

# **Quesnel-Bowron Watershed Connectivity Remediation Plan: 2024 -**

Canadian Wildlife Federation

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# Acknowledgements



# Project Overview

## Connectivity Plan Purpose and Approach

SAMPLE The following Watershed Connectivity Remediation Plan (WCRP) represents the culmination of a one-year collaborative planning effort for the Bulkley River watershed (excluding the Morice River, see Project Scope), the overall aim of which is to clarify and reduce the threat of aquatic barriers to anadromous salmonids and the livelihoods that they support, including the values and laws of First Nations, as well their continued sustenance, cultural, and ceremonial needs both now and into the future. This 10-year plan was developed to identify priority actions that the Bulkley River WCRP planning team (see Table ?? for a list of team members) will undertake between 2021-2031 to conserve and restore fish passage in the watershed through strategies aimed at barrier remediation, barrier prevention, and strengthening Indigenous connections to land and water.

WCRPs are long-term, actionable plans that blend local stakeholder and rightsholder knowledge with innovative GIS analyses to gain a shared understanding of where remediation efforts will have the greatest benefit for anadromous salmonids. The planning process is inspired by the [Conservation Standards](#) (v.4.0), which is a conservation planning framework that allows planning teams to systematically identify, implement, and monitor strategies to apply the most effective solutions to high priority conservation problems. There is a rich history of connectivity and fish passage planning and remediation work in the Bulkley River watershed that this WCRP builds upon, including the work undertaken by the BC Fish Passage Technical Working Group, the Skeena Fisheries Commission, the Office of the Wet'suwet'en, the Wet'suwet'en First Nation, and the Society for Ecosystem Restoration in Northern British Columbia (SERNbc) among others (([Wilson2007?](#)), ([McCarthy2015?](#)), ([Smith2018?](#)), ([Casselman?](#)), ([Irvine2018?](#))). The Canadian Wildlife Federation will continue to engage and coordinate with local partners and existing initiatives, in part through the Skeena Environmental Stewardship Initiative. SERNbc is also currently undertaking [fish passage](#) work in the Bulkley River watershed, with some overlap and some differences in scope compared to the work and processes described in this WCRP. The SERNbc project relies on expert knowledge and field assessments in both the Bulkley and Morice watersheds to improve passage for all fish, including fluvial and resident species, and focuses on stream crossings that act as barriers (([Irvine2021?](#))). This WCRP focuses specifically on improving connectivity for anadromous salmonid species and uses consensus-based planning exercises and spatial model implementation to develop watershed-scale status assessments, goal setting, and prioritization for multiple barrier types. SERNbc and the WCRP planning team are currently

collaborating on the development of the [bcfishpass](#) connectivity model and will continue to work together to promote coordination and collaboration between the two initiatives moving forward.

The planning team compiled existing barrier location and assessment data, habitat data, and previously identified priorities, and combined this with local and Indigenous knowledge to create a strategic watershed-scale plan to improve connectivity. To expand on this work, the Bulkley River WCRP planning team applied the WCRP planning framework to define the “thematic” scope of freshwater connectivity and refine the “geographic” scope to identify those portions of the watershed where barrier prioritization will be conducted, and subsequent remediation efforts will take place. Additionally, the team selected target fish species, assessed their current connectivity status in the watershed, defined concrete goals for gains in connectivity, and developed a priority list of barriers for remediation to achieve those goals. During the 2021 field season, 28 barrier assessments and 21 habitat confirmations were completed. Seventeen barriers were added to the intermediate barrier list based on 2021 field assessments, and an additional 17 crossings were removed from the list, due to being passable, not existing, or having low quality habitat (see [?@tbl-removed-from-consideration](#)). The preliminary barriers list was further divided this year into an “intermediate barriers” list (see [?@tbl-intermediate](#)), which includes barriers that require further assessment, and a “priority barriers” list (see Table ??), which includes barriers that are actively being pursued for design and remediation. While the current version of this plan is based on the best-available information at the time of publishing, WCRPs are intended to be “living plans” that are updated regularly as new information becomes available, or if local priorities and contexts change. As such, this document should be interpreted as a current “snap-shot” in time, and future iterations of this WCRP will build upon the material presented in this plan to continuously improve aquatic barrier remediation for migratory fish in the Bulkley River watershed. For more information on how WCRPs are developed, see Mazany-Wright, Noseworthy, et al. (2021).

