



*Nuknuwi chi t'íicham ku chuush-pa*

**Yakama Nation Fisheries Program  
Southern Territories Habitat Strategy**



**Honor. Protect. Restore.**



## Acknowledgement and Intent of the Southern Territories Habitat Strategy

At the time of writing, sacred cultural resources of the Yakama Nation such as salmon are under threat as perhaps never before since human beings made their first pact with the salmon *nusux*. Unprecedented changes are occurring to the home lands and waters which the Yakama Nation have called home since Time Immemorial, and for which its people are caretakers. This document is intended to communicate the strategy direction for the Southern Territories Habitat Program. This strategy is adaptive, yet is anchored in both best available western science and traditional knowledge. We wish to acknowledge the cumulative history of the Yakama people and their forebears on this land and on these waters, and all that they have contributed to the legacy of land stewardship and sustainable lifeways. In the work we do, we strive to **honor** the ancestors who came before and the accrued wisdom which has been handed down to us, forming a living legacy; we seek to **protect** the living culture which maintains that immutable connection to the land and insists we continue to protect the sacred resources; and we endeavor to **restore** the function and integrity of this landscape, its rivers and its ecology. While there are many factors outside of these subbasins and beyond our scope which affect natural and cultural resources such as salmon populations —from human population growth to changes in ocean conditions, to the health of the Columbia River estuary—we are focused here on Columbia River tributaries, their confluences, and actions in the mainstem Middle Columbia River that flow through, connect and give life to the Southern Territories.



***“Salmon are one of the most important of our First Foods. The First Foods nourish us, and we must protect them and the habitats that support them. Since the time of our Treaty, there have been many changes—a proliferation of roads and a loss of our floodplain and riparian habitats, the constriction of irrigation facilities, the installation of flood control dikes that prevent rivers from rejuvenating their floodplains, just to name a few— that have put pressure on our natural resources.”***

—Yakama Nation Climate Adaptation Plan



Figure 1. Map of the Southern Territories of the Yakama Nation.

# Introduction



Yakama women picking huckleberries, c. 1955; J.W. Thompson photo. Courtesy Maryhill Museum of Art.

Since time immemorial, the people of the Confederated Tribes and Bands of the Yakama Nation have lived on the lands now encompassing eastern and central Washington, and cared for the natural resources we share. The work the Tribe carries out is guided by principals and teachings handed down through the generations, through living traditions and spiritual practices. Yakama traditional knowledge and cultural ways reflect the natural cycles of the Earth and reaffirm wisdom learned from long-past elders. The place-based lifeways are embedded in a spiritual belief that the land was entrusted by the Creator to the living

and as a heritage to be held and protected for generations into the future. Since time immemorial, the Columbia River Basin has given its salmon and other sacred foods to sustain the Yakama people; the Yakama have honored and protected them in turn. The Tribe reserved the rights to fish, hunt and gather in a treaty with the Federal Government in 1855, understanding that these rights were bound to duties to sustain these resources in perpetuity.

## Deep Roots in the Land

For millennia, the Yakama people followed a pattern of seasonal subsistence. Yakama People used the entire land base, from the lowlands around the Columbia River to the snow-peaked Cascade Mountains. The coldest months were spent in winter villages generally located on the valley floor: a place with a relatively moderate climate, a reliable source of wood and water, and protection from cold winds. Villages were located on or near waterways, in places where a variety of resources could be obtained, including game animals, fish, and riparian and desert plants. In the springtime, as soon as the first edible greens appeared above the ground, tribal people began moving across the countryside in search of fresh food resources. People followed the melting snows upland and collected edible plant foods as they matured. Some would go to the rivers to fish. Others would remain in the mountains, following the maturing plants upslope, until the huckleberry *wiwnu* harvest in the fall. At that time, foods would either be stored or transported back to the winter villages from both the mountains and the rivers, and people would settle in, once more living on stored foods and occasional fresh meat until the following spring. The land was managed through thoughtful and deliberate harvest, thinning, replanting, and burning.

Today, the reservation lands of the Yakama Nation, created in the Treaty of 1855 negotiated by leaders of fourteen tribes and bands from central and south-central now-Washington State with the Federal Government, are located within the Yakima and Klickitat River basins. The territories of the Yakama Nation—which consist of lands ceded by the Yakama Nation and all of the usual and accustomed areas where tribal members fish, hunt, and gather foods and medicines—extend beyond the reservation boundaries. *Nch'i-Wana*, the Big River (Columbia River), connects these homelands. Upriver, to the north, are the Methow, Entiat, and Wenatchee basins which drain the east slopes of the northern Cascade Mountains; lower portions of Crab Creek and the Snake River extend to the east. The territories continue downstream to the eastern tributaries of Alder Creek, Glade Creek, Pine Creek and Rock Creek, continuing to the Klickitat, the White Salmon, the Little White Salmon, and the Wind rivers (see Figure 1, p.3).

# Introduction...

## Habitat Enhancement: A Territorial Vision

This strategy document addresses the Yakama Nation’s southern territories, which comprise basins of the Columbia River’s north-bank tributaries, from Glade Creek in the east to the Wind River in the west. The Treaty of 1855 reserves tribal fishing, hunting and gathering rights in basins on and bordering the Yakama Reservation, and subsequent court rulings have established the Yakama Nation as a co-manager with the state of Washington of fisheries in these basins. Salmon continue to be central to Yakamas’ spirituality, culture and economic life. The Yakama Nation Fisheries Program and Yakima-Klickitat Fisheries Project work throughout the reservation, usual-and-accustomed and ceded areas, managing harvest, habitat, and hatcheries, and conducting research, monitoring and evaluation around salmon *nusux*, steelhead *shushaynsh*, sturgeon *wilaps* and other fish of tribal and ecological importance. The long-term and landscape-scale view of resource management held by Yakama people—that everything is connected— is reflected in the approach to protecting and restoring healthy and resilient habitats.

