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[Français](#) | [Home](#) | [Contact Us](#) | [Help](#) | [Search](#) | [canada.gc.ca](#)

[Home](#) > [Science](#) > [Centres of Expertise](#) > [CAHR](#) > [Our Research](#) > [Quantifying and calibrating the cumulative effects of human-induced and natural changes to habitats and the aquatic resources they support](#) > Cumulative effects at multiple scales: case studies of the development of habitat-population assessment tools using Fraser River salmon

Main Menu

Science

CAHR

[About CAHR](#)

[Our Research](#)

[Our Team](#)

[Our Publications](#)

[News and Updates](#)

[Contact Us](#)

[Links](#)

Follow Us



[Proactive Disclosure](#)

Cumulative effects at multiple scales: case studies of the development of habitat-population assessment tools using Fraser River salmon

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Developments of freshwater habitat indicators (e.g. DFO's WSP) have not explicitly considered cumulative spatial or temporal effects in the assessment of habitat status. Furthermore, many population studies evaluate the impact of single habitat variables on fish productivity, despite the additive and synergistic influence of cumulative effects. We propose to address these knowledge gaps by developing a risk-based assessment framework for the evaluation of cumulative freshwater habitat indicators using WSP habitat indicators for the Fraser River system as a case study. We will also explore alternative approaches for developing habitat-population models. Biological models parameterised using empirical data will form the building blocks for simulation frameworks used to evaluate potential effects of habitat mitigation/compensation strategies on freshwater survival. Finally, long term data series of adult freshwater mortality and habitat variables will be used to evaluate statistical models for forecasting migratory success, using Fraser River sockeye salmon as a case study.



Mature sockeye salmon staging in Weaver Creek. D. Patterson, 2008.



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[Top of the page](#)

[Important Notices](#)