

Technical Proposal

Preparation of the “Wild Salmon Policy Habitat & Ecosystem Status Report” for Early Stuart Sockeye Salmon

Prepared for:

Fisheries and Oceans Canada

Solicitation Number:

30004771

Submitted by:

Levy Research Services Ltd. and Ecofor Consulting Inc.

Oct. 10, 2023



Fish Trap – Fort St. James – 1891

Executive Summary

This proposal responds to RFP Solicitation Number 30004771 and has been prepared to address Wild Salmon Policy Strategies 2 and 3 (combined) for the Early Stuart Management Unit. Reductions of Early Stuart sockeye salmon adversely affect the food supply for local First Nations and create adverse psychological effects. The presently depleted status of these sockeye also affects downstream First Nations where they are also highly-prized. However, it has been decades since there was a directed fishery on Early Stuart sockeye

Our team will be led by Dr. David Levy who has extensive experience on Fraser sockeye derived from doctoral research at UBC, provision of support for individual First Nation communities, regional agencies such as the Upper Fraser Fisheries Conservation Alliance (UFFCA) as well as provincial agencies such as the Salmon Co-ordinating Committee of the FNFC. The report will closely follow the TOC contained in the RFP. To ensure that the report does not deviate from expectations, we propose to schedule 3 Zoom meetings: 1. Project Inception meeting as soon as possible following Contract Award, 2. Mid-project progress report, and 3. Meeting to review the draft report.

A local consulting company based in Fort St. James, Ecofor Consulting Inc., will support the project by conducting geomatic analyses, including GIS and satellite image analysis, as required including any necessary ground-truthing. Ecofor has existing MOUs with local First Nations in the watersheds and a successful track record of working with First Nations.

Indigenous Knowledge of local salmon fisheries will be based largely on existing information in a report prepared by the UFFCA in partnership with Tl'azt'en Nation.

While not mentioned in the RFP, we believe the planning could be strengthened by considering cumulative effects and cumulative effects indicators. We have not budgeted for this work as it is outside the scope of the RFP. Instead, we will develop recommendations as to how these effects could be addressed in future.

The RFP provides a tight timeline to provide the final report by Jan. 29, 2024. Project Team members are 100% committed to meeting the deadline.

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Context

The Early Stuart sockeye population is one of the most vulnerable salmon populations in the Fraser River by virtue of its extended migration distance covering 1200 km from the Fraser River mouth. The fish are highly valued by the First Nations from the Upper Fraser who depend on the runs for food, social and ceremonial purposes. Many First Nations, including those located downstream, consider Early Stuart sockeye to be a form of medicine that is provided preferentially to elders. Moreover, there are songs, dances and legends related to salmon in general and Early Stuart sockeye in particular. When the run declines this creates hardship via compromised nutrition as well as adverse psychological impacts.

Since the late 1990's, Early Stuart sockeye have declined severely and there are major concerns about the future survival of this sockeye run. They have been red-zoned under the WSP and classified as Endangered under COSEWIC. These concerns have been amplified by declining migration conditions due to climate change as well as declining habitat quality within the watershed, including logging (cut blocks visible on the satellite image below).



The situation calls for strategic intervention to catalyze a practical recovery program. While the current project is not directly related to Early Stuart sockeye recovery, it focusses on habitat and ecosystem assessment which will become key components for future recovery planning activities under both the WSP and PSSI.

To deliver the project we have developed a partnership between Levy Research Services Ltd. and Ecofor Consulting Inc. The primary author of the report will be Dr. David Levy who has extensive experience with sockeye salmon in the Fraser River as outlined below. He has devoted much of his career providing fisheries support services for Fraser First Nations and has worked previously with the UFFCA within the Takla – Trembleur – Stuart area as well as within the Nechako River basin.

[Levy Research Services Ltd.](#)

[LRS Ltd](#) was incorporated in 1990 and has since conducted dozens of projects, primarily on sockeye salmon in the Fraser River Watershed. Since 2000, the company has provided fisheries consulting services for Fraser River First Nations in the Upper and Middle Fraser. The Principal, Dr. David Levy, completed his Ph.D. at the Univ. of BC on sockeye salmon and kokanee in 15 large lakes in BC. He served as Independent Member of the Nechako Fisheries Conservation Program between 2005 – 2023. Between 2010 – 2013 the company provided scientific support services to the Cohen Commission of Inquiry into the Decline of Sockeye Salmon in the Fraser River where Dave was appointed Science Director. Between 2006 – 2010 he was Senior Biologist for the Upper Fraser Fisheries Conservation Alliance where he focussed primarily on Early Stuart sockeye recovery. He has also conducted numerous projects on behalf of the Salmon Co-ordinating Committee of the First Nations Fisheries Council. Recently, he completed a report on behalf of DFO Kamloops titled: “Review of Protection and Recovery Strategies for Pacific Salmon”.