The Southern Territories habitat strategy is guided by a holistic vision of natural resource stewardship rooted in the belief that everything is connected. The concept of a watershed, encompasses this wholeness, from the headwaters to their confluences, including all natural species and processes. The Yakamas view natural resources as all being interdependent and interwoven, tied in with *Washat* Longhouse beliefs. First, water *chuush* is honored and protected, since it sustains all other life on Earth. Next, the salmon *nusux* and all aquatic species are honored, then the deer and all terrestrial and avian wildlife, then the



Beadwork: Stella Washines

roots and all plant life, with the berries being an integral part of Yakama ceremony and culture—none may be left out. All life has a purpose. Restoration projects afford the opportunity to protect and enhance water (flows and aquatic habitat) and culturally significant plants *q'nit* such as the wild rose, chokecherry, Ponderosa pine, etc. for the benefit of Yakama tribal members, but also for all other organisms that use that habitat.

In practice, the habitat strategy is rooted in an established, adaptive approach to watershed protection and restoration developed and refined in the Klickitat and Rock Creek basins. Project work emphasizes habitat enhancement that benefits native salmonid stocks, focusing on restoring stream processes by removing and mitigating disturbances to watershed function, improving habitat conditions, and protecting and improving water quality. Watershed and habitat improvements benefit threatened salmon, steelhead and resident fish species, and enhance habitat for many terrestrial and amphibian wildlife species. Protection activities complement restoration by securing refugia and reducing habitat degradation. Since a significant portion of the tributary watersheds is in private ownership, cooperation with federal, state, local and private entities increases the overall effectiveness of activities. The Southern Territories Habitat Project’s project selection and implementation strategy addresses goals and objectives identified in various subbasin and salmon recovery plans, strategies, and more localized analyses, prioritization and planning efforts (see References, p. 19).

Watershed enhancement projects are also selected and developed to align with guidance from Columbia River Intertribal Fish Commission’s *Wykanush-mi Wakishwit* (Spirit of the Salmon) planning documents, as well as *Protecting and Restoring Watersheds—a Tribal Approach to Salmon Recovery*, the *YN Climate Action Plan* and other tribal and intertribal directives.



A before-and-after view of a section of the Klickitat Haul Rd. restoration project.

**Habitat actions across the Southern Territories can be organized by these broad focal strategies:**

### **Restoration and Enhancement**

- Restore stream processes by removing or mitigating disturbances to watershed function, improving habitat conditions, and improving and protecting water quality
- Reduce impacts caused by roads, railroad prisms and infrastructure on floodplain
- Improve fish passage and floodplain connectivity
- Increase headwater storage capacity through process-based restoration such as beaver introduction or beaver-analog construction, addressing incision and compaction, excluding livestock, and revegetation
- Investigate and pursue opportunities for improving and restoring habitats on Columbia River mainstem and tributary confluences, such as restoring delta habitats, improving instream conditions, riparian vegetation
- Assess current and projected future water resources and pursue instream flow, municipal and irrigation efficiency improvements
- Address upland landscape integrity related to watershed processes: pursue, encourage Best Management Practices (BMPs) for forest health; reduce upland habitat fragmentation, conversion; work to maintain migration corridors; reduce grazing impacts

### **Coordinated Land Acquisition and Land-Use Management, Watershed Coordination, and Planning**

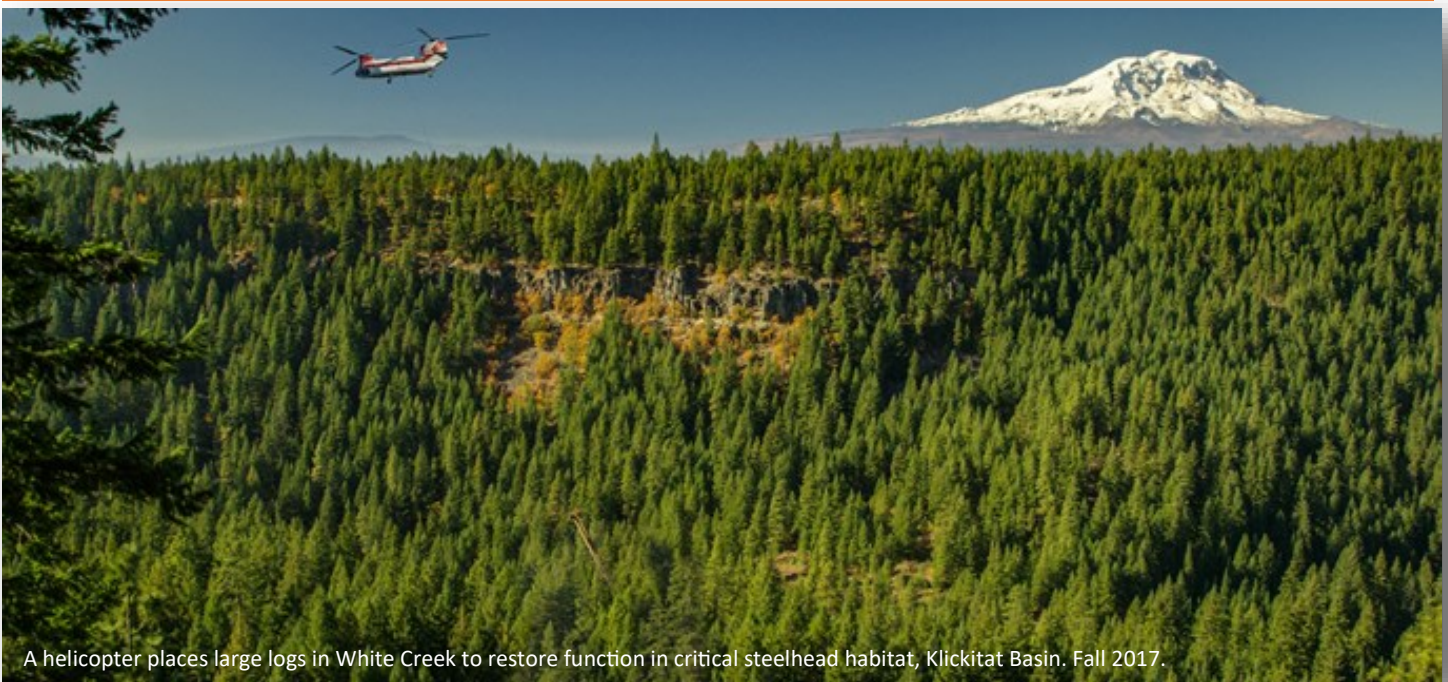
- Coordinate with partner agencies and Non-Governmental Organizations (NGO) to pursue land and water acquisitions or conservation easements to achieve habitat conservation objectives and protect ecosystem function
- Insist on recognition of tribal sovereignty through consultation, inclusion of Tribal Treaty rights, traditional knowledge and best available science that supports treaty resources in local and regional planning processes
- Engage with local governments, agencies to communicate, advocate for habitat protection objectives and priorities
- Increase attention on Shoreline Master Program (SMP) and Critical Areas Ordinance (CAO) implementation, review and guideline development
- Engage with local and regional governmental organizations on coordinated priorities and objectives around habitat protection and restoration
- Increase monitoring, consistency and accountability of existing enforcement and regulatory mechanisms that affect watershed resources
- Encourage smart growth that protects ecosystem health through involvement in general land use planning, WRIA, CAO, SMP, etc. update processes that account for cumulative impacts

### Coordinated Land Acquisition and Land-Use Management, Watershed Coordination, and Planning, continued...

- Develop a permit tracking and accountability system to cover programs such as Hydraulic Project Approval (HPA), Shoreline Management Act (SMA), *U.S. Army Corps of Engineers (USACE) Nationwide Permits and stormwater discharge permits* for the southern territories
- Seek revision of habitat standards for the *Growth Management Act (GMA, in planning basins), SMA and other resource protections from one of No Net Loss (NNL) to Net Gain (NG)*, understanding that status quo conditions do not support recovery objectives and treaty rights [or account for climate change impacts, population growth, etc.]
- Advocate that state and federal policies include climate change impacts, such as the *SMA, GMA Comprehensive Plans, and* management plans for Columbia River Gorge National Scenic Area, Wild and Scenic Rivers and USACE
- Track and prevent introduction and spread of terrestrial and aquatic invasive species by engaging with cooperative weed management areas, building capacity for early detection/rapid response and developing/communicating BMPs

*“Management of floodplain and riparian habitats throughout the territories of the Yakama Nation will protect and enhance a diversity of environmental conditions, maintain sustainable use of these resources, and thereby maintain these resources as a dependable source of spiritual renewal, food and medicinal plants, revenue, and employment for the Yakama people.”*

*-Yakama Nation Climate Action Plan*



A helicopter places large logs in White Creek to restore function in critical steelhead habitat, Klickitat Basin. Fall 2017.

### Education, Outreach and Collaboration

- Develop unified, regional messaging and communication strategy with partners and through multi-stakeholder efforts such as *SHARE the White Salmon River*
- Expand programs such as *Salmon in the Classroom*, Watershed Education field days, tours of YNF facilities and restoration sites, Outdoor School, Water Jam, etc. to encompass other Southern Territories watersheds

### Education, Outreach and Collaboration, continued...

- Continue to engage with federal regional leadership from the National Oceanic and Atmospheric Administration (NOAA), U.S. Environmental Protection Agency (EPA), USFWS, USACE, and Natural Resources Conservation Service (NRCS), State agencies, local conservation districts, and land trusts as well as multi-agency regional bodies (e.g. Columbia River Gorge Commission, Columbia Gorge Cooperative Weed Management Area, East Cascades Oak Partnership) to advance landscape-scale habitat protection and protection of treaty resources
- Collaborate with partners to educate the local community about YN priorities and treaty rights, threats to fish, wildlife and their habitats, and best management practices for good stewardship of common resources through media, at public events, workshops and conferences, community science projects, etc.
- Help partners (NGOs and agencies) develop incentives for water-wise and salmon-safe building, agriculture, landscaping, recreation, etc.



YN Staff guides an electrofishing sampling activity near Camp Chaparral in the Klickitat Basin. August 2019. Photo: YN



The Klickitat River basin in south-central Washington state is the ancestral home of the *xwałxway-pam* Indians (people of the Steller’s jay), now known as the Klickitats, one of the 14 tribes and bands that comprise today’s Yakama Nation. One segment of the river is federally designated as “Wild and Scenic”.

