Restoring Fish Passage in the Peace Region - 2025

Executive Summary

S E R N B C

SOCIETY FOR ECOSYSTEM RESTORATION IN NORTHERN BRITISH COLUMBIA

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Prepared for the Fish and Wildlife Compensation Program and Fish Passage Technical Working Group

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on behalf of the Society for Ecosystem Restoration in Northern British Columbia

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Executive Summary (PDF)

This report is available as a PDF and as an online interactive report at https://www.newgraphenvironment.com/fish_passage_peace_2025_reporting/. We recommend viewing online as the web-hosted HTML version contains more features and is more easily navigable. Please reference the website for the latest version stamped PDF from fish_passage_peace_2025_reporting.pdf.

The Society for Ecosystem Restoration in Northern BC (SERNbc) is working together with the McLeod Lake Indian Band, the Peace Region Fish and Wildlife Compensation Program (FWCP), the Provincial Fish Passage Technical Working Group (FPTWG), road/rail tenure holders and other stakeholders/partners to prioritize, plan and fund the restoration of fish passage at road and rail crossing structure barriers within the FWCP Peace Region.

The primary objective of this project is to identify and prioritize fish passage barriers within study areas, develop comprehensive restoration plans to address these barriers, and foster momentum for broader ecosystem restoration initiatives. While the primary focus is on fish passage, this work also serves as a lens through which to view the broader ecosystems, leveraging efforts to build capacity for ecosystem restoration and improving our understanding of watershed health. We recognize that the health of life - such as our own - and the health of our surroundings are interconnected, with our overall well-being dependent on the health of our environment.

The project engages FWCP partners and stakeholders to clearly communicate fish passage issues in FWCP Peace Region watersheds while collaboratively planning and executing the steps necessary to achieve fish passage restorations. The work completed and ongoing aligns with the Fish and Wildlife Compensation Program Rivers, Lakes and Reservoirs Action Plan sub-objective 6 of addressing fish passage issues in streams to enhance the productivity of priority species. Project activities undertaken address the following actions:

- PEA.RLR.S06.RI.20 — Conducting engagement to prioritize options for fish passage improvement (P1)
- PEA.RLR.S06.RI.19 — Conducting research to prioritize fish passage actions (P1)
- PEA.RLR.S06.HB.21 — Restoring fish access to streams (P1)

Connectivity modelling now runs weekly with automated updates across all 16 watershed groups in the FWCP Peace area, driven by `bcfishpass` outputs using channel width, gradient, and provincial / federal barrier inventories. Field assessments were completed this year within five of those watershed groups — Parsnip River, Crooked River, Carp River, Nation River, and Parsnip Arm — to maintain momentum and identify candidate sites and partners. In parallel, we contribute desktop

and field corrections back to the provincial `bcfishpass` modelled-crossing inventory — 282 records since April 1, 2025 across the FWCP Peace Region — refining the inputs the weekly model consumes and the same inventory other analyses across BC rely on (see the Methods chapter for details). The work and its forward proposal have the support of the Provincial Fish Passage Technical Working Group (FPTWG) — a partnership between the Province of British Columbia (WLRS, MOF, MOE, MOTI) and Fisheries and Oceans Canada.

Alongside the automated weekly updates, we use our open-source R packages `fresh` and `link` to expand, experiment with, and develop new project-specific habitat-modelling outputs — most recently an initial Arctic grayling intrinsic-habitat layer for the FWCP Peace area, parameterized on stream size and gradient. The framework is designed to take additional covariates as data and methods mature: stream-temperature and Growing-Season Degree Days predictions from collaborative modelling with Poisson Consulting, water-temperature observations via `water-temp-bc`, and calibration of predictions against fish-presence observations in `bcfishobs` together with research activities (some commissioned for FWCP Peace) that identify areas of known high-value spawning and rearing habitat. Each release of this report is tagged so reviewers can navigate between the submitted snapshot and current state at the report URL referenced above.

Although the main purpose of this report is to document 2025 field work data and results, it also builds on multiple prior years of SERNbc fish passage reporting; per-site links to the relevant prior reports are in the Assessment Data Summary appendix.

Fish passage assessment procedures conducted through SERNbc in the FWCP Peace Region since are amalgamated online within the Results and Discussion section of the report found here, which includes links to project reporting for each site.

