

Thompson-Shuswap
Salmon Collaborative

Thompson-Shuswap Salmon Ecosystem Action Plan

Fisheries and Oceans Canada
Pêches et Océans Canada

BRITISH COLUMBIA

Secwépemc Fisheries Commission

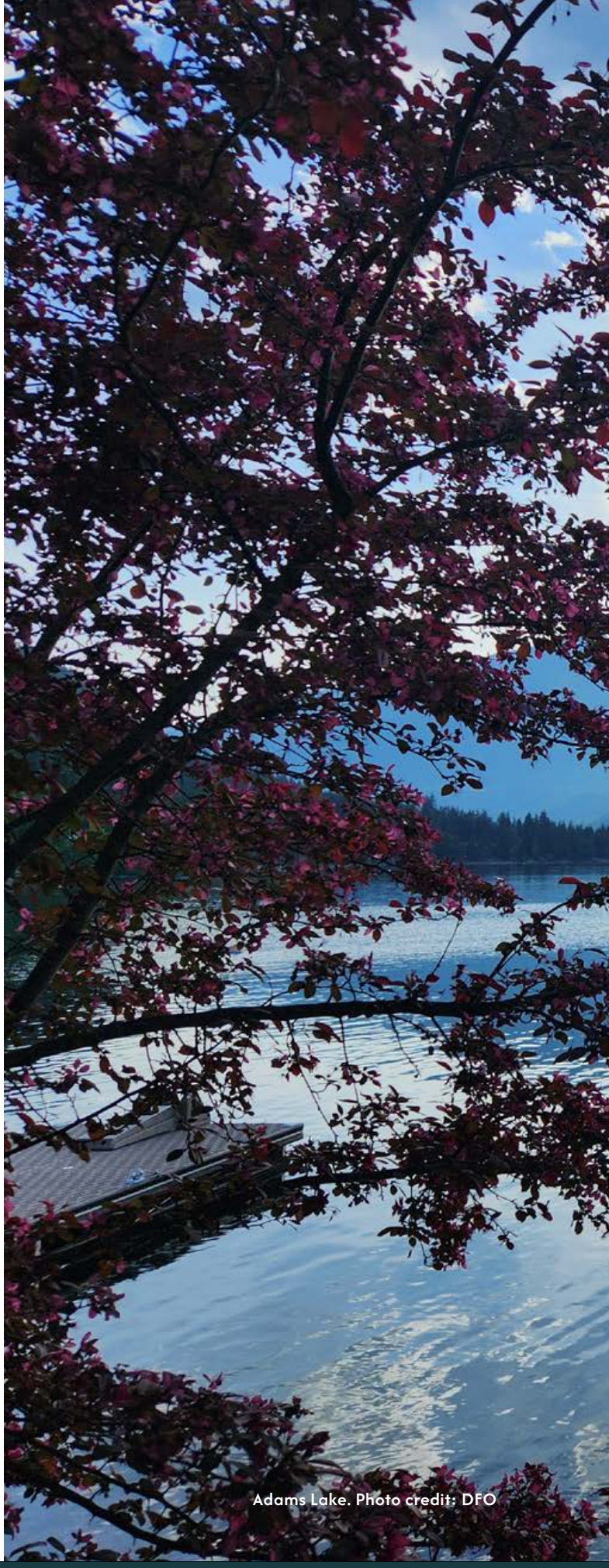
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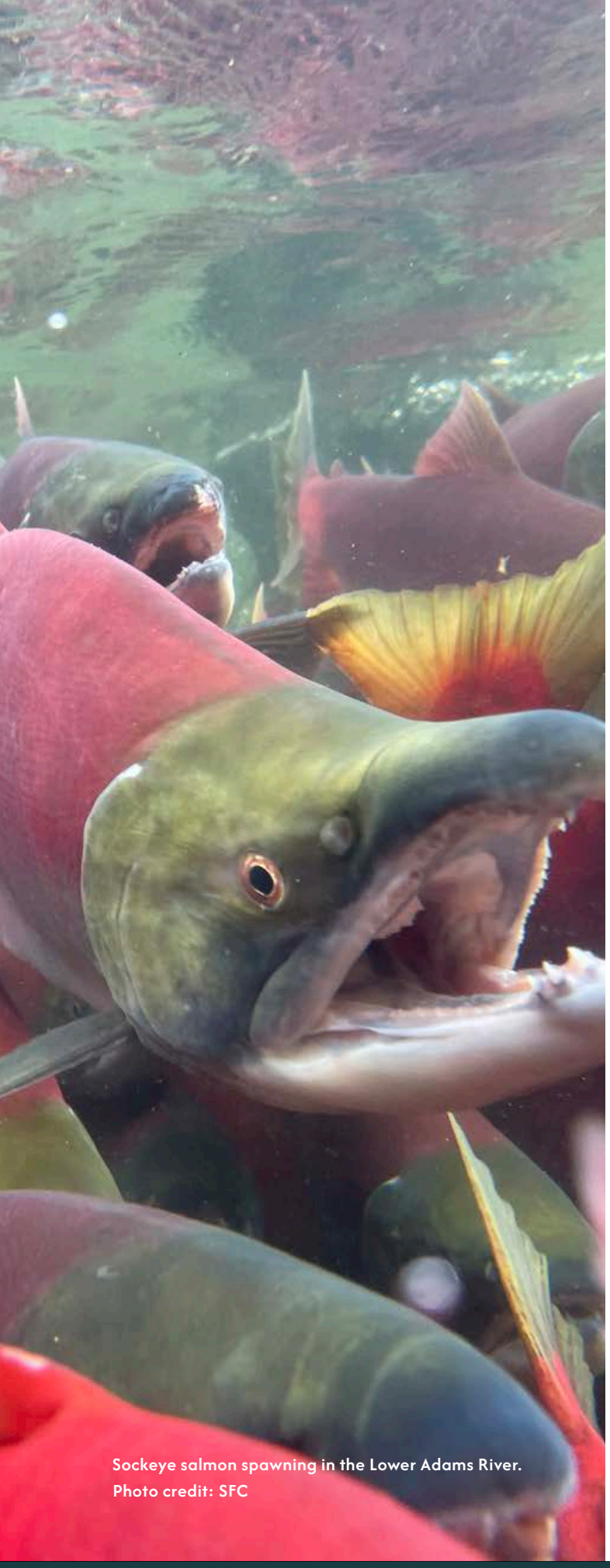
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Adams Lake. Photo credit: DFO



Sockeye salmon spawning in the Lower Adams River.
Photo credit: SFC

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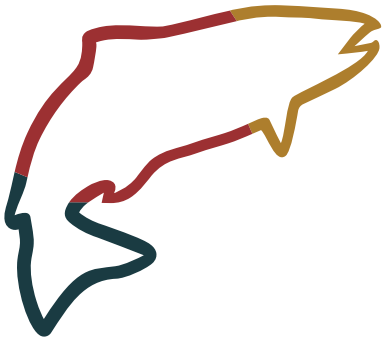
Thompson Nicola Conservation Collaborative

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Whispering Pines/Clinton Indian Band

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Executive Summary

Salmon are vital to ecosystems, culture, and communities, yet they face unprecedented challenges. Twelve of 18 salmon populations in the Thompson–Shuswap are now considered at risk by the Committee on the Status of Endangered Wildlife in Canada.

The Thompson-Shuswap Salmon Ecosystem Action Plan is a collaborative roadmap and a call to action for all who work and live in the Thompson-Shuswap to unite in our shared responsibility to achieve better outcomes for salmon and their freshwater ecosystems.

Co-developed by the Thompson-Shuswap Salmon Collaborative (TSSC), a partnership between the Secwépemc Fisheries Commission, Fisheries and Oceans Canada, and the BC Ministry of Water, Land, and Resource Stewardship, this ecosystem action plan unites efforts under 6 shared goals: 1) increasing the quantity, quality, and diversity of aquatic habitat; 2) improving habitat connectivity; 3) safeguarding water quality; 4) safeguarding flows; 5) strengthening relationships with salmon; and 6) improving knowledge and coordination within the salmon community. The Plan prioritizes site-specific actions for 19 focal waterbodies and introduces 18 cross-cutting actions to address systemic challenges across the watershed. These include advancing area-based conservation designations, embedding salmon values in planning processes, fostering partnerships with landowners, expanding education programs, improving data access, and implementing hydrology solutions (for example, upslope restoration, watershed planning tools, and expanded monitoring networks). Several key knowledge gaps are also identified, along with proposed next steps to address them.

Implementation will rely on multi-partner collaboration, First Nations leadership, and adaptive review cycles. By acting now, we can promote ecosystem resilience and sustainability and sustain the ecological and cultural values that define salmon ecosystems in the Thompson-Shuswap.

Secwépemc Fisheries Commission

Secwépemc Knowledge Statement

Sqleltn (salmon) hold a revered place within Secwepemcúl'ecw, encompassing sacred, spiritual, and cultural values that intertwine with our identity and way of life. The *sqleltn* are not just fish; they are our relatives, embodying the reciprocal relationship we have with the natural world.

We take care of each other, ensuring mutual survival and prosperity. *Sqleltn* are considered sacred beings, integral to our spiritual practices and ceremonies. They symbolize life, sustenance, and the interconnectedness of all things. The rivers and lakes where *sqleltn* thrive are sacred sites, and the return of the sqleltn each year is celebrated with gratitude and reverence.

In our worldview, *sqleltn* are more than a food source; they are kin. This relationship demands respect, care, and responsibility. We acknowledge that our existence is deeply connected to the health of the *sqleltn* populations, and in turn, we must protect and nurture their habitats. Our connection to the land, lakes, and rivers is profound. The health of the *sqleltn* reflects the health of these ecosystems. Protecting and preserving water sources ensures the survival of the *sqleltn* and, by extension, our cultural heritage. First Nations rights come with obligations, and one of those is to be stewards of the water, safeguarding it for future generations.

Our oral traditions emphasize the importance of *sqleltn* in our culture. These stories teach us about the lifecycle of the *sqleltn*, the balance of nature, and our role in maintaining harmony. They are shared within each community, incorporating our language and cultural expressions. The concept of "all my relations" extends to the *sqleltn*, illustrating the interconnectedness of all life forms. Secwépemc values emphasize the importance of unity and collective action in *sqleltn* recovery efforts. The *sqleltn* were here before us, and we honour their presence through sustainable practices and advocacy.

Our elders offer invaluable advice regarding *sqleltn* recovery. Their wisdom, derived from generations of knowledge, is crucial in developing effective conservation strategies. They remind us that the health of *sqleltn* populations is directly linked to our language, health, food security, family cohesion, and traditional medicine. Incorporating our ancestors' language, teachings, and values, we stand united in our commitment to protect and preserve the *sqleltn*. This is not just about safeguarding the *sqleltn* but about maintaining the essence of who we are as Secwépemc people.

Prepared by Secwépemc Fisheries Commission

The Thompson-Shuswap



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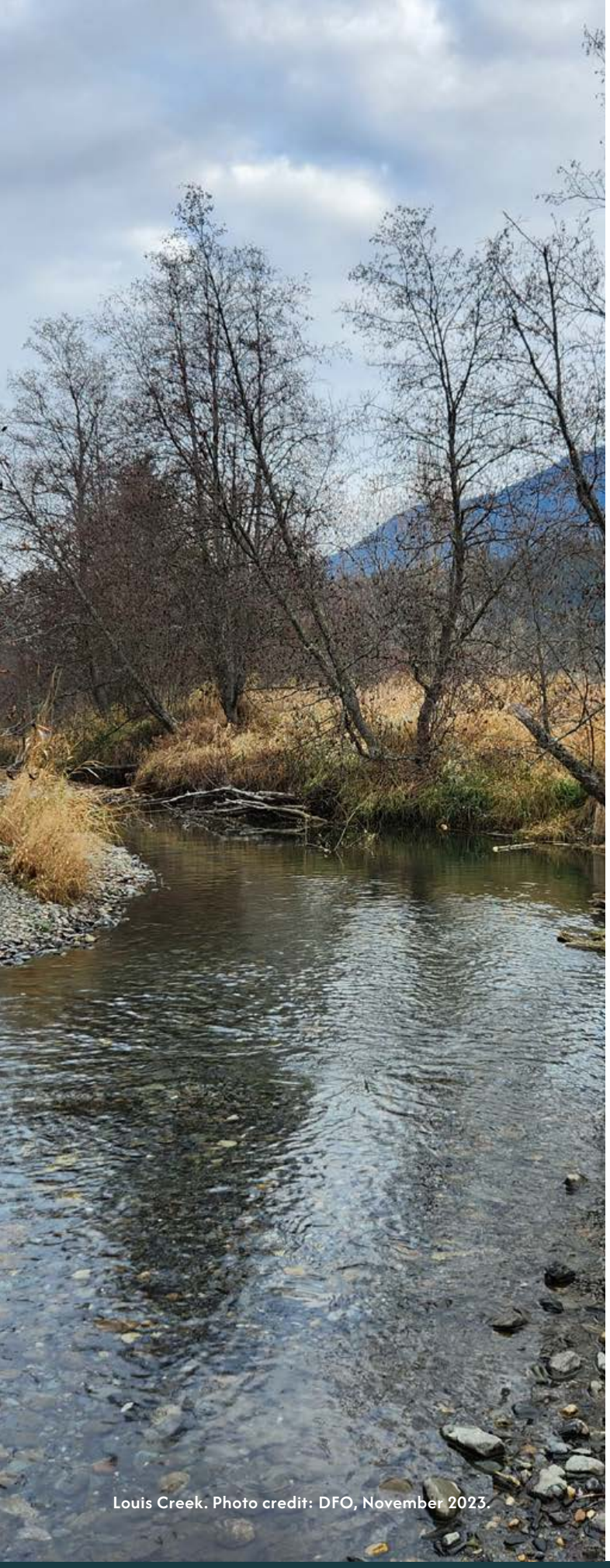
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Louis Creek. Photo credit: DFO, November 2023.

Secwepemctsín Glossary

Secwepemctsín has multiple regional dialects. The terms included in this glossary reflect one set of commonly used spellings and interpretations, and may vary among Secwépemc communities.

English	Secwepemctsín
Chinook salmon	*kekésu7*
Coho salmon	*sxeyqs*
Pink salmon	*sqewq̓ewíken*
Salmon	*sqleltn*
Sockeye salmon	*sqelten7úẇl*
Steelhead trout	*sgwigwle*
Thank you*	*kukwstép-kuc*

* From more than one individual to more than one individual.

List of Acronyms

AESI	Agri-Ecosystem Stewardship Initiative
AI	Artificial Intelligence
AL	Adams Lake
B.C.	British Columbia
BC WLRS	British Columbia Ministry of Water, Lands, & Resource Stewardship
BCW	BC Water Tool
BDA	Beaver Dam Analogues
BE	Bessette Creek
BR	Bonaparte River
CABD	Canadian Aquatic Barrier Database
CC	Cross-cutting
CEFT	Critical Environmental Flow Threshold
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CU	Conservation Units
DEM	Digital Elevation Models
DFO	Department of Fisheries and Oceans Canada
DR	Deadman River
DU	Designatable Unit
EFP	Environmental Farm Plan
EFN	Environmental Flow Needs
ER	Eagle River
ESA	Ecologically Significant Areas
FIM	Foreshore Inventory Mapping
FLP	Forest Landscape Planning
FRISP	Farmland-Riparian Interface Stewardship Program
FSW	Fisheries Sensitive Watersheds
FWCP	Fish and Wildlife Compensation Program
GIS	Geographic Information System
HCTF	Habitat Conservation Trust Foundation
IPC	Indigenous Protected Conservation Areas
KBA	Key Biodiversity Areas
KM	Kilometer
LA	Lower Adams River
LC	Lemieux Creek
LiDAR	Light Detection and Ranging
LNT	Lower North Thompson
LOC	Louis Creek
LPI	Light Penetration Index
LSR	Lower Shuswap River
NGO	Non-government organizations
OCP	Official Community Plan
PC	Paul Creek
PSF	Pacific Salmon Foundation
RAMS	Risk Assessment Methods for Salmon
RPA	Recovery Potential Assessment
RR	Raft River
SAW	Stewarding Agricultural Watercourses
SFC	Secwépemc Fisheries Commission
SHIM	Sensitive Habitat Inventory Mapping
SIRR	Scaling the Implementation of Riparian Restoration
SL	Shuswap Lake
SR	Salmon River
STR	South Thompson River
T	Thompson River
TR	Tranquille River
TSS	Temperature Sensitive Stream
TSSC	Thompson-Shuswap Salmon Collaborative
UNT	Upper North Thompson River
UP	Upper Adams River
WSA	Water Sustainability Act
WSP	Water Sustainability Plans

Chapter 1. Introduction

The Thompson-Shuswap region, in south-central British Columbia (B.C.), is in the Secwepemcúl'ecw, the traditional, ancestral, and unceded territory of the Secwépemc Nation, who have stewarded these lands since time immemorial. These lands are home to diverse populations of salmon and ecosystems. Salmon are integral to First Nations culture and essential for the productivity and resiliency of ecosystems far beyond the streams they inhabit. They transcend human jurisdictions, invoke a profound connection to nature, and support livelihoods throughout their range.

In the Thompson-Shuswap, 4 species of Pacific salmon — *kekésu7* (Chinook, *Oncorhynchus tshawytscha*), *sxeyqs* (coho, *Oncorhynchus kisutch*), *sqewq̓ewíken* (pink, *Oncorhynchus gorbuscha*), and *sqlelten7úw̓l* (sockeye, *Oncorhynchus nerka*) — along with *sgwigwle* (steelhead, *Oncorhynchus mykiss*), an anadromous trout, collectively form 18 Conservation Units (CU). A CU is a distinct group of salmon that lives and reproduces in a particular area and is managed as its own population for conservation purposes under Canada's Policy for the Conservation of Wild Salmon Policy[1]. For the purposes of this Plan, all of these species, including steelhead trout, are collectively referred to as "salmon." These iconic fish migrate distances of up to 700 km from their spawning grounds in the Thompson-Shuswap to the mouth of the Fraser River, spending years and transitioning thousands of kilometers while maturing in the North Pacific Ocean, then returning to reproduce. They face numerous natural and human-induced challenges throughout their lifecycle, shaping their adaptation.

In the Thompson-Shuswap, many ecosystems are heavily developed, resulting in negative impacts to salmon habitat. These impacts include pollution, low water flows, elevated water temperatures, and habitat loss, fragmentation, and degradation, which often occur during critical periods for salmon migration, spawning, and juvenile rearing[2,3]. Climate change, largely driven by human activities, is increasing the frequency and intensity of wildfires, droughts, heatwaves, and floods to unprecedented levels[3,4]. Salmon face additional challenges, including disease, fishing pressures, and shifting ocean conditions. These recent, human-caused changes have had profound and alarming effects on salmon and the ecosystems that they rely on to survive and thrive.

The cumulative pressure of such stressors has culminated in a decline in the size, health, and/or productivity of several Pacific salmon and steelhead populations that spawn and rear in the Thompson-Shuswap. Twelve CUs within the Thompson-Shuswap are now considered at risk by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

Numerous agencies, organizations, and individuals have initiated various habitat restoration and conservation projects with goals to reverse the decline of salmon populations and address habitat degradation in the Thompson-Shuswap. While these efforts strive to contribute positively to restoration and conservation, agreed-upon regional priorities and a cohesive regional strategy are needed to optimize their effectiveness. With climate change increasingly threatening the sustainability of our successes, the need for such a strategy is even greater[4].

To support more integrated and effective salmon conservation efforts, the Secwépemc Fisheries Commission (SFC), Fisheries and Oceans Canada (DFO), and BC Ministry of Water, Land and Resource Stewardship (WLRS) have formed the Thompson-Shuswap Salmon Collaborative (TSSC), facilitating communication and strategic coordination to conserve and restore salmon ecosystems in the Thompson-Shuswap.

1 DFO, *Wild Salmon Policy: 2018-2022 Implementation Plan*, 2018.

2 Dionne et al., "Recovery Potential Assessment for Chinook," 2023.

3 Arbeider et al., "Coho Salmon Recovery Potential Assessment," 2020.

4 MacDonald and Grant, *State of Canadian Pacific salmon,* 2023.

The Secwépemc people have many teachings on working together to uphold relationships, both with each other and with the land and ecosystems we steward. Garry Gottfriedson, Airini, and Tina Matthew highlighted this in *The Secwépemc Nation Research Ethics Guidelines*:

"E élkstwecw-et, me7 clecéllt̓ se-kt, me7 teknémete xweyxwéyt̓e stem, le7 en tsutcwíye, ta7e me7s xenestém, tústep, e yews k̓estwílcste re stem me7 le7es re s-w7ecs re tellqelmúcw."

"When we work together, we have a good mind and we are kind hearted, to protect everything, and we must behave properly, to do no harm, damage or cause destruction for those yet to be born."

These teachings informed and helped guide the approach taken by the TSSC, particularly the emphasis on working together in a respectful way, acting with care, and considering our responsibilities to future generations.

TSSC Vision Statement

Work urgently, collaboratively, and strategically to achieve immediate and long-term benefits for salmon ecosystems in a changing climate, for present and future generations.



TSSC partners visiting the Tranquille River, May 2024. Photo credit: DFO

Co-development of the Thompson-Shuswap Salmon Ecosystem Action Plan (the Plan) marks a key milestone for the TSSC. This collaboratively developed Plan identifies crucial restoration and conservation actions needed to strengthen the resiliency of salmon ecosystems in the Thompson-Shuswap.

The Plan unites the voices of TSSC parties and many others, crafting a shared vision and a clear path forward for all those working for salmon. It serves as a call to action for all who work, live, or play in the Thompson-Shuswap to unite in our shared responsibility and work together to achieve better outcomes for salmon and their habitats.

Plan Development

Co-development of the Plan was led by the TSSC Steering Committee. The Plan was collectively shaped through engagement with Secwépemc communities, academia, environmental non-government organizations (NGO), industry, and government bodies over 4 years (2022 to 2026). It was informed by a large body of existing work, including previous watershed assessments, integrated planning processes, and salmon habitat reports, as much as possible. Perspectives have been gathered and feedback provided through a series of workshops, Technical Working Groups, First Nations engagement meetings, information sessions, and individual correspondence[5].

This action plan was developed using the best available information at the time; however, some limitations remain. Some relevant reports or data sources may not have been identified, and although this plan was informed by diverse expertise in salmon habitat and ecosystem management, it does not capture every perspective in the field. While the importance of Secwépemc Knowledge is recognized, it was not fully incorporated due to project scope and engagement constraints. As a result, actions from this plan should be refined through additional research, broader expert input, and meaningful collaboration with Secwépemc communities.

The TSSC would like to extend a heartfelt *kukwstép-kuc* (thank you) to all those who have participated.



kukwstép-kuc
(thank you)

Purpose of the Plan

The Plan offers guidance and serves as a planning tool for all those working within salmon ecosystems in the Thompson-Shuswap, including First Nations governments, local communities, salmon stewardship groups, provincial and federal government staff, academia, consultants, industry, and more (namely, the salmon community). The Plan establishes guiding goals for supporting recovery of salmon ecosystem health and outlines actions to support progress toward those goals. The Plan also offers guidance to support implementation of these actions.

The Plan is an essential resource for a wide range of applications. Restoration and conservation practitioners and funding bodies can use the Plan to help develop project proposals and inform prioritization processes. Regulators and proponents may wish to consult the Plan to inform mitigation measures and identify habitat offsetting opportunities. Governments can use the Plan to inform other planning processes, policy development, and regulatory decisions. The Plan and its supporting documents also provide a synopsis of our current state of knowledge and can be used by the salmon community to identify research and assessment priorities.

The Plan contains the following:

- Key information on salmon populations and their habitats in the Thompson-Shuswap
- Goals and objectives to guide restoration and conservation actions, where appropriate
- Priority restoration and conservation actions for each focal waterbody
- Cross-cutting actions that apply across the Thompson-Shuswap
- Guidance for implementation, evaluation, and adaptive management of the Plan

While the Plan is not legally binding, its collaborative development is intended to increase the likelihood of support and uptake by decision-makers. Its effectiveness will depend on whether First Nation governments, other jurisdictional authorities, and interested parties choose to endorse it and integrate its recommendations into restoration efforts and future planning processes that carry regulatory authority. The TSSC encourages the Plan's use wherever it can inform or support actions that benefit salmon ecosystems.

5 For more information on engagement activities, refer to the Thompson-Shuswap Engagement Summary.

Chapter 2. Salmon and their Habitat in the Thompson-Shuswap

This chapter offers a high-level overview of the Thompson-Shuswap region, focusing on its salmon populations, their ecosystems, and the key challenges they encounter. A comprehensive, fully-referenced overview of salmon and their ecosystems in the Thompson-Shuswap is available in the accompanying Thompson-Shuswap Watershed Profile[6].

Overview of the Thompson-Shuswap

The Thompson-Shuswap spans just over 47,000 km² of the Thompson River watershed, upstream of Ashcroft, B.C. The Plan covers all freshwater habitat accessible to salmon, and the riparian areas and upland conditions that influence this habitat.

Through engagement with the salmon community, the TSSC identified 19 focal waterbodies within 3 major watersheds (Figure 1). The focal waterbodies were identified based on at-risk salmon populations, restoration and conservation activity, active food, social, or ceremonial fishing interests, and proximity to a Secwépemc community. These focal waterbodies are the primary areas where the Thompson-Shuswap salmon community typically focuses its efforts.



Sockeye salmon spawning in the Lower Adams River. Photo credit: SFC

6 TSSC, *Thompson-Shuswap Watershed Profile,* 2026.

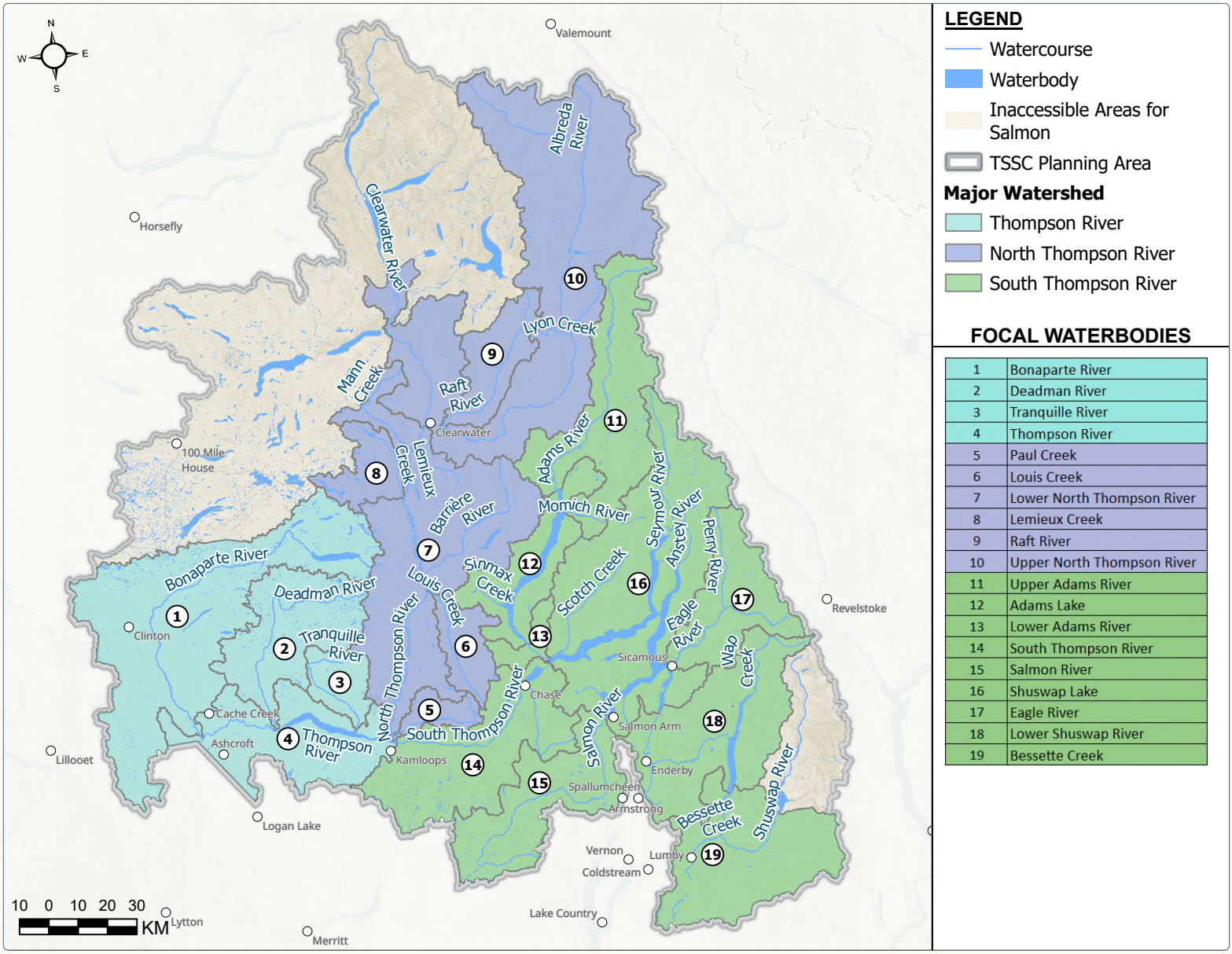


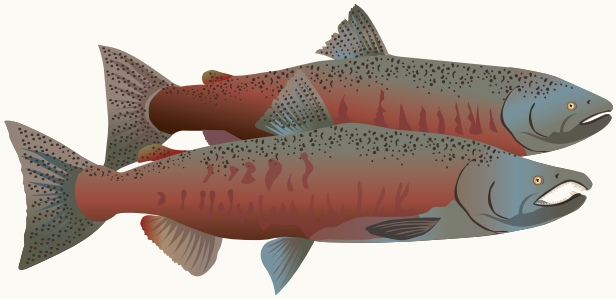
Figure 1. The 19 focal waterbodies of the Thompson-Shuswap, colour-coded by major watershed.

Boundaries for focal waterbodies have largely been delineated using standardized methods for B.C. (such as, Freshwater Atlas watershed groups or assessment watersheds). Where Freshwater Atlas watershed boundaries do not reflect on-the-ground activities or the priorities of the local salmon community, boundaries for focal waterbodies have been manually delineated using topographic data. More detailed mapping, including the delineation of 'Watershed Groups' and focal waterbody boundaries, is provided in Chapter 4.

