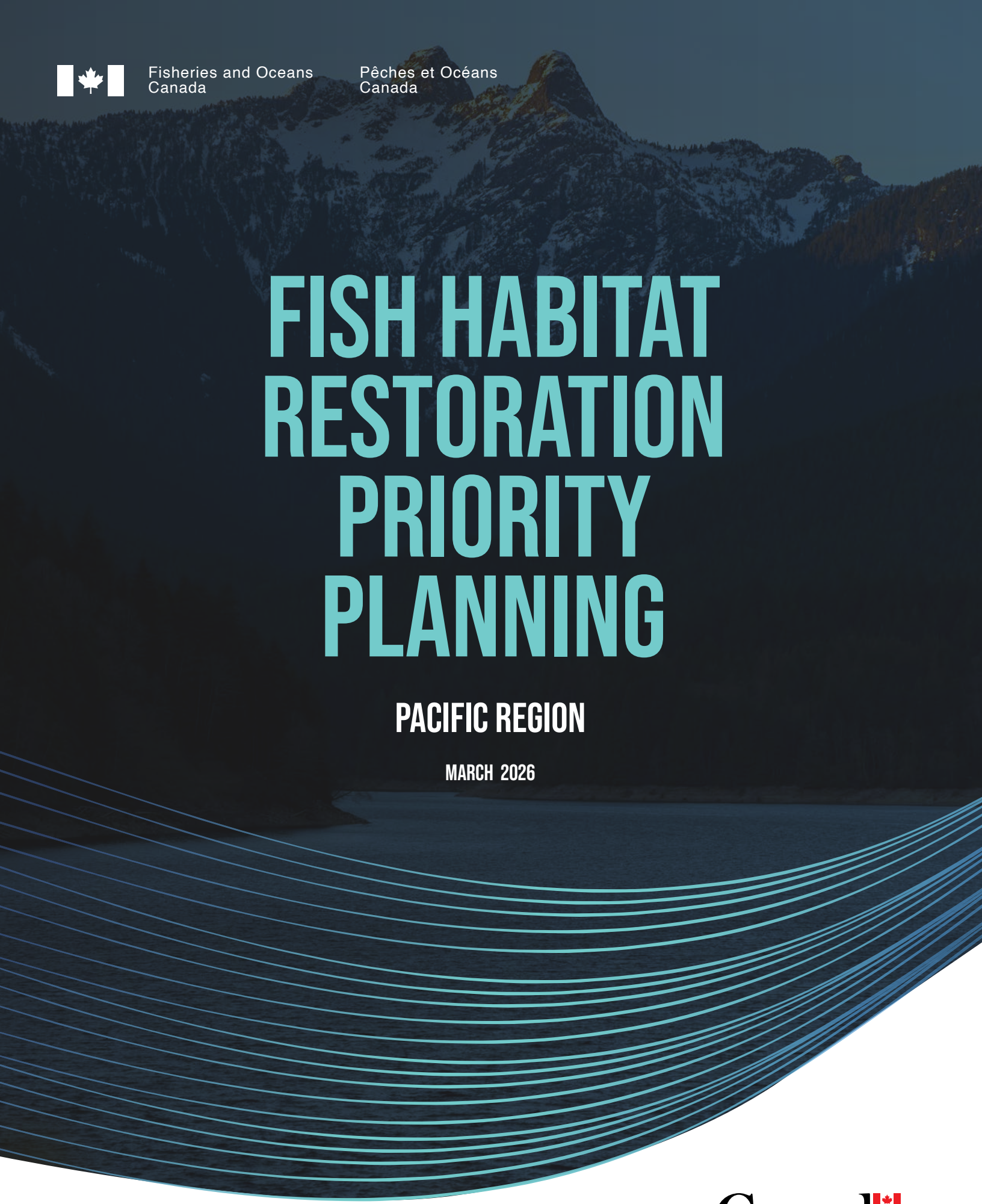

Fisheries and Oceans Canada

Pêches et Océans Canada

FISH HABITAT RESTORATION PRIORITY PLANNING

PACIFIC REGION

MARCH 2026

Canada

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NOTE TO THE READER

Threats and impacts to fish and their habitats arise from a variety of sources. Multiple entities have a role to play in protecting fish and fish habitat including Fisheries and Oceans Canada (DFO), the Government of British Columbia, the Yukon Government, and First Nations. For clarity, the term "First Nations" is used throughout this document to reflect the composition of Indigenous groups in Pacific Region. However, it is acknowledged that a range of entities (for example, Indigenous organizations, tribal councils, or other affiliations) can lead habitat restoration projects. This document is intended to be inclusive and applicable to all such entities.

The Fish Habitat Restoration Priority Planning for Pacific Region (restoration priorities plan) focuses on current and historical threats and impacts to fish habitat. The restoration priorities plan proposes seven habitat restoration goals alongside objectives and measures to effectively restore fish habitat throughout Pacific Region (British Columbia and the Yukon). The goals, objectives, and measures aim to address the root causes of habitat degradation. When preparing a comprehensive habitat restoration plan, it is important to consider all threats and to work collaboratively to achieve long-lasting and self-sustaining results for fish.

Addressing activities that affect fish and fish habitat requires collaboration and coordination. First Nations, provincial, territorial or federal involvement may be required for habitat restoration projects. DFO's **Projects near water** web portal is a federal resource that provides guidance for works that may affect fish and their habitat.

This document is intended to inform and improve planning for habitat restoration activities to achieve the best possible outcomes for investments. It is not intended to be a binding or prescriptive document. It is also not meant to speak on behalf of any single restoration practitioner or DFO program, imply mandatory use, prescribe leadership roles, or commit DFO to specific future planning or implementation activities.

In the event of an inconsistency between the Habitat Restoration Priority Planning for Pacific Region and federal, provincial or territorial legislation or associated regulations, the legislation will prevail.

"**THROUGH MEANINGFUL CONSULTATION AND COLLABORATION AND PARTNERSHIPS** WITH INDIGENOUS GROUPS AND BRITISH COLUMBIA AND YUKON PARTNERS, FISHERIES AND OCEANS CANADA WILL IMPLEMENT THE PACIFIC SALMON STRATEGY INITIATIVE **TO PROTECT AND REVITALIZE SALMON POPULATIONS AND THEIR HABITATS.**"

UNITED NATIONS DECLARATION ON THE RIGHTS OF INDIGENOUS PEOPLES ACT ACTION PLAN MEASURE 41

ACKNOWLEDGEMENTS

This plan is the product of three years of engagement with hundreds of Canadians dedicated to fish and fish habitat in British Columbia and the Yukon. DFO staff drafted the plan by incorporating valuable input from dedicated, knowledgeable and impassioned members of the restoration community who reviewed, edited and helped improve the plan over multiple drafts.

DFO would also like to acknowledge the First Nations Fisheries Council of British Columbia (FNFC) for supporting engagement with First Nations across British Columbia. FNFC convened several regional and provincial-wide engagement sessions throughout 2024 and 2025 to gather First Nations' perspectives, input, and feedback for the draft restoration priorities plan. These engagement sessions were conducted in addition to ongoing bilateral conversations between DFO and First Nations across Pacific Region.

Through these meetings and in conversations, many First Nations across Pacific Region shared their traditional knowledge and expertise in habitat restoration and stewardship to inform the restoration priorities plan. We honour and are grateful to the knowledge holders, past, present, and future, whose guidance informs the restoration priorities plan.

Moving forward with respect and shared responsibility, and working together to restore the lands and waters we all rely on will be important for our collective success.

“WHAT HAPPENS ON THE LAND, IMPACTS THE WATER.”

ANONYMOUS PARTICIPANT, NORTHEAST AND SOUTHEAST ENGAGEMENT SESSION, NOVEMBER 19, 2024

EXECUTIVE SUMMARY

PURPOSE AND SCOPE

The Fish Habitat Restoration Priority Planning for Pacific Region (restoration priorities plan) is a foundational guide developed by Fisheries and Oceans Canada (DFO) to support aquatic habitat restoration across British Columbia and the Yukon. It identifies regional restoration goals and objectives applicable to all fish species and all aquatic habitats from headwaters to nearshore marine environments. The restoration priorities plan also provides guidance on how to set habitat restoration priorities that address habitat degradation and highlights the importance of planning and working across geographic and jurisdictional boundaries.

COLLABORATIVE APPROACH

The restoration priorities plan was developed through extensive engagement with First Nations, governments, environmental non-governmental organizations, industry and community groups. It reflects a shared commitment to restoring fish habitats and advancing reconciliation. It emphasizes the importance of Indigenous knowledge, stewardship, and leadership in restoration efforts.

RESTORATION GOALS

Seven regional, long-term goals guide restoration efforts. Each goal includes specific, measurable objectives and suggested metrics to support monitoring and adaptive management. To respect local priorities and jurisdictional diversity, the goals are not ranked.

- Improve fish passage
- Increase habitat connectivity
- Increase water quantity
- Improve water quality
- Increase riparian habitat area
- Improve habitat complexity and diversity
- Improve watershed hydrology

KEY CONSIDERATIONS

- Restoration should strive to address cumulative impacts and improve habitat and species resilience to climate change
- Addressing the root cause of degradation and restoring ecosystem processes, such as sediment transport and water flow, are central to long-term success
- Restoration can be an important step in supporting local knowledge, cultural revitalization, and food sovereignty for First Nations

IMPLEMENTATION AND USE

The restoration priorities plan serves as a reference document to support funding applications, watershed planning, recovery documents and rebuilding plans, regulatory reviews, and offsetting plan development. DFO encourages users to apply the restoration priorities plan's goals and objectives at local scales, integrate biocultural indicators, and collaborate across jurisdictions.

NEXT STEPS

The restoration priorities plan is a document intended to evolve with new data, feedback, and environmental conditions. The document will be reviewed as needed to ensure it remains relevant and effective.

DFO emphasizes that the recommendations presented in the restoration priorities plan are offered for consideration and discussion. The restoration priorities plan should not be interpreted as a definitive course of action by DFO or the restoration community, but rather guidance to help with restoration planning and action after thoughtful consideration of site-specific fish and fish habitat threats and needs.

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GLOSSARY

Adaptive management: An integrated, multidisciplinary and systematic approach to improving natural resource management. Management methods are updated based on the outcomes of implemented management policies, practices and monitoring protocols.[1]

Aquatic invasive species: Freshwater or marine plants, animals, algae and micro-organisms introduced outside their natural or past distribution. Invasive species specifically disrupt the composition and/or function of native ecosystems, often outcompeting local species.

Coastal squeeze: Refers to the loss of intertidal habitats caused by rising sea levels and fixed human infrastructure.

Conservation unit: A group of wild Pacific salmon sufficiently isolated from other groups that, if extirpated, is very unlikely to recolonize naturally within an acceptable timeframe, such as a human lifetime or a specified number of salmon generations.[2,3]

Cumulative effects: Changes in environmental, social, economic, and cultural values and conditions caused by the combined effects of past, present, and reasonably foreseeable future human activities and natural processes.[4,5]

Ecosystem process: Also known as an ecosystem function. It is a suite of dynamic physical, chemical, and biological processes that sustain life for organisms. These include productivity, energy flow, and nutrient cycling.

Engagement: An ongoing, consistent dialogue that builds trust and respect between parties on issues of mutual interest and supports Canada's commitment to implement the **United Nations Declaration on the Rights of Indigenous Peoples**, as per the federal ***United Nations Declaration on the Rights of Indigenous Peoples Act***, and the **Principles respecting the Government of Canada's relationship with Indigenous peoples**. Engagement is often considered a spectrum and can include information sessions, meetings, workshops, and site visits.

Engagement participant: A member of the restoration community who provided feedback during development of the restoration priorities plan.

Fish: As per the definition in the *Fisheries Act*, "fish" referenced in the Fish Habitat Restoration Priority Planning Guide for Pacific Region includes all species and life stages of fish, shellfish and crustaceans, including eggs, sperm, larvae and spat. *Please note that this plan does not include habitat restoration goals for marine mammals, which are included in the definition of "fish" in the Fisheries Act.*

Fish habitat: As per the definition in the *Fisheries Act*, fish habitat is water frequented by fish and any other areas on which fish depend directly or indirectly to carry out their life processes, including spawning grounds and nursery, rearing, food supply and migration areas.

Habitat restoration: Assisting with the recovery of an ecosystem or habitat to a more resilient state by re-establishing structure, species composition and ecological processes through active means, for example, landscape manipulation, or passive means such as removing old infrastructure and allowing natural processes to recover.[6]

Hišukiš ċawaak: "Everything is one" in Nuu-chah-nulth-aht, among species, habitats, ecosystem processes, and the people who share reciprocal relationships with them.

Importance: Defined by Pacific Region's restoration community as something that holds significant value for those who depend on it.

Indicator: Integrates information from various metrics or factors into a single value. It can include ecological indicators, indicator species, or biocultural indicators.

Indigenous Protected and Conserved Areas: The Indigenous Circle of Experts has defined the term Indigenous Protected and Conserved Area as lands and waters where Indigenous peoples and governments have the primary role in protecting and conserving ecosystems through Indigenous laws, governance, and knowledge systems.[7]

Keystone relationship: (Cultural) Keystone relationships recognize the cultural value of species beyond providing food and shelter, but also in supporting a myriad of cultural and traditional practices.[8]

Keystone species: A species that has a disproportionately large effect on its natural environment relative to its abundance. Keystone species play a critical role in maintaining the ecology and structure of a community. Examples include salmon, and beavers, which both alter and maintain the physical, chemical, and biological environment around them.

Limiting factor: Activities and processes that may not cause a population-level decline, but limit growth, resilience, or recovery of a species. Limiting factors can become threats if a species has lost its resilience due to other threats and is thus prone to decline.[9]

Linear development: Infrastructure such as highways, resource roads, transmission lines, pipelines, and fibre optics cable development that is linear in nature.[10]

Metrics: A measure to evaluate an ecosystem response.

Nature-based solutions: Actions taken to protect, sustainably manage, and restore natural and modified ecosystems that effectively and adaptively address societal challenges while simultaneously benefiting people and nature.

Offsetting plan: An offsetting plan includes measures taken by a proponent to counterbalance the residual effects of fish and fish habitat that are caused by their project after avoidance and mitigation measures have been applied.

Priority setting or prioritization: The process of assessing the urgency, feasibility, and expected impact of goals and objectives to determine which should be acted upon first while considering available funding, expertise, and other constraints.[11]

Process-based restoration: An approach to fish habitat restoration that focuses on restoring natural processes in degraded ecosystems, which in turn create and sustain habitat features. Process-based restoration aims to address the root causes of degradation.[12,13]

Restoration action: Specific localized activities that contribute to a restoration goal and its objectives.

Restoration community: Organizations and communities involved in habitat restoration, including First Nations, federal, provincial, territorial, municipal and local governments, non-governmental organizations, community groups, consultants, academia, and development proponents.

Restoration goal: Achievable outcomes that describe a desired future condition or state for species, areas, or ecosystem processes. Goals are designed to be broad and long-term to account for the large-scale and slow recovery of natural systems.

Restoration objective: Specific, short-term, measurable outcomes that contribute to achieving a restoration goal.

Riparian area: Areas that occur next to freshwater and marine bodies of water and include both the area dominated by continuous high moisture content and the adjacent upland vegetation that exerts an influence on it.

Species at risk: Species at risk referenced in this document include all species listed on Schedule 1 of the *Species at Risk Act* and species assessed as extirpated, endangered, threatened, or special concern by the Committee on the Status of Endangered Wildlife in Canada.

Stakeholder: A person, organization or business with an interest or concern in something and may be affected by a course of action.

Treaty: Denotes an agreement made between governments and Indigenous peoples that defines ongoing rights and obligations on all sides. In Canada, Treaties with Indigenous peoples include both:

- Historic treaties with First Nations
- Modern treaties (also called comprehensive land claim agreements) with Indigenous peoples

Value: Something that can be defined by ecological, cultural, economic, commercial, recreational, or other area-specific measures, individually or in combination.

Watershed: The area of land that drains all rainfall, groundwater, and surface water to a common outlet.

Watershed plan: An assessment of a watershed's current and future health by identifying forests, wetlands, streams, and groundwater conditions, and outlining solutions to address identified issues. Characterizing the watershed allows planners to understand impacts and threats, and guides management strategies for improvements.

ABBREVIATIONS

ABBREVIATION	MEANING
BC	British Columbia
°C	Degrees Celsius
g/L	Grams per litre
kg	Kilogram
km	Kilometre
km^2	Square kilometre
m	Metre
m^2	Square metre
Pacific Region	British Columbia and the Yukon
National Framework	Framework to Identify Fish Habitat Restoration Priorities
Restoration priorities plan	Habitat Restoration Priority Planning for Pacific Region

ACRONYMS

ACRONYM	TERM
DFO	Fisheries and Oceans Canada
PACT	Purposeful, Actionable, Continuous and Trackable
RCOE	DFO's Habitat Restoration Centre of Expertise
SEP	Salmonid Enhancement Program
SMART	Specific, Measurable, Achievable, Relevant and Time-bound
UNDA	*United Nations Declaration on the Rights of Indigenous Peoples Act*
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples

1 INTRODUCTION

Aquatic ecosystems in Canada's Pacific Region have been altered by the ***cumulative effects*** of human-caused habitat degradation. Anthropogenic pressures, amplified by climate change, have degraded important habitats, disrupted ***ecosystem processes***, and resulted in declines in aquatic species populations.[14] These impacts also threaten the cultural, economic, and ecological well-being of communities that rely on these species and their habitats.

Canada's 2030 Nature Strategy is building on existing initiatives to address Kunming-Montreal Global Biodiversity Framework targets. Target 2 of the Nature Strategy describes Canada's commitment to ensure thirty percent of ecosystems are under effective restoration by 2030. Through this strategy, Canada is prioritizing ***habitat restoration*** to enhance biodiversity, ecosystem processes, and ecological integrity.[15] For over five decades, Fisheries and Oceans Canada's (DFO) Pacific Region has been leading and supporting habitat restoration efforts to improve aquatic ecosystems and ***fish*** populations. Recent initiatives to rebuild fish populations have focused on three management levers, including: 1) harvest modification, 2) hatchery production, and 3) habitat restoration. Habitat restoration is a key component to improve habitat conditions for fish, aquatic ***species at risk*** (SAR), and ecosystem health, as well as support species and habitat biodiversity, improve resilience to climate change, and compliment the benefits of protected habitat.[16,17,18]

Habitat restoration is also a pathway to advancing reconciliation with ***First Nations*** in British Columbia (BC) and the Yukon. Restoration efforts, when led or partnered with First Nations, can support self-determination, food sovereignty, cultural identity, and connection to the lands and waters.

By rebuilding human-ecosystem relationships to protect aquatic habitats and species, as well as strengthening and honouring First Nations' cultural practices and knowledge, habitat restoration supports reconciliation by upholding the **Principles respecting the Government of Canada relationship with Indigenous peoples**; implementing the commitments in the **United Nations Declaration on the Rights of Indigenous Peoples** (UNDRIP), and advancing measures in **Canada's adoption of UNDRIP under the Federal *United Nations Declaration on the Rights of Indigenous Peoples Act*** (UNDA) and its **accompanying Action Plan**.[19]

1.1 PURPOSE AND INTENDED AUDIENCE

The Fish Habitat Restoration Priority Planning for Pacific Region (restoration priorities plan) is an initiative to support and improve habitat restoration project planning and coordination. Developed through extensive ***engagement***, the restoration priorities plan identifies regional goals and objectives for aquatic habitat restoration. Designed as a dynamic reference document, the restoration priorities plan is intended to be updated periodically to reflect new insights, community feedback, and evolving environmental conditions, ensuring it remains responsive to current needs.

The restoration priorities plan aims to:

- identify regional habitat ***restoration goals*** and ***objectives***
- align, integrate, and make habitat restoration information transparent and accessible
- support habitat restoration planning at the ***watershed*** scale

The restoration priorities plan may be used by, but is not limited to:

- organizations, communities, or individuals planning or conducting habitat restoration organizations, communities, or individuals funding projects to inform restoration planning and project selection
- resource managers and decision-makers during planning and development (for example, land use planning, watershed management plans, recovery documents)
- proponents looking to develop ***offsetting plans***, habitat banks, or restoration projects
- regulators to support decision-making related to the conservation and protection of fish and ***fish habitat*** (for example, during the regulatory review of project applications for authorization of works, undertakings or activities under the *Fisheries Act*).

1.2 HOW TO USE THE FISH HABITAT RESTORATION PRIORITY PLANNING FOR PACIFIC REGION

The restoration priorities plan consolidates resources and summarizes insights from across the ***restoration community*** in BC and the Yukon. It can be cited directly or used as a reference for other related materials on habitat restoration. While project-specific factors may influence the design and planning for individual projects, the restoration priorities plan can serve as a resource when drafting funding applications, watershed and habitat restoration plans, permits, or offsetting plans that may be required as part of a *Fisheries Act* authorization application.

1.3 SCOPE

The restoration priorities plan applies to all aquatic habitats and fish species in Pacific Region from headwater to nearshore ecosystems. The content, particularly the habitat restoration goals and objectives (**Section 4**), is intentionally broad to reflect Pacific Region's ecological diversity, the wide range of First Nations, organizations and ***stakeholders*** involved in habitat restoration, and the varying scale and intensity of habitat disturbances across the region. The restoration priorities plan is designed to support the development of specific habitat restoration goals and objectives at the watershed level.

1.4 PACIFIC REGION

For this document, Pacific Region comprises BC and most of the Yukon, and aligns with DFO's regional organizing structure (**Figure 1**). It consists of approximately 1.43 million km^2 of land (14% of Canada) and approximately 26,000 km of coastline (10.7%), spanning approximately twenty degrees of latitude, and almost 6,000 metres in elevation. The geographic diversity of Pacific Region supports a variety of aquatic habitats such as nearshore marine, coastal, and inland floodplains, wetlands, and freshwater streams, rivers, and lakes. Pacific Region is home to over 500 species of marine and freshwater fish, and hosts the longest salmon migration routes in the world (between 1,100 and 1,300 km for Fraser River sockeye and Chinook salmon, and up to 3,200 km for Yukon River Chinook salmon).[20,21]

The biological diversity of the region has supported and co-evolved alongside a highly diverse cultural landscape. Pacific Region is home to distinct First Nations and their governments that have called the region home for millennia. Of the 12 distinct Indigenous language families in Canada, six are spoken exclusively in Pacific Region by 203 First Nations in BC and 14 First Nations in the Yukon.[22,23,24] Some First Nations, in the region, are self-governing or are Nations with ***Treaty*** settlement lands.

Together, these traditional territories foster diverse cultures with reciprocal relationships between people and their environment, forming cultural ***keystone relationships***. Cultural keystone relationships recognize the cultural significance of all species, acknowledge their role in providing food and shelter, as well as respect the interdependencies between plants, animals, people, and their roles in cultural and traditional practices.[25]

The interconnected cultural, biological, and geographic mosaic in Pacific Region has significantly influenced the restoration priorities plan. The **nuučaaʔuł** (Nuu-chah-nulth), on the west coast of Vancouver Island, refer to this as **hišukiš c̓awaak** (everything is one). This concept, along with other similar philosophies, guided the development of the restoration priorities plan. As a result, this plan is unique and specifically tailored for the region and its restoration community.

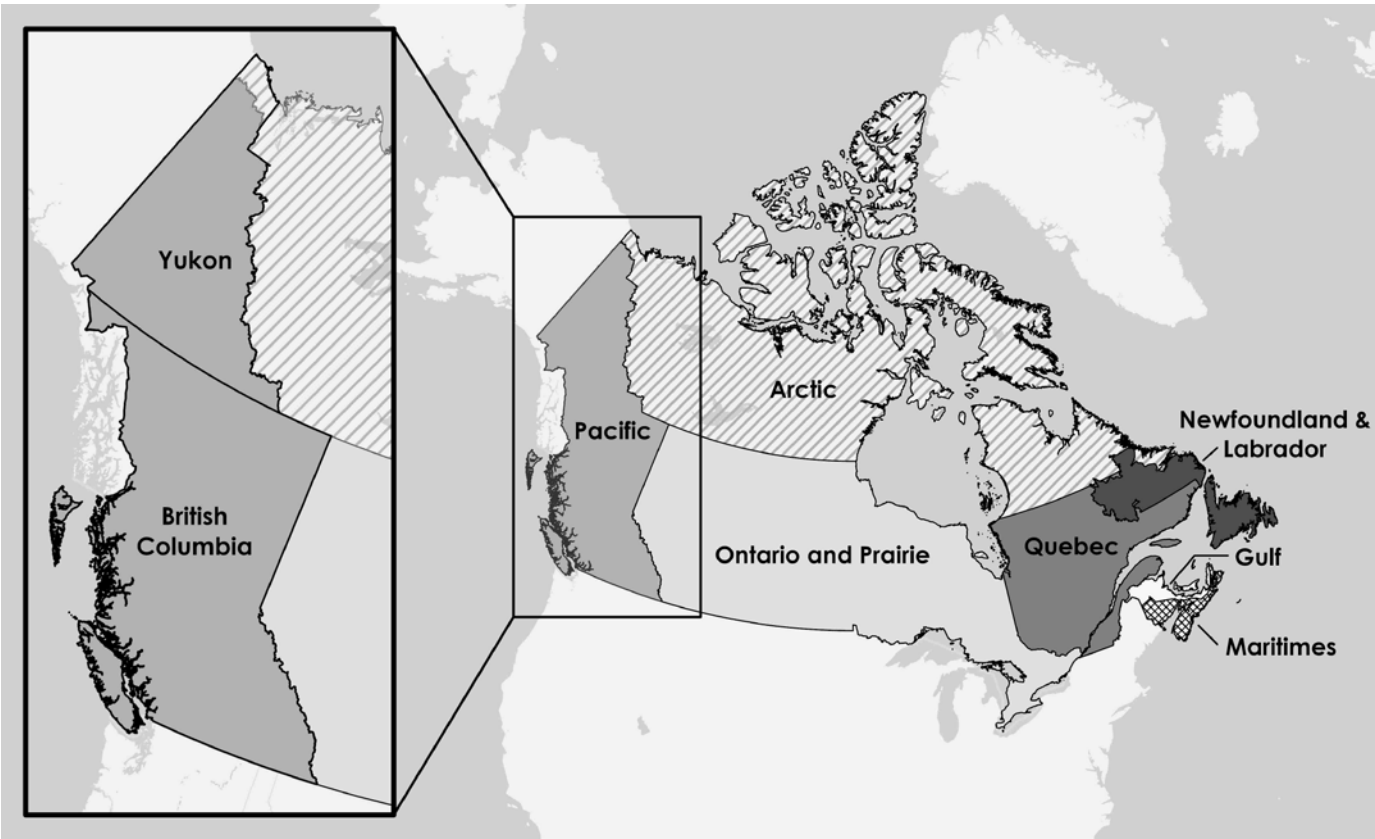


Figure 1: Map of Canada and the seven administrative regions of Fisheries and Oceans Canada. Pacific Region includes British Columbia and Yukon.

2

HABITAT RESTORATION IN PACIFIC REGION

2.1 HABITAT THREATS

Fish habitat loss, modification, and degradation can result from multiple and interrelated factors. These factors can negatively and cumulatively affect aquatic species, ecosystems, economies, and the people who rely on them. In Pacific Region, common human-driven causes of habitat degradation include:

- land development and modification such as urbanization, agriculture, and hydroelectric development
- extractive industries such as forestry and mining
- infrastructure such as roads, dams, pipelines, and railways
- coastal development and modification such as ***coastal squeeze*** and aquaculture
- pollution
- tourism and recreational activities
- ***aquatic invasive species***

The combination and interaction of multiple chemical, physical, and biological effects from various threats have caused aquatic habitat degradation and fragmentation, as well as widespread fish population declines, with impacts often extending beyond the watershed in which they occur.[26,27,28] The impacts are further exacerbated by climate change, leading to more frequent and extreme conditions that reduce the resilience, rebuilding, and recovery potential of fish and fish habitat.[29,30,31] Climate change is resulting in:

- increasing air and water temperatures
- ocean acidification
- retreating glaciers
- sea-level rise
- permafrost slumping and contamination
- changes to rainfall, snow melt, and river flow timing

- wildfires and debris flow
- droughts
- floods

Climate change can shift what is considered 'normal' in ecosystems, which can make it difficult to define realistic restoration targets.[32] As a result, restoration efforts can be undermined if threats and the scale of their impacts are not fully recognized and incorporated into restoration planning. Effective climate change adaptation relies on understanding current and projected climate conditions to inform goal-setting, project design, and implementation.

Cumulative effects and climate change should be considered during the restoration planning process to improve outcomes and ensure sustainable recovery of fish and fish habitat. It is essential to assess and understand threats at the watershed level to develop specific actions that address the causes of habitat degradation and the resulting impacts to ecosystem processes, species, economies, and cultural ties. Habitat restoration goals and objectives can then be tailored to address the root cause(s) of degradation, leading to better long-term restoration success, self-sustaining ecological processes, and the recovery of species and stocks of concern.[33,34]

2.2 RECONCILIATION

First Nations in Pacific Region have exercised stewardship of the lands and waters using traditional knowledge, laws, and governance systems that are still present. They continue to play a vital role in initiating, informing, leading, sustaining, and improving habitat restoration projects in Pacific Region (**Box 1**). In this way, First Nations-led or -partnered restoration brings benefits to First Nations and the broader community by incorporating traditional and local knowledge, creating local employment and training opportunities, and building community capacity for ongoing stewardship. As such, supporting First Nations-led or -partnered restoration work aligns with the **Principles respecting the Government of Canada's relationship with Indigenous peoples** and Articles listed in **UNDA**, and contributes to achieving measures in its accompanying **Action Plan** (**Appendix 1**).

Developing habitat restoration goals that include First Nations relationships with the landscape, such as harvesting, cultivating, travelling, and monitoring, can advance reconciliation by fostering relationship-building, promoting the revival of traditional practices, and strengthening First Nations' capacity to lead environmental stewardship programs. First Nations have underscored that habitat restoration provides opportunities for First Nations to:

- reestablish their relationship and reconnect with their lands and waters
- exercise leadership in stewardship
- share and preserve knowledge between generations
- strengthen youth involvement and connection across their territories
- foster and retain local and young habitat restoration professionals

XʔƏḶÍLWƏTAʔɬ (INDIAN RIVER) WATERSHED **BOX 1**

The **səlilwətaɬ** (Tsleil-Waututh) people are undertaking a significant effort to restore and enhance important salmon habitats within the **xʔəl̓ílwətaʔɬ** (Indian River) Watershed. As part of the **xʔəl̓ílwətaʔɬ** Watershed Integrated Stewardship Plan, they are creating side channel habitat for coho, assessing steelhead and resident trout species, and native and hatchery stock Chinook populations. They have also prioritized re-establishing conifers in riparian forests and floodplains, enhanced large woody debris concentrations, and restored river and floodplain stability and resilience. They are also assessing and restoring estuary ecological functions, conducting erosion control, removing contaminated wood waste, improving water quality, and removing man-made fish barriers.

*Photo: The **xʔəl̓ílwətaʔɬ** (Indian River)*

Photo credit: Matteo Saletti

In the development of this restoration priorities plan, First Nations across the region have stated that achieving lasting success in restoring aquatic habitats and species populations requires approaches that are consistent with First Nations' views on inherent rights, decision-making authority, and jurisdiction over their traditional territories. And, while meaningful, it is essential to recognize that habitat restoration is only one component of a broader, ongoing effort to advance reconciliation. First Nations engaged in the development of the plan also communicated that reconciliation calls for collaboration that respects First Nations' laws, knowledge systems, and leadership in stewarding the lands and waters.

2.3 DFO'S HISTORY AND ROLE IN HABITAT RESTORATION IN PACIFIC REGION

Growing concerns in the 1950s over declining salmon stocks led DFO to experiment with artificial salmon spawning channels and lake fertilization to support sockeye rearing in the two decades that followed.[35,36] The formation of the Salmonid Enhancement Program (SEP) in 1977 was initially based on a formal agreement between DFO and the Province of BC to increase salmonid survival during their freshwater phase.[37] From the 1990s to 2010s, SEP evolved to include the Community Involvement Program and the Resource Restoration Units. These teams worked with external community groups, focusing on community hatchery operations and spawning channels, and supporting a range of habitat restoration initiatives.[38]

In 2021, based on a historic investment by the Government of Canada to address the decline of wild Pacific Salmon with funding from the Pacific Salmon Strategy Initiative, DFO expanded its habitat restoration programming by launching DFO's Habitat Restoration Centre of Expertise (RCOE). From 2021 to 2025, the RCOE has been supporting and collaborating with the restoration community to address habitat issues threatening fish around Pacific Region, with a focus on Pacific salmon. The RCOE has been supporting Pacific salmon conservation and recovery by co-developing and implementing strategies to:

- build and maintain strong partnerships to advance salmon habitat restoration goals
- promote, support, and implement restoration work in priority areas
- develop and implement monitoring and research to ensure restoration activities are innovative, effective, and based on science
- share science advancements, emerging practices, and lessons learned of habitat restoration through knowledge exchange activities to advance a more consistent use of techniques and tools[39]

The RCOE's habitat restoration efforts rely on partnerships and collaboration with the restoration community. Habitat restoration is now largely led by these organizations, with support and guidance provided by the RCOE where requested (**Box 2**).

BOX 2

RED SLOUGH RESTORATION

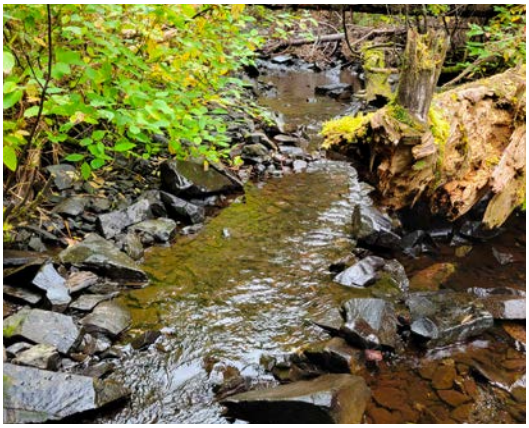
The Katzie First Nation, alongside DFO, the Lower Fraser Fisheries Alliance, World Wildlife Fund, BC Parks Foundation, and Age of Union, have restored flow to Red Slough in the Upper Pitt River in southern British Columbia. Red Slough had been disconnected from the Pitt River for over 100 years due to legacy logging infrastructure. As part of the initiative, youth and elders from the Katzie First Nation planted native vegetation, a meaningful step in strengthening the Katzie First Nation's ongoing connection to their traditional territory, while also restoring important rearing and spawning habitat for salmon.

Photo: Constructed conveyance channel to restore flow in the Red Slough in the Upper Pitt River

Photo credit: Justin Barbati

Hundreds of habitat restoration projects have been completed in freshwater, nearshore, and marine habitats in Pacific Region. Of these projects, freshwater habitat restoration has broadly focused on improving critical spawning and rearing habitat for salmonids, hydrological connectivity, and adjacent floodplain structure. For example:

- creating and restoring off-channel rearing and spawning habitat
- installing large woody debris and/or boulder structures
- riparian, streambank, and slope stabilization
- reconnecting flows and fragmented habitats (**Box 3**)
- removing or modifying barriers such as culverts and dams
- nutrient enrichment
- managing aquatic invasive species



BOX 3

KISPIOK RIVER EMERGENCY WORK FOR SALMON MIGRATION

Emergency works in the Kispiox River in northern British Columbia improved drought-affected fish habitat during upstream sockeye salmon migration. Efforts included reconnecting water flow in sections of the river where fish were stranded. The Gitksan Watershed Authorities and DFO's Restoration Centre of Expertise completed aerial assessments, hand dredging, and rock placements to concentrate water flows and enable fish to swim upstream.

Photo: Kispiox River after emergency works to reconnect flow between pools to restore fish passage

Photo credit: Natalie Newman

In the nearshore and marine habitat restoration projects have broadly focused on improving essential spawning and rearing habitat for aquatic species, restoring traditional forage areas for First Nations, and strengthening coastal resilience. For example:

- eelgrass, tidal marsh, and nearshore ***riparian*** vegetation transplant
- reconnecting flows and fragmented habitats (**Box 4**)
- removing or adding sediment
- shoreline recontouring and stabilization using nature-based methods
- transplanting eelgrass and kelp species in sub-tidal areas
- managing aquatic invasive species
- overgrazing by invasive herbivores
- restoring shellfish gardens

BOX 4

AGRICULTURAL DAM REMOVAL

Restoration in the estuary of the Cowichan and Koksilah rivers on the east coast of Vancouver Island removed historic agricultural dikes to reconnect intertidal channels and tidal marsh habitat. The Cowichan River estuary and nearshore habitat are important for Pacific salmon, herring, shellfish, migratory birds, and marine mammals.

Photo: Planting day in the food forest in the Cowichan Estuary

Photo credit: DFO

3

FISH SPECIES, AREAS, AND ECOSYSTEM PROCESSES IN PACIFIC REGION

As part of the National Framework, each DFO region was tasked with identifying important fish species, areas and ecosystem processes. During engagement phases, the restoration community acknowledged the importance of recognizing the complex interconnections, **hišukiš ċawaak**, among species, habitats, ecosystem processes, and the people who share reciprocal relationships with them. Considering this, "***importance***" is defined by Pacific Region's restoration community as something that holds significant value for those who depend on it. The restoration community relied on the following interconnected and overlapping values when considering what was important.

- Ecological importance refers to a species' or ecosystem's role in the success, survival, fitness, and well-being of other species or ecosystems. For example, a species may be an important food source, may help engineer, create, or maintain the habitat they live in, or import limiting nutrients and promote new or greater growth for other species. Species that have high ecological importance can have an outsized influence over ecosystem structure and function such as ***keystone species***, or may include SAR, or species with low or high abundance.[40] Highly valued ecosystems may, for example, have high biodiversity, be rare across the landscape, or support species that have been identified as having high value by the people who depend on them.
- Cultural importance refers to a species or ecosystem's traditional, historical, social, medicinal or spiritual significance for past, present or future generations. This includes species used for food, social and/or ceremonial purposes and those considered cultural keystone species.[41]
- Commercial importance refers to the species or ecosystem's role in a for-profit fishery (for example, catching, fishing or harvesting).
- Recreational importance recognizes fish species and ecosystems used for non-commercial fishing.

3.1 FISH SPECIES

The restoration community identified many fish species of high cultural, ecological, commercial, and/or recreational importance (**Appendix 2**). While many participants in the engagement process emphasized that all species and their interconnections are important, the following species were repeatedly highlighted as examples in surveys, stories and written responses.

3.1.1 Pacific salmon

Chinook (*Oncorhynchus tshawytscha*), chum (*O. keta*), coho (*O. kisutch*), pink (*O. gorbuscha*), and sockeye salmon (*O. nerka*) are deeply embedded in Pacific Region's ecosystems and culture. Pacific salmon begin their life in freshwater. Some species grow rapidly and leave for the ocean within weeks of emerging from the gravel, while others rear in freshwater for one to two years. Salmon feed and mature in the ocean, and return to freshwater to spawn, usually to the same streams where they were born, bringing with them nutrients that support greater growth, diversity and density in other species and ecosystems.[42,43] For example, resident killer whales are salmonid specialists and their population dynamics are linked to Chinook salmon abundance.[44]

There are about 9,000 populations of wild Pacific salmon, grouped into 450 genetically and ecologically distinct ***conservation units*** that return to over 1,000 streams and rivers to spawn in BC and the Yukon.[45] Pacific salmon are a significant food source for many First Nations and feature prominently in art, stories, ceremonies, and the economy. Pacific salmon also support multimillion-dollar commercial and recreational fishing industries.[46] **Canada's Policy for Conservation of Wild Pacific Salmon** guides Canada and its partners in the protection and conservation of 5 Pacific salmon species and their habitats from common threats including from fishing, forestry, mining, agriculture, urban and hydroelectric development, aquaculture, and climate change.[47,48] Significant resources have been invested in conserving and restoring Pacific salmon habitat, improving sustainable fishing, supporting stock recovery through hatchery production, and maintaining cultural connections.[49]

3.1.2 Trout, char, grayling, and whitefish

Throughout Pacific Region other salmonid species were identified as having regional ecological and economic values including:

- westslope cutthroat trout (*Oncorhynchus lewisi lewisi*)
- coastal cutthroat trout (*Oncorhynchus clarkii clarkii*)
- rainbow trout and steelhead (*Oncorhynchus mykiss*)
- bull trout (*Salvelinus confluentus*)
- Dolly Varden (*Salvelinus malma*)
- lake trout (*Salvelinus namaycush*)
- Arctic Grayling (*Thymallus arcticus*)
- mountain whitefish (*Prosopium williamsoni*)
- lake whitefish (*Coregonus clupeaformis*)

The diversity of life histories of salmonids includes lake-type, river-type, migratory, resident, and some populations of rainbow trout (that is, steelhead), Dolly Varden and coastal cutthroat migrate to the ocean as adults and return to freshwater to spawn. The recreational fishing industry is valued at $498 million annually in BC.[50,51]

Salmonids thrive in clean, cool, and connected habitats. Threats to salmonids include habitat loss and fragmentation, water temperature changes driven by climate change, degraded water quality, loss of intact ***riparian areas***, and overharvest.[52]

3.1.3 Pacific herring

Pacific herring (*Clupea pallasii*) are a pelagic schooling fish that form a central component of the marine food web along the Pacific coast. Pacific herring are a critical food source for Chinook and coho salmon, and are important forage fish for other predators, including pinnipeds, whales, and marine birds. Pacific herring spawn on kelp and eelgrass in nearshore and estuarine habitats in the spring. Larvae and juvenile herring remain in nearshore habitats during their first summer before moving offshore as adults.

First Nations have traditionally harvested herring and gathered roe. Herring is a cultural keystone species for many First Nations through seasonal diets, ceremonies, potlatches and economy.[53] Pacific herring also support an important commercial fishery in the region.[54] Pacific herring were historically abundant, but over the last century, their abundance has declined.[55] Threats to Pacific herring include overfishing, food supply, predation by marine mammals, loss of spawning habitat, and changing ocean conditions. Pacific herring and their habitat are interconnected to people, other species, and ecosystems on the coast.

3.1.4 Eulachon

Eulachon (*Thaleichthys pacificus*) is a species of smelt that spends approximately 95% of its life in the marine environment before returning to spawn in freshwater. In Pacific Region, eulachon range from the Nass to the Fraser River. Eulachon spawn in coastal rivers associated with glacial or snowpack-fed rivers with strong spring freshets.

The high fat content of eulachon made these fish an important source of food for First Nations, shared during celebrations and as a trade link between coastal and interior First Nations.[56] They can be consumed fresh, dried, smoked, salted, and frozen and have been distributed in potlatches. Additionally, the rendered oil, or eulachon grease, is valued for its medicinal properties.

Populations of eulachon have declined over the past century, with sharp declines observed over the past half-century. No singular cause has been attributed to this decline, but hypotheses include freshwater habitat loss, predation by pinnipeds, altered marine conditions due to climate change, and commercial fisheries bycatch.[57]

3.1.5 White sturgeon

White sturgeon (*Acipenser transmontanus*) are a long-lived fish (up to 100 years) with a generation time between 30 and 40 years. There are six populations of White sturgeon all found in Pacific Region: Lower Fraser, Middle Fraser, Upper Fraser, Nechako, Kootenay, and Upper Columbia. White sturgeon spend most of their life in freshwater but have been observed in the Strait of Georgia, the Strait of Juan de Fuca, and the Fraser River estuary.[58] The Fraser River white sturgeon recreational fishery is estimated to be valued at $20 million annually.[59] First Nations have traditionally harvested white sturgeon for food, medicine, and used the meat and spinal cord for ceremonies.[60]

There are several habitat-related threats that are limiting white sturgeon survival, including habitat degradation and loss through dams, impoundments, channelization, and diking. These constructed impediments block access to spawning and foraging sites, alter flow regimes and decrease downstream turbidity, resulting in changes in food availability, and increased juvenile predation.[61]

3.1.6 Marine bivalves

Marine bivalves are commonly found in shallow nearshore marine areas and estuaries and are a common food source for coastal communities. Traditionally cultivated and maintained “sea gardens” are important harvesting sites, and bivalves have been included in First Nations’ ceremonies and trade for thousands of years.[62,63] The species composition along nearshore marine areas and estuaries and withing sea gardens varies with local conditions, but can include:

- cockles (*Clinocardium nuttallii*)
- little necks (*Leukoma staminea*)
- butter clams (*Saxidomus gigantea*)
- horse clams (*Tresus spp.*)
- geoducks (*Panopea Generosa*)
- manila clams (*Venerupis philippinarum*) after they were introduced in the early 1900s

Current threats to marine bivalves include ocean acidification, rising sea levels, pollution, and invasive species. The loss of estuary and tidal flat habitats by sea level rise can also be exacerbated by shoreline development.[64] Declining abundance and restrictions on harvesting due to pollution have reduced food security and curtailed cultural practices for communities that rely on these species.[65]

3.2 AREAS

The restoration priorities plan lists specific geographic areas, including watersheds and coastal areas across Pacific Region that were identified by the restoration community (Appendix 2.4). This list was generated by ***engagement participants*** and in many cases identifies places where they live, where they connect with nature, or the places that support them. While this list is not exhaustive, it emphasizes the importance of connectivity between key habitat types throughout a watershed that directly and indirectly support fish (**Figure 2**). Key attributes from each habitat type are described below to help guide priority planning for fish habitat restoration. Notable examples of each habitat type from Pacific Region have been highlighted throughout this section.

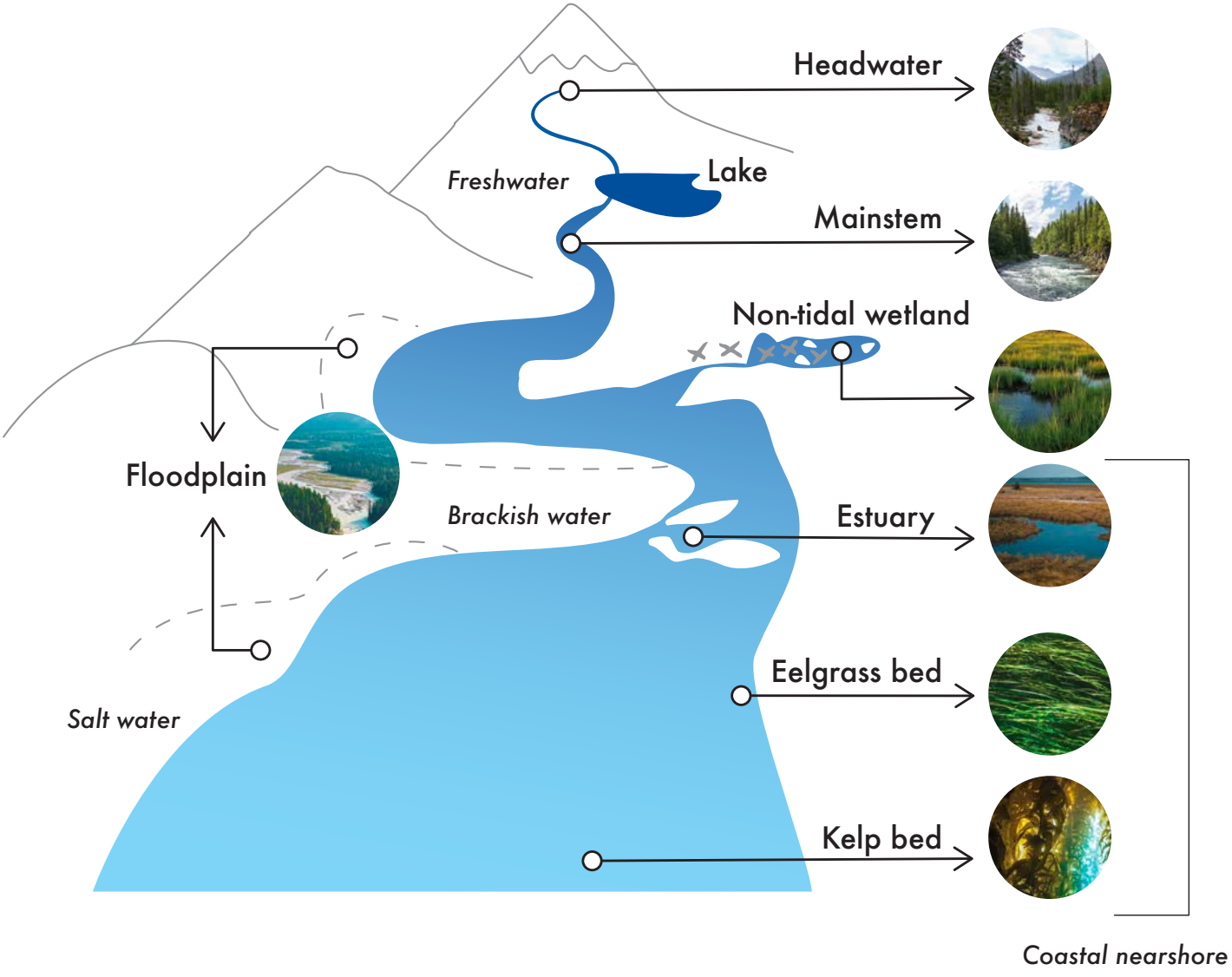


Figure 2: Key habitat types and watershed features in Pacific Region.

3.2.1 Headwaters

Headwater streams are the uppermost parts of freshwater systems. They include perennial, intermittent, and ephemeral streams, and comprise a large part of river networks globally.[66,67] Oftentimes, the uppermost reaches of headwaters are inaccessible to fish, yet headwater streams, whether accessible or not to fish, provide essential ecosystem processes such as storing cold water, are important sources of woody debris, nutrients, food and sediment for downstream fish-bearing reaches, and provide habitat where they are accessible to fish, and other aquatic and riparian organisms. Runoff and groundwater from headwaters transport sediment, wood, organic matter, nutrients, chemical contaminants, fish, amphibians, invertebrates, and other microorganisms downstream.[68]

Headwater streams are often small and sensitive to the surrounding landscapes. Changes in water quantity and quality in headwaters can have large cumulative effects downstream.[69] Headwaters mediate the frequency and magnitude of downstream floods. Intact hillslope, forest, and riparian zones are critical for headwater streams and their ability to maintain flow regimes that benefit downstream ecosystems. Land-use changes such as timber harvest and road development can threaten healthy, functioning headwaters, and downstream habitats. For example, timber harvest in riparian zones of the North Thompson River resulted in elevated stream temperatures in coho rearing systems.[70]

HEADWATERS OF THE TAKU RIVER WATERSHED

Originating in the traditional territory of the Taku River Tlingit First Nation, the headwaters of the Taku River watershed begin in the Stikine Plateau in northwestern British Columbia, near the Yukon border. The Taku watershed spans over 25,000 km^2 and is characterized by alpine peaks, boreal forests, and glacial lakes. Five species of Pacific salmon are present in the Taku watershed, with runs estimated at over 2 million salmon annually. The headwaters of the Taku River are relatively intact and undeveloped. In 2023, the Taku River Tlingit First Nation declared 60% of the Taku watershed as an ***Indigenous Protected Conservation Area***. The largest threats within the Taku headwaters are related to mining, and human-caused climate change, including drought, glacial retreat, and wildfire.[71]

Photo: The Taku River in Northwestern BC

Photo Credit: Jonathan Moore

3.2.2 Mainstems

Mainstem rivers are essential habitats for fish that offer deep-water refuge, overwintering sites, and ecological functions that support larger growth and diverse river life histories. Mainstem rivers are crucial migration pathways for various diadromous fish species, including salmon, steelhead, and lampreys, as well as resident fish such as rainbow trout, burbot, and bull trout. Impacts to fish on mainstem rivers include barriers that block both lateral access to floodplains and longitudinal access for fish passage. Additional impacts from urbanization include ***linear development***, water extraction, hydroelectric dams, contaminated runoff, motorized recreational vehicle use, and increasing water temperatures as a result of climate change present challenges to fish in mainstem habitats.

FRASER RIVER ESTUARY

The Fraser River Basin is the longest river wholly contained in BC, spanning approximately 1,375 km and draining approximately 234,000 km^2 (one quarter of BC). The river and its tributaries are known as one of the most important salmon rivers in the world, supporting all five Pacific salmon species. The Fraser supports numerous other fish, including steelhead trout, eulachon, white sturgeon, and numerous resident species.

The Fraser River floodplain from Hope to the Salish Sea is the most densely populated area in Pacific Region. It supports productive agricultural land formed by nutrient-rich alluvial sediments. A network of dikes, floodwalls, and pump stations was constructed to protect infrastructure but has made off-channel and floodplain habitats inaccessible to fish.

The Fraser River drains into the Strait of Georgia and is the largest estuary in BC composed of a network of tidal marshes, channels, mudflats and eelgrass meadows. Millions of out migrating juvenile salmon pass through the Fraser estuary annually. The Fraser River delta is recognized as a Ramsar "**Wetlands of International Importance**" and hosts the highest concentration of overwintering birds in Canada.

First Nations across British Columbia have long been connected with the Fraser River, fostering reciprocal relationships with the river during salmon migrations. The importance of the Fraser River extends to many First Nations across the region.

Photo: The Fraser River Estuary at the second North Arm Jetty breach at low tide

Photo Credit: DFO

3.2.3 Floodplains

Floodplains are low-lying areas adjacent to flowing rivers and streams formed by the transport and deposition of river sediments over time. They are active seasonally or intermittently wetted during periods of higher water flow. The lateral connectivity between main channels and floodplains provides diverse habitats such as side channels, oxbow lakes, point bars, meander bends, and sloughs.[72] Many fish species rely on floodplains for feeding, rearing, and refuge during various life stages.

Floodplains are also critical water storage areas that absorb water during floods and recharge groundwater sources. They physically reduce the magnitude of flood events by buffering downstream water quantity, streamflow velocity, and reducing erosive forces, therefore providing refuge for fish during periods of extreme flows. Additionally, floodplains filter excess sediment and pollutants to increase water quality, buffer high flows, and increase water storage. Floodplains increase a watershed's resilience to climate change by storing groundwater during drought conditions and forming natural firebreaks.[73] Threats to floodplains include development, altered hydrology, loss of lateral connectivity, and channelization.

3.2.4 Lakes

Lakes are important feeding, rearing, spawning and overwintering habitat for many fish species. Lakes provide spawning areas for fish along deltas or shoals, near the mouth of inlet tributaries, or at outlet streams. The fish species composition of a lake depends on lake depth, water temperature, the number and type of aquatic plants, nutrients and the substrate (for example, mud, sand, or rocks). Lakes also support downstream fish and fish habitat in mainstem rivers and other waterbodies by supplying water, food and sediment. Hydroelectric dams and other structures that impound rivers and lakes, known as reservoirs, can alter flow and thermal regimes, sediment transport, isolate fish populations, and fish community composition.[74]

3.2.5 Non-tidal wetlands

Wetlands are productive habitats located at the interface between freshwater and terrestrial habitats and often located near headwaters and within floodplains. They include marshes, swamps, shallow open water, bogs, and fens. Wetlands provide feeding, rearing, and refuge habitat for many fish species. Connectivity among these habitats is critical to many fish species, particularly those that reside in flood plains of large rivers.

Wetlands also indirectly support fish and other species by filtering sediment, absorbing nutrients and contaminants, capturing water during high flow, releasing water during low flow, and are a source of essential organic matter that supports plankton and benthos that are the foundation of food webs that support fish. Wetlands are an important carbon sink and are at risk from development and land-use changes across the region.[75]

COLUMBIA RIVER WETLANDS

The Columbia River Wetlands are one of the largest wetland complexes in British Columbia, weaving 180 km through 26,000 hectares between the Purcell and Rocky Mountain ranges in the traditional territories of the Akisq'nuk First Nation and Shuswap Band. The Columbia Wetlands are recognized as a "**Wetlands of International Importance**" under the Ramsar Convention, acknowledging their global value. The Columbia Wetlands are a hotspot for biodiversity, including over 260 species of birds, numerous fish such as burbot, bull trout, mountain whitefish and westslope cutthroat trout, reptiles, amphibians, mammals and countless invertebrates. Further, they are a vital component of the Pacific Flyway, a waterfowl migration route from nesting areas on the Arctic Ocean to overwintering areas in South America.

The wetland complex is threatened by climate change and numerous remnant structures that were used to constrict water flow to the main channel for paddle-wheeler traffic in the early 20th century. Other infrastructure impedes gravel recruitment to the floodplain, further eroding the functioning of the floodplain and its wetlands. The mix of public and private land tenures and nearly 100 different management plans related to the Columbia wetlands complicate restoration initiatives. Work is underway to develop an integrated restoration strategy for the area. In collaboration with the Columbia Wetlands Stewardship Partners, a restoration initiative program, led by Living Lakes Canada, has identified a number of features that restrict river and wetland processes. The goal is to prioritize actions that will restore ecosystem processes throughout the wetland complex.

Photo: Perry's Slough (smaller channel flowing through the middle of the valley) is part of the Columbia River's wetland complex near Brisco, BC

Photo Credit: Living Lakes Canada Society

3.2.6 Coastal nearshore

Coastal nearshore areas include tidal marshes, salt marshes, seagrass meadows, and intertidal and subtidal zones. Nearshore habitats support rearing, feeding and migration for numerous fish species, and are an essential habitat for marine invertebrate communities, including marine bivalves. In addition to their ecological role in supporting fish and wildlife biodiversity, nearshore areas filter pollutants, improve water quality, and sequester carbon. They help mitigate climate change by trapping sediments, reducing flood and erosion risks through dissipation of energy from waves, surges, and currents.[76]

Estuaries, eelgrass beds, and nearshore habitats are threatened by increased marine traffic, and are increasingly squeezed between coastal development, rising sea levels and fixed infrastructure, such as dikes and shoreline armouring.

SKEENA RIVER ESTUARY | NORTHWESTERN BC

The Skeena River estuary, located where the Skeena River flows around a cluster of islands and meets the sea in northern British Columbia, lies within the traditional territories of the Gitxaala, Kitselas, Kitsumkalum, Metlakatla, Lax Kw'alaams and Tsimshian First Nations. This ecologically rich estuary is characterized by extensive eelgrass beds, kelp forests, mudflats and shallow, intertidal passages. Over 50 distinct **conservation units** from five species of Pacific salmon rely on nursery habitat provided by the Skeena estuary. Juvenile Pacific salmon use estuaries to grow quickly while slowly adjusting to their new saltwater environment. The Skeena estuary is also home to spawning eulachon, migrating and overwintering waterfowl, and wildlife, including wintering and calving moose.

Photo: The Skeena River Estuary in Northwestern BC

Photo Credit: Lana Miller

3.2.6.1 ESTUARIES

Estuaries are areas where freshwater and marine habitats overlap. Estuaries are highly productive for microorganisms, fish, wildlife, and plants and directly support complex food webs, including terrestrial, marine, and freshwater prey available for numerous species. Estuarine conditions change with river discharge, tides, and weather, creating a mosaic of habitats suitable for a diverse array of plants and animals. Many animals reproduce and spend the early part of their lives in estuaries, including juvenile salmon.[77] Estuaries provide habitats for juvenile salmon as they acclimate to saltwater during their outmigration to the ocean. Salmon that spend more time in productive estuaries grow larger and have an increased likelihood of marine survival. Estuaries are also a key habitat and source of food for invertebrates like crabs and shrimp, and other fish species, including herring, and anchovy.

3.2.6.2 EELGRASS BEDS

Eelgrass (*Zostera marina*) is a flowering seagrass found in estuaries, shallow coastal bays, inlets, and shorelines along the Pacific coast. Eelgrass beds provide habitat for many aquatic species, organic material for filter feeders such as clams and other bivalves, sequester carbon, and dissipate wave energy. Seagrass meadows can provide food, medicine and are deeply connected to spiritual fulfillment and cultural connections for many coastal First Nations.[78]

EELGRASS BEDS | PACIFIC OCEAN

Clayoquot Sound is over 2,600 km^2 of inlets and diverse landscapes on the west coast of Vancouver Island, British Columbia, in the traditional territories of the Tla-o-qui-aht, Hesquiaht, and Ahousaht First Nations and is a United Nations Educational, Scientific and Cultural Organization Biosphere Reserve. The sheltered intertidal areas and mudflats of Clayoquot Sound support a myriad of eelgrass (*Zostera marina*) meadows that provide important habitat for numerous fish species, including juvenile Pacific salmon and spawning Pacific herring, crustaceans, marine bivalves and many other species. Eelgrass meadows are highly productive ecosystems that serve as carbon sinks, storing atmospheric carbon in plant biomass and sediments.[79]

Photo: Eelgrass bed in the Pacific Ocean

Photo Credit: Cynthia Durance

KELP FOREST | HAIDA GWAII

The underwater kelp forests of the Haida Gwaii archipelago off the west coast of British Columbia are important ecosystems for nearshore marine life. In the traditional territory of the Haida Nation, bull kelp (*Nereocystis luetkeana*) and giant kelp (*Macrocystis pyrifera*) form large floating canopies that serve as nurseries and feeding grounds for crustaceans, diverse communities of fish, including Pacific salmon and rockfish, northern abalone, and marine mammals. Kelp forest abundance off Haida Gwaii has declined over the last century due in part to warming ocean temperatures, the loss of sea otters, and the resulting increase in populations of sea urchins, which graze on kelp forests.[80,81]

Photo: Kelp forest in the Pacific Ocean

Photo Credit: Erick Morales

3.2.6.3 KELP BEDS

Canopy-forming kelp, including bull kelp (*Nereocystis luetkeana*) and giant kelp (*Macrocystis pyrifera*), creates a complex habitat for herring, sand lance, rockfish, lingcod, salmon, prawns, crab, urchins, seastars, abalone, and countless other marine invertebrates. Many coastal First Nations rely on kelp beds for subsistence fishing and gathering food such as herring spawn on kelp.[82]

Kelp beds decrease wave energy, helping to reduce shoreline erosion and mitigate storm surges by dampening waves. They also provide nutrients to shorelines as wrack and sequester large amounts of carbon. In Pacific Region, threats to the abundance and distribution of kelp forests are associated with rising ocean temperatures and overgrazing by urchins.[83] Both salmon and forage fishes rely on kelp beds, showing the interconnectedness between species and ecosystems.[84]

3.3 ECOSYSTEM PROCESSES AND PROCESS-BASED RESTORATION

Restoring ecosystem processes at a watershed scale helps re-establish self-sustaining functions that increase resilience over time.[85] Key ecosystem processes identified during engagement for this plan included restoring:

- habitat connectivity and eliminating human-made barriers to improve water flow, timing, quality and quantity, improve sediment transport, and fish passage
- geomorphic processes that increase physical habitat diversity and maintain natural channel morphology
- riparian and nearshore shading, filtration, nutrient inputs, food availability, and natural shoreline stability

Ecosystem processes vary by scale, habitat availability, degree of degradation, and susceptibility to climate change. Just as species and their habitats are interconnected, ecosystem processes are interdependent and interconnected.

Re-establishing ecosystem processes requires long-term collaborative goals established through baseline studies, thoughtful design, long-term monitoring, and ***adaptive management***. ***Process-based restoration*** is a tool practitioners are using to re-establish ecosystem processes; it is an approach to fish habitat restoration that focuses on restoring natural processes in degraded ecosystems, which create and sustain habitat features. Process-based restoration aims to address the root causes of degradation. Process-based restoration approaches have been embedded in the habitat restoration goals and objectives presented in the next section.

4 SETTING
RESTORATION GOALS AND OBJECTIVES

Habitat restoration goals describe the desired future condition of a habitat and serve as targets to guide restoration efforts. Habitat ***restoration objectives*** are focused, time-bound achievements designed to help attain restoration goals (**Figure 3**). Evidence from process-based restoration programs supports combining long-term goals and short-term objectives to maximize restoration benefits. By determining the root causes of habitat degradation and affected species, long-term goals with clear objectives and actionable priorities can be developed to restore self-sustaining watershed processes and reduce symptoms of degradation.[86]

Setting habitat restoration goals and objectives can also advance the acknowledgement and integration of First Nations knowledge and cultural practices, and resilience to climate change.

4.1 DEVELOPMENT OF GOALS AND OBJECTIVES

The regional goals and objectives were developed using the National Framework's restoration principles and are grounded in regional perspectives, reflecting planning already undertaken by agencies, government programs, and communities to identify and implement local fish habitat restoration, as well as extensive regional engagement (**Appendix 2**). Importantly, they are not ranked by any criteria, in recognition of the interconnectedness between species, ecological processes, and cultural values.

Well-designed objectives are often designed to be Specific, Measurable, Achievable, Relevant and Time-bound (SMART). However, there are other methods designed to help set objectives, including Purposeful, Actionable, Continuous and Trackable (PACT).[87] The PACT method focuses on continuous output as opposed to final benchmarks and outcomes. This method can be useful when collaboration and stewardship are means by which to achieve habitat restoration goals. The restoration priorities plan relied on both SMART and PACT methods to design goals and objectives that facilitate coordinated decision-making across the region.

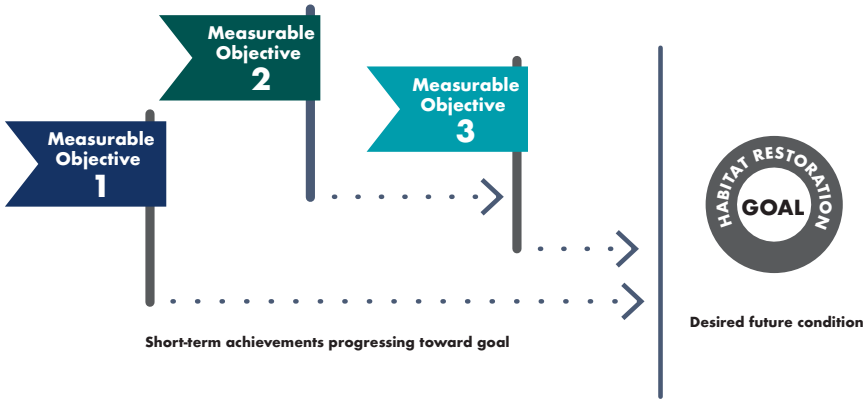


Figure 3: Habitat restoration objectives are focused, time-bound achievements that work towards a desired future condition or habitat restoration goal. Multiple objectives can work concurrently or in series towards a habitat restoration goal.

The regional habitat restoration goals and objectives outlined in **Section 4.4** were designed to:

- incorporate approaches that span ecological, geomorphological, hydrological, cultural, and jurisdictional boundaries and can be applied to any species, area, or ecosystem process throughout Pacific Region
- address the causes of habitat degradation and loss
- address continued threats that limit productivity and ecosystem processes
- benefit the species and/or areas of concern
- account for the interconnectedness of terrestrial and aquatic species and habitats
- account for climate change predictions
- address threats across multiple scales to account for the large-scale recovery of natural systems
- address First Nations' cultural revitalization and preservation[88]

4.2 INDICATORS VERSUS METRICS

Ecological ***indicators*** integrate information from various metrics or factors into a single value, making them valuable for assessing overall ecosystem health. Indicators can represent different aspects of the environment. Pacific salmon have been used as an ***indicator species*** because of their diverse habitat requirements, which are suitable for many other cold-water aquatic species. Other biological indicators consist of groups of species, such as a community of plants or fish. For example, the number of Ephemeroptera (mayflies), Plecoptera (stoneflies) and Trichoptera (caddisflies), known collectively as EPT, is often used as an indicator of water quality.

Historically, indicators have been used in Western science to streamline monitoring processes, but they can overlook other knowledge systems.[89] ***Biocultural indicators*** offer another approach that integrates cultural, social, and place-based knowledge that has developed over time through reciprocal relationships between people and their environment.[90,91,92] Some examples of biocultural indicators shared during engagement sessions include:

- having enough fish on the fishing grounds to support fish camps where knowledge, ceremony, language, and laughter can be shared
- having enough fish to ensure elders are fed, and fish are shared throughout the community
- well-fed bears and wolves observed around spawning grounds
- the return of spring freshets, bird communities, and riparian vegetation along aquatic corridors[93]

Integrating knowledge systems and sources into useful watershed-based indicators requires inclusive and collaborative working groups and local knowledge. For these reasons, the restoration priorities plan does not include biocultural indicators for regional goals and objectives in the following section. However, to effectively restore habitat processes and cultural relationships, it is recommended to include biocultural indicators as measures of success alongside other metrics. A case study in the Great Bear Rainforest in the traditional territory of the Kitasoo/Xai'xais First Nation provides a framework for establishing locally-driven biocultural indicators.[94]

Choosing standardized ***metrics*** allows practitioners to compare ecosystem responses across spatial and temporal scales, as well as both within and between projects. To measure regional progress towards each habitat restoration goal, example metrics have been included for each goal below. These will be measured over time and included in reporting. See **Section 6** for more details.

4.3 CONSIDERATIONS

Many of the habitat restoration goals, and objectives presented in the following sections are overlapping and interrelated. Some metrics may also be used to measure progress towards more than one goal. For example, "increase the number of groundwater sources connected to the channel" is used as a metric for both improving water quantity and quality.

The seven goals listed below are intended to be broad yet distinct, to facilitate monitoring and address regional-level threats. However, they may be reorganized or combined to suit specific watershed needs.

Disclaimer: Not every goal or objective will apply to all ecosystem types or address every habitat issue in a restoration plan. The application of the goals and objectives presented in Section 4.4 should carefully consider the root causes of habitat degradation, the requirements of local species, the intended benefits restoration may provide, and an understanding, avoidance and/or mitigation of the unintended negative consequences of habitat work.

For example, increasing habitat complexity may benefit fast-flowing, channelized systems by slowing flow, enhancing groundwater storage, improving nutrient exchange, and supporting diverse species. However, these changes could raise water temperature and lower dissolved oxygen, negatively impacting cold-water fish and aquatic invertebrates.

Given the tremendous diversity of Pacific Region, understanding each watershed is foundational to developing appropriate restoration plans.

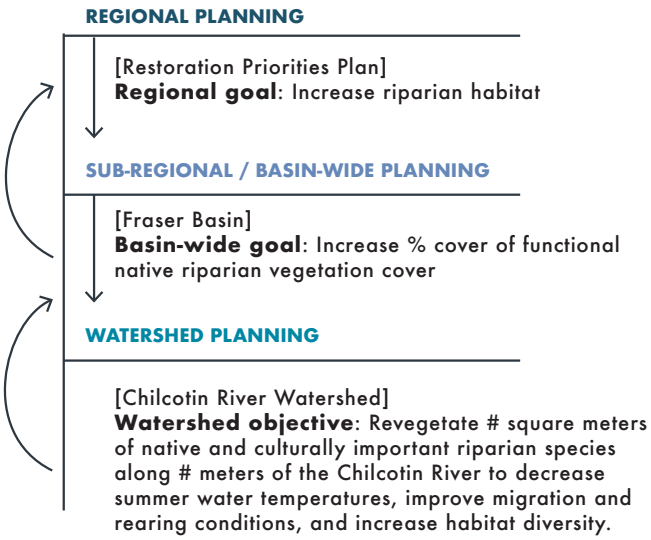


Figure 4: The relationship between regional, sub-regional or basin-wide planning, and watershed planning can be viewed as a hierarchy of increasingly specific goals and objectives. Broad regional goals, like those identified in the restoration priorities plan, can provide direction for basin-wide goals. In turn, these basin-wide goals can help guide the development of watershed-level objectives that are specific, measurable, achievable, relevant and time-bound (SMART). SMART watershed objectives translate high-level goals into concrete actions and performance metrics. They allow progress to be tracked within individual watersheds while also showing how local actions contribute to achieving broader basin-wide and regional outcomes. The example basin-wide goal and watershed objective are for illustrative purposes only.

4.4 PACIFIC REGION'S HABITAT RESTORATION GOALS AND OBJECTIVES

The following goals and objectives can be adjusted to address specific habitat restoration needs at various scales. By leveraging local knowledge of watershed threats, impacts, and requirements, regional goals can be integrated into a basin-wide plan and further refined into SMART watershed objectives (**Figure 4**).

One goal of many fish habitat restoration projects is to measurably benefit fish populations. Fish population metrics should be quantified before and after a restoration project and repeated for multiple fish life cycles to assess if restoration actions are meeting the project's specific goals. Wherever possible, fish population response should be measured to identify if the habitat restoration project has a benefit for the species of concern. However, quantifying changes in fish populations, such as abundance or biomass, requires repeated and extensive data collection. In the absence of population data, example metrics presented in this section can be used to monitor habitat changes over time to determine if restoration actions are addressing the causes of degradation that are threatening the species of concern. They can be simpler to measure, more conducive to adaptive management, and have been chosen based on decades of scientific knowledge linking them to beneficial habitat conditions for fish.

4.4.1 Goal: Improve fish passage

Purpose: Physical, human-made barriers, including velocity, light and sound barriers, restrict or prevent fish movement and migration and can increase predation. Removing or upgrading these barriers:

- restores fish access to historical habitats
- provides unrestricted migration for migratory species to and from their spawning grounds
- improves resident fish access to all habitat types
- improves gene flow
- provides access to novel habitats as fish migrate due to changing environmental conditions
- improves habitat connectivity (see next goal)
- improves people's access to ecologically, culturally, commercially and recreationally important fish species

Example Habitat Restoration Objectives:

- Remove or upgrade anthropogenic infrastructure such as coastal floodgates, jetties, causeways, dykes, weirs/dams, undersized culverts, and relic infrastructure (for example, inactive roads, pilings).
- Increase fish access to required habitat during predicted low and high flow conditions due to climate change (for example, create v-notches in channel beds to concentrate flow during droughts, create refuge habitat that is accessible during flood conditions).
- Improve light and sound conditions in and near aquatic habitat that may cause behavioural harm to fish (for example, decrease artificial light at night, increase daylight to covered streams, reduce underwater noise).
- Assess sources of debris accumulations and remove debris caused by anthropogenic changes interfering with ecosystem processes (for example, relic pilings collecting debris, blocking fish passage, and restricting habitat connectivity).

Example Metrics:

- Increase in unobstructed fish passage (linear m or km)
- Decrease in relic infrastructure within riparian and aquatic habitats
- Decrease in light intensity around riparian and aquatic habitats
- Decrease in anthropogenic sounds in aquatic habitats

4.4.2 Goal: Increase habitat connectivity

Purpose: Increasing habitat connectivity improves horizontal, vertical and lateral water flow (physical connectivity), restores ecosystem processes (functional connectivity), and increases water storage. It also increases the natural mosaic of habitats, resulting in increased resilience of fish and ecosystems to rapidly changing conditions.

Increasing habitat connectivity also:

- buffers against predicted environmental changes in aquatic systems, such as sea level rise
- links heterogeneous habitats and promotes fish production
- increases space along river corridors for flooding and channel migration
- promotes groundwater recharging and supports continuity of flow during droughts
- supports annual and interannual flow variation (that is, restores the natural hydrograph)
- increases marine-freshwater mixing
- supports all life stages of fish
- promotes nutrient exchange between terrestrial and aquatic habitats
- maintains or restores geomorphic processes such as sediment transport and channel-floodplain interactions
- improves fish passage (see previous goal)
- restores cultural processes, land management practices and stewardship opportunities for First Nations their traditional territories

Example Habitat Restoration Objectives:

- Remove or upgrade human-made infrastructure such as coastal floodgates, jetties, dykes, weirs/dams, undersized culverts, and relic infrastructure.
- Create new connected habitat or re-engage disconnected habitats, including mainstem, off-channel, riparian, floodplain, wetland, marshland, estuarine, nearshore, kelp, and eelgrass habitat.
- Maintain or increase the length of uninterrupted sediment transport (for example, longshore or longitudinal sediment drift) by removing or redesigning piers, causeways, docks, weirs/dams, or remnant infrastructure in marine and freshwater systems.

Example Metrics:

- Increase in area of physically and functionally connected habitat (m^2) (species dependent)
- Increase in uninterrupted shoreline length (m or km)
- Change in in salinity (g/L) (project dependent if higher or lower)
- Change in sediment transport rate (m^3/s)
- Change in bed elevation

4.4.3 Goal: Increase water quantity

Purpose: Increasing water volume, depth or storage capacity with low-tech and process-based measures can increase the availability of wetted habitat, improve habitat connectivity, slow water flow, increase groundwater storage, and support greater species diversity. The objectives can also support the revival of Indigenous knowledge and management techniques for restoring natural form and function in aquatic environments.

Restoring water volume and depth also:

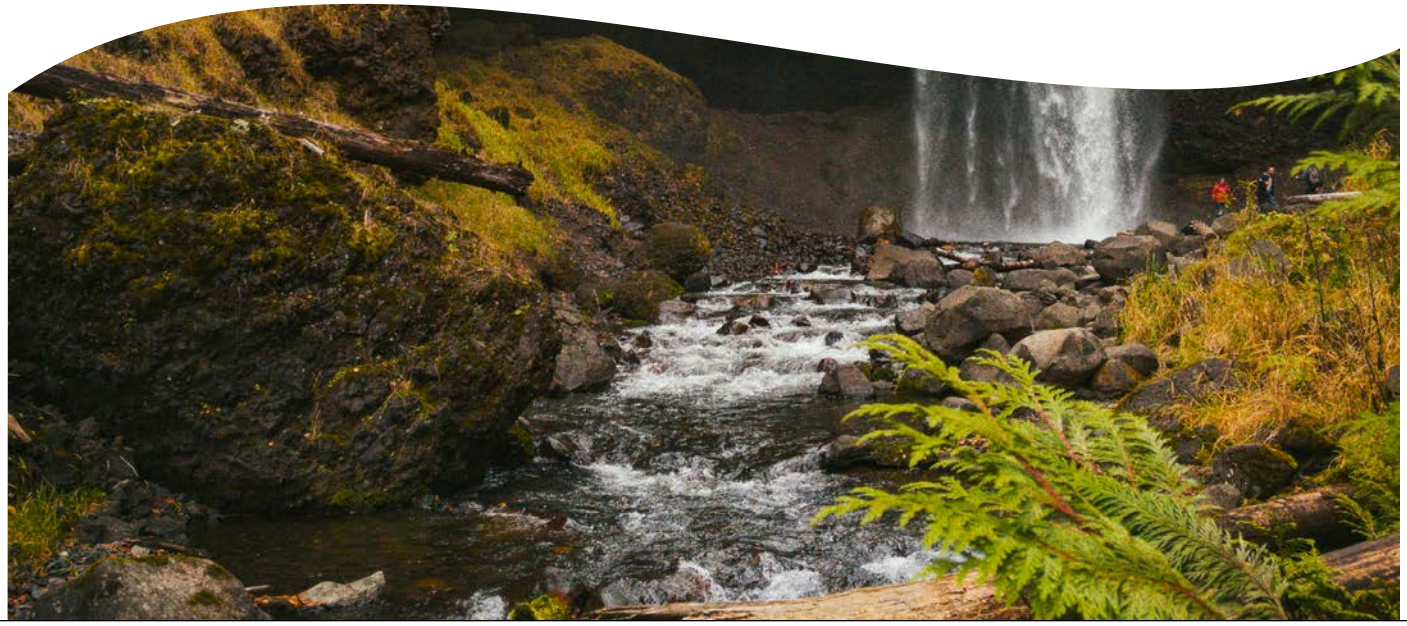
- increases the physical space available for fish to swim, hide, and forage
- improves a system's resilience to climate change by promoting infiltration, increases groundwater recharge and improves flow continuity during summer and winter low flows
- supports fish passage and habitat connectivity (see goals above)

Example Habitat Restoration Objectives:

- Increase water volume and depth during low flow periods.
- Maintain or increase connectivity to groundwater sources in river systems.

Example Metrics:

- Increase in water flows (m^3/s) during low flow periods
- Increase water storage capacity (m^3)
- Increase in the number of wetted channels
- Increase in total wetted area (m^2)
- Increase in water volume during critical low flow periods (m^3)
- Increase in water depth (m)
- Increase the number of groundwater sources connected to the channel



4.4.4 Goal: Improve water quality

Purpose: Improving water quality measures, such as temperature, dissolved oxygen, pH, turbidity, nutrient concentration and suspended solids, provides cool, clean water for fish and has co-benefits for people, plants, and other animals. Groundwater regulates surface water temperature during both summer and winter. Reducing impermeable surfaces and allowing water to move laterally over its floodplain during high flows improves water absorption and filtration, recharges groundwater sources, reduces flood risk, and decreases non-point-source pollution in aquatic habitats, which also:

- improves habitat conditions and availability for fish
- promotes native species diversity
- increases resilience and adaptability to changing conditions.

Example Habitat Restoration Objectives:

- Maintain and/or improve water temperature using a variety of methods (for example, overhanging vegetation, or large wood, expand connectivity to cold water refugia).
- Maintain or increase connectivity to groundwater sources in river systems.
- Reduce the percentage of impermeable surfaces around aquatic habitats (for example, riparian revegetation, rain gardens in urban centres and around confined channels).
- Decrease livestock access along sensitive banks and near sensitive aquatic habitats (for example, spawning habitat).
- Remove and/or replace contaminated infrastructure (such as treated pilings with creosote) following provincial and federal guidelines (for example, the Guidelines for Use of Treated Wood In and Around Aquatic Environments and Disposal of Treated Wood).[95]
- Minimize other point source pollution (for example, road runoff, agriculture runoff, and other contaminants).

Example Metrics:

- Reduce water temperatures (°C) that may cause physical and behavioural stress to fish
- Increase in the number of groundwater sources connected to the channel
- Decrease in percent impermeable area around aquatic habitats (%)
- Decrease in the number of creosote structures in aquatic habitats
- Decrease in detectable pollutants within water samples[96]

4.4.5 Goal: Increase riparian habitat area

Purpose: Restored riparian vegetation can lower water temperatures, enhance water filtration to minimize point-source and non-point-source pollution, provide direct and indirect food inputs, and reduce human-caused sedimentation by naturally stabilizing banks and shorelines. Functional shading can buffer stream temperatures and help offset the warming effects of climate change.[97] Riparian vegetation is also a source of large wood, which creates habitat complexity (for example, pools, undercut banks, and debris jams).

Example Habitat Restoration Objectives:

- Increase riparian and nearshore vegetation cover by revegetating riparian areas using native plants, trees and shrubs.
- Incorporate native vegetation that supports First Nations' food security and cultural practices into re-vegetation plans.

Example Metrics:

- Increase in riparian area (m^2)
- Increase in the percentage of native vegetation cover in riparian areas (%)
- Reduced stream temperature with thermal shading (°C)
- Increased inputs of large wood and organic matter

4.4.6 Goal: Improve habitat complexity and diversity

Purpose: Complex and diverse habitats support a broad diversity of species across life stages, as well as population and genetic diversity within species. Species and population diversity increase an ecosystem's resilience to change. Practitioners can support fish species recovery by creating and protecting a diversity of self-sustaining hydrological, geological, and ecological processes in freshwater and marine environments.

Example Habitat Restoration Objectives:

- Increase physical habitat diversity and functional connections between habitats (for example, pools, riffles, off-channel habitat, aquatic and terrestrial cover, and intertidal soft sediments)
- Decrease the area of hard armour along riverbanks and shorelines.
- Maintain or increase natural river channel and nearshore morphology (for example, large wood installations, dendritic channels, shoreline length).
- Maintain or increase the area of spawning, rearing, feeding, refuge and overwintering habitat (for example, reconnect rivers to their floodplains).
- Control and prevent the introduction and spread of aquatic invasive species.

Example Metrics:

- Increase in the area of native aquatic and riparian vegetation cover (m^2)
- Increase in the variability of functionally linked aquatic habitats
- Increase the amount of hydrologically engaged off-channel habitats, including ephemeral and seasonal channels and wetlands
- Decrease in the density or percent cover of aquatic and riparian invasive species

4.4.7 Goal: Improve watershed hydrology and sediment transport

Purpose: An intact or restored watershed:

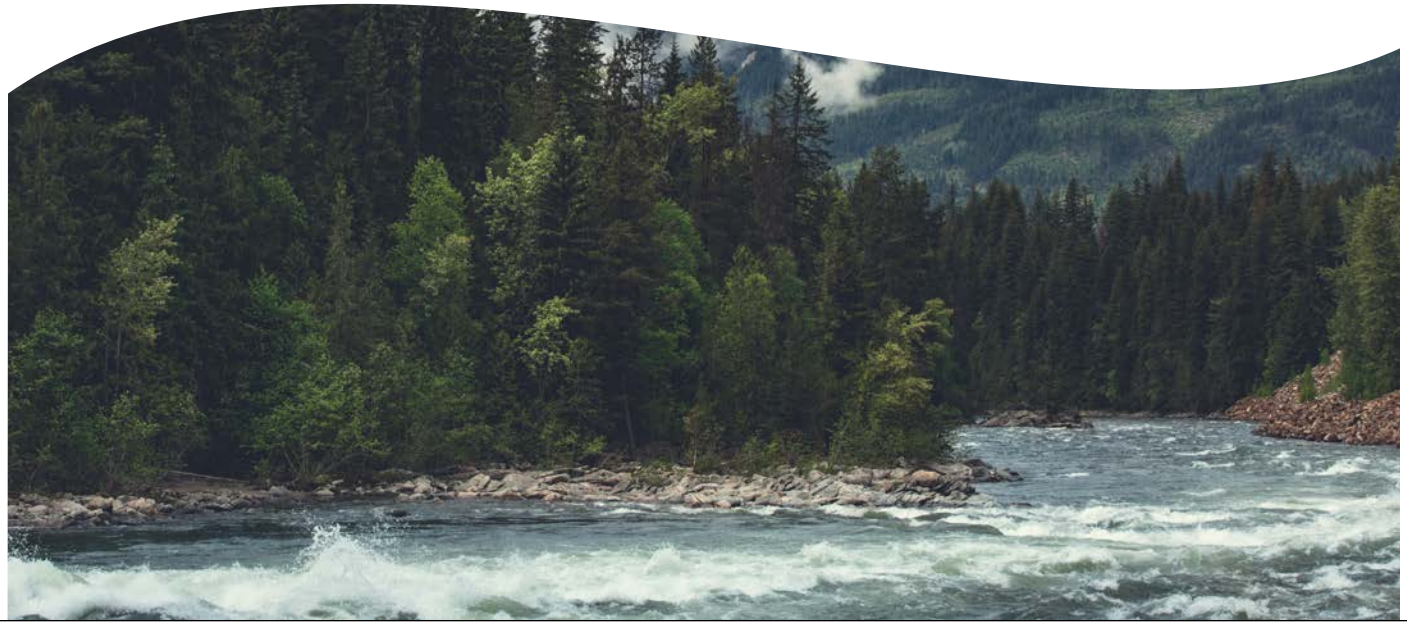
- re-establishes water absorption and filtration
- supports soil retention throughout the watershed
- reduces unnatural sediment load
- increases native vegetation growth
- re-initiates species interactions and ecosystem processes
- addresses landscape-level degradation that affects downstream fish habitat
- can restore lands and waters that are culturally significant for First Nations
- re-establishes reciprocal inter-species relationships

Example Habitat Restoration Objectives:

- Increase native vegetation in degraded upslope and headwater habitats.
- Reduce the angle of upslope areas.
- Incorporate native vegetation that supports First Nations' food security and cultural practices into re-vegetation plans.

Example Metrics:

- Increase area of native vegetation cover (m^2)
- Increase the percent of native vegetation cover in riparian areas
- Decrease in magnitude and frequency of high flow events
- Decrease in fine sediment inputs into streams
- Decrease in slope angle in over-steepened or exposed terrain



4.5 MEASURES THAT SUPPORT HABITAT RESTORATION SUCCESS

The restoration community provided feedback on additional topics that can improve outcomes for fish and influence the success of habitat restoration. These topics are presented in the following subsections. Recommendations from the restoration community for each topic are presented in **Appendix 3**.

4.5.1 Habitat protection

When there is the option, protecting fish and fish habitat and preventing impacts before they occur is one of the most effective methods for preserving fish habitats and ecosystem processes.[98,99] Strong regulations and legislation that safeguard aquatic habitats also supports restoration goals. Protected areas provide space and time for ecosystem processes, like floods and fires, to shape the landscape, promoting habitat heterogeneity and supporting species resilience to climate change.[100] Ecologically and culturally protected habitats also improve the success rate of restoration projects that are placed adjacent to them.[101,102]

The local effects of habitat restoration can be difficult to detect at broader scales due to high natural variability, confounding factors such as fisheries pressures and marine survival and because the rate of habitat degradation can progress faster than restoration and recovery.[103] Protecting habitats from further degradation and integrating First Nations' cultural and fish habitat values into land and water management can help improve the likelihood of successful restoration. These actions lay a strong foundation for effective restoration and building ecosystem resilience.

DFO has a mandate to conserve and protect fish and fish habitat under the *Fisheries Act*. **UNDA** and its accompanying **Action Plan Measures** 37 and 41 (**Appendix 1**) reinforces the Government of Canada's commitment to promote a collaborative approach to conserving and protecting all fish habitat. The establishment of a network of marine protected areas in the Great Bear Sea, an area along BC's north and central coast, is an example of collaborative habitat protection. This achievement was made possible through the collaboration of First Nations, the Government of Canada, and the Province of BC, and is supported through an Indigenous-led Project Finance for Permanence model.[104,105]

4.5.2 Monitoring

Monitoring fish and fish habitat before and after restoration is essential to determine if (1) a restoration project is meeting goals and objectives, (2) fish populations are improving, and (3) funding and resources are being used effectively.[106,107,108] There is often a delay between ***restoration action*** and the responses observed at the habitat, ecosystem, or population level. Effectiveness monitoring can account for longer-term responses and measure the appropriate metrics to assess the outcomes for restoration objectives, including changing reference conditions through time.[109] If the restoration project does not meet its objectives, practitioners and policymakers can use information from monitoring to modify strategies using an approach to strengthen the current restoration project and guide future restoration efforts. In this way, effectiveness monitoring can help support future funding initiatives and applications by identifying successful methods and highlighting where and how the largest benefits can be achieved.

Funded monitoring programs can also support fisheries guardian programs and their efforts to address their communities' needs.[110] First Nations-led monitoring can establish best practices and interconnected indicators of success. To help meet **UNDA** and its accompanying **Action Plan Measure 39** (**Appendix 1**), DFO has collaborated with multiple working groups to establish key components of the Fisheries Guardians program. The training curriculum for new Aboriginal Fisheries Guardians is being developed through a collaborative process that involves Guardians, Indigenous Knowledge holders, and departmental representatives to ensure the curriculum meets the needs of both the department and the various communities with Guardian programs across the country.[111]

4.5.3 Funding

A number of organizations, including but not limited to, DFO, BC Hydro, and the Pacific Salmon Foundation provide funding that supports habitat restoration in BC and the Yukon (for example, BC Salmon Restoration and Innovation Fund, Coastal Restoration Fund, Aquatic Ecosystems Restoration Fund, Fish and Wildlife Compensation Program, and Community Salmon Program). Engagement feedback highlighted the need for more consistent, accessible, and long-term funding to effectively support the full lifecycle of habitat restoration projects, including planning, implementation, monitoring, and maintenance. Habitat restoration is a multi-year process that requires sustained funding to achieve the project goals and objectives without risks of compromising momentum and success.

Additionally, engagement participants shared a desire for change in how funds are allocated and reported, advocating for more transparent, equitable, and responsive funding mechanisms. This includes streamlining application and reporting processes to reduce administrative burdens and maintain focus on restoration efforts to provide the most benefit for fish and fish habitat.

First Nations shared that predictable and flexible funding would enable Indigenous partners to fully engage in restoration initiatives. Such funding enables First Nations to reliably grow their capacity, participate in training and decision-making, retain expertise, lead programs, collect and share knowledge and data. These efforts would directly advance objectives in **UNDA** and its **accompanying Action Plan Measures** 38 and 39 (**Appendix 1**).[112]

4.5.4 Collaboration and coordination

Improving collaboration and coordination among First Nations, and stakeholders has become a key theme of the restoration priorities plan. Restoration planning within broader watershed-scale contexts and actions can provide maximum benefits for fish and fish habitat.[113] The restoration community would like to continue building and strengthening partnerships with agencies, improve knowledge transfer, and share expertise, resources, equipment and capacity to action work on the ground. Feedback from the restoration community emphasized the need for improved regulatory coordination, communication, and collaboration to support effective fish habitat restoration.

The multi-jurisdictional nature of restoration in Pacific Region often involves numerous agencies, which can lead to confusion about roles. Collaboration and coordination can have immediate benefits for fish and offer practitioners the ability to start smaller-scale actions while planning is occurring in the background. For example, organizations like Ducks Unlimited Canada are working alongside landowners to help reduce riparian disturbance along river banks. This work would not be possible without willing partners and the coordinated use of resources.

5

CRITERIA
TO GUIDE HABITAT RESTORATION DECISIONS

Habitat restoration expertise continues to increase in Pacific Region. However, challenges with capacity, funding, time, and equipment hinder the restoration community's ability to undertake all the restoration work needed to support fish and their habitat. ***Priority setting*** helps determine the most suitable tasks to address habitat degradation and achieve the greatest benefits for fish at the right time and in the right place.[114]

Though engagement participants agree that restoration priority setting can be helpful when resources are limited, many noted that prioritizing or ranking specific habitat restoration goals at a regional scale in the restoration priorities plan would ignore:

- watershed-level assessments that identify local threats and impacts, species and populations' needs, and specific projects that are informed by local and Indigenous knowledge
- First Nations' rights, title, and jurisdiction over their settlement lands and traditional territories
- First Nations' economic and cultural practices, reliance, and relationships with fish and fish habitat

Based on this feedback, the regional habitat restoration goals and objectives outlined in **Section 4.4** were not ranked. Instead, a shared set of criteria was established to guide habitat restoration decisions across all levels of planning:

- led by, partnered, or identified as a priority by First Nations
- demonstrate clear benefits to fish and their habitats
- incorporate climate change resilience and mitigation measures
- use ***nature-based solutions*** and process-based actions where feasible
- address threats and impacts at the watershed level
- incorporate effectiveness monitoring to evaluate outcomes

5.1 COLLABORATIVE HABITAT RESTORATION ACROSS SCALES IN PACIFIC REGION

Across Pacific Region, several organizations, agencies, councils, First Nations, and governments are working collaboratively across disciplines and at multiple spatial and organizational scales to restore fish habitat. Research shows that restoration planning is most effective when it integrates cross-disciplinary approaches and embeds place-based watershed knowledge within broader regional and sub-regional strategies.[115] This approach supports locally tailored solutions, fosters community partnerships, and leverages planning and decision-making across spatial and temporal scales.

Ecosystem processes and fish populations respond differently to various habitat restoration methods, and the benefits of restoration work often take years to decades to become evident.[116] By working collaboratively, partners can better address the long-term challenges of habitat restoration and ensure effectiveness over time.

Two examples of cross-jurisdictional strategies that are in development in Pacific region include (1) the **Trilateral Accord to address the decline of wild Pacific Salmon** (Trilateral Salmon Accord) signed on June 21, 2024, by the First Nations Fisheries Council of BC as secretariat for BC First Nations, the provincial Ministry of Water, Land, and Resource Stewardship and DFO, and (2) the Yukon River Chinook Salmon Rebuilding and Ecosystem Strategy being collaboratively developed by Yukon First Nations, the Yukon Salmon Sub-committee, the Yukon First Nations Salmon Stewardship Alliance, the Government of Yukon, and DFO.

The Trilateral Salmon Accord lays a foundation for improved alignment and coordination for salmon rebuilding activities across five priority areas of focus, including habitat restoration at a provincial scale. While the Yukon River Chinook Salmon Rebuilding and Ecosystem Strategy includes the identification of habitat restoration objectives for Chinook salmon in the Canadian portion of the Yukon River Watershed. Success as defined by the strategies will take time but there is success in how the partners have come together to develop a path forward for the recovery of fish and fish habitat.

5.2 WATERSHED PLANNING

The goals and objectives listed in **Section 4.4** were co-developed to support the prioritization of restoration actions at the watershed scale. A ***watershed plan*** is a tool to characterize fish and fish habitat within a watershed, while identifying threats and impacts caused by human activities and climate change. Characterizing the watershed helps planners understand the scope and scale of these impacts, and informs management strategies aimed at improving fish habitat. A clear understanding of localized issues, such as those preventing the recovery of species, areas or ecosystem processes, is essential for implementing effective restoration actions. This approach supports the development of self-sustaining and resilient ecosystems over the long term.

To support watershed planning, DFO has developed a **practitioner's guidebook** that outlines a process for collaborative planning and habitat restoration in Pacific Region. This guidebook will support planners and practitioners in identifying key pressures and impacts on fish populations. It offers considerations for undertaking collaborative planning with multiple jurisdictions and other partners, at sub-regional or watershed scales. The guidebook also offers insights to help users identify data gaps and integrate Indigenous and local knowledge, scientific expertise, and community values into watershed and habitat restoration plans.

Some watershed to sub-regional scale collaborative tables are already piloting integrated watershed planning, which detail restoration priorities based on local threats and impacts. These tables include the **Yukon River Chinook Rebuilding and Ecosystem Strategy**, the **Cowichan Watershed Board**, the **West Coast of Vancouver Island Chinook Rebuilding Plan**, the Nicola Watershed Salmon Ecosystem Table, and the **Thompson-Shuswap Salmon Collaborative**. These collectives are excellent examples of First Nations and federal, provincial and territorial governments working together to develop comprehensive watershed recovery plans.

6 REVISIONS AND REPORTING

The restoration priorities plan is an evergreen document; a living plan that allows for continued development and refinement. The effectiveness of the restoration priorities plan will be assessed by compiling data from restoration project monitoring programs, and the plan will be adapted based on the results from those programs.

Progress reporting and revisions of the restoration priorities plan will be scheduled as needed to consider advancements in knowledge, techniques and lessons learned and undertake minor updates (for example, updated links and sources). The following could result in updates to the guidance presented in the restoration priorities plan:

- changes in techniques or standard approaches to restoration implementation
- changes in habitat threats, risks or ***limiting factors***
- revisions to stock recovery or management plans
- new, or revisions to, SARA recovery strategies, action plans, or management plans
- new or updated Committee on the Status of Endangered Wildlife in Canada assessments
- changes to Provincial or Territorial restoration or species recovery priorities
- priorities identified in First Nations management plans
- changes in impacts of, or risks posed by, aquatic invasive species (for example, through establishment, range expansion, or introduction of new species)
- inclusion of new or revised data from climate models
- alignment with other departmental plans (for example, SEP)
- restoration measures identified by the Minister to maintain major fish stocks at or above the level necessary to promote the sustainability of the stock (*Fisheries Act*, Section 6.2(5))
- inclusion of new or revised data on restoration activities, which may impact future restoration
- changes to legislations, regulations or policies

7

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APPENDIX 1

UNDA

ACTION PLAN MEASURES

Action Plan Measure 37: In a measurable manner, enhance collaborative tools, agreements and transparent approaches to better deliver on the collaborative design, development, delivery and management of fisheries, as well as conservation and protection of fish habitat. Fisheries and Oceans Canada and Crown-Indigenous Relations and Northern Affairs Canada will continue to pursue fisheries-related collaborative governance opportunities through nation-to-nation, Inuit-Crown and government-to-government negotiations.

Action Plan Measure 38: Provide predictable and flexible funding that will ensure Indigenous partners have the capacity to provide fisheries, habitat, science, and oceans and marine-related services. Provide predictable and flexible funding to ensure Indigenous nations and organizations have the capacity to meaningfully participate in advisory, co-management, and decision-making processes tied to aquatic resources and oceans management.

Action Plan Measure 39: Develop and implement legislative, policy, or program supports, as well as provide predictable and flexible funding, to ensure fisheries guardians can meet community needs.

Action Plan Measure 40: Develop and employ mechanisms that respect and incorporate Indigenous Knowledge as a distinct knowledge system in the management of fisheries, fish habitat, conservation, marine safety and protection of the marine environment.

Action Plan Measure 41: Through meaningful consultation and collaboration and partnerships with Indigenous groups and British Columbia and Yukon partners, Fisheries and Oceans Canada will implement the Pacific Salmon Strategy Initiative to protect and revitalize salmon populations and their habitats.

Action Plan Measure 42: Through meaningful consultation and collaboration and partnerships with Indigenous governments, organizations, communities and other partners, advance marine Indigenous Protected and Conserved Areas to support Canada's commitments to reconciliation and marine conservation.

Related to UNDRIP Articles: 10, 26, 27, 28, 30, 32

UNDA Chapter 5: Indigenous Modern Treaty Partner Priorities

Action Plan Measure 13: Collaborate with Modern Treaty Partners to pursue possible changes to federal fisheries legislation, regulations and policies to: a) align with Canada's Modern Treaty relationships, objectives and obligations, including the spirit and intent of those agreements. b) address issues and barriers to the effective exercise of Indigenous Modern Treaty Partner jurisdiction respecting fisheries. c) support healthy fish and aquatic plant populations. d) support successful free, prior and informed consent implementation regarding federal legislative or administrative measures that may affect the fisheries-related modern treaty rights and obligations.

Related to UNDRIP Articles: 37

APPENDIX 2

WHAT WE HEARD

FISH HABITAT RESTORATION PRIORITY PLANNING FOR PACIFIC REGION

NOTE TO READER

This *What We Heard* report summarizes feedback that was used to draft the *Fish Habitat Restoration Priority Planning for Pacific Region* (restoration priorities plan). It is intended to capture and reflect the perspectives shared during engagement. The information contained herein does not represent the views, positions, or policy direction of Fisheries and Oceans Canada (DFO). It should not be interpreted as indicating DFO's response to, or level of support for, any specific feedback, recommendation, or opinion expressed.

INTRODUCTION

The restoration priorities plan identifies regional goals and objectives for fish habitat restoration in Pacific Region (includes British Columbia and the Yukon). This work began in 2022 and was guided by the "**Framework to Identify Fish Habitat Restoration Priorities**" (the National Framework), a national approach to establishing fish habitat restoration goals in all seven DFO regions.[1] The National Framework outlines an iterative process for identifying habitat restoration priorities that includes the following steps:

1. Gather information
2. Describe the current state of fish habitat restoration activities
3. Identify important species, areas, and ecosystem functions
4. Set restoration goals and supporting actions
5. Identify restoration priorities
6. Evaluate and update restoration priorities

The restoration priorities plan was drafted based on extensive engagement with the restoration community, including First Nations, federal, provincial, territorial, and local governments, environmental non-governmental organizations, academics, consultants, industry proponents, and fishers across Pacific Region. The findings summarized in this report reflect feedback received by Fisheries and Oceans Canada's (DFO) Restoration Center of Expertise (RCOE) during the engagement process, which took place between 2023 to 2025.

1 Fisheries and Oceans Canada 2023. Framework to Identify Fish Habitat Restoration Priorities. Fish and Fish Habitat Protection Program, Ottawa, ON. p. 16.

ENGAGEMENT

APPROACH IN PACIFIC REGION

The RCOE prioritized comprehensive and inclusive engagement during the first four steps in the National Framework. The goal was to listen to as many voices as possible to ensure that the restoration priorities plan accurately reflected the diverse perspectives and experiences of those involved, and those who wished to be involved, in habitat restoration.

Engagement with the restoration community was undertaken following a principles-based approach. The three principles for engagement were:

1. Uphold and follow principles in the ***United Nations Declaration on the Rights of Indigenous Peoples Act* Action Plan (UNDRIP)**
2. Gather input from the restoration community
3. "Hold the pen" for the restoration community

This approach aligns with the principles respecting the Government of Canada's relationship with Indigenous peoples and advancing measures in the **Principles respecting the Government of Canada's relationship with Indigenous peoples**, Canada's adoption of UNDRIP under the Federal ***United Nations Declaration on the Rights of Indigenous Peoples Act*** (UNDA) and its accompanying **Action Plan**.[2] Together, these recognize the importance of meaningful engagement and collaboration in advancing reconciliation based on the recognition of rights, respect, co-operation, and partnership.

ENGAGEMENT APPROACH AND OVERVIEW

Information on habitat degradation, habitat restoration, and locally important species and areas were sourced from web searches, internal DFO libraries, and engagement participants. Information sources that were reviewed are listed in **Appendix 2.1**.

The engagement approach prioritized open and round-table discussions, real-time content editing, and active follow-up (**Figure 1**).

To promote inclusiveness and minimize barriers to participants, engagement was iterative and included:

- interactive online presentations
- in-person workshops
- cross-organizational meetings
- email correspondence sharing reports, technical documents, and written feedback
- online surveys hosted on DFO's Let's Talk Pacific Salmon portal. A list of questions from the Phase 1 and Phase 2 surveys is presented in **Appendix 2.2**.
- note-takers who transcribed participants questions and comments and edited versions of the plan during engagement sessions
- funding provided to First Nations participants by the Indigenous Habitat Participation Program (IHPP)

2 Government of Canada 2023. *United Nations Declaration on the Rights of Indigenous Peoples Act* Action Plan. Department of Justice. p. 96.

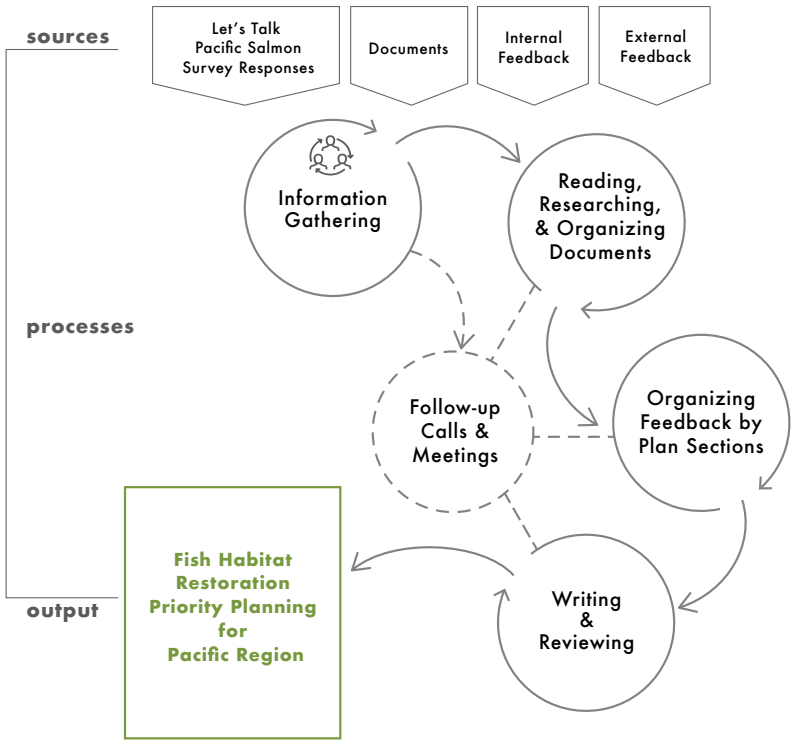


Figure 1: Feedback work flow during drafting of the Fish Habitat Restoration Priority Planning for Pacific Region (restoration priorities plan). The polygons at the top of the figure show all sources of information that were received and reviewed from Spring 2023 to Winter 2024. The middle circles depicts the iterative workflow of reviewing, organizing, following up on engagement and synthesizing information. A final draft of the restoration priorities plan was published in March 2026. The document will be updated periodically as new information is gathered.

Engagement proceeded in 3 phases, described below:

PHASE 1 - SPRING 2023 TO WINTER 2023

Phase 1 sought feedback on the first draft of the restoration priorities plan and focused on:

- identifying important species, areas, and ecosystem processes
- understanding current habitat restoration projects, goals, and activities in Pacific Region
- how restoration project goals, supporting actions, and priorities were identified and developed
- identifying various restoration project ***prioritization*** processes
- data sources used to identify habitat restoration priorities
- spatial scale(s) for which restoration should be prioritized (for example, watershed, sub-regional)
- revision and reporting methods

Feedback was organized into common themes, which were used to draft the first draft of habitat restoration goals and objectives.

PHASE 2 – SPRING 2024 TO WINTER 2024

Phase 2 sought feedback on the first draft of the fish habitat restoration goals and objectives and continued to gather input on topics covered during phase 1. Additional questions and topics discussed during phase 2 included:

- how applicable the draft goals and objectives were to restoration initiatives in the region
- the language and wording used throughout the draft plan
- identifying **limiting factors** that hindered restoration planning and implementation

PHASE 3 – SPRING 2025

Phase 3 was added at the request of Phase 2 engagement participants who wanted to see a more complete version of the plan before it was finalized. Phase 3 continued to gather feedback on content from previous phases of engagement, along with input on:

- how language regarding relevant UNDRIP articles and accompanying UNDA Action Plan measures were incorporated
- how important species, areas, priorities and importance were defined
- if habitat indicators and management measures supporting restoration success reflected previous feedback

ENGAGEMENT BY THE NUMBERS

The Let's Talk Pacific Salmon portal was used for public engagement during Phase 1 and Phase 2. The portal received 61 survey responses during Phase 1 and 25 during Phase 2 and a total of 4,209 website visits during both phases. The Indigenous Habitat Participation Program provided $368,000 to support First Nations' engagement during this time.

Between spring 2023 and spring 2025, DFO hosted 92 meetings and workshops with the restoration community across Pacific Region. Of these, 72 were hosted online, 15 were held in-person, and 5 were hybrid, combining in-person, and online engagement.

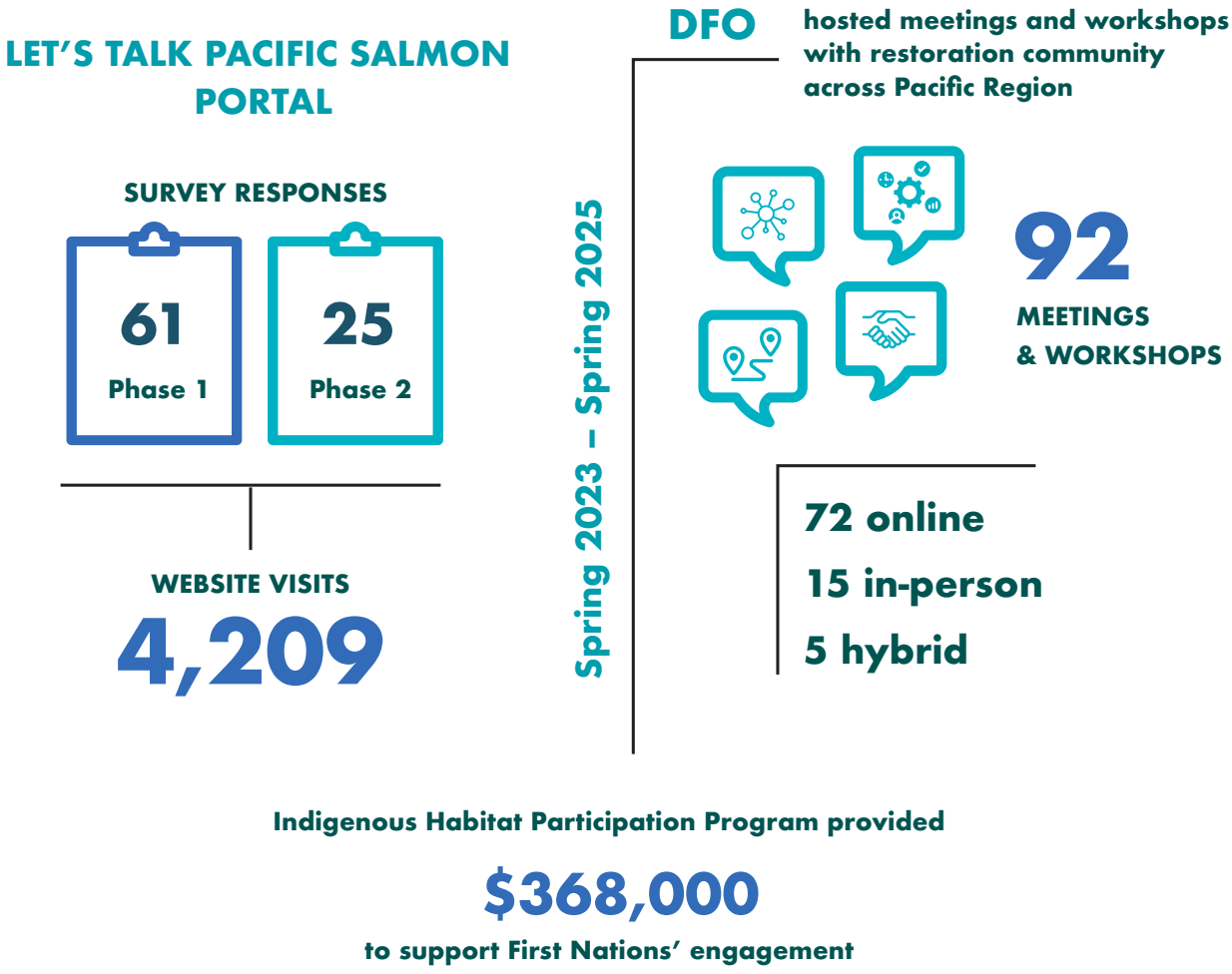


Figure 2: Let's Talk Pacific Salmon portal engagement numbers and DFO-hosted meetings and workshops in the Pacific Region between Spring 2023 and Spring 2025

COMPILATION

Feedback from all sources was compiled into a master tracking document. To support clarity and efficient integration, the master tracking document was sorted by sections of the restoration priorities plan and categorized into themes. Comments and revisions were then embedded into subsequent restoration priorities plan drafts to ensure careful consideration and incorporation. Drafting of the document was continuous, and follow-up meetings were scheduled as needed, based on requests from individuals, organizations or DFO. Documents shared by participants, such as scientific papers, management plans, and local case studies, were thematically sorted and individually reviewed, and in many cases cited, to inform and strengthen the restoration priorities plan. Publicly-available documents are itemized in **Appendix 2.1**.

CONSIDERATIONS AND LIMITATIONS

Not every First Nation or member of the restoration community in Pacific Region was able to directly engage or provide input on the restoration priorities plan. In some cases First Nations relied on non-governmental organizations or multi-Nation organizations they were part of to represent their interests during meetings. At the request of Yukon First Nations, RCOE staff attended workshops for the Yukon River Chinook Rebuilding strategy and participated in meetings with the Council of Yukon First Nations to avoid over-burdening limited staff in the territory. In British Columbia, the First Nation's Fisheries Council of BC facilitated workshops and provided funding for First Nations staff to attend meetings.

Although significant efforts were made to reduce barriers to participation, such as rescheduling meetings and providing multiple ways to provide feedback, not everyone was able to engage. As a result, the restoration priorities plan reflects the knowledge, ***values***, perspectives and input from those who participated in engagement.

Feedback was carefully reviewed and thoughtfully considered to determine whether it was aligned with the scope of the restoration priorities plan. Although all input was reviewed and documented, not every suggestion was incorporated, as some fell outside the scope of the restoration priorities plan or restoration activities more broadly. Feedback deemed out of scope was redirected to the appropriate contacts to ensure it was still acknowledged. This approach ensured the plan remained focused while still respecting and capturing the breadth of perspectives shared.

WHAT WE HEARD

Participants shared thoughtful and nuanced feedback for the restoration priorities plan. Input included a range of specific points that reflected diverse perspectives and priorities. Their feedback has been summarized and organized under the following broad themes:

- Species and areas
- Environmental considerations
- First Nations' perspectives, rights, and reconciliation
- Socioeconomic and management

SPECIES AND AREAS

Engagement participants identified a diversity of freshwater and marine fishes, bivalves and shellfish as important to them. Many definitions of "importance" were shared, and importance in Pacific Region is being defined as something that holds significant value for those who depend on the species being considered. Species that the restoration community identified during engagement are listed in **Appendix 2.3**. This list does not include all species, stocks, or populations in Pacific Region but rather reflects what we heard during engagement.

The range of waterbodies engagement participants identified during engagement included watersheds and coastal areas across Pacific Region (**Appendix 2**). In many cases, this list represents places where people live, where they connect with nature, or the places that support their culture and lifestyle. This list of waterbodies in **Appendix 2.4** showcases what we heard during engagement.

Neither the appendices are exhaustive and can be updated during future versions of the plan.

ENVIRONMENTAL CONSIDERATIONS

Climate change mitigation and resiliency: Participants stated the importance of integrating climate change considerations into restoration planning to help habitats adapt to shifting conditions. Building habitat resilience is key to mitigating the impacts and increasing severity of climate-related emergencies (for example, drought, floods, wildfires, and sea level rise). For example, allowing rivers space to adjust to higher flows, and doing ground-based assessments to understand local climate change impacts.

> "I think this planning should be framed with climate change in mind. Climate adaptation should be an integral part of this. Restoration solutions that used to work won't work anymore. Restored habitats won't be useful if they are not restored with solutions adapted to their specific climate change vulnerability (for example, , restoring a stream habitat but with droughts, that habitat doesn't get any water late summer, so all fish die.) This is really technical habitat restoration planning, and it excludes different types of knowledge or solutions."
>
> Anonymous Participant, Let's Talk Pacific Salmon Phase 2 Survey

Suggestions included developing and implementing innovative and proactive fish habitat restoration approaches, climate trajectory modeling methods, and effective land and water use strategies (for example, drought management and agricultural practices) to assess and adapt to new climate realities. Participants also highlighted the need for guidance on restoration approaches that respond to climate-driven ecological changes. For example, pink salmon (*Oncorhynchus gorbuscha*) are expanding beyond their historic range to the north Pacific and Arctic regions, leading to uncertainty and disagreement over how to restore habitat and manage their presence.

Cumulative effects: Participants emphasized the importance of understanding cumulative effects when planning fish habitat restoration. They highlighted the need to address overlapping ecological and social threats that impact fish, fish habitat, and broader ecosystem processes. In particular, participants called for greater education and awareness around the cumulative impacts on salmon and their habitats.

> "Doing one-off restoration projects in the big scheme of things isn't the way forward if we don't have responses to other stressors on those habitats."
>
> Anonymous Participant, Lower Fraser Region Engagement Session, April 24, 2024

Biodiversity: Participants noted the importance of identifying, preserving, and maintaining species and habitat diversity to strengthen resilience against disturbances. Preserving genetic diversity was also highlighted as essential to support the long-term health and adaptability of fish populations. Participants stressed the need to account for the unique biodiversity of Pacific Region when planning habitat restoration. They noted that the region's ecological complexity requires diverse, locally tailored approaches, as actions in one area will often influence conditions in another.

Habitat connectivity and fish passage: Reducing or removing barriers such as culverts and dams was identified by participants as essential to supporting fish movement and ensuring access to key habitats for spawning, rearing, feeding, overwintering, and refuge. Maintaining connectivity between headwaters and downstream areas, along with continuous riparian corridors, was seen as vital to sustaining healthy fish populations.

Investments in upgrading existing infrastructure were recommended to improve water flow and enhance fish passage. Participants also highlighted the need for ongoing maintenance and monitoring of fish passage infrastructure to ensure long-term functionality and effectiveness. Ensuring fish can reach critical habitats was consistently noted as a top priority.

Participants also emphasized the need for clear guidance to carry out urgent fish passage work during climate emergencies, such as landslides or droughts. They noted that responding effectively requires quick access to funding, fast-tracking permits and approvals, and bringing in external support to restore habitat connectivity and reduce impacts on fish.

> "Salt marshes and eelgrass meadows are blue carbon habitats that support nearshore biodiversity, as nursery and foraging habitats. These nearshore ecosystems are expected to migrate landward in response to accelerated sea level rise. However, human modifications of coastlines from seawalls and dikes prevent the migration of shallow subtidal and intertidal coastal habitats, resulting in decline or loss of these habitats to coastal squeeze. Thus, to retain these important habitats, it is important to remove barriers that prevent landward migration of nearshore coastal habitats (for example, , salt marshes and eelgrass meadows) by investing in living shorelines. It is vital to prioritize barriers to migrating fish and habitats that are no longer meeting the original intent."
>
> Anonymous Participant, Let's Talk Pacific Salmon Phase 2 Survey

FIRST NATIONS' PERSPECTIVES, RIGHTS AND RECONCILIATION

Recognizing First Nations' rights and Title, authority, and the integration of the *United Nations Declaration on the Rights of Indigenous Peoples Act* into restoration planning: Preserving First Nations' access to land and water, and acknowledging First Nations governance systems, were seen as essential to fostering genuine collaboration and effective restoration outcomes. Building trust through consistent, respectful engagement followed by meaningful action was identified as a key step toward empowering First Nations communities and ensuring their active participation.

> "Indigenous people need stable, reliable access to their salmon watersheds in order to be able to rebuild their restoration, monitoring, and management systems, and in order to be able to make accurate assessments of habitat restoration needs."
>
> Anonymous Participant, Let's Talk Pacific Salmon Phase 1 Survey

Incorporating UNDRIP and UNDA into restoration planning was strongly supported as a way to uphold First Nations' rights, and ensure equitable involvement in habitat restoration. Participants also stressed the importance of recognizing First Nations' authority over their territories to strengthen cultural connections and support long-term stewardship of their lands and waters.

> "Including First Nations on the ground helps reconnect First Nations membership with their Rights and responsibilities in their territories."
>
> Anonymous Participant, Northeast and Southeast Engagement Session, November 19, 2024

First Nations' and local knowledge integration: It is important to involve and include local knowledge holders throughout all stages of decision-making to ensure that Indigenous Knowledge is respected and meaningfully integrated into restoration efforts. Participants called for greater recognition of Indigenous Knowledge Systems, noting that community-driven approaches and the inclusion of Indigenous perspectives in both planning and implementation can lead to more culturally appropriate, respectful, and effective restoration.

> "Those that live along the rivers and watersheds hold the expertise and knowledge needed to safeguard local resources."
>
> Anonymous Participant, Lower Fraser Region Engagement Session, April 24, 2024

> "Recognition of First Nations Knowledge Systems as legitimate expertise is crucial."
>
> Anonymous Participant, Interior Region Engagement Session, April 30, 2024

First Nations' self-determination, leadership, collaboration, and partnerships: Direct involvement and input from First Nations is essential to ensure restoration efforts reflect local needs, values, and priorities. Supporting First Nations-led and -partnered restoration work was seen as critical to building trust and fostering meaningful partnerships. Improved engagement and collaboration between First Nations and Crown agencies were recommended to align efforts and integrate diverse worldviews and knowledge systems.

Participants highlighted the Indigenous Guardians Program as a strong example of this approach. Guardians support habitat monitoring and protection by training community members to oversee stewardship activities, enforce local regulations, and collect data. The program's success comes from combining Traditional Ecological Knowledge and local practices with Western science, which strengthens local stewardship and conservation efforts.

Participants also called for funding for Indigenous Guardian and other community-run programs to build capacity and professional expertise, particularly in remote regions. Mentorship programs that share resources, data, and lessons learned were suggested to reduce capacity strains and support long-term stewardship. Creating pathways for knowledge sharing and supporting First Nations access and opportunity were viewed as key to ensuring restoration efforts are culturally relevant and sustainable.

Redefining "importance" and adopting a holistic approach to fish habitat restoration: Ranking restoration goals at the regional level and identifying their "importance" was cautioned, with participants noting it can undermine and oversimplify the complexity of habitat restoration and overlook local context. Participants emphasized the importance of having a holistic, ecosystem-based approach to habitat restoration that acknowledges the complexity and interconnections between species, their habitats, and people who have reciprocal relationships with them.

> "I don't like looking through the lens of a priority. As First Nations, we can't pick and choose what to prioritize, it's all important. Our future will not be very bright if we don't do what we need to do, which is fix it together – we must improve Indigenous-Crown relationships."
>
> Anonymous Participant, Coastal Engagement Session, April 11, 2024

Participants highlighted that all restoration goals are interconnected and should not be prioritized in isolation. Setting broad regional goals to guide restoration efforts, while allowing for local communities the flexibility to address their unique priorities and challenges, was recommended to reflect local ecological, cultural, and community needs. This more nuanced approach recognizes that restoration priorities are deeply interconnected and cannot be effectively addressed in isolation.

> "The plan needs to focus on a holistic picture. There is not just one piece of the puzzle to fix. All is one and everything is interconnected."
>
> Anonymous Participant, February 20, 2024

Restoration of culturally significant species and areas: Participants emphasized the importance of prioritizing restoration efforts that support culturally significant species and areas vital to First Nations cultures, traditions, and food security. Restoring these species and areas plays a key role in preserving cultural heritage and strengthening traditional practices, livelihoods, and community well-being. Engagement participants highlighted that protecting sacred sites and culturally important landscapes from development and degradation was essential to maintaining First Nations' economies, sovereignty, and long-term resilience. Participants also called for the inclusion of First Nations stewardship practices in restoration planning. They stressed the need to recognize the value of species and areas that hold economic, commercial, and recreational importance to First Nations communities.

> "It is important to think about how different people, especially First Nations, are defining restoration. Part of that is redefining restoration from relationship perspectives."
>
> Anonymous Participant, Version 2.0 Engagement Session, March 10 and 18, 2025

Incorporating biocultural indicators of success: Participants recommended advancing the use of biocultural indicators of success in habitat restoration projects to ensure alignment with each Nation's specific values and priorities. Embedding these indicators into restoration plans was seen as a way to support the revitalization of Indigenous Knowledge Systems and cultural practices, while strengthening community-led approaches to restoration.

SOCIOECONOMIC AND MANAGEMENT CONSIDERATIONS

Fish habitat protection and conservation: Participants emphasized that intact and restored habitats should be safeguarded from current anthropogenic impacts and future land use such as urban development, resource extraction, and recreational vehicles (for example, jet boats and all-terrain vehicles). Suggestions included the use of conservation mechanisms such as Indigenous Protected and Conserved Areas and Ecologically Significant Areas. For example, important habitats, headwaters, wetlands, and estuaries must be prioritized to prevent future losses and reduce the need for costly and less effective restoration.

There was strong support for strengthening the enforcement of existing regulations to ensure fish populations and aquatic habitats are adequately protected from industrial, urban, recreational, and agricultural threats. Participants also called for guarantees that restored habitats will not be subject to future development. A consolidated watershed plan that integrates relevant policies, regulations, and conservation goals was recommended to guide protection efforts. There was an overall consensus that protection should be the first line of defence for fish habitat and work in tandem with restoration.

> "Habitat protection and conservation should not be limited spatially only to protected areas. Valuable habitat that has viable potential to be restored should also be protected, not just pristine habitat."
>
> Anonymous Participant, April 2, 2025

Funding and capacity building: Participants emphasized that fish habitat restoration requires increased and sustained funding, along with targeted training and recruiting expertise to support restoration work without the uncertainty of fluctuating support. There was a strong call for stable, flexible, and non-competitive funding mechanisms that are adaptable to the specific needs of different regions and communities, support the full lifecycle of restoration projects, and help recruit and retain skilled staff, especially in remote areas around Pacific Region. Participants also recommended dedicated funding for baseline assessments, long-term monitoring and maintenance, and emergency responses to climate events to support lasting and adaptive restoration outcomes.

> "Consistent, easy to access, and long term funding that doesn't take a lot of internal capacity to apply for, and can be secured in a timely manner. Without competition/bidding between different Nations. 'Restoration accommodation funding' would be great as a model. Similar to other accommodation funding opportunities versus applying to grants that are competed against from multiple Nations/ organizations. And have the funding available well in advance of restoration works windows."
>
> Anonymous Participant, Let's Talk Pacific Salmon Phase 2 Survey

Participants emphasized the importance of ensuring that funding and reporting processes support restoration work while minimizing administrative burdens. Suggestions including restructuring funding applications and reporting processes to be more streamlined, flexible, and results-focused. Accessible and well-structured funding was seen as essential to enabling consistent and meaningful progress. Participants also recommended designating funding for specialized equipment, professional services, infrastructure, and travel to carry out restoration in difficult-to-access areas such as in the Yukon and along British Columbia's north and central coasts.

> "Funding opportunities and permitting processes needed to be more understanding of one another. There has been many instances where one of the core risks to a project being carried out within funding window is permitting timelines. Furthermore, lack of clarity about which regulations and permits apply within certain areas (ex: the intertidal) have been another area of risk to projects."
>
> Anonymous Participant, Let's Talk Pacific Salmon Phase 1 Survey

Improve regulatory coordination, communication, and collaboration: Participants emphasized the need for improved regulatory coordination, communication, and collaboration to support effective fish habitat restoration. The multi-jurisdictional nature of restoration in Pacific Region often involves numerous agencies, leading to confusion about roles and points of contact, especially within Crown governments, where staff turnover can be common. Participants also highlighted the importance of ensuring accountability for environmental damage, with suggestions that those responsible should pay the costs for restoration. A unified approach was recommended to clearly define agency responsibilities, streamline regulatory navigation, and reduce overlap across jurisdictions.

> "The fragmentation of jurisdiction and authority among different levels of government and agencies complicates effective habitat protection and restoration."
>
> Anonymous Participant, North Region Engagement Session, April 18, 2024

Existing regulatory frameworks were described as complex and rigid, creating barriers to timely restoration, particularly during climate-related emergencies such as drought-induced fish salvages. Participants called for more flexible processes and increased capacity for restoration evaluations, permitting, and implementation. Establishing working groups to support restoration along migration routes and across large watersheds was also suggested. Strengthening collaboration with provincial ministries and resource extraction industries was seen as key to reducing jurisdictional silos and improving restoration project delivery. Developing proactive policies that anticipate challenges like climate change and habitat degradation was viewed as essential to achieving restoration goals.

> "Community members would like to hear more from DFO about the successes and failures the departmental restoration teams are facing so the community can capitalize on the lessons."
>
> Anonymous Participant, Vancouver Island engagement session, February 20, 2024

Monitoring, Data Management, and Knowledge Transfers: The lack of baseline data, particularly in remote areas of Pacific Region, was identified as a barrier to restoration planning and implementation, highlighting the need for enhanced data collection and management. Improved coordination between First Nations, Crown agencies, and ENGOs was recommended to reduce redundancy in fieldwork and ensure efficient use of resources.

A robust monitoring and evaluation framework was seen as essential to track progress and adapt restoration efforts over time. Without proper monitoring, participants cautioned that restoration activities may fall short of delivering intended outcomes. Strengthening these systems will help ensure restoration is informed, responsive, and effective.

> "Short-term nature of monitoring/performance measures limits our ability to learn and improve methods. Many sites in my region are no-one's responsibility after a 5-year monitoring period, and we are now dealing with a legacy of aging projects in need of repair. Many sites also lack baseline data, so impacts to pre-existing flora and fauna are often not considered in benefits calculations."
>
> Anonymous Participant, Let's Talk Pacific Salmon Phase 1 Survey

NEXT STEPS

The engagement process gave valuable insight into the state of restoration knowledge in Pacific Region. It showed how restoration is interconnected with the restoration community, the land and waters, and reconciliation with Indigenous peoples. There are significant opportunities to build trust in Pacific Region between DFO, First Nations, and other members of the restoration community. Much of the restoration work to support fish, including Pacific salmon, would be difficult for a single organization to complete, and requires committed collaboration and coordination.

The authors acknowledge and thank all engagement participants for their feedback on the restoration priorities plan and the restoration community for their efforts to improve conditions for fish in a changing landscape.

APPENDIX 2.1

Data Sources

Reports, plans, documents and data provided during engagement and reviewed for the Habitat Restoration Priorities Plan for Pacific Region.

ACRONYMS for Data SOURCE TYPES

FNPF: First Nations-Led Plans and Frameworks

HPFPS: Habitat Recovery/Action Plans, Frameworks, Policies, and Strategies

RFC: Restoration Funding and Criteria

RPDM: Restoration Planning, Design, and Monitoring

SASR: Species - Assessment and Status Report

SAMP: Species - Action/Management Plan

SFMP: Species - Fisheries Management Plan

WP: Watershed Plans

SOURCE TYPE	INFORMATION SOURCE
FNPF	Biocultural indicator manual, a guide for the development and implementation of biocultural indicator frameworks
FNPF	Blueprint for restoring ecological governance to the Lower Fraser River
FNPF	British Columbia first nations climate strategy and action plan
FNPF	British Columbia ministry of environment & climate change strategy and Tsleil-Waututh Nation: water quality objectives for Burrard Inlet
FNPF	Connecting the broken salmon trail
FNPF	Conserving Kispiox fish populations and their habitat
FNPF	Eco-cultural restoration of the K'omoks estuary
FNPF	First nations fisheries council of British Columbia - Turning the tide: Actions to implement the declaration on the rights of Indigenous Peoples Act
FNPF	First nations fisheries oouncil of British Columbia - Stemming the tide: Getting below the surface
FNPF	Framework for community-based landscape restoration: Scaling up restoration efforts in Blueberry River first nations territory
FNPF	Gitanyow Lax'yip land use plan, sustainable development, Gwelx ye'enst & leading-edge land use planning
FNPF	Gitksan watershed authorities
FNPF	Huu-ay-aht first nations watershed renewal program: Annual reports (2016 to 2024)
FNPF	Lake Babine Nation fisheries program
FNPF	Local indigenous knowledge and values framework: foreshore integrated management planning - Nicola Lake
FNPF	Lower Fraser Fisheries Alliance climate adapt and coastal restoration project - phase 3: A framework for prioritizing climate change adaptation strategies in the Lower Fraser Basin
FNPF	News Release: Government of Canada works with Pacheedaht First Nation restore wild salmon habitat
FNPF	Quatsino first nation land use
FNPF	Seabird Island inter-government affairs strategic plan 2024-2029
FNPF	Stemming the tide: getting below the surface
FNPF	Tla'amin Watershed Protection Plan
FNPF	Tsleil-Waututh Nation Burrard Inlet action plan

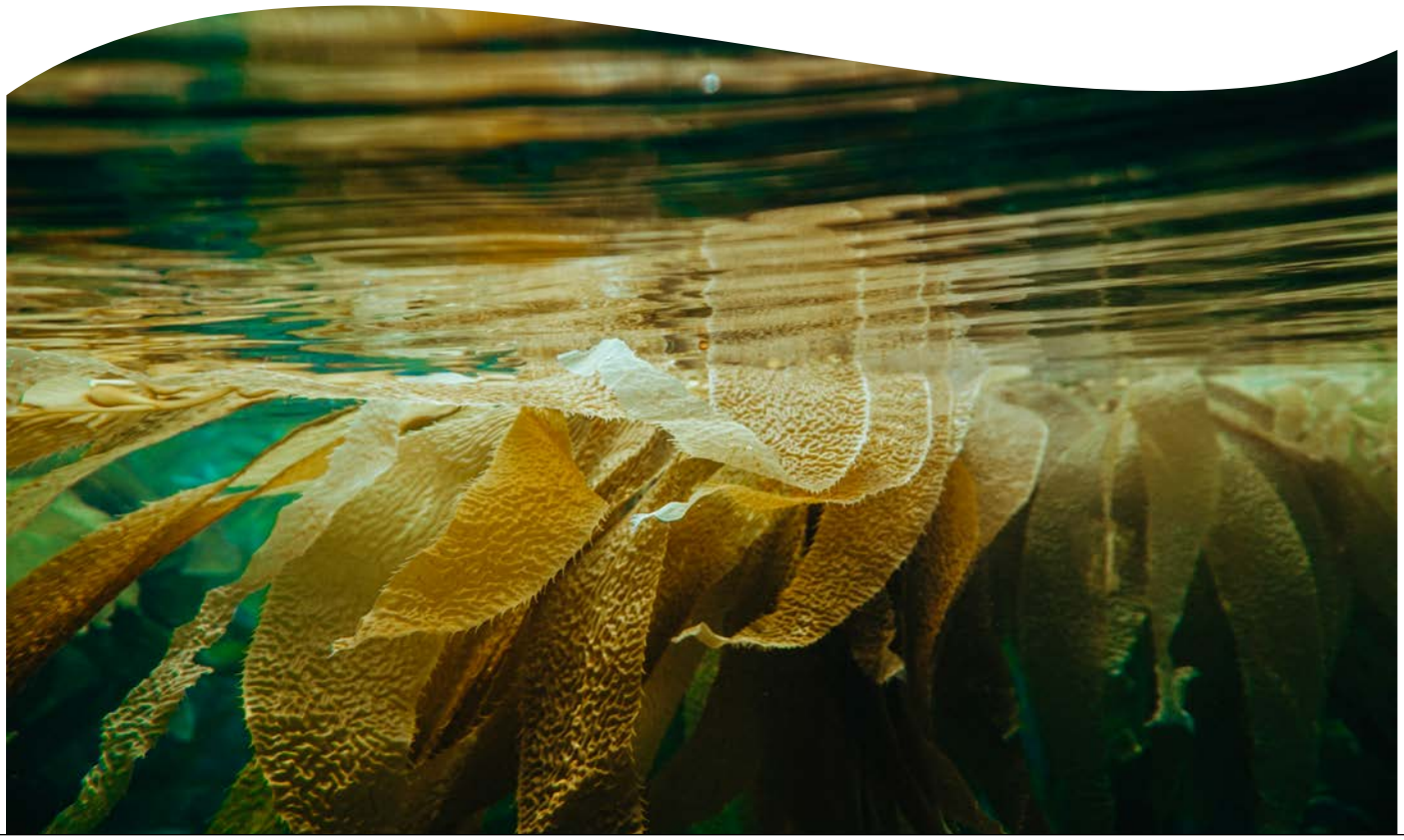
SOURCE TYPE	INFORMATION SOURCE
FNPF	Tsleil-Waututh Nation Cumulative Effects Monitoring Initiative (CEMI) studies
FNPF	Tsleil-Waututh Nation Indian River watershed integrated stewardship plan
FNPF	Turning the tide: Actions to implement the declarations on the rights of indigenous peoples act
FNPF	Wet'suwet'en fisheries program
HPFPS	An integrated plan to restore and enhance waterways in the city of Chiliwack
HPFPS	BC Central Coast: Prioritizing strategies for Pacific salmon recovery and persistence
HPFPS	British Columbia Protocol for prioritizing sites for fish passage remediation
HPFPS	Canadian Science Advisory Secretariat Science Advisory Reports (Species/Stocks)
HPFPS	Coastal Blue Carbon in Canada: State of Knowledge
HPFPS	Collaboration for salmon resilience: from crisis to opportunity - a Cowichan story
HPFPS	Fish and wildlife compensation program watershed action plans
HPFPS	From flood risk to resilience: a B.C. flood strategy to 2035
HPFPS	Government of Canada and province of British Columbia steelhead action plan
HPFPS	Government of Canada species at risk public registry
HPFPS	Government of Canada The *United Nations Declaration on the Rights of Indigenous Peoples Act* action plan
HPFPS	Options for a made-in-BC wild salmon strategy
HPFPS	Pacific Estuary Conservation Program (PECP) identified estuaries of British Columbia mapping and ranking project: 2019 update
HPFPS	Salish Sea nearshore habitat recovery project 2019-2020 final report
HPFPS	Salmon habitat synthesis and assessment framework for the Upper Columbia River
HPFPS	SEP/PSSI Restoration Framework
HPFPS	Skeena sustainability assessment forum's state of the value report for fish & fish habitat
HPFPS	Tsolum River recovery plan: Tsolum River watershed
HPFPS	United nations convention of biological diversity: Kunming-Montreal global diversity framework
HPFPS	United nations declaration on the rights of indigenous peoples
HPFPS	Watershed security strategy and fund intentions paper
HPFPS	West coast Vancouver Island Chinook rebuilding plan
HPFPS	Wild Salmon Policy 2018 to 2022 Implementation Plan
Other	Aboriginal aquatic resource and oceans management program
Other	Aboriginal fisheries strategy
Other	Action Plan for the UN Decade on Ecosystem Restoration, 2021-2023
Other	Carwardine, J., et al. 2018. Priority threat management for biodiveristy conservation: A handbook
Other	Chalifour, L., at al.2022. Identifying a pathway towards recovery for depleted wild Pacific salmon populations in a large watershed under multiple stressors
Other	Coastwide evaluation and classification of Pacific Region estuaries based on anthropogenic activities and significant fish habitat
Other	Cohen commission of inquiry into the decline of sockeye salmon in the Fraser River - final report
Other	Comox Valley project watershed society - estuary reports
Other	Currie, J., et al. 2022. Prioritizing ecological restoration of converted lands in Canada by spatially integrating organic carbon storage and biodiversity benefits
Other	Finn, R., et al. 2022. Using systematic conservation planning to inform restoration of freshwater habitat and connectivity for salmon
Other	Healthy watersheds initiative 2021 interim report
Other	Kootenay Lake partnership

SOURCE TYPE	INFORMATION SOURCE
Other	Nicola water use management plan
Other	North Pacific anadromous fish commission
Other	Okanagan Basin water board governance manual
Other	Okanagan Basin water board wetland action plan
Other	Pacific Estuary Conservation Program (PECP) identified estuaries of British Columbia mapping and ranking project: 2019 update
Other	Pacific salmon action dialogue series
Other	Salish Sea initiative
Other	Salt Spring Island watershed protection plan
Other	Strengthening decision-making and collaboration for healthy watersheds
Other	Thorne, C., et al. 2014. Project Risk Screening Matrix for River Management and Restoration.
Other	WWF mission restoration
RFC	Aquatic ecosystems restoration fund
RFC	Aquatic habitat restoration fund
RFC	A watershed security find for British Columbia: Position Paper
RFC	BC conservation fund by BC parks foundation
RFC	British Columbia salmon restoration and innovation fund
RFC	Canada nature fund for aquatic species at risk
RFC	Coastal restoration fund
RFC	Ecosystems and oceans science contribution framework
RFC	Environmental damages fund
RFC	Habitat stewardship program for aquatic species at risk
RFC	Habitat stewardship program for species at risk
RFC	Indigenous habitat participation program
RFC	Indigenous partnerships for species at risk funding opportunity
RFC	Nature smart climate solutions
RFC	Pacific integrated commercial fisheries initiative
RFC	Pacific salmon commission (northern fund)
RFC	Pacific salmon commission (southern fund)
RFC	Pacific salmon foundation community salmon program
RFC	Salmonid enhancement program community involvement contribution program
RFC	Yukon River panel restoration and enhancement fund priorities plan
RPDM	A first nations planning guide for freshwater fisheries habitat restoration projects guidebook
RPDM	Constructing riffles and pools in channelized streams
RPDM	Fish habitat assessment procedures
RPDM	Fish habitat rehabilitation procedures
RPDM	Playbook to guide landscape recovery strategies & priorities for salmon habitat following major wildfires
RPDM	Principles and guidelines for ecological restoration in Canada's protected natural areas
RPDM	Project planning and management for ecological restoration
RPDM	Stream and watershed restoration: a guide to restoring riverine processes and habitat
RPDM	The British Columbia watershed restoration program: summary of the experimental design, monitoring and restoration techniques workshop
RPDM	Action plan for the Cultus pygmy sculpin (Cottus aleuticus, cultus population) in canada

SOURCE TYPE	INFORMATION SOURCE
SAMP	Action plan for the nooksack dace (Rhinichthys cataractae ssp.) and the salish sucker (Catostomus sp. cf. catostomus) in Canada
SAMP	Action plan for the northern abalone (Halitosis kamtschatkana) in Canada
SAMP	Action plan for the Paxton Lake and Vananda Creek stickleback species pairs (Gasterosteus aculeatus) in Canada
SAMP	Action plan for the speckled dace (Rhinichthys osculus) in Canada
SAMP	Action Plan for the vancouver lamprey (Entosphenus macrostomus) in Canada
SAMP	Action plan for the western brook lamprey - morrison creek population (Lampetra richardsoni) in Canada
SAMP	Action plan for the white sturgeon (Acipenser transmontanus) in Canada
SAMP	Management Plan for the giant and unarmoured threespine sticklebacks (Gasterosteus aculeatus) in Canada
SAMP	Management plan for the green sturgeon (Acipenser medirostris) in Canada
SAMP	Management plan for the rougheye/blackspotted rockfish complex (Sebastes Aleutianus and S. Melanostictus) Longspin Thornyhead (Sebastolobus Altivelis) in Canada
SAMP	Management plan for the shorthead sculpin (Cottus confusus) in Canada
SAMP	Management plan for the westslope cutthroat trout (Onchorhynchus clarkii lewisi), British Columbia population in Canada
SAMP	Management plan for the yelloweye rockfish (Sebastes ruberrimus) in Canada
SAMP	Management plans for the Columbia Sculpin (Cottus hubbsi) in Canada
SAMP	Pacific herring 2024-2025: integrated fisheries management plan summary
SAMP	COSEWIC assessment and status report on the Bocaccio Sebastes paucispinis in Canada (2013)
SASR	Action plan for the Misty lake sticklebacks (Gasterosteus aculeatus) in Canada
SASR	COSEWIC assessment and status report on the bull trout Salvelinus confluentus
SASR	COSEWIC assessment and status report on the Chinook Salmon Oncorhynchus tshawytscha designatable units in southern British Columbia (Part one - designatable units with no or low levels of artificial releases in the last 12 years in Canada
SASR	COSEWIC assessment and status report on the Chinook Salmon Oncorhynchus tshawytscha designatable units in southern British Columbia (Part two - designatable units with no or low levels of artificial releases in the last 12 years in Canada
SASR	COSEWIC assessment and status report on the Chinook Salmon Oncorhynchys tshawytscha Okanagan population in Canada
SASR	COSEWIC assessment and status report on the coastrange sculpin Cottus aleuticus Cultus Lake population in Canada
SASR	COSEWIC assessment and status report on the Coho Salmon Oncorhynchus kisutch Interior Fraser population in Canada
SASR	COSEWIC assessment and status report on the columbia sculpin Cottus hubbsi in Canada
SASR	COSEWIC assessment and status report on the darkblotched rockfish Sebastes crameri in Canada
SASR	COSEWIC assessment and status report on the dolly varden Salvelinus malma malma
SASR	COSEWIC assessment and status report on the eulachon, Nass/Skeena Rivers population, Central Pacific Coast population and the Fraser river population Thaleichthys pacificus in Canada
SASR	COSEWIC assessment and status report on the Eulachon Thaleichthys pacificus Nass/Skeena population in Canada
SASR	COSEWIC assessment and status report on the giant threespine sticklebac Gasterotesu aculeatus and the unarmoured threespine stickleback Gasterosteus aculeatus in Canada
SASR	COSEWIC assessment and status report on the lake and european whitefish (several populations) in Canada
SASR	COSEWIC assessment and status report on the Misty Lake sticklebacks (Gasterosteus sp.)(Misty lake lentic stickleback and Misty Lake lotic) stickleback
SASR	COSEWIC assessment and status report on the nooksack dace (Rhinichthys cataractae)
SASR	COSEWIC assessment and status report on the plains sucker Pantosteus jordani and the cordilleran sucker Pantonsteus bondi
SASR	COSEWIC assessment and status report on the quillback rockfish Sebastes maliger in Canada
SASR	COSEWIC assessment and status report on the rainbow trout (Oncorhynchus mykiss) Athabasca River populations in Canada
SASR	COSEWIC assessment and status report on the rougheye rockfish Sebastes sp. Type 1 Type 2 in Canada
SASR	COSEWIC assessment and status report on the salish sucker Catostomus sp. Cf. catostomus

SOURCE TYPE	INFORMATION SOURCE
SASR	COSEWIC assessment and status report on the sockeye salmon Oncorhynchus nerka in the Fraser River drainage basin, Canada
SASR	COSEWIC assessment and status report on the speckled dace Rhinichthys osculus
SASR	COSEWIC assessment and status report on the steelhead trout (Oncorhyncus mykiss) (Thompson River and Chilcotin River populations) in Canada
SASR	COSEWIC assessment and status report on the the bering cisco (Coregonous laurettae) in Canada
SASR	COSEWIC assessment and status report on the Threespine Stickleback specie bundle Gasterosteus aculeatus
SASR	COSEWIC assessment and status report on the umatilla dace Rhinichthys umatilla
SASR	COSEWIC assessment and status report on the vancouver lamprey Entosphenus macrostomus
SASR	COSEWIC assessment and status report on the western brook lamprey Lampetra richardsoni
SASR	COSEWIC assessment and status report on the westslope cutthroat trout Oncorhyncus clarkii lewisi
SASR	COSEWIC assessment and status report on the white sturgeon Acipenser transmontanus
SASR	COSEWIC assessment and status report on the yelloweye rockfish Sebastes ruberrimus Pacific ocean outside waters population Pacific Ocean inside waters population in Canada
SASR	COSEWIC assessment and status report on the yellowmouth rockfish Sebastes reedi in Canada
SASR	COSEWIC assessment and update status report on the green sturgeon Acipenser medirostris
SASR	COSEWIC assessment and update status report on the northern abalone Haliotis kamtschatkana in Canada
SASR	COSEWIC assessment on the shorthead sculpin Cottus confusus in Canada
SASR	Fraser River eulachon 2025: integrated fisheries management plan summary
SASR	Puntledge River summer chinook habitat status report
SASR	The Uncertain Future of Fraser River Sockeye Final Report - October 2012
SASR	COSEWIC assessment and status report on the sockeye salmon Oncorhynchus nerka 24 designatable units in the Fraser river drainage basin in Canada
SASR	COSEWIC assessment and status report on the sockeye salmon Oncorhynchus nerka Sakinaw population in Canada
SFMP	Dolly varden of the Gwich'in settlement area and Inuvialuit settlement region - Northwest Territoris and Yukon north slope
SFMP	Integrated fisheries management plan summary: Crab by trap - Pacific Region, April 1, 2025 to March 31, 2026
SFMP	Integrated fisheries management plan summary: Geoduck and horseclam - Pacific Region 2025/2026
SFMP	Integrated fisheries management plan summary: intertidal clams - March 1, 2023 to February 28, 2026
SFMP	Integrated fisheries management plan summary: Pacific oyster (Crassostrea gigas) - Pacific Region, 2025/2026
SFMP	Northern Pacific salmon integrated fisheries management plan summary July 1, 2025 to June 30, 2026
SFMP	Pacific region integrated fisheries management plan groundfish effective february 21, 2025
SFMP	Scallop Pacific Region 2024/2027 Integrated fisheries management plan
SFMP	Southern Pacific salmon integrated fisheries management plan summary July 1, 2025 to June 30, 2026
SFMP	Transboundary Pacific salmon integrated fisheries management plan summary
SFMP	Yukon River chinook, fall chum and coho salmon integrated fisheries management plan summary 2023
SFMP	Ecological restoration guidelines for British Columbia
WP	Bulkley Land and resource management plan
WP	Bulkley River and Morice River watershed groups fish passage restoration planning 2020
WP	Campbell River watershed action plan
WP	Columbia Basin management plan: strategic priorities
WP	Coquitlam River watershed plan
WP	Cowichan Basin water management plan
WP	Cowichan watershed board: An evolution of collaborative watershed governance
WP	Ecosystem restoration opportunities in the Skeena region

SOURCE TYPE	INFORMATION SOURCE
WP	Horsefly River watershed
WP	Implementation of the Chilliwack River watershed strategy
WP	Kootenai River Basin watershed restoration plan
WP	Kootenay Lake local conservation fund guidance document
WP	Lower mainland flood management strategy
WP	Nanaimo regional district drinking water & watershed protection program: 10 year action plan
WP	Nechako watershed strategic plan
WP	Peel watershed regional land use plan
WP	Sea-to-Sky land and resource management plan
WP	Shuswap watershed council strategic plan
WP	Skeena Region land use plans
WP	Squamish River watershed salmon recovery plan
WP	Yinka Dene 'Uza'hné surface water management policy
WP	Yukon River watershed plan



APPENDIX 2.2

Let's Talk Pacific Salmon engagement questions

Survey questions listed in the "Restoration Priorities Plan for Pacific Region Survey" from Phase 1 engagement, active from April 2023 to January 2024:

1. Are you responding on behalf of an organization or as an individual?
2. Do you self-identify as Indigenous?
3. What are your individual interests in Pacific salmon? Please select all that apply.

   a) Conservation and Stewardship
   b) Salmon Enhancement
   c) Indigenous fishing
   d) Commercial fishing
   e) Recreational fishing
   f) Industry or Business Activities
   g) Collaboration and Engagement to Address Pacific Salmon Declines
   h) Monitoring and Enforcement
   i) General Interest
   j) Other

4. What are the first 3 digits of your postal code/your ZIP code?
5. Are you responding on behalf of an Indigenous organization?
6. What is your organization type?
7. What are your organizations interests in Pacific Salmon?

   a) Conservation and Stewardship
   b) Salmon Enhancement
   c) Indigenous fishing
   d) Commercial fishing
   e) Recreational fishing
   f) Industry or Business Activities
   g) Collaboration and Engagement to Address Pacific Salmon Declines
   h) Monitoring and Enforcement
   i) General Interest
   j) Other

8. What are the first 3 digits of your organization's postal code/ZIP code?
9. Do you have information or documents, not listed in Appendix 3 that can be reviewed and shared in the regional plan?
10. Please share your comments on "Information sources" for the Restoration Priorities Plan.
11. Please upload documents using the "choose file" link below.
12. What do you think would be the most useful way to organize the data in the regional plan?
13. Which Indigenous-based boundary structure do you think would be most useful in terms of interpreting the information in the regional plan?

    a) Traditional Territories
    b) Indigenous language boundaries
    c) Regions represented by Tribal Councils and Indigenous Aggregates
    d) I do not know
    e) Other

14. Do you have any other comments on how the data, goals and priorities could be organized?

15. Please let us know your thoughts on how the data, goals and priorities could be organized.

16. What do you think are the greatest barriers to fish habitat restoration success in your area?

a) Climate change
b) Land access
c) Uncertainty about project outcomes
d) Lack of expertise
e) Lack of capacity to do the work
f) Lack of standardized monitoring or performance measures
g) Lack of existing information or baseline studies
h) Remoteness of location
i) Regulations
j) Risks to existing infrastructure
k) Lack of standards, guidelines or BMPs
l) Funding structure/limitations
m) Lack of funding
n) None
o) I do not know
p) I prefer not to answer
q) Other

17. Which fish habitat standard, guideline or best management practice should be a priority to develop?

18. Do you have any other comments about barriers to fish habitat restoration success in your area?

19. Please let us know your thoughts on barriers to fish habitat restoration success.

20. Please select the ecologically important species in your area. Check all that apply.*

a) Arctic grayling
b) Bivalve species (for example, mussels, clams, scallops)
c) Bull trout
d) Burbot
e) Chinook salmon
f) Chum salmon
g) Coho salmon
h) Dace species (for example, Nooksack dace, speckled dace)
i) Eulachon
j) Green Sturgeon
k) Kokanee
l) Pacific Herring
m) Pink salmon
n) Rainbow trout
o) Rockfish species
p) Sculpin species
q) Sockeye salmon
r) Steelhead trout
s) Stickleback species
t) Sucker species
u) Westslope cutthroat trout
v) White sturgeon
w) Whitefish
x) I do not know
y) Other (please specify all that apply)

21. Please select the culturally important species in your area. Check all that apply.

22. Please select the commercially important species in your area. Check all that apply.

23. Please select the recreationally important species in your area. Check all that apply.

24. What are the important areas (for example, watersheds, waterbodies) in your area?

25. What are the important ecosystem functions in your area?

26. Please select up to 5 habitat restoration needs in your area:

- **a)** Increase water quantity
- **b)** Improve water quality
- **c)** Reduce stream temperature
- **d)** Improve access to cold water refugia
- **e)** Improve instream habitat structure, complexity and cover
- **f)** Improve biological, hydrological or geomorphic processes
- **g)** Improve horizontal habitat connectivity
- **h)** Improve vertical habitat connectivity
- **i)** Improve instream fish passage
- **j)** Improve marine habitat connectivity
- **k)** Increase floodplain engagement along rivers, lakes or estuaries
- **l)** Improve or stabilize coastal or inland riparian areas
- **m)** Improve functional estuarine or salt marsh habitat
- **n)** Improve riparian areas
- **o)** None
- **p)** I do not know
- **q)** I prefer not to answer
- **r)** Other

27. Do you have additional comments, questions or feedback on habitat restoration needs in your area?

28. Please share your comments, questions or feedback on habitat restoration needs in your area.

29. Do you have experience prioritizing habitat restoration needs at a local or regional scale?

30. Please describe the process you followed (for example, decision framework) or provide a link to the resource(s) you used.

31. How would you prioritize habitat restoration needs in your area?

32. Do you have additional comments, questions or feedback on habitat restoration priorities in your area or the prioritization process?

33. Please provide your comments on habitat restoration priorities or the prioritization process.

34. Do you have anything else you would like to share about habitat restoration or the draft Restoration Priorities Plan for Pacific Region?

Survey questions listed in the "Phase 2 Survey: Habitat Restoration Goals and Objectives" from Phase 2, active from March 2024 to July 2024:

1. Are you responding on behalf of an organization or as an individual?
2. Do you self-identify as Indigenous?
3. What are your individual interests in Pacific salmon? Please select all that apply.

   a) Conservation and Stewardship
   b) Salmon Enhancement
   c) Indigenous fishing
   d) Commercial fishing
   e) Recreational fishing
   f) Industry or Business Activities
   g) Collaboration and Engagement to Address Pacific Salmon Declines
   h) Monitoring and Enforcement
   i) General Interest
   j) Other

4. What are the first 3 digits of your postal code/your ZIP code?
5. Are you responding on behalf of an Indigenous organization?
6. What is your organization type?
7. What are your organizations interests in Pacific Salmon?
8. What are the first 3 digits of your organization's postal code/ZIP code?
9. Would you like to respond to questions on content discussed in Version 1.0? If you reply yes, you will be directed to questions on information sources, geospatial organization, barriers to restoration success, and important species, areas, and ecosystem functions. If you reply no, you will skip ahead to questions on the draft goals and priorities. You may press the "Previous" button at any time to return to the beginning of the survey and review questions on Version 1.0.
10. Do you have information or documents, not listed in Appendix 3 that can be reviewed and shared in the regional plan?
11. Please share your comments on "Information sources" for the Restoration Priorities Plan.
12. Please upload documents using the "choose file" link below.
13. What do you think would be the most useful way to organize the data in the regional plan?
14. Which Indigenous-based level of organization could be added to help interpret the information in the Regional Plan? Please check all that apply.

    a) Traditional Territories
    b) Indigenous language boundaries
    c) Regions represented by Tribal Councils and Indigenous Aggregates
    d) I do not know
    e) Other

15. Do you have any other comments on how the data, goals, and priorities could be organized?
16. Please let us know your thoughts on how the data, goals, and priorities could be organized.

17. What do you think are the greatest barriers to fish habitat restoration success in your area? Please check all that apply.

a) Climate change
b) Land access
c) Uncertainty about project outcomes
d) Lack of expertise
e) Lack of capacity to do the work
f) Lack of standardized monitoring or performance measures
g) Lack of existing information or baseline studies
h) Remoteness of location
i) Regulations
j) Risks to existing infrastructure
k) Lack of standards, guidelines or BMPs
l) Funding structure/limitations
m) Lack of funding
n) None
o) I do not know
p) I prefer not to answer
q) Other

18. Which fish habitat standard, guideline or best management practice should be a priority to develop?

19. Do you have any other comments on barriers to fish habitat restoration success in Pacific Region?

20. Please let us know your thoughts on barriers to fish habitat restoration success.

21. Please select the ecologically important species in your area. Check all that apply.*

a) Arctic grayling
b) Bivalve species (for example, mussels, clams, scallops)
c) Bull trout
d) Burbot
e) Chinook salmon
f) Chum salmon
g) Coho salmon
h) Dace species (for example, Nooksack dace, Speckled dace)
i) Eulachon
j) Green Sturgeon
k) Kokanee
l) Pacific Herring
m) Pink salmon
n) Rainbow trout
o) Rockfish species
p) Sculpin species
q) Sockeye salmon
r) Steelhead trout
s) Stickleback species
t) Sucker species
u) Westslope cutthroat trout
v) White sturgeon
w) Whitefish
x) I do not know
y) Other (please specify all that apply)

22. Please select the culturally important species in your area. Check all that apply.

23. Please select the commercially important species in your area. Check all that apply.

24. Please select the recreationally important species in your area. Check all that apply.

25. What are the important areas (for example, watersheds, waterbodies) in your area?

26. What are the important ecosystem functions in your area?

27. Do you agree with draft Habitat Restoration Goal A: Increase the quantity, quality, and diversity of aquatic habitat?

28. Do you have comments on Draft Goal A?

29. Comments on Draft Goal A:

30. Draft objectives for Draft Goal A:

- **a)** Restore natural processes in watersheds and along marine shorelines (for example, process-based restoration: create space in the riverscape for flooding and channel migration, improve longshore drift and regain natural sediment transportation)
- **b)** Increase habitat diversity (for example, , large wood, bioengineered habitat)
- **c)** Improve the quantity and quality of fish habitat needed for spawning, rearing, feeding, refuge, overwintering, and migration.

Do you have comments on the draft objectives?

31. Comments on Draft Goal A objectives. What other objectives would you include for Draft Goal A?

32. Do you agree with draft Habitat Restoration Goal B: Improve habitat connectivity (i.e., lateral, vertical and horizontal water flow)?

33. Do you have comments on Draft Goal B?

34. Comments on Draft Goal B.

35. Draft objectives for Draft Goal B:

- **a)** Reconnect or reconstruct instream, shoreline, off-channel, floodplain, and wetland habitat
- **b)** Promote groundwater recharging.

Do you have comments on the draft objectives?

36. Comments on Draft Goal B objectives. What other objectives would you include for Draft Goal B?

37. Do you agree with draft Habitat Restoration Goal C: Improve Fish Passage?

38. Do you have comments on Draft Goal C?

39. Comments on Draft Goal C.

40. Draft objectives for Draft Goal C:

- **a)** Remove barriers to migrating fish such as coastal floodgates, jetties, weirs/dams, and undersized culverts.

Do you have comments on the draft objective?

41. Comments on Draft Goal C objectives. What other objectives would you include for Draft Goal C?

42. Do you agree with draft Habitat Restoration Goal D: Improve water quality?

43. Do you have any comments on Draft Goal D?

44. Comments on Draft Goal D.

45. Draft objectives for Draft Goal D:

- **a)** Maintain and/or improve stream temperature using shading methods (for example, , overhanging vegetation, large wood)
- **b)** Protect or improve access to groundwater sources and cold water refugia
- **c)** Increase riparian vegetation cover (i.e., improve filtration to reduce point source pollution, decrease anthropogenic sources of sedimentation)

Do you have any comments on the draft objectives?

46. Comments on Draft Goal D objectives. What other objectives would you include for Draft Goal D?

47. Do you agree with draft Habitat Restoration Goal E: Improve water quantity for fish?

48. Do you have comments on Draft Goal E?

49. Comments on Draft Goal E.

50. Draft objectives for Draft Goal E:

a) Increase channel complexity and reduce channelization to slow flow
b) Develop or expand storage opportunities (for example, , promote groundwater recharging)
c) Contribute to improving water depth and fish passage conditions

Do you have any comments on the draft objectives?

51. Comments on Draft Goal E objectives. What other objectives would you include for Draft Goal E?

52. Do you agree with draft Habitat Restoration Goal F: Re-establish regenerative slope stability?

53. Do you have comments on Draft Goal F?

54. Comments on Draft Goal F.

55. Draft objectives for Draft Goal F:

a) Plant and seed native trees and shrubs to stabilize slopes at higher elevations in the watershed
b) Reduce slope length using bioengineering techniques to encourage vegetation growth
c) Revegetate riparian areas with native trees and shrubs

Do you have any comments on the draft objectives?

56. Comments on Draft Goal F objectives. What other objectives would you include for Draft Goal F?

57. Do you have experience prioritizing habitat restoration goals at a local or regional scale?

58. Please describe the process or method used (for example, , decision framework) or provide a link to the resource(s) you used.

59. Which major watershed do you live or work in?

60. How would you prioritize (for example, , rank) the draft habitat restoration goals for your watershed?

61. Do you have anything else you would like to share about habitat restoration planning in British Columbia and Yukon?

* The species list provided as options for participants is the same for Questions 21 to 23 for the Phase 1 and 2 surveys.

APPENDIX 2.3

Species Identified During Engagement

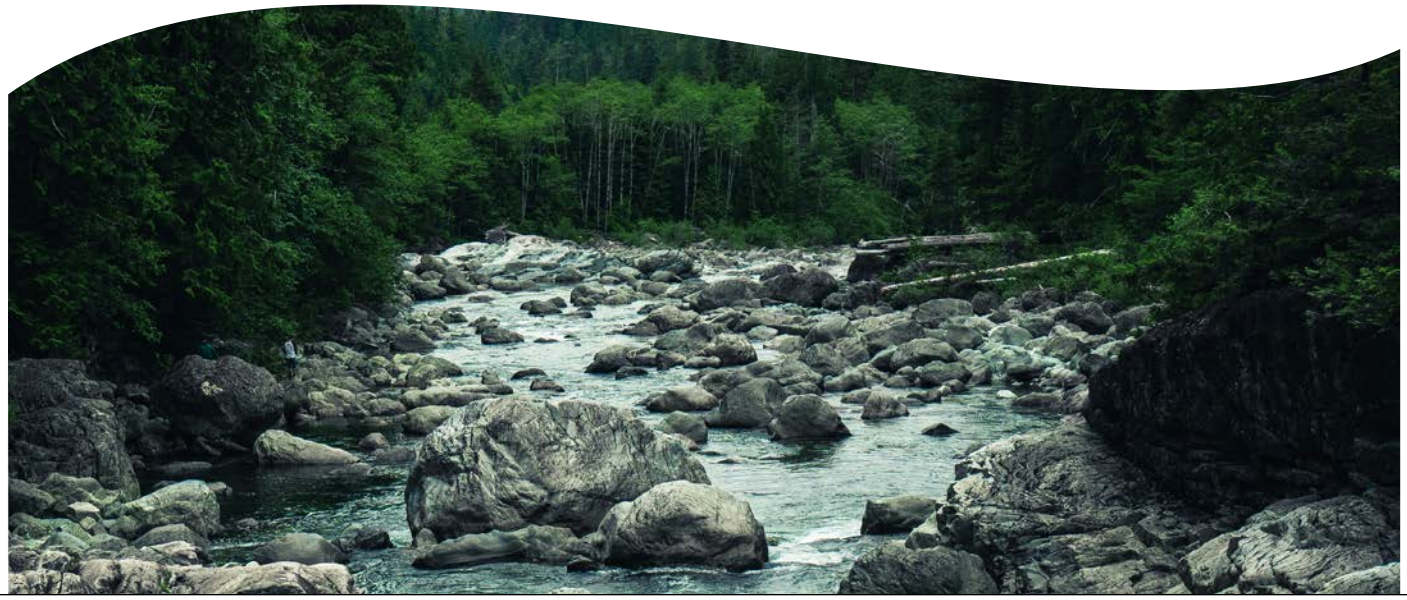
Species and groups of species identified by the restoration community during engagement of the restoration priorities plan.

COMMON NAME	SCIENTIFIC NAME
Abalone	*various*
Arctic grayling	*Thymallus arcticus*
Bull trout	*Salvelinus confluentus*
Burbot	*Lota lota*
Butter clams	*Saxidomus gigantea*
Chinook salmon	*Oncorhynchus tshawytscha*
Chum salmon	*Oncorhynchus keta*
Coastal cutthroat trout	*Oncorhynchus clarkii clarkii*
Cockles	*Clinocardium nuttallii*
Coho salmon	*Oncorhynchus kisutch*
Cordilleran sucker†	*Pantosteus bondi*
Dungeness crab	*Metacarcinus magister*
Eulachon	*Thaleichthys pacificus*
Geoduck	*Panopea Generosa*
Green sturgeon	*Acipenser medirostris*
Horse clams	*Tresus spp.*
Kokanee	*Oncorhynchus nerka*
Lingcod	*Ophiodon elongatus*
Little necks	*Leukoma staminea*
Longnose dace*	*Rhinichthys cataractae*
Mussels	*various*
Nooksack dace	*Rhinichthys cataractae*
Northern Anchovy	*Engraulis mordax*
Northern Pike (Jackfish)	*Esox lucius*
Oysters	*various*
Pacific halibut	*Hippoglossus stenolepis*
Pacific herring	*Clupea pallasii*
Pacific Sand Lance	*Ammodytes personatus*
Pink salmon	*Oncorhynchus gorbuscha*
Rainbow trout	*Oncorhynchus mykiss*
Red rock crab	*Cancer productus*
Rockfish	*various*
Salish sucker	*Catostomus sp. cf. catostomus*

COMMON NAME	SCIENTIFIC NAME
Scallops	*various*
Sculpin species	*various*
Sockeye salmon	*Oncorhynchus nerka*
Speckled dace	*Rhinichthys osculus*
Steelhead trout	*Oncorhynchus mykiss*
Surf Smelt	*Hypomesus pretiosus*
Threespine stickleback	*Gasterosteus aculeatus*
Vancouver lamprey	*Entosphenus macrostomus*
Western Brook lamprey	*Lampetra richardsoni*
Westslope cutthroat trout	*Oncorhynchus clarkii lewisi*
Whitefish	*various*
White sturgeon	*Acipenser transmontanus*

* Common dace were identified as important during engagement but were removed from the list of important species since common dace are not present in Pacific Region.

† Mountain sucker were identified as important during engagement however mountain sucker populations in British Columbia are now recognized as a separate species called Cordilleran sucker.



APPENDIX 2.4

Important areas

Important geographic areas identified by Let's Talk Pacific Salmon survey participants during engagement from April 2023 to March 2025. Responses have been categorized by watershed or major basin. This table includes responses from all forms of participant engagement. It is not an exhaustive list of all important areas, watersheds, rivers or streams within Pacific Region.

WATERSHED OR BASIN NAME[1,2]	ENGAGEMENT PARTICIPANT RESPONSE
Alberni Inlet	Alberni Inlet
Alberni Inlet	Barkley Sound
Alberni Inlet	Klanawa River
Alberni Inlet	Klanawa Valley
Alberni Inlet	Pachena Bay
Alberni Inlet	Somass Watershed
Alsek	Alsek River
Alsek	Kathleen Lake
Campbell River	Campbell River
Campbell River	Quinsam Lake
Campbell River	Quinsam River
Clayoquot	Clayoquot Sound
Clayoquot	Kennedy Lake
Clayoquot	Strathcona Park
Columbia River	Columbia River
Columbia River	Columbia Valley
Columbia River	Columbia Watershed
Columbia River	Okanagan Lake
Columbia River	Okanagan Valley
Comox	Black Creek
Comox	Brooklyn Creek
Comox	Brown River
Comox	Comox Lake
Comox	Comox Watershed
Comox	Courtenay Estuary
Comox	Courtenay River
Comox	Cruickshank River
Comox	K'omoks Estuary
Comox	Little River
Comox	Millard Creek
Comox	Morrison Creek
Comox	Oyster River
Comox	Piercy Creek

WATERSHED OR BASIN NAME[1,2]	ENGAGEMENT PARTICIPANT RESPONSE
Comox	Portuguese Creek
Comox	Puntledge River
Comox	Roy Creek
Comox	Southwest Cortes Island
Comox	Trent River
Comox	Tsolum River
Cowichan	Chemainus River
Cowichan	Copper Canyon
Cowichan	Cowichan Estuary
Cowichan	Cowichan Lake
Cowichan	Cowichan River
Cowichan	Koksilah River
Cowichan	Koksilah Watershed
Cowichan	S'amunu Watershed
Fraser	West Road River/Blackwater River
Fraser River	Alouette River
Fraser River	Bertrand Creek
Fraser River	Boundary Bay
Fraser River	Bowron River
Fraser River	Cheslatta River
Fraser River	Chilcotin River
Fraser River	Chilliwack River
Fraser River	Coldwater River
Fraser River	Cottonwood River
Fraser River	Fraser Plateau of the Cariboo-Chilcotin
Fraser River	Fraser River
Fraser River	Fraser River Estuary
Fraser River	Fraser River Watershed
Fraser River	Harrison Lake
Fraser River	Harrison River
Fraser River	Kanaka Creek
Fraser River	Little Campbell River
Fraser River	Miami River
Fraser River	Morkill River
Fraser River	Nazko River
Fraser River	Nechako River
Fraser River	Nicola River
Fraser River	Nicomekl River
Fraser River	Ootsa River
Fraser River	Quesnel River
Fraser River	Serpentine River

WATERSHED OR BASIN NAME[12]	ENGAGEMENT PARTICIPANT RESPONSE
Fraser River	Shuswap Lake
Fraser River	Shuswap Watershed
Fraser River	Silverdale Creek
Fraser River	Spius River
Fraser River	Stuart River
Fraser River	Takla Lake
Fraser River	Thompson River
Fraser River	**Sx̱ótsaqel** (Chilliwack Lake)
Fraser River	Upper Pitt River
Fraser River	Vedder River
Gold River	Nootka Sound
Headwaters Yukon	McIntyre Creek
Kalum River	Kitsumkalum Watershed
Lakelse	Lakelse Watershed
Nass River	Nass Estuary
Nass River	Nass River
Owienko Lake	Chuckwalla/Kildala Watershed
Owienko Lake	Owikeno Lake Watershed
Parksville	Beaufort watershed
Parksville	Nile Creek
Parksville	Qualicum River
Parksville	Rosewell Creek
Parksville	Tsable River
Peace River	Parsnip River
Salmon River-Vancouver Island	Salmon River Watershed
San Juan River	Charters Creek
San Juan River	Gordon River
San Juan River	Juan De Fuca Strait
San Juan River	Loss Creek
San Juan River	Nitinat Watershed
San Juan River	San Juan River
San Juan River	Sooke Harbour
San Juan River	Sooke River
San Juan River	Sooke Watershed
Skagit River	Skagit River
Skeena River	Skeena Estuary
Skeena River	Skeena River
Skeena River	Skeena Watershed
Squamish	Burrard Inlet
Squamish	Howe Sound
Squamish	Indian Arm

WATERSHED OR BASIN NAME[1,2]	ENGAGEMENT PARTICIPANT RESPONSE
Squamish	Mossom Creek
Squamish	Noons Creek
Squamish	North Schoolhouse Creek
Squamish	Squamish River Watershed
Squamish	SuterBrook Creek
Tahsis	Kyuquot Sound
Taku River	Taku River
Toba inlet	Okeover Inlet
Toba Inlet	Theodosia River
Toba Inlet	Unwin Creek
Toba Inlet	Unwin Lake
Toba Inlet, Comox, Jervis Inlet, Squamish, Lower Fraser, Victoria, Cowichan, Parksville, San Juan River	Salish Sea and associated watersheds
Toba Inlet, Jervis Inlet	Tla'amin (Powell River)
Upper Yukon	Kluane Lake
Victoria	Bilston Creek
Victoria	Bowker Creek
Victoria	Chalet Creek
Victoria	Chatham Sound
Victoria	Colquitz River
Victoria	Craigflower Creek
Victoria	Esquimalt Harbour
Victoria	Goldstream Estuary
Victoria	Goldstream River
Victoria	Graham Creek
Victoria	Gulf Islands
Victoria	Hagan Creek
Victoria	Haro Strait
Victoria	James Island
Victoria	Millstream Creek
Victoria	Reay Creek
Victoria	Saanich Inlet
Victoria	Shawnigan Lake
Victoria	Shawnigan Creek
Victoria	Shawnigan Watershed
Victoria	Shoal Harbour
Victoria	Sidney Channel
Victoria	Sidney Island Beaches
Victoria	Sidney Spit
Victoria	Ten Ten Creek
Victoria	Tetayut Creek

WATERSHED OR BASIN NAME[1,2]	ENGAGEMENT PARTICIPANT RESPONSE
Victoria	Tod Creek
Victoria	Tsehum Harbour
Victoria	Tseycum Creek
Victoria	Tyron Beach
Victoria	Victoria Harbour
Yukon River	Yukon River

1 Government of BC 2024. Freshwater Atlas. Available from https://www2.gov.bc.ca/gov/content/data/geographic-data-services/topographic-data/freshwater#about [accessed January 13, 2025].

2 Government of Yukon 2021. Watersheds - 1M. Available from https://open.yukon.ca/data/watersheds-1m [accessed November 5, 2025].

APPENDIX 3

MEASURES

THAT SUPPORT HABITAT RESTORATION SUCCESS

Throughout engagement the restoration community identified measures to improve aquatic ecosystems and fish populations. These measures were categized into three categories: habitat protection, monitoring, and funding measures.

Suggested habitat protection measures

- Increase the area of protected habitat[1]
- Increase financial and regulatory support for First Nations-led watershed-level habitat protection initiatives (for example, Salmon Parks, Great Bear Sea Project Finance for Permanence)
- Increase floodplain and wetland protection, particularly where land-use changes or development may be high
- Increase protection and improve management of upslope landscapes and riparian buffers
- Protect current and future water supply and demand[2]
- Increase the number of aquatic systems with environmental flow needs assessments and allocate water as a percentage of water available after environmental needs have been met
- Support Canada's 2030 Nature Strategy Target 3 to ensure and enable 30% of terrestrial and inland water and of coastal and marine areas are effectively conserved by 2030, which promotes biodiversity and supports important species, areas, and ecosystem processes identified in this plan[3]
- Focus on locating and protecting groundwater-fed streams
- Strengthen stream-crossing guidelines and support for clear-span bridges (for example, the updated ***Code of Practice for Culvert Maintenance*** no longer includes culvert replacement)
- Continue to identify, measure, and incorporate water flow needs for aquatic ecosystems into regulatory decision-making
- Mandate efficiencies for large-scale water use
- Update regional timing windows to reflect shifting habitat use and protect key habitat during sensitive life history stages (for example, Pacific herring and salmon spawning)

Suggested monitoring measures

- Increase standardized baseline and post-restoration fish and fish habitat monitoring for restoration projects over a timescale appropriate to detect the effects of the restoration work.
    - Consider measures of ecosystem processes, fish and habitat abundance productivity, diversity, and spatial distribution[4]
- Incentivize monitoring previously implemented restoration projects and promote learning opportunities (such as lessons learned from successful and failed restoration work)
- Measure and analyze habitat and fish metrics that capture process change and progress towards measurable proximate objectives (for example, temperature reduction, improving habitat structure, water quality or increasing the depths of rearing pools), in addition to ultimate objectives such as smolt biomass, incubation success rates, standard counts and linear and aerial measurements (for example, the number of fish, number of plants planted, square metres planted, linear metres of accessible habitat)
- Develop standardized protocols (for example, snorkel surveys, photo-monitoring, installing multi-parametre water quality metres, remote sensing technology) to assess the effects of restoration actions (such as fish population response, instream or riparian habitat function; see Funding objectives) and compare across projects and watersheds
- Lower the barriers to conducting standardized restoration monitoring by providing support for study design and interpretation, low-cost restoration approaches, and technical guidance
- Promote the sharing of standardized monitoring data to improve restoration actions (for example, formal comparisons of approaches within/across watersheds) and to support practitioners without the resources to conduct comprehensive effectiveness monitoring (for example, share fish abundance data that may otherwise require several sampling years to acquire)

Suggested funding measures

- Increase long-term, stable funding for habitat restoration (for example, create new funds that support restoration for terms beyond three to five years to include all restoration stages from initial planning to effectiveness monitoring after a project is complete)
- Implement a non-competitive, flexible funding initiative specific to First Nations that enables:
    - Self-determination and trust
    - Cross-territorial knowledge- and capacity-sharing
    - Long-term staffing, building of capital assets and knowledge retention
- Fund long-term (10+ years) habitat effectiveness monitoring programs following habitat restoration project completion to adequately assess project success (or failure) and contribute to learning opportunities for all practitioners
- Streamline funding applications and standardize reporting requirements to improve project implementation and data sharing
- Increase funding for innovative approaches and experimental design
- Continue to update and routinely share information on new and existing restoration funding resources, application requirements and due dates

Suggested collaboration and coordination measures

- Organize pre- and post-season knowledge-sharing meetings with First Nations and all other levels of government along key Pacific salmon migratory routes to share goals, needs, and lessons learned (supporting UNDA Action Plan Measures 37, 40 and 41; **Appendix 1**).
- Increase support for conferences, workshops and other events where community members and professionals can interact and share information and experiences (for example, the Yukon River Panel Educational Exchange, and the Pacific Salmon Foundation Salmon Recovery Conference.
- Increase community awareness of key environmental issues impacting local watersheds and local habitat restoration projects.
- Connect local young professionals and First Nations with environmental professionals, organizations, or events (such as mentorship programs, conferences, workshops, annual meetings and others)
- Develop and organize volunteer habitat restoration events that incorporate on-site and hands-on learning, and environmental and cultural education components in partnership with local First Nations and community groups.
    - Ensure that First Nations are represented as leaders or co-leaders.
    - Incorporate First Nations storytelling in conjunction with Western knowledge systems to align with UNDRIP Article 31, which cites "the rights of Indigenous Peoples to maintain, control, protect, and develop their cultural heritage, traditional knowledge, and traditional cultural expressions, as well as the manifestations of their sciences, technologies, and cultures"
- Develop a mentorship program for young professionals interested in pursuing environmental education that connects them with local ENGOs, professionals, First Nations elders, and community stewards
- Develop and enact a communication plan with various pathways to educate and alert communities of local restoration initiatives and opportunities.

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1 Roni, P., and Beechie, T. 2013. Stream and watershed restoration: A guide to restoring riverine processes and habitats. Wiley-Blackwell, Seattle, WA.

2 BC Ministry of Water, Land and Resource Stewardship. 2023. Watershed security strategy and fund intentions paper. p. 26.

3 Environment and Climate Change Canada 2024. Canada's 2030 Nature Strategy: Halting and reversing biodiversity loss in Canada. Available from https://www.canada.ca/en/environment-climate-change/services/biodiversity/canada-2030-nature-strategy.html#toc15 [accessed August 28, 2025].

4 Bilby, R.E., Currens, K.P., Fresh, K.L., Booth, D.B., Fuerstenberg, R.R., and Lucchetti, G.L. 2024. Why aren't salmon responding to habitat restoration in the Pacific Northwest? Fisheries 49(1): 16-27. doi:10.1002/fsh.10991.