

Draft

# White Salmon River Subbasin Summary

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# White Salmon River Subbasin Summary

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# White Salmon River Subbasin Summary

## Fish and Wildlife Resources

### Subbasin Description

#### General Location

The White Salmon River originates in the Gifford Pinchot National Forest in south central Washington along the south slope of Mount Adams in Skamania and Yakima counties. It flows south for 45 miles before entering the Bonneville Reservoir in Underwood, Washington at River Mile (RM) 167 (Figure 1).

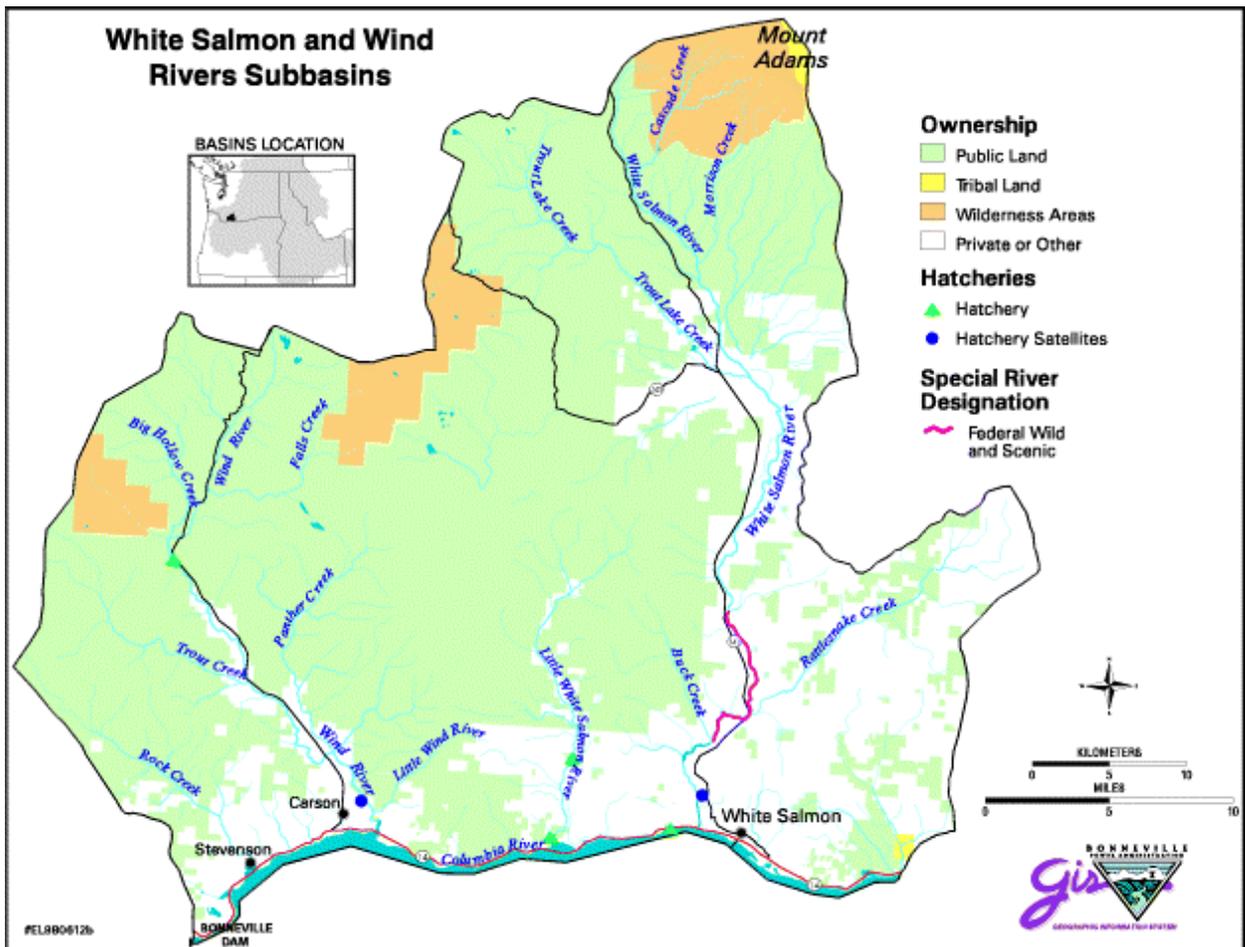


Figure 1. Location of the Wind in the Columbia River Subbasin Gorge Province

#### Drainage Area

The White Salmon River drains approximately 386 mi<sup>2</sup> (250,459 acres) of Skamania, Yakima, and Klickitat counties over a distance of 45 miles. Principal tributaries include Trout Lake, Buck, Mill, Dry, Gilmer, and Rattlesnake Creeks.

### Climate

Climatic patterns of the White Salmon subbasin are controlled by marine-influenced air masses from the Pacific Ocean and continental air masses from eastern Washington. Winters are usually wet and mild, while summers are warm and dry. Approximately 75% of the precipitation is delivered in the form of rainfall or snow between October and March. The average precipitation along the eastern most portion of the watershed equals 40 inches a year, increasing to as much as 95 inches in the west and north.

### Topography/geomorphology

The basin is oriented north to south with elevations ranging from 80 feet to 7,500 feet. Topography varies within the watershed from rugged mountains to rolling hills to river valleys. Consolidated sediments are overlain with basaltic lava flows; subsequent erosion, mud flows, and glaciation have resulted in precipitous cliffs, deeply incised canyons, and relatively flat valley floors. The mainstem of the White Salmon River drops 7,420 feet in 45 miles for an average gradient of 3.2%. Anadromous fish passage is currently blocked at RM 3 by Condit Dam. A falls at Husum is likely a partial barrier to some anadromous fish and the 20-foot falls at RM 16 is likely the upper extent of current anadromous potential; however, there is some historical evidence of anadromous fish reaching the Trout Lake Valley.

Stream flows in the watershed range from summer low flows to peak flows in the winter. Some streams only flow during high flow events and are dry the remainder of the year (ephemeral streams). Others, such as the mainstem, increase from an average daily flow of 644 cubic feet per second (cfs) in the fall to flows of 1,538 (cfs) during the spring. The flow pattern on the White Salmon River is relatively constant due to its glacial origin, large water recharge potential, and storage capacity. Recharged water is released mostly in the middle portion of the mainstem canyon between Trout Lake valley and Husum. The largest stream flows typically occur in response to rain-on-snow events, when heavy rains combine with high air temperatures and high winds to cause widespread snowmelt. Low flows are maintained on the mainstem by late season snowmelt and areas of water retention or recharge. Several tributaries (e.g., Rattlesnake Creek) currently experience very low base flows as a result of unknown recent causes (PWA 1997).

### Geology and Soils

The geology of the White Salmon Watershed is dominated by past volcanic activity. Subbasin soils are the result of volcanism and glaciation. Soils in the valley are deep and coarse with moderate fertility. In the hilly areas the deep and well drained soils are derived from weathered volcanic ash and lava underlain with olivine basalt. In the lower portion of the basin, the soils are generally shallow and less porous.

### Vegetation

The subbasin vegetation is a mixture of east and west Cascade forests. The trees are a mix of Douglas fir, western hemlock, western red cedar, grand fir, ponderosa pine, and Oregon white oak. In addition, Sukdorf's desert parsley, and blue-eyed grass are found here; both of these species are federal candidates for threatened or endangered species. Of the

250,459 acres that compose the watershed, 236, 963 (94.6 %) are forested, 3.6% are pasture, 0.6% are hay, 0.5% rural residential, and 0.7% are other uses.

### Major Land Uses

The White Salmon River subbasin is part of the Yakama Indian Nation lands ceded to the United States in the Treaty of June 9, 1855. Within this area the tribe reserves the right to hunt and fish at all usual and accustomed places in common with citizens of the territory. The upper portion of the basin and its tributaries are located within the legislated boundary of the Gifford Pinchot National Forest (GPNF) and federal ownership accounts for 50% of the watershed. The DNR manages approximately 20% of the basin, corporate timber holding account for 20%, while the remaining 10% consists of small private timber lands, irrigated cropland, orchards, and residential area. Most of the first 12 miles of mainstem river and its drainage are outside the GPNF, but a large portion of this area lies within the Columbia River Gorge National Scenic Area (CRGNSA) and this section of river is designated a federal "wild and scenic river" (UCD 1994).

The White Salmon River drainage was traditionally managed for timber and agricultural production; however, under the Northwest Forest Plan, much of the drainage has been designated as riparian reserves, or reserved through other means. Additionally, all lands within the CRGNSA are regulated by the Columbia River Gorge Commission's land use regulations as administered by Skamania County and the Gorge Commission. Those outside the CRGNSA are regulated by the Washington State Forest Practices Regulations. Urban development has been concentrated in White Salmon Husum, BZ Corner, and Trout Lake, Washington. Large-scale industrial activities are limited by lack of available land outside the National Forest and Scenic Area.

The river's proximity to the Portland/Vancouver area makes it a popular recreation destination for whitewater boating, winter sports, fishing, golfing, wildflower viewing, camping, hiking, picnicking, sightseeing, hunting, and berry picking.

### Fish and Wildlife Status

#### Fish

Fish assemblages in the Little White Salmon River are divided into the area above and below the Condit Dam. Species found downstream from the dam include spring and fall chinook, coho salmon, winter and summer steelhead, large-scale and bridgelip suckers, pacific and brook lamprey, threespine stickleback, sculpins, white sturgeon, redbelt shiners, peamouth, and northern pikeminnow rainbow trout, and bull trout. Historically, sea-run cutthroat trout, pink salmon, and chum salmon likely used this area, but are believed to be extirpated. Species found upstream of the dam include cutthroat trout, rainbow trout, sculpin, and brook trout (non-endemic).

#### **Steelhead (Threatened, Lower Columbia ESU, 3/98)**

Natural spawning runs of winter and summer steelhead currently are limited to the lower 3.3 miles of river below Condit Dam (Figures 2 and 3, respectively). Size of historical spawning populations is not well documented. Principal tributaries above the dam that also could have supported steelhead include Buck, Little Buck, Mill, Spring, Rattlesnake,

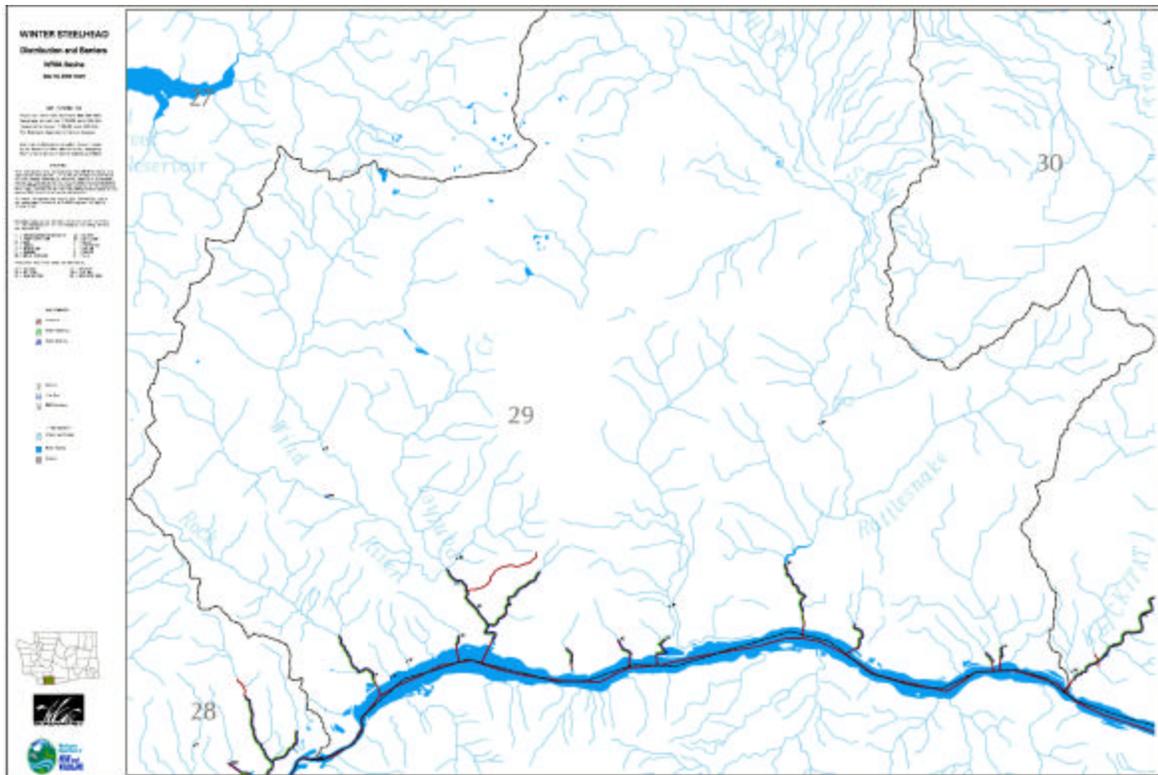


Figure 2. Distribution of winter steelhead in the Wind River Subbasin

and Indian creeks. Restored passage or removal of Condit Dam would open the upper drainage to steelhead.

