

U.S. Fish & Wildlife Service

Little White Salmon

*National Fish
Hatchery*



UPPER HATCHERY



Welcome

Welcome to Little White Salmon National Fish Hatchery on the beautiful Little White Salmon River—a mini-gorge within the Columbia Gorge. The main visitor area is at the upper hatchery, beyond the bridge. Here you will find the visitor center, fish ladder, overlook, and parking. Inside the visitor center are exhibits, and public restrooms. The hatchery spawning operation can be viewed from the exhibits room. Adult salmon holding ponds are located inside this building. Viewing windows are downstairs in the basement. Watching salmon swim is soothing.

The hatchery is open daily from 7:30 am to 4:00 pm. Here are key times to visit:



- **May 1:** fish ladder open for spring Chinook adults

The adult holding pond is inside the spawning/exhibits building. The big fish can be viewed downstairs.

- **May - August:** spring Chinook salmon viewing
- **August:** spring Chinook salmon spawning on Tuesdays (call 509-538-2755 for specific dates)

Torsten Kjellstrand,
The Oregonian

- **Late August thru November:** Watch adults spawn naturally in the small stretch of river between the upper and lower facilities

- **Late September – October:** upriver bright fall Chinook arrive

- **Late October – early November:** spawning upriver bright fall Chinook

- **mid-April:** spring Chinook salmon smolts released

- **Early July:** upriver bright fall Chinook salmon smolts released

- **November – February:** drive the entry road and watch bald eagles





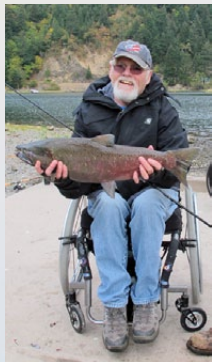
Fishing Drano Lake

Above, a limit of Drano Lake springers in the boat.

© Caveman Jim

Drano Lake is one of the most popular recreational salmon fisheries in Washington. Many professional guides take clients here. All Washington State fishing regulations and license requirements apply. Please note that there is no fishing north of the buoys at the river's mouth. There is a Skamania County boat ramp off of State Route 14, east of our entrance road. Here are key fishing dates:

- **May:** Peak of spring Chinook return to Drano Lake and best time to catch these fish
- **Mid-July thru August:** Summer steelhead seek out thermal refuge in Drano Lake during their upriver migration. Steelhead fishery at its peak.
- **September thru October:** Best time to catch an upriver bright fall Chinook from Drano Lake.



Drano Lake can be fished from boat, bank, wheelchair, or walker:

USFWS image

We are happy to offer the unique experience of salmon fishing to the mobility impaired. A paved path off of the entry road allows lakeside access to wheelchairs, walkers, or those with canes.



Common merganser and Chinook salmon racing on the Little White Salmon River.

© Paul Thomson

Birding, hiking, fish watching

Feel free to walk the entry road. There are many opportunities to see birds here. In winter, bald eagles of varying ages work the islands where the river meets the lake. Watch as common mergansers dive for salmon eggs, or American dippers rolling in the river's ripples.



When adult fish are present, look for them leaping against the dam.

© Paul Thomson

You can also "fish watch" by walking along the river from the entry gate to the upper hatchery. It is fun to watch salmon dart about in the river's cold clear water—you might even witness nest digging and spawning. Just past the raceway building, look for a grassy area on the bank. This is a good place to see large groups of salmon. Continue on and watch fish leap against the barrier dam (opposite the bridge), or watch the fish ladder located directly below the wooden overlook deck.

Kayakers



Kayaker going over Spirit Falls.

© Mike Leeds

The Little White Salmon River has become increasingly popular among expert kayakers. These adrenaline junkies put in at the bridge near Willard National Fish Hatchery and pull out just beyond our gate. Some consider it the most difficult regularly run stretch of river on the West Coast. Only expert paddlers should attempt this Class V run.

Hatchery purpose

Established in 1896, Little White Salmon National Fish Hatchery (NFH) is the oldest working hatchery on the Columbia today. The Columbia is a Chinook salmon river. Here we raise two kinds: upriver brights (fall), and spring Chinook. The hatchery operates as dictated by sound salmon science, several federal agency policies, congressionally enacted laws, and ratified treaties. Columbia River salmon hatchery mandates are complex and multi-layered with numerous “co-managing” stakeholders. There is a scientific or politically mandated reason for all that the hatchery does. Some are more straightforward than others.

As mitigation for the adverse effects of Bonneville Dam on salmon, Congress passed the Mitchell Act in 1938. This act funds conservation of Columbia salmon, and pays for state and federal hatcheries, fish screens to keep young fish out of agricultural fields, habitat restoration, and research into salmon biology/ecology. The hatchery receives funding from this act and for mitigation of salmon loss due to dams further upriver.

Little White Salmon NFH produces salmon to honor the 1855 treaties between the U.S. and Northwest Tribes. Specifically, the hatchery supports the Yakama Nation's fishery. In exchange for land in Oregon, Washington, and Idaho, the Tribes stipulated that they be allowed to fish for salmon at their “usual and accustomed places” in perpetuity. Put simply, it would be a treaty violation if there are no fish to catch.

A map shows ceded Tribal lands (light) and reservations (dark) of four treaty groups within the Columbia Basin (top). Salmon fishing is a spiritual and practical tradition for Native people of the river (catching, and drying, middle). Once this area boasted fishing spots along the Cascades and the mouth of the Little White Salmon River to rival even Celilo Falls (bottom).

Wikipedia



The Spokesman-Review

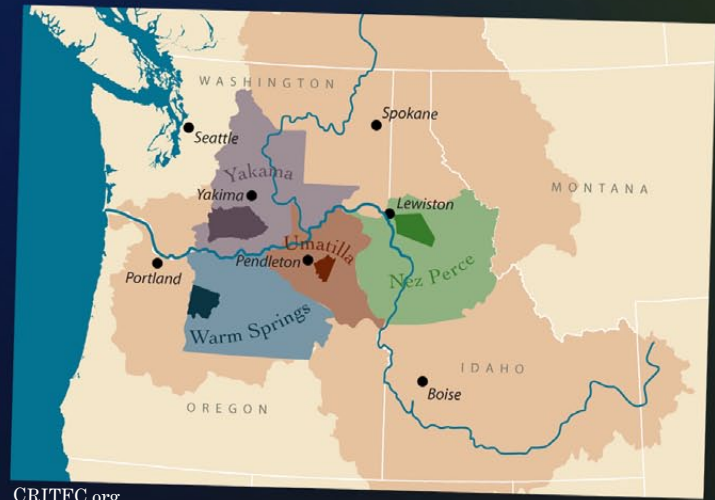


A dog watches salmon at Bonneville Dam (above). The hatchery mitigates for adverse impacts on salmon caused by dams.



Fishing platforms on Drano Lake are evidence of the Yakama Nation's intent to live by the terms of the 1855 treaty.

Allen Thomas,
The Columbian



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Northwest Indian Fisheries Commission



State of Oregon Archives (1431)



Benjamin Gifford photo, OrHi7784

A Chinookan village on Drano Lake



Chinook canoes were a much desired commodity. Lewis & Clark's men thought them to be the best canoes they had ever seen.

© Edward S. Curtis

Chinook Civilization

Interior of a Chinook lodge after a painting by Paul Kane circa 1841. Note the dog.



Oregon Historical Society

(Opposite page) Paul Kane painted this scene of Chinook in front of Mt. Hood from field sketches. This is likely a temporary house as the Chinook built permanent dwellings of cedar planks.

Although the Yakama Nation—Sahaptin language speakers—is affiliated with the hatchery site today, it was a group of Chinookan speakers that lived on the banks of Drano Lake in times past. History labels them the Chilluckittequaw or White Salmon people. They were allied with a larger group living in Hood River. By mid-19th century, they were referred to as the Cascade Indians.

The truth is that the first written accounts of people in the Columbia Gorge occur after disease had already decimated the population. Major smallpox epidemics, contracted through trade with European sailors, occurred as early as the 1790s and again in the early 1800s. The ravages of disease left the village here a composite of epidemic survivors from up and down river reflecting only a semblance of their formerly great Chinook culture.

Anthropologists and historians once claimed that civilization arrived alongside complex systems of agriculture. Only farming provided a consistent food supply to support large populations with social stratification and the leisure time to create works of art. They were wrong. The Chinook civilization arrived without plows or domestic livestock. There is a reason the word Chinook refers to both a people and a fish. This great civilization was inextricably tied to Columbia's salmon runs.



Stark Museum of Art

Head flattening was for the upper classes in Chinookan culture.



Even today, intricate wood carving is an expression of Chinook culture.

Natalie Behring,
The Columbian

Chinook groups occupied the Columbia Basin from the ocean to The Dalles for hundreds maybe thousands of years. In the Portland basin, where the Willamette meets the Columbia, there was a Chinook “city” not just large by North America standards, but one of the most populous spots on the planet circa 1700.

Chinook language speakers controlled both shores of the Columbia from the coast to the Long Narrows. Their trade network encompassed Canada, northern California and interior to the Rockies. They leveraged salmon, wapato, eulachon oil, lumber, and canoes to acquire buffalo hides/meat, kouse (lomatioms like biscuit root), pipe-stone, feathers, and after 1730, horses from the plains; shells (especially dentalium), and dried clams came to them from Puget Sound and the coast; copper from Alaska; iron axes from Siberia (via the Aleutians in the 1400-1500s); and obsidian, wocas (water lily seeds), baskets, and slaves from as far south as the Klamath Basin.

When Europeans sailed into the mouth of the Columbia, the Chinook quickly monopolized any new trade goods they offered. Briefly, they grew even more influential and wealthy, but the Europeans also brought diseases for which the Chinook had no natural immunity.



National Gallery of Canada



The Columbian

Lewis & Clark visit Drano Lake



The Corps of Discovery camped near Drano Lake in 1805.

© Sue Smith

The plankhouse at Ridgefield National Wildlife Refuge (three images, top) is built in the Chinook tradition. The houses here on Drano Lake would have looked similar. Top right shows the interior. Compare this to the engraving on the previous spread.

On October 29, 1805, the Corps of Discovery made camp here near three Chinook plank houses on the south side of Drano Lake. Evidence of Chinook culture greeted the explorers: head-flattened men and women with their distinctive houses and wonderful canoes. The Corps translators were stymied. None of them spoke Chinook.

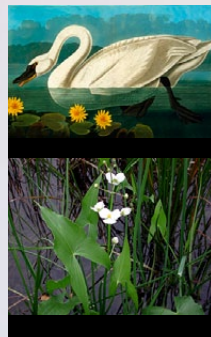
Here is the comic scene described in Clark's journal entry: "*Lewis and [I] went into the houses of those people who appeared somewhat surprised at first.*" Emboldened by the gracious nature of their hosts earlier that day, the captains just walked right into the houses here. The polite but wide-eyed anxiety of their hosts would be familiar to anyone ambushed by pushy relatives who barge in unannounced. To make up for their boldness, that evening while they smoked tobacco with the men, Pierre Cruzatte played his violin and all were "*much pleased.*"

On this single day the expedition "purchased" 19 dogs: one-tenth of the total number of dogs eaten on the entire journey. Imagine the journey from Doug's Beach to Drano Lake with 16 dogs among 31 men, one woman, and one baby—all crammed into a half-dozen crude dugout canoes and one graceful Chinook canoe. That was an exciting 21-mile day-trip in which it must have been hard to tell the old fleas from the new.



This is the kind of doorway Lewis & Clark barged through.

Zachary Kaufman,
The Columbian



Large numbers of tundra swans on Drano Lake make it highly likely that wapato was also present. Both the Chinook and swans ate the tubers (bottom)

John James Audubon, "Common American Swan" (top); HerbVideos.com (middle); Scotts.com (bottom)



Natalie Behring, The Columbian

Clark wrote that Drano Lake was filled with a "great number" of tundra swans. Perhaps the lake once supported the wetland plant known as wapato which is ideal swan food. Wapato, or arrowhead (*Sagittaria latifolia*), once grew in great abundance within the lower Columbia floodplain. This small wetland tuber was processed into a popular trade item. Lewis journal gives us, perhaps, a glimpse of Drano Lake life while writing about a Chinook village downriver called Cathlapotle (Ridgefield National Wildlife Refuge):

"...in this pond the natives inform us they Collect great quantities of pappato, which the womin collect by getting into the water; Sometimes to their necks holding by a Small canoe and with their feet loosen the wappato or bulb of the root from the bottom from the Fibers, and it imedeately rises to the top of the water; they Collect & throw them into the Canoe, those deep roots are the largest and best roots... In this manner these patient females remain in the water for several hours even in the depth of winter."

The list of wildlife mentioned specifically in the October 29 journal entry is revealing. Clark describes the people here wearing robes of wolves, deer, lynx, otter (or harbor seal), fox and, much to Clark's delight, mountain goat. Half of this list is not found in the Gorge today.

Little White Salmon's condors



© Michael Quinn/NPS



Wikipedia



Wikipedia



© light poet



© Alzbeta

Condors, mountain goats, harbor seals, wolves and lynx are absent from the Columbia Gorge today, but were in evidence to Lewis & Clark when they visited in late October of 1805.

The next day, the Corps of Discovery lunched at the mouth of the Wind River. Clark jots down this note in his daybook, “*saw the large Buzzard white head and part of the wings white.*” Buzzard was a catchall word for any raptor, so this Wind River bird could have been an osprey or an immature bald eagle. At the evening’s group session, Sargents Ordway and Whitehouse contributed their observations of the large buzzard. Clark then refines his journal account to say, “*this day we Saw Some few of the large Buzzard Capt Lewis Shot at one, those Buzzards are much larger than any of their Spec[ies] or the largest Eagle. White under part of their wings &c.*”

This can only be the California condor. Like the bald eagle, the condor ate salmon. To get salmon, condors preferred cataracts, falls and pinch points on the rivers—the same place Chinookan people gathered to fish. The Little White Salmon River must have been ideal for condor feasts due to the incredible concentration of salmon crammed into such a short length of river. It is highly likely, given a condor’s daily range, that the bird seen by Clark near the Wind also feasted on fish here at the Little White Salmon River.

Chinook legend names the condor “lightning bird.” With their impressive size, they tore through Chinook fish weirs and traps to get salmon, they crowded the villages to get at salmon gut piles, and they brazenly crashed elk caches for venison.

By the 1850s, salmon were still plentiful, but the condor was not. Sightings ceased in the Gorge, and none were seen here again. However, within 40 years, the salmon would begin to follow the condor down the pathway to scarcity.

A history of hatcheries



The first serious decline in Columbia salmon numbers occurred in the first part of the 19th century due to a trade war over beavers which were used in the making of stylish hats.

© Cheryl Reynolds,
beaver photo



An early salmon can, Veteran Brand Columbia salmon, honors Civil War veterans.

The first documented human-caused decline in Columbia salmon was the result of a trade war between fur companies. In the first decades of the 19th century, Hudson Bay vowed to leave not one beaver for the Americans as they exited the region. Without nature’s engineers working the waters, salmon numbers dropped. Salmon came back as the aquatic rodents numbers replenished.

Salmon runs were healthy up to the mid-1860s. People caught only what they could consume. Early commercial fishing had little impact on salmon runs. Without a palatable way to preserve the fish, or the technology to quickly process them, exploitation of this mind-bogglingly abundant fishery could not happen. That all changed with the packing of salmon into tin cans.

The Hume brothers came west from Maine and along with their tinsmith friend, Arthur Hapgood, figured out how to can salmon. They were reasonably successful in their first year hand soldering each and every tin of Chinook salmon caught. With practice, their methods improved. After just two seasons of canning on the Sacramento River, the river’s Chinook already in decline, the Humes packed up and opened the first salmon cannery on the Columbia in 1866 ushering in a cannery boom.

Meanwhile, coastal areas across the U.S. sounded the alarm that there was a significant and sudden decrease of commercial fish and other aquatic animals. As answer to the alarm, Congress created the U.S. Commission on Fish and Fisheries in 1871, and charged it with conducting a careful, scientific investigation into the decline.



Boxing passes the time for McCloud River hatchery workers. Livingston Stone is seated in the background. He would, in fact, use his fists against fish thieves.

The Commission's lead, Spencer Fullerton Baird, sent a no-nonsense "pisciculturist" named Livingston Stone to San Francisco to find out where salmon spawned on the Sacramento. In 1872, Stone pioneered the first Chinook salmon hatchery on a Sacramento tributary, the McCloud River. Stone brawled with would-be poachers to keep them off the hatchery's adult stock. From fisticuffs to poetic, Stone wrote:

"The thrill and excitement that tingled to our fingers' ends when we first saw the little black speck in the unhatched embryo, which told us that our egg was alive. It was one of the dearest sights on earth to us..."

Stone's hatchery was successful. He proved that large numbers of salmon eggs could be collected, fertilized and hatched in a protected artificial setting. It looked like the Sacramento salmon industry was saved from state mandated limits on salmon harvest.

Meanwhile, back on the Columbia canneries were popping up "like daisies" on both banks of the river. In 1883 Columbia canneries processed a whopping 43 million pounds of spring and summer Chinook. No one knew then that the party was over. In the next five years it would drop to 25 million pounds. Overharvest caused a



Sporting his trademark "Dundreary whiskers" in this photo, Stone's hatchery success in California made him a desirable asset on the Columbia.



Canneries were only the proximal cause of the need for hatcheries. Salmon losses to logging, mining, and farming were accumulating at the same time.

decline in premium salmon. To keep the canneries fed, less desirable fall Chinook were added to the harvest. Washington and Oregon legislatures proposed limits for the first time.

Livingston Stone's success with the first hatchery gave the Commission on Fish and Fisheries a heady optimism. Commissioner Baird assuaged the Oregon and Washington salmon industry:



Columbia salmon labels like this one boasted that the salmon were "spring caught." Unsustainable, canneries turned to less desirable fall Chinook in order to extend the cannery boom.

Courtesy of Columbia River Maritime Museum

"...instead of passage of protective laws, which cannot be enforced except at very great expense and with much ill feeling, measures be taken, either by the joint efforts of the States and Territories interested or by the United States, for the immediate establishment of a hatching establishment on the Columbia River, and the initiation during the present year of the method of artificial hatching of these fish."

Livingston Stone, backed by the Oregon and Washington Fish Propagating Company, established a hatchery on a tributary of the Columbia, the Clackamas River. Winter floods wiped out all 200,000 Chinook salmon eggs. Stone arranged to have his McCloud River hatchery send eggs to replace those lost—thus the tradition of egg transfer between hatcheries was born.

Little White Salmon Station



A Chinook in a "straight jacket."

USFWS image



pnwsalmoncenter.org

As an egg collection station, the hatchery fertilized and protected the eggs until they hatched, then released them into the river.

The Clackamas hatchery was short lived, but Commissioner Baird's vision was fulfilled. Baird's successor, John J. Brice, created the Little White Salmon Station in 1896. The initial cost to build and operate the very first U.S. Commission of Fish & Fisheries hatchery on the Columbia was \$2,288.27.

The hatchery was an egg collection station at first. To augment Chinook salmon numbers eggs were collected and protected in wooden troughs until they hatched. The hatchlings were released as unfed sac-fry directly into the Little White Salmon River.

By 1908, increasing numbers of sac-fry were experimentally reared for later release. The hatchery began to feed the fish in manmade ponds. A major difficulty for the next 50 years was what to feed the fry. Little White Salmon and later Willard National Fish Hatchery were pioneers in the field of salmon food. One of the oldest buildings here is the cold storage facility where livestock and adult fish carcasses were stored before being processed.

The Chinook salmon native to the Little White Salmon River is the tule fall Chinook or white salmon. So named because these Chinook have adapted a strategy of converting fat into eggs and milt in trade for a shorter journey up the Columbia and its lower river tributaries—thus their meat is pale. The Dalles marks the upriver extent of the tule's range.

Opposite page: Little White Salmon was still an egg collection station in 1903 (top). By the 1920s, workers gathered eggs into milk cans but the hatchery kept and fed the fry in ponds. Adult fish were filleted (3rd from top). Their carcasses frozen and processed into food for salmon fry. A group of men work the rack on the Little White Salmon River circa 1938 perhaps just before Bonneville Pool covered much of the lower river (bottom).

USFWS images



Tule fall Chinook (right), or white salmon were the native stock for the Little White Salmon River.

© Lance Koudele



A profound loss

In 1896, the Little White Salmon NFH began raising tule fall Chinook. This was the “charter species” so to speak. By 1985, this native Chinook run was so depressed that it was reluctantly abandoned by the hatchery. The hatchery manager, Jack Bodel, wrote about why the “tules” failed on the Little White Salmon River:



As in this Edward Curtis photo, native fishermen came to the Little White Salmon River to spear tules—even as the hatchery was established.

© Edward S. Curtis

“Although the construction of Bonneville Dam had a deleterious effect on production and survival, the importation of stocks (which changed their genetic fitness and introduced diseases) and rearing fish longer (which reduced survival in the hatchery) were contributing factors. Therefore, after 90 years of rearing a native stock originally described as so abundant that the spawners filled the river for a month, efforts are now dedicated to rearing transplanted fall and spring chinook salmon stocks.”

Visitors today don’t see the river that was. The additional half-mile stretch of wild river between Drano Lake and the Columbia—prime gravel ideal for nests—is now silted in, smothered beneath Bonneville’s pool. When the hatchery began, Indians fishing below the hatchery rack in the river pulled out two and even three tules with one spear thrust. Early hatchery workers were amazed at how many fish made it past their rack. Bodel, having just written a history of hatchery, knew just how profound the loss of this native salmon run was.

Some adjustments

The 1990s saw more Northwest salmon runs disappear, others were listed as endangered. The efficacy of hatcheries as instruments of salmon recovery was (and still is) hotly debated. Some thought that hatcheries should raise only fish native to the water on which the hatchery operated. This was impossible for Little White Salmon NFH as its native fish was gone.



Little White Salmon NFH fights disease in its raceways by using sound science in the lab.

USFWS image

In response to constructive criticisms, and internal reviews, the U.S. Fish & Wildlife Service hatcheries implemented changes going into the new millennium. Little White Salmon focused on fish health, increasing genetic fitness, and improving the overall survival of its Chinook.

Little White Salmon NFH today performs a balancing act working at both salmon restoration and propagation. On the propagation side, by raising two very desirable Chinook types, the local economy is given a boost from increased visitors fishing Drano Lake. The Yakama Nation benefit by catching upriver brights, a high value fish. The spring Chinook caught here are so recent in coming from the ocean they are often silver—making them also very desirable.



A newly restored White River Chinook smolt points to the value of this hatchery as a tool of salmon restoration.

USFWS image

On the restoration side, the hatchery was instrumental in preserving wild spring Chinook on the White River in the Wenatchee Basin. In collaboration with the Grant County Public Utility District, captive broodstock were spawned here in order to provide sufficient numbers of juvenile fish to re-establish the run. The last spawn of White River spring Chinook captive brood stock took place here in 2014, but this only just touches upon the potential for this hatchery to help with salmon recovery and conservation.



Oak habitat restoration

Establishing a hatchery here meant that the land within its boundaries was relatively well protected for over a century. Coincidentally, the hatchery has rare western Gorge white oak habitat. Preservation of white oak woodlands is a top priority for land managers in Washington State. The hatchery is collaborating in this effort by restoring this habitat.

Restoration of the native oak forest and its patchwork of grasslands makes sense here because a healthy oak/conifer habitat means a healthy river not only for salmon, but for sensitive oak woodland species that utilize the river's riparian and aquatic habitats.

The remnant oak, cliff and prairie plant communities found are intact examples of how these specific communities should look. This benefits oak woodland restoration elsewhere because these habitats can be studied and imitated. Plus, the hatchery land can provide seeds to other oak woodland restoration efforts.



Two rarities that we hope will return to the restored white oak habitat: golden chinquapin, and Larch Mountain salamander.

More than 200 species of birds, reptiles, mammals, and amphibians use this native oak forest and bunchgrass prairie habitat.



Four colorful "herps" (short for herpetology specimens) found in the sunny white oak woodlands: western yellow-bellied racer; western skink, California mountain kingsnake, and a ring-necked snake.

The hatchery oaks butt up against the 200-acre Little White Salmon Biodiversity Reserve. This creates a larger block of restored oak habitat, a bigger anchor for rare species to cling to. The conservation value is further raised by the uniqueness of this particular site as a confluence of rivers and lake habitats interspersed with oak and grasslands.

To see just how unique this oak habitat is, we can look to a 2006 amphibian and reptile survey taken before restoration efforts. Primarily reptiles were found in the open, south facing oak woodlands: southern alligator lizard, western fence lizard, western skink, ring-necked snake, rubber boa, western yellow-bellied racer, California mountain kingsnake, and western rattlesnake. This only hints at the diversity of species found in the oak woodland. Continued restoration efforts will see many oak dependent species that were once absent return, and rare species become more common.



Suppressing fires allows conifer trees to overshadow the oaks. Restoration mimics the natural fires that regularly cleared the land allowing the white oaks to grow.

USFS image

Hatchery future

In 2013, the single day count of fall Chinook through Bonneville dam topped the old record set in 2003 not just one time, but three times. Returns of upriver bright Chinook were record breaking in 2013 at nearly three times the prediction. 2014, the year this brochure was written, will likely be even a bigger year for fall Chinook.

Good ocean conditions, high spring river flows with increased spill over the dams were responsible. Stuart Ellis of the Columbia River Inter-Tribal Fish Commission said that it was not just fish returning to hatcheries: “This fall chinook run is not only big, but it’s got a lot of natural-origin fish going to a lot of different places.”

Good management practices *might* be paying off. We should be cautiously optimistic and remember that the Columbia Basin once saw 14 to 19 million salmon, 10 million of which were Chinook. Chinook salmon once made it hundreds of miles inland all the way to the Canadian Rockies and into Nevada. They don’t have this range any more.

The future of hatcheries ideally would be to decline and go extinct just as the various salmon runs on the Columbia thrive and are reborn. If the climate doesn’t heat up too much—and that is a BIG “if”—then restoring river habitat is the way to this “hatchery-less future.” (And yes, that most likely means dam removal.)

If we make the rivers function as they did once, the salmon will do their job. After all, salmon are made to expand their range into any welcoming and even not so welcoming cold, clear river with a complex gravel bottom. They’re game if we are.

Perhaps one day the river will not be crowded by fish coming into a hatchery, but simply crowded with fish because the river is healthy.

© Pacific Rim



Once upon a time Ice Age floods carved the Gorge, gouging out all life in the water's rush from Missoula to Astoria. Columbia's salmon runs were decimated as great mammoths drowned. But, the salmon runs came back. Salmon are quite resilient given time and a healthy river.

USGS image



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<http://www.fws.gov/gorgefish/littlewhite/>

U.S. Fish & Wildlife Service

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