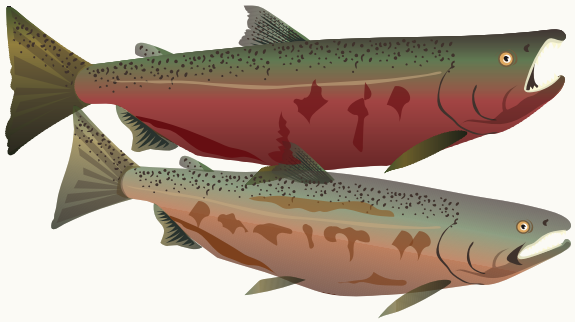
Salmon Species and Conservation Statuses

All salmon species in the Thompson-Shuswap are anadromous, meaning they live in the ocean as adults and migrate up rivers to reproduce in freshwater, where juveniles incubate and rear. Except for steelhead trout, Pacific salmon are semelparous, reproducing once in their life before dying. During spawning, salmon dig out gravel nests (redds) along stream bottoms in which to lay and fertilize their eggs.

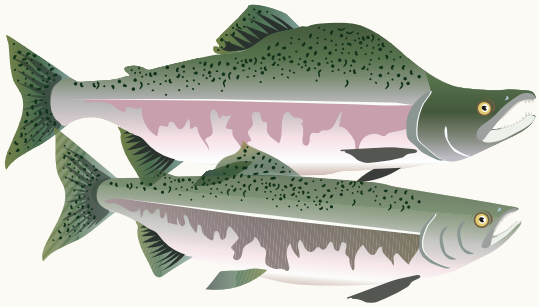
Throughout their evolution, salmon have adapted to periodic disturbances and variable environmental conditions by utilizing a range of habitats and ecological niches. Consequently, each species has developed unique traits, habitat requirements, and reproductive strategies.



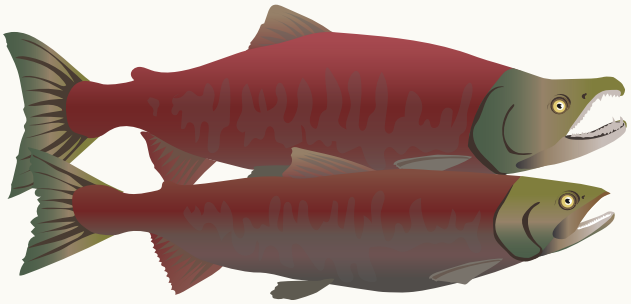
Kekésu7 (Chinook salmon, *Oncorhynchus tshawytscha*) are the largest of the Pacific salmon and exhibit a variety of life strategies along a spectrum of 2 general behaviours. Some Chinook in the Thompson-Shuswap are stream-type, meaning they spend up to 1 year in freshwater before migrating to the ocean. Others are ocean-type, meaning they typically migrate to the ocean within 2 to 5 months after emerging from spawning gravel. Both types spend 1 to 6 years at sea before returning to their natal watersheds to spawn. Chinook spawn in a broad range of water depths, velocities, and substrates, while juveniles are most often found in shallow waters with low velocities and small gravels.



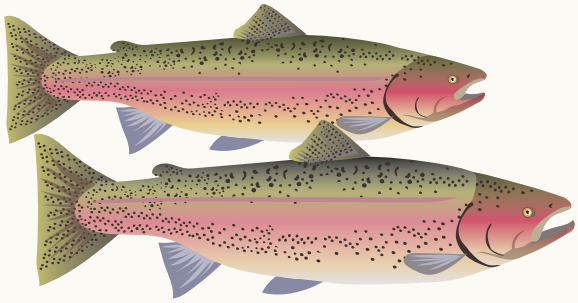
Sxeyqs (Coho salmon, *Oncorhynchus kisutch*) are widespread throughout the Thompson-Shuswap. They return to freshwater in the fall and spawn from fall to early winter, often in pools and deeper channel margins in streams, and in floodplain wetlands and side channels in larger rivers. Fry emerge the following spring and typically spend a year in freshwater before migrating to the ocean. Juveniles cluster in areas with shallow gradient streams, slow-moving side channels, and occasionally in lakes. Most coho will spend 18 months in the ocean before returning to their natal watersheds to spawn.



Sqewqéwíken (Pink salmon, *Oncorhynchus gorbuscha*) are the smallest species in the Thompson-Shuswap and typically have a two-year lifespan. In the Thompson-Shuswap, they migrate to their home streams from July to October, where they typically spawn in riffles of streams and shallow pools in coarse gravel, sand, and cobbles. Shortly after hatching, pink fry migrate to the ocean, spending much less time in freshwater habitat than other salmon species. Once in the ocean, they spend 1 year maturing before returning to the Thompson-Shuswap in odd-numbered years.



Sqlelten7úẃl (Sockeye salmon, *Oncorhynchus nerka*) in the Thompson-Shuswap spawn in late summer or fall in lakes and their tributaries. Juvenile sockeye rear in lakes for a year or sometimes more before migrating downstream to the ocean. Like many sockeye populations, the number of adults spawning in the Thompson-Shuswap is significantly higher every fourth year.



Sgwígwle (Steelhead trout, *Oncorhynchus mykiss*) are the anadromous form of rainbow trout. Thompson steelhead migrate from the Thompson-Shuswap to the Bering Sea, then return after 2 years to spawn in the fall. They are also unique among these Pacific salmon species in that they are iteroparous and can spawn up to 3 times and may live as long as 8 years. Juveniles stay in freshwater for 1 to 3 years, preferring cold, deep pools, before migrating to the ocean. In the Thompson-Shuswap, steelhead distribution is limited to the Deadman, Bonaparte, and Thompson River watersheds.



South Thompson River. Photo credit: SFC

There are 2 classifications typically used to describe genetically and geographically distinct populations of salmon: Conservation Units (CU)[7] and Designatable Units (DU)[8]. There are 18 CUs or 17 DUs in the Thompson-Shuswap (Figure 2). Four CUs have been assessed as Poor, 1 as Poor-Fair, 4 as Fair, and 4 as Fair-Good under the Government of Canada's Wild Salmon Policy. More recently, 12 DUs have been assessed as being at-risk by COSEWIC (7 Endangered, 4 Threatened, 1 Special Concern) (Table 1).

Table 1. Salmon populations in the Thompson-Shuswap as denoted by their Conservation Unit (CU) and equivalent Designatable Unit (DU) names and their statuses as assessed under the Government of Canada's Wild Salmon Policy and by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Thompson Steelhead have been assessed by COSEWIC but not assigned a DU number.

Species	Conservation Unit	WSP Status	Designatable Unit	COSEWIC Status
Chinook	CK-13 South Thompson SU 0.3	Good	DU12	Not at Risk
Chinook	CK-15 Shuswap River SU 0.3	To be determined		
Chinook	CK-14 South Thompson SU 1.3	Fair / Poor	DU13	Endangered
Chinook	CK-16 South Thompson-Bessette Creek SU 1.2	Poor	DU14	Endangered
Chinook	CK-17 Lower Thompson SP 1.2	Poor	DU15	Endangered
Chinook	CK-18 North Thompson SP 1.3	Poor	DU16	Endangered
Chinook	CK-19 North Thompson SU 1.3	Poor	DU17	Endangered
Chinook	CK-82 Upper Adams River SU x.x	Data Deficient	DU29	Not assessed
Coho	CO-7 Lower Thompson	Fair	DU6	Threatened
Coho	CO-8 South Thompson	Good / Fair	DU7	Threatened
Coho	CO-9 North Thompson	Good / Fair	DU8	Threatened
Pink	PKO-1 Fraser River	Good / Fair	N/A	Not assessed
Sockeye	SEL-10-01 Kamloops - Early Summer Timing	Fair	DU11	Special Concern
Sockeye	SEL-10-03 North Barriere - Early Summer (de novo)	Fair	DU14	Threatened
Sockeye	SEL-09-03 Shuswap Complex - Late	Good / Fair	DU18	Not at Risk
Sockeye	SEL-09-02 Shuswap Complex - Early Summer Timing	Fair	DU19	Not at Risk
Sockeye	SEL-09-05 Momich - Early Summer	Original population extinct, current population not yet assessed under WSP	DU199	Endangered
Steelhead	N/A	Not assessed under WSP	Thompson (Summer Run)	Endangered

7 A CU forms the basic unit for assessment under Canada's Policy for Conservation of Wild Pacific Salmon (Wild Salmon Policy). Under the Wild Salmon Policy, CUs are assigned a status zone of red (poor), amber (fair), or green (good), based on spawning abundance, distribution, and the likelihood of population persistence. Some CUs are named in relation to the timing of their return to freshwater (for example, SU indicates summer return, SP indicates spring return).

8 A DU is a population within a species that is distinct from others and important for the species' evolutionary history in Canada. COSEWIC follows COSEWIC Guidelines for Recognizing Designatable Units to assess the conservation status of DUs as Extinct, Extirpated, Endangered (at risk of extirpation or extinction), Threatened (likely to become endangered if nothing is done to reverse the decline), Special Concern (may become threatened or endangered due to the threats it faces), Not at Risk, or Data Deficient.

Salmon Species Distributions

Mapping the boundaries of salmon CUs or occupancy (Figure 2) provides an initial framework for understanding the broad distribution of salmon populations within the Thompson-Shuswap. These boundaries illustrate the relative spatial distribution of species and populations across the watershed, from widespread to more localized. However, CU boundaries and known occupancy alone do not capture finer-scale habitat use or site-specific salmon observations. To develop a more detailed picture of salmon CU distributions, the TSSC integrated multiple sources of information, including existing survey and monitoring data and documented spawning locations. This information was further supplemented through a collaborative mapping process, where members of the salmon community contributed observations using an online mapping tool. These more detailed distribution layers are available in the Thompson-Shuswap Salmon Collaborative Data Explorer[9].



The Upper Adams River. Photo credit: SFC

9 You can find the data explorer at: The TSSC Data Explorer.

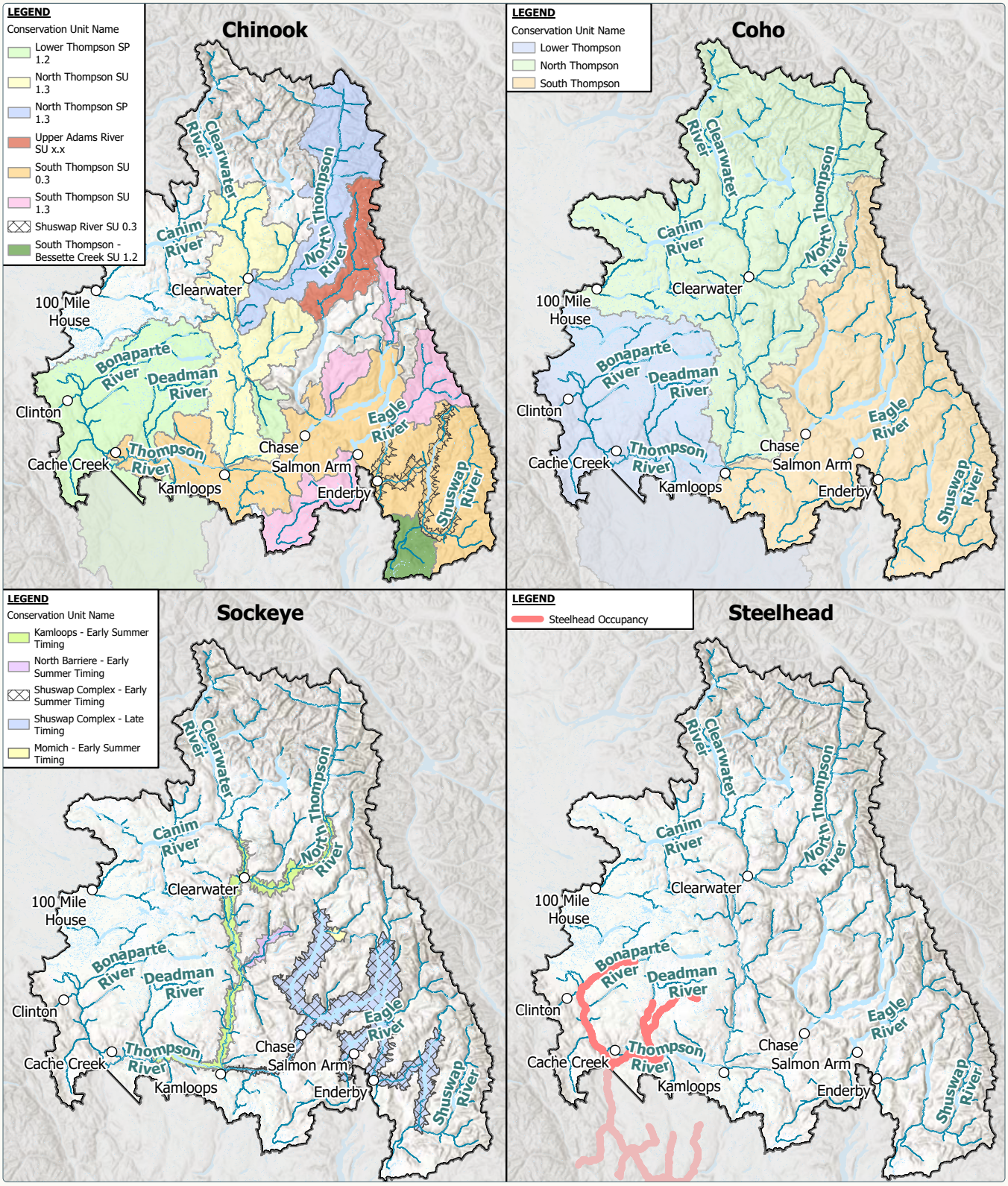


Figure 2. Distribution of Chinook, coho, and sockeye salmon Conservation Units (CU) and steelhead trout occupancy in the Thompson-Shuswap. Pink salmon (not shown) has a single CU (Fraser River odd-year or PKO-1) that extends throughout the entire Thompson-Shuswap and across Southern B.C.

Salmon Ecosystems in the Thompson-Shuswap

From the highest mountain peaks to aquifers deep underground, salmon depend on interconnected ecological processes and ecosystem functions (Figure 3).

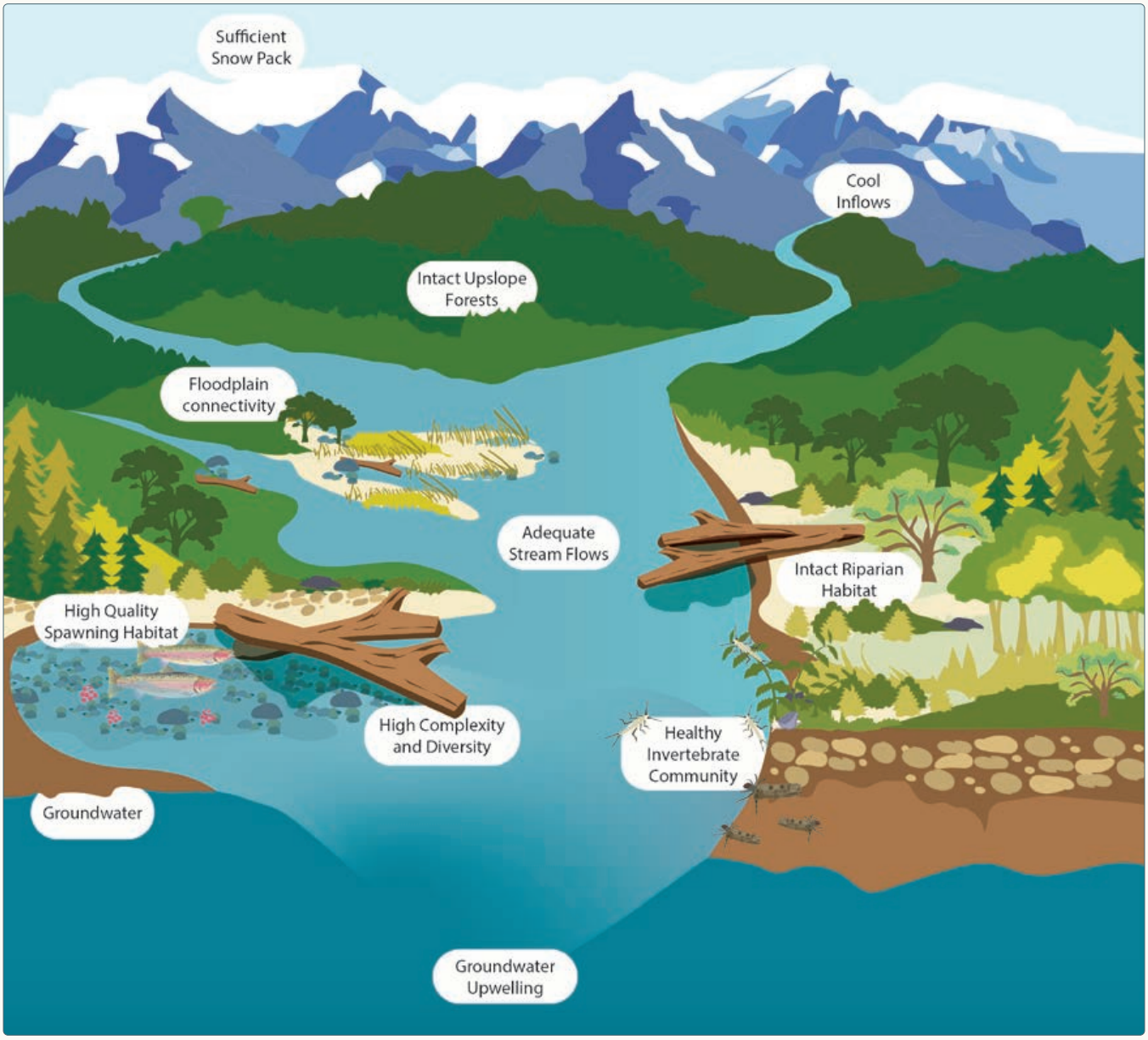


Figure 3. Interconnected ecological processes and components of healthy freshwater salmon ecosystems in the Thompson-Shuswap.

Sufficient winter snowpacks and groundwater upwelling provide essential cool water inflows during the hottest and most drought-prone summer months, supporting passage for adult salmon during critical migration periods as they return to spawn. Intact watershed processes create a range of diverse habitats, such as pools, riffles, connected floodplains, wetlands, side channels, and high-quality spawning beds. Healthy riparian vegetation lowers stream temperatures through shading, filters pollutants, stabilizes stream banks, provides shelter, and contributes large wood and leaf litter, which increases habitat complexity and fuels diverse macroinvertebrate communities for salmon to feed on. Together, these interconnected ecological processes fulfil the needs of salmon during their freshwater life stages.

Threats to Salmon and Their Ecosystems

Salmon and their ecosystems in the Thompson-Shuswap face several well-documented threats[10]. Recovery Potential Assessments (RPA) have been completed for several DUs, following their assessment by COSEWIC, to assess threats and inform potential listing under the federal Species at Risk Act. While some threats identified through the RPAs—such as fishing pressures and ocean conditions—occur outside the geographic scope of this Plan, many directly affect freshwater salmon ecosystems within the Thompson-Shuswap. A summary of key freshwater salmon ecosystem threats is provided in Table 2, with additional details on important habitat stressors[11] specific to each major watershed provided in Chapter 4.



Sandbags were used at the mouth of Lemieux Creek to redirect flows, allowing for upstream salmon migration in the fall of 2024 as an emergency response to low stream flow. Photo credit: SFC

10 The term "threat" is used to align with the International Union for Conservation of Nature (IUCN) methodologies, adopted by RPAs and COSEWIC assessments, for simplicity and consistency.

11 The term "stressor" is used for environmental or anthropogenic elements that stress salmon habitats, as identified through studies and literature outside of formal threat assessments.

Table 2. Key freshwater ecosystem threats to salmon populations in the Thompson-Shuswap, as identified in recent Recovery Potential Assessments (RPA). This table summarizes freshwater threats that pose a low-medium or higher risk to COSEWIC-assessed threatened or endangered salmon Designatable Units (DU), including threat categories, DU-specific risk levels, and key considerations informing the assessments.

Threat Category	Risk Level	Key Considerations
Agriculture	**Low-Medium** for Chinook DU13[12], DU14[13], and DU17[13] **Low-Medium** for sockeye DU14[14]	Land clearing and cattle grazing can cause loss of riparian vegetation, bank destabilization, and the release of sediments into streams if they have unrestricted access.
Biological Resource Use	**Medium-High** for sockeye DU14[14]	Historic logging has reduced the quality of riparian and instream habitat. Transporting logs via rivers can increase juvenile mortality.
Climate Change & Severe Weather	**High** for Chinook DU13[12] and DU15[12] **High-Medium** for Chinook DU14[13], DU16[13], and DU17[13] **Medium-High** sockeye DU14[14] **Medium-Low** for coho[15]	Increasing frequency and intensity of severe weather events such as drought, heat waves, wildfires, storms, and floods is leading to declining habitat quality and increasing mortality. Changes in snowpack, groundwater availability, and discharge regimes are increasing stream temperatures, resulting in physiological stress, habitat fragmentation, and declining habitat quality. Forest disturbances caused by fire, pests (for example, mountain pine beetle), and disease are increasing with climate change.
Energy Production & Mining	**Low-medium** for Chinook DU13[12] and DU15[12]	Placer and open-pit mining activities (mechanical dredging, sifting, washing, and re-deposition of fluvial substrates and stream-side deposits) directly impact salmon habitat.
Natural System Modification	**Extreme-High** for Chinook DU14[13] **High** for Thompson Steelhead[16] **High** for Chinook DU15[12]	Changes to water catchment surfaces from wildfires, water management, forestry, agriculture, and urban development are impacting stream temperatures and flow regimes. Water extraction reduces in-stream flows, limiting the wetted area, and changing water temperatures. Absence of adaptive management of water resources in the face of climate change and increased variability is reducing in-stream flows below critical thresholds.

12 Dionne et al., "Recovery Potential Assessment for Chinook," 2023.
13 Doutaz et al., "Recovery Potential Assessment for Chinook," 2021.
14 Doutaz et al., "Recovery Potential Assessment for Sockeye," 2023.
15 Arbeider et al., "Coho Salmon Recovery Potential Assessment," 2020.
16 DFO, *Recovery potential assessment for Steelhead Trout*, 2018.

Pollution	**High** for Chinook DU15[12] **Medium** for Thompson steelhead[16] **Medium** for coho[15] **Medium** for Chinook DU13[12], DU14[13], DU16[13], and DU17[13]	Introduction of pollutants, including nutrients, toxic chemicals, and/or sediments from urban, commercial, agricultural, and forestry activities. Exposure to pollutants impacts olfactory function, migratory behaviour, and immune functions, which reduces individual survival.
Transportation & Service Corridors	**Low-Medium** for Chinook DU13[12] and DU15[12]	Loss or degradation of habitat from road, railroads, utility, and service line development. Stream crossings (such as culverts) may pose barriers to fish passage, limiting access to upstream habitat. Recent extensive wildfires have led to an increase in salvage logging and potentially more forest service road construction.

Cumulative Effects

Threats to salmon and their ecosystems are often connected and interact in complex ways, making them difficult to address individually. When multiple threats overlap, their combined effects may place greater overall pressure on salmon habitats. Many modelling exercises are available to try to understand how these threats interact. Here, we highlight research from DFO Science, in which they developed "cumulative threat scores" for all stream reaches across the Thompson-Shuswap to quantify the potential pressure exerted on salmon habitat by these cumulative effects. These cumulative threat scores were derived from geospatial analyses of key threats to salmon habitat from human activities and landscape disturbances — specifically, aquatic invasive species, flow alteration, habitat fragmentation, in-stream habitat destruction, riparian disturbance, and pollution[17,18]. Stream reaches with higher cumulative threat scores are expected to experience greater overall pressures. Many areas across the Thompson-Shuswap, including major rivers and tributaries important to salmon, show high cumulative threat scores indicating a high level of landscape disturbance (Figure 4). For a more detailed overview of these cumulative effects analyses and their results in the Thompson-Shuswap, refer to the Plan's accompanying *Thompson-Shuswap Watershed Profile*[19].

17 DFO, *Geospatial Indicators and Metrics for Threats to Fish Habitat*, 2024.

18 Iacarella et al., "Geospatial Indicators and Metrics for Threats to Fish Habitat," 2025.

19 TSSC, *Thompson-Shuswap Watershed Profile,* 2026.

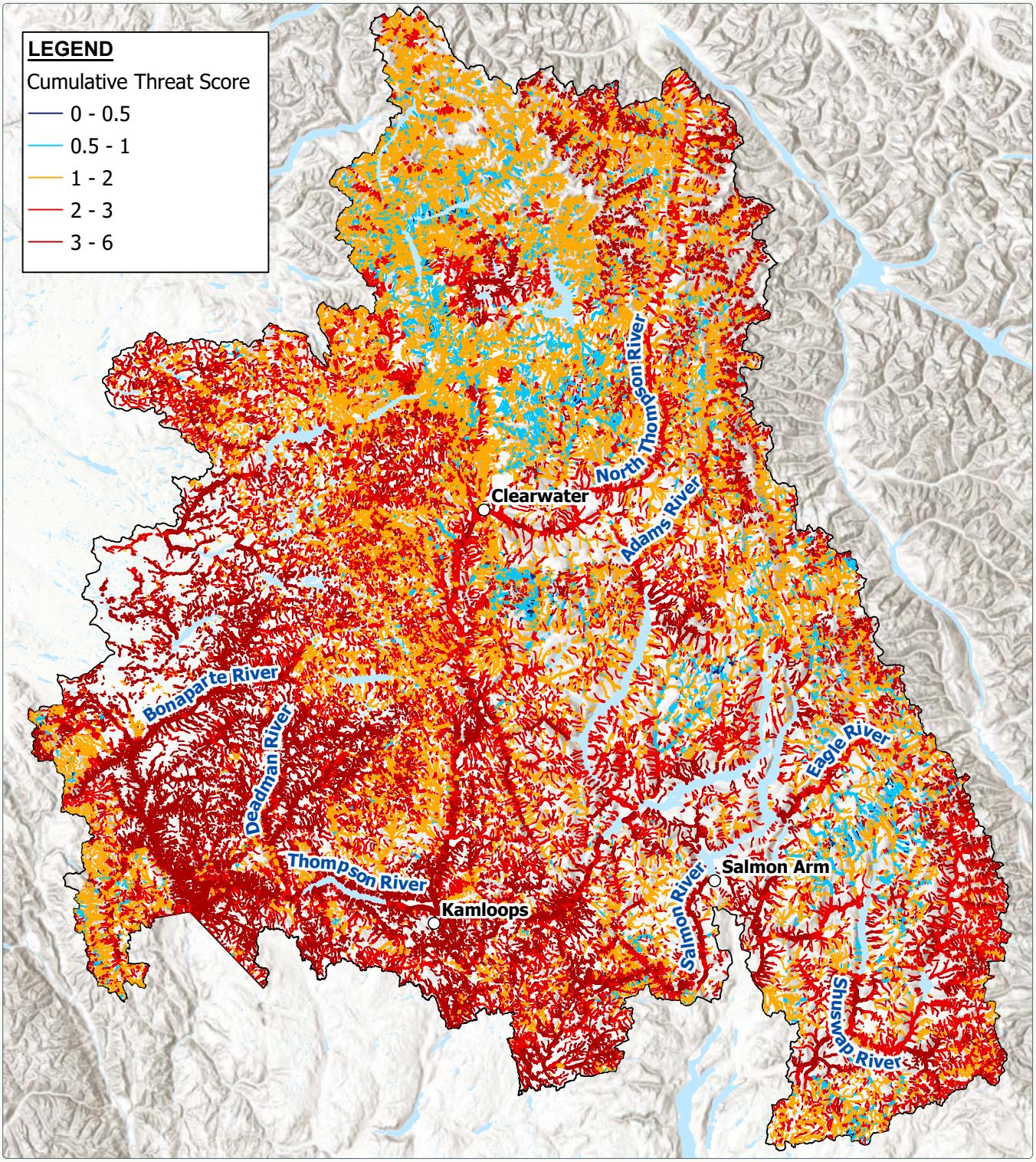


Figure 4. Cumulative threat scores, measured for stream reaches in the Thompson-Shuswap, indicate the cumulative level of human activity and landscape disturbance that may be impacting salmon habitat. Higher cumulative threat scores indicate higher levels of combined estimated threats[20,21].

20 DFO, *Geospatial Indicators and Metrics for Threats to Fish Habitat*, 2024.

21 Iacarella et al., "Geospatial Indicators and Metrics for Threats to Fish Habitat," 2025.

Climate Change

In the same research, DFO Science used climate models to predict how stream flows, stream temperatures, and flood risk in the Thompson-Shuswap could change over the next 50 years[22,23,24]. The results show that warmer water temperatures and changes in flow rates are the most significant climate-related threats to fish and their habitats in this region[23,24]. Under a moderate global emission scenario, average summer stream temperatures are expected to rise by about 2.6°C by 2041 to 2060. The largest increases are expected in the Thompson, South Thompson, Bonaparte, and lower North Thompson rivers, where average summer water temperatures could reach 20 to 21.5°C by 2060 (Figure 5). These warmer stream temperatures are likely to negatively affect salmon, particularly their ability to migrate and spawn. For example, while they vary by species, general temperature thresholds for migrating adult salmon indicate the following negative impacts:

- Above 18°C: Decreased swimming performance
- Above 19°C: Early signs of physiological stress and slow migration
- Above 20°C: Increased pre-spawning mortality and disease risk
- Above 21°C: Chronic exposure can lead to severe stress and early mortality
- Above 24°C: Maximum thermal threshold



SFC biologists open channels to mitigate low flow conditions in the Deadman River. Photo credit: SFC

22 DFO, *Geospatial Indicators and Metrics for Threats to Fish Habitat*, 2024.

23 Weller et al., "Stream thermalscape scenarios for British Columbia," 2024.

24 Iacarella et al., "Geospatial Indicators and Metrics for Threats to Fish Habitat," 2025.

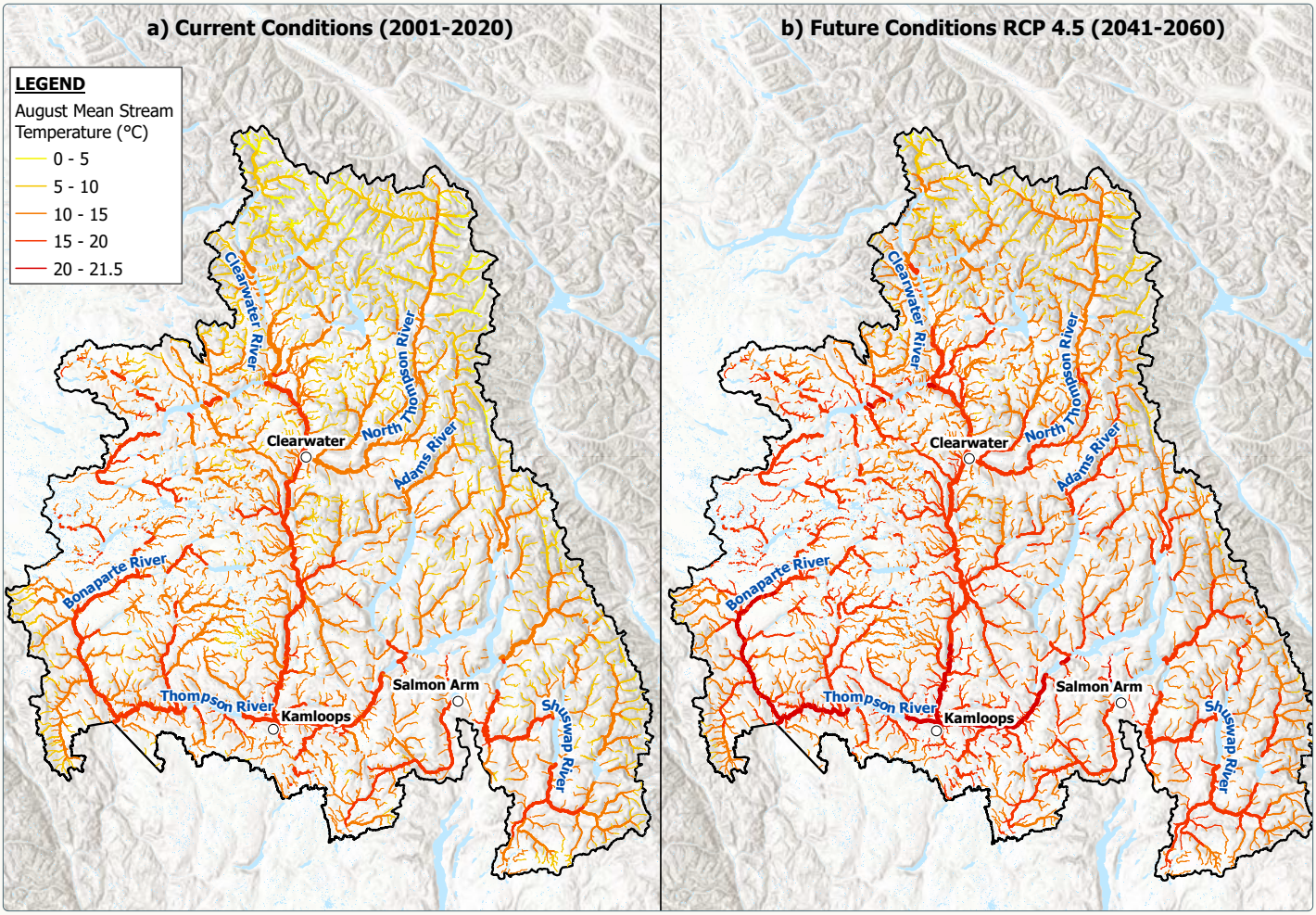


Figure 5. Modelled mean stream temperatures in August for the Thompson-Shuswap under a) current conditions (2001-2020) and; b) future conditions under Representative Concentration Pathway (RCP) 4.5 moderate global emission scenario for years 2041-2060[25,26,27]. Stream reaches of stream orders 3 and higher are shown, and line width is proportional to stream order.

Higher temperatures and decreased snowfall are also resulting in lower volumes of water stored in the snowpack. This affects the rate at which water is released from the snowpack and flows into rivers, resulting in lower flows. These lower flows can cause water levels to drop below critical thresholds at times when salmon need water most for migration. Climate models show that more tributaries across the Thompson-Shuswap are expected to experience low-flow conditions in summer and fall under projected future conditions, and the increase in low-flow events is further compounded by water withdrawals throughout the Thompson-Shuswap region. Reduced flows limit available habitat for salmon of all life stages, inhibit migration, increase pollutant concentrations, and may worsen already high stream temperatures.

To understand how serious low-water conditions could become under climate change, DFO Science conducted geospatial analyses using licensed water use data and projected monthly low flows under a moderate climate change scenario. This work identified parts of Bessette Creek, Duteau Creek, Eagle River, the lower Shuswap River, the North Thompson River, the Salmon River, and the Thompson River as salmon streams that may be especially vulnerable to worsening low-flow conditions in the future. How severe these impacts may become will also depend on local stream channel characteristics, which vary widely across the region.

For a more detailed overview of climate change predictions, refer to the Plan's accompanying *Thompson-Shuswap Watershed Profile*[28].

25 DFO, *Geospatial Indicators and Metrics for Threats to Fish Habitat*, 2024.

26 Weller et al., "Stream thermalscape scenarios for British Columbia," 2024.

27 Iacarella et al., "Geospatial Indicators and Metrics for Threats to Fish Habitat," 2025.

28 TSSC, *Thompson-Shuswap Watershed Profile,* 2026.

Low water levels are already affecting salmon in some streams, especially where water withdrawals are high. During drought years in 2021, 2023, and 2025, Temporary Protection Orders[29] were put in place for Bessette Creek and Salmon River to prohibit water withdrawals from mid-August to mid/late-September to ensure passage to spawning grounds for migrating Chinook salmon (CK14 and CK16). Expanding proactive watermanagement and allocation solutions could reduce the need for emergency measures during critical periods.

Climate change is also driving an increase in the severity and frequency of wildfires in the Thompson-Shuswap, which further degrades salmon habitat and negatively affects flow rates and water quality. Notably, the 6 largest fires recorded between 1919 and 2023 in the Thompson-Shuswap all occurred from 2017 onward[30].



Wildfires can increase flood risk. The Momich River was impacted by a large fire in 2023. Photo credit: SFC

29 BC Water Sustainability Act — Temporary Protection Orders

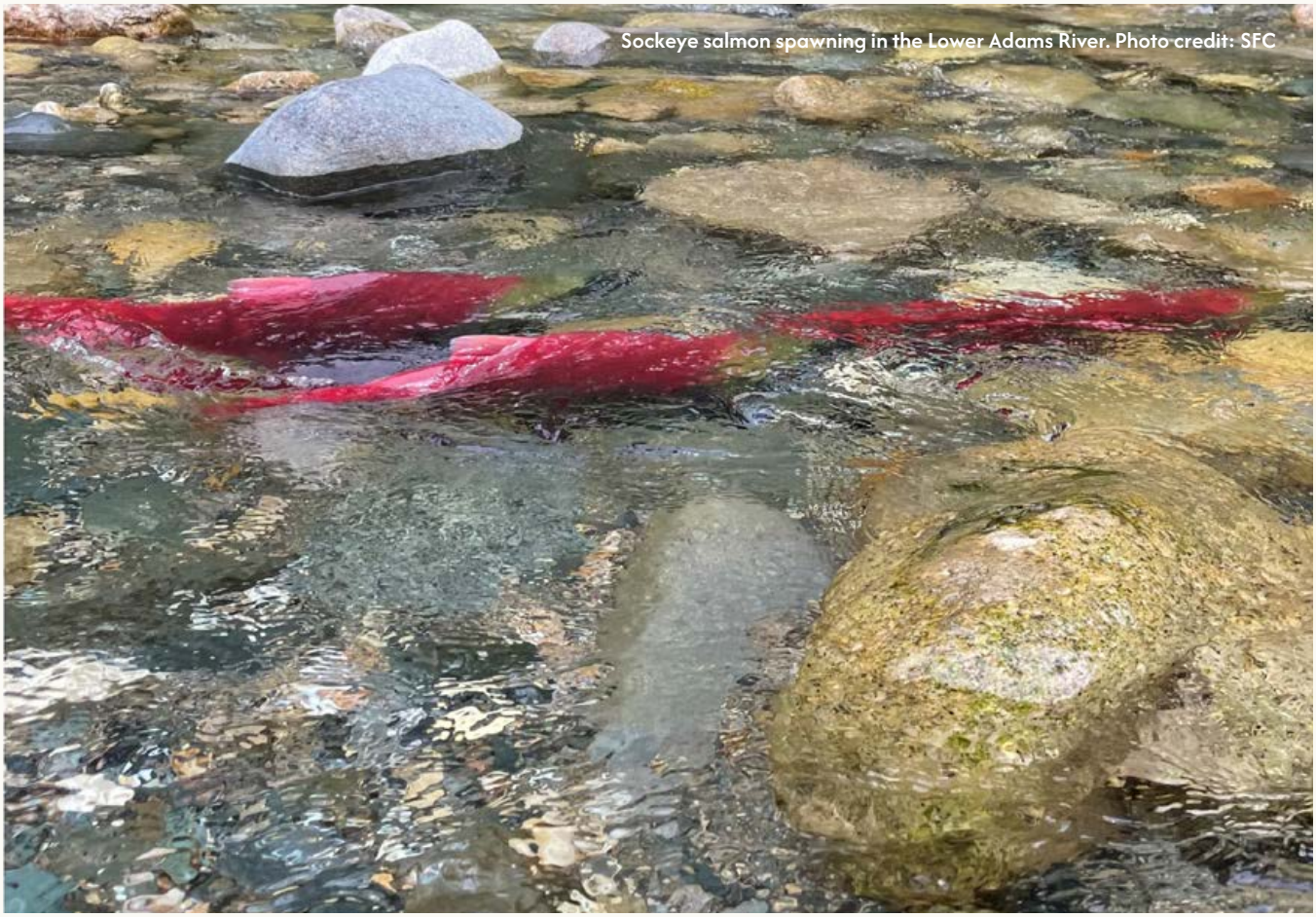
30 BC Wildfire Service, "BC Wildfire Fire Perimeters," 2025.

Loss of Connection to Salmon

Less tangible threats related to the breakdown of human relationships with salmon and their ecosystems are more difficult to quantify and are often overlooked. Salmon hold a revered place within Secwepemcúl'ecw, encompassing sacred, spiritual, and cultural values that intertwine with the Secwépemc identity and way of life. Secwépemc communities have cared for *sqlelt̓n* in these lands since time immemorial and offer invaluable perspectives on salmon recovery, derived from generations of knowledge. Secwépemc communities engaged in the development of the Plan highlighted the need for their communities and all others to maintain and improve their relationships with salmon and their ecosystems. There are important teachings in Secwepemcúl'ecw that are passed down by Secwépemc Knowledge Holders, and that guide the relational responsibilities between people, *sqlelt̓n*, and Secwepemcúl'ecw. When these teachings are not shared, the relational responsibility between people, salmon, and the land is degraded.

As natural ecosystems deteriorate, so does our connection with the natural world. This is compounded by shifting baseline syndrome, where future generations consider the degraded ecosystems they live in to be "normal", having known no difference. This highlights an additional threat to salmon that, although less direct, is increasingly significant: the loss of Traditional Knowledge and spiritual and cultural connection to salmon and their ecosystems. As a result, future generations may be less inclined to care about salmon recovery, conservation, and protection.

Participants engaged in developing the Plan also highlighted the challenges of working across multiple jurisdictions, which include numerous federal and provincial departments, ministries, sectors, units, programs, and initiatives, alongside 4 regional districts and 17 municipalities. They emphasized the importance of relationships within the salmon community, noting that challenges with knowledge sharing, integration, coordination, and organizational stability or longevity create barriers to effective support for salmon ecosystems.



Sockeye salmon spawning in the Lower Adams River. Photo credit: SFC

Chapter 3. Identifying Goals, Objectives, and Actions

This chapter outlines the overarching goals and objectives that can guide actions in the Thompson-Shuswap to improve ecosystem function for salmon. It also describes the collaborative process used by the TSSC to identify and prioritize actions that support these goals and objectives.

Goals and Objectives

The TSSC developed the Plan's goals and objectives (Table 3) based on collective knowledge of salmon habitat needs in the Thompson-Shuswap and an understanding of the key threats they face (see Chapter 2 and the *Thompson-Shuswap Watershed Profile*). These were further informed by Harding et al.'s *Regional Restoration Priorities Plan* and refined collaboratively with input from the Thompson-Shuswap salmon community to reflect regional priorities.
The goals and objectives support a shared vision of improving and protecting salmon ecosystems, while strengthening the social connections needed to do so, to achieve both immediate and long-term benefits in a changing climate. They address multiple threats to salmon populations and support the conditions needed for resilient and productive ecosystems.
These goals are not commitments by TSSC parties, but are intended to guide the identification and prioritization of actions with the greatest potential benefit. All actions in the Plan support one or more objectives, as outlined in Chapters 4 and 5.

Identifying Actions

The TSSC identified 2 categories of actions for the Plan: place-based restoration and conservation actions (Chapter 4) and cross-cutting actions (Chapter 5). Restoration actions describe place-based, localized projects and initiatives that aim to maintain or improve salmon habitat. Cross-cutting actions are not tied to a local action, but instead require additional regulatory, policy, and jurisdictional support to improve salmon habitat conditions holistically. Actions within the scope of the TSSC were those that:

- Identified priorities for conservation and restoration;
- Explored tools (including policy, programs, regulations, human resources, and expertise) available to implement conservation and restoration priorities;
- Coordinated and facilitated the implementation of conservation and restoration priorities;
- Built relationships, improved communications, and identified key decision makers and technical experts;
- Collected baseline data and/or conducted monitoring of priority ecosystems or restoration works; and/or
- Supported existing conservation and restoration efforts in the Thompson-Shuswap.

To identify a list of preliminary restoration actions, the TSSC identified all relevant actions proposed in the literature for the Thompson-Shuswap published from 2000 to 2024.

From March 2023 to June 2025, the TSSC hosted workshops, virtual engagement sessions, technical working groups, First Nations engagement meetings, field assessments, and a web-based mapping exercise (using Survey123) to engage salmon community participants in further identifying potential actions.

In addition, the TSSC employed a novel geospatial modelling tool called NetMap[31] to create "virtual watersheds" for the Bonaparte and Deadman rivers in ArcGIS using Digital Elevation Models (DEM) and applicable spatial data. This innovative project enabled the TSSC to identify site-specific restoration opportunities, such as areas susceptible to chronic sediment delivery, candidate sites for riparian planting, as well as locations with potential to improve floodplain and side-channel connectivity.

31 TerrainWorks – NetMap

Table 3. The 6 goals of the Thompson-Shuswap Salmon Ecosystem Action Plan and their objectives.

	Goals	Objectives
A 	**Increase or maintain the quantity, quality, and diversity of aquatic habitat for all fresh water life stages**	A-1: Increase or maintain the quantity of habitat for spawning, rearing, feeding, refuge, overwintering, and migration A-2: Increase or maintain the quality of habitat for spawning, rearing, feeding, refuge, overwintering, and migration A-3: Increase or maintain the quality of riparian habitat A-4: Increase or maintain habitat diversity
B 	**Improve habitat connectivity**	B-1: Increase lateral connectivity, such as to floodplain, off-channel, and wetland habitats B-2: Increase longitudinal connectivity to allow fish migration further upstream by removing or remediating structural barriers
C 	**Improve water quality**	C-1: Maintain or improve stream temperature C-2: Increase or maintain access for salmon to cold-water thermal refugia such as groundwater upwellings, hyporheic mixing zones, and glacial-fed headwaters C-3: Increase the filtration capacity of riparian areas to reduce non-point source pollution and sedimentation C-4: Increase bank stability to reduce erosion and sedimentation using nature-based solutions C-5: Increase upslope stability to reduce landslides and sedimentation
D 	**Maintain adequate flows**	D-1: Increase channel complexity and reduce channelization to slow flows and improve ecological flow regimes D-2: Develop or expand water storage opportunities D-3: Reduce instances and/or magnitude of low flow events that create barriers to migration or to accessing suitable habitat D-4: Increase vegetative cover on slopes at higher elevation to promote water infiltration and storage
E 	**Improve our relationship with salmon**	E-1: Increase the number of projects led by and in partnership with First Nations communities E-2: Increase the number of projects that incorporate education and outreach opportunities E-3: Increase the number of projects that involve landowners and stewardship groups
F 	**Improve knowledge and coordination within the salmon community**	F-1: Increase salmon ecosystem knowledge and the availability of shared data and digital tools F-2: Increase the capacity of First Nations organizations coordinating restoration and conservation actions



The TSSC hosts a workshop in Kamloops, B.C., to begin establishing a shared vision for the Plan, March 2023. Photo credit: DFO

All identified actions were screened for inclusion in the Plan based on the following criteria:

a) the action has the potential to address at least one Plan objective;

b) the action is within the scope of the TSSC; and

c) the action remains relevant (is not outdated, redundant, or already addressed).

Once the list of potential actions had been established, the TSSC then refined the actions to be specific, trackable, and potentially achievable within a 5-year review cycle (see Chapter 6). Actions tied to specific locations were grouped as Focal Waterbody Actions (Chapter 4) and reviewed and further refined by the salmon community through online engagement sessions between September and October 2025.

A separate engagement session was held for Bessette Creek to pilot a structured prioritization framework[32] developed by the TSSC. While participants supported the proposed methodology, they determined that additional detail would be needed for each proposed action to accurately apply the scoring criteria within the framework. Consequently, prioritization scores for Bessette Creek actions have not been compiled or included in this plan. Further guidance on the potential future use of prioritization frameworks can be found in Chapter 5. Cross-cutting actions, or those not tied to a specific location, were reviewed and further refined during a hybrid workshop held in Kamloops in November 2025.

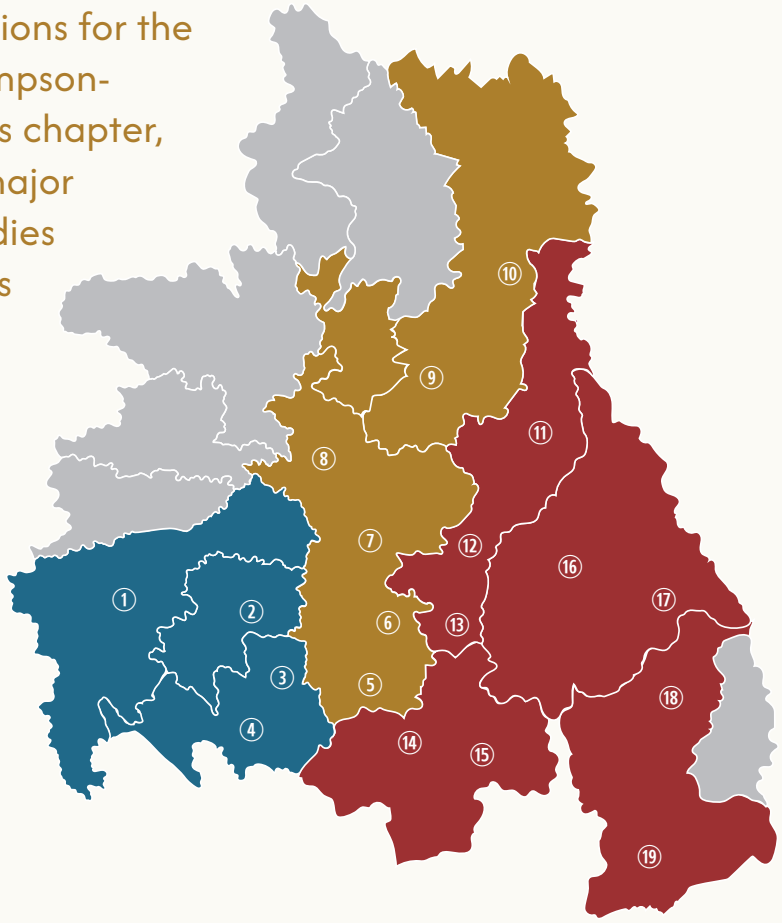
32 Visit the TSSC website to learn more about the prioritization framework.

Chapter 4. Focal Waterbody Actions

This chapter outlines priority actions for the 19 focal waterbodies in the Thompson-Shuswap. To ease navigating this chapter, it has been organized by the 3 major watersheds, with focal waterbodies organized into watershed groups within each major watershed.

For each major watershed, a snapshot of salmon populations and key habitat stressors is provided to ground action planning in an understanding of current ecological conditions, including the identification of watershed groups that are inaccessible to salmon[33]. This structure is intended to align actions with ecological processes and opportunities for collaboration at appropriate watershed scales.

Inaccessible areas for salmon



THOMPSON RIVER MAJOR WATERSHED	NORTH THOMPSON RIVER MAJOR WATERSHED	SOUTH THOMPSON RIVER MAJOR WATERSHED
Bonaparte River Watershed Group:	**Lower North Thompson River Watershed Group:**	**Adams River Watershed Group**
Bonaparte River ①	Paul Creek ⑤	Upper Adams River ⑪
Deadman River Watershed Group:	Louis Creek ⑥	Adams Lake ⑫
Deadman River ②	Lower North Thompson ⑦	Lower Adams River ⑬
Thompson River Watershed Group:	Lemieux Creek ⑧	**South Thompson River Watershed Group**
Tranquille River ③	**Upper North Thompson River Watershed Group:**	South Thompson River ⑭
Thompson River ④	Raft River ⑨	Salmon River ⑮
	Upper North Thompson and Lower Clearwater Rivers ⑩	**Shuswap Lake Watershed Group**
		Shuswap Lake ⑯
		Eagle River ⑰
		Upper Shuswap Watershed Group
		Lower Shuswap River ⑱
		Bessette Creek ⑲

33 Refer to the *Thompson-Shuswap Watershed Profile* for a detailed description of characteristics and stresses to salmon ecosystems in these watersheds.

Actions identified within each focal waterbody are organized under four themes:

- **Fish passage:** Increasing access, both laterally and longitudinally, to salmon habitat;
- **Restoration and conservation:** Improving or maintaining the quality and quantity of salmon habitat, including water quality, instream habitat features, and riparian vegetation;
- **Knowledge gaps**: Research, field studies, and/or monitoring programs to improve understanding of issues affecting salmon or salmon habitat;
- **Outreach and engagement:** Education initiatives or projects involving Secwépemc Nations, community members, and local organizations working to improve salmon habitat.

Each listed action has a unique action number and has been linked to specific goals and objectives of the Plan (Table 3). **Actions consistently identified by broad consensus as high priorities within that watershed group are bolded and indicated by the following symbol: '⚠'.** They are also listed at the top within their respective action themes. Priority actions largely aim to address root causes related to ecological processes and ecosystem function. These will support the enabling conditions necessary for healthy, productive salmon ecosystems.

The goals and objectives supported by each action are denoted with icons representing the goals to:

A) Increase or maintain habitat quality, quantity, and diversity

B) Improve habitat connectivity

C) Improve water quality

D) Maintain adequate flows

E) Improve our relationship with salmon

F) Improve knowledge and coordination within the salmon community



Louis Creek. Photo credit: DFO.

Thompson River Major Watershed

The Thompson River Major Watershed is divided into 4 watershed groups: Thompson River, Deadman River, Bonaparte River, and Green Lake (Figure 6). As indicated in Figure 6, the majority of the Green Lake Watershed Group is inaccessible to salmon; however, approximately 9 km of Rayfield River may be accessible between Purver Falls and the Bonaparte River confluence.

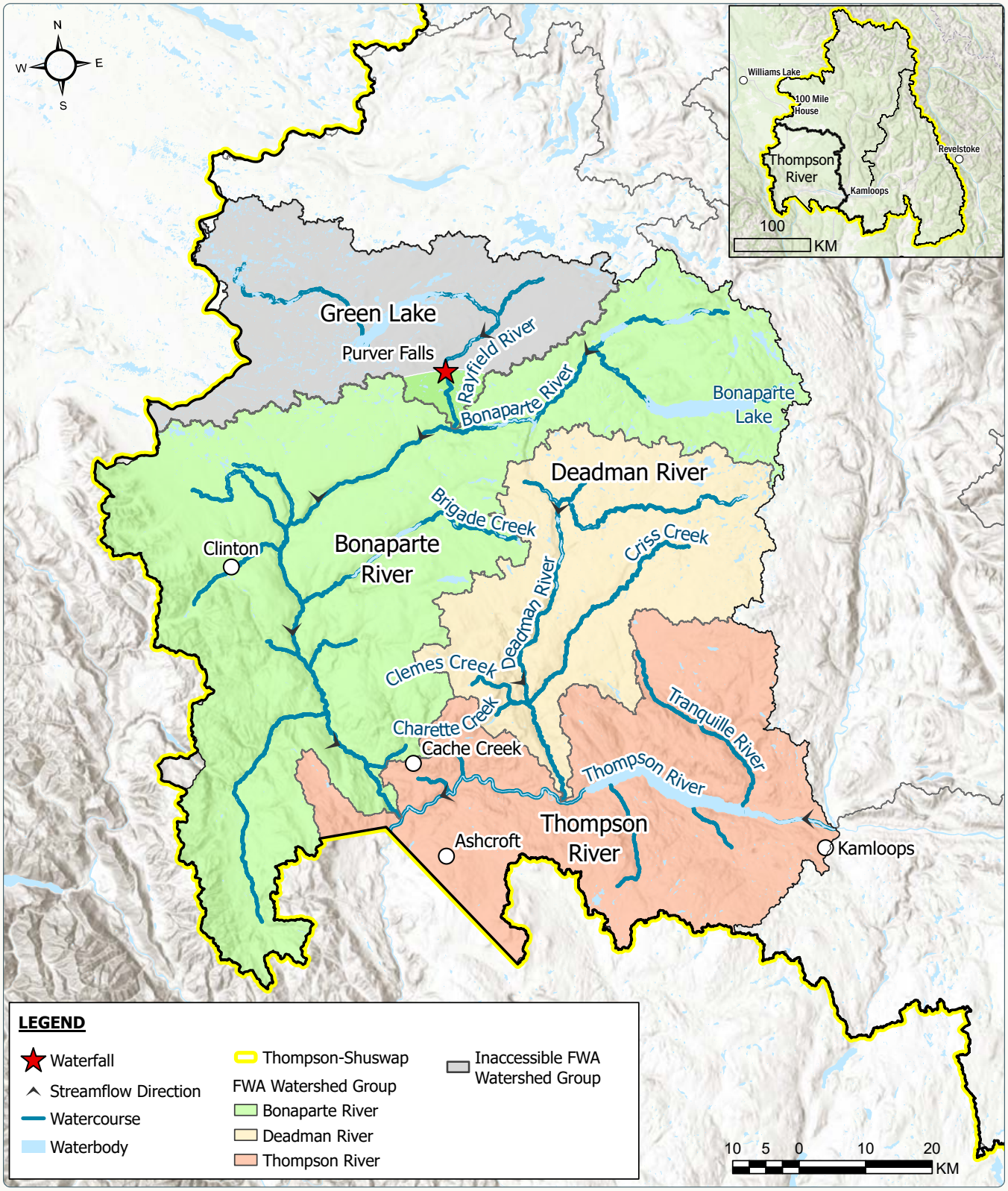


Figure 6. Thompson River Major Watershed, Freshwater Atlas (FWA) Watershed Groups, and major watercourses.

There are 8 salmon CUs in the Thompson River Major Watershed. Table 4 below shows the presence or likely absence for each CU across all 4 watershed groups.

Table 4. Salmon conservation units (CU) in the Thompson River Major Watershed, with associated designatable units (DU), COSEWIC conservation statuses, and observed presence (Y) or likely absence (N) in each Watershed Group.

Species	Conservation Unit name	Designatable Unit and COSEWIC Status	Thompson River Watershed Group	Bonaparte River Watershed Group	Deadman River Watershed Group	Green Lake Watershed Group
Sockeye	Kamloops - Early Summer Timing (SEL-10-01)	DU11 Special Concern	Y	N	N	N
	Shuswap Complex - Late (SEL-09-03)	DU18 Not At Risk	Y	N	N	N
	Shuswap Complex-Early Summer Timing (SEL-09-02)	DU19 Not At Risk	Y	N	N	N
Chinook	South Thompson SU 0.3 (CK-13)	DU12 Not At Risk	Y	N	N	N
	Lower Thompson SP 1.2 (CK-17)	DU15 Endangered	Y	Y	Y	N
Coho	Lower Thompson (CO-7)	DU6 Endangered	Y	Y	Y	N
Pink	Fraser River (PKO-1)	Not assessed by COSEWIC	Y	Y	Y	N
Steelhead	N/A	Thompson Summer Run Endangered	Y	Y	Y	Y

Salmon in the Thompson River Major Watershed face many stressors. A few key habitat stressors prevalent in this watershed are highlighted below.

Key Habitat Stressors[34] in the Thompson River Major Watershed:

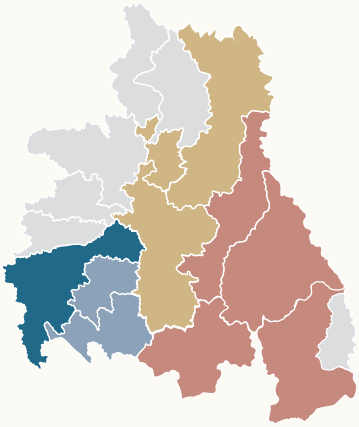
- **Altered hydrology and climate change**: Many streams are fully allocated, which limits additional withdrawals. When combined with climate change-related hydrologic changes, this can increase pressure on aquatic ecosystems, especially in the Bonaparte, Deadman, Tranquille, and Thompson rivers. Climate change is contributing to these pressures by altering runoff patterns, reducing summer base flows, and increasing stream temperatures. These changes have significant impacts on salmon migration, spawning, and rearing success.
- **Decreased water quality**: Nutrient loading, algal blooms, and sedimentation are common in the Bonaparte and Deadman rivers. Wildfires (such as Elephant Hill and Sparks Lake) and resource industry activities can have negative impacts on water quality through increased sedimentation and slope instability.
- **Fish passage barriers**: Water diversion structures (for example, on the Tranquille River) and damaged infrastructure (for instance, the Bonaparte Fishway, post-2017 wildfire) restrict access to upstream habitats for migrating salmon. The Bonaparte Fishway requires ongoing repairs to maintain connectivity.
- **Loss of habitat quantity, quality, and complexity**: Recreational gold panning in the Tranquille River disturbs fish habitat, and widespread riparian degradation has occurred throughout the Deadman and Bonaparte rivers, leading to erosion, sedimentation, and elevated stream temperatures.

