-85). 3-5 years to develop, planning provisions OR identifying restoration measures. **These can impact and/or curtail existing water rights or restrict/prohibit use of land across different statutes.*
- [Land Act](#) that governs the “landlord”, “leaseholders”, “renters” and “users” of crown land. It’s a broad tool with no explicit habitat provisions but has some helpful applications’ (Note s.10.1, s.15, s. 16, s.17 and Permissions Policy).
 - There is a S.17 reserve established within the Heart of the Fraser, restricting the removal of any sediment or gravel around the river since there is uncertainty around the cumulative effects.
- [Forest & Range Practices Act](#) - management of forest values, provisions for management of recreational activities.
 - S.58 - protection of recreation and range of resources on Crown land. FRPA is generally used for recreational sites/trails, more challenging for use in non-urban areas – in which case they may be better managed by local governments.

Where to start wielding tools

1) Start with the First Nations (rights & title holders): moral obligation and legally required under DRIPA (pathway to reconciliation, increased transparency, increased predictability). 2) Work together to clarify values, establish some hierarchy, choose what's important & urgent. 3) Clarify objectives: Describe what we want, as precise as possible. 4) Manage towards them: operational decisions, conservation lands. 5) Assess current, past & future condition: Pyramid of metrics, land & water building blocks, habitat, biota (populations)

FLNRORD Approach

- Values & FLNRORD management/responsibility within the Fraser River (South Coast Region) = white Sturgeon, in-channel habitat, bank conditions, riparian conditions, marsh ecosystems, Species At Risk
- Set objectives: Pulling together what we have had and been using (existing reserves, population targets, starting to seek opportunities to speak with First Nation communities.
- Action: Wildlife Act regs, WA decisions (refusals), Land Act decisions (refusals), habitat restoration
- Assess: Pulling together existing data: Bank hardening, marsh ecosystems, riparian, SAR Habitat, in-channel (sediment distribution/dredging)

The **Stewardship-Based Objective Tool (SBOT)** is used to map out objectives for the management of the whole system. It can be used to see where we are currently (what has already been done) and what our targets are (e.g. shoreline hardening, dredging, habitat uses). These objectives can be integrated for individual decisions and inform larger-scale planning.

Q: Step one is to start with First Nations - what does that look like? Is there a system in place for this already? How do you see this unfolding in the Heart of the Fraser?

- Scott: To be determined, we need to find a way and start with conversation/consultation.

Q: how does [Agricultural Land Reserve] ALR designation constrain existing fish and habitat protection regulations?

- Scott: Depends on what we want to do, we do have WMAs that overlap so it doesn't have to be a barrier. As we start to map out these objectives, they can transcend regulatory barriers; we need to find a way for everyone to pull together. By creating clear objectives, we can present this information to several different organizations and across different contexts.
- Bruce: Having an ALR designation does not predicate a decision the department will come too. Echoing Scott, objectives can transcend boundaries, so these need to be clear with these.

2:15. Indigenous Protected Conservation Areas. *Les Bogdan, Senior Advisor to the British Columbia Coastal Marine Habitat and Stewardship Partnership*

(Watch video [here](#))

Marine and Terrestrial Protected Areas

The federal government made an international commitment for designated protected area (Target 1 = 17% terrestrial, > 10% marine by 2020). They weren't on track to meet the target, so they included First Nations land-use plans with areas designated for conservation - successfully achieving 17% terrestrial and ~13% marine by 2020. The next goal is 25% terrestrial and marine (each) by 2025 and 30% each by 2030.

To achieve these goals for habitat protection, the Indigenous Circle of Experts (ICE) was formed in 2017 to make recommendations. The Indigenous Leadership Initiative (ILI) has also been operational since 2012, hosting BC Provincial Senior Advisors and working with all levels of government organizations, First Nations and some NGOs. The Federal Nature Agreement has also been signed.

Resource: See the [March 2018 ICE Report](#).

Indigenous-Led Conservation Opportunities (as outlined by the 2018 ICE Report)

- 1) Protection
 - a. Indigenous Protected Conservation Area (IPCA)
 - b. Indigenous Protected Area (IPA)
 - c. Other Effective Conservation Measures (OECM)
 - d. Marine Protected Areas (MPAs)
 - e. Salmon Park
 - f. others
- 2) Guardians – working with TEK and western science. *There was an announcement for \$342 million for guardian programs across Canada.*
- 3) Restoration – guided by expertise, TEK and community priorities
- 4) Training and Education
- 5) Partnerships
- 6) Funding

Note that First Nations within the province of BC have already established protection. To date, 4 IPCAs have been established without provincial approval or support (latest was Knight Inlet). Over 20 Guardians programs have been implemented with minimal government funding. Nature Funding and Guardians Funding are slowly coming but proposal based.

Recommendation: There is an opportunity within the Heart of the Fraser, the entire Fraser watershed and other watersheds for Indigenous-led protection.

2:45. Group Discussion and Questions (2:45 – 3:50)

In the consideration of time, there was not a group discussion but rather a series of questions from the audience towards the panel of speakers.

(Watch video [here](#))

Q: For Bruce and Scott: You went through a number of Acts/sections/tools/provisions that the government has available - of these, which do you think has the greatest potential for affecting change in the Heart of the Fraser? Q: What tools are underutilized, or a target for entities to advocate for or inform change?