Skamania stock summer steelhead and winter steelhead have been released into the White Salmon River watershed to mitigate for the losses of anadromous fish caused by Condit Dam to provide local recreational and tribal fishing opportunities. All hatchery steelhead are adipose fin clipped and the river has been managed under catch-and-release sport fishing regulations for wild steelhead since 1986.

The lower mile of the White Salmon River supports a tremendous steelhead fishery. As upriver summer steelhead migrate up the Columbia River, they seek refuge in the cooler waters of the lower White Salmon River. These fish will hold in the cooler water continuing their upstream migration. This area provides a thermal refuge for summer steelhead.

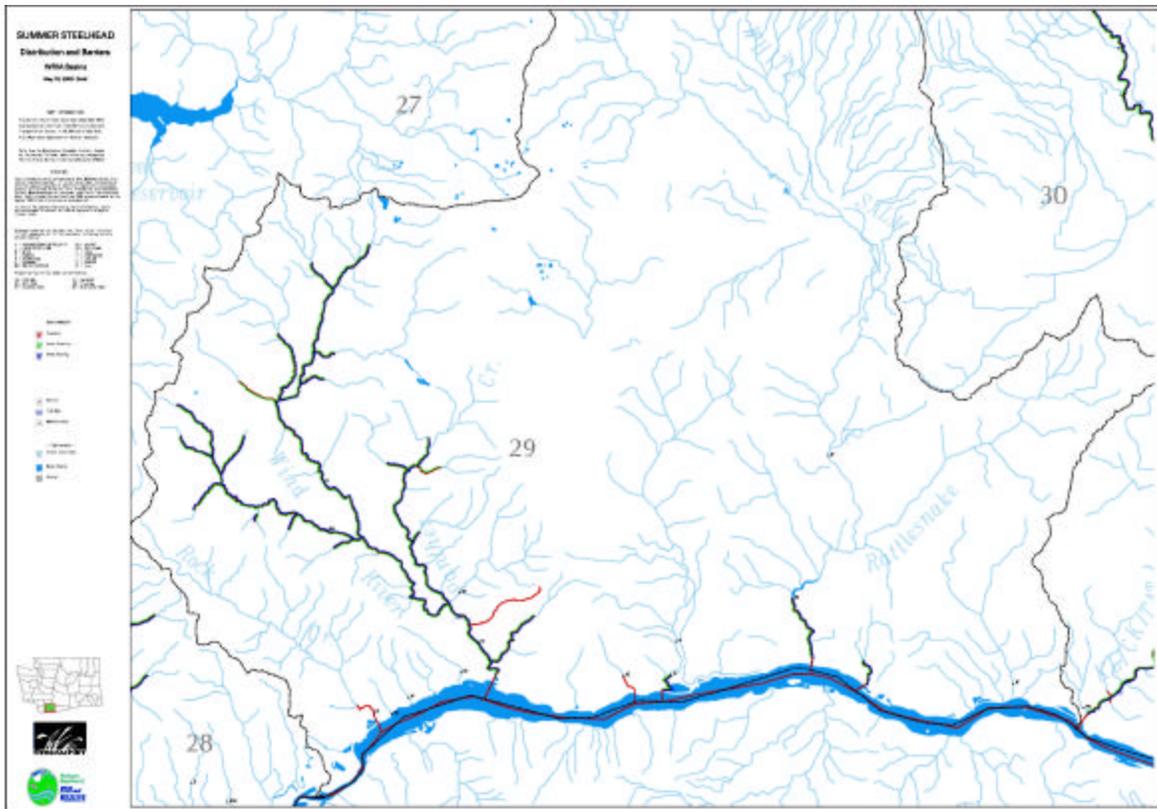


Figure 3. Distribution of summer steelhead in the Wind River Subbasin

**Chinook salmon (Threatened, Lower Columbia ESU, 3/99)**

It is likely that the native run of spring chinook in the White Salmon River was extirpated after the failure of the Condit Dam fish ladder shortly after dam construction in 1913. Currently, hatchery spring chinook are acclimated and released from a U.S. Fish and Wildlife Service (USFWS) facility at RM 1. The Washington Department of Fish and Wildlife (WDFW) believes the majority of naturally spawning fish are hatchery strays, and that this population is not self-sustaining. Currently, spring chinook salmon in the White Salmon River are managed for hatchery production. The size of historical spawning populations is not well documented. Restored passage or removal of Condit Dam would once again open the upper drainage to spring chinook.

Natural spawning of tule fall chinook in the Little White Salmon River occurs below the barrier (Figure 4). Completion of Bonneville Dam inundated the primary habitat in the lower Wind River. Natural production is likely composed of hatchery strays. Historic distribution of fall chinook salmon is believed to extend to Husum Falls, located at River Mile 8. Abundance surveys since 1964 indicate a significant population decline (Figure 5). Passage above Condit dam would allow these fish to access an additional five miles of habitat.

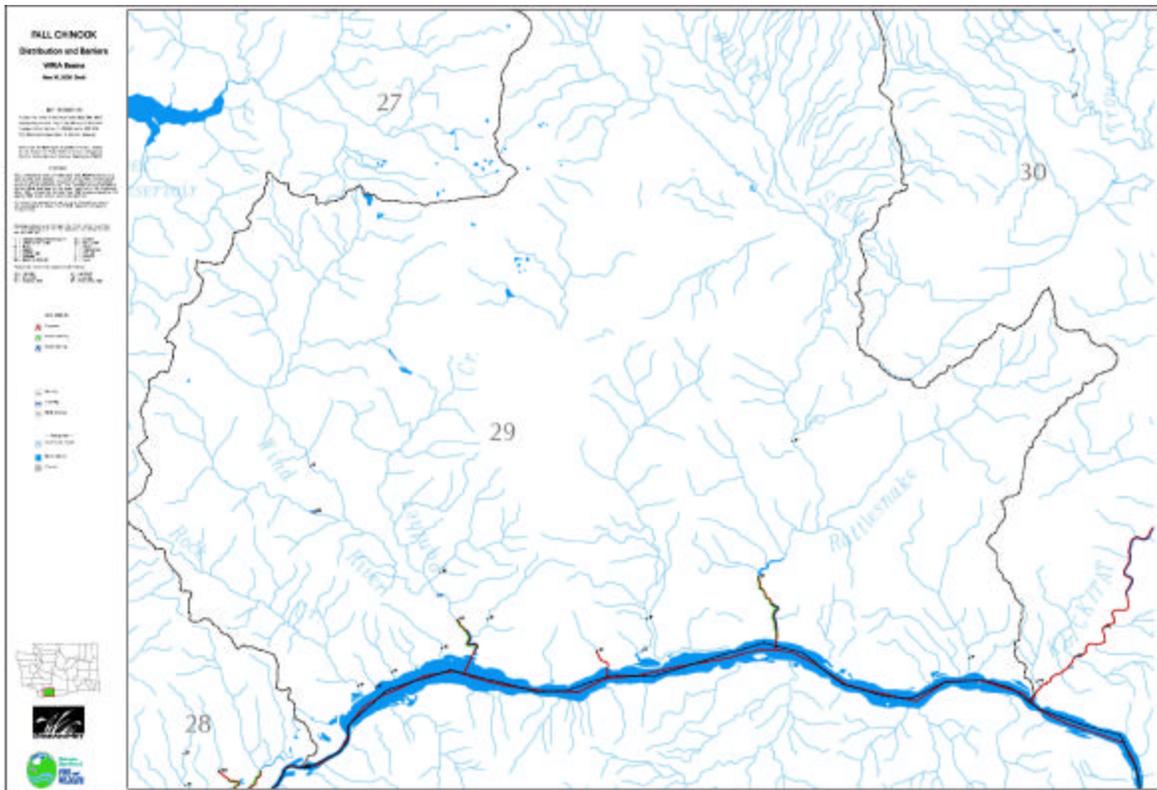


Figure 4. Distribution of fall chinook in the Wind River Subbasin

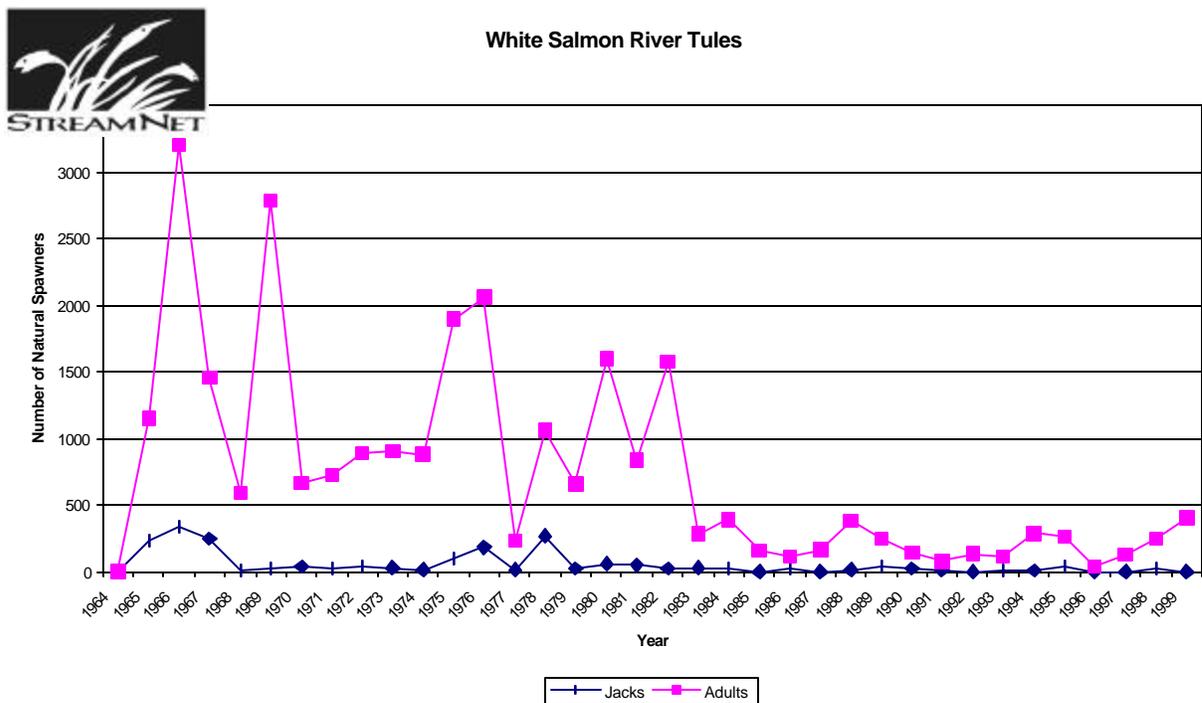


Figure 5. Tule Fall Chinook abundance in the Little White Salmon River, 1964-99

Bright fall chinook salmon originated from the Columbia River above McNary Dam. These fish have been reared at Bonneville and Little White Salmon hatcheries to mitigate for chinook salmon lost due to the construction and operation of mainstem Columbia River dams. Stray brights from these facilities have been observed in the Little White Salmon River and natural production of bright fall chinook occurs in the Little White Salmon River. Bright fall chinook salmon tend to spawn later than tule fall chinook and the abundance of bright fall chinook salmon has been monitored since 1988 (Figure 6).