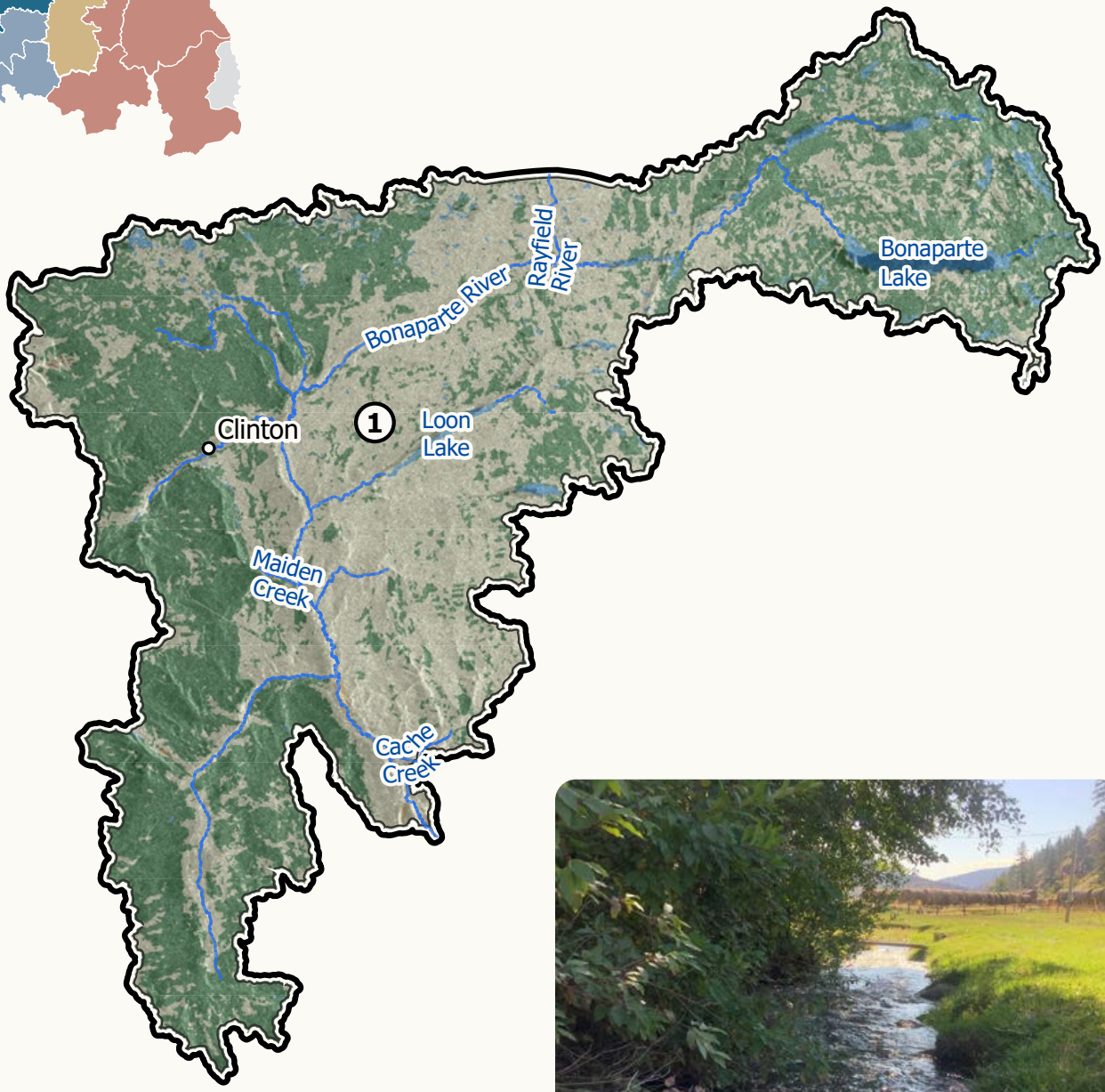


Salmon migrate through a narrow canyon to access habitat in the Bonaparte River. Photo credit: SFC

34 Summaries for key habitat stressors are based on multiple sources, including RPAs, COSEWIC assessments, SHIM assessments, strategic review documents, and more. Refer to the *Thompson-Shuswap Watershed Profile* for complete reference details.

Bonaparte River Watershed Group





Focal Waterbody ①: Bonaparte River

Actions identified for the Bonaparte River (BR) Focal Waterbody are listed in the table below.

Focal Waterbody 1: Bonaparte River (BR)

Supported Goals and Objectives	#	Action
		Fish Passage
A-1 B-2 D-1, D-3 E-1	**BR1** ⚠	**Conduct an engineering and flow-analysis assessment of the Bonaparte Fishway to identify structural upgrades that ensure reliable upstream passage under variable flow conditions[35].**
A-1 B-2	BR2	Remediate fish passage barriers on Maiden Creek by replacing the undersized double culvert near Loon Lake Road and the Highway 97 culvert[36].
		Restoration and Conservation
A-1, A-2, A-4 B-1 C-3 D-1, D-2, D-3 E-1	**BR3** ⚠	**Support and expand ongoing Beaver Dam Analog (BDA) installation projects led by Secwepemcúl'ecw Restoration and Stewardship Society and BC Wildlife Federation[35].**
A-2, A-3 C-4	BR4	Revegetate riparian areas with native plants and install livestock fencing at priority sites identified in the Bonaparte River Sensitive Habitat Information Mapping (SHIM) report to stabilize banks and reduce erosion[37].
A-1, A-2 B-1	BR5	Evaluate opportunities to expand off-channel rearing habitat and increase habitat complexity at key sites (for example, at Cache Creek)[35].
A-2 C-4	BR6	Install livestock watering stations set back from watercourses at key sites to reduce cattle access and prevent disturbance to salmon habitat[38].

35 TSSC, Thompson River engagement meeting, October 16, 2025.

36 Secwépemc Fisheries Commission, *Thompson-Shuswap Watershed Connectivity Restoration Plan*, 2025.

37 McGill et al., *Bonaparte River Sensitive Habitat Inventory*, 2025.

38 Dionne et al., "Recovery Potential Assessment for Chinook," 2023.

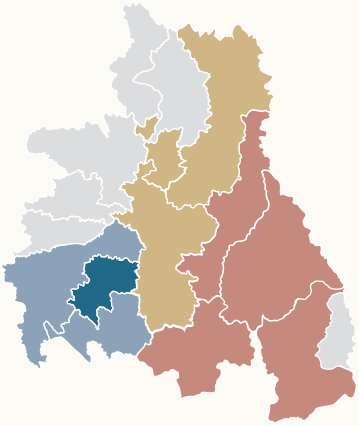
Knowledge Gaps		
A-2	**BR7** ⚠	**Establish water quality and sediment targets and implement monitoring throughout the focal waterbody[39].**
C-1, C-2, D-3 F-1	**BR8** ⚠	**Initiate a hydrometric and stream temperature monitoring program, including installing or reactivating sites on Hat Creek, to address snowmelt and water-level data gaps, support flow-management decisions, drought-response planning, and cold-water refugia mapping[35].**
A-1, A-2, A-3 C-2 E-1 F-1	BR9	Confirm cold-water refugia within and adjacent to Bonaparte Reserve using local and Traditional Knowledge in combination with field temperature monitoring to guide future riparian restoration and protection efforts[40].
A-2, A-3 C-1, C-3, C-4 F-1	BR10	Verify sites identified in NetMap as having high thermal loading in the Bonaparte River and complete riparian planting at appropriate locations[41].
A-1, A-4 B-1 F-1	BR11	Verify sites identified in NetMap as potential off-channel habitat and implement connectivity improvements where appropriate[41].
A-1, A-2 B-2 E-1 F-1	BR12	Conduct a field assessment to determine the upstream limit of adult salmon distribution in Hat Creek and use the findings to guide future fish passage improvements[35].
F-1, F-2	BR13	Explore the use of Artificial Intelligence (AI) based image recognition and video analysis tools to support or enhance salmon enumeration at existing resistivity counting sites. Assess feasibility, accuracy, and data-integration potential to improve long-term population monitoring[35].
Outreach and Engagement		
D-2, D-3 E-2, E-3 F-1	**BR14** ⚠	**Work with Bonaparte First Nation, local water users, and provincial agencies to co-create a seasonal flow management plan that supports salmon migration while ensuring a reliable water supply for agricultural needs[39].**

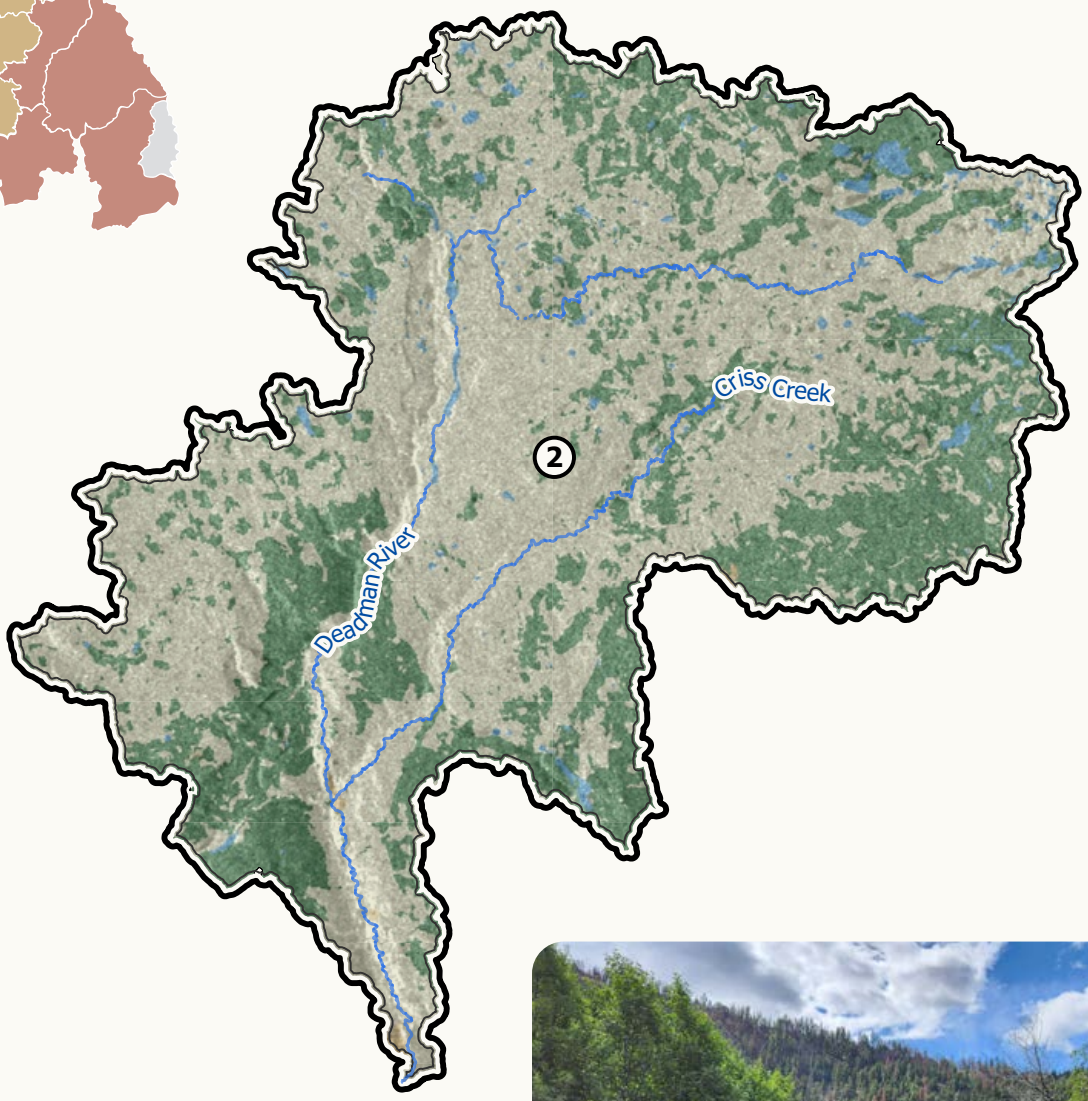
39 TSSC, meeting with Bonaparte Watershed Society, December 19, 2023.

40 McGill et al., *Bonaparte River* Sensitive *Habitat Inventory*, 2020.

41 TerrainWorks, Bonaparte NetMap model output, 2024.

Deadman River Watershed Group







Focal Waterbody ②: Deadman River

Actions identified for the Deadman River (DR) Focal Waterbody are listed in the table below.

Focal Waterbody 2: Deadman River (DR)

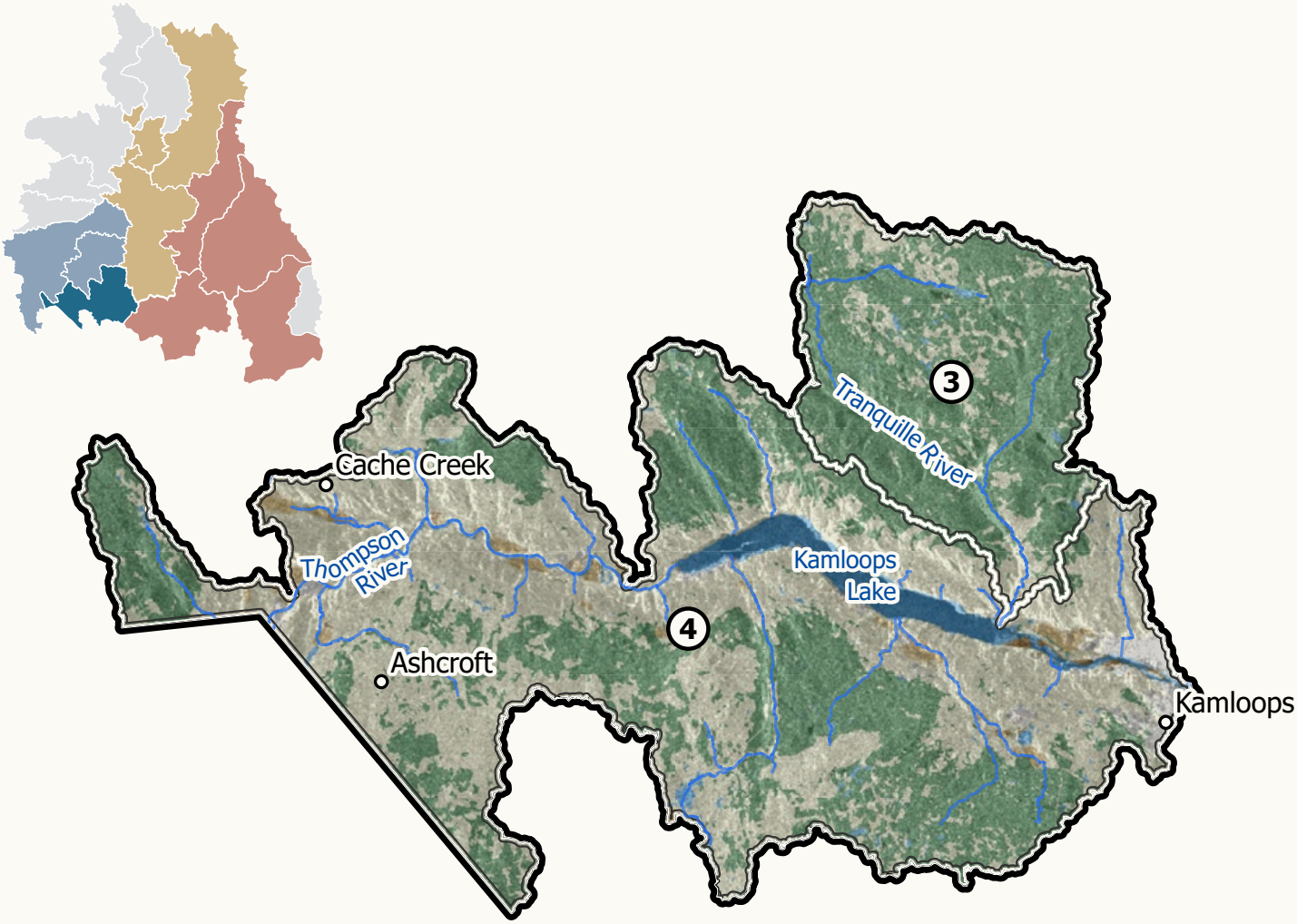
Supported Goals and Objectives	#	Action
Restoration and Conservation		
A-2, A-3 C-3, C-4	DR1	**Plant riparian vegetation, install fencing, and create controlled livestock access points on Deadman River and Criss Creek to improve riparian cover and habitat quality[42,43].**
A-2, A-3 C-3, C-4, C-5 E-1	DR2	Remediate slope stability issues in areas affected by the Sparks Lake wildfire using nature-based solutions to reduce erosion[44].
A-3, A-4 E-1 F-2	DR3	Naturalize the Environmental Protection Area within the Designated Area of Skeetchestn Indian Reserve (IR) #0 by restoring and enhancing native vegetation to improve ecological integrity and support culturally significant landscapes[44].
A-2, A-4 D-1	DR4	Enhance instream habitat complexity in the lower Deadman River and priority sites on Criss Creek identified in the SHIM, including increasing sinuosity and adding woody debris[43,45].
Knowledge Gaps		
A-2, A-4 F-1	DR5	Identify areas that would benefit from habitat complexing projects to improve habitat quality[46].
A-2 C-3, C-4, C-5 F-1, F-2	DR6	Identify additional opportunities to continue forest-service-road deactivation and replanting programs with Skeetchestn Natural Resources in the upper watershed to improve slope stability and water quality[45].

42 Secwépemc Fisheries Commission, *Sensitive Habitat Inventory – Deadman River*, 2024.
43 Secwépemc Fisheries Commission, *Criss Creek Sensitive Habitat Inventory*, 2025.
44 Urban Systems Ltd., *Skeetchestn Indian Band – Land Use Plan*, 2022.
45 TSSC, Thompson River engagement meeting, October 16, 2025.
46 Dionne et al., "Recovery Potential Assessment for Chinook," 2023

A-4 B-1 F-1	DR7	Support and monitor Skeetchestn-led beaver translocation projects and identify upper-watershed sites for beaver dam analogues or re-establishment to enhance water storage; NetMap habitat tools may assist in site identification[47].
A-1 B-1 F-1	DR8	Verify sites identified in NetMap as potential off-channel habitat and implement connectivity improvements where appropriate[47].
A-2 C-1, C-2, C-3, C-4 F-1	DR9	Verify sites identified in NetMap as having high thermal loading in the Deadman River and complete riparian planting at appropriate locations[47].
A-2 C-4, C-5 F-1	DR10	Verify sites identified by sediment sourcing research and modelling tools, including NetMap, as having high predicted sediment delivery to Deadman River and Criss Creek, and determine feasibility of drainage diversions and road remediation[47].
F-1, F-2	DR11	Explore the use of AI-based image recognition and video analysis tools to support or enhance salmon enumeration at existing resistivity counting sites. Assess feasibility, accuracy, and data-integration potential to improve long-term population monitoring[45].

47 TerrainWorks, Deadman River NetMap model output, 2025.

Thompson River Watershed Group





Focal Waterbody ③: Tranquille River



Focal Waterbody ④: Thompson River

Actions identified for the Tranquille River (TR) and Thompson River (T) focal waterbodies are listed in the tables below.

Focal Waterbody 3: Tranquille River (TR)

Supported Goals and Objectives	#	Action
		Fish Passage
A-1 B-2 F-1	**TR1**	**Progress the ongoing feasibility study led by BC Parks, Tk'emlúps te Secwépemc, and the Secwépemc Fisheries Commission to restore fish passage at the Tranquille River water diversion structure[48].**
A-1 B-1 D-2 E-3	**TR2**	**Collaborate with Tranquille Farms to evaluate water withdrawals, quantify losses from leaking infrastructure, assess impacts on salmon (including drought-related risks), and implement the most effective mitigation measures[49].**
A-1 B-1, B-2 D-1	TR3	Construct BDAs where appropriate to slow flows, recharge groundwater, and improve salmon habitat. Implement adaptive management of beaver dams by mapping, monitoring seasonal changes in connectivity (for example, between the Thompson River and the Tranquille Wetlands Management Area,) and addressing current and future fish passage barriers[48,49].
		Restoration and Conservation
A-2 C-1, C-4	TR4	Use bioengineering techniques at key sites to stabilize and revegetate the riparian corridor to reduce erosion, improve habitat quality, and enhance water quality[49].
A-1, A-2, A-4 B-1 D-1	TR5	Increase aquatic habitat quantity, diversity, and complexity at key locations by creating greater pool density, enhancing channel sinuosity, improving wetland connectivity, and conducting instream restoration to enhance spawning habitat[49].
A-2, A-3 C-3	TR6	Control invasive reed canary grass (*Phalaris arundinacea*) to improve riparian habitat quality and maintain conditions that support salmon ecosystems through the Lac du Bois Grasslands Protected Area[48].

48 TSSC, Thompson River engagement meeting, October 16, 2025.

49 Secwépemc Fisheries Commission, *Sensitive Habitat Inventory – Tranquille River*, 2023.

A-2, A-3 B-1 C-3	TR7	Support BC Parks efforts to restore natural floodplain function in areas of the Lac du Bois Grasslands Protected Area previously impacted by livestock grazing to improve habitat quality and ecosystem resilience[48].
	Knowledge Gaps	
C-1, C-2 D-3 F-1	**TR8**	**Identify and evaluate seepage zones to determine groundwater influence and their role in providing cold-water habitat for salmon; develop measures to protect and maintain these areas under future climate conditions[48].**
A-1 B-2 C-1	**TR9**	**Assess nutrient inputs, fish-use patterns, and water flow and temperature to identify key limiting factors for salmon and inform restoration and management strategies[48].**
	Outreach and Engagement	
E-1, E-1 F-2	**TR10**	**Support the "Salmon in the Classroom" program in Kamloops to sustain facilities, resources, and Tranquille River releases, fostering youth stewardship[48].**
E-1, E-2 F-2	TR11	Work with BC Parks, Tk'emlúps te Secwépemc, and local groups to install signage and share educational materials in the Lac du Bois Grasslands Protected Area on how recreational stream activities impact salmon habitat and passage[49].

Focal Waterbody 4: Thompson River (T)

Supported Goals and Objectives	#	Action
Restoration and Conservation		
A-1 B-1	T1	Assess the benefits of reconnecting the oxbow channel to the Thompson River downstream of Deadman River[50].
A-2 C-4	T2	Install livestock watering stations set back from watercourses at key sites to reduce cattle access and prevent disturbance to salmon habitat[51].
Knowledge Gaps		
A-1, A-2 B-2 C-5 F-1	T3	Conduct an integrated assessment to identify and map potential restoration opportunities, fish-passage constraints, and geohazard risks along the mainstem Thompson River[50].
C-3, C-5 D-4	T4	Identify locations to install catchments along salmon migration corridors to filter roadway runoff[51].

50 TSSC, Thompson River engagement meeting, October 16, 2025.

51 Dionne et al., "Recovery Potential Assessment for Chinook," 2023.

North Thompson River Major Watershed

The North Thompson River Major Watershed is divided into 6 watershed groups: Lower North Thompson River, Upper North Thompson River, Clearwater River, Murtle Lake, Mahood Lake, and Bridge Creek (Figure 7). Bridge Creek, Mahood Lake, and Murtle Lake watershed groups, as well as the upper portion of the Clearwater River watershed group, are inaccessible to salmon due to natural barriers (Goodwin Falls, Bailey's Chute, and Helmcken Falls). The accessible, lower portion of the Clearwater River Watershed Group has been grouped with the Upper North Thompson River Watershed Group in Table 5.

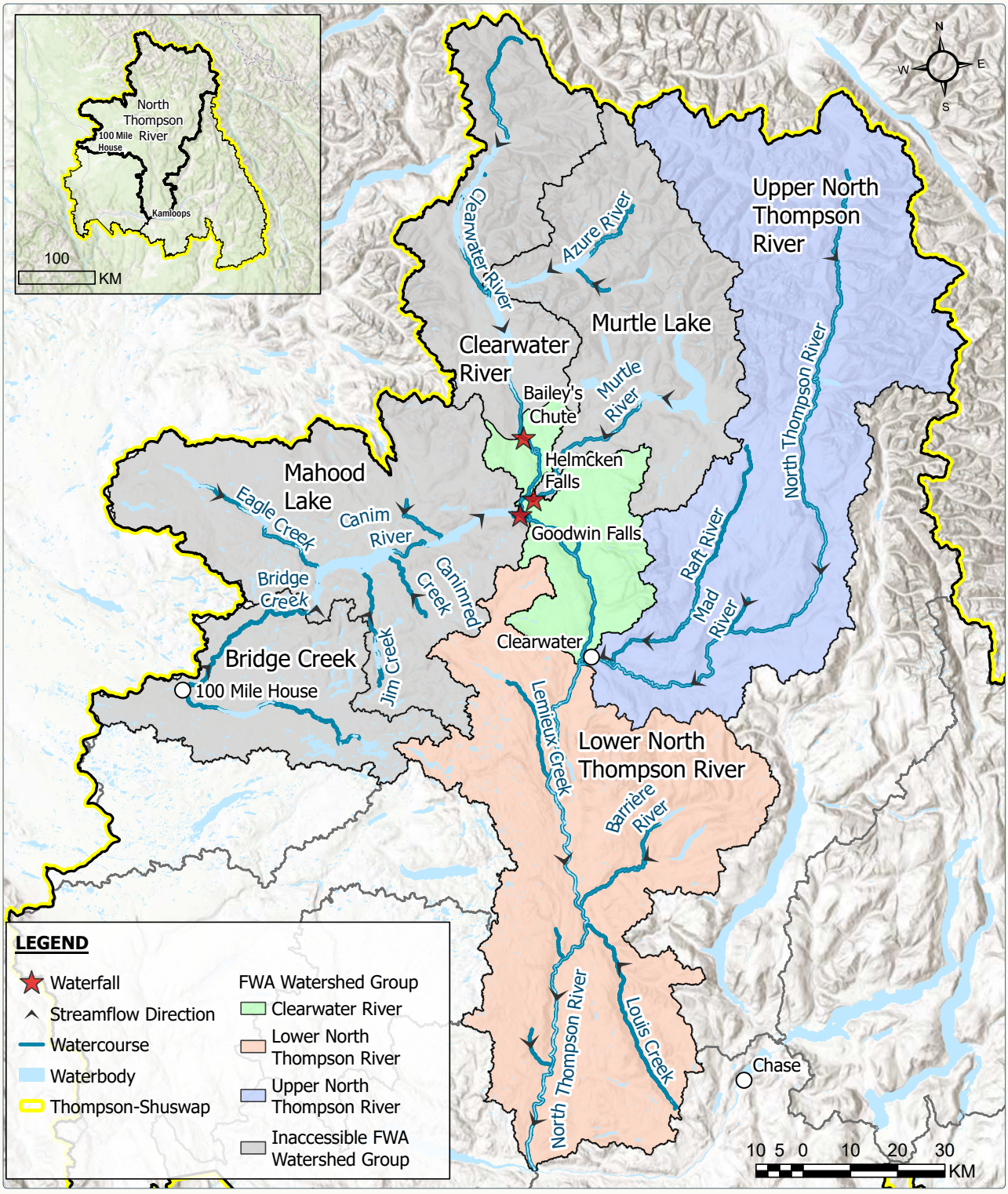


Figure 7. The North Thompson River Major Watershed, Freshwater Atlas (FWA) Watershed Groups, and major watercourses.

There are 7 salmon CUs in the North Thompson River Major Watershed. Table 5 below shows presence or likely absence for each CU across the 2 watershed groups that are accessible to salmon.

Table 5. Salmon conservation units (CU) in the North Thompson River Major Watershed, with associate designatable units (DU), COSEWIC conservation statuses, and observed presence (Y) or likely absence (N) in each Watershed Group[52].

Species	Conservation Unit name	Designatable Unit and COSEWIC Status	Lower North Thompson River Watershed Group	Upper North Thompson River Watershed Group[52]
Sockeye	Kamloops - Early Summer Timing (SEL-10-01)	DU11 Special Concern	Y	Y
	North Barriere-Early Summer Timing (de novo) (SEL-10-03)	DU14 Threatened	Y	N
Chinook	North Thompson SP 1.3 (CK-18)	DU16 Endangered	Y	Y
	Lower Thompson SP 1.2 (CK-17)	DU15 Endangered	Y	N
	North Thompson SU 1.3 (CK-19)	DU17 Endangered	Y	Y
Coho	North Thompson (CO-9)	DU8 Threatened	Y	Y
Pink	Fraser River (PKO-1)	Not assessed by COSEWIC	Y	Y

Salmon in the North Thompson River Major Watershed face many stressors. A few key habitat stressors prevalent in this watershed are highlighted below.