## Vision Statement

SAMPLE Healthy, well-connected streams and rivers within the Bulkley River watershed support thriving populations of migratory and resident fish. In turn, these fish provide the continued sustenance, cultural, and ceremonial needs of the Wet’suwet’en and Gitxsan peoples, as they have since time immemorial. First Nations, residents, and visitors to the watershed work together for environmental stewardship to clarify, implement, and assess the effectiveness of actions to mitigate the negative effects of aquatic barriers, improving the resiliency of streams and rivers for the benefit and appreciation of all.

## Project Scope

SAMPLE Connectivity is a critical component of freshwater ecosystems that encompasses a variety of factors related to ecosystem structure and function, such as the ability of aquatic organisms to disperse and/or migrate, the transportation of energy and matter (e.g., nutrient cycling and sediment flows), and temperature regulation Seliger and Zeiringer (2018). Though each of these factors are important when considering the health of a watershed, for the purposes of this WCRP the term “connectivity” is defined as the degree to which aquatic organisms can disperse and/or migrate freely through freshwater systems. Within this context, connectivity is primarily constrained by physical barriers, including anthropogenic infrastructure such as dams, weirs, and stream crossings, and natural features such as waterfalls and debris flows.



Figure 1: The primary geographic scope — the Quesnel-Bowron watershed, excluding the Morice River (SAMPLE) drainage.

SAMPLE The primary geographic scope of this WCRP is the Bulkley River watershed, located in the mid-eastern portion of the Skeena River drainage basin in northwestern British Columbia (Figure ??). The scope constitutes the Bulkley River “watershed group” as defined by the [British Columbia Freshwater Atlas](#) (FWA). A consistent spatial framework was necessary to undertake a watershed-selection process at the provincial scale to identify target watersheds to improve connectivity for salmonids. The Bulkley River watershed was identified by the BC

Fish Passage Restoration Initiative as one of four target watersheds for WCRP development Mazany-Wright, Norris, et al. (2021b). The Bulkley River watershed has a drainage area of 776,200 ha, spanning from Bulkley Lake in the southeast to the confluence with the Skeena River in the northwest. The watershed is generally divided into the “lower” Bulkley River and the “upper” Bulkley River by the confluence with the Morice River near the town of Houston. Culturally and economically important populations of Chinook Salmon (*Oncorhynchus tshawytscha*), Coho Salmon (*Oncorhynchus kisutch*), Sockeye Salmon (*Oncorhynchus nerka*), and Steelhead (*Oncorhynchus mykiss*) are all found in the watershed, which historically supported Indigenous sustenance and trading economies (Table ??; (**Irvine2021?**)).

Table 1: Target fish species in the Bulkley River watershed. The Gitxsanimax, Witsuwit'en, and Western common and scientific species names are provided.

Table 1

Secwepemctsín	Common Name	Scientific Name
Kekèsu	Chinook Salmon	<i>Oncorhynchus tshawytscha</i>
Sxeyqs	Coho Salmon	<i>Oncorhynchus kisutch</i>
Sqlelten7ùwi	Sockeye Salmon	<i>Oncorhynchus nerka</i>

SAMPLE The Quesnel-Bowron watershed comprises parts of the traditional territories of two matrilineal nations:

- SAMPLE Gitxsan peoples— the traditional Gitxsan Laxyip spans the northern portion of the watershed, including the Suskwa River, and is governed by a hereditary system of 60 Wilps or House Groups who are represented by Simgigyat (hereditary chiefs). Each Wilp has jurisdiction over several Anaat, or fishing sites. The Wilp groups that have territory coinciding with the Bulkley River watershed include Djogaslee, Gyet'm Galdo'o, Luutkudziiwas, Axtii Tsex, Yagosip, and Spookw (G. Sebastian pers. comm.). The Gitxsan steward the land and waters based on Ayookw (Gitxsan law) and Adaakw (oral histories; (**Gitxsan2019?**), (**Irvine2021?**))). It is necessary to receive permission from the individual Wilp chief for any work to occur on their territory.
- SAMPLE Wet'suwet'en peoples— the Wedzin Kwah (Bulkley River watershed) is part of the larger Wet'suwet'en traditional territory. The hereditary territory is governed by a system made up of five clans – Gilseyhu (Big Frog), Laksilyu (Small Frog), Tsayu (Beaver), Gitdumden (Wolf/Bear) and Laksamshu (Fireweed) – each of which comprises multiple Yikhs (House Groups) represented by hereditary chiefs. The Wet'suwet'en steward the land based on Inuk Nu'at'en (Wet'suwet'en law), and the principle of Yintahk, meaning everything is connected to the land ((**OfficeWetsuweten2013?**), (**Irvine2021?**))). It is necessary to receive permission from the appropriate bands (Witset First Nation or Wet'suwet'en first Nation, Skin Tyee, Nee Tahí Buhn, or Burns Lake