

Geospatial assessment of cumulative threats to salmon freshwater habitats in the Fraser Basin



DFO Science Division
Ecosystem Sciences

DFO Science Section
**Freshwater
Ecosystems**

Project Leads
Josephine Iacarella
Keegan Paterson
Daniel Weller

Locations
Fraser Basin



Climate
Vulnerability

Project ID
2425



Conservation
and
Stewardship



Fraser



Modelling

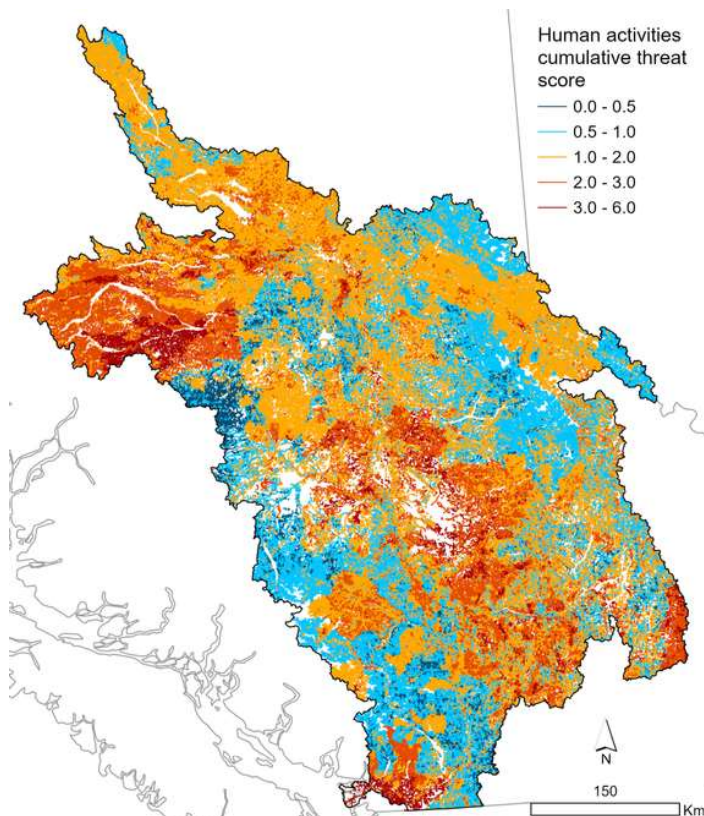


CSAS Report

[Back to Top](#)

Multiple overlapping threats from human activities, landscape disturbance, and climate change are leading to cumulative effects on salmon populations. Understanding where these threats are highest, and what is contributing most to threats, is important for managing populations and improving salmon habitat. However, measuring the many threats across salmon freshwater habitats using field-based approaches is impossible owing to the widespread distribution of salmon in BC.

Dr. Iacarella's program created a geospatial modelling approach to estimate nine human



Geospatial map showing cumulative threats from human activities.

Take-aways

- Identifying individual and cumulative threats to salmon and their habitat is critical for effective management and restoration actions.
- This project estimates and maps nine human activities and landscape disturbance-based threats and four climate change-based threats for the stream network in the Fraser Basin.
- Results identify threat levels across salmon Conservation Units and the human activities and land uses that contributed most to threats.

activities and landscape disturbance-based threats (e.g. riparian disturbance, nutrient and pollution loading, instream habitat destruction) and four climate change-based threats (e.g. high water temperatures and low flow under future climate change conditions) for the stream network across the Fraser Basin.

Relative threat levels were identified for [Conservation Units](#) of salmon, and linked to estimated suitable habitat for salmon spawning. This project also provided a case study to support restoration planning in the Thompson-Nicola Ecological Drainage Unit led by Integrated Planning for Salmon Ecosystems by identifying locations that are important to salmon and potentially in need of restoration.

Timeline

- ✓ Feb 2024: Project delivered and approved at Pacific CSAS meeting
- ✓ July 2024: Science Advisory Report published