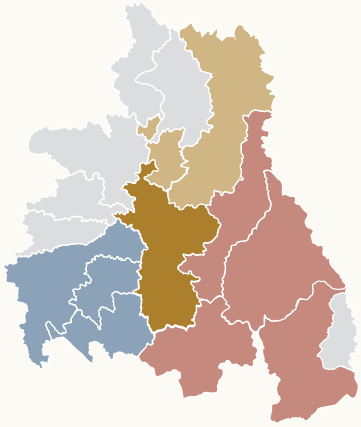
Key habitat stressors[53] in the North Thompson Major Watershed:

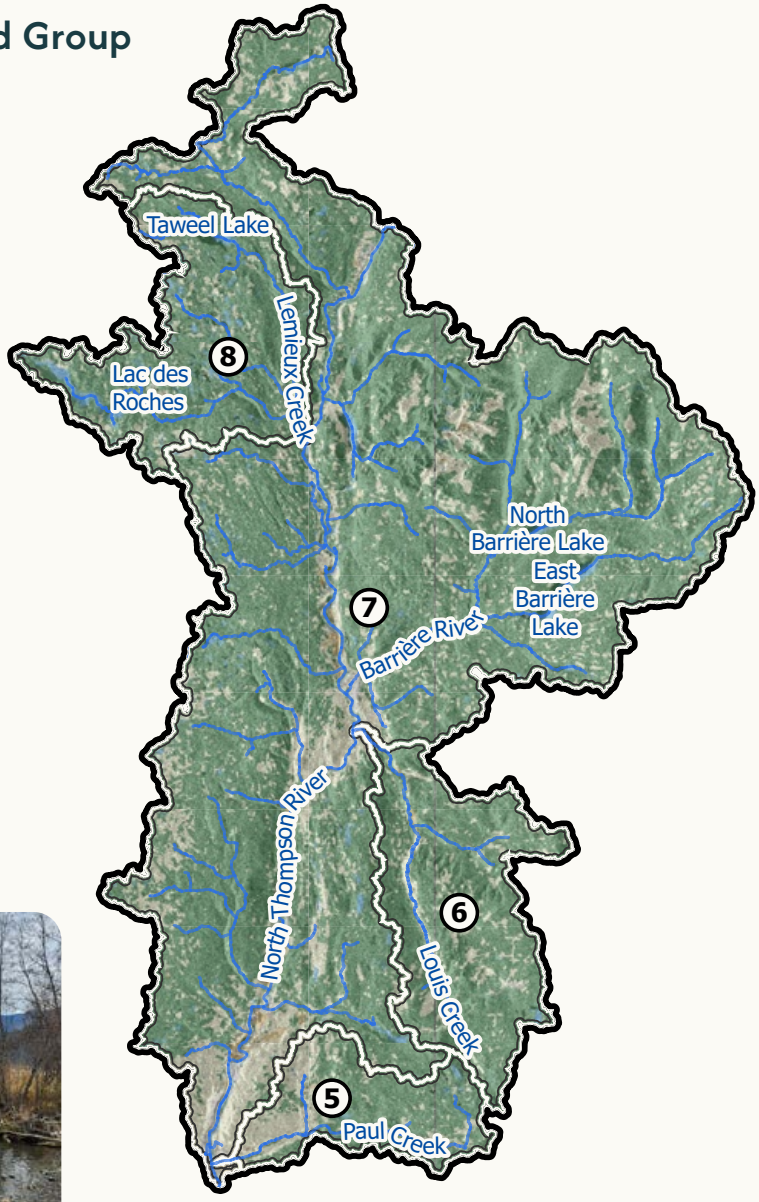
- **Altered hydrology and climate change**: Many streams are fully allocated, which limits additional withdrawals. When combined with climate change-related hydrologic changes, this can increase pressure on aquatic ecosystems, especially in drought-sensitive systems like Louis Creek. Climate change is contributing to these pressures by altering runoff patterns, reducing summer base flows, and increasing stream temperatures. These changes have significant impacts on salmon migration, spawning, and rearing success.
- **Elevated stream temperatures**: Forest harvesting can contribute to increased maximum summer stream temperatures, as observed in the North Thompson watershed, reducing thermal suitability for salmon.
- **Fish passage barriers**: Culverts, dams, and diversion channels restrict access to upstream habitats in systems such as East Barrière River, Paul Creek, and Louis Creek. Periodic drying in streams, including Lemieux, Louis, and Paul creeks, also restricts upstream access, limiting spawning and rearing opportunities for migrating salmon and increasing stranding risk.
- **Habitat loss and degradation:** Linear infrastructure and private land development have led to channel modification, riprap installation, and loss of riparian function in Dunn, Lemieux, Louis, and Paul creeks. These modifications have reduced instream habitat complexity, altered hydrology, and degraded salmon spawning and rearing habitat.
- **Legacy enhancement structures**: Aging constructed habitats (such as spawning channels in Lemieux Creek and off-channel habitat in Raft River) do not have optimal hydrological connectivity connections and are at risk of causing fish strandings.

52 The accessible portion of the lower Clearwater River has been included in the Upper North Thompson Watershed Group.

53 Summaries for key habitat stressors are based on multiple sources, including RPAs, COSEWIC assessments, SHIM assessments, strategic review documents, and more. Refer to the *Thompson-Shuswap Watershed Profile* for complete reference details.

Lower North Thompson River Watershed Group







Focal Waterbody ⑤: Paul Creek



Focal Waterbody ⑥: Louis Creek



Focal Waterbody ⑦: Lower North Thompson



Focal Waterbody ⑧: Lemieux Creek

Actions identified for the Paul Creek (PC), Louis Creek (LOC), Lower North Thompson (LNT), and Lemieux Creek (LC) focal waterbodies are listed in the tables below.

Focal Waterbody 5: Paul Creek (PC)

Supported Goals and Objectives	#	Action
Fish Passage		
A-1 B-2	PC1	Replace 2 perched culverts at Canadian National (CN) Rail and Kootenay Way with fish-passable culverts and assess the diversion channel for potential opportunities for improvement[54].
A-2 B-2	PC2	Remediate the Salish Road culvert to prevent barriers resulting from washout and enhance adjacent instream habitat[54].
A-1 B-2 D-1	PC3	Restore upstream salmon passage under the Kemp Concrete bridge by adding baffles, removing sediment, and creating backwater features[54].
B-2	PC4	Continue to monitor fish passage through the Yellowhead Highway culvert and conduct an options analysis for upgrading the culvert if needed[54].
A-1, A-4 B-2	PC5	Develop and implement a beaver-management plan to maintain fish passage while preserving the ecological benefits of beaver ponds[54].
Restoration and Conservation		
A-2, A-3 C-1, C-3, C-4	PC6	Revegetate exposed riparian areas to stabilize stream banks and reduce erosion at priority sites identified in the Paul Creek SHIM, including in the Scheidam Flats. Install livestock exclusion fencing to protect restored vegetation and maintain riparian integrity[54].

54 Secwépemc Fisheries Commission, *Sensitive Habitat Inventory – Paul Creek*, 2024.

Focal Waterbody 6: Louis Creek (LOC)

Supported Goals and Objectives	#	Action
		Fish Passage
A-1 B-2	**LOC1**	**Develop a long-term solution to the migration barrier at the mouth of Louis Creek during low flows to ensure consistent salmon passage and connectivity[55].**
A-1 B-2	LOC2	Remediate priority culverts to allow upstream fish passage, improving connectivity and access to critical salmon habitat[56].
		Restoration and Conservation
A-2, A-3 C-1, C-3, C-4	LOC3	Revegetate riparian areas with native plants and install livestock fencing at priority sites identified in the Louis Creek SHIM to stabilize banks, reduce erosion, and improve water quality and fish habitat[56].
A-2, A-3 C-4	LOC4	Install livestock watering stations set back from watercourses at key sites to reduce cattle access and prevent disturbance to salmon habitat[57].
A-2, A-3 C-4 E-1 F-2	LOC5	Implement the Whitecroft restoration project with Simpcw and Tk'emlúps te Secwépemc to restore 750 m of stream banks to enhance salmon habitat and reduce sediment input to Louis Creek[55].
		Knowledge Gaps
A-1, A-2, A-4 B-1 C-1, C-2 D-1	LOC6	Identify and assess off-channel, backwater, and cold-water refuge habitats and prioritize their protection and restoration[56].

55 TSSC, Survey123 response, 2025.

56 McDonald and Hawes, *Louis Creek Sensitive Habitat Inventory*, 2023.

57 Dionne et al., "Recovery Potential Assessment for Chinook," 2023.

A-2 F-1	LOC7	Enhance water quality monitoring to investigate potential increases in algae growth. Expand sampling frequency and parameters (such as nutrients, temperature, and turbidity), identify high-risk locations, and analyze seasonal trends to understand drivers and inform management strategies[58].
D-3 F-1	LOC8	Evaluate how Sun Peaks Resort's water withdrawals influence streamflow in McGillivray Creek and Louis Creek. Collect data on withdrawal volumes, timing, and flow conditions; analyze seasonal low-flow scenarios; and assess potential risks to migration and rearing to inform future water management strategies[58].
F-1	LOC9	Complete a desktop analysis of watershed landscape changes from forestry, wildfires, and development to guide restoration priorities and long-term management[58].
Outreach and Engagement		
E-2 F-1	LOC10	Continue engaging landowners and facilitating knowledge-sharing through the Louis Creek collaborative to strengthen partnerships and support informed restoration decisions[58].

Focal Waterbody 7: Lower North Thompson (LNT)

Supported Goals and Objectives	#	Action
Fish Passage		
A-1 B-1	LNT1	Upgrade undersized culverts between Westsyde Road and Gilead Island to improve habitat connectivity[59].
Restoration and Conservation		
A-2, A-3 C-1, C-3, C-4	LNT2	Restore the streambank near Sandalwood Drive by removing old vehicles used as bank protection and stabilizing banks to improve habitat quality and riparian function[60].
A-2, A-3 B-2 C-1, C-3 D-1	LNT3	Restore Dixon Creek by re-establishing natural channel form and riparian habitat, addressing impacts from the old weir to reduce fish strandings and improve habitat quality[60].

58 Secwépemc Fisheries Commission, Louis Creek Community Stewardship meeting, 2024.

59 TSCC, Salmon Habitat Mapper, 2025.

60 TSSC, Survey123 response, 2025.

A-1 B-2 E-1	LNT4	Replace 2 perched and undersized driveway culverts 400 m and 500 m upstream of the Barrière River confluence[60].
A-2, A-3, A-4 C-1, C-3, C-4	LNT5	Restore habitat complexity and riparian corridor at the priority site identified in the East Barrière SHIM near the end of Creekside Road[61].
	Knowledge Gaps	
A-1 B-2 D-3 F-1	LNT6	Monitor tributary fans at the lower North Thompson River for low-flow barriers to assess fish passage and inform actions to increase connectivity[61].

Focal Waterbody 8: Lemieux Creek (LC)

Supported Goals and Objectives	#	Action
	Fish Passage	
A-1 B-2 D-1, D-3	**LC1**	**Implement a long-term restoration solution at the mouth of Lemieux Creek to address channelization and sediment buildup, reducing migration barriers at low flows and improving fish passage[62].**
A-1, A-4 B-2	LC2	Develop and implement a beaver-management plan to address recurring passage issues. Evaluate adaptive management options to maintain fish passage while preserving the ecological benefits of beaver ponds[62].
	Restoration and Conservation	
A-2, A-3 C-1, C-3, C-4	LC3	Revegetate riparian areas with native plants and install livestock fencing at priority sites identified in the Lemieux Creek SHIM to stabilize banks, reduce erosion, and improve water quality and fish habitat[62].

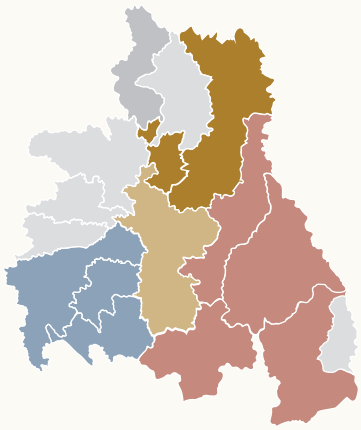
61 Secwépemc Fisheries Commission, *Sensitive Habitat Inventory – East Barrière River*, 2024.

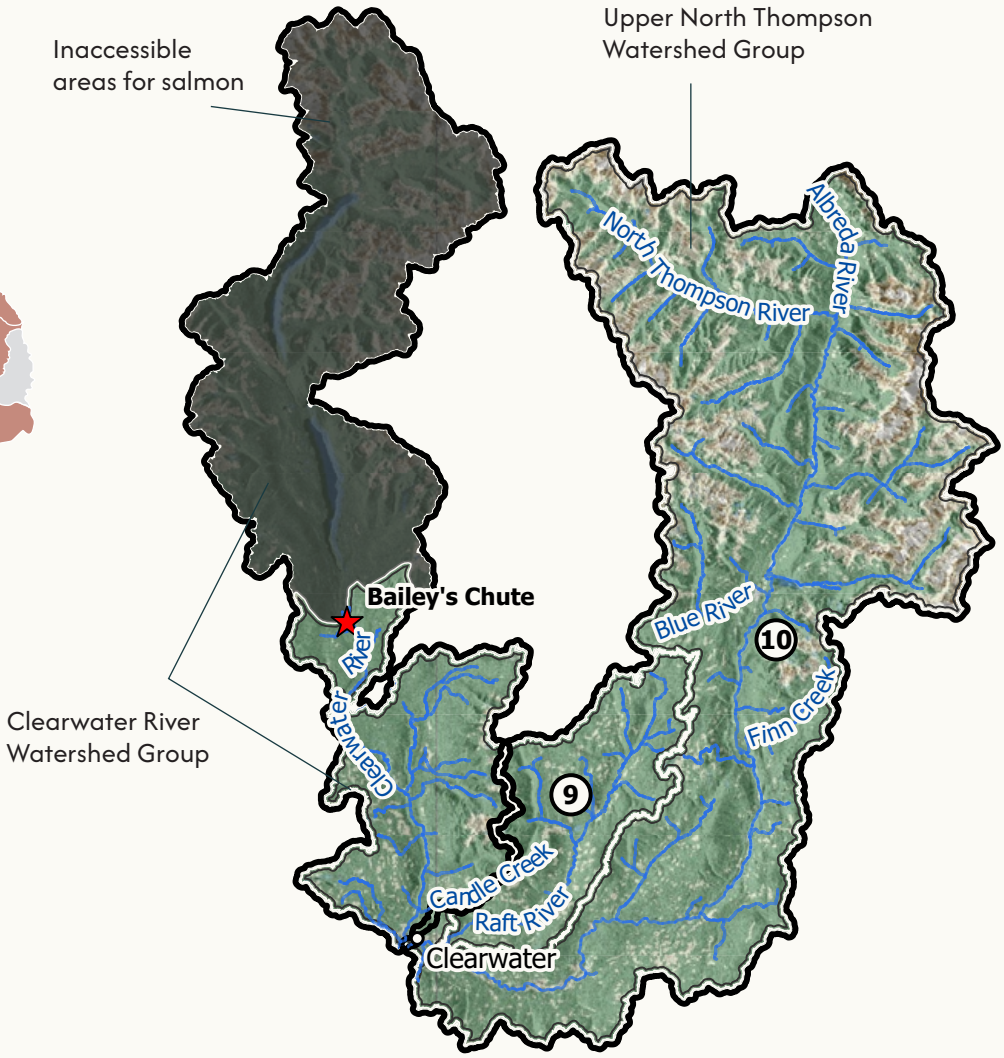
62 Secwépemc Fisheries Commission, *Sensitive Habitat Inventory – Lemieux Creek*, 2023.

Knowledge Gaps		
A-1 B-2 D-1, D-3 F-1	**LC4**	**Monitor flow and fish passage conditions through the mouth of Lemieux Creek, and research restoration solutions to address channelization and sediment aggradation that can lead to low-flow migration barriers[62].**
A-1 C-1 D-3 F-1	**LC5**	**Complete an options analysis to increase in-stream water volume in the upstream section that goes subsurface during low flows, improving habitat availability and fish passage[62].**
A-2 C-4 D-1	LC6	Assess the feasibility of installing energy-dissipating structures to reduce left streambank erosion caused by road confinement, improving channel stability and habitat quality[62].
A-1 B-1	LC7	Monitor access to the historic constructed side channel near Lemieux Creek, evaluate habitat quality, and determine the potential benefits of improving connectivity[63].
A-1, A-2 D-3 F-1	LC8	Re-evaluate environmental flow needs for Lemieux Creek, considering recent low-flow conditions and water use changes, to support salmon migration and rearing[63].
Outreach and Engagement		
E-2, E-3	LC9	Re-establish the Lemieux Watershed Society to advance local salmon stewardship priorities[63].

63 TSSC, North Thompson River engagement meeting, September 15, 2025.

Upper North Thompson River Watershed Group







Focal Waterbody ⑨: Raft River



Focal Waterbody ⑩: Upper North Thompson and Lower Clearwater Rivers

Actions identified for the Raft River (RR) and Upper North Thompson River (UNT) focal waterbodies are listed in the tables below. Limited actions were identified specific to the portion of the Lower Clearwater River Watershed Group that is accessible to salmon, so they have been included within the Upper North Thompson River Focal Waterbody.

Focal Waterbody 9: Raft River (RR)

Supported Goals and Objectives	#	Action
		Restoration and Conservation
A-1, A-2, A-3 C-1, C-3 D-1	RR1	Acquire land along the Raft River to protect habitat and past restoration, then restore approximately 2 km of historic channel and floodplain[64].
A-2, A-3 C-1, C-3, C-4	RR2	Conduct riparian planting at priority sites identified in the Raft River SHIM to help stabilize the exposed banks and increase stream shading[65].
		Knowledge Gaps
A-1, A-2 B-2 F-1	RR3	Assess the functionality of 600 m of constructed off-channel habitat and address sediment blockage at the intake culvert[65].

64 TSSC, Survey123 response, 2025.

65 Secwépemc Fisheries Commission, *Sensitive Habitat Inventory – Raft River*, 2024.

Focal Waterbody 10: Upper North Thompson and Lower Clearwater River (UNT)

Supported Goals and Objectives	#	Action
		Restoration and Conservation
A-2, A-3 C-3, C-4, C-5	UNT1	Remediate impacts of the obsolete forest service road on the east side of the Clearwater River by stabilizing failure points and preventing sediment from entering the stream to improve water quality[66].
		Knowledge Gaps
A-2 C-5 F-1	UNT2	Identify sources of high sediment loading in the Upper North Thompson River and develop remediation strategies to protect aquatic habitat during storm events[67].
A-2, A-4 D-1 F-1	UNT3	Assess where large woody debris inputs would provide the greatest habitat benefits across the watershed and identify land use practices that support wood retention to maintain complexity and stability[67].

66 S. Russell (B.C. Government), pers. comm., 2024.

67 TSSC, North Thompson River engagement meeting, September 15, 2025.

South Thompson River Major Watershed

The South Thompson River Major Watershed is divided into 4 watershed groups: South Thompson River, Shuswap Lake, Adams River, and Upper Shuswap (Figure 8).

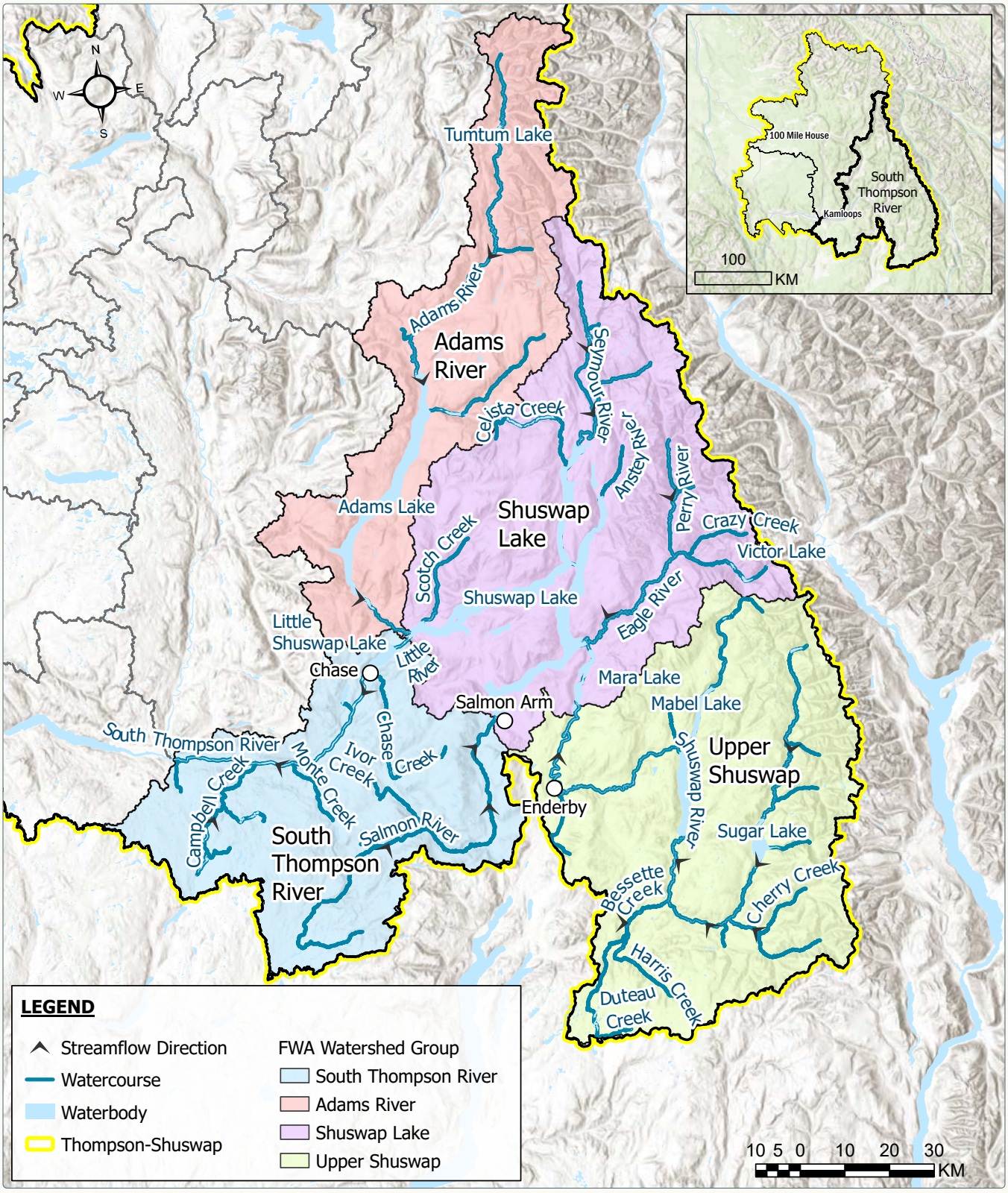


Figure 8. The South Thompson River major watershed, Freshwater Atlas (FWA) Watershed Groups, and major watercourses.

There are 10 salmon CUs in the South Thompson River Major Watershed. Table 6 below shows presence or likely absence for each CU across all 4 watershed groups.

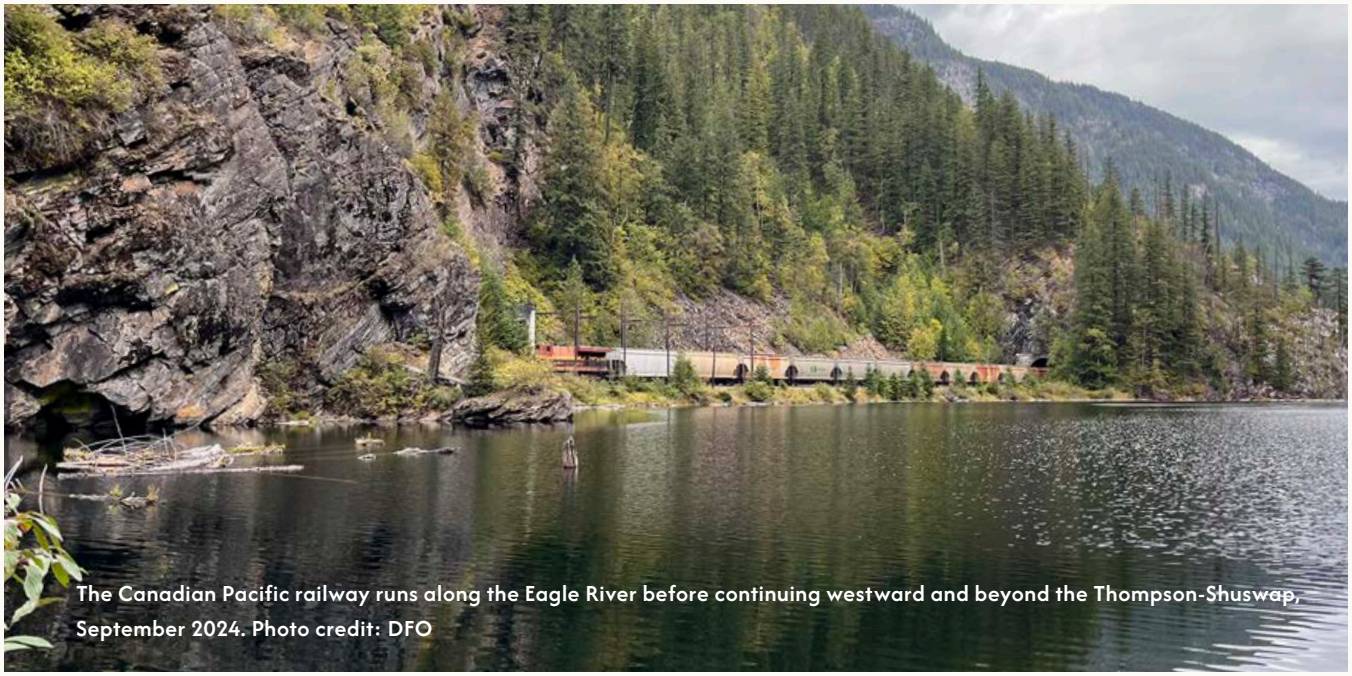
Table 6. Salmon conservation units (CU) in the South Thompson River Major Watershed, with associated designatable units (DU), COSEWIC conservation statuses, and observed presence (Y) or likely absence (N) in each Watershed Group.

Species	Conservation Unit name	Designatable Unit and COSEWIC Status	South Thompson River Watershed Group	Shuswap Lake Watershed Group	Adams River Watershed Group	Upper Shuswap Watershed Group
Sockeye	Shuswap Complex – Late (cyclic) (SEL-09-03)	DU18 Not At Risk	Y	Y	Y	Y
	Shuswap Complex-Early Summer Timing (SEL-09-02)	DU19 Not At Risk	Y	Y	Y	Y
	Momich - Early Summer	DU199 Endangered	N	N	Y	N
Chinook	South Thompson SU 0.3 (CK-13)	DU12 Not At Risk	Y	Y	Y	Y
	South Thompson SU 1.3 (CK-14)	DU13 Endangered	Y	Y	N	N
	Shuswap River SU 0.3 (CK-15)	DU12 Not At Risk	N	Y	N	Y
	South Thompson-Bessette Creek SU 1.2 (CK-16)	DU14 Endangered	N	N	N	Y
	Upper Adams SU (CK-82) Data Deficient	Not assessed by COSEWIC	N	N	Y	N
Coho	South Thompson (CO-8)	DU7 Threatened	Y	Y	Y	Y
Pink	Fraser River (PKO-1)	Not assessed by COSEWIC	Y	Y	Y	Y

Salmon in the South Thompson River Major Watershed face many stressors. A few key habitat stressors prevalent in this watershed are highlighted below.

Key Habitat Stressors[68] in the South Thompson River Major Watershed:

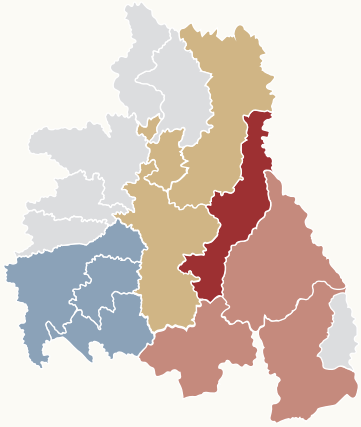
- **Altered hydrology and climate change**: Many streams are fully allocated, which limits additional withdrawals. When combined with climate change-related hydrologic changes, this can increase pressure on aquatic ecosystems, especially in drought-sensitive systems like Bessette Creek and Salmon River. Climate change is contributing to these pressures by altering runoff patterns, reducing summer base flows, and increasing stream temperatures. These changes have significant impacts on salmon migration, spawning, and rearing success, as well as on food availability due to trophic level impacts.
- **Decreased water quality**: Nutrient loading, algal blooms, and sedimentation are common in Shuswap and Mara Lakes, with excess nutrient loading attributed to watershed land uses, including agriculture and sewage. Climate change is also interactive with nutrient loading, leading to impacts on lake ecosystem functioning for salmon. Wildfires and resource extraction, can have negative impacts on water quality through increased sedimentation and slope instability. Adams River and Bessette Creek are areas of particular concern.
- **Fish passage barriers**: The Wilsey Dam and culverts (like the Canadian Pacific Railway culvert on Eagle River) restrict access to upstream habitats, especially during low flows, limiting spawning and rearing opportunities for migrating salmon.
- **Habitat loss and degradation**: Widespread riparian degradation has occurred along watercourses such as Bessette Creek, Eagle River, and Salmon River, leading to erosion, sedimentation, and elevated stream temperatures. Shoreline developments on Shuswap Lake, Mara Lake, and the South Thompson River, as well as linear infrastructure (highways, railways, etc.) throughout the watershed, have reduced channel complexity and blocked access to off-channel habitats.
- **Recreational activities**: Boating in the South Thompson River and Shuswap Lake contributes to bank erosion and the spread of invasive water milfoil, which reduces spawning habitat and increases predation risk.

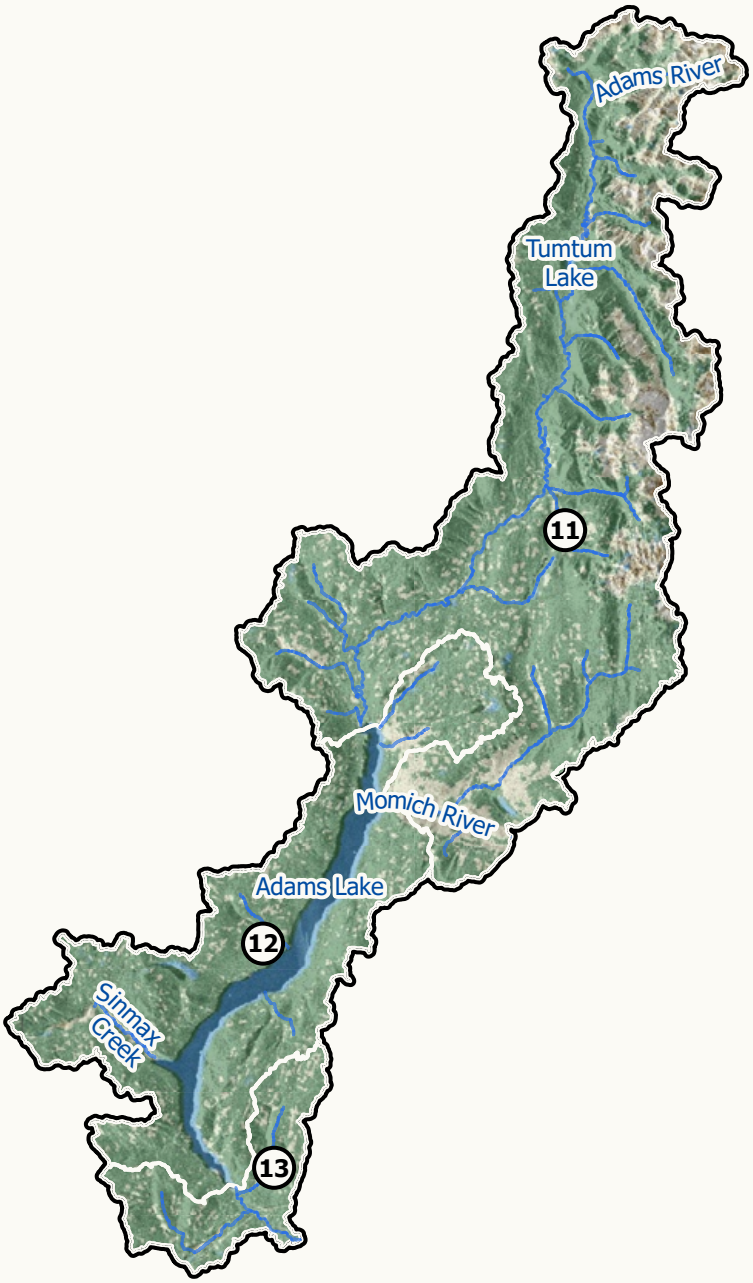


The Canadian Pacific railway runs along the Eagle River before continuing westward and beyond the Thompson-Shuswap, September 2024. Photo credit: DFO

68 Summaries for key habitat stressors are based on multiple sources, including RPAs, COSEWIC assessments, SHIM assessments, strategic review documents, and more. Refer to the *Thompson-Shuswap Watershed Profile* for complete reference details.

Adams River Watershed Group







Focal Waterbody ⑪: Upper Adams River



Focal Waterbody ⑫: Adams Lake



Focal Waterbody ⑬: Lower Adams River

Actions identified for the Upper Adams River (UP), Adams Lake (AL), and Lower Adams River (LA) focal waterbodies are listed in the tables below.

Focal Waterbody 11: Upper Adams River (UP)

Supported Goals and Objectives	#	Action
		Fish Passage
A-1 B-1, B-2	**UP1**	**Evaluate options to improve fish passage at the Momich River log jam, such as log removal or side channel construction, to restore upstream access for salmon[69].**

Focal Waterbody 12: Adams Lake (AL)

Supported Goals and Objectives	#	Action
		Restoration and Conservation
A-2, A-3 D-1	AL1	Remove riprap, add wood to floodplains, and plant native vegetation at Sinmax Creek to slow flow and increase floodplain inundation, increasing salmon habitat[70].
A-2, A-3 C-4	AL2	Revegetate riparian areas with native plants and install livestock fencing at priority sites, including near Agate Bay Road, to stabilize banks, reduce erosion, and improve water quality and riparian habitat[70].
A-2	AL3	Excavate sediment retention pond to reduce sediment inputs from Homestake Creek Mine tailings near Agate Bay Road[70].
		Knowledge Gaps
A-2 E-1 F-1	**AL4**	**Assess the effectiveness of previous lake fertilization efforts in Adams Lake through an expert assessment, and develop appropriate future nutrient treatments if found to be beneficial to salmon productivity[71].**

69 TSSC, Survey123 response, 2025.

70 LGL Limited and Geomorphic Consulting Limited, *Technical Memorandum*, 2025.

71 TSSC, South Thompson River engagement meeting, October 17, 2025.

A-2 C-4, C-5 F-1	AL5	Identify priority obsolete forest service roads for remediation to reduce sediment input[72].
A-3 C-4 F-1	AL6	Identify potential riparian restoration sites along Sinmax Creek[73].
A-2 F-1	AL7	Monitor the presence of invasive species in Adams Lake and establish control measures[71].
A-1, A-2, A-3, A-4 B-1 C-2 F-1	AL8	Develop DEMs and relative elevation models (REM) for Sinmax Creek to conduct river styles characterization and identify potential restoration opportunities[70].
A-2, A-3 C-3, C-5 F-1	AL9	Evaluate post-fire habitat quality in Bush Creek and propose restoration as appropriate[69].
Outreach and Engagement		
E-1, E-3	AL10	Connect with landowners in the Sinmax Creek watershed to strengthen relationships that support First Nations partnerships, education, and stewardship[70].
E-3	AL11	Liaise with provincial and federal regulators regarding Homestead mine mitigation measures to support opportunities for improving water quality[71].

72 Fraser Basin Council, *Strategic Review*, 2016.

73 Secwépemc Fisheries Commission, *Sensitive Habitat Inventory – Sinmax Creek*, 2025.

Focal Waterbody 13: Lower Adams River (LA)

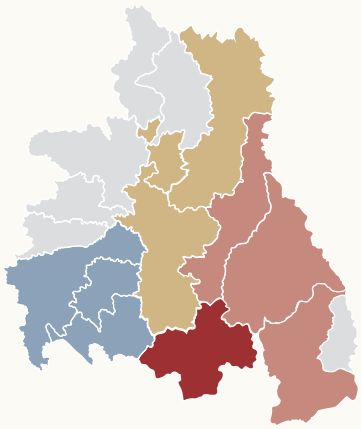
Supported Goals and Objectives	#	Action
		Restoration and Conservation
A-1, A-2 B-2	**LA1**	**Assess post-wildfire fish habitat quality along the Adams River fan and develop restoration plans to support fish passage[74].**
A-1, A-2	LA2	Support Skwlāx First Nation in implementing plans to restore sockeye spawning habitat downstream of the Squilax – Anglemont Road bridge[74].
B-1 D-1, D-2, D-4	LA3	Develop restoration plans that slow the flow velocity and increase the frequency of floodplain inundation on Huihill Creek within Tsútswecw Provincial Park[75].
A-2, A-4 D-1	LA4	Enhance instream woody debris by adding structures and utilizing danger trees felled after wildfire[76].
		Knowledge Gap
E-1 F-1	LA5	Monitor spawning extent on Nikwikwaia Creek beyond the current survey area to capture a more complete understanding of salmon use[76].
		Outreach and Engagement
E-1, E-2	**LA6**	**Continue promoting salmon values and stewardship through the Salute to the Sockeye festival, strengthening First Nations partnerships, expanding education and outreach, and improving our relationship with salmon[76].**

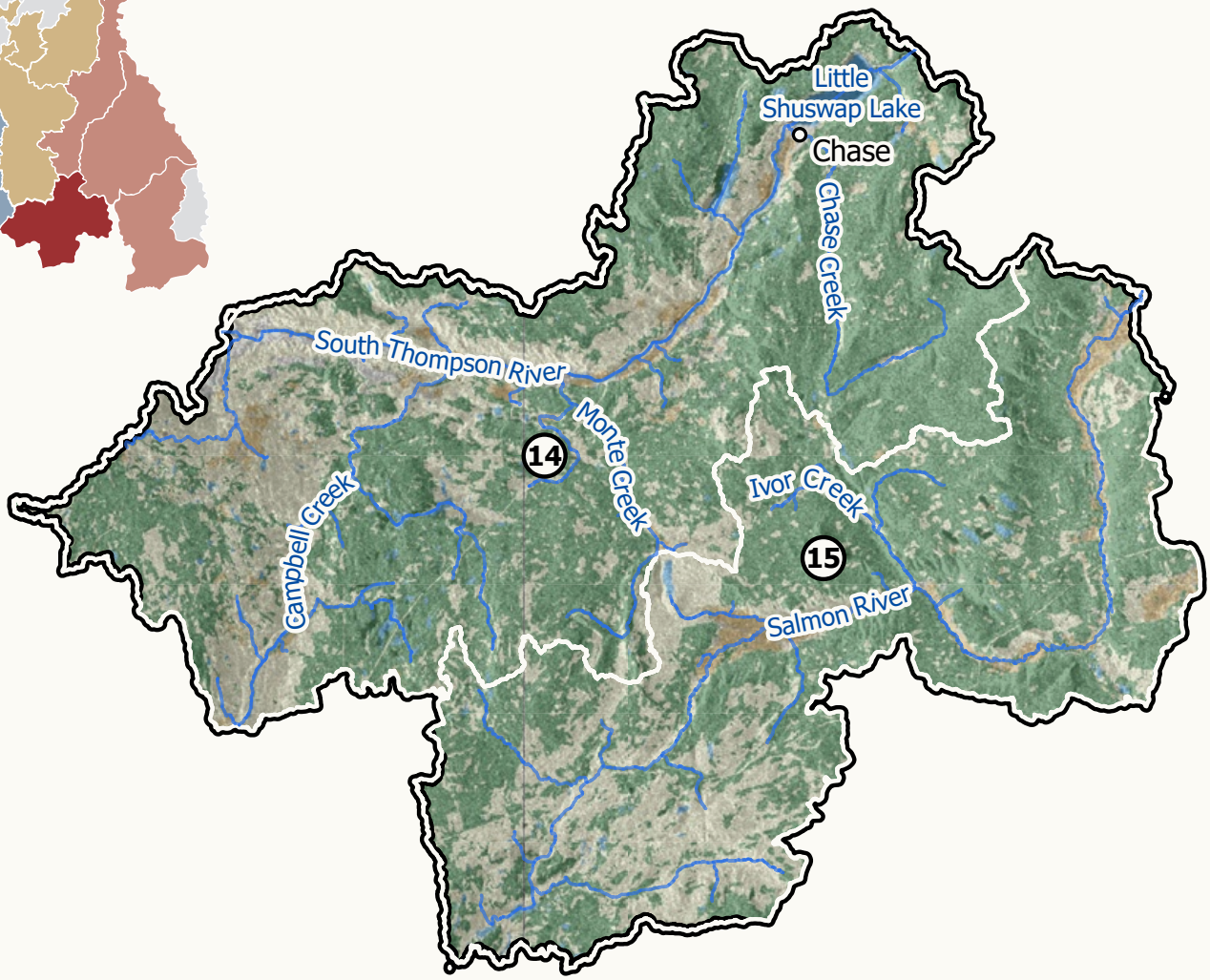
74 TSSC, Survey123 response, 2025.

75 LGL Limited and Geomorphic Consulting Limited, *Technical Memorandum*, 2025.

76 TSSC, South Thompson River engagement meeting, October 17, 2025.

South Thompson River Watershed Group







Focal Waterbody ⑭: South Thompson River



Focal Waterbody ⑮: Salmon River

Actions identified for the South Thompson River (STR) and Salmon River (SR) focal waterbodies are listed in the tables below.

Focal Waterbody 14: South Thompson River (STR)

Supported Goals and Objectives	#	Action
		Fish Passage
A-1 B-2 F-1	STR1	Assess stream crossings to identify culverts that block salmon migration and implement remediation to restore connectivity[77].
		Restoration and Conservation
A-1, A-3, A-4 B-1 D-1, D-3, D-4	STR2	Develop restoration plans that increase the length of stream, slow the flow velocity, and increase the frequency of floodplain inundation on upper Chase Creek with instream wood installations, gravel bar, and riparian staking or planting[78].
A-2, A-3 C-4	STR3	Revegetate riparian areas with native plants and install livestock fencing at priority sites identified in the Strategic Review of Fisheries Resources for the South Thompson report, including Chase Creek, to stabilize banks, reduce erosion, and improve water quality and fish habitat[77].
A-2	STR4	Complete a contaminated site evaluation, then develop and implement plans to remove the tire wall on the Little Shuswap River to improve salmon habitat quality[79].
A-2 F-1	STR5	Set phosphorus management targets and implement water quality monitoring[80].
A-2, A-3 C-3, C-4	STR6	Develop a restoration plan to address severe erosion along the South Thompson River downstream of Little Shuswap Lake[81].

77 Fraser Basin Council, *Strategic Review*, 2016.
78 LGL Limited and Geomorphic Consulting Limited, *Technical Memorandum*, 2025.
79 TSSC, South Thompson River engagement meeting, October 17, 2025.
80 McDougall, *Agricultural Nutrient Mana*gement, 2014.
81 TSSC, Salmon Habitat Mapper, 2024.

Knowledge Gaps		
A-1, A-2 F-1	STR7	Assess spawning gravel availability in Chase Creek to inform salmon habitat restoration strategies[77].
C-4, C-5 F-1	STR8	Assess the source of slope instability in Chase Creek to develop a remediation plan[77].
A-2 C-3 F-1	STR9	Evaluate the outcomes of agricultural nutrient management strategies proposed in the 2014 Shuswap Watershed Council report, and prioritize reinvestment in those demonstrated to be effective in improving water quality and ecosystem health[80].
A-1, A-2, A-3, A-4 B-1 C-2 D-2 F-1	STR10	Develop DEMs and REMs for Chase Creek to conduct river styles characterization and identify potential restoration opportunities in the watershed, including water retention strategies above the waterfall[78].
A-3 C-3, C-4, C-5	STR11	Assess opportunities for riparian restoration in tributaries (including Chase, Campbell, and Monte creeks) to reduce fine sediment loading to the South Thompson River[77].
Outreach and Engagement		
E-2, E-3 F-1	STR12	Establish a South Thompson River watershed roundtable to connect with the local cattlemen's association and poultry producers to address nutrient inputs[80].
E-1, E-3	STR13	Engage landowners and promote First Nations partnerships in the Chase Creek watershed to build relationships, advance stewardship education, and support collaborative salmon habitat restoration[78].

Focal Waterbody 15: Salmon River (SR)

Supported Goals and Objectives	#	Action
		Fish Passage
A-1 B-2	SR1	Identify opportunities to improve fish passage through small dams and weirs along tributaries to the Salmon River[82].
		Restoration and Conservation
A-2, A-3 C-4	**SR2** ⚠	**Revegetate riparian areas with native plants and install livestock fencing at priority sites identified in the Salmon River SHIM to stabilize banks, reduce erosion, and improve water quality and fish habitat[83,84].**
A-2, A-3 C-1 D-3	SR3	Restore riparian and instream habitat by increasing riparian widths, tree canopy closure, and instream cover to mitigate the increasing risk of low flows and associated effects at priority sites identified in the Salmon River SHIM[83].
A-2, A-4 C-4	SR4	Revisit and assess previously restored areas, replacing or supplementing historic structures with additional habitat-complexing and erosion-control features to improve long-term stability and ecological function[82].
A-1, A-4 B-1 D-1, D-2, D-3	SR5	Increase habitat complexity along the Salmon River by creating additional pool and off-channel habitat, and identify opportunities to redevelop lost wetland habitat, including within the footprint of the White Rock Lake wildfire[83].
		Knowledge Gaps
B-2 C-1 D-3	**SR6** ⚠	**Conduct studies to establish Critical Environmental Flow Thresholds (CEFT) and Environmental Flow Needs (EFN) in the Salmon River to maintain and improve flows during drought periods[83].**

82 Forsite Consultants Ltd., *Sensitive Habitat Inventory Salmon Arm*, 2012.

83 Mohoruk et al., *Salmon River Inventory*, 2022.

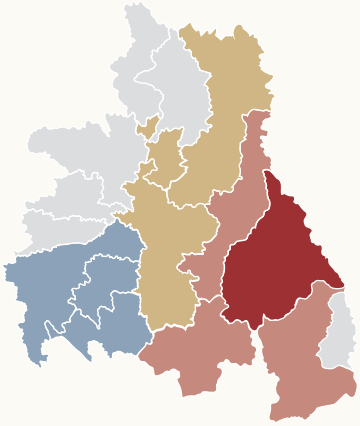
84 TSSC, South Thompson River engagement meeting, October 17, 2025

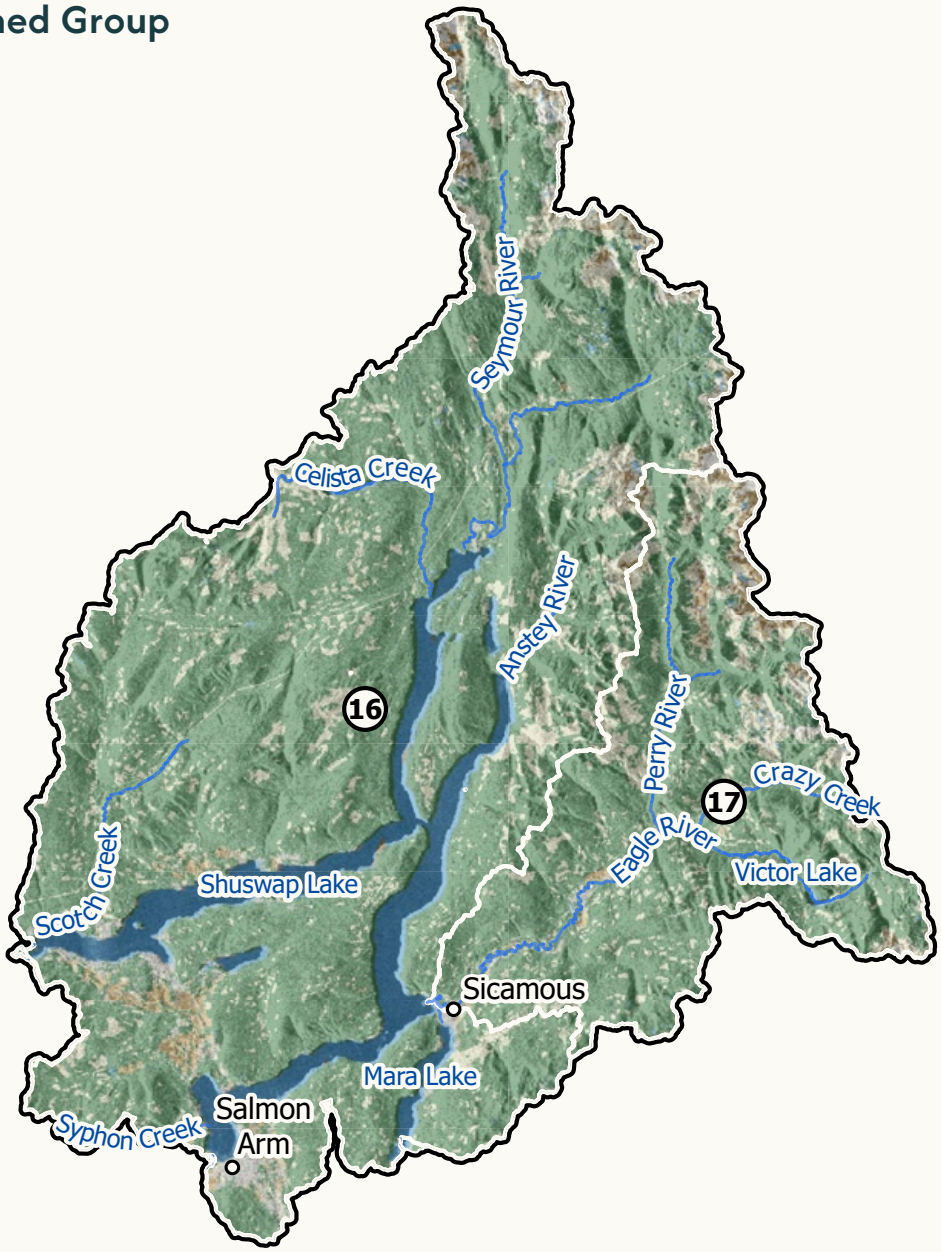
A-1 B-2 F-1	**SR7**	**Continue to invest in hydrology studies to understand species-specific thermal and flow barriers for salmon migration[85].**
D-2, D-3 F-1	SR8	Explore options to increase existing water reservoir volumes to allow for increased release volumes and improved flows during drought[85].
A-1 B-2 D-3 F-1	SR9	Monitor salmon access through the Salmon River delta during low-flow periods, and propose mitigation to improve habitat connectivity[86].
Outreach and Engagement		
A-2, A-3 C-4 E-3	SR10	Coordinate with landowners and producers to mitigate nutrient inputs and encroachment from livestock and cropping activities along the Salmon River[83].
E-2, E-3	SR11	Conduct outreach on proper screening of water intakes to prevent entrainment and impingement[83].

85 Salmon River collaborative meeting series, 2025.

86 Dionne et al., "Recovery Potential Assessment for Chinook," 2023.

Shuswap Lake Watershed Group







Focal Waterbody ⑯: Shuswap Lake



Focal Waterbody ⑰: Eagle River

Actions identified for the Shuswap Lake (SL) and Eagle River (ER) focal waterbodies are listed in the tables below.

Focal Waterbody 16: Shuswap Lake (SL)

Supported Goals and Objectives	#	Action
		Fish Passage
A-1 B-2	SL1	Assess culverts on Syphon Creek and remediate barriers to fish passage[87].
		Restoration and Conservation
A-2 C-3	**SL2** ⚠	**Implement restoration actions recommended in the Shuswap Watershed Council 2025 wetland strategy to reduce nutrient input to the lakes[88].**
A-1, A-2, A-4 B-1	SL3	Restore habitat diversity and complexity along Scotch Creek and potentially re-engage a historic channel in the fan[89].
A-1, A-2, A-3, A-4	SL4	Develop project plans to improve foreshore habitat on priority sites identified in the Shuswap and Mara lakes Foreshore Inventory and Mapping (FIM) report[90].
A-2, A-3	SL5	Manage invasive plants in Sicamous Narrows to improve the quality of salmon rearing habitat[88].
		Knowledge Gaps
E-1 F-1, F-2	**SL6** ⚠	**Support Splatsin and the Province of B.C. in modelling cumulative effects in Sicamous Narrows to identify ways to reduce development pressures and improve salmon habitat[88].**
D-2 F-1	SL7	Initiate a study to understand future trends in lake water levels and explore mitigation options to increase water storage in the watershed[88].
		Outreach and Engagement
A-2 E-3	SL8	Engage with residents on nutrient management options to improve water quality, including limiting the use of fertilizers, avoiding grey water release from boats, and maintaining septic systems[91].

87 TSSC, Salmon Habitat Mapper, 2025.
88 TSSC, South Thompson River engagement meeting, October 17, 2025.
89 TSSC, Survey123 response, 2024.
90 Schleppe, *Foreshore Inventory - Shuswap and Mara Lakes*, 2009.
91 Shuswap Watershed Council, *Nutrients and Water Quality*, 2023.

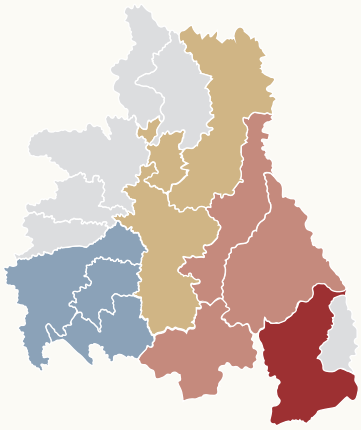
Focal Waterbody 17: Eagle River (ER)

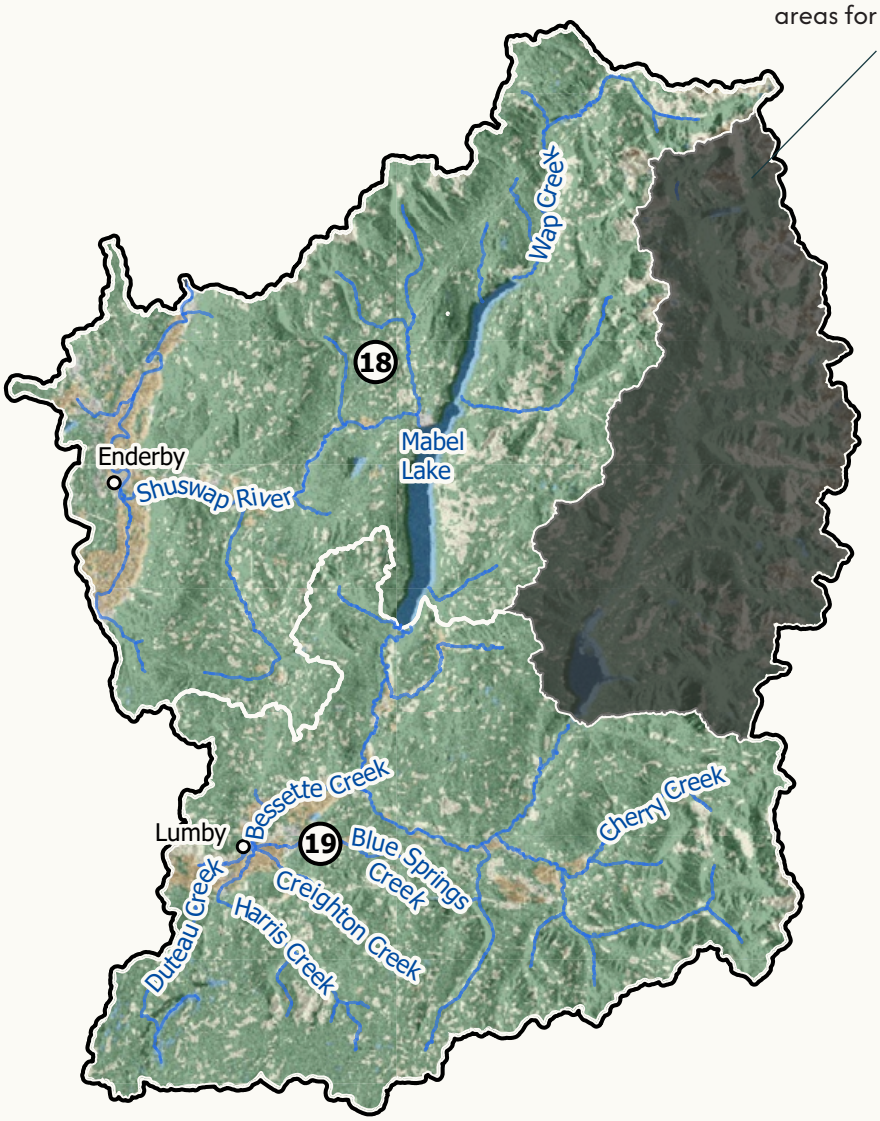
Supported Goals and Objectives	#	Action
		Fish Passage
A-1 B-2	**ER1**	**Remediate the fish passage barrier at the Mile 16 Railway diversion to provide upstream access[92].**
A-1 B-2 D-3	ER2	Conduct an options analysis to improve fish passage through the mouth of Yard Creek and Tito Creek at low flows[92].
A-1 B-1	ER3	Design a culvert remediation plan to increase juvenile rearing habitat in disconnected oxbows on Owlhead Creek[92].
		Restoration and Conservation
A-1 B-1	ER4	Conduct a feasibility assessment of reconnecting the large oxbow channel off Eagle River to increase juvenile habitat availability[92].
		Knowledge gaps
A-1, A-2, A-3, A-4	ER5	Reassess opportunities for riparian restoration and projects to increase instream complexity[93].

92 TSSC, CWF barrier remediation workshop series, 2024.

93 Hawes et al., *Eagle River Inventory*, 2015.

Upper Shuswap Watershed Group







Focal Waterbody ⑱: Lower Shuswap River



Focal Waterbody ⑲: Bessette Creek

Actions identified for the Lower Shuswap River (LSR) and Bessette Creek (BC) focal waterbodies are listed in the tables below.

Focal Waterbody 18: Lower Shuswap River (LSR)

Supported Goals and Objectives	#	Action
Restoration and Conservation		
A-2, A-3, A-4 C-3, C-4 D-1	LSR1	Revisit the 18 priority bank segments and design restoration plans to improve habitat quality using bioengineering techniques[94].
A-2 E-2, E-3	LSR2	Establish No-Wake Zones on the Lower Shuswap River to reduce recreational boating-related erosion[94].
Knowledge Gaps		
C-2 F-1	LSR3	Locate groundwater discharge zones and thermal refuge areas along the Shuswap River, and identify options to protect against future disturbance[94].
A-2, A-3, A-4 C-3	LSR4	Identify habitat restoration opportunities along the shores of Mabel Lake, including dismantling groynes, placement of large woody debris, and shoreline re-vegetation[94].
F-1	LSR5	Conduct an inventory of spawning species and locations along the shore and in other key habitat areas in Mabel Lake, Wap Creek, and Shuswap River to inform restoration planning[95].
F-1	LSR6	Complete detailed Wetland and Foreshore Inventory Mapping of foreshore, flood benches, and shore marshes around Mabel Lake to inform restoration planning[95].
Outreach and Engagement		
C-4 E-3	LSR7	Engage with landowners on Mabel Lake to identify habitat values and conduct lakeshore erosion hazard mapping on their properties to identify areas at risk and mitigate impacts, including reducing the need for unnecessary hard armoring along the shoreline[95].

94 Hawes et al., *Lower Shuswap River Inventory*, 2011.

95 Schleppe, *Foreshore Inventory – Mabel Lake*, 2010.

Focal Waterbody 19: Bessette Creek (BE)

Supported Goals and Objectives	#	Action
		Fish Passage
A-1, A-4 B-2	BE1	Develop and implement a beaver-management plan for Bessette Creek to address recurring passage issues. Evaluate adaptive management options to maintain fish passage while preserving the ecological benefits of beaver ponds[96].
A-1 B-2	BE2	Improve passage through 2 culverts identified as barriers to fish passage on Blue Springs Creek[97].
A-1 B-2	BE3	Remediate the artificial dam located in Creighton Creek to increase habitat connectivity to suitable rearing/spawning habitat upstream[98,99].
		Restoration and Conservation
A-2, A-3 C-1, C-3, C-4	BE4	Restore functioning riparian corridor and install livestock fencing for priority sites identified in the SHIM for Bessette Creek, Creighton Creek, and Duteau Creek[99].
		Knowledge Gaps
D-3 E-1, E-3 F-1	BE5	Explore options to create water-sharing agreements during drought to avoid the need to issue Temporary Protection Orders and improve flows[100].
D-2, D-3	BE6	Increase water reservoir capacity at locations recommended in BGC Engineering water storage feasibility study to retain water and improve flows[100].
C-1 F-1	BE7	Evaluate the impact of thermal barriers to Chinook salmon migration under future climate change scenarios and develop mitigation strategy to improve habitat connectivity[100].
		Outreach and Engagement
A-1, A-3 E-3	**BE8**	**Collaborate with landowners to promote the importance of maintaining riparian vegetation and preventing livestock from entering rivers[99,100].**
D-2, D-3 E-2, E-3 F-1	**BE9**	**Collaborate with the Bessette Agricultural Sustainability Society and the Duteau Technical Working Group to promote salmon values in the watershed and identify solutions to water shortages[100].**
F-1	BE10	Continue to engage with BC Hydro to explore potential opportunities for protecting and restoring salmon habitat, including during the Wilsey fish passage[100].

96 TSSC, South Thompson River engagement meetings, October 17, 2025.
97 TSSC, CWF barrier remediation workshop series, 2024.
98 TSSC, Salmon Habitat Mapper, 2025.
99 McDonald et al., *Sensitive Habitat Inventory: Bessette Creek, Creighton Creek and Duteau Creek*, 2022.
100 TSSC, Bessette Creek prioritization workshop, August 25, 2025.

C-4 E-2, E-3	BE11	Create a streambank stabilization demonstration project to share bioengineering design techniques and raise awareness of non-hard-armouring options to reduce erosion and improve water quality[100].
B-1 F-1	BE12	Identify engagement and data sharing opportunities to input salmon habitat values into Floodplain Inventory Mapping planning with the Village of Lumby[99].



Shuswap River. Photo credit: SFC

Chapter 5. Cross-Cutting Actions

This chapter outlines 18 cross-cutting actions that are not tied to a single specific geography in the Thompson-Shuswap. These actions have been identified and prioritized through extensive background research and participant engagement (see Chapter 3 for more information).

Cross-cutting actions have been categorized into 4 themes:

- Area-based Conservation,
- Outreach & Engagement,
- Hydrology, and
- Knowledge Gaps.

Background information, application in the Thompson-Shuswap, and potential next steps are outlined for each action. **The cross-cutting actions identified as priorities during engagement on this plan are bolded and indicated with the following symbol (⚠).** Each action has been linked to the specific goals of the Plan that it supports (Table 7).

Table 7. Complete list of cross-cutting (CC) actions and the goals they support. Actions identified as higher urgency through participant engagement are emphasized by bolding and the inclusion of the (⚠) symbol next to the action number.

Action Theme	Action #	Supported Goals	Cross-cutting Action
Area-based Conservation	CC1	A-D	Explore establishing new area-based conservation designations.
	CC2	A-D	Explore the potential for securing and protecting land parcels with high salmon ecosystem value.
Outreach & Engagement	**CC3** ⚠	All	**Incorporate social, cultural, and ecological salmon ecosystem values into tri-lateral agreements, provincial Forest Landscape Plans, and regional and municipal planning processes.**
	CC4 ⚠	All	**Conduct outreach activities to encourage partnerships with landowners and community members focused on improving habitat quality.**
	CC5	A, E	Continue supporting existing public education programs targeting responsible recreation near salmon habitats.
	CC6	F	Share salmon ecosystem information through an accessible, centralized shared data platform.
Hydrology	CC7	C, D	Explore the potential for establishing Watershed Sustainability Plans and Watershed Objectives under the B.C. *Water Sustainability Act*.
	CC8 ⚠	All	**Identify potential opportunities for influencing upslope habitat conditions to improve water quality, water retention, and flows for salmon ecosystems.**
	CC9	D	Explore the potential to develop an integrated real-time water data tool for the Thompson-Shuswap.
	CC10 ⚠	All	**Expand the hydrometric monitoring network, including the integration of water temperature monitoring capabilities.**

Action Theme	Action #	Supported Goals	Cross-cutting Action
Knowledge Gaps	**CC11** ⚠	All	**Undertake targeted hydrological studies to quantify groundwater contributions to streamflow, identify critical thermal refuge locations, and evaluate protection strategies.**
	CC12	A, C	Assess the risk of contaminants for salmon in Thompson-Shuswap and propose mitigation.
	CC13	F	Determine fry dispersal and survival rates in critical overwintering habitats of at-risk Chinook and coho populations.
	CC14	A, C	Research and map the distribution of invasive freshwater and riparian species and assess their risks to salmon.
	CC15	A-D, F	Advance research to better understand how human and climate-related stressors affect salmon productivity and how populations respond to restoration and protection measures.
	CC16 ⚠	All	**Develop and apply biocultural habitat indicators to monitor ecosystem health and evaluate restoration effectiveness.**
	CC17	F	Undertake detailed salmon population risk assessments and prioritize actions for focal waterbodies.
	CC18	All	Continue to identify priorities for artificial barrier remediation and implement projects.

Area-based Conservation

Area-based conservation offers a strategic approach to protect and conserve important salmon habitats, supporting multiple goals and objectives[101,102,103,104]. Together, these actions support integrated watershed management by linking habitat protection to broader land-use planning and governance frameworks and, in some cases, offer enforceable safeguards[105,106]. The Area-based Conservation theme includes 2 cross-cutting actions.

Cross-cutting Action 1: Explore establishing new area-based conservation designations.

It should be noted that their inclusion here does not constitute a recommendation that they be implemented, only that they be considered as options and researched further for effectiveness and feasibility. Several area-based conservation designations could potentially be explored in the Thompson-Shuswap:

- **Ecologically Significant Areas** (ESA) can be designated under the *Fisheries Act* for long-term protection of highly productive, sensitive, or unique fish habitats. While no ESAs have yet been formally established, a national framework is in place[106], and the first candidate ESA has been announced[107].
- **Fisheries Sensitive Watersheds** (FSW) have been designated since 2005 under the *Forest and Range Practices Act* (FRPA) to conserve watershed-scale processes and protect fish habitat. There are currently 6 FSWs in the Thompson-Shuswap[108]. The FSW process is well-established, involving technical evaluation of fisheries values, watershed sensitivity, preparation of an order, consultation, and ongoing monitoring[109]. Designation can be initiated by governments, conservation associations, or community groups, making it broadly accessible[110,111].
- **Temperature Sensitive Streams** (TSS) can be designated under the FRPA to address thermal risks from forestry and climate change[112]. Designating a TSS is technically and administratively complex and requires multi-year temperature data and evidence of fish impacts, which are costly and often unavailable[113]. Coordination across agencies and sectors adds complexity and requires significant resources. No TSSs have been designated to date, although pilot work in the Nicola River has developed spatial models and provincial databases to identify candidates[114].
- **Key Biodiversity Areas** (KBA) are sites of national or global importance for biodiversity, largely led by NGOs, and do not confer legal protection[115]. Their effectiveness depends on formal integration into policy frameworks[116], sustained investment, and ensuring First Nations rights and governance are respected, especially where KBAs overlap with First Nations lands[117].

101 Bisson et al., "Freshwater ecosystems and resilience of Pacific salmon," 2009.
102 Holmes et al., "Restoring freshwater habitat mosaics," 2024.
103 Fuller et al., "Riparian vegetation shade," 2022.
104 Noa-Yarasca et al., "Soil & Water Assessment Tool," 2022.
105 Environmental Protection and Management Regulation (EPMR), B.C. Reg. 200/2010.
106 DFO, *Framework for Ecologically Significant Areas*, 2023.
107 Fraser et al., "Overview of the Napu'saqnuk / St. Mary's River Estuary," 2024
108 B.C. Fisheries Sensitive Watersheds – Overview.
109 Provincial FSW Procedures Working Group, *Fisheries Sensitive Watershed Default*, 2017.
110 Horsefly River Roundtable – Fisheries Sensitive Watershed Order
111 Sunshine Coast Conservation Association – Fisheries Sensitive Watershed Designation
112 Cunningham et al., "Forestry influences on salmonid," 2023.
113 Reese-Hansen et al., *Designating Temperature Sensitive Streams in British Columbia*, 2012.
114 Peatt and Peatt, *Evaluating Temperature Sensitive Streams Designation for the Nicola River Watershed*, 2013.
115 KBA Canada Coalition, *National Standard for the Identification of Key Biodiversity Areas*, 2021.
116 KBA Canada Steering Committee, *Key Biodiversity Areas & The Global Biodiversity Framework*, 2025.
117 Center for Indigenous Environmental Resources, *Key Biodiversity Areas: Indigenous Perspectives*, 2023.

- **Indigenous Protected Conservation Areas** (IPCA) have been declared in B.C. by Indigenous groups[118,119,120]. IPCAs are grounded in Indigenous law and knowledge, guided by principles of leadership, rights, and long-term conservation[121]. Unlike KBAs, IPCAs are not based on standardized scientific frameworks but on community-defined governance systems and cultural priorities. IPCAs can advance Indigenous-led conservation, improve habitat outcomes, and foster collaborative stewardship[122,123].

Implementing area-based conservation in the Thompson–Shuswap is feasible but challenging. Success requires collaboration, coordination, and significant investment across multiple parties. Given existing partnerships, the Thompson-Shuswap salmon community is well-positioned to explore these tools - especially where they can align with ongoing initiatives, such as the Qwelminte Secwépemc, B.C. Watershed Security Strategy, and Thompson River Watershed Forest Landscape Planning (FLP) Project[124].

Potential next steps in the Thompson-Shuswap:

- Identify candidate sites eligible for designation, based on benefits and feasibility
- Develop an implementation plan to advance designation of the site(s)

Cross-cutting Action 2:
Explore the potential for securing and protecting land parcels with high salmon ecosystem value.

Land securement is a proven strategy for ecosystem protection, securing riparian and floodplain habitats, and enabling restoration. Through land securement grants, programs like the Fish and Wildlife Compensation Program (FWCP) have conserved over 80,000 hectares of fish and wildlife habitat in B.C. since 2002[125]. Complementary tools such as the federal Ecological Gifts Program provide tax incentives for land donations or conservation covenants, ensuring long-term protection while landowners retain title.

There are opportunities for land securement in the Thompson-Shuswap, supported by programs like the FWCP[126]. Success depends on collaborative partnerships, funding streams responsive to real estate markets, planning tools to identify target parcels, and robust conservation covenants.

Potential next steps in the Thompson-Shuswap:

- Identify high salmon ecosystem value parcels for strategic land securement
- Identify pathways, establish partnerships, and align multiple dynamic and responsive funding opportunities

118 Meziadin Indigenous Protected Area – Protecting Salmon for Future Generation
119 Kwikwasut'inuxw Haxwa'mis First Nation declares Hada & Kakweikan Indigenous Protected and Conserved Area
120 Gwaxdlala/Nalaxdlala IPCA declaration
121 Indigenous Protected and Conserved Areas Factsheet
122 Mansuy et al., "Indigenous protected and conserved areas (IPCAs)," 2023.
123 Mullen, *The (In)Ability to Develop Indigenous Protected and Conserved Areas in Canada*, 2022.
124 Thompson River Watersheds Forest Landscape Planning Project
125 Fish and Wildlife Compensation Program - Land Securement Grants
126 Fish and Wildlife Compensation Program, *Shuswap River Action Plan*, 2022.

Outreach & Engagement

The Outreach & Engagement theme aims to strengthen collaboration, deepen public awareness and learning, and align salmon ecosystem values across multiple jurisdictions. The Outreach and Engagement theme includes 4 cross-cutting actions.

> ⚠ **Cross-Cutting Action 3: Incorporate social, cultural, and ecological salmon ecosystem values into bilateral and tri-lateral agreements, provincial Forest Landscape Plans, and regional and municipal planning processes.**

The Trilateral Accord to address the decline of Wild Pacific Salmon[127] was signed June 2024, and commits DFO, BC WLRS, and First Nations Fisheries Council to a lasting collaborative. It establishes a foundation for improved alignment and coordination of salmon rebuilding activities at a provincial scale. At a more regional scale, B.C.'s new Forest Landscape Plans (FLP) will replace forest stewardship plans as part of changes to the forest management regime[128], presenting a major opportunity to integrate salmon ecosystem values into forestry planning. In addition, engagement in municipal and regional planning processes—such as Official Community Plans (OCP) and Development Permit Area reviews—offers opportunities to strengthen riparian protection and improve water quality, while building public and political support for habitat protection[129,130,131].

There are strong linkages between the priorities of the Trilateral Accord and the Plan. Maintaining a connection to the Trilateral Accord will foster ongoing alignment of governance, priorities, and resources.

Concurrently, at the regional scale of the Thompson-Shuswap, the Thompson River Watershed FLP[132] provides a platform for integrating salmon values into forest management. Existing watershed scores derived using the Watershed Status Evaluation Protocol[133,134] and cumulative effects modelling may offer a starting point that can be updated and adapted to incorporate social, cultural, and ecological salmon ecosystem values. Multiple municipal and regional OCP reviews are also underway or scheduled in jurisdictions such as the Columbia-Shuswap Regional District, Thompson-Nicola Regional District, City of Enderby, and City of Salmon Arm. These processes provide immediate entry points to embed salmon ecosystem values in policy and strengthen protections. The TSSC is well-positioned to sustain linkages to these processes through its established relationships.

Potential next steps in the Thompson-Shuswap:

- Engage in upcoming tri-lateral and other collaborative tables and planning initiatives, reflecting salmon ecosystem values and providing data
- Raise awareness within the salmon community by including information on planning engagement opportunities in TSSC and partner communications
- Clarify roles between the TSSC, Qwelmínte Secwépemc, FLP tables, and provincial leads, and agree on methods to integrate salmon values into the Thompson River Watershed FLP
- Incorporate findings and progress into the Plan review cycles to adapt future actions and ensure alignment across trilateral watershed, land-use, and forestry planning

127 Fisheries and Oceans Canada - Trilateral accord to address the decline of wild Pacific salmon
128 B.C. Forest Landscape Plans
129 McDonald, 2021. *Creating safer cities for salmon*, 2021.
130 Stokes et al., "Local land-use planning to conserve biodiversity," 2010.
131 Walsh et al., "Prioritizing conservation actions for Pacific salmon in Canada," 2020.
132 Thompson River Watersheds Forest Landscape Planning Project
133 Porter et al., *Watershed Status Evaluation Protocol (WSEP – watershed-level fish values monitoring)*, 2019.
134 BC Ministry of Forests, *Watershed assessment procedure guidebook*, 2001.

⚠ Cross-Cutting Action 4: Conduct outreach activities to encourage partnerships with landowners and community members focused on improving habitat quality.

Effective stewardship depends on trusted partnerships with landowners and community members supported by practical tools and incentives. The Province of B.C. offers several programs that illustrate this approach:

Agricultural Lands

- **Stewarding Agricultural Watercourses** (SAW) – Works with producers and ranchers on riparian and watercourse stewardship, offering technical support and cost-share funding[135].
- **Environmental Farm Plan** (EFP) – Confidential on-farm risk assessments linked to the Beneficial Management Practices Program (BMP) for projects like riparian planting, fencing, off-channel watering, and stream crossings[136].
- **Farmland-Riparian Interface Stewardship Program** (FRISP) – Provides on-site guidance, project prescriptions, and permitting support[137].
- **Agri-Ecosystem Stewardship Initiative** (AESI) – Uses a Payment-for-Ecosystem-Services (PES) model to fund riparian enhancements, native vegetation planting, rotational grazing, and weed management[138].
- **Scaling the Implementation of Riparian Restoration** (SIRR) – Partners directly with landowners to implement riparian restoration projects with annual PES-based payments[139].

Homeowners and Other Landowners

- **NatureScape BC** – Provide training, design guidance, and case studies for riparian and floodplain improvements on private properties[140].
- **Habitat Conservation Trust Foundation (HCTF)[141], FWCP[142], and Pacific Salmon Foundation (PSF) Community Salmon Program**[143] – Offer grants for on-the-ground restoration and stewardship projects on private lands.

The Thompson-Shuswap salmon community is well-placed to target outreach to high-value salmon habitats in private ownership, co-design feasible actions with landowners and community members, and provide information on incentives and permitting support. The TSSC can help by collating information on high-priority sites, connecting appropriate people, and showcasing local demonstration sites in communications to encourage uptake.

Potential next steps in the Thompson-Shuswap:

- Map high-value salmon habitats on private lands using existing data
- Engage landowners and community members at priority sites with information on available stewardship programs, incentives, and provide support to address barriers (for example, permitting)
- Coordinate with agricultural and stewardship organizations to align outreach and funding
- Further incorporate First Nations perspectives and local knowledge into engagement
- Showcase local demonstration sites in TSSC communications to encourage uptake

135 BC Stewarding Agricultural Watersheds Project
136 BC Environmental Farm Plan Program
137 BC Cattleman's Association – Farmland-Riparian Interface Stewardship Program
138 IAF – Agri-Ecosystem Stewardship Initiative
139 IAF – Scaling the Implementation of Riparian Restoration
140 Stewardship Center for B.C. – NatureScape B.C.
141 Habitat Conservation Trust Fund – Land Stewardship Grants for Non-Governmental Organizations
142 Fish and Wildlife Compensation Program
143 Pacific Salmon Foundation – Community Salmon Program

Cross-cutting Action 5:
Continue supporting existing public education programs targeting responsible recreation near salmon habitats.

Recreation near rivers and lakes can disturb salmon during sensitive life stages[144]. Activities such as All-Terrain Vehicle (ATV) stream crossings, off-leash dogs, and wake-generating boating increase erosion and bedload transport, degrading spawning gravel and egg survival[145,146]. Recreation can also result in increased spread of invasive species[147]. First Nation Guardian and stewardship programs play a key role in promoting respectful recreational use by providing on-the-ground presence, education, and monitoring to protect salmon habitats[148,149,150]. Several provincial and federal programs focus on reducing invasive species transmission — a well-supported public practice in B.C.[151,152]. Community-based social marketing techniques can also be effective tools[153,154,155].

Key behaviours to address include reducing powerboat speeds; avoiding ATV stream crossings; cleaning, draining, and drying at boat launches; and leashing dogs and keeping them out of creeks during spawning. Collaborative partnerships between federal, provincial, and First Nations organizations, alongside Indigenous Guardian programs, are key to supporting outreach to recreational users.

Potential next steps in the Thompson-Shuswap:

- Identify priority, high-use sites and associated key behaviours to address
- Co-deliver targeted campaigns



The TSSC hosts its final workshop in Kamloops, B.C., to confirm cross-cutting actions and refine watershed-specific actions for the Plan, November 2025. Photo credit: SFC

144 Reid et al., "Potential impacts of riverine recreational activities on Atlantic Salmon," 2024.
145 Shuster et al., "Erosive potential of recreational boat wakes," 2020.
146 PKOLS-Mount Douglas Conservancy, *Understanding the Ecological Impact of Dogs*, 2023.
147 Invasive Species Council of B.C., *Best Management Practices*, 2021.
148 Government of Canada – 47 First Nations Guardians initiatives 2025–2026
149 New Relationship Trust – Guardians and Stewardship Training
150 Parks Canada – Secwépemc Indigenous Guardian Program
151 Government of B.C. – Stop the spread of invasive mussels
152 DFO, *Science Advice on "Clean, Drain, Dry and Decontaminate" treatments*, 2021.
153 Sanchez et al., "Barriers and motivators of household water-conservation behavior," 2023.
154 Koop et al., "Enhancing domestic water conservation behaviour," 2019.
155 McKenzie-Mohr, *Fostering sustainable behavior*, 2011.

Cross-cutting Action 6:
Share salmon ecosystem information through an accessible, centralized shared data platform.

Centralizing salmon ecosystem data in an accessible platform improves transparency, supports evidence-based decision-making, and reduces duplication of effort. A shared system enables planners, researchers, and communities to access consistent information on salmon status, habitat pressures, and climate projections, fostering collaboration and adaptive management. The TSSC Data Explorer is a publicly accessible interactive Geographic Information System (GIS) tool co-developed with the Pacific Salmon Foundation's Salmon Watersheds Program to centralize salmon status, habitat pressures, and planning information for the Thompson–Shuswap salmon community[156]. Future enhancement could include additional data layers such as: additional layers from PSF's Data Library (for example, spawner abundance), Sensitive Habitat Inventory Mapping (SHIM) outputs, DFO geospatial threat indicators and cumulative scores for the Thompson–Nicola, B.C. stream thermalscapes (1981 to 2100)[157], fish and ecosystem data, and species-specific spawning and natal rearing favourability projections. Any relevant data from studies addressing Knowledge Gaps (CC11 to CC18) should also be considered for future inclusion. Clear metadata and scale-dependent symbology will ensure transparency and usability, while formal or informal agreements may be needed to address data-sharing constraints.

Potential next steps in the Thompson-Shuswap:

- Continue integrating priority data layers into the TSSC Data Explorer
- Develop and confirm data protocols (verification process, metadata standards)
- Identify and resolve data-sharing constraints through agreements
- Promote tool usage through TSSC communications and training

Hydrology

Hydrology is critical for salmon, governing every stage of their life cycle. Stable flows maintain spawning gravels and prevent scour, while cool, oxygenated water reduces metabolic stress and disease risk[158,159]. Climate change is increasing hydrologic variability — reducing summer low flows, increasing winter floods, and driving stream temperatures beyond salmon survival thresholds[160]. The Hydrology theme includes 4 cross-cutting actions.

Cross-cutting Action 7:
Explore the potential for establishing Watershed Sustainability Plans and Watershed Objectives under the B.C. *Water Sustainability Act*.

Watershed Objectives, enabled under s.43 of the *Water Sustainability Act* (WSA), are a flexible, area-based planning tool for setting a desired state to sustain aquatic ecosystems and water uses. Their goal is to conserve and manage water values connected to human and ecosystem health, and will only be considered in situations where it is demonstrated that they are likely the best tool available to address an issue related to these values[161]. No watershed objectives have been established to date. Water Sustainability Plans (WSP), enabled under Sections 64–85 of the WSA, are initiated by ministerial order and can significantly change how a watershed is managed[162]. WSPs address conflicts between water users, reconcile environmental flow needs, manage water quality risks, and identify restoration measures for damaged ecosystems. Examples of WSPs in development include the Xwulqw'selu (Koksilah) WSP[163] and the Nicola WSP[164], which aim to address drought risk, water allocation conflicts, and ecosystem health through collaborative governance.

It should be noted that the inclusion of Watershed Objectives here is not meant as a recommendation that they be implemented, but that the possibility of establishing them be further researched and considered if appropriate.

156 TSSC data explorer
157 Weller et al., "Stream thermalscape scenarios for British Columbia," 2024.
158 Beechie et al., "Restoring salmon habitat for a changing climate," 2013.
159 Richter and Kolmes, "Maximum temperature limits for Chinook, coho, chum and steelhead," 2005.
160 Mayer et al., "Thermal tolerance in Pacific salmon," 2024.
161 B.C. Water Sustainability Act Objectives Interim Policy
162 B.C. water planning and strategies
163 B.C. Ministerial Order 426/2023
164 B.C. Ministerial Order 208/2025

Watershed Objectives and WSPs could provide legally enforceable mechanisms for water management and ecosystem protection for salmon-bearing watersheds in the Thompson–Shuswap. Their benefits and feasibility, however, have not been fully assessed. Exploring this potential would require evaluating whether these tools are the most effective option compared to alternatives and identifying watersheds where they could be applied. If this work advances, it should ensure alignment with ongoing initiatives such as the B.C. Watershed Security Strategy and the Thompson River Watersheds FLP Project.

Potential next steps in the Thompson-Shuswap:

- Develop criteria for screening watersheds (for example, salmon values, habitat threats, water pressures, resource-use conflicts, data readiness, community interests)
- Apply criteria to identify potential candidate watersheds for further study
- Conduct benefits and feasibility assessment for shortlisted watersheds

⚠ Cross-cutting Action 8: Identify potential opportunities for influencing upslope habitat conditions to improve water quality, water retention, and flows for salmon ecosystems.

Upslope interventions are targeted management and restoration practices beyond the existing stream channel that improve water quality, retention, and flow. Key measures include: forest management[165], green infrastructure such as bioretention basins and wetlands, 166 forest road upgrades or decommissions[167], or nature-based solutions such as beaver dam analogues and live beaver relocations[168]. Evidence shows these measures can reduce fine sediment, improve habitat quality[169], raise stream levels, increase groundwater, and cool summer water temperatures[170]. Success depends on tailoring actions to local landscape and hydrologic conditions from the mountain top to the valley bottom. Road deactivation efforts should prioritize targeting the roads that are the greatest sediment sources rather than the roads that are most accessible for restoration work.

Coordination with Secwépemc communities, private landowners, and government agencies is critical to secure permissions, align objectives, and ensure long-term stewardship. Adaptive management, including monitoring and adjusting approaches over time, is essential to maintain benefits under changing watershed conditions and evolving management priorities.

To address root causes, this cross-cutting action should be implemented at priority sites in combination with all other cross-cutting actions, including: all hydrology actions, integrated strategic planning processes (CC3), groundwater studies (CC11), spatial prioritization tools (CC15), and barrier remediation (CC18). The following physical restoration and conservation measures from the mountain top to the valley bottom should be considered for implementation:

- **Riparian and Upland Restoration,** including native planting, managed grazing, managed livestock access or exclusion, reforestation, terracing, and stabilized drainage to rebuild soil structure, enhance infiltration, and support a functioning ecological flow regime.
- **Forest Road Upgrades and Decommissioning** to reduce sediment inputs and protect clean baseflows.
- **Urban Green-Stormwater Infrastructure Programs** such as bioswales, bioretention, and small retention basins, along with wetland restoration, rain gardens, and permeable paving to capture stormwater, retain water, and reduce pollutants.
- **BDA construction and Beaver Relocations** to raise water tables, protect baseflows, and cool stream temperatures.

165 Filoso et al., "Impacts of forest restoration on water yield," 2017.
166 Zellner and Massey, "Modelling benefits and tradeoffs of green infrastructure," 2024.
167 B.C. Forest Road Deactivation
168 Pearce et al., "Impact of beaver dam analogues on hydrology," 2021.
169 Sugden, "Estimated sediment reduction with forestry best management practices," 2018.
170 Dittbrenner et al., "Relocated beaver," 2022.

Potential next steps in the Thompson-Shuswap:

- Use watershed modelling and existing data to identify priority sites
- Work across governments, forestry and livestock grazing licensees, and First Nations organizations to align resources and objectives and secure permissions
- Implement 1–2 targeted demonstration projects (for example, road deactivation + riparian planting; BDA installation) and monitor effectiveness (see CC17)

Cross-cutting Action 9:
Explore the potential to develop an integrated real-time water data tool for the Thompson-Shuswap.

Real-time monitoring and decision-support tools enable early detection of low-flow conditions, allowing timely interventions such as flow augmentation, habitat triage, and emergency fish salvage[171]. Integrating biological, hydrological, and climate data strengthens adaptive capacity, supporting ecological resilience during extreme events[172]. Public-facing dashboards and alerts raise awareness and encourage community participation, providing actionable, transparent information that supports salmon survival and long-term watershed resilience. The provincial Real-time Water Data Tool[173] already delivers continuous hydrometric, groundwater, and snowpack data via a public interface as the province's primary repository of data from monitoring stations across the province. The consolidated BC Water Tool (BCWT)[174] integrates water availability, licensing, and watershed information by consolidating tools from multiple regions (Omineca, Skeena [Northwest], Cariboo, and Kootenay-Boundary). There is currently no equivalent tool publicly available for the Thompson–Shuswap to consolidate under the BCWT.

Developing a real-time water data tool for the region would improve understanding of watershed conditions and support communication about drought, water availability, and salmon habitat needs. A tool could integrate streamflow, groundwater, precipitation, licensing, and environmental flow needs from provincial networks, local sensors, and remote sensing platforms. Features such as dashboards, mobile apps, and GIS integration could allow users to visualize conditions, track seasonal changes, and receive alerts during high-risk periods. Targeted messaging would support adaptive decision-making by First Nations governments, local communities, and water users. Several B.C. initiatives illustrate feasibility and offer potentially transferable models[175,176,177,178].

Potential next steps in the Thompson-Shuswap:

- Scan provincial and regional initiatives to confirm what real-time water tools are in use and their capabilities
- Identify gaps specific to Thompson–Shuswap (for example, salmon-relevant data integration and public accessibility)
- Explore options for adapting, expanding, or consolidating data in existing platforms


Lemieux Creek. Photo credit: DFO.

171 Otkin et al., "Getting ahead of flash drought," 2022.
172 Cui et al., "Integrating ecosystem water demands into drought monitoring," 2024.
173 B.C. Real-time Water Data Tool
174 BC Water Tool
175 Okanagan Basin Water Board – Environmental Flow Shiny App
176 Hartwig et al., "Water security through community-directed monitoring in the Canadian Columbia Basin," 2024.
177 Living Lakes Canada – Columbia Basin Water Monitoring Framework
178 Living Lakes Canada – Columbia Basin Water Hub

⚠ Cross-cutting Action 10:
Expand the hydrometric monitoring network, including the integration of water temperature monitoring capabilities.

Modernizing hydrometric networks with integrated temperature monitoring is essential for climate adaptation, water management, and ecosystem resilience. Flow and temperature data enable accurate modelling, drought and flood planning, and habitat protection.

Adding temperature monitoring to existing hydrometric stations and expanding coverage in key tributaries would improve understanding of flow and thermal stress on salmon in the Thompson-Shuswap. Integration with the Canada–B.C. Hydrometric Program[179] and collaboration with local partners such as the Shuswap Watershed Council and Secwépemc communities would ensure shared protocols and data stewardship. Priority sites should focus on drought-prone focal waterbodies that have limited coverage (for example, Bessette Creek). Lessons from the Nicola Basin's multi-benefit monitoring workshop provide a resource for prioritizing sites[180].

Potential next steps in the Thompson-Shuswap:

- Identify priority gaps, install temperature sensors at existing gauges, and establish new sites
- Consolidate all data through BC water tools (see CC9) and the Canada–B.C. Hydrometric Program

Knowledge Gaps

Addressing knowledge gaps is essential for effective salmon management in the Thompson-Shuswap. The Plan's Knowledge Gaps theme includes 8 wide-ranging cross-cutting actions, relating to targeted hydrological studies, habitat indicators, risk assessments, invasive species monitoring, mapping, barrier remediation, and evaluation of past restoration effectiveness. Although not specifically included as a potential next step, close collaboration and sharing findings with the Thompson–Shuswap salmon community is essential for all actions.

⚠ Cross-cutting Action 11:
Undertake targeted hydrological studies to quantify groundwater contributions to streamflow, identify critical thermal refuge locations, and evaluate protection strategies.

Groundwater plays a critical role in sustaining streamflow, creating thermal refuges, and supporting salmon survival during drought and warming conditions[181]. Targeted studies can clarify groundwater–surface water interactions, hyporheic exchange, and intragravel oxygen dynamics that influence spawning success[182]. Thermal refuges are critical for salmon survival during increasingly frequent heat stress events, and identifying and protecting these areas is essential for maintaining migration corridors and reducing pre-spawn mortality under climate change[183]. Methods may include differential gauging[184], seasonal temperature sensor arrays, and synoptic thermal mapping[185], or pore-water sampling[186] during late-summer baseflows and winter incubation. There are several examples of initiatives that have demonstrated practical workflows to measure groundwater contributions, map thermal heterogeneity, and publish standardized hydrology

179 B.C. Map of Current Streamflow Conditions for All Real-time Stations in B.C.
180 Alexander et al., *Nicola Basin Multi-Benefit Monitoring Station Workshop*, 2025.
181 Baldock et al., "Juvenile coho salmon track a seasonally shifting thermal mosaic," 2016.
182 Fullerton et al., "Longitudinal thermal heterogeneity in rivers and refugia for coldwater species," 2018.
183 Isaak and Young, "Cold-water habitats, climate refugia, and their utility for conserving salmonid fishes," 2023.
184 McCallum et al., "A new method for estimating recharge to unconfined aquifers," 2014.
185 Anibas et al., "seasonal spatial patterns of groundwater–surface water interaction," 2011.
186 Gruzalski et al., "Pore water collection, analysis and evolution," 2016.

data for planners and communities[182,187,188,189,190]. Examples of thermal refuge mapping and protection efforts in other regions, including the Columbia River Basin[191], South Prairie Creek (Washington)[192], and the North Alouette River[193], use thermal infrared drone surveys to identify cold-water refugia for salmon conservation. SFC has conducted thermal drone surveys on the Deadman River near Skeetchestn village to identify groundwater inputs to surrounding wetlands. Protection strategies chosen must address spatial variability, persistence, and connectivity of refuges[194], while integrating geomorphic and hydrologic drivers. These studies can be used to inform EFNs and CEFTs, enabling science-based drought management and guiding water allocation to support salmon resilience.

Studies should be targeted in drought-prone focal waterbodies, such as the Deadman River, Bessette Creek, and Salmon River, where groundwater plays an important role in stream flow. Key studies include: quantifying groundwater contributions and bedload movement, identifying critical thermal refuges for salmon survival, and analyzing strategies and pathways for their protection.

Potential next steps in the Thompson-Shuswap:

- Establish partnerships and implement targeted hydrological and thermal refuge studies
- Undertake an options analysis to advance protection strategies and implementation pathways

Cross-cutting Action 12: Assess the risk of contaminants for salmon in the Thompson-Shuswap and propose mitigation.

Contaminants and excess nutrients in freshwater ecosystems pose significant risks to salmon survival and recovery. Sources such as stormwater runoff, agriculture, industry, and urban development introduce pollutants, including metals, hydrocarbons, pesticides, road salts, and emerging chemicals like 6PPD-quinone. These substances are harmful to salmonids, and some contaminants, such as 6PPD-quinone, are acutely toxic to certain Pacific salmon species at extremely low concentrations[195], underscoring the need for proactive risk assessment and mitigation.

Studies in Louis Creek highlight the need for systematic contaminant risk assessment, including monitoring protocols and evaluation of exposure by species and life stage[196]. For example, coho are highly sensitive to 6PPD-quinone[197], while Chinook and steelhead are less affected[195]. Identifying hotspots and priority contaminants will help guide restoration and mitigation actions.

Potential next steps in the Thompson-Shuswap:

- Establish academic partnerships and initiate a contaminant risk study for salmon in the Thompson-Shuswap
- Develop contaminant mitigation plans for priority watersheds

187 Epp, *Environmental Flows and Hydrologic Assessment for the Bessette Creek Watershed*, 2014.
188 McCleary and Thomson, *Hydrogeology and Environmental Flow Needs Assessment near Lumby*, 2021.
189 Community Mapping Network – Bessette Creek and Salmon River Sensitive Habitat Atlas
190 Rood and Hamilton, "Hydrology and water use for salmon streams in the Chilcotin," 1995.
191 EPA – Tough Places and Safe Spaces: Can Refuges Save Salmon from a Warming Climate?
192 Coastal Geologic Services – Protecting Thermal Refuges for Coldwater Fish in the PNW
193 Pacific Salmon Foundation – Mapping Thermal Refugia in Salmon Streams
194 Torgersen et al., *Primer for identifying cold-water refuges,* 2012.
195 Lo et al., "Acute toxicity of 6PPD-quinone to early life stage juvenile Chinook and coho salmon," 2023.
196 Scott et al., *Louis Creek watershed: Water quality report for the 2024 dry season*, 2025.
197 Greer et al., "6PPD-Quinone Induces Mortality," 2023.

Cross-cutting Action 13:
Determine fry dispersal and survival rates in critical overwintering habitats of at-risk Chinook and coho populations.

Understanding fry dispersal and overwintering survival is crucial for stream-type Chinook and coho populations to develop conservation strategies that best support population recovery. Dispersal patterns are shaped by flow, temperature, and density dependence, while overwinter survival is linked to habitat complexity and cover availability[198].

For example, habitat sampling and fry sampling have informed restoration priorities in the Cowichan River[199]. Applying similar approaches in the Thompson–Shuswap may help identify critical overwintering refugia and survival risks for at-risk Chinook (DUs 13 to 17) and coho, informing future restoration and conservation actions. This action should be coordinated with CC11, exploring groundwater contributions and thermal refuges.

Potential next steps in the Thompson-Shuswap:

- Establish partnerships and initiate studies

Cross-cutting Action 14:
Research and map the distribution of invasive freshwater and riparian species and assess their risks to salmon.

Invasive freshwater and riparian species can degrade habitat, compete with native species, and spread disease, creating serious risks for salmon. Common threats in B.C. include invasive fish, plants, and high-risk species such as zebra and quagga mussels. These organisms reduce ecosystem resilience and salmon recruitment. Tracking their distribution is challenging and requires ongoing investment, making coordinated assessment and risk evaluation essential.

Numerous invasive species pose a risk to salmon in the Thompson-Shuswap, including smallmouth bass and yellow perch in the South Thompson Major Watershed[200]. There is also a risk that zebra and quagga mussels could be introduced to Adams Lake[201]. In addition, widespread invasive plants such as Eurasian water milfoil and reed canary grass are common. These organisms alter habitat quality, compete for resources, and transmit diseases that reduce recruitment[202]. InvasivesBC[203], made available in 2023, is a significant step toward consolidating known invasive species records. Maintaining current distribution data is inherently challenging and requires significant investment.

Potential next steps in the Thompson-Shuswap:

- Establish partnerships to initiate a comprehensive study and develop predictive models for invasion risk hotspots
- Integrate data with InvasivesBC
- Use findings to inform coordinated monitoring and rapid response for high-risk areas

Cross-Cutting Action 15:
Advance research to better understand how human and climate-related stressors affect salmon productivity and how populations respond to restoration and protection measures.

Modelling approaches can support understanding of how human activities (such as land use, water use, and pollution) and climate-driven changes (including temperature and flow) interact to affect salmon across their life cycle. Integrated life cycle, population, hydrology, and geomorphic models may enable scenario-based evaluation of restoration and protection actions and exploration of salmon responses under different management and climate conditions. However, where key data are limited, modelling outputs must be interpreted with caution, with uncertainty explicitly acknowledged and used

198 Sturrock et al., "Reconstructing the migratory behavior and long-term survivorship of juvenile Chinook," 2015.
199 Craig, *Critical Rearing Habitat Requirements of Cowichan River Chinook Salmon*, 2015.
200 Arbeider et al., "Interior Fraser Coho Salmon Recovery Potential Assessment," 2020.
201 Fraser Basin Council, *Strategic review of fisheries resources for the South Thompson - Shuswap*, 2016.
202 Invasive Species Council of B.C. – Aquatic Invasive Impacts on Pacific Salmon
203 B.C. Invasives – BC database and mobile application

to help identify priority research needs rather than definitive predictions. In the Thompson-Shuswap, a stronger understanding of salmon distribution, life history, and productivity is foundational to effective planning and modelling (as noted throughout the cross-cutting actions to address Knowledge Gaps) and should be addressed, as possible, while also progressing quantitative tools that may support restoration and conservation planning.

Foundational efforts are underway to incorporate spatial heterogeneity, life-stage sensitivity, and cumulative impacts (for example, field studies[204], cumulative effects frameworks[205], modelling exercises[206,207], and the CEMPRA tool[208]) and are highly applicable to the Thompson-Shuswap.

Virtual watershed approaches may also provide high-resolution topographic and hydrological information to guide targeted, site-specific actions[209], including floodplain reconnection, beaver habitat, erosion mitigation, and riparian restoration. Light Penetration Index (LPI) analysis also allows solar insolation to be quantified, guiding riparian prescriptions. Examples from B.C.[210] and further afield[211,212] demonstrate its value for salmon habitat planning. Hydrological tools (such as the RAVEN model), when combined with LiDAR and other geospatial data, can further support evaluation of flow dynamics and climate-related changes relevant to restoration planning[213].

The TSSC piloted the use of NetMap[214] in B.C., creating virtual watersheds for the Bonaparte and Deadman rivers, and using these to identify new potential actions in these watersheds (see Chapter 4). Expanding similar approaches to other priority watersheds could further support restoration planning under climate change conditions, where suitable data is available.

Potential next steps in the Thompson-Shuswap:

- Identify and refine key knowledge gaps in salmon life history, distribution, productivity, and inter-annual variability — including connections to hydrology, climate, and restoration — to guide targeted research and strengthen confidence in quantitative tools
- Identify priority watersheds where integrated virtual watershed and hydrological modelling can best inform restoration and management options to support salmon recovery
- Assess feasibility and costs for LiDAR acquisition and explore partnerships for shared data access
- Confirm methods and develop a phased implementation plan for integrated virtual watershed and hydrological modelling

⚠ Cross-cutting Action 16:
Develop and apply biocultural habitat indicators to monitor ecosystem health and evaluate restoration effectiveness.

Biocultural indicators improve salmon management by linking ecological health with cultural values, ensuring restoration is both scientifically effective and culturally relevant[215,216]. These indicators combine ecological metrics with First Nations perspectives to reflect salmon life-cycle needs and relationships to water and land[217,218,219]. They enable monitoring of habitat condition and limiting factors across life

204 Milner et al., "Seasonal dynamics of juvenile coho salmon in wetlands," 2025.
205 BC Cumulative Effects Framework
206 DFO, *Geospatial Indicators and Metrics for Threats to Fish Habitat*, 2024.
207 Doherty et al., *Hatchery, predation, and climate effects on productivity of wild salmon,* 2023.
208 ESSA – CEMPRA tool
209 Denicola, *Using Aerial LiDAR to Assess Stream Restoration Project Sites,* 2018.
210 Tranquil Creek Watershed Salmon Restoration
211 Restoring Habitat to Recover Coho Salmon on the Oregon Coast
212 TerrainWorks – Virtual Watersheds in Alaska
213 Craig et al., "Flexible watershed simulation with the Raven hydrological modelling framework," 2020.
214 TerrainWorks – NetMap
215 Roni et al., "tools for identifying, planning, and implementing habitat restoration for Pacific salmon," 2018.
216 Flitcroft et al., "A review of habitat connectivity research for Pacific salmon," 2019.
217 Bartlett et al., "Two-eyed seeing and other lessons learned," 2012.
218 Atlas et al., "Indigenous systems of management for culturally and ecologically resilient Pacific salmon," 2021.
219 Bingham et al., "Knowledge pluralism in first nations' salmon management," 2021.

stages, while systematic evaluation enables continuous improvement through adaptive management. Examples include the Intensively Monitored Watersheds network[220] and Washington's Salmon Recovery Funding Board program[221]. The Lower stál̓əl̓ ẇ (Fraser River) Biocultural Framework is composed of five broad indicators: access, ways of engaging, care-taking, physical health, and biological health[222]. These indicators are interwoven in a basket of knowledge and work together to form a holistic understanding of water health.

A biocultural indicator and evaluation framework for the Thompson-Shuswap will help identify life-stage-specific limiting factors, assess restoration outcomes, identify trends, and guide future actions. Existing governance through the TSSC, implementation of the Plan, and tools like the TSSC Data Explorer provide a strong foundation to advance this action. Once indicators have been co-developed with Secwépemc partners, they can be piloted in select priority reaches (for example, Adams, Eagle, Salmon, and Clearwater rivers) using consistent methods[223,224] to assess previous restoration effectiveness and monitor ecosystem health over time. This work is essential for supporting TSSC's proposed review cycle in Chapter 6, enabling tracking of ecosystem condition trends over time and continuously improving the Plan through adaptation.

Potential next steps in the Thompson-Shuswap:

- Co-develop indicators with Secwépemc knowledge holders and technical teams
- Pilot monitoring and evaluation in priority reaches (for example, Adams, Eagle, Salmon, and Clearwater rivers) using consistent methods
- Integrate findings into TSSC's proposed review cycle (Chapter 6) to track ecosystem condition trends and continuously improve the Plan through adaptation

Cross-cutting Action 17:
Undertake detailed salmon population risk assessments and prioritize actions for focal waterbodies.

Conducting detailed risk assessments helps identify threats and limiting factors, and links these to potential mitigation measures, strengthening decision-making. For example, the Risk Assessment Methods for Salmon (RAMS) is a structured framework that supports evidence-based prioritization and management decisions. It identifies limiting factors and the mitigation actions needed to address them across a population[225,226]. There exist various other frameworks for prioritizing actions, suitable for diverse scales and applications[227,228,229,230].

The TSSC piloted a simple and effective framework for prioritizing physical restoration and conservation works in focal waterbodies. This framework, which evaluates benefit, feasibility, and community support, is available for adaptation and future use. Integrating this tool with RAMS would provide a more detailed understanding of limiting factors and mitigation opportunities while incorporating community perspectives and linking these factors to place-based priority actions. Given its limited spawning distribution and Endangered status, Chinook in Bessette Creek (CK-16 / DU14) would be a strong candidate population for undertaking such an assessment.

Potential next steps in the Thompson-Shuswap:

- Confirm a candidate salmon population and/or focal waterbody for undertaking a RAMS-style assessment for further restoration prioritization
- Establish partnerships, initiate the project, and integrate findings into the Plan

220 Haskell et al., *Key Findings and Lessons Learned from Pacific Northwest Intensively Monitored Watersheds*, 2019.
221 Krall et al., "Lessons learned from long-term effectiveness monitoring of instream habitat projects," 2019.
222 First Nations Fisheries Legacy Fund and Centre for Indigenous Fisheries, *Biocultural Indicator Manual*, 2024.
223 B.C. Standards and guidelines for fish and fish habitat
224 Pacific Salmon Foundation – Methods for Assessing Status and Trends in Pacific Salmon
225 Pacific Salmon Foundation – Risk Assessment Method for Salmon
226 Pearsall, *Nicola Basin Chinook Risk Assessment Final Report,* 2022.
227 Upper Columbia Regional Technical Team, *Habitat Action Prioritization,* 2021.
228 Walsh et al., *BC Central Coast: Prioritizing Strategies for Pacific Salmon Recovery and Persistence,* 2020.
229 NOAA – Collaborating to Identify Salmon Habitat Restoration Priorities
230 Walsh et al., "Prioritizing conservation actions for Pacific salmon in Canada," 2020.

Cross-cutting Action 18:
Continue to identify priorities for artificial barrier remediation and implement projects.

Prioritizing barrier remediation is critical for restoring connectivity and improving salmon population resilience, particularly under climate change. Since 2008, fish passage has been restored at approximately 200 barrier culverts in B.C.[231].

Artificial barriers fragment habitats and restrict access to spawning and rearing areas in the Thompson–Shuswap. Addressing these barriers will reconnect critical reaches and improve migration pathways. Established prioritization and implementation methods[232] and collaborative projects already underway[233,234,235] provide a strong foundation for continued action. The Canadian Aquatic Barrier Database (CABD) serves as a centralized data platform that supports coordination and planning[236].

Potential next steps in the Thompson-Shuswap:

- Expand barrier remediation prioritization work into other priority focal waterbodies, implement projects, and consolidate data using the CABD



An SFC biologist assesses stream crossings to identify potential barriers for migrating salmon. Photo credit: SFC

231 Zubick et al., "A comparative analysis of culvert barrier remediation techniques in British Columbia," 2025.
232 Mazany-Wright et al., *Breaking Down Barriers,* 2021.
233 B.C. Fish Passage Technical Direction
234 Secwépemc Fisheries Commission, *Thompson-Shuswap Watershed Connectivity Restoration Plan,* 2025.
235 Pemberton-Renaud et al., "Codevelopment of framework for prioritizing culvert remediation," 2024.
236 Canadian Aquatic Barrier Database

Chapter 6. Implementation

This chapter presents an implementation framework that will be strengthened through collaboration among multiple partners to sustain momentum from this planning process.

Multi-Partner Implementation

Given that no single organization has the capacity or mandate to deliver all actions on its own, the Plan is designed for flexible and adaptive implementation by those within the regional salmon community. The TSSC, as a watershed-level technical convenor, brought together SFC, DFO, and WLRS to seek input from others in the watershed and to establish shared goals, objectives, and priorities to guide the salmon community in our collective efforts to improve salmon ecosystems in the Thompson-Shuswap. Success in implementing the recommendations of this plan, however, depends on a diverse network of groups and individuals within the salmon community selecting and advancing actions that align with their strengths, mandates, and opportunities.

This approach respects the autonomy of participating organizations and individuals, enabling them to continue initiating restoration activities in local waterbodies, participate in and lead cross-cutting actions where relevant, and respond quickly to funding opportunities, emerging issues, or shifts in environmental, social, or political conditions. It is anticipated that most focal waterbody actions in Chapter 4 of the Plan will be implemented by local practitioners who live and work in those areas. Many focal waterbody actions may be led or co-led by First Nations, with stewardship practitioners and technical partners (including SFC) working in collaboration with or under the direction of First Nations governments. Cross-cutting actions set out in Chapter 5 will likely be led by a wider range of partners, including First Nations organizations, federal, provincial, and local governments, academic institutions, and national or regional NGOs.

Common Project Lifecycle

Actions outlined in the Plan vary widely in scope, type, complexity, and context. To encourage consistency and integration, many actions can be implemented using a common project lifecycle (Figure 9). This common structure provides a flexible, transparent, and coordinated approach for planning, implementing, and adapting actions. The common project lifecycle is most applicable to any actions that have a clear scope, a defined start and finish, and can be broadly defined as a project[237]. The majority of focal waterbody and many of the cross-cutting actions in the Plan fall into this category. By using this common lifecycle, practitioners can coordinate efforts more effectively, share lessons learned, and collectively advance salmon conservation and restoration goals.

Several cross-cutting actions (Chapter 5) are ongoing endeavours to address underlying conditions, processes, or policies and require close collaboration and creative problem-solving across multiple jurisdictions. These may not follow a structured common project lifecycle.

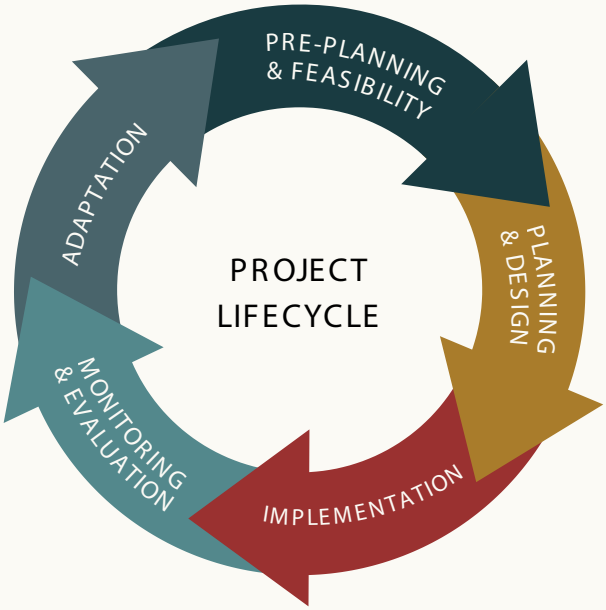


Figure 9. Common Project Lifecycle and its 5 phases.

237 A project is a "temporary endeavor undertaken to create a unique product, service, or result." *Project Management Institute.*

While the phases and shared goals of the common project lifecycle remain consistent, the specific activities within each phase can be tailored to the unique requirements of each action category. First Nations engagement should be interwoven throughout the 5 phases of the common project lifecycle. Table 8 outlines the typical activities that project planners and practitioners may need to consider across project phases for each action category.

Table 8. The 5 phases of the common project lifecycle, their shared goals, and high-level activities across action types.

PHASE	SHARED GOAL	ACTION TYPE		
		Knowledge Gaps / Hydrology / Area-based Conservation	**Outreach and Engagement**	**Physical Works (Restoration and Conservation / Fish Passage)**
PRE-PLANNING AND FEASIBILITY	**Define opportunity and confirm feasibility**	Identify need and establish objectives Develop proposal / project plan and secure funding Undertake preliminary feasibility study Establish partnerships, project team, and governance structures		
PLANNING AND DESIGN	**Develop a plan and establish mechanisms for delivery**	Develop study design	Develop engagement plan and materials	Undertake detailed design Initiate outsourced procurement
IMPLEMENTATION	**Deliver the action effectively and safely**	Conduct research	Deliver education / stewardship / outreach activities	Execute physical restoration works
MONITORING AND EVALUATION	**Track performance and measure success**	Analyze data, and publish and share findings	Track participation, assess impact, and share reporting	Document 'as-built' conditions Monitor ecological effectiveness, evaluate success, and share reporting
ADAPTATION	**Apply insights to improve future actions**	Refine priorities based on findings and recommend new actions / next steps	Adjust messaging and methods for greater effectiveness	Apply adaptive management to improve future restoration success

Communication and Coordination

Because implementation involves a diverse salmon community, communication and coordination are essential to promote an integrated approach that uses resources efficiently and maximizes benefits for salmon. This dynamic approach is essential for responding to shifting priorities, emerging opportunities, and changing environmental conditions. It ensures that actions are continuously refined to maximize their effectiveness and alignment with the Plan's goals and objectives.

The TSSC will continue to facilitate communication through newsletters, its website and shared data platform, workshops, and virtual engagement sessions, as funding and capacity allow. Coordination meetings are also recommended to help maintain alignment, identify gaps, and foster collaborative action. The TSSC may also be well-positioned to lead or support several cross-cutting actions identified in Chapter 5, by seeking alignment across the salmon community and establishing partnerships to drive momentum on these actions.

Communities and organizations are encouraged to identify actions in the Plan that align with their mandate, capacity, and opportunities. Coordination of these projects should be advanced between salmon community members through engagement, collaboration, or partnership with Secwépemc communities, recognizing their central role in local watersheds and salmon resilience, and with other relevant local watershed organizations. Project leads are responsible for approaching actions with the most current information and a collaborative, respectful mindset by contacting Secwépemc communities (Table 9) and watershed organizations (Table 10) within the Thompson-Shuswap that should be informed, engaged as partners, or may hold relevant knowledge to support the work.

Engaging with the appropriate Secwépemc communities before any work is undertaken is critical to this plan, as is ensuring that actions are culturally informed, coordinated, and, where appropriate, led by Secwépemc communities and aligned with their priorities. Table 9 lists the main office locations of Secwépemc communities to support early outreach, information sharing, and discussion of potential involvement.

Table 9. First Nations communities and contact details to support project implementation and coordination.

First Nation	Contact
Adams Lake Indian Band	6443 Hillcrest Rd, Chase, BC V0E 1M0 (250) 679-8841
Bonaparte Indian Band	PO Box 669, Hwy 97N 2689A Sage Hill Rd, Cache Creek, BC V0K 1H0 (250) 457-9624
Neskonlith Indian Band	705 Chief Neskonlith Dr, Chase, BC V0E 1M0 (250) 679-3295
Shuswap Indian Band	PO Box 790, RR#2-3A 492 Arrow Road, Invermere, BC, V0A 1K2 (250) 341-3678
Simpcw	7555 Dunn Lake Rd, Barriere, BC V0E 1E0 (250) 672-9995
Skeetchestn Indian Band	PO Box 178, Savona, BC V0K 2J0 (250) 373-2493

Skwlāx te Secwepemcúl̓ecw	1886 Little Shuswap Lake Road, Chase, BC V0E 1M2 (250) 679-3203
Splatsín First Nation	5775 Old Vernon Rd, Enderby, BC V0E 1V0, (250) 838-6496
Tk'emlúps te Secwépemc	330 Chief Alex Thomas Way #200, Kamloops, BC V2H 1H1 (250) 828-9700
Whispering Pines/Clinton Indian Band Stil'qw/Pelltíq't	615 Whispering Pine Drive, Kamloops, BC V2B 8S4 (250) 579-5772

In addition to Secwépemc communities, other local watershed groups and collaboratives have active restoration and conservation initiatives underway. Coordination with these organizations, as relevant, can strengthen place-based and cross-cutting actions and support cohesive progress across the Plan. Table 10 lists organizations that were identified in writing this Plan and which may offer additional expertise, knowledge, or partnership opportunities within the region.

Table 10. Salmon, watershed, and stewardship organizations that contributed to the drafting of the Plan.

Watershed Group	Organization
Bonaparte River	Secwepemcúl'ecw Restoration and Stewardship Society
Lower North Thompson River	Louis Creek Community Stewardship Group
Adams River	Adams Lake Salmon Society
South Thompson River	Salmon River Collaborative meetings Salmon River Technical Working Group
Upper Shuswap	Bessette Agricultural Sustainability Society Kingfisher Interpretive Centre
Across the Thompson-Shuswap	Canadian Wildlife Federation Fraser Basin Council Pacific Salmon Foundation Thompson-Nicola Conservation Collaborative

Monitoring and Review Cycles

To ensure the Plan remains responsive and effective, it is recommended that progress be tracked through annual check-ins and a comprehensive 5-year review. TSSC can lead these review cycles (as funding and capacity allow) and include engagement with First Nations and relevant organizations, allowing for reflection, refinement, and adaptation of actions over time.

Annual check-ins, starting in 2027, should assess progress on completing actions, identifying constraints, potential opportunities for expansion and refinement, and the need to defer or remove actions. Each action will be assigned a status recorded in a tracking spreadsheet (for instance, complete, active, deferred, or removed). Actions may be modified, and new actions can be included during annual check-ins to address emerging issues, advances in research, and feedback from the salmon community.

A comprehensive review should be completed in the fifth calendar year following Plan publication to evaluate progress toward the goals and objectives of the Plan. The comprehensive review would:

- Refine, adapt, or remove actions as needed
- Assign a status to individual actions
- Determine next steps for 'active' and 'deferred' actions
- Confirm the Plan's goals and objectives remain relevant and revise for the next 5-year cycle if needed
- Assess progress toward addressing the Plan's goals and objectives
- Identify new actions for the next 5-year review cycle
- Update and reissue the Plan

Additional comprehensive reviews may be conducted outside the regular 5-year schedule due to exceptional circumstances, including:

- An unforeseen event that may impact the Plan's goals and objectives
- Concerning trends or systemic issues identified through annual reviews, requiring a targeted comprehensive review



SFC biologists pit tag juvenile coho in the Deadman River, July 2023. Photo credit: DFO

Tracking Plan Outcomes

A comprehensive review will aim to track the contribution of completed Plan actions toward supporting the goals and objectives.

To understand trends in salmon ecosystem health across the Thompson-Shuswap region, a structured monitoring framework is needed. This framework should include methods for conducting a broad ecosystem conditions assessment and setting measurable ecosystem targets or objectives. While the development of such a framework is beyond the scope of the Plan, the collaboratively developed goals and objectives provide a strong foundation to inform this work. The need for a structured monitoring framework is further explored as a cross-cutting action to develop and apply biocultural habitat indicators to monitor ecosystem health and evaluate restoration effectiveness (CC16) in Chapter 5.

Shaping a Future Where Salmon Thrive

Over the past 4 years, people from diverse backgrounds — including community members, knowledge keepers, scientists, and partners from multiple organizations — have come together, united by a shared care for *sqlelt̓n* and the landscapes we collectively steward. This Plan is the result of countless conversations, long hours, and a shared belief that our region can do better for these iconic species. The dedication shown by everyone involved has been inspiring, and it reflects the deep connection many of us feel to *sqlelt̓n* and to the waters that sustain them.

The wisdom and leadership of the Secwépemc Nation have been essential to this work. Their teachings, shared through generations, about respect, reciprocity, and responsibility offer a powerful reminder: *sqlelt̓n* are not just part of the landscape; they are kin, shaping who we are and guiding how we live in relationship with the waters and each other. *Sqlelt̓n* shape cultures, nourish communities, and connect generations. Carrying these values forward is not only an act of respect, it is a commitment to a healthier and more balanced future for everyone who depends on these lands and waters.

While this report brings the planning phase to a close, the work ahead is where hope turns into action. The recommendations contained within this Plan point the way, but it is the relationships and shared determination behind them that will truly make a difference. Protecting and restoring *sqlelt̓n* and their ecosystems will require steady effort, open dialogue, and the courage to keep working together even when the path is challenging.

The partnerships built during this process have shown how much is possible when people choose collaboration, and when the well-being of *sqlelt̓n* becomes a shared priority. If we continue to follow Secwépemc teachings guided by respect, humility, and a sense of collective responsibility, we can help support sustainable *sqlelt̓n* populations and ensure their presence continues to enrich the environment, cultures, and communities of the Thompson-Shuswap region for many generations to come.



Sockeye Salmon. Photo Credit: SFC

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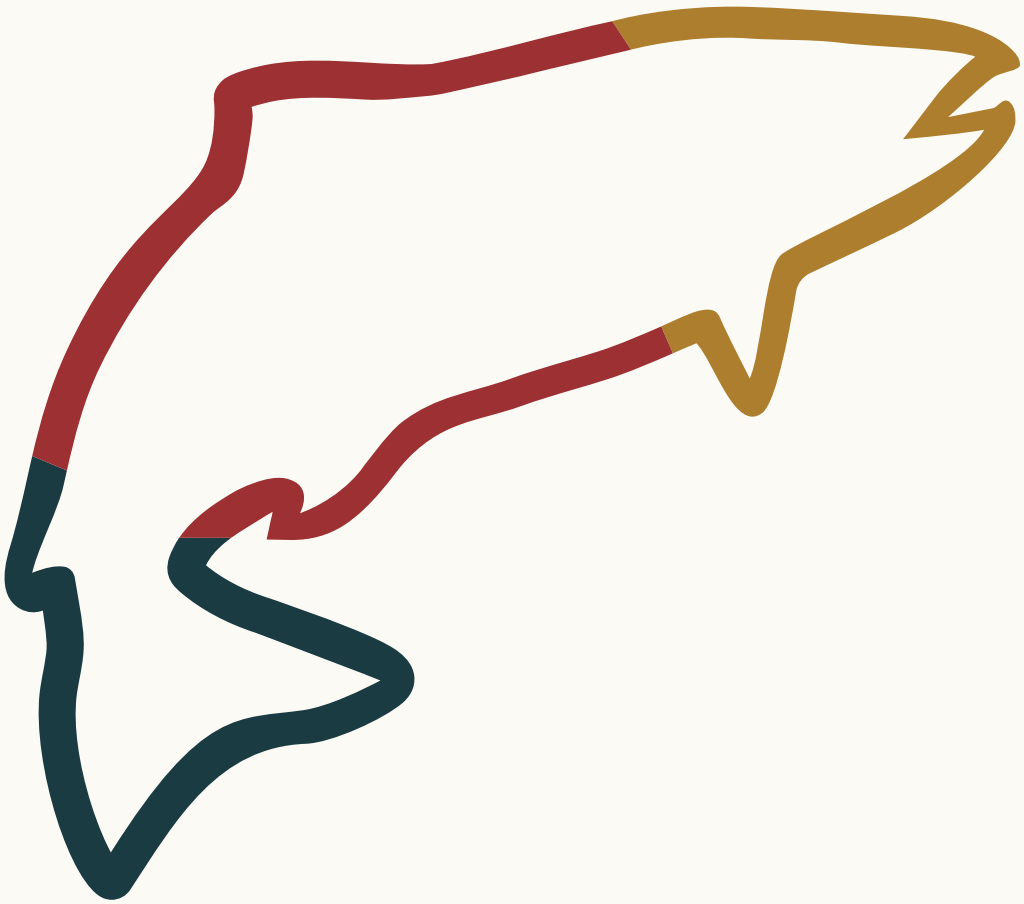
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Thank you

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