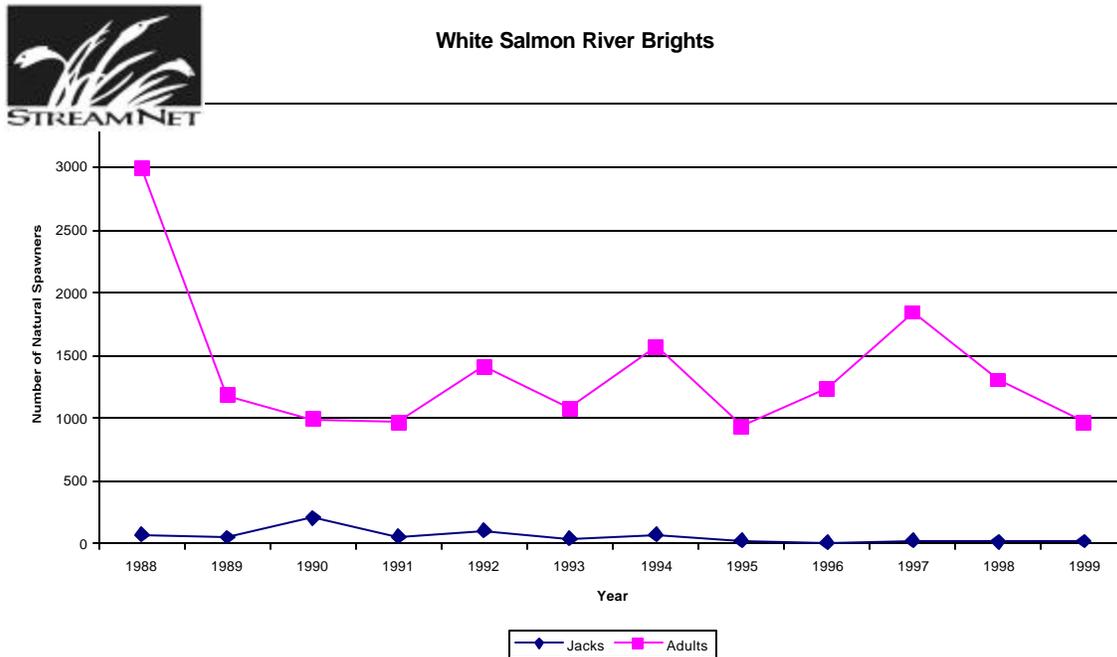


Figure 6. Bright Fall Chinook abundance estimates in the Little White Salmon River

**Bull Trout (Threatened, 1998)**

The status of bull trout in the White Salmon River is unknown. Bull trout have been observed in the mainstem below Condit Dam and managers believe these fish are part of an adfluvial population, which uses the Bonneville Reservoir. In 1993, bull trout presence/absence surveys were conducted in the watershed as a cooperative project between the U.S. Forest Service (USFS) and WDFW. No bull trout were found in any stream during this limited sampling effort. The WDFW has initiated a bull trout-sampling project in the Columbia Gorge Province to more accurately determine the distribution of bull trout in the White Salmon River and other Washington tributaries. In the White Salmon River, surveys will focus on cold water habitats that can support bull trout. Until this project is completed, there is insufficient information to determine distribution, assess population status, or develop a recovery plan for these fish.

**Coastal cutthroat trout (ESA candidate)**

Coastal cutthroat trout occur in the watershed, but the historic and recent distribution and status of this species are unknown. Hatchery cutthroat releases occurred as early as the

1930s, but were discontinued at least 30 years ago. Personnel from WDFW have observed these fish in the lower tributaries. In 1999, a sample of 50 coastal cutthroat trout were collected by WDFW and forwarded to National Marine Fisheries Service (NMFS) for genetic analysis. Because of the limited information and the lack of sampling that specifically targeted cutthroat trout, the status of coastal cutthroat trout in the watershed is unknown; however, the distribution appears to be limited and the sea-run form may be extirpated.

**Coho (ESA candidate, Lower Columbia ESU, 7/95)**

A small spawning population of coho persists in the White Salmon River. The WDFW believes upstream adult coho distribution is limited to the area below Condit Dam (Figure 7). Hatchery coho are released in the basin and hatchery strays are a likely source of any natural production.

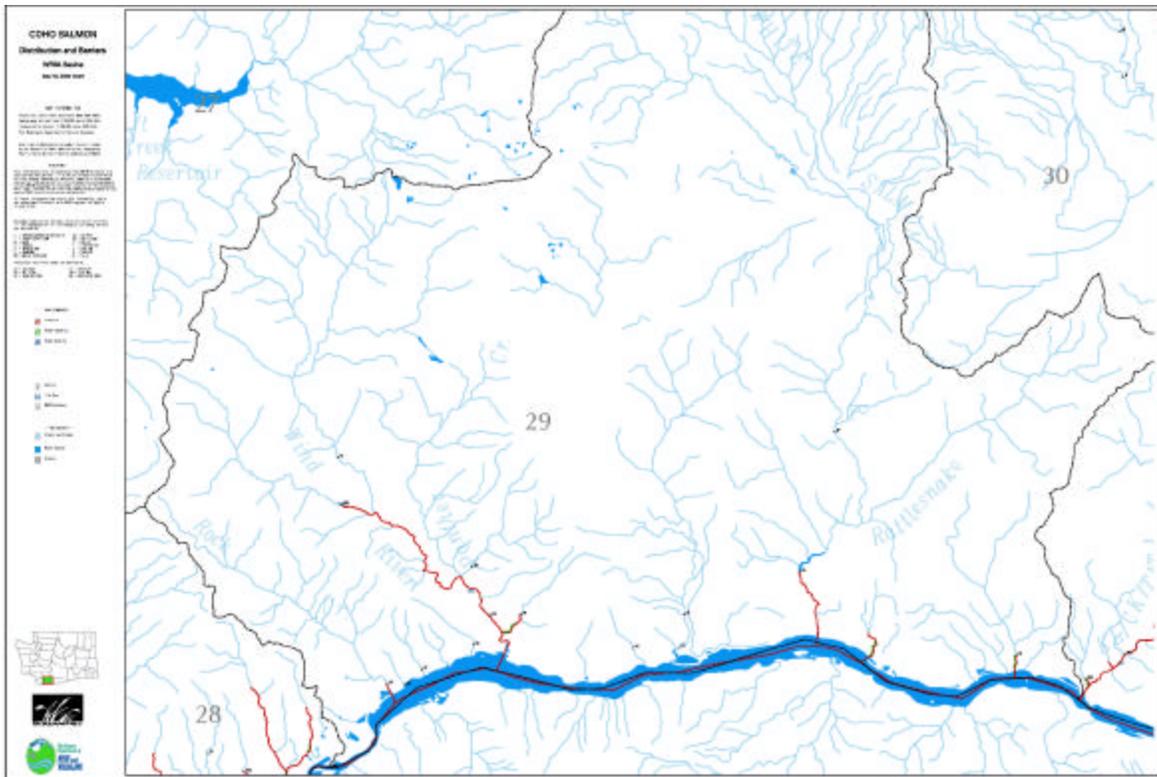


Figure 7. Coho distribution throughout the White Salmon Subbasin

**Resident Rainbow Trout**

Resident rainbow trout are native to the White Salmon River drainage and inhabit the White Salmon River up to RM 42.5 where the stream becomes a barrier due to steep gradient and low flow. Stocking of rainbow trout began in the White Salmon River as early as 1934, and in Cascade Creek in 1942 (Table 1). These are the USFS and WDFW's

Table 1. Fish Bearing Streams in the upper White Salmon River Watershed

Stream	Fish species present	Presently stocked	Date first stocked	First species stocked	Natural population
Upper White Salmon River	rainbow and brook trout	No	1934	Rainbow	rainbow cutthroat
Green Canyon	rainbow	No	None known	NA	unknown
Ninefoot Creek	rainbow	No	None known	NA	rainbow
Trib. A	rainbow	No	None known	NA	unknown
Wicky Creek	rainbow (1940-1953)	No	None known	NA	rainbow
Cascade Creek	rainbow	No	1942	Rainbow	unknown

\* Earliest documentation found.

earliest records found, yet stocking may have occurred before these dates. Hatchery rainbow trout have been stocked into this watershed, but these releases were terminated in the 1990's except for 10-40,000 fingerling rainbow trout that are stocked annually in Northwestern Lake for recreational angling opportunities.

In 1990, the WDFW conducted a genetic study of rainbow trout in the White Salmon River drainage (Phelps, 1990). Samples were collected from five locations throughout the drainage. The analysis indicated the wild rainbow trout populations to be genetically distinct from each other and from Washington State hatchery rainbow trout strains. The study concluded that hatchery supplementation of rainbow trout in the drainage has not caused a loss of distinct wild populations. Rainbow trout in White Salmon River are listed as one of the outstanding remarkable resources in the wild and scenic portion of the river. This designation affords a high level of protection for these fish. The status of the rainbow trout population is unknown.

#### **Brook Trout**

Brook trout are non-indigenous to the White Salmon River watershed. Hatchery releases have been discontinued, but naturally reproducing populations have been established within this watershed. The status of brook trout populations is unknown at this time.

#### **Pacific Lamprey – YIN Species of Concern**

Pacific lampreys were historically, and are currently, important to the Yakama Indian Nation. The status of this species is unknown.

#### **Bi-valve Mollusks**

Freshwater mussels are known to inhabit certain portions of the basin; however, the current species assemblages, distribution, and status are unknown.

## Wildlife

### **Black-tailed deer (Priority species in Washington)**

Black-tailed deer inhabit most of western Washington and extend their range east of the Cascades in the Columbia River Gorge. Typically, black-tailed deer reside in finite home ranges in the lower elevation temperate forests. Along the Cascades there have been specific migration patterns from winter and summer ranges. The White Salmon River is considered important black-tailed deer habitat and the majority of the upper drainage is in the Gifford Pinchot National Forest.

The lower drainage is important winter range and currently supports a large population of deer. A mosaic of dense coniferous and oak habitat provide cover and forage during the winter months.

USFS ownership along the lower White Salmon River corridor (Wild and Scenic River) provides a corridor for future habitat enhancement to support local deer populations.