[Ecofor Consulting Inc.](#)

[Ecofor](#) is headquartered in Fort St. James and has extensive experience providing on-the-ground fisheries, forestry and archaeological assessments within the Stuart, Tembleur and Takla drainages. The company has strong geomatics, GIS and satellite remote sensing capabilities. The company has existing partnership agreements and experience with the Nak’azdli Whu’ten First Nation, Binche Whu’ten First Nation and Tl’azt’en First Nation. Ecofor’s local presence and experience within the project area will be invaluable for the implementation of this project via [GIS Mapping and Modeling](#) and [Environmental Resource Management](#) expertise.

Project Objectives

This contract is for a professional report collating available data and information on Early Stuart sockeye and their habitat. The objective of the report is to provide a complete background on the historical and current condition of Early Stuart sockeye habitats and ecosystem functions.

Project Outline

Data

Following contract award we will survey publicly accessible data bases e.g. NuSEDS and Pacific Salmon Explorer, to determine the availability of data that relate to the Project. Dave has Early Stuart sockeye data sets in hand that were utilized during previous UFFCA research. We can therefore tailor a data request to DFO to focus selectively on the most recent and relevant data required for the project.

We will contact DFO Stock Assessment personnel in Kamloops to familiarize ourselves with the status of existing DFO datasets. We will then provide DFO with a data request within one week of contract award.

DFO annually reports escapement data for sockeye in tributaries to Takla and Trembleur Lakes and time series of these observations will be extremely useful for the Project. The preliminary 2022 escapement estimates for Early Stuart sockeye will become available in early November, 2023. Early Stuart sockeye spawner populations in Takla and Trembleur tributaries in 2019 were decimated by the Big Bar slide and the 2023 escapements will be extremely informative to assess the recovery of these populations.

The following sockeye spawning tributaries are regularly enumerated by DFO and First Nations within the Takla – Trembleur – Stuart Watersheds:

Driftwood River

Blackwater Creek
 Driftwood River
 Kastberg Creek
 Kotsine River
 Porter Creek

Middle River Tributaries

Baptiste Creek
 Forfar Creek
 Kazchek Creek
 Middle River
 Kynoch Creek
 Rosette Creek

Takla Northwest Arm

Crow Creek
 Dust Creek
 Hooker Creek
 Point Creek
 Sinta Creek

Trembleur Lake Tributaries

Fleming Creek
 Paula Creek
 Sidney Creek
 Tidesdale Creek

Takla Northeast Arm

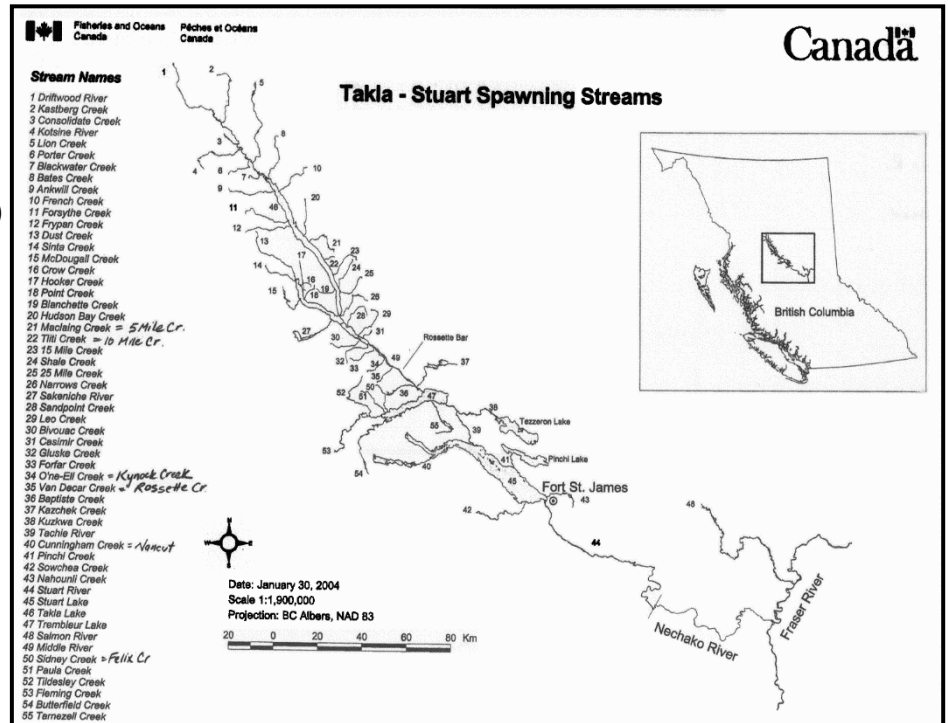
Ankwill Creek
 Blanchet Creek
 Blanchet North Creek
 Frypan Creek
 Hudson’s Bay Creek
 Lovell Creek (Forsythe Creek)
 Maclaing Creek (5 Mile Creek)
 Shale Creek
 15 Mile Creek
 25 Mile Creek

Stuart Lake

Sowchea Creek

Takla Main Arm

Gluske Creek
 Narrows Creek
 Sakeniche River



Twelve Fraser sockeye technical reports prepared for the Cohen Inquiry will be consulted. It is anticipated that much of the required information for the project can be compiled from these sources¹.

The RFP lists 5 reference documents to be considered during project execution:

1. Canada's Policy for Conservation of Wild Pacific Salmon (2005)
 - a. [DFO WSP2 JUN 06 w/covers \(dfo-mpo.gc.ca\)](#)
 - b. WSP strategy 2 in particular
2. Refining habitat indicators for Strategy 2 of the Wild Salmon Policy: practical assessment of indicators (2007)
 - a. [Refining habitat indicators for Strategy 2 of the Wild Salmon Policy: Assessing indicators and data sources \(psf.ca\)](#)
3. Canada's Policy for Conservation of Wild Pacific Salmon: stream, lake, and estuarine habitat indicators (2009)
 - a. [Habitat Indicators Report \(dfo-mpo.gc.ca\)](#)
4. UNDRIP/UNDA Action Plan [2023-06-20 UNDA Action Plan EN.pdf \(justice.gc.ca\)](#)
5. DFO/CCG Reconciliation Strategy [Reconciliation strategy \(dfo-mpo.gc.ca\)](#)

Dave is familiar the WSP documentation including the 2 habitat indicator reports. During the development of these documents Dave participated in the review process on behalf of Northern St'at'imc Fisheries to ensure that First Nation values were considered.

Indigenous Knowledge

The Dakelh share a distinct connection to the land, passing their knowledge and traditions down from generation to generation, utilizing and incorporating IK in all aspects of life and culture. Dakelh Title and Rights are rooted in legends, stories and IK and resource management practices are based on a mutual relationship – taking care of the land and in return being provided for by the land and the resources.

Typically, IK is treated as an “add-on” to the technical analysis, and is often not included in a meaningful way, essentially a “science first” approach. To develop a truly co-operative venture, it is necessary to incorporate IK during the initial scoping and objective–setting stages.

To avoid this pitfall, we will incorporate existing IK information that was collected under Dave's direction and is available in 2 existing reports prepared by the UFFCA:

¹ <https://www.dropbox.com/sc/fi/embg42y74q9ksrncpr9gl/Levy-Summary-Cohen-Science-Results.pdf?rlkey=92qpknuuv8ptb3spiunz4cvwc&dl=0>

- Carrier Freshwater Fisheries: Traditional Use Study of the Central Interior Carrier and Tl'azt'en First Nations in the Upper Fraser (2008)²
- Tl'az'ten Nation Community Fisheries Profile (2009)

For decades, academics have attempted to “fuse” IK and scientific knowledge to provide a method for integrating information for planning and decision-making purposes. During previous work conducted on behalf of the St'at'imc Nation, Dave concluded that this approach is flawed and that it is preferable to consider the 2 information sources separately so that one can inform the other and vice versa.

The output of this analysis will be recommendations for incorporation of IK in the future Integrated Strategy Planning components of the WSP and PSSI.

Collaborative Rebuilding Planning Process

The RFP refers to a relevant collaborative planning process for Early Stuart sockeye (not part of the present project). We will review the experience of other jurisdictions and processes by selectively examining references (hyperlinked) contained in Appendix 3 of a previous PSSI³ report

This analysis, while mentioned in the RFP, is outside of the core scope of the project and the main output from the evaluation will be recommendations on an effective approach and structure of a future Early Stuart recovery planning process.

Integrated Strategic Planning within a WSP and PSSI Framework

The Wild Salmon Policy (WSP) was finalized in 2005 following six years of drafting and consultation. At the time, it was viewed as a transformative policy that would effectively conserve and protect Pacific salmon biodiversity and support sustainable salmon fisheries.

In the original WSP there were six strategies and action steps within the policy which provide the framework for WSP implementation.

² Many Tl'azt'en elders have been interviewed over the years and the audio inventory was transcribed from Dakelh dialect into English and archived at the Tl'azt'en Natural Resource Office (NRO). The study was completed in May 2007 with the assistance of former Chief Thomas Alexis and Veronica (Jackie) Campbell who provided translations and explanations of the materials.

³ Levy, D.A. 2023. [Review of Protection and Recovery Strategies for Pacific Salmon](#) . Levy Research Services Ltd. Prepared for: Fisheries and Oceans Canada, PSSI

Strategy 1	Monitoring of wild salmon status (CUs)
Strategy 2	Assessment and monitoring of habitat status
Strategy 3	Inclusion and monitoring of ecosystem values
Strategy 4	Integrated Strategic Planning
Strategy 5	Annual program delivery
Strategy 6	Performance review

In 2018, DFO released the [WSP 2018 to 2022 Implementation Plan](#). The intent of the Plan is to develop common guidance, standardized methods, and useful tools to advance the long-term goal and objectives of the WSP. It relies upon 3 interrelated themes: 1) Assessment, 2) Maintaining and Rebuilding Stocks, and 3) Accountability.



Components of the WSP Implementation Plan 2018 – 2022.

Strategy 4 can be considered the heart of the WSP as that is where the outputs from Strategies 1, 2 and 3 come together in support of salmon conservation. Among other reasons, Strategy 4

hasn't progressed very far because there are few CUs where all the Strategy 1, 2 and 3 inputs are available.

Early Stuart sockeye are red-zoned under the WSP and therefore the Strategy 1 requirement has been fulfilled. This project will focus on Strategies 2 and 3. We do not know DFO's intention to merge the Integrated Strategic Planning requirements under both the WSP and PSSI and will seek DFO's guidance.

As described by the Pacific Fisheries Resource Conservation Council⁴:

"The challenge for the Minister in developing an appropriate habitat and ecosystem monitoring strategy for the Wild Salmon Policy is not in identifying the potential long suite of indicators. The challenge is in developing a cost-effective, user-accessible, up-to-date monitoring program that focuses on the most relevant and important indicators while ensuring that the monitoring program is integrally linked to management actions to achieve the habitat objectives of the WSP".

The analysis section of the project report will revisit the list of parameters that will be addressed within the report (Sections 1.3 through 3.2.3.13 in Appendix 1, TOC) and suggest refinements for application during future analysis. We will examine the feasibility of weighting the parameters depending on salmon species and life history.

Cumulative Effects

DFO has made considerable progress in developing habitat and ecosystem indicators, but no work has been undertaken to measure the status of the indicators and link them to the production and conservation characteristics of specific CUs or MUs like Early Stuart sockeye. A further challenge, presently absent, is consideration of cumulative effects. None of the indicators address cumulative effects and these are likely the most important ones from a salmon conservation perspective.

Examples of stressors that could cumulatively affect Early Stuart sockeye include:

- Big Bar Slide
- Logging
- Mining
- Fish harvesting
- Climate change
- Cyclic dominance
- Competition with kokanee
- Etc.

Cumulative effects indicators will be needed for future evaluations. We will provide recommendations for an approach to address cumulative effects.

⁴ PFRCC (2006). Implementing the Habitat and Ecosystem Components of DFO's Wild Salmon Policy.

GIS/Mapping Exercise

The RFP references a GIS/Mapping Exercise but doesn't provide any objectives or details. Ecofor has strong capacity in geomatics including GIS and Satellite imaging and is well equipped to conduct this work. We will provide recommendations for the scope of the GIS/Mapping exercise at the Project Inception Meeting.

Horizontal Management

The RFP mentions horizontal management in a few places. Horizontal management is described by Gardner Pinfold⁵ as follows:

"DFO conducts its operations within a vertical structure of specialized branches: Science, Fisheries and Aquaculture Management (FAM), Oceans Habitat Enhancement Branch (OHEB) and Policy. Each of the branches is accountable for elements of the WSP: Science for Strategies 1 and 3, OHEB for Strategy 2 and FAM for Strategy 4. Policy Branch is responsible for co-ordinating WSP implementation, while overall accountability for WSP delivery rests with the RDG. Despite the extent to which strategies cut across branches and the extent of integration required, there is no one below the RDG with horizontal management responsibility for implementing the WSP".

Prior to the conclusion of the project we will recommend a mechanism for horizontal management of a Early Stuart strategic planning and recovery process that identifies structure for all of the players to understand their role and participate in future recovery planning.

Zoom Meetings

While this component isn't a key deliverable identified in the RFP, if awarded the contract, the Project Team could deliver 3 Zoom meetings if desired: 1) Project Inception meeting as soon as feasible following contract award; 2) Interim Progress meeting; 3) Meeting to review the draft final report. These meetings would be 2-3 hours duration and the Project Team would prepare agendas and meeting minutes.

⁵ [Gardner Pinfold 2011](#)

Appendix 1: Table of Contents for Project Report

Sub-sections shaded red will be prepared by Levy, yellow will be prepared by Ecofor and grey will be jointly prepared.

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