- Scott: There isn't one big issue, it's a lot of cumulative issues which requires a sophisticated, cumulative approach to address it (not one solution). Reserves under Land Act as a regulatory tool are powerful though not readily understood but some could be better utilized.
- Bruce: we need to address issues at large and small-scale. Determine the right tools for threats for more long-term protection and conservation. Build structured fashion to all identify needs and align to set conversation strategies- sharpen connections to priorities. Priorities and objective as more important as a focus than an activation of tools. Objectives supported broadly can find tools to use to address, not the reverse.
- Les: There's legal protection for IPCAs in the Yukon/Northwest territories but not in BC. Conservancies can allow for co-management, legal protection although it's a lower level of protection by the province.

Q: Lina: How do we start laying out priorities for this area (Species specific, habitat specific, etc.)?

- Les: Species and regional specific priorities can fail because improving conditions for one specific species can be to the detriment of others.
- Bruce: at highest level, convening broadly represented group of stakeholders and supporters to adhere to same principles for fish and fish habitat and have that endorsement. Inquiry question: if FN in area see this as something of merit, to be advanced in a mindful and respectful way. Need support at the outset on articulating objectives principles and aligning decisions towards those authorities, otherwise it won't matter what one entity like DFO says. When looking at things, a single species approach is never advisable too granular. Need to identify what biophysical mechanisms keep the entire ecosystem functioning.

Q: *Because of the relationship between the Nooksack River and Fraser River (especially during flooding from meltwaters from Mount Baker) is there any discussions among First Nations who live on the Nooksack with those on the Fraser?*

- Murray: Complicated from a jurisdictional standpoint, fish and water don't know borders. Currently no political system between Sumas and Nooksack in the area, but there should be because traditionally/historically have shared resources and management

Q: Jason: Are there collaborations between governments across the border that you are aware of?

- Scott: some transboundary committees in FLNRO around Nooksack River, more pertaining to water quality issues/species at risk.
- Bruce: there is some transboundary communication regarding aquatic invasive species, formal contact on salmon treaties. Not aware of any transboundary work regarding the HoF.
- Lina: Watershed Watch has some collaboration with other orgs across the border on education initiatives, engineering and planning for fish-friendly flood works, coordinating with various stakeholders (FN, tribes, fishers)

Q: Many speakers point to the need for a collaboratively developed plan or objectives that each decision-making group can point to when they say yes or no. How could we do this in a way that decision-makers can stand behind (maybe in court!)?

- Bruce: If you can create a model with goals/objectives, that is the most direct way to determine what the legislative authority would be.
- Scott: From a legal perspective, start with a low-level legal objective (e.g., Scott wants to have 15m setbacks in a specific watershed) that can carry some weight. These objectives will be required to be accounted for in decision-making processes. Transparency is important: define whose objective is it (a specific person/org?). There may be other perspectives and objectives from other groups, but it is a good starting point.
- Les: An action-oriented approach is required which includes partnerships and bringing the right people to the table for creating a plan.
- Jason: How can we bring together the morning convo (high value, ongoing threats) with our discussion from afternoon (management/protection options available)?

Q: For Scott: Mineral tenures surrendered in ecologically sensitive Skagit River Donut Hole recently with significant compensation to Crown Land Tenure holder. Is that a precedence for other Crown Land? FN's Land?

- Scott: The specific decision isn't a precedent, but there is some for the mineral decision. Thinking through WMA and what is best tool, purchase or a different compensation for the landholder.

Comment: Troy Nelson - Biologist, Fraser River Sturgeon Conservation Society: Moving Forward: Introduce/instill program objectives and engagement opportunities with FNs and other communities throughout the entire Fraser watershed, including those at the very top. The heart is only as healthy as the circulatory system!

- Troy unmuted and spoke to his comment: Fraser Watershed and the Heart of the Fraser is only as healthy as everything that feeds it. Salmon and sturgeon move both ways through it. The Fraser River encompasses all tributaries that flow into it. Suggest a watershed plan that includes all species and all communities within these tributaries and the Fraser.

Comment: Rob Knight - CMN published advice re offsetting objectives in 2017 ".[Marsh and Riparian Habitat Compensation in the Fraser River Estuary:](#)"

Q: Who used to collect sediment budget data and why did it stop in 2000?

- Ryan: Water Survey of Canada (WSC) used to collect sediment data (60s and 70s) mainly at Mission, but funding was cut and there were no more WSC sediment data. Some sediment work by SFU in early 2010's, but research stopped because student left. Sediment work in gravel bed reach was from aerial photos, that research stopped so no more data was collected

Q. Other studies determine 1,000,000 m³ of new gravel into this area but someone said it is now 200,000? Where is the paper determining that?

- Scott: 200,000 m³/yr enters the Heart of the Fraser – pertaining to UBC research from Mike Church. The values vary dramatically with flows – there may be a buildup of sediment or sand around Mission. With a big flood there would be a lot of sediment moving.

Wrap-up and closing remarks: Key points from the panel

- There are very few places where this diversity of groups/people can come together in an open, friendly dialogue. That is the uniqueness of this session today and encouragement for people to accept invitations for future discussions.
- There are many challenges moving forward but a potential to transcend boundaries and overcome these challenges from the government side of things. We can start small and build over time.
- Emphasis to proactively plan and implement rather than reactive response to disasters.
- The organizing team will convene following the workshop and think about the next steps. We will bring people together in the future and value other input (thanks to all participants)