### **Fisher (“Endangered” in Washington, 10/98; Federal “Species of Concern”)**

The White Salmon River subbasin is part of the historical range of the fisher (Figure 8). Overtrapping, and loss and alteration of habitats are considered the most significant reasons for the decline of fishers in Washington. Although extensive surveys for fishes have been conducted throughout their historical range, no known population of fishers exists in Washington. The apparent absence of fishers in Washington represents a significant gap (i.e., lack of population continuity) in the species range from Canada to Oregon and California. Riparian habitats, especially those with large diameter snags, live trees, and downed logs, are considered high quality habitats for fishers, especially for resting and reproduction. Loss and fragmentation of these habitats can limit the suitability of a landscape for fishers. Oregon now has a resident population of fishers in the Cascades that could serve as a source population for Washington; however, the Bonneville Dam makes the Columbia River a more formidable barrier for fisher dispersal from Oregon to Washington.

### **Larch Mountain Salamander (Sensitive in Washington, 1993)**

The Larch Mountain Salamander has a restricted range, and is almost entirely endemic to a small area in Washington. Its known distribution includes west-side habitats of the southern Cascades of Washington and the Columbia Gorge area of Oregon and Washington. This range includes the White Salmon River subbasin. Larch mountain salamanders require cool, moist environments in upland areas. Nearly all populations of these salamanders have been found on steep talus slopes in forested areas. They are also found in steep slopes in older forests, under woody debris on the forest floor or in detritus at the base of a snag. They are vulnerable to disturbances such as logging, rock extraction, and inundation that can alter these habitats and make them unsuitable. Since the larch mountain salamander is patchily distributed in the landscape, disturbances at the local level may negatively impact the population as a whole.

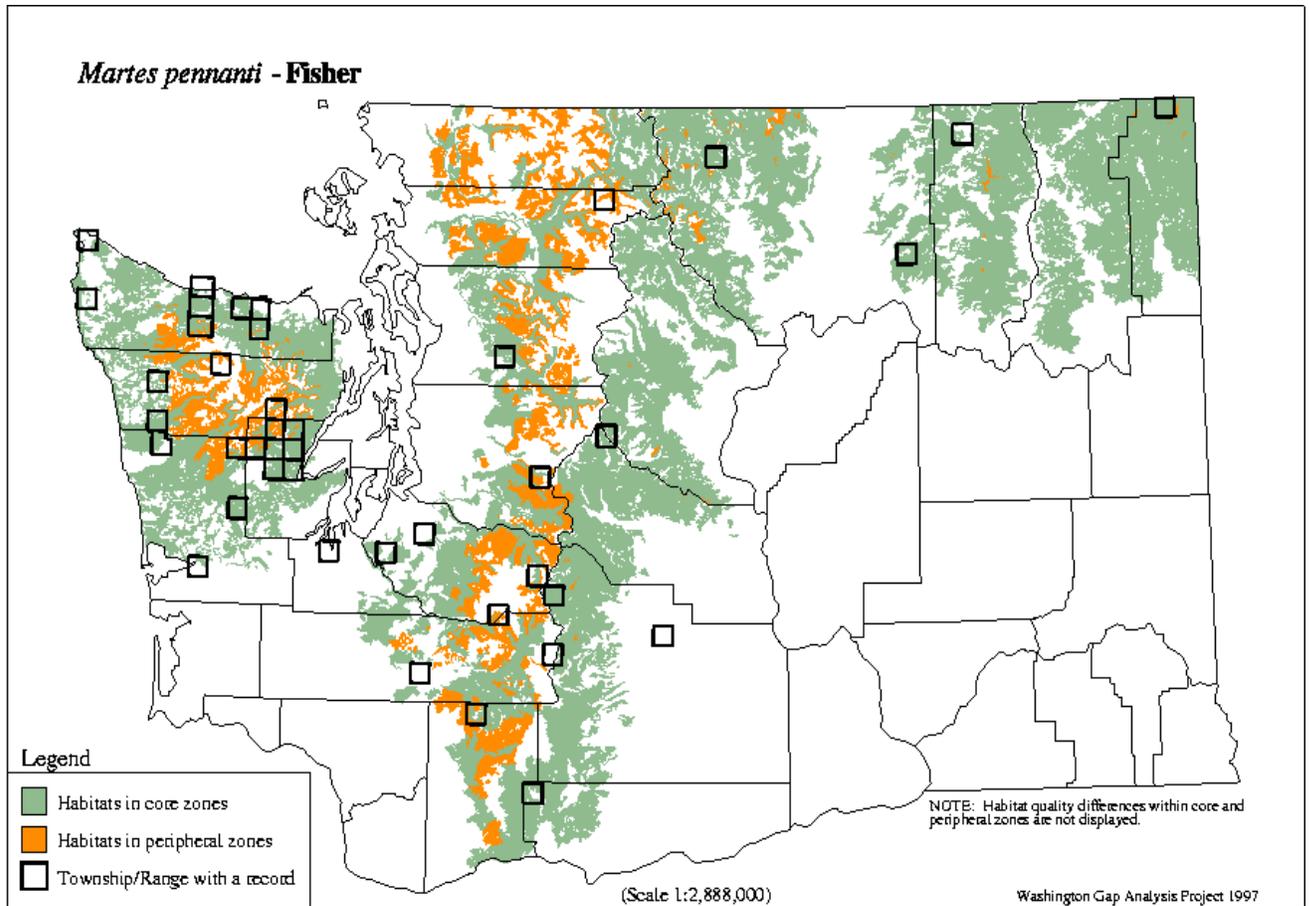


Figure 8. Potential distribution of the Fisher in Washington

#### **Riparian Bird Guild**

A great number of bird species are associated with or require riparian habitats in the White Salmon River subbasin. As a subset of this guild, neotropical migrants (e.g., willow flycatcher, yellow warbler, yellow-breasted chat, red-eyed vireo, Vaux's swift) have exhibited declining population trends. Lewis' woodpeckers are closely associated with large cottonwood stands. Historically, they were common in cottonwood habitats of the Columbia River, but declines were noted after 1965 and they are now considered extirpated in some areas. The yellow-billed cuckoo is a riparian obligate species that was once common along the Columbia River, but has not been reported in this area since 1977. Other species that are marsh obligates found in riparian-marsh habitats include the Virginia rail, sora rail, and marsh wren. Loss of riparian habitat for these birds resulted from the inundation and alteration of habitats in the White Salmon River subbasin and in the mainstem of the Columbia River.

#### **Western pond turtle (WDFW endangered Species)**

The western pond turtle is listed by Washington State as an endangered species. The western pond turtle is declining throughout most of its range and is highly vulnerable to

extirpation in Washington. The species requires a continued recovery program to ensure its survival in the state until sources of excessive mortality can be reduced or eliminated.

The western pond turtle has been extirpated from most of its range in Washington. Two populations remain in the Columbia River Gorge (Figure 9). The total number of western pond turtles in known Washington populations is estimated at 250-350 individuals, approximately half of which went through the head-start program at the Woodland Park Zoo. Additional turtles may still occur in wetlands that have not been surveyed in western Washington and the Columbia Gorge. Currently, WDFW is primarily working on Western Pond Turtle recovery in habitat near the mouth of the Klickitat River. The goal of the recovery program is to re-establish self-sustaining populations of western pond turtles in the Columbia Gorge region. The recovery objectives are to establish at least 5 populations of >200 pond turtles, composed of no more than 70% adults, which occupy habitat that is secure from development or major disturbance. It is also necessary that the populations show evidence of being sustained by natural recruitment of juveniles. The core pond turtle sites should be wetland complexes that may be less susceptible to catastrophes than sites of a single water body. The recovery objectives need to be met before the western pond turtle would be considered for downlisting to threatened status. Objectives for downlisting to sensitive are similar, except 7 populations of >200 pond turtles will be needed.

#### **Western Gray Squirrel (Threatened in Washington, 1993)**

The western gray squirrel was listed as a state threatened species in Washington in 1993, when surveys indicated that the species' distribution was becoming increasingly disjunct. Small, isolated, populations remain in south Puget Sound, the Lake Chelan area, the southeast slope Cascade region, and the Columbia River Gorge, the latter being the largest in the state. The exact reasons for this decline are unknown; however, changes in the landscape likely play a key role. Many years of fire suppression and selective logging practices have altered Washington's oak-conifer communities and the habitat of the western gray squirrel.

On mesic sites, invading Douglas-fir overtops the slow-growing, fire-adapted oak. In drier areas, drought and insects further stress overstocked forests. In some areas this has resulted in a wholesale loss of conifer, leading to intensive logging in remaining conifer stands. Dense pockets of conifer in oak woodlands, which frequently contain clusters of western gray squirrel nests, have been subjected to logging at an increasing rate in southwestern Washington.

The core population of the western gray squirrel is currently found in the lower Klickitat drainage from the southern Yakima Indian Nation boundary to the mouth of the Klickitat River. Historically, western gray squirrels were known to occur in the White Salmon River subbasin. Recent observations indicate WGS presence in the drainage but the status of the population is unknown. Current threats include loss of habitat from logging, residential development, and invasion of the eastern gray squirrel.

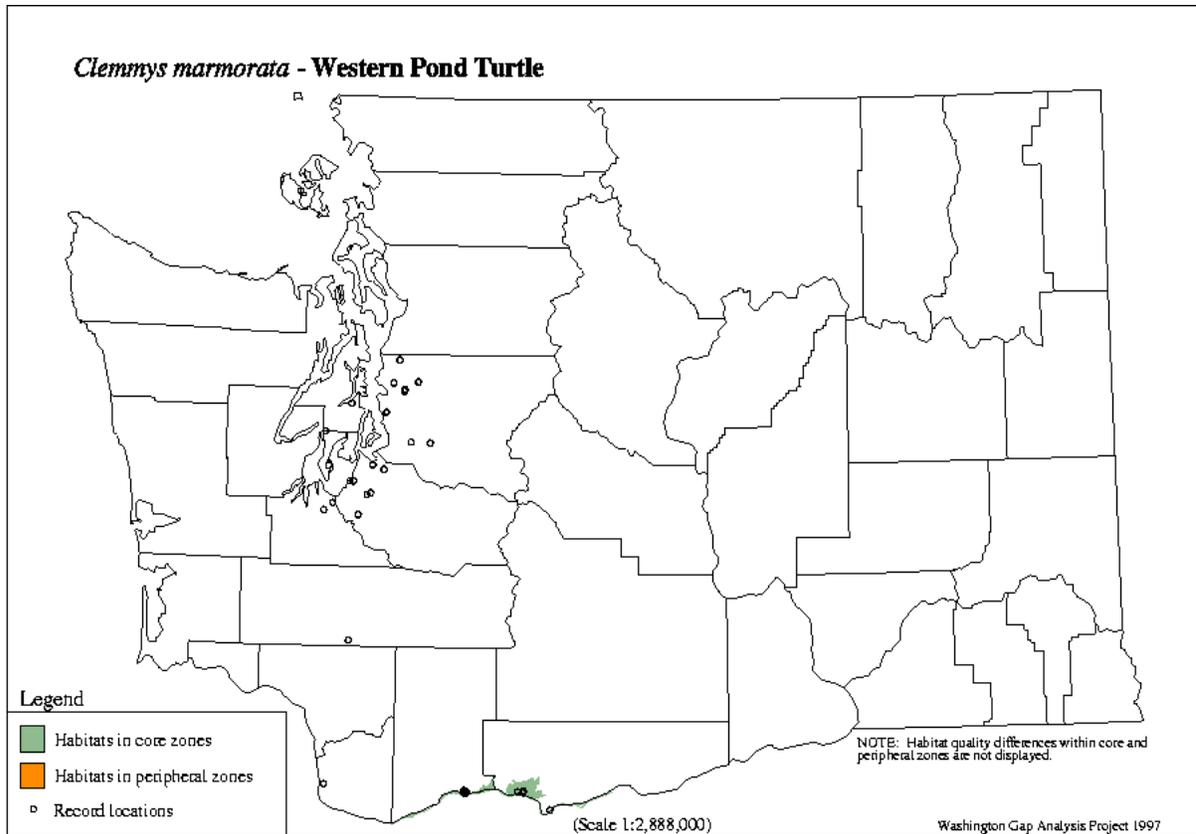


Figure 9. Distribution of Western Pond Turtle in Washington

#### **Oregon Spotted Frog (Endangered in Washington, 1999)**

The Oregon spotted frog is a Pacific Northwest endemic. Oregon spotted frogs are almost entirely aquatic in habit, leaving the wetlands only occasionally and for short durations. Wetlands associated with lakes, ponds, and slow-moving streams can provide suitable habitat; however, these aquatic environments must include a shallow emergent wetland component to be capable of supporting an Oregon spotted frog population. Historically, this critical element was found in the floodplains of many larger water bodies. Various emergent-wetland and floating aquatic plants are found in abundance in Oregon spotted frog habitat. Adult female and juvenile frogs, in particular, spend summers in relatively warm waters of this shallow emergent wetland environment. Two populations currently exist in the state of Washington: one near Trout Lake in the White Salmon River drainage and the other at Conboy National Wildlife Refuge, in the Klickitat drainage.

#### **Habitat Areas and Quality**

Current habitat conditions are a result of natural and stochastic events and the influence of current and past human land-use. In the White Salmon River these events include volcanic eruptions, earthquakes, fire, erosion/sedimentation, steam bank vegetation, large woody debris, and peak flow (USFS 1996). Past and present human activities including riparian and upslope timber harvest, hydro and splash damming, grazing, agriculture, water

withdrawal, road building, railroading, and rural development have negatively affected fish and wildlife habitat.

### Fish

The single largest loss of habitat occurred with the construction of Condit Dam and the resultant loss of habitat above this area. The White Salmon River only supports 1.2 miles of anadromous spawning and rearing habitat below the powerhouse and another 1.8 miles between the powerhouse and the dam. This is compared to approximately 40 miles of lost habitat above the dam. The second major loss occurred when the lower White Salmon River was flooded after the construction of Bonneville Dam.

A portion of the fish habitat in the White Salmon River subbasin has been surveyed by the USFS, Underwood Conservation District (UCD), and Champion Pacific Timberlands. The USFS classified federally managed stream channel in the White Salmon River based on the Rosgen classification system, which incorporates channel slope, meander width ratio, channel entrenchment, sinuosity, and width to depth ratio (Rosgen 1994). Channels were classified as A, B, C, or E. Low gradient meandering stream channels (generally Rosgen C and E channels) contain substrate and water velocities that are preferred by salmonids for spawning and early rearing. In addition, coho and chinook salmon prefer these channels for rearing to the smolt stage. Rosgen A and B channels have moderate to low sinuosity, moderate to low width to depth ratio, moderate to high gradient and high to moderate entrenchment. "A" and "B" channels are dominant in this watershed and provide excellent rainbow rearing habitat and limited spawning habitat.

In 1992-93, the UCD and USFS conducted a joint survey of fish habitat and associated riparian vegetation along 86 miles of private and state managed stream corridor within the White Salmon. This survey covered the main branches of the lower White Salmon, upper White Salmon, Trout Lake Creek, Gilmer Creek, Rattlesnake Creek, Buck Creek, Indian Creek, Mill Creek and Spring Creek. The surveys mapped and described various features related to water quality, vegetation, streambed structure, bank stability, water withdrawals, erosion, grazing, culverts, and other land-use and natural features. Results of this work are contained in a report prepared by the UCD (Hennelly 1994).

Due to the diverse life history movements exhibited by salmonids in the basin, all habitat is important at specific life history stages. Human caused impacts to "B" channels are less than "C" channels because riparian areas of "B" channels are less accessible, the increased stream gradient flushes sediment more efficiently, and the boulder-bedrock substrate maintains channel stability and natural pool/riffle ratios in "B" channels. As a general rule, "C" channels in the White Salmon River are more degraded and have poorer habitat quality than "B" and "C" channels elsewhere. These will therefore remain the focus of most restoration activities. Blockages for resident fish occur primarily in the tributaries.

The USFS manages 50% of the land within the White Salmon River subbasin. The President's Forest Plan (ROD) categorizes the basin as a Tier 2, Key Watershed. Federal land management decisions in the watershed will significantly influence the quality of habitat in the White Salmon River subbasin. Currently, national forest habitat is considered fair to excellent depending on the location. Habitat in the lower mainstem and tributaries (state and private ownership) is judged to be poor to excellent. Most habitat in the subbasin is degraded compared to historic conditions. Habitat problems noted by the USFS and others are mainly related to timber harvesting practices, roads, agriculture, water

withdrawals, (etc.) and rural development. This is evidenced by increased peak flows, increased sedimentation, lack of large woody debris, increased width-to-depth ratios, lack of riparian vegetation, and increased water temperature (Champion Pacific Timberlands 1997, USFS 1995, 1997, and 1998). Throughout the subbasin there continues to be a need to restore riparian conifer vegetation, reduce sediment delivery to streams, slow runoff rates and increase water storage capacity, reduce stream energies, eliminate barriers, enhance channel complexity, and ensure adequate recruitment of large woody debris into the system.

## Wildlife

### Riparian Habitat

The majority of terrestrial vertebrate species use riparian habitat for essential life activities and the density of wildlife in riparian areas is comparatively high. Forested riparian habitat has an abundance of snags and downed logs that are critical to many cavity birds, mammals, reptiles, and amphibians. This habitat is often characterized relatively dense understory and overstory vegetation; cottonwood, alder, and willow are commonly dominant tree species in riparian areas. Riparian habitats are often forested; however, they may contain important subcomponents such as marshes and ponds that provide critical habitat for a number of species (e.g., Virginia rails, sora rails, marsh wren). Riparian habitats also function as travel corridors between and connectivity to essential habitats (e.g., breeding, feeding, season ranges). Inundation of the lower reaches of the subbasin resulted in the loss of riparian habitat, but also the loss of connectivity provided by that habitat along the White Salmon River to the Columbia River, and along the Columbia River to other subbasins.

### Oak habitat

Oregon white oak is Washington's only native oak. Although limited and declining, oaks and their associated floras comprise distinct woodland ecosystems. The various plant communities and stand age mixtures within oak forests provide valuable habitat that contributes to wildlife diversity statewide. In conjunction with other forest types, oak woodlands provide a mix of feeding, resting, and breeding habitat for many wildlife species. More than 200 vertebrate and a profusion of invertebrate species use Washington's oak woodlands. Some species occur in especially high densities, whereas others are not typically found in Washington.

The White Salmon River subbasin supports a portion of the white oak habitat remaining in the state of Washington. Oregon white oak is considered a state priority habitat which is determined to be of significance because it is used by an abundance of mammals, birds, reptiles, and amphibians. Many invertebrates, including various moths, butterflies, gall wasps, and spiders, are found exclusively in association with this oak species. Oak/conifer associations provide contiguous aerial pathways for animals such as the state threatened western gray squirrel, and they provide important roosting, nesting, and feeding habitat for wild turkeys and other birds and mammals. Dead oaks and dead portions of live oaks harbor insect populations and provide nesting cavities. Acorns, oak leaves, fungi, and insects provide food. Some birds, such as the Nashville warbler, exhibit unusually high breeding densities in oak. Oaks in Washington may play a critical role in

the conservation of neotropical migrant birds that migrate through, or nest in, Oregon white oak woodlands

### **Watershed Assessment**

The Yakama Indian Nation, State and federal agencies, Champion Pacific Timberlands, and the UCD have completed various watershed assessments. In 1990, the Columbia Basin System Planning Salmon and Steelhead Production Plan was developed to identify options and strategies for increasing steelhead and salmon production in the Columbia River Basin (WDF 1990). The White Salmon River Subbasin Plan was one of 31 developed under the Columbia Basin Fish and Wildlife Authority. This plan documented the existing and potential production for winter and summer steelhead, spring and fall chinook, and coho salmon, summarized current management goals and objectives, documented existing management efforts, identified problems and opportunities associated with increasing steelhead and salmon production, and presented preferred and alternative management strategies.

Between 1992 and 1994, the UCD and WMC undertook a detailed investigation of quality conditions of surface waters in the basin. This work represented the first phase of a basin-wide assessment done in conjunction with the multi-entity driven "White Salmon River Watershed Enhancement Project." The two-fold purpose of the water quality analysis was to establish a baseline water quality reference and delineate the causes of nonpoint source water pollution occurring in the watershed's major subbasins. Results of the project indicated two significant violations in state water quality standards. Fecal coliform standards were exceeded by varying degree throughout most of the lower subbasins. Temperature standards were exceeded in the Trout Lake Creek and Rattlesnake Creek subbasins, and were approaching standard in the Gilmer Creek and Buck Creek subbasins. Finally, trends involving several other parameters including suspended solids (sediment), nutrients, and dissolved solids were discovered that portray the need to accelerate proactive and preventative watershed treatments (Stampfli 1994). Similar results involving stream temperatures were noted by the USFS involving Trout Lake Creek (Coffin 1993), and by the Yakama Indian Nation (YIN) concerning Rattlesnake Creek and Indian Creek (Mathews 1992).

The UCD and WMC undertook a second analysis of the watershed during 1992 and 1994 that served to detail current land ownership and land use. The overall goal of this work was to evaluate current land-use patterns in concert with water quality data, thereby enabling development of watershed enhancement strategies. Through interviews and on-site visits involving 60 major landowners (controlling 89% of the basin), a description of typical land management practices was formulated along with a brief evaluation of potential water quality impacts (UCD 1994).

In 1997, Champion Pacific Timberlands Inc., in partnership with the Washington State Department of Natural Resources (DNR) completed a protocol watershed analysis involving Rattlesnake Creek. This work contains a detailed appraisal of mass wasting potential, surface erosion, riparian function, hydrologic change, fish habitat and stream channels within this 34,915 acre system. Major findings and recommendations for action include the need to: a) increase the size and frequency of conifers in the riparian zone to provide shade and future recruitment of large woody debris, b) slow water runoff rates and increase water storage capacity, c) reduce stream energies and introduce more channel

variability, and d) improve fish habitat and reduce barriers in the mainstem and several tributaries.

The USFS completed a federal watershed analysis for the Trout Lake Creek, Cave-Bear Creek, and the Upper White Salmon River in 1995, 1997, and 1998, respectively, using the methods described in *Ecosystem Analysis at the Watershed Scale: Federal Guide for Watershed Analysis Version 2.2* (USDA-FS et al. 1995). This process responds to the President's Northwest Forest Plan, which specifies watershed analysis as an integral component of its Aquatic Conservation Strategy. The standard six step process includes: 1) Characterization of the watershed, 2) Identification of issues and key questions, 3) Definition of current conditions, 4) Definition of historic conditions, 5) Synthesis and interpretation of data, and 6) Recommendations. The watershed analysis is an interdisciplinary exercise, which incorporates the physical, biological environment along with the social sciences. Resources areas covered in the analysis include: 1) Geological and physical processes, 2) Vegetation, 3) Terrestrial wildlife, 4) Hydrology, 5) Stream channels, 6) Water quality, 7) Fisheries, and 8) Human uses. The Panikanic Watershed analysis, covering the area near Rattlesnake Creek, was completed in 1997 using DNR protocols. The study identified water temperatures exceeding guidelines, increased peak flows, increased sedimentation, lack of large woody debris, increased width-to-depth ratios, and lack of riparian vegetation (USFS 1996). Throughout the three systems analyzed, there continues to be a need to restore riparian vegetation, reduce sediment delivery to streams, enhance channel complexity, and ensure adequate recruitment of large woody debris into the system. The Washington Department of Ecology (WDE) has designated stream segments of the White Salmon River subbasin as water quality impaired. The 303(d) list identifies segments that do not meet the standards of the federal Clean Water Act.

In 1999, the Washington Conservation Commission (WCC) initiated a limiting factors analysis for salmon and steelhead in the White Salmon subbasin as part of the WRIA 29 evaluation. (WCC 1999). Completion of this report is scheduled for winter of 2000. The primary finding of the draft document is the fact that salmon and steelhead production is currently being reduced by Condit Dam. The dam blocks anadromous fish passage, recruitment of coarse substrate, produces low flows in the bypass reach, stands fish due to ramping, and through operations has helped contribute to lack of channel complexity and pools below the dam.

## **Limiting Factors**

### **Fish**

Stream surveys h, subbasin assessments, and watershed analyses were used to evaluate limiting factors in the White Salmon River (WDW et al. 1990, CBFWA 1995, USFS 1996, USFS 1997, USFS 1998, Champion 1997). The watershed assessments indicate that fish production is primarily limited by Condit Dam. Other factors limiting both anadromous and resident fish include past riparian timber harvests, past removal of log jams, road building, grazing, agriculture, and regeneration harvest within the rain on snow zone. Alluvial reaches within the mainstem and tributaries, have been significantly impacted. Many of these reaches initially disturbed reaches have not recovered and in some cases are getting worse. Throughout the subbasin there continues to be a need to restore riparian vegetation to reduce water temperature, and peak flows, increase future

wood recruitment potential, reduce sediment delivery to streams, and ensure continuous recruitment of large woody debris into the system. Until passage at Condit Dam is realized, restoration activities would provide most benefits to resident fish. The one exception is that actions that maintain or reduce summer water temperatures would assist all upriver anadromous fish that pause in lower portion of the White Salmon River before continuing their upriver journey.

#### **Wildlife**

For most species, there is a lack of essential historical data to adequately evaluate the impacts of Bonneville pool inundation. For the Larch Mountain Salamander, surveys are needed in areas where management may disturb potential habitats as well as surveys in the periphery of its known range to better define its distribution. For the fisher, it is unknown if there is adequate habitat in the southern Cascades to support a viable population should individuals successfully disperse from Oregon or if individuals are reintroduced from another population. In addition, information is lacking on how to effectively mitigate for the loss of riparian habitats and the connectivity they provide. Further information is needed to evaluate current loss of deer winter range from timber harvest and residential development.

#### **Artificial Production**

No hatcheries are found in the White Salmon River; however, hatchery spring chinook are acclimated at the USFWS raceways at RM 1. These fish are Carson stock obtained from either the Little White Salmon National Fish Hatchery (NFH) or Carson NFH to provide harvest opportunity. These releases have been ongoing since the 1980's. Hatchery summer and winter steelhead smolts have been released into the basin. Releases ranged from 20,000 to 40,000 per race. The USFWS Hatchery and Genetic Management Plan for Spring Creek Hatchery's tule fall chinook salmon program is included in the Appendix.

#### **Existing and Past Efforts**

Due to the lack of passage for anadromous fish at Condit Dam, past and ongoing efforts for fish populations have centered around the USFWS chinook and WDFW steelhead hatchery program funded through the Mitchell Act. Habitat protection has become a higher priority. The USFS has implemented the President Forest Plan and the State of Washington has increased habitat protection through the Timber, Fish, and Wildlife process. During the recent Federal Energy Regulatory Commission (FERC) relicensing process, the fisheries agencies and tribes asked for and FERC required upstream and downstream passage at Condit Dam.

1989 – UCD and DNR complete the “Rattlesnake Creek Riparian Restoration Project,” and early effort aimed at demonstrating modern approaches to riparian zone and in-channel restoration.

1990 – Fisheries agencies and tribes completed a subbasin plan.

1992 – UCD, USFS, DNR, timber companies, and other cooperators initiated the White Salmon watershed enhancement project” with funding from Department of Energy (DOE).

1993 – Watershed Management Committee (WMC) and Technical Advisory Committee (TAC) formed on the White Salmon Watershed.

1994 – White Salmon River Watershed – Basin Land-Use Investigative Report” completed defining existing human patterns and potential water quality limiting factors.

1994 – White Salmon River Watershed Water Quality Investigative Report” completed documenting past and current water quality at the subbasin level.

1994 – “White Salmon River Watershed Enhancement Plan,” a DOE approved watershed plan, completed. This plan describes voluntary action for enhancing water quality, fish, and wildlife.

1994-98 – Phase I watershed plan implementation project completed using primarily DOE funds. Accomplishments include restoration, technical assistance, education, monitoring and assessment.

1996 – Trout Lake Creek Watershed Analysis.

1997 – Cave-Bear Watershed Analysis

1997 – Panikanic (Rattlesnake Creek) watershed analysis

1998 – Upper White Salmon Watershed Analysis.

1998- 00 Phase II watershed plan implementation including restoration, technical assistance, education, monitoring and assessment.

1999 – A settlement agreement was signed by PacifiCorp and interveners in the FERC relicensing proceedings. The agreement, yet to be approved by FERC, stipulates the removal of Condit Dam by year 2006.

2000 - Riparian project in which 6500 conifer seedlings and 3500 live stakes were planted in the middle reach of Rattlesnake Creek.

## **Subbasin Management**

### **Goals, Objectives, and Strategies**

The participants in this process were directed to provide identified goals, objectives, and strategies for the subbasin. The objectives may not be quantifiable or include a time period. This is due in part to the watershed assessments not being finalized, and the lack of consensus on the desired future condition of fish and wildlife populations and their habitat. In addition, recent data from the White Salmon River and other Columbia River tributaries indicates that salmon and steelhead populations have experienced wide swings in abundance making it difficult to establish meaningful quantifiable objectives without taking into account natural environmental variability. The participants hope to use the assessments and other data to fully develop these objectives, strategies, and actions in the coming years.

#### **Cornerstone Goal (all participants)**

Restore wildlife and fish populations to levels that support ecosystem benefits and harvest, restoration of the habitat on which these populations rely (restore the natural ecosystem functions of the White Salmon watershed), sustain and/or restore water quality, and maintain long-term economic and community sustainability.

## Goals

### **Yakama Tribe**

1. Restore/reclaim anadromous fishes to the rivers and streams that support the historic cultural and economic practices of the tribes.
2. Protect tribal sovereignty and treaty rights.

### **State of Washington (Washington's Statewide Salmon Strategy)**

1. Restore salmon, steelhead, and trout populations to healthy harvestable levels and improve the habitat on which fish rely on.

### **Washington Department of Fish and Wildlife**

1. Sound stewardship of fish and wildlife. (Mission statement: "Sound stewardship of fish and wildlife.")
2. Protect, restore, and enhance the productivity, production, and diversity of wild salmonids and their ecosystems to sustain ceremonial, subsistence, commercial, and recreational fisheries; non-consumptive fish benefits; and other related cultural and ecological values." (Wild Salmonid Policy - WDFW 1997)

### **Underwood Conservation District of White Salmon, WA**

1. To actively enhance the level of natural resource stewardship exercised by landowners, manager and resource users in the district (Skamania and Klickitat counties).

### **Columbia River Inter-Tribal Fisheries Enforcement**

Add to or revise existing content to include the following language:

The overall goal is to continue to protect and restore the health and function of the watershed. Specific goals, objectives, and strategies are listed below.

Protect, enhance and restore wild and natural anadromous and resident fish populations within this watershed of the Columbia Gorge Province.

An organized multi-entity watershed management committee and allied technical advisory group has been active in the White Salmon River watershed since 1993. These groups are an outgrowth of the White Salmon River Watershed Enhancement Project, which was initiated by the Underwood Conservation District in 1992. The White Salmon project started subsequent to finding that basin water quality was being degraded by a number of land-use activities. It was then determined that the optimal course for addressing these concerns would be through the formation and action of a local stakeholders group to both identify concerns and develop watershed enhancement strategies. By 1994, the White Salmon River Watershed Management Committee (WMC) and Technical Advisory Committee (TAC) had jointly developed several watershed inventory and analysis documents, along with a "watershed enhancement plan" designed to lay forth a vision and principles for land management in the basin. The plan currently being implemented (White Salmon River Watershed Enhancement Plan, 1994) is intended to restore water quality, fish and wildlife habitat and provide long-term economic stability to the basin's economy using a series of voluntary-based actions. The document is divided into a number of chapters based upon land-use categories (forest,

pasture, residential, etc.). Each chapter is furthermore divided into four basic planning elements which depict goals and strategies intended for each of the land-use categories. These planning elements include: a) direct action goals; b) technical assistance and cost-share goals; c) citizen involvement and education goals; and d) recommendations for changes to current laws, regulations and ordinances. The White Salmon River Watershed Enhancement Project is currently in its 7<sup>th</sup> year of implementation. Current funding is being provided by the WA Department of Ecology and WA Conservation Commission. A number of projects are underway in cooperation with landowners, groups and agencies. The type of projects currently and past completed include riparian enhancement, riparian silviculture, fish habitat improvements, waste clean-up, dairy waste design and construction, public involvement events, environmental monitoring and project monitoring.

### Objectives Fish

#### **Washington Department of Ecology (in conjunction with Skamania County and WDFW)**

1. Develop a plan within a four year timeframe that will address water quantity, water quality, habitat and instream flow. Underwood Conservation District of White Salmon, Washington.
2. Continually involve local agencies and citizens in activities related to planning and implementation work that is a result of watershed framework activities.

#### **Columbia River Inter-Tribal Fisheries Enforcement**

Maintain natural populations of anadromous and resident salmonids at levels that promote increased utilization of available habitat and that contribute to tribal and non-tribal fisheries as measured by an increasing trend in population abundance and distribution by the year 2012.

### Fish Strategies

#### **Yakama Tribe**

1. Improve adult pre-spawning survival;
2. Improve juvenile rearing survival;
3. Improve adult and juvenile passage survival; and

#### **US Forest Service**

1. Reduce water temperatures.
2. Restore riparian areas.
3. Reduce road densities.
4. Increase the quality of pools through recruitment of large woody debris.

#### **Underwood Conservation District of White Salmon, Washington**

1. Direct on-ground conservation action;
2. Offer technical and cost-share assistance to landowners and agencies
3. Conducting citizen involvement and environmental education activities

4. Monitor of project enactment and environmental results for measuring progress and adapting programs to meet changing needs.

#### **Columbia River Inter-Tribal Fisheries Enforcement**

1. Integrate conservation law enforcement protection into fish, wildlife and habitat management.
2. Identify and enforce laws and rules pertaining to fish passage, riparian habitat, and water quality protection. Provide information on enforcement actions to the system-wide conservation enforcement monitoring and evaluation project.
3. Identify and enforce laws and rules pertaining to exotic fish transfers.
4. Identify violations of laws and rules pertaining to habitat protection and provide information to appropriate state, federal or tribal law enforcement entity.
5. Increase enforcement of laws and fishing regulations pertaining to illegal take of fish (all life stages).
6. Continue enforcement of wildlife laws and regulations affecting wildlife species and habitat.

Specific action items for hatchery production can be found in the Spring Creek National Fish Hatchery HGMP (see Appendix), Tribal Fish Restoration Plan, Lower Columbia Steelhead Conservation Initiative, and WDFW's Wild Salmonid Policy.

#### **Research, Monitoring, and Evaluation Activities**

Due to the lack of anadromous passage at Condit Dam, research, monitoring, and evaluation activities in this basin have received a lower priority than basins with significant anadromous fish runs; however, with the FERC requirements for fish passage and the discussions on the removal of Condit Dam, it is expected that these activities will increase. Current monitoring activities in the basin include temperature, photo documentation, and restoration projects.

The Columbia Basin Law Enforcement Council (CBLEC) coordinates state, federal and tribal conservation law enforcement efforts throughout the Columbia Basin. Currently, a consultant for Columbia River Inter-Tribal Fisheries Enforcement is conducting monitoring and evaluation of conservation enforcement in the mainstem Columbia River between Bonneville and McNary Dams, including cooperative enforcement actions in the tributaries.

#### **Fish and Wildlife Needs**

- Collect basin data on fish habitat quality and quantity to complete comprehensive assessment.  
*Rationale:* To complete a comprehensive assessment, additional habitat data is needed including: an inventory and status of fish habitat and water quality within the basin, an inventory and status of all water withdrawals, inventory and status of all artificial barriers, inventory and status on roads within the basin and a prioritized list for road decommissionings, and an assessment on declining flows within the Rattlesnake Creek.

This would also include establishment of a stream gauge when Condit Dam gauge operation is terminated.

- Develop a comprehensive watershed assessment.  
*Rationale:* Only portions of the White Salmon River have been assessed. The development of one assessment would review actions for the entire basin, making one cohesive plan.
- Continue to refine anadromous reintroduction program.  
*Rationale:* Many questions still remain unanswered regarding the reintroduction of anadromous fish above Condit Dam including effects of existing fish and wildlife populations, and effects of removal on fish habitat and river morphology.
- Determine abundance, distribution, survival by life-stage, and status of fish and wildlife native to the watershed.  
*Rationale:* Abundance and survival estimates will be needed to determine if habitat restoration programs including fish re-colonization of the upper watershed are working and to determine if these fish populations are rebuilding. Determination of the status and abundance of listed fish populations including steelhead, chinook salmon, chum salmon, and bull trout is needed in order to recover these listed fish. Coastal cutthroat trout have been proposed for listing under ESA and coho salmon are considered a candidate for listing under ESA because of possible lowered status across their distributional range. Little is known about historical and current distribution and status of these fish in this watershed. The abundance of pacific lamprey has declined above Bonneville Dam. In addition, recent observations during fish sampling and comparison of these observations with historical observations suggest that crayfish have disappeared from some of their former range. Crayfish and lamprey likely are important parts of the food chain and documenting their distribution and status is an important factor for assessment of health of the Wind River ecosystem. Also, since rainbow trout have been listed as one of the remarkable resources in the “Wild and Scenic” section of the White Salmon River, these populations need to be monitored to ensure that this resources continues to remain healthy.
- Determine genetic and life history types of native fish and wildlife and the strength of their current expression relative to historical and desired future conditions.  
*Rationale:* Maintaining life history and genetic diversity allow fish to be productive under the current and a wide variety of future conditions. Determining these levels of diversity will help develop successful recovery strategies.
- Assess effect of natural escapement of non-native hatchery fish on natural production of native fish.  
*Rationale:* Brook trout are not native to the White Salmon River. High brook trout abundance may present an ecological risks to native ESA listed bull trout, or other species. These interactions should be evaluated to determine if negative interactions keep the native fish populations from rebounding if introduced fishes are present in the watershed.

- Determine the effectiveness of habitat restoration projects on achieving the desired physical change and measure the response of wild steelhead populations to these changes.  
*Rationale:* As agencies request funds for habitat restoration in the White Salmon River, large-scale monitoring and site-specific monitoring projects are needed to evaluate the effectiveness of these actions to rebuild fish populations.
- Assess effect of operations of Bonneville and The Dalles dams on the fish and wildlife production capacity and migration corridor of the portion of Little White Salmon River that is inundated with the impounded waters.  
*Rationale:* The inundation by Bonneville Pool has permanently flooded and created Drano Lake. Fish production and wildlife may be negatively impacted by large-scale ecosystem functional changes including sedimentation, water temperature, turbidity, predator access in this area.
- Implement restoration actions identified in the watershed assessments that are consistent with recovery of fish and wildlife populations and their habitat.  
*Rationale:* Restoration projects that are the outcome of watershed assessments and have gone through a review process, have addressed factors that limit the recovery of fish and wildlife populations. These projects should have a high probability for success. The above or modified monitoring and evaluation programs should be funded as part of these restoration activities.
- Watershed coordination and local stewardship programs.  
*Rationale:* The land and resource management decision needed to recovery fish and wildlife populations and their habitat will impact local residents. Many of these people are knowledgeable about these resources and should be part of the decision process. Their involvement is very important to the outcome of management decisions and address local concerns about long-term community and economic sustainability.
- Preservation of viable fish & wildlife populations through improved habitat protection, habitat enhancement and law enforcement

Enhanced fish, wildlife & habitat law enforcement was conducted throughout the Columbia Basin by federal, state and tribal entities during 1991-1998. Beginning in May 2000, the Columbia River Fisheries Enforcement Department is implementing increased conservation enforcement efforts in the mainstem Columbia, and its tributaries -- in cooperation with adjoining jurisdictions.

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## Subbasin Recommendations

### **FY 2001 Projects Proposals Review**

The Columbia Gorge Province Technical Team, composed of representatives from ODFW, WDFW, CRITFC, CTWSRO and YN met to review FY 2001 project funding proposals on October 10 and 11, 2000. The team reviewed two subbasin proposals for new projects seeking funding for the next three years in the White Salmon River Subbasin. The review of one additional project which addresses needs across multiple subbasins is also provided. Each project proposal and team funding recommendation is discussed below as an ongoing or new project. Table 1 presents a matrix summary with the individual projects, their relationship to identified subbasin resource protection /restoration strategies, and the subbasin team’s funding recommendation.

### **Projects and Budgets**

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Project: 21009 - Assess current and potential salmonid production in Rattlesnake Creek associated with restoration efforts

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**Sponsor:** UCD, YN, USGS

**Short Description:**

Address a unique opportunity to document habitat conditions and fish population status within the Rattlesnake Creek watershed prior to major habitat restoration activities and before Condit Dam removal and the reintroduction of anadromous salmonids.

**Abbreviated Abstract**

We propose to address a unique opportunity to document existing habitat conditions, the status of fish populations, and restoration priority sites within the Rattlesnake Creek watershed (White Salmon River Subbasin) before major habitat restoration activities are implemented and prior to the reintroduction of salmon and steelhead with the planned removal of Condit Dam. As fishery biologists and habitat restoration specialists, we recognize the need to document and learn from our efforts and we are aware of the importance of being accountable for the time and money expended on such activities. Rarely, however, are we granted an opportunity to adequately assess fish populations and habitat conditions before and after a restoration activity is implemented. Because returning adult salmon *Oncorhynchus* spp. and steelhead *O. mykiss* have not had access to Rattlesnake Creek since 1914, there is a unique opportunity to document current habitat conditions and fish populations and to track changes in these parameters as restoration efforts are implemented in the White Salmon River Subbasin. An assessment of resident trout populations should serve as a good surrogate for evaluating factors that would limit salmon and steelhead production in the watershed.

**Relationship to Other Projects**

Project ID	Title	Nature of Relationship
9802600	Document Native Trout Populations	The project sponsors will share information and coordinate sampling activities with these two projects where possible.
9902400	Bull Trout Population Assessment in the Columbia River Gorge, WA	

**Relationship to Existing Goals, Objectives and Strategies**

This project addresses several needs identified in the subbasin summary including “collect basin data on fish habitat quality and quantity to complete comprehensive assessment...,” “develop a comprehensive watershed assessment...,” and, “determine abundance, distribution, survival by life stage, and status of fish and wildlife native to the watershed...”

**Review Comments**

**Budget**

FY01	FY02	FY03
Rec: \$227,951 Category: Urgent/High Priority Notes: This project provides a tremendous opportunity to monitor the	Rec: \$255,921 Category: Urgent/High Priority	Rec: \$252,884 Category: Urgent/High Priority

FY01	FY02	FY03
river before and after dam removal.		

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Project: 21012 - Evaluate Status of Coastal Cutthroat Trout in the Columbia River Basin above Bonneville Dam

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**Sponsor:** USGS-CRRL

**Short Description:**

Survey Columbia River tributaries above Bonneville Dam for coastal cutthroat trout to determine population status, to identify limiting factors, and to understand the role of current and past human and natural disturbances affecting status.

**Abbreviated Abstract**

The goal of the proposed study is to provide vital information on the current status of cutthroat trout populations in the lower Columbia River basin as a necessary prerequisite to future recovery efforts. Study objectives are to 1) document existing data on historical and current distribution and describe management practices that affect the coastal form of cutthroat trout in the Columbia River basin above Bonneville Dam, and 2) determine status of naturally reproducing populations of cutthroat trout above Bonneville Dam. Objective 1 will be conducted from 2001-02 using a combination of questionnaires and a review of existing biological data and land-use, production, and harvest management practices. Objective 2 will be conducted from 2001-03 by conducting fish and habitat surveys.

**Relationship to Other Projects**

<b>Project ID</b>	<b>Title</b>	<b>Nature of Relationship</b>
9304000	Fifteenmile Creek Habitat Restoration Project	We will contact project biologists for their help in identifying potential populations of cutthroat trout populations and we will survey this watershed. Habitat improvements for steelhead could help cutthroat trout.
9405400	Bull Trout Life History Project -- NE Oregon	We will contact project biologists for their help in identifying potential populations of cutthroat trout populations in the Hood River watershed, a watershed that we will survey for the proposed project.
8805304	Hood River Production Program	We will contact project biologists for their help in identifying potential populations of cutthroat trout populations in the Hood River watershed, a watershed that we will survey for the proposed project.
9204101	Fish Passage Evaluations - Lower Columbia River	This project may well have data on passage of sea-run cutthroat trout to the Hood, White Salmon, Little White Salmon, Klickitat, and Wind rivers, all of which we plan to survey during the proposed project.
8812000	Yakima Natural Production and Enhancement Program	This project's activities and findings in the Klickitat watershed may help us locate populations of cutthroat trout.
9801900	Wind River Watershed Project	We will contact project biologists for their help in identifying potential populations of cutthroat trout populations in the Wind River watershed, a watershed that we will survey for the proposed project.
9033	Document Native Trout Populations	We will contact project biologist to see what they have found in some of the upper reaches of watersheds that we intend to sample. Our surveys will be more extensive (covering the Gorge Province) and in some areas more intensive (population estimates).

**Relationship to Existing Goals, Objectives and Strategies**

Project Proposal 21012 is a request for funding a project to evaluate the status of coastal cutthroat in the province. This project addresses several needs identified in the Wind River Subbasin Summary including “Determine abundance, distribution, survival by life-stage, and status of fish and wildlife native to the watershed,” “Determine genetic and life history

types of native fish and wildlife and the strength of their current expression relative to historical and desired future conditions,” and, “Assess effect of natural escapement of non-native hatchery fish on natural production of native fish.”

**Review Comments**

Many projects within the basin are finding cutthroat information. An organized accumulation of this information is needed. This project should first accumulate all available information from all fish and wildlife agencies and tribes in the basin. Fieldwork should then focus on subbasins and areas where data is missing.

<b>Budget</b>		
<b>FY01</b>	<b>FY02</b>	<b>FY03</b>
Rec: \$39,770 Category: Urgent/High Priority Notes: Funding for Objective 1 should be considered a high priority. The other objectives should be considered high priority in FY 02 and 03 if warranted based on the results from FY 01. We recommend funding only Objective 1 during FY 2001.	Rec: \$240,926 Category: Urgent/High Priority	Rec: \$253,038 Category: Urgent/High Priority

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**Project: 21033 - White Salmon River Watershed Enhancement Project**

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**Sponsor:** UCD

**Short Description:**

A comprehensive, five year plan aimed to improve fish habitat, riparian and upslope watershed conditions, and land stewardship through direct restorative actions, cooperative work with stakeholders, and promoting education and citizen involvement.

**Abbreviated Abstract**

The White Salmon River is a “wild and scenic” waterway, which was placed on the Washington State’s 303(d) “water quality limited list” in 1994 for exceedance of state standards in temperature and coliform. Anadromous fish passage is blocked by Condit Dam at river mile 3.3. The dam operators are currently being required to provide fish passage within six years, and have publicly stated they will remove the dam. This will make at least 13 miles of the mainstem White Salmon River and several tributaries assessable to anadromous fish populations. The overall goal of this proposal is to restore fish habitat, including water quality, for resident and anadromous fish in the White Salmon River subbasin. Specific objectives include: restoring processes and functions that will improve fish habitat; coordination and monitoring of watershed assessment and restoration activities by supporting the White Salmon River Watershed Management and Technical Advisory Committees; evaluation and documentation of water quality, fish habitat, and

riparian conditions; restoration of hydrologic conditions and elimination of water quality degradation sources; and education of the public on watershed issues. Immediate high priority restoration needs will be met and all restoration projects will be monitored (some by permanent photo documentation sites).

**Relationship to Other Projects**

<b>Project ID</b>	<b>Title</b>	<b>Nature of Relationship</b>
9095	<p>Bull Trout Project</p> <p>This project also has a direct connection to the FERC re-licensing agreement to remove Condit dam.</p>	<p>This project will serve to develop an understanding of fish distribution and species composition in the White Salmon watershed.</p>

**Relationship to Existing Goals, Objectives and Strategies**

This project will fill critical data gaps in the sub-basin summary and Ecosystem Diagnostic Treatment (EDT) model. The project directly addresses the needs identified in the subbasin summary including "Collect basin data on fish habitat and quality and quantity to complete comprehensive assessment" and "Implement restoration actions identified in the watershed assessments that are consistent with recovery of fish and wildlife populations and their habitat." Categorizing this project as a "Recommended Action" is a prioritization issue within the subbasin. Highest priority was given to evaluating the removal of Condit Dam. In the future as dam removal gets nearer, this project will become a "High Priority."

**Review Comments**

**Budget**

<b>FY01</b>	<b>FY02</b>	<b>FY03</b>
<p>Rec: \$242,221</p> <p>Category: Recommended Action</p>	<p>Rec: \$266,441</p> <p>Category: Recommended Action</p>	<p>Rec: \$293,086</p> <p>Category: Recommended Action</p>

**Research, Monitoring and Evaluation Activities**

Various research, monitoring and evaluation activities are currently ongoing in the White Salmon River basin. These efforts intend to define the condition of native/anadromous fish, water quality, water flow, habitat, limiting factors and other conditions.

The WDFW is monitoring the number of Chinook salmon occurring below Condit Dam (RM 3.2). Intermittent monitoring of steelhead escapement and smolt production has also been performed by WDFW during the past. The department also conducts surveys of opening day harvest of trout within Northwestern Lake. Finally, the department is currently performing a bull trout survey in the entire watershed, with participation of the USFS – Mt. Adams Ranger District. This work is intended to document the existence of suitable cold-water habitat, and the presence of bull trout using day and night snorkeling methods.

Regular water quality monitoring and evaluation activity has been conducted on the White Salmon River basin since 1993. The UCD and USFS completed a baseline study in

1994. The study details a broad list of water quality parameters at 10 primary stations covering all major sub-basins. Monitoring by the UCD, USFS and others has continued yearly since 1994. Current work targets the continuous monitoring of water temperature at 12+ stations. Stream discharge is continuously recorded by the USGS at the mouth of the White Salmon. Intermittent discharge measurements are also performed at Rattlesnake Creek, Gilmer Creek and the White Salmon at Husum.

The WA Conservation Commission (WCC) is presently performing a limiting factors analysis on the White Salmon as part of the HB 2496 Salmon Recovery Act process. The effort will utilize a considerable amount of existing and evolving project-related data that is being collected on an ongoing basis by agencies such as the UCD, WDFW and USFS.

### **Needed Future Actions**

A wide range of future actions will be required to effectively promote, support and sustain the on-ground restoration, assessment, monitoring and educational tasks which are proposed under this plan. Effective watershed restoration is highly dependent upon a wide range of landowner, corporate, agency and environmental interests, which play important roles in natural resource management within the White Salmon. Since the White Salmon River Watershed Management Committee (WMC) is the primary group coordinating such players, a continuing need exists to maintain the function of the WMC.

Complete restoration of the White Salmon basin is dependent upon the removal of Condit Dam – an action expected to occur in 2006. Before this event, broad ranges of biological and physical assessments of the basin are needed. Of primary importance is the determination of current fish population status (including genetics) above and below the dam. Activities proposed under Project 21009 will begin this work, however, additional tasks should be completed. The WDFW is currently trying to budget activities to collect, analyze and archive fish genetic material from all portions of the White Salmon. Such data will prove critical to the future interpretation of the effects of dam removal and subsequent re-colonization subsequent to 90 years of anadromous absence. Beyond this issue, the White Salmon Technical Advisory Committee (TAC) has collected a comprehensive list of White Salmon projects needing accomplished before dam removal. Other needs include inventory of water withdrawals and screening status, EDT analysis, temperature modeling, population and life histories, determination of effective habitat restoration methods, identification of optimal educational strategies, road abandonment inventories, inventory of water gauging needs, geomorphic assessment of Rattlesnake Creek, assessment of nutrient inputs, identification of barriers intended for removal, and determination of stocks intended for reintroduction after dam removal.

Restoration of the White Salmon will also hinge-upon the successful application of various federal and state programs intended to support watershed restoration. Federal programs such as FIP, CRP and WIP are instrumental to achieving the riparian habitat restoration goals within this plan. These programs are intended to provide incentives to private landowners for the planting of large conifers and other “function trees” on degraded fish-bearing streams. State programs such a CREP are intended to provide similar technical and cost-share incentives. In addition, other cost-share programs and technical help are available (and should be promoted) through USFWS, WSU Extension,

WDFW, UCD and DNR. Local entities such as conservation districts and watershed councils are critical to effective marketing and implementation of such public programs.

The long-term success and sustainability of any work accomplished under this plan will hinge upon the future modification of human activities and behaviors. It is widely recognized that such change begins and ends with public education. While many watershed education tasks are included under the projects listed in this plan, many more are needed. Every entity helping to draft this plan intends to assist in elevating the level of classroom and community education in the White Salmon. The list of education opportunities available range from providing technical speakers to classrooms, helping to devise environmental education curricula, setting-up outdoor classrooms, helping to organize river clean-up events, publication of project results in local newspapers, etc.

### **Actions by Others**

As highlighted above, the long-term success of this plan is dependent upon the efforts of every stakeholder in the basin. Coordination of work by the timber industry, government, agriculture, recreation, land developers and others must continue to evolve through the actions of the White Salmon Watershed Management Committee and other basin-wide planning efforts such as the WRIA 29 Water Resources planning process.

Timely implementation of allied fish population studies, water quality investigations, habitat assessments, project implementation and monitoring by agencies such as WDFW, YN, USFS, USFWS, DNR, NRCS and USGS is currently critical to the upcoming removal of Condit Dam and ultimate restoration of the White Salmon. A considerable volume of such work is now being undertaken by the USFS on forest service land in the watershed. A similar amount of work is being undertaken on private land through implementation of the CREP program and DOE-funded White Salmon River Watershed Enhancement Project by the UCD and NRCS. Other entities involved in the White Salmon River Watershed Enhancement Project are likewise striving to correct known water quality and habitat problems.

**Table 1. White Salmon River Subbasin Summary FY 2001 BPA Funding Proposal Matrix**

Project Proposal ID	21009	21012	21033							
Provincial Team Funding Recommendation	Urgent/High Priority	Urgent/High Priority	Recommended Action							
<b>Washington Department of Ecology (in conjunction with Skamania County and WDFW) Objectives:</b> 1) Develop a plan within a four year timeframe that will address water quantity, water quality, habitat and instream flow. Underwood Conservation District of White Salmon, Washington. 2) Continually involve local agencies and citizens in activities related to planning and implementation work that is a result of watershed framework activities.			+							
<b>Columbia River Inter-Tribal Fisheries Enforcement Objective:</b> Maintain natural populations of anadromous and resident salmonids at levels that promote increased utilization of available habitat and that contribute to tribal and non-tribal fisheries as measured by an increasing trend in population abundance and distribution by the year 2012.	+	+	+							
<b>Yakama Tribe Strategies:</b> 1) Improve adult pre-spawning survival; 2) Improve juvenile rearing survival; 3) Improve adult and juvenile passage survival	+		+							
<b>US Forest Service Strategies:</b> 1) Reduce water temperatures; 2) Restore riparian areas; 3) Reduce road densities; 4) Increase the quality of pools through recruitment of large woody debris	+		+							
<b>Underwood Conservation District of White Salmon, Washington Strategies:</b> 1) Direct on-ground conservation action; 2) Offer technical and cost-share assistance to landowners and agencies; 3) Conducting citizen involvement and environmental education activities; 4) Monitoring of project enactment and environmental results for measuring progress and adapting programs to meet changing needs	+	+	+							
<b>Columbia River Inter-Tribal Fisheries Enforcement Strategies:</b> 1) Integrate conservation law enforcement protection into fish, wildlife, and habitat management; 2) Identify and enforce laws and rules pertaining to fish passage, riparian habitat, and water quality protection. Provide information on enforcement actions to the system-wide conservation enforcement monitoring and evaluation project; 3) Identify and enforce laws and rules pertaining to exotic fish transfers; 4) Identify violations of laws and rules pertaining to habitat protection and provide information to appropriate state, federal, or tribal law enforcement entity; 5) Increase enforcement of laws and fishing regulations pertaining to illegal take of fish (all life stages); 6) Continue enforcement of wildlife laws and regulations affecting wildlife species and habitat.	+	+	+							
<p><b>These project titles are referenced by ID above:</b>                  21009 - Assess current and potential salmonid production in Rattlesnake Creek associated with restoration efforts                  21012 - Evaluate status of coastal cutthroat trout in the Columbia River Basin above Bonneville Dam                  21033 - White Salmon River watershed enhancement project</p>										

**Note:** + = Potential or anticipated effect on subbasin objectives and strategies.