### **Subbasin Characteristics**

The subbasin covers an area of 1,350 sq. mi. One of the longest undammed rivers in the Pacific Northwest, the Klickitat River begins in the Cascade Mountains near 5,000’ elevation and flows south over 95 mi. to join the Columbia River at Lyle, Washington (river mile [RM] 180.4), 34 mi. upstream of Bonneville Dam (elev. 74’). Its network of rivers and streams cuts through a several thousand-foot-thick basalt plateau from the east on the Yakama Reservation, carving steep-walled canyons and creating several cascades and waterfalls, including Lyle Falls (RM 2.2) and Castile Falls (RM 64). Forested lands cover three-quarters of the watershed, with the Yakama Nation as the primary landowner; the remaining forests are state- and privately owned. The rest of the subbasin is used primarily for pasture, orchards, dry-land farming and livestock grazing. Along with several other tributaries in the middle-Columbia, the Klickitat provides a coldwater refuge to fish migrating past the basin.

### **Fish Use**

The Klickitat River subbasin supports two species of Pacific salmon, Chinook *nusux* (*Oncorhynchus tshawytscha*, spring and fall runs) and Coho *sinux* (*O. kisutch*, primarily late-run), as well as Steelhead *shúshaynsh* (*O. mykiss*, summer and winter runs). Spring Chinook, summer and winter Steelhead existed historically in the watershed. Steelhead are part of the Endangered Species Act (ESA)-listed “threatened” Middle Columbia Steelhead Distinct Population Segment (DPS). Columbia River Bull Trout *ashchinsh* (*Salvelinus confluentus*), found in some headwater tributaries, are listed as “threatened” under the ESA. Pacific lamprey *k’súyas* or *asúm* (*Entosphenus tridentatus*) is another anadromous species of cultural and ecological importance in the subbasin.

### **Current and Ongoing Work**

Habitat enhancement work in the basin has focused on restoring stream processes by removing and mitigating disturbances to watershed function, improving habitat conditions, and protecting and improving water quality.

### **Limiting Factors and Threats**

- Floodplain infrastructure (roads, railroad prism) resulting in disconnectedness and loss of function
- Habitat simplification and loss (Bonneville Pool inundation)
- Fine sediment delivery (natural and anthropogenic)
- Impacts from high flow events (bed scour, flood deposits, vegetation impacts, etc.)

### **Needs and Opportunities**

- Restore hydrologic function in tributary headwaters
- Acquire lands for protection and restoration
- Address water quantity/quality impacts from land uses (road decommissioning, undersized road crossing structures, grazing management)
- Reconnect floodplains, adding instream complexity
- Restore riparian vegetation communities and sediment/pollutant attenuation capacity and function



Upper Klickitat River canyon. Photo YN.

The White Salmon *mítula* River subbasin in southwestern Washington contains usual and accustomed hunting, fishing and gathering grounds, as well as archaeological and cultural sites of tribal and national significance. Two segments of the river are federally designated as “Wild and Scenic”.

### **Subbasin Characteristics**

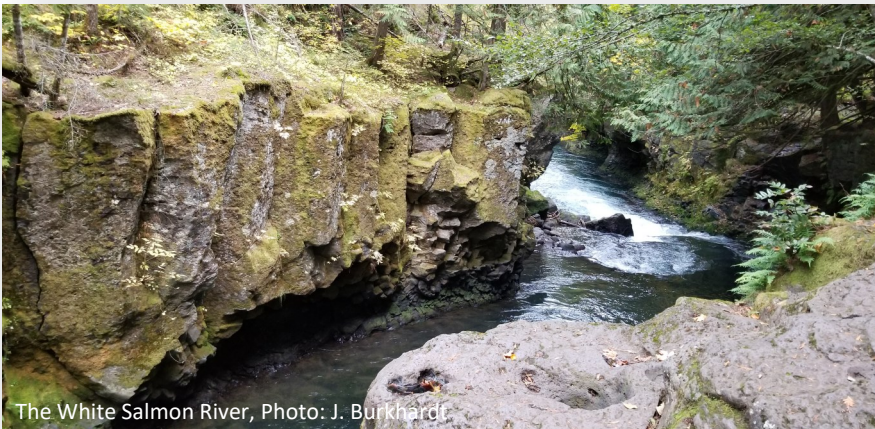
The subbasin drains approximately 386 sq. mi. in a transitional ecotone, flowing over 45 mi. from 7500’ in elevation on Mt. Adams (*Pahto*) to join the Columbia River at Underwood, Washington at RM 163 (80’ elev.). Condit Dam, constructed in 1913 at RM 3.3, blocked anadromous fish passage. The dam was breached in October 2011, and decommissioning was completed in September 2012, reopening fish passage into the upper basin for recolonization by its native anadromous fish runs. The river also serves as a critical coldwater refuge for fish migrating upstream into the Columbia and Snake River basins (US EPA). The basin sees heavy use for commercial and private whitewater boating; as well as forestry, dairy, ranching and orchard agricultural uses, in addition to providing domestic water supply.

### **Fish Use**

The river is home to historical and ESA-listed (“threatened”) populations of Middle Columbia River DPS Steelhead, Lower Columbia River DPS Chinook, Lower Columbia River DPS Coho, Columbia River DPS Chum *mítula* (*O. keta*) and Columbia River DPS Bull Trout; the basin also supports Pacific lamprey, a species of concern and important cultural significance.

### **Current and Ongoing Work**

The Yakama Nation was party to the settlement agreement to remove Condit Dam, and has been involved with watershed planning, habitat and fish population assessments, monitoring fish recolonization and habitat restoration projects since before dam removal.



The White Salmon River, Photo: J. Burkhardt

### **Limiting Factors and Threats**

- Residential development (proliferation of permit-exempt wells, riparian vegetation removal, etc.)
- Impaired water quality in some tributaries and mainstem reaches, grazing
- Lack of fish habitat quality, quantity and food resources
- Conversion of forest lands, parcelization

### **Needs and Opportunities**

- Promote comprehensive, basin-wide hydrologic assessment, and sustain a multi-stakeholder watershed group
- Work with City of White Salmon to move municipal water diversion from Buck Cr. to mainstem White Salmon
- Attenuate flashy hydrograph in tributaries by enhancing upland meadow complexes
- Increase instream and riparian habitat quality, address fragmentation and grazing impacts
- Remove barriers to fish passage (culverts, unscreened diversions, private dams)
- Enhance stream flows through flow acquisitions, easements, irrigation efficiency and reducing illegal withdrawals
- Protect seeps and springs, intact habitat through conservation and acquisition
- Address water quality impairments (flow, temperature, bacteria)
- Study recreation impacts and plan for cumulative impacts with agency partners
- Acquire lands for protection and restoration



The Rock Creek subbasin in southeastern Washington is home to the Rock Creek *Kamitpah* Band of the Yakama Nation, and important natural and cultural resources.

**Subbasin Characteristics**

Rock Creek subbasin drains 223 square miles, from the Simcoe Mountains and the Yakama Reservation to the Columbia River at RM 230, about 12 mi. upstream of John Day Dam; its reservoir, Lake Umatilla, inundates the lower mile.

**Fish Use**

Rock Creek supports a native population of ESA-listed (“threatened”) Mid-Columbia River DPS Steelhead, as well as Coho salmon, bridgelip suckers *qwool qwool* ,

and other culturally important fish species. The subbasin supports critical habitat with high production potential for Steelhead, but significant habitat limitations affect their populations; some are likely due to underlying geology, though anthropogenic changes in and adjacent to the subbasin have likely increased their intensity.

**Current and Ongoing Work**

Yakama Nation Fisheries has been using a three-pronged approach to restore watershed health and aid recovery of salmonids and culturally significant fish species to support sustainable populations in Rock Creek:

1. Assess current fish use, water quality/quantity, and habitat conditions to determine areas of high steelhead productivity and survival, and primary habitat factors limiting productivity
2. Prioritize actions to protect, restore, and enhance stream reaches
3. Conduct restoration activities to address priorities, and monitoring the effectiveness of those actions

**Limiting Factors and Threats**

- Lack of key habitat quantity and habitat diversity
- Altered hydrology (changes in precipitation, groundwater development) with low summer flows and high water temperatures
- Loss of riparian vegetation and function due to grazing and presence of non-native species
- Increased hydroconfinement from floodplain roads and dikes
- Increased fine sediment delivery
- Altered food web
- Non-native fish species predation on and competition with native salmonids

**Needs and Opportunities**

- Increase water storage capacity and reduce erosion in the headwaters by restoring natural function to meadows and springs and reversing stream incision
- Manage grazing to improve native riparian plant composition, density and abundance
- Protect groundwater sources critical to, and increase habitat complexity in, perennial pools
- Replace fish passage barriers and address erosion by installing hardened crossings in ephemeral stream reaches
- Co-manage WDFW-owned lands with WDFW in the headwaters of Rock Creek watershed
- Gain better understanding of Steelhead habitat utilization, life history strategies, and degree of introgression from out-of-basin stocks

The Wind River *xuxux-nmi* in south-central Washington is part of the traditional territories of the Yakama Nation, and provides habitat for critical cultural resources. There is a tribal fishery at the confluence.

### **Subbasin Characteristics**

The Wind River subbasin drains about 224 sq. mi. into the Columbia at RM 154. Elevation in the basin ranges from 80' to 3,900' in the headwaters in the southern Gifford Pinchot National Forest. Topography is varied, with steep, canyon sections in the lower 20 miles and relatively flat, high-elevation meadows and alluvial benches. Shipherd Falls, a set of four 10-15' falls at RM 2, historically blocked all anadromous fish except for steelhead, until a fish ladder was constructed there in the 1950s.



### **Fish Use**

This evolutionary significant unit (ESU) historically supported abundant fall Chinook, winter Steelhead, Chum, and Coho salmon, though numbers of naturally spawning salmon and steelhead have plummeted to levels far below historical numbers. Lower Columbia River Chinook, Lower Columbia River ESU Steelhead (summer run—*Critical*), Columbia River Coho and Columbia River Chum have been listed as Threatened under the ESA.

### **Current and Ongoing Work**

YN representatives contributed to the Lower Columbia subbasin plan, partnered in the removal of Hemlock Dam on Trout Creek, took part in watershed resource and habitat planning, and sat on the Lower Columbia Recovery Plan Steering Committee.

### **Limiting Factors and Threats**

- Contributing upland and instream habitat quality has been reduced by agricultural and forestry practices
- Key habitats have been isolated or eliminated through Bonneville Pool inundation, channel modifications, and floodplain disconnection
- Altered habitat conditions have increased salmonid predation by birds non-native fish
- Competition and interbreeding with domesticated or non-local hatchery fish has reduced productivity
- Hydropower construction and operation has altered flows, habitat, and migration conditions

### **Needs and Opportunities**

- Protect intact forests and wetland/meadow complexes in headwaters, and manage forest lands pursuant to Forest and Fish Rules and federal forest plans to protect watershed processes
- Acquire lands for protection and restoration
- Address severely reduced deltaic habitat and function at the mouth of the river
- Manage growth and development to protect stream flows, watershed processes and habitat conditions
- Restore passage, floodplain function, riparian function, and stream habitat diversity in critical areas including by restoring beaver-related or beaver-mimicking processes
- Align hatchery priorities with conservation objectives

*Goal: Ensure that waters in the Southern Territories provide a suitable home for salmon, steelhead and all of Yakama Nation's treaty-reserved resources by meeting all applicable standards and ecologically-based instream flows.*

### **RECOMMENDED ACTIONS:**

#### ***Maintain or enhance instream flows to support abundant salmon production***

- Establish instream flow requirements that meet tribally approved minimum standards
- Work with irrigators to screen diversions and improve efficiency to maintain stream flows

#### ***Control non-point source pollution***

- Ensure that all waters in the territories meet water quality standards and contribute to productive fish runs and sustainable harvests
- Appeal land-use permits and decisions that authorize water quality and/or quantity impacts
- Draft comments on programmatic permits and legislation affecting HPAs
- Review and comment on re-issuance of NPDES municipal permits

#### ***Evaluate conditions***

- Evaluate current flow rates and conduct basin and subbasin analyses
- Encourage comprehensive surface and groundwater monitoring by regulators, including of permit-exempt wells
- Conduct a comprehensive water resource assessment of the White Salmon basin including quantifying groundwater withdrawals and their impact on stream flows, water quality

#### ***Protect and enhance groundwater sources, stream flows and water quality***

- Work to enhance natural water storage, filtration and high-flow attenuation through upland and in-stream habitat projects
- Work with water trusts and other partners to secure acquisitions and easements for trust water rights to protect instream flows
- Communicate and advocate for YN's Time Immemorial water right to protect aquatic resources



A beaver complex in the upper Wind River basin. Photo: J. Burkhardt

***Goal: Restore and maintain ecological connectivity and geomorphic function watershed-wide (and consider ridgetop-to-ridgetop habitat integrity).***

### **RECOMMENDED ACTIONS:**

***Address regulatory inadequacies that fail to protect watershed ecology and function (CAO, SMP, Forest Practices Act, HPA)***

- Identify, map and develop plans that identify places most at risk for development, and prioritize their protection

***Improved oversight for permit data collection by federal, state and local government (and increase tribal capacity for data collection/analysis)***

- Develop incentives for landowners and agricultural producers for carbon-neutral, generative, fish-friendly and low-water practices and to maintain corridors and other landscape connectivity

- Participate in outreach and coordination with watershed groups, landowners, conservation districts, and local governments to encourage stewardship of resources

- Support forest health prescriptions such as thinning and prescribed burns to mimic natural disturbance regimes and enhance resiliency of forests

- Promote community-supported forestry and land conservation initiatives that acquire, preserve and manage land for conservation benefit

- Enhance the ability of upland areas to attenuate storm events, infiltrate and retain water in the ground longer and slowly release to aid stream temperature and flows through a variety of restoration actions

- Improve complexity of upland stream channels to protect downstream reaches

- Encourage decommissioning of non-essential forest roads and culverts to improve conveyance and reduce sediment delivery to streams

- Enhance headwater meadows through addressing stream incision, re-establishing historic fire return interval, and grazing management

- Encourage removal and replacement of undersized road crossing structures to reduce likelihood of failure, reconnect floodplains and where feasible decommission roads

- Ensure that recreation development is meaningfully analyzed and planned to avoid impacts to natural and cultural resources

***Promote and formulate a sustained Watershed Group or Council in the White Salmon River basin***



Middle Klickitat River. Photo: D. Lindley

*Goal: Protect and restore riparian corridors and channel migration zones to conditions that sustain and support salmon and steelhead populations and productivity.*

### **RECOMMENDED ACTIONS:**

#### ***Improve and/or develop new regulations, laws and BMPs that work to protect habitat***

- Improve oversight and accountability of various land-use permits (HPA, GMA, CWA, etc.) and improve permitting process for variances and conditional use permits to ensure avoidance and/or mitigation of impacts to riparian areas and to be more protective of riparian function
- Through SMA and SMP compliance processes, require /help to develop meaningful monitoring of ecological functions and better tracking of cumulative impacts
- Improve guidance on the No Net Loss (NNL) policy regarding implementation requirements for local jurisdictions, including the development of BMPs, through permit requirement, implementation and adaptive management to move toward a net gain in shoreline habitat function
- Develop a unified local, state, federal and tribal information and outreach curriculum that provides accurate, scientifically sound information to the public about sustainable riparian land management
- Work with state and local governments to make riparian restoration a priority in zoning and land-use laws
- Work with federal, state and local jurisdictions to develop a unified system to track permits, variances and permit-related data in order to evaluate effectiveness in protecting watershed ecological function
- Work with Washington Department of Ecology to encourage development of direct and prescriptive guidance for local jurisdictions on application of NNL for individual permits, and how and when to adaptively manage SMPs at the jurisdictional/ programmatic scale to move toward net gain in habitat
- Advocate for establishment and maintenance of riparian buffers based on 1 site potential tree height (SPTH) (WDFW Riparian Guidance)

#### ***Restore and permanently protect riparian areas through land acquisition***

- Identify primary riparian sites for acquisition at the local scale
- Work with partners to acquire riparian areas to public, land-trust or tribal ownership
- Promote community-supported forestry and land conservation initiatives that emphasize maintaining/restoring riparian ecological function

#### ***Adaptive Management***

- Map and quantify current riparian conditions in the southern territories
- Compare current riparian conditions against the jurisdiction and land-use laws, regulations, etc., that guide management in those riparian areas



Wind River. Photo: I. Jezorek.

## Target Habitat: Floodplains

*Goal: Protect, restore and enhance hydrological and geomorphic connectivity between rivers, their floodplains and deltas.*

### **RECOMMENDED ACTIONS:**



A bird's eye view of the Rock Cr. floodplain. Photo: J. Burkhardt

### ***Restore and permanently protect floodplains through land acquisition and conservation easements***

- Develop tribal programs and work with partners to protect and restore floodplains through land acquisition
- Focus restoration, floodplain infrastructure removal and setback projects on maximizing floodplain hydrological and geomorphic function
- Promote federal and local programs that buy out properties at high risk for flooding and in channel migration zones
- Ensure that FEMA flood maps are accurate and sufficiently protect riparian areas and channel-migration zones

### ***Prevent installation of dikes/levees, bank armor, infrastructure, fill and impervious surfaces***

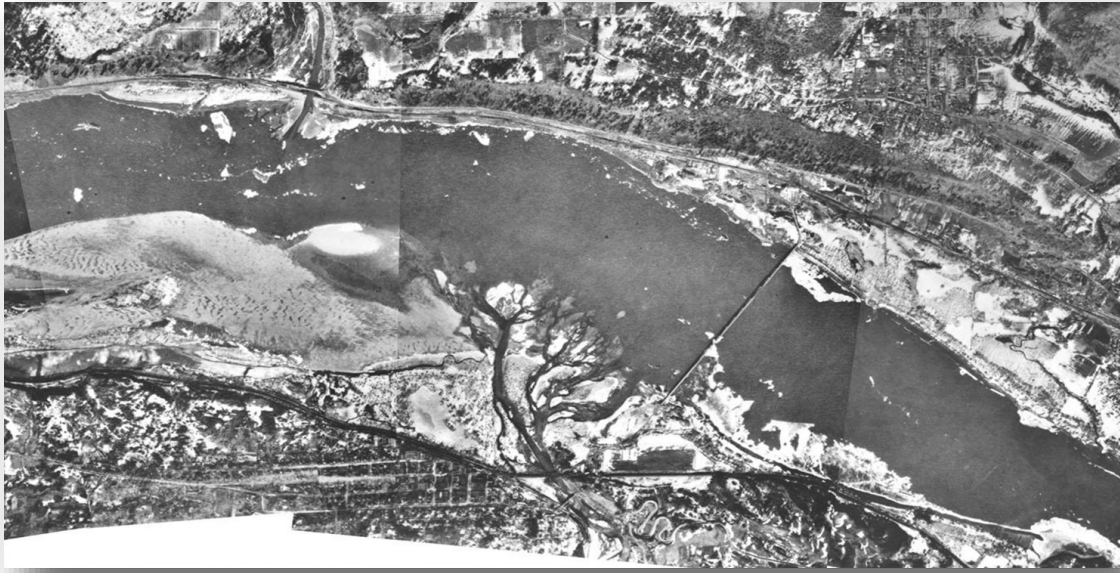
- Improve accountability of and compliance with existing federal, state, county and municipal regulations that protect floodplains and channel migration zones (Clean Water Act, ESA, HPA, GMA, SMA, etc.)
- Work with municipal, county and state agencies to reduce floodplain degradation due to regulatory exemptions, conditioned uses and variances
- Require that Federal Emergency Management Administration (FEMA) policies such as the National Flood Insurance Program (NFIP) prevent further degradation of floodplain habitat
- Require that USACE programs comply with existing laws that protect habitat, such as CWA, ESA, and the National Marine Fisheries Service Biological Opinion
- Support creation of regulatory incentives for green infrastructure and low-impact development that steers clear of floodplains

### ***Data Collection and Analysis***

- Compile and maintain data on floodplain extent, condition, and where and how much existing regulations have allowed habitat loss
- Advance the science and BMPs of effective climate change adaptation in floodplains



*Goal: Strive for a safe, healthy Columbia River and tributaries that support all life.*



An aerial photograph of the White Salmon River and Hood River deltas on the Columbia River before the construction of Bonneville Dam. This type of complex, diverse, vegetated, shallow habitat with braided distributary channels has been severely reduced in the mainstem Columbia and tributary confluences. Photo: USACE, 1930s.

### **RECOMMENDED ACTIONS:**

- Work with action agencies to improve conditions at tributary confluences (improving fish passage and cover from predators, replanting native species, removing invasives)
- Work with action agencies to restore more normative flow regimes, improve passage for outmigrating juveniles and kelts, in-migrating Pacific lamprey
- Work with action agencies to manage human use of confluences and development of access points
- Explore opportunities to re-create functional diverse habitat, thermal refugia, galleries of woody vegetation, in-stream habitat structure and complexity
- Advocate for better transportation safety, spill response and reduce toxic cargo traveling on and along river



A tale of two tributaries: the Columbia River confluences of the Klickitat River (left) and Pine Creek (right), in eastern Klickitat County.

**Table 1. Habitat Approach and Ecological Target Habitats in the Southern Territories**

TARGET HABITATS:	WATER	UPLANDS / FOREST	RIPARIAN	FLOODPLAINS	MAINSTEM COLUMBIA / TRIBUTARY CONFLUENCES
<b>GOALS:</b>	<i>Ensure that waters in the Southern Territories provide a suitable home for salmon, steelhead and all of YN's treaty-reserved resources by meeting all applicable standards and ecologically-based instream flows</i>	<i>Restore and maintain ecological connectivity and geomorphic function watershed-wide (consider ridgetop-to-ridgetop habitat integrity)</i>	<i>Protect and restore riparian corridors and channel migration zones to conditions that sustain and support healthy salmon and steelhead populations and productivity</i>	<i>Protect, restore and enhance hydrologic and geomorphic connectivity between rivers and their floodplains and deltas</i>	<i>Promote Columbia River and tributary conditions that support a healthy aquatic food web</i>
<b>LIMITING FACTORS / THREATS:</b>	<ul style="list-style-type: none"> <li>• Water quality impairments from land uses, human development</li> <li>• Treaty resources can be harmed if condition parameters, e.g., temperature, dissolved oxygen (DO), turbidity reach certain levels</li> <li>• Water withdrawals and associated consumptive water use can deplete stream flows, reduce available habitat for fish, and adversely affect other instream water uses</li> <li>• Stream flows are threatened by increasing groundwater development</li> <li>• Unquantified impacts from unpermitted surface-water withdrawals</li> </ul>	<ul style="list-style-type: none"> <li>• Human population growth and related impacts</li> <li>• Increased residential development and land conversion</li> <li>• Insufficient regulatory oversight, enforcement</li> <li>• Climate change impacts to hydrologic regime (timing, quantity), sediment delivery, stream flows and temperatures</li> <li>• Forest health and resiliency to stressors affected by climate change, management</li> <li>• Insufficient adherence to Treaty trust responsibilities by local, state entities</li> <li>• Habitat fragmentation and degradation</li> <li>• Agricultural exemptions contribute to degradation</li> <li>• Proliferation of permitted and unpermitted recreation affecting resources</li> </ul>	<ul style="list-style-type: none"> <li>• Simplified habitat in stream channel and along banks</li> <li>• Channel modifications have adversely affected vegetation structure along banks (e.g. riprap)</li> <li>• Impervious surfaces from roads, other infrastructure route runoff into stream</li> <li>• Lack of large woody living vegetation = insufficient future recruitment for in-stream/bankside debris</li> <li>• Proliferation of permitted and unpermitted recreation affecting resources</li> </ul>	<ul style="list-style-type: none"> <li>• Floodplain infrastructure constrains channels, isolates side channels, prevents flood flows from spreading out &amp; dissipating</li> <li>• Channel migration zones blocked or constrained by human development</li> <li>• Legacy impacts from large wood removal (lack of floodplain roughness and in-channel structure)</li> <li>• Reduction in availability and access to plant and animal species traditionally important to tribes</li> </ul>	<ul style="list-style-type: none"> <li>• Altered flow regimes exacerbate fish passage and health issues, harbor non-native predators</li> <li>• Invasive species compete with or harm native aquatic species</li> <li>• Current and legacy sources of land-based pollution</li> <li>• Highly modified and simplified shoreline environments (lack of shallow-water, deltaic habitats, side channels, riparian function)</li> <li>• Impacts from transportation infrastructure and threat of toxic spills</li> <li>• Increased water temperatures from climate change, Columbia River hydrosystem operations</li> </ul>
<b>APPROACH:</b>	<ul style="list-style-type: none"> <li>• Maintain and implement more protective water quality standards</li> <li>• Defend against efforts to deregulate protection requirements</li> <li>• Increase monitoring and accountability of agencies responsible for protecting water quality and quantity</li> <li>• Map and evaluate impacts to ecological flows</li> <li>• Work with water trusts and landowners to secure and enhance instream flows</li> <li>• Improve water storage through ecological restoration</li> <li>• Protect and enhance groundwater resources</li> </ul>	<ul style="list-style-type: none"> <li>• Create permit-tracking tool to monitor and assess impacts of permits</li> <li>• Work with agencies, partners, legislature to improve land stewardship through guidance, legislation, enforcement, incentives</li> <li>• Identify and address regulatory inadequacies in watershed/aquatic resource protection</li> <li>• Build resilience in natural systems by encouraging restoration of or mimicking natural processes (beavers, large woody debris, prescribed fire for forest health, etc.) and restoring connectivity</li> </ul>	<ul style="list-style-type: none"> <li>• Compare current riparian conditions against the land-use laws, regulations, etc. that guide land management</li> <li>• Establish baseline conditions and monitor to determine trajectory of ecological function</li> <li>• Document the ineffectiveness of voluntary-based riparian programs in protection and restoration on a landscape scale</li> <li>• Improve and/or develop laws, regulations and BMPs that protect and restore habitat</li> <li>• Uniformly protect riparian areas with buffers based on 1 Site Potential Tree Height (SPTH, WDFW Guidance)</li> </ul>	<ul style="list-style-type: none"> <li>• Prevent development in floodplains, e.g., levees, bank armor, fill, infrastructure, and impervious surfaces</li> <li>• Restore and permanently protect floodplains through land acquisition</li> <li>• Research best practices for using floodplain function to reduce the impacts of climate change, integrating traditional ecological knowledge</li> <li>• Work with local and state jurisdictions to improve land use planning and resource protections</li> </ul>	<ul style="list-style-type: none"> <li>• Work with action agencies to improve conditions at tributary confluences (dredging, replanting natives, removing invasives)</li> <li>• Work with action agencies to restore more normative flow regimes, improve passage for out-migrating juveniles and kelts</li> <li>• Explore opportunities to recreate functional shallow-water habitat, thermal refugia, vegetation galleries, instream habitat structure and complexity</li> <li>• Advocate for reduced toxic cargo, better transportation safety, spill response and clean-up on and along river</li> </ul>

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