



PACIFIC SALMON COMMISSION

ESTABLISHED BY TREATY BETWEEN CANADA
AND THE UNITED STATES OF AMERICA
MARCH 18, 1985

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Request for Proposals: Multi-year comparison of catch composition, catchability, and bias among in-river Fraser River sockeye test fisheries

Background and Objectives

The Pacific Salmon Commission (the “Commission”) is a treaty-based international organization, formed by the governments of Canada and the United States in 1985 to implement the Pacific Salmon Treaty. It is a decision-making body for cooperative management of Pacific salmon in the Yukon River, Southeast Alaska, British Columbia, and the U.S. Pacific Northwest.

The Fisheries Management Division (the “Staff”) of the Commission supports, in part, the Fraser River Panel (the “Panel”). To provide the Panel accurate advice, the Staff collects records for individual sockeye caught in test fisheries regarding size, age, sex, and stock-of-origin (determined by GSI). The test fisheries are operated within the Fraser River and in both the marine area approach routes in tidal Areas 12 and 20. The in-river test fisheries use gillnets composed of sections that vary in mesh size.

The effectiveness of the lower Fraser River test fishery at Cottonwood, near Ladner, B.C., has declined in recent years, particularly on years with few returning sockeye salmon. An alternative test fishery location at Brownsville Bar, near New Westminster, has been operated concurrently for 3 seasons (2021-2023). Both fishing locations use the same specifications of mesh size but use slightly different net materials. Additionally, a third in-river test fishery, Whonnock, is located upstream and is operated at the same time as these lower river test fisheries.

PSC staff are seeking proposals from fisheries statisticians/researchers to conduct a multi-year comparison of catch composition, catchability, and analyses of bias among the in-river test fisheries.

Scope of Work

The service provider will be expected to complete some or all four of the following projects, listed below in order of priority. It is recognized that some projects may fall outside a researcher’s area of expertise, but this should not preclude submission of a proposal.

Project 1

- Conduct a multi-year statistical comparison of population stock composition, both by Management Group (4 groups) as well as Stock Group (19 groups), of the test fishing catch from the three sites; Cottonwood, Brownsville Bar, and Whonnock.

Project 2

- Perform a statistical comparison of catch data collected across the three test fisheries. Comparisons include: fish size (length, weight, condition factor), catch type (gilled/girthed catches vs. tangled catches), and catch distribution across the mesh sizes (4 mesh sizes at Cottonwood and Brownsville Bar and 7 mesh sizes at Whonnock).
- Evaluate sockeye size, sex, and catch type (gilled/girthed vs. tangled) by suite of mesh sizes among all three in-river test fisheries. Investigate how these factors impact relative catchability and resulting stock composition.
- Synthesize the results of Project 2 with Project 1 as data driven evidence for why population composition is the same or different across the three test fisheries.

Project 3

- Conduct an exploration of body size effects on stock composition estimates through the use of simulations and theoretical scenarios.
- Provide recommendations on the reliability of current suite of mesh sizes and alternative population parameters where reliability is lost.
- Provide recommendations on optimal suite of mesh sizes given alternative population size parameters.

Project 4

- Compare sizes of sockeye (length, weight, and condition factor) from various mesh sizes used by in-river test fisheries with sizes of sockeye sampled in marine test fisheries. Marine test fisheries include single mesh gillnet test fisheries which are expected to be most size selective and purse seines are expected to be least size selective.

Further information on the preliminary analyses previously performed is provided on the [PSC's Southern Endowment Fund Project Reports Page](#). Additionally, to better understand the type of data that will be used in these analyses and to help focus proposals, applicants can explore some of the PSC's biological data on the [PSC Website](#).

Expected deliverables

- Agreed upon analyses outlined in Scope of Work executed using reproducible R-code
- Documented R-code
- Timely updates to the Staff (every two weeks)
- A final report which includes a summary of analyses conducted as well as conclusions and recommendations regarding future work and implications for in-season assessment and management.
- A presentation to be provided to the Fraser River Panel (availability permitting)

Timeframe for work

- Work will preferably occur between October 2024 and June 2025, and will conclude with a written report as well as a presentation of contract deliverables to the Fraser River Panel in June 2025 (availability permitting).

Criteria and Qualifications

Respondents shall have the following:

- Extensive experience in statistics.

- Outstanding programming skills in R
- Availability to complete work between October 2024 and June 2025

The following would be an asset:

- Experience in advanced quantitative methodologies (e.g. multivariate statistics, meta-analysis, hierarchical analyses, Bayesian statistics, ecological or population modelling).
- Experience working with test fishing or fisheries data and/or experience with applied statistics.
- Ability to present to the Fraser River Panel at their pre-season meeting in June 2025 (location TBD)
- Significant overlap in working hours (similar time zone preferred).

Response Format

All responses shall include the following information:

1. Scope and Budgetary Quote: Clearly outline which projects listed in Scope of Work can be successfully conducted within the timeframe and provide separate budget quotes for these individual projects. Indicate which projects would be outside the area of expertise.
2. Methodology: For each project, the response must include suggested analytical/statistical approaches with comments regarding skills and feasibility to achieve the deliverables.
3. Summary of Qualifications: Provide an outline of the background of the company, qualifications and relevant experience of key personnel.
4. Timelines: Confirmation of availability between October 2024 and June 2025 to execute and complete the projects.
5. Client References: Provide two references of recent clients for which the respondent has provided similar services and, if possible, examples of the delivered product.

Deadline

Proposals must be submitted electronically via email to the Pacific Salmon Commission.

Attn: Tosh Sutherland
Pacific Salmon Commission
info@psc.org

Subject line: Lower Fraser River test fisheries analyses

Please note that all responses must be received by 4:00 pm PST on Wednesday August 28, 2024.

All responses will be reviewed by relevant Staff. An interview of prospective service providers may be administered.

Questions or clarification regarding this Request for Proposals should be directed to:

Tosh Sutherland, Test Fishing Operations Manager, sutherland@psc.org or (604)-684-8081 ext. 629