Proposed Dam on Washington's Upper Chehalis River

Frequently Asked Questions

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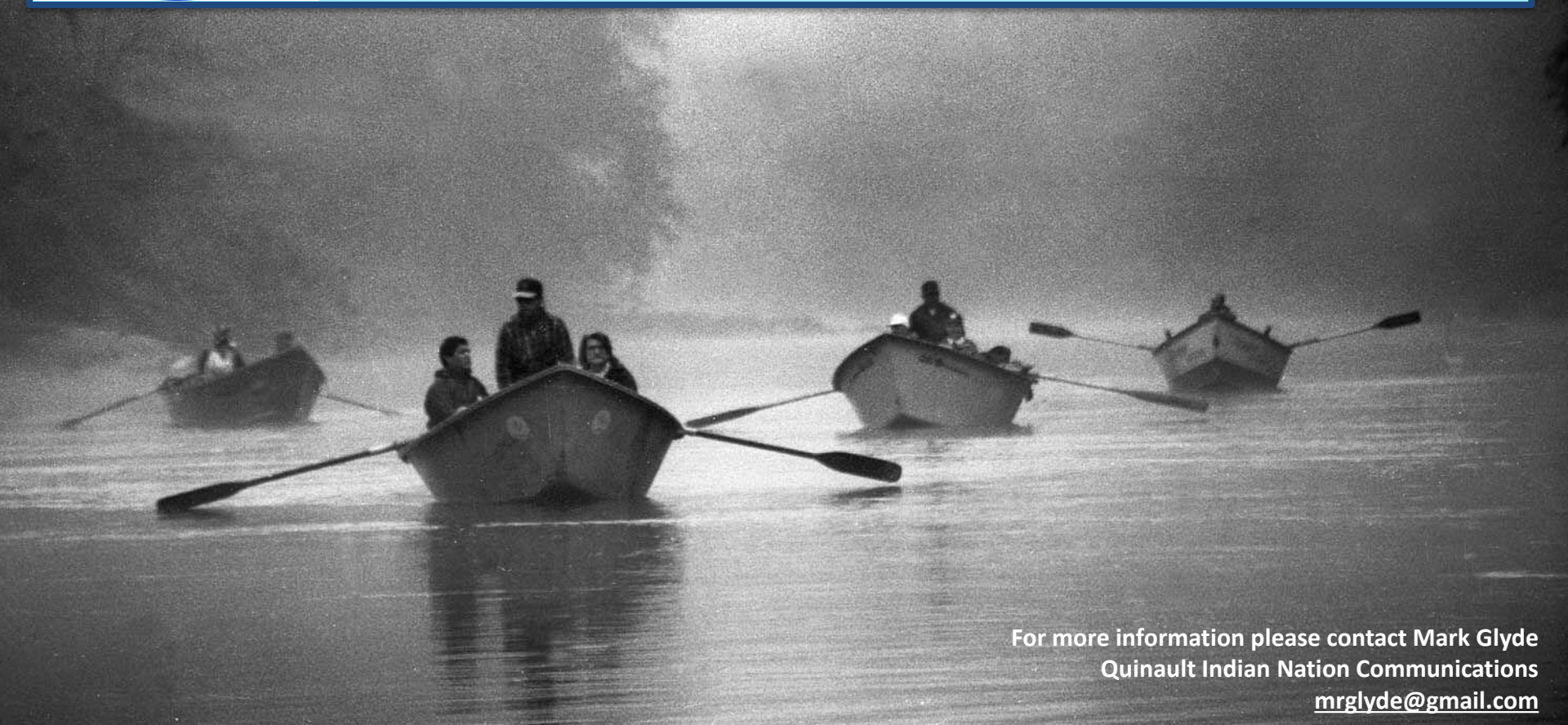

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What is the genesis and purpose of the dam and why was the Upper Chehalis River chosen as the site for the dam?

Building a flood control dam in the Upper Chehalis Basin has been debated going back more than 20 years. The current proposal, now in the environmental review phase, gained traction following the catastrophic flood of 2007 which inundated the cities of Chehalis and Centralia and surrounding properties and submerged and closed I-5 for five days.

According to the project sponsor, Chehalis River Basin Flood Control Zone District (FCZD) the purpose of the dam is to "reduce damage from Pe Ell to Centralia from periodic flooding triggered by rainfall in the Willapa Hills. The facility is not intended to address flooding in all parts of the Chehalis Basin."

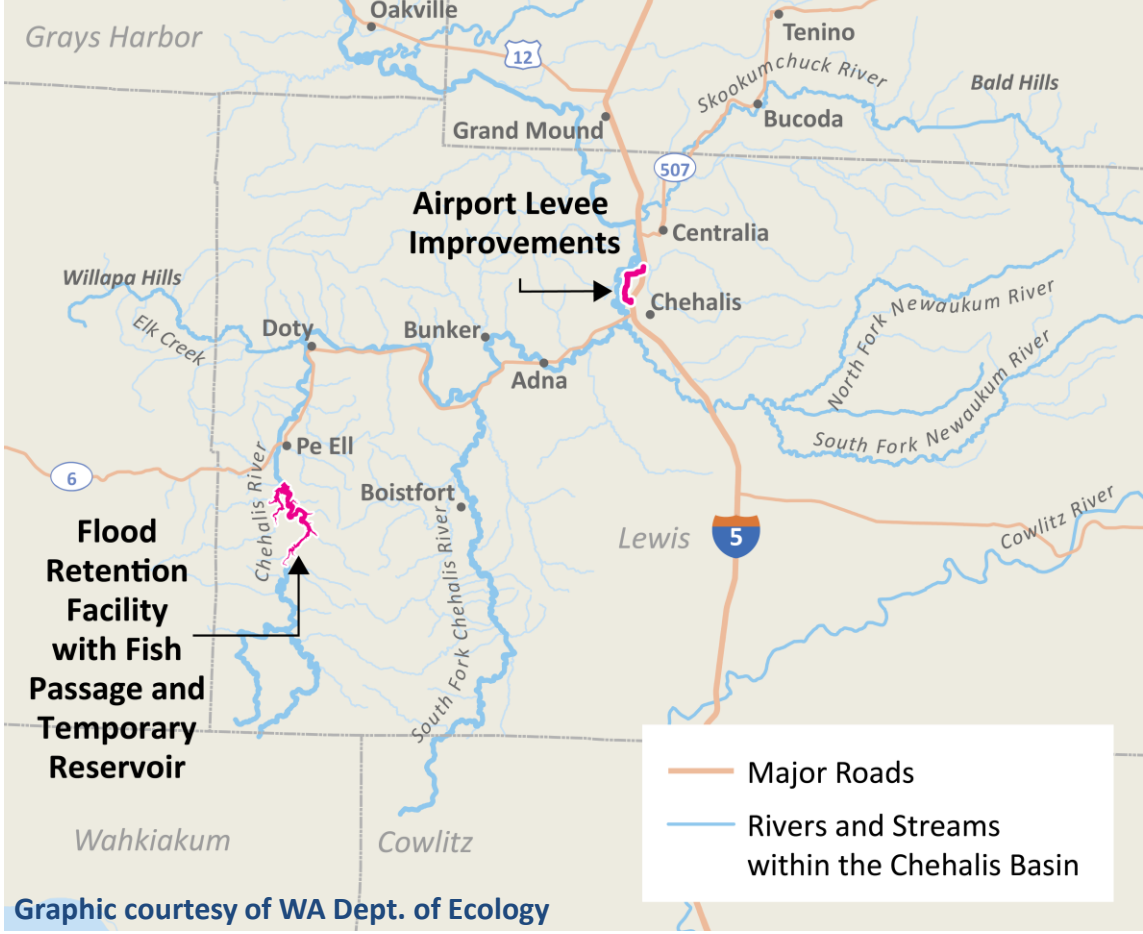
Interstate 5 in 2007 flood, photo courtesy of WA Dept. of Ecology

The dam would reduce flood elevations by holding back water from the Upper Chehalis River during major storms that drench the Willapa Hills.

The FCZD in its purpose and need states an objective of the dam is to reduce flood level by 1 foot at the Mellen Street river gauge near Centralia.

The dam would begin holding back water when the river is forecast to exceed a flow of 38,800 cubic feet per second (cfs) at the Grand Mound river gage located about 8 miles downstream of Centralia.

The FCZD in its purpose and need states the dam "would not address flooding in all parts of the Basin," and "would neither protect communities from all flooding, nor would it be designed to stop regular annual flooding from the Chehalis River."



Graphic courtesy of WA Dept. of Ecology

Notably, a 2003 report on flood damage reduction options for the Chehalis Basin by the U.S. Army Corps of Engineers explored five potential sites for flood control dams in the Upper Basin, including two sites on the Upper Chehalis River, and concluded "all five features were determined to be economically infeasible (p.80)."


Photo courtesy of Mark Glyde

Who are some of the key players involved in evaluating and permitting the dam?

The proposed dam was recommended in 2014 by a work group of Governor Jay Inslee. In 2017 the Washington State Office of the Chehalis Basin and the Chehalis Basin Board were created to "aggressively pursue implementation of an integrated Strategy for long-term flood damage reduction and aquatic species restoration in the Chehalis River Basin."

The Chehalis Basin Board, which oversees the Chehalis Basin Strategy, consists of seven voting members: two members appointed by the Governor; one each appointed by the Confederated Tribes of the Chehalis Reservation and the Quinault Indian Nation; and three members appointed by the Chehalis River Basin Flood Authority. The Flood Authority is governed by elected representatives of 13 city and county governments in Lewis, Thurston and Grays Harbor counties. The three elected Lewis County Commissioners govern the Chehalis River Basin FCZD, which sponsored the dam.

Two separate Draft Environmental Impact Statements (DEIS) are being prepared by the Washington Dept. of Ecology and the U.S. Army Corps of Engineers. The purpose of environmental review is to provide answers about the pros and cons of building a dam, including costs, impacts and benefits to people and nature, whether the chosen site is safe and suitable geologically and to "analyze an alternative of localized and nonstructural actions that could help retain flood waters while reducing flood-related damage."

What are the causes of severe flooding in the Basin?

Atmospheric rivers coming off the Pacific Ocean are the source of severe floodwaters, but 150 years of human industry and development has diminished fish and wildlife habitat and dramatically altered how the Basin handles those periodic torrents.

Historically the river meandered across a floodplain with many natural features acting together to keep flooding in check. Side channels and wetlands spread floodwaters across the land while old growth forests absorbed and slowly drained rain and melting snow into the river. Oxbows, logjams and other natural structures formed the many and varied habitats along the banks and in the river channel where salmon and other aquatic species flourished.

Interstate 5 through Centralia and Chehalis, photo courtesy of Shane Anderson & Lighthawk

Today, due to past logging and development, rain water finds its way much more rapidly into a constricted river system prone to landslides that largely lacks the relief valve of natural storage. The result is lost habitat and more severe flooding and flood damage. A Seattle Times news story about the 2007 flood described it this way:

> *"In one large clear-cut alone, nearly a dozen slides emptied into a creek. In some areas, log jams may have acted like small dams, temporarily holding back water until they toppled over or breached. Some upriver communities got slammed with the mess. Then the floodwater moved on, all the way to the cities of Chehalis and Centralia and the development in the floodplain along I-5. . .*
>
> *While individual filling projects might not appear to have an impact, the cumulative effect of repeated development in a floodplain can mean big trouble, the experts argue. It's like putting bricks in a bathtub. One brick displaces a little water. But a lot of bricks can force the tub to overflow."*

Willapa Hills, photo courtesy of Shane Anderson & Lighthawk

Habitat restoration actions can help reduce flood damage while improving conditions for fish and wildlife. In many parts of the Basin that don't stand to benefit from the dam, restoration of natural floodplain functions is a cost-effective option to reduce flood damage.

How much would the dam cost?

The cost of the dam could top $1 billion dollars. According to a September 2018 budget report from the Office of Chehalis Basin, the dam would cost $628 million for permitting, design, engineering, mitigation and construction.

A 2014 study of 245 dams in 65 countries, however, shows an average cost overrun of 96% for dam building.

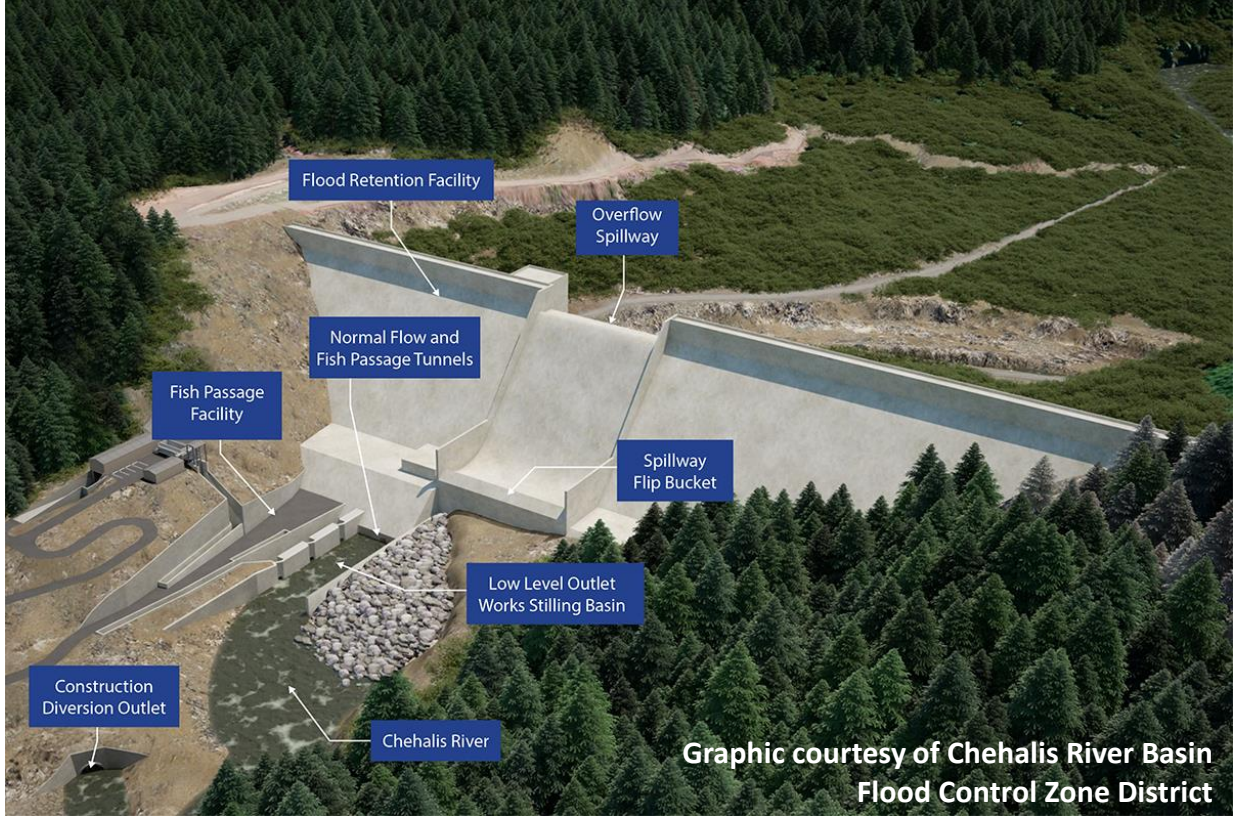
The dam is being built for possible expansion in the future which will add to its cost.

"The proposed flood retention facility is considered to be expandable because it would be built with a foundation and hydraulic structure extents capable of supporting the future construction of a larger structure and reservoir that could expand the water storage from 65,000 acre-feet to up to 130,000 acre-feet."

Skookumchuck reservoir and dam, photo courtesy of Shane Anderson & Lighthawk

How would the dam work?

The proposed dam has a unique design. It would only store floodwater during major floods and then slowly release water over a period of up to about one month once the storm has passed. The temporary reservoir created by the dam, however, would back up and submerge more than six miles of the river corridor above the dam site.



Graphic courtesy of Chehalis River Basin Flood Control Zone District

Proponents claim that the unique design means the dam would have little impact on salmon because the river would flow normally most of the time, and fish would be collected and transported above the dam when its gates are closed.

According to the project proposal "a major flood in the Basin (an event with greater than 38,800 cubic feet per second at the Grand Mound gage) has a 15% probability of occurring in any given year (an approximate 7-year recurrence interval)."

The dam would not produce hydropower, would not produce supplemental water supplies for downstream farmlands and would not provide for recreation, as many dams do.

Chehalis River, photo courtesy of Lee First

Which communities in the Chehalis Basin would benefit, or not, given the stated purpose of the dam?

Residents, businesses and property owners from the town of Pe Ell to the cities of Centralia and Chehalis along the Upper Chehalis River would be the primary beneficiaries of the flood damage reduction goals of the dam. Construction of the dam could also encourage new commercial and other development in the floodplain in Centralia and Chehalis and in that case developers and other business interests would profit from the dam.

Many other communities in the Basin stand to share little in the stated benefits of the dam because they are located outside the area where the dam primarily aims to reduce flood peaks. Those communities include Aberdeen, Hoquiam, Elma and Montesano in the Lower Basin as well as cities, towns and properties in the valleys of major tributaries of the Chehalis River such as the Satsop, Wynoochee, Newaukum and Humptulips rivers.

Upper Chehalis River,
photo courtesy of Shane Anderson

What is the dam's potential impact on fish and wildlife habitat at the dam site?

While detailed impacts are currently being studied through the environmental review process, construction and operation of the dam would likely have a major impact on salmon and other fish and wildlife. Reporting from a September 28, 2018 article in the *Centralia Chronicle*, describes the impact to Chinook Salmon as follows:

> *"Larry Lestelle, a consulting biologist to the Quinault (Nation) said the Chinook salmon that spawn upstream of the dam all spawn within the six-mile footprint of the reservoir that would be created during flood events. Salmon eggs depend on flowing water to bring them oxygen, meaning that all eggs upstream of the dam would be killed in years the reservoir is created. "Of all the salmon runs in the Chehalis system, spring Chinook are the ones that are in the toughest shape," (Lestelle) said. "One of the strongholds historically was in the Upper Chehalis upstream of Pe Ell. Today, the run is much reduced ... If a dam was to be built in that area, it would seal the fate of that remnant run that's still in the Chehalis."*

Upper Chehalis River proposed dam site, October 2018, photo courtesy of Shane Anderson

Both Spring and Fall Chinook spawn in September and early October. The big storms that would trigger the dam into operation typically start in November. Now imagine if the dam were activated each winter for several years running, a scenario that is more likely under climate change.

The dam "could also contribute to existing and ongoing water quality problems in the Chehalis River, including elevated temperatures and low DO (dissolved oxygen)," according to a summary of cumulative impacts (p. 522) in a 2016 Draft Programmatic Environmental Impact statement. The summary also states:

"If land use management recommendations do not limit future floodplain development and a dam increases development pressure in the floodplain, continued floodplain development could cumulatively affect water resources, fish and wildlife habitat, and increase the future risk of flood damage."

Upper Chehalis River, photo courtesy of Shane Anderson

How would the Chehalis Basin Strategy's goals for habitat restoration be achieved?

The Quinault Indian Nation and Confederated Tribes of the Chehalis are working with the State of Washington and stakeholders in the Basin to develop an Aquatic Species Restoration Plan (ASRP) as part of a comprehensive strategy to restore the ecological health of the Chehalis River Basin.

Actions under the ASRP include restoring habitat along the banks of rivers and streams, removing fish barriers such as undersized culverts, rebuilding off-channel habitat (oxbows and side channels off the main river), reconnecting the river to its floodplain and creating, restoring or enhancing wetlands.

While the ASRP and the dam are not formally linked to each other, they are the two most significant initiatives of the Chehalis Basin Strategy. The estimated cost of the ASRP ranges from about $290 million to $1.1 billion based on three scenarios.

A key concern for the Quinault Indian Nation is the timing of decisions and funding about the dam and the ASRP. A realistic timeframe for the dam to be approved and built is 10-15 years. Habitat restoration actions on the other hand would need to continue for decades after a dam is built in order to produce positive results. There is no funding source identified for implementation of the ASRP. Accordingly, there is no guarantee funