

# White River – Tall Timber Ranch Interpretive Nature Trail opened June 2012

Funded through the Washington State Salmon Recovery Funding Board in cooperation with Chelan-Douglas Land Trust, Tall Timber Ranch and Cascade Columbia Fisheries Enhancement Group



Photo courtesy of  
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riparian ecology; and  
Sketchbook Illustrator)  
- July 2012

# Welcome to the White River Trail at Tall Timber Ranch



This unique and natural setting is within Tall Timber Ranch's conservation easement, dedicated to preserve riparian habitat. Please respectfully explore the interpretive signs along this nature trail. Learn about native fishes, floodplains, and the value of this remarkable and beautiful river bottom. The original Wenatchi Indian word for the White River was "Na-pe'qua" meaning white water. From this glacier-carved valley to the intriguing human history, we hope you will get a sense of those who came before you.

## Journey Through Time from 1100 AD to the Present

Early indigenous people of the White River-Lake Wenatchee area used the tools shown below: scrapers for dressing salmon and deer, and pestles for grinding food in the seasonal "Gathering Times."



Lithic tools (tools made of stone) called scrapers and pestles Wenatchee National Forest and Eastern Washington University Reports in Archaeology and History No. 100-106; 1998

First detailed written account of the White River: 1870 exploration across the North Cascades by surveyor D.C. Linsley (Northern Pacific Railroad) with local Indian guides

"Friday July 1st 1870...Dined off a goat steak which although tough, was very sweet...Flies and mosquitoes are abundant. A hummingbird paid us a visit."

- D.C. Linsley, 1870 journal entry



White River European-American settlement begins in the 1880s

United States Forest Service (USFS) was established 1891-1905 to sustain healthy, diverse, and productive forests for present and future generations.

Civilian Conservation Corps (CCC) built USFS roads, trails, fire lookouts, and campgrounds (1933-1941).



USFS old Mt. David Lookout Gray family collection 1966

Land was cleared and soils drained for crops and livestock under the 1908 Homestead Act. Homes and schools were built; logging, trapping, and moonshining businesses thrived. The Likfeldt Homestead was later sold to aviator Clyde Pangborn and family (1945).



Original homestead on Tall Timber Ranch lands (Napeequa Meadows): George Likfeldt Cabin 1908-1927 Gray Family collection, ca 1920s

Winter in the White River Valley: With snows 6-12 feet deep, residents adapt to snowshoeing and skiing as ways to get around in wintertime.



Skier-trapper, Ross Sears (of Sears Creek Road), makes a winter visit to neighbors Charles and Charlotte Gray. Gray Family collection, ca 1940s

Tall Timber Ranch held its first church camp in 1957. The Presbytery purchased the Forks Ranch in 1956 and the Pangborn Place in 1967. Countless individuals have helped Tall Timber fulfill its mission to be

"an adventure in; renewing faith, reconnecting hearts, and reclaiming lives in a stunning wilderness setting."



Tall Timber Ranch founders Herb Schulze, Larry Roumpf and Edgar Toews with 1957 Tall Timber campers Tall Timber Ranch collection, 1957

White River Key Watershed designated by USFS for critical salmon spawning and rearing habitat 1994

In 1998 Chelan-Douglas Land Trust (CDLT) began conservation work along the White River in partnership with The Trust for Public Land and the USFS.

By 2012 CDLT permanently conserved 621 acres (7 miles of riverfront), including a conservation easement with Tall Timber Ranch.



Sockeye spawning in the White River Betsy Beers, 2002

Timeline: 1100 AD and 1700 AD, 1855, 1870s to 1880s, 1889 to present, 1891 to Present, 1906 to 1950s, 1908, 1909, 1920s to 1950s, 1945 to 1967, 1956 to Present, 1975, 1994 to Present



Wenatchi Indian Chief John Harmelt (1847-1937), his wife Ellen Harmelt (1850-1937); and relative Mary Felix Note cedar-root basket hats and plant and animal beadwork WVMCC #83-67-13 ca 1931

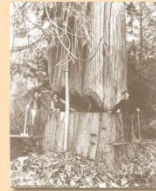
Treaty with the Yakama, 1855 between the U.S. government (Territory of Washington) and the "Yakama...Pisquouse, Wenatshipam..." tribes. -Ratified by the U.S. Senate in 1859



Historic sheep camp above Indian Creek in view of Glacier Peak WVMCC #75-23-28

Thousands of sheep grazed high meadows and valley pasturelands. Grazing is presently limited to small bands on private lands in the White River.

Cross-cut or "misy whip" saw used to cut large diameter trees



Cedar "springboard" tree University of Washington Libraries Special Collections #17617, Kinsey 1906

Cedar logging and shingle mills were scattered along the White River. Rafts of logs were driven downstream to the Lake Wenatchee sawmill. Early logging changed cedar forests to the mixed cottonwood stands seen today.



Early homesteaders were proficient trappers, loggers, farmers and fishermen. Bill Bates & Grover C. Dickinson 1 926 marten pelts; WVMCC #80-21-15

Built by Grover C. and Lawrence Dickinson in 1909, the Forks Ranch was the second homestead established at Tall Timber. Later it was sold to Asa Allen (1919-38); the Spragues (1938-56) and the Roes (1949-56), who ran it as a dude ranch.



Famous aviator Clyde Pangborn and Miss Veedol with brother Percy, sister-in-law Doris, mother Opal and co-pilot Hugh Herndon Jr. WVMCC #80-56-257 1931

The Pangborn Place, at Napeequa Meadows, was the mountain retreat for Clyde Pangborn and his brother Percy. Clyde piloted the record-making 1931 nonstop Trans-Pacific flight. Percy and Doris Pangborn were later known for feeding thousands of hummingbirds at the meadows.



Moses George above the White River on Forest Service horse trip USFS photo 1980, Heather Murphy

"It was my privilege to listen to the descriptions giving us in the Wenatchee Indian language...The elders were busy gathering berries, nuts, fish and medicinal herbs, storing for winter use."

- Family of Moses George 1906-1996

Wenatchi Indian oral history from Moses George's 1975 handwritten letter recorded his elders describing traditional use of the White River



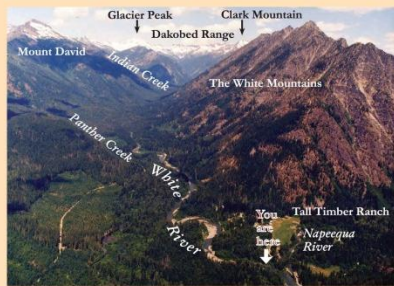
Funded through the State of Washington Salmon Recovery Funding Board, in cooperation with Chelan-Douglas Land Trust, Tall Timber Ranch and the Cascade Columbia Fisheries Enhancement Group. Many people were involved in creating these signs. We wish in particular to thank the residents of the White River, as well as the Wenatchi Indians, who lived here first. - Chelan-Douglas Land Trust, 2012

# Glacial History of the White River

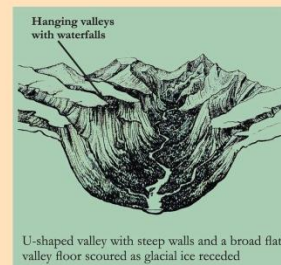
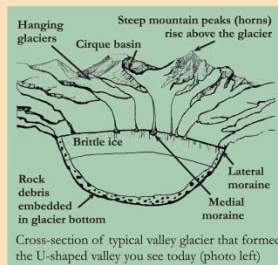


The natural forces of alpine glaciation, river erosion, and volcanic eruptions shaped the White and Napeequa River Valleys. The Cascade Range volcano Glacier Peak erupted centuries ago depositing pumice and ash. Mountains rise from low-forested floodplains at 1,950 feet and climb sharply to vertical cliffs and glaciers at over 8,600 feet.

Multiple advances of Cascade alpine glaciers covered this area during the Late Pleistocene and Little Ice Age eras. These glaciers formed the valleys where the White and Napeequa Rivers flow. Glaciers in the White River drainage combined with adjoining glaciers in the Little Wenatchee creating Lake Wenatchee where they ended in a **terminal moraine**.



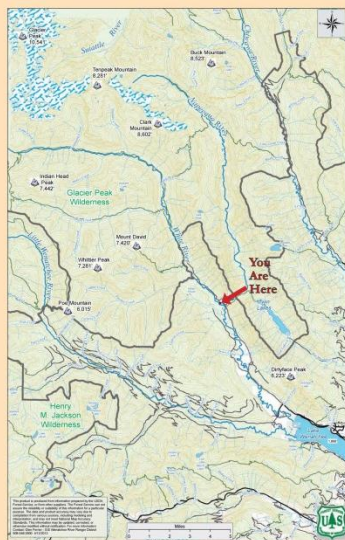
This aerial view of the White River Valley shows the **Dakobed Range**, a glacier rimmed crescent linking Glacier Peak to Clark Mountain. Dakobed is an early Indian word for Glacier Peak, meaning **Great Parent**.  
Tall Timber Ranch collection, Keith Opp 2005



Valley glacier illustrations artist: Sandra Noel based on her North Cascades National Park *Glacial Change* interpretive sign, 2005

Eastward of Glacier Peak are five named glaciers that feed meltwater into the White River drainage: **White River, Butterfly-Moth, Pilz, Richardson, and Clark Glaciers**. These dynamic rivers of permanent ice grow with winter's snowfall and shrink in summer's melt breaking and grinding away at bedrock. Classic **U-shaped** valleys were scoured by glacial erosion, widening V-shaped river canyons. **Cirque basins** are at the head with steep waterfalls connecting **hanging valleys** like the upper Napeequa.

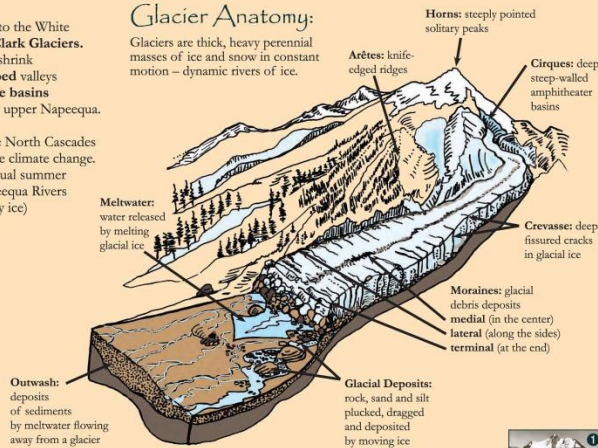
Glaciers are one of the most valuable resources on the east slopes of the North Cascades Range: they influence soil development, vegetation, flooding, and indicate climate change. Glacial **meltwater** supplies fresh water during drought years and the annual summer dry period to sustain endangered salmon and trout. The White and Napeequa Rivers both flow with milky white glacial flour (eroded bedrock finely ground by ice) in the summertime and run crystal clear in the winter.



This topographical map shows the elevation changes from the lowlands of Lake Wenatchee and the White River Valley to the glaciers on the high peaks at Clark Mountain and Glacier Peak.  
GIS map created and provided by USFS, Wenatchee River Ranger District 2012

## Glacier Anatomy:

Glaciers are thick, heavy perennial masses of ice and snow in constant motion – dynamic rivers of ice.



## A Shrinking Natural Resource:

Glacial historians have been watching North Cascades glaciers since British Columbia geologist George M. Dawson's observations in 1891. Recent glacier monitoring and historical studies at nearby North Cascades National Park estimated 40% of the glacial ice cover was lost in the past 150 years; 7% of glacial areas shrunk between 1958 and 1998; and all glaciers are retreating as of 2011. Compare the **Chocolate Glacier** in 1960 to the glacier in 2005. Note the thinning ice in the middle and the glacier retreat at its terminal end in the 2005 photo.

- 1 View of Glacier Peak's Chocolate Glacier, September 27, 1960
- 2 View of Glacier Peak's Chocolate Glacier, September 21, 2005



Inset photo, ID: #20753, NSIDC; Larger photo, ID: #14613, PSI; Glacier Research Portland State University; U.S. Geological Survey and National Snow and Ice Data Center

# Floodplains

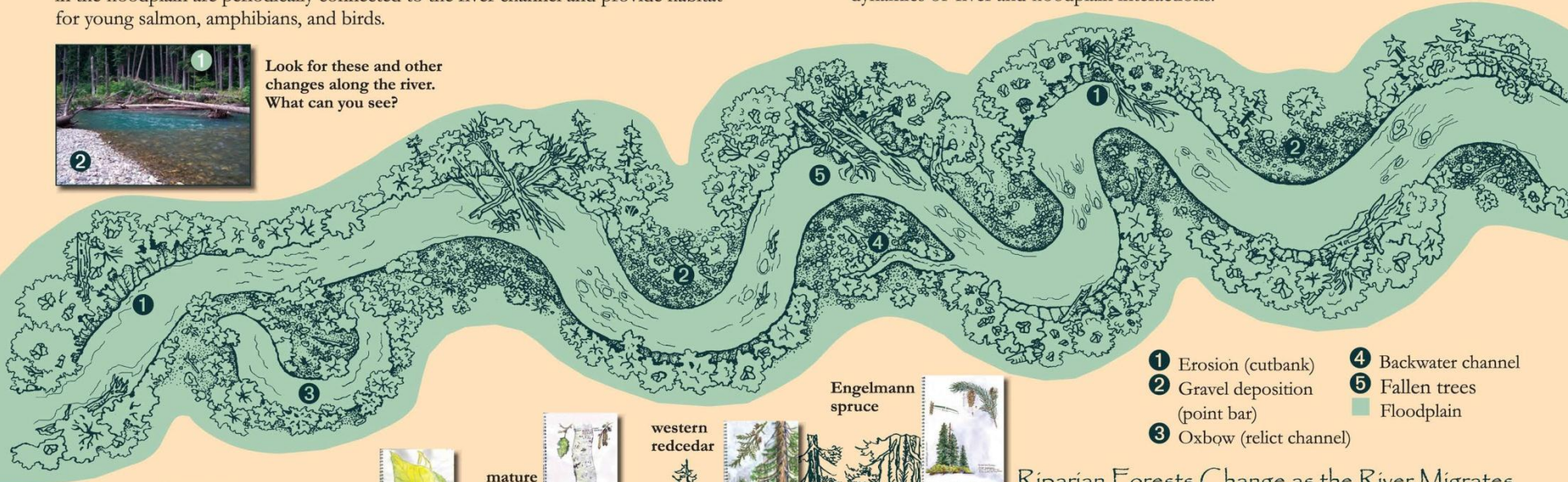


Floodplains are low-lying areas bordering streams that become inundated periodically at high flows. Floodplains filter fine sediments and reduce the effects of high runoff caused by melting snow and heavy rains. As a river migrates across the floodplain over time it leaves behind old channels and ponds. These depressions in the floodplain are periodically connected to the river channel and provide habitat for young salmon, amphibians, and birds.

River meandering is typically very subtle, but the changes are substantial. You may notice steep eroded streambanks and fallen trees on the outside bend of the river and deposits of sand and gravel on the inside of a bend. This process of erosion and deposition corresponds to the river's energy and is part of the continual dynamics of river and floodplain interactions.



Look for these and other changes along the river. What can you see?



- 1 Erosion (cutbank)
- 2 Gravel deposition (point bar)
- 3 Oxbow (relict channel)
- 4 Backwater channel
- 5 Fallen trees
- Floodplain



## Riparian Forests Change as the River Migrates

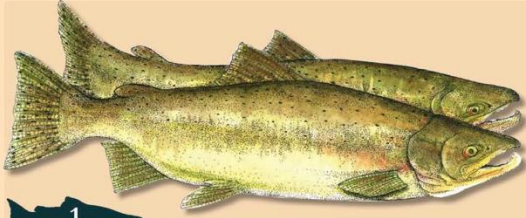
Floodplains contain riparian areas (shrubs and trees along the river). Vegetation in riparian areas helps shape stream channel positions in the floodplain and provides important wildlife habitat. This riparian forest has a variety of sizes and species of trees. The young part of a floodplain and the most recent deposition may be colonized by willows, alders, and black cottonwood that thrive in disturbed areas like new gravel bars. As the floodplain becomes vegetated, more stable and older, you may find Engelmann spruce, western redcedar or Douglas-fir.

# Native Fishes of the White River



The Wenatchee River and White River have a diversity of native fish species. Pacific salmon and steelhead are anadromous (fish that spawn in fresh water but spend part of their lives in the ocean). Native salmon and steelhead travel hundreds of miles to reach their spawning grounds in the White River.

Mountain whitefish, bull and resident cutthroat trout, and other fishes spend their entire lives in fresh water. Look for young salmon and resident trout along the cutbanks and under fallen logs in the river. If you are visiting the White River in the late summer or early fall, you may see spawning salmon on the gravel “tail-outs” below slow deep pools.



1



2

Salmon & trout above are shown in spawning colors. In their ocean or saltwater phase they appear silvery blue-green.



3



4



5



6



7



8

**1 Spring Chinook** (*Oncorhynchus tshawytscha*) migrate from the ocean in the spring, enter the Wenatchee watershed in the summer, and spawn in August. Juveniles spend one year in fresh water and two to three years at sea before returning to spawn. Spring Chinook are listed as endangered under the Endangered Species Act.

**2 Lampreys** (*Family petromyzontidae*) are an ancient form of jawless fishes. Their mouths are surrounded by a circular sucking disk with raspy teeth. Two species of lampreys are commonly found in the Columbia River drainage, one anadromous (Pacific lamprey) and the other resident (Western brook lamprey). Lampreys may have historically existed in the White River. Dams along the Columbia and Wenatchee Rivers have blocked their passage to the upper river systems.

**3 Sockeye** (*Oncorhynchus nerka*) differ from other species of salmon because their offspring require a lake environment for rearing (sometimes called a “nursery lake”). There are both anadromous (sockeye) and non-anadromous (kokanee) populations. Both populations from the Upper Columbia basin begin spawning in September. The White River sockeye are one of only two populations in the entire Upper Columbia and the largest run of salmon in the White River.

**4 Bull trout** (*Salvelinus confluentus*) have both resident and migratory life-histories. Resident bull trout spend their entire life in freshwater streams and may live longer than twelve years. Migratory bull trout spawn in tributary streams and juvenile fish rear one to four years before migrating to either a lake or river. Bull trout spawn mid-September through early November. Bull trout are listed as threatened under the Endangered Species Act.

**5 Coho salmon** (*Oncorhynchus kisutch*) native stocks were extirpated and no longer occur in the Upper Columbia River region. However, the Yakama Nation has been reintroducing this species back to their historic range, including the White River. Adult coho enter their natal river in the fall. Coho juveniles remain in the river for a full year after leaving the gravel nests.

**6 Mountain whitefish** (*Prosopium williamsoni*) are the most abundant species of whitefish in Washington. Some fish may move into tributary streams from the Columbia to spawn. Unlike salmon and trout, mountain whitefish do not build a nest; instead they broadcast their eggs over gravel and cobbles in the stream bottom.

**7 Westslope cutthroat trout** (*Oncorhynchus clarki lewisi*) are widely distributed throughout the Wenatchee watershed and typically occupy every stream with suitable habitat, such as the Napeequa and White Rivers. The cutthroat gets its name from the bright orange-crimson slash mark on the underside of the lower jaw.

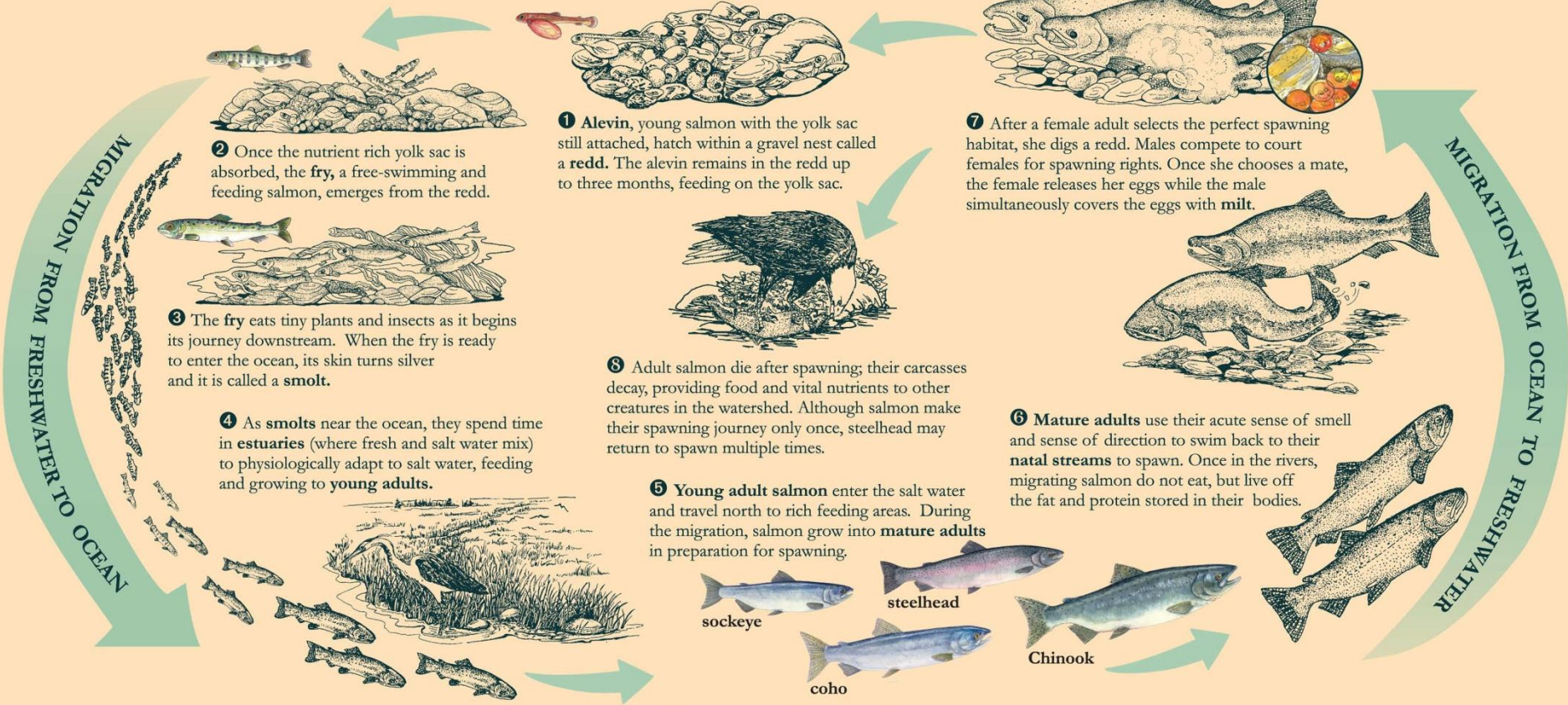
**8 Steelhead trout** (*Oncorhynchus mykiss*) migrate over several months beginning in late summer and into spring when spawning occurs. Juveniles spend one to three years in fresh water before migrating to the ocean for one to three years. Some steelhead stay in the rivers, becoming resident rainbow trout. Some resident rainbows migrate to the sea, becoming steelhead. Unlike Pacific salmon, steelhead may spawn multiple times. They are listed as threatened under the Endangered Species Act.

# Salmon Lifecycle



Pacific salmon travel thousands of miles to complete their lifecycle. The salmon's life begins in freshwater streams like the White River. As they mature, they travel approximately 500 miles to the Pacific Ocean where they spend two to four years at sea before returning to fresh water to spawn. During this epic migration from the Pacific, through the Columbia and Wenatchee Rivers, salmon

must avoid predation and fishing, navigate nine dams, and cope with degraded habitat. Less than 1% of the eggs make it back as spawning adults. More than 100 species of wildlife including bears, wolves, orcas, seals, otters, eagles, salamanders, and fish are known to feed on salmon throughout the salmon's lifecycle.



White River adult salmon and steelhead (above) as they appear in the ocean

# Wood at Work



Looking into the river corridor, you will see downed logs, root wads, and tree limbs scattered on the beach and bundled as “log jams” in the water.

Woody material is carried to the stream by wind, streambank erosion, landslides, and beaver activity and is part of what makes this river great habitat for salmon and wildlife. Wood provides complex habitat, shaping the stream by trapping sediments, slowing and redirecting flows and scouring pools, which are important for fish. Wood and the organic debris

it traps (like leaves and salmon carcasses) fuel the aquatic food web. Without this wood, the river is more susceptible to erosion, flooding, and loss of biodiversity.

Look for American dipper riding the riffles or bobbing on log jams, ospreys nesting on snags, amphibians and insects hiding under logs and in shallows, beaver-cuttings of shrubs and beaver and black bear tracks in the gravel bars.



amphibians



Douglas-fir



osprey



American dipper

Log jam

Downed logs

Gravel bar

Pools provide resting places for adult salmon and homes for juvenile and resident fish. Some insects called **shredders** feed on dead leaves, algae and other organic matter trapped in logs. They later become food for salmon and other fish.



- 1 caddisfly larva
- 2 stonefly nymph



bear tracks



black bear



American beaver



beaver cuttings



Placement of signs along the Interpretive Nature Trail at Tall Timber Ranch



Photos courtesy of *Cascade  
Columbia Fisheries Enhancement  
Group*. Jason Lundgren  
(project leader and chief sign  
researcher for fisheries)  
- June 2012