In 2025, fieldwork activities took place within the Parsnip River, Parsnip Arm, Carp River, and Nation River watershed groups. Fish passage assessments and habitat confirmations were completed at new and previously identified crossings, with site-level results documented per-crossing in the appendices. Two crossings advanced to FWCP-funded 2026 implementation following this year's work: PSCIS 199663 (Kennedy Siding, tributary to the Parsnip River — replacement with a streambed simulation in coordination with BC Timber Sales) and PSCIS 203597 (THUT15000 Deactivation, tributary to the Nation River — riparian enhancements including soil decompaction, native planting, and coarse woody debris placement).

Environmental DNA (eDNA) sampling was incorporated at program scale this year. A total of 93 samples were collected across 35 streams in partnership with the University of Northern British Columbia (UNBC) for ddPCR analysis. Per-species detection results informed crossing prioritization and partner conversations, and are summarized in Appendix - Environmental DNA Results and visualized in the interactive Peace eDNA map.

Fish sampling and PIT-tagging was completed at three monitoring sites using a custom fish-passage effectiveness monitoring form standardized across the program. Ongoing effectiveness monitoring continued at PSCIS 125179 (Tributary to Missinka River) and PSCIS 125131 (Tributary to Table River), extending multi-year baselines from prior reports; baseline monitoring was initiated this year at PSCIS 198692 (Kerry Lake) — originally framed as pre-replacement, now repurposed as pre-removal: Sinclar Forest Products, as the Kerry Lake FSR tenure holder, has pivoted from structure replacement (24/25) to road decommissioning and removal of PSCIS 198692 (km 9) and the adjacent PSCIS 198693 (km 8) in 25/26. eDNA sampling was integrated at all three sites as part of both the baseline and the ongoing effectiveness components of the monitoring protocol.

Two analytical dimensions are new to the program this year. A floodplain delineation pilot was completed for the Parsnip River Watershed Group using the `flooded` R package, mapping the functional floodplain footprint and the off-channel habitat units (lakes, wetlands, side channels) that lateral connectivity supports — see Appendix - Floodplain Delineation. A climate departure analysis was completed for the FWCP Peace Region using the `cd` R package, quantifying temperature, precipitation, snowpack, and atmospheric drying trends since 1951 across the region's ecoregions — see Appendix - Climate Departure. Both layers complement the structural barrier inventory by providing the watershed context that prioritization decisions depend on.

Fish passage work in this region operates inside the constraints described in the Approach section of the background: thousands of structures across multiple jurisdictions and tenure holders, six-to-eight-figure remediation costs, and a finite funding envelope. Decisions about which crossings to advance are made opportunistically — pursuing simpler, lower-cost options to maintain momentum, while building the multi-year relationships and shared data that larger commitments require. The breadth of 2025 partner engagement is summarised in Engage Partners.

Looking ahead, the Recommendations chapter outlines a coordinated set of next steps. Headline themes:

- Advance site-specific work in 2026/27 — replacement of crossing 199663 (Tributary to the Parsnip River) on the Chuchinka-Colbourne FSR with BC Timber Sales (BCTS); above-minimum-standards riparian restoration on the Tributary to Nation River deactivations with BCTS; and support for Sinclar Forest Products' planned road decommissioning and structure removals at PSCIS 198692 and 198693 on the Kerry Lake FSR — with both the Kerry Lake and Tributary to Nation River riparian / deactivation sites acting as field sites for a native-seed and plant-propagation collaboration with the University of Northern British Columbia (UNBC) and the College of New Caledonia (CNC).
- Continue effectiveness monitoring (fish sampling, electrofishing with PIT tagging, eDNA, water-temperature data, and aerial imagery) extending multi-year baselines at the Missinka, Table, and Kerry Lake sites.
- Push the climate-departure and floodplain-delineation analyses forward — extending the watershed-group ecoregion mapping that anchors barrier prioritisation in regional climate

signal, expanding the functional-floodplain footprint to additional FWCP Peace watersheds, and building partner capacity to interpret and act on what these layers reveal.
- Develop a public webmap interface for fish-passage priorities and outcomes.
- Position `water-temp-bc` as an example of a data-portal model that can be extended or replicated to incorporate other past and future datasets collected by UNBC, cumulative-effects monitoring initiatives, FWCP-funded research, and others.
- Model and extend the same open-access pattern for eDNA data across the broader research community.

The intent across all of these is to anchor per-crossing fish-passage decisions inside the watershed-scale context they belong in, and to build a community of practice that can address basin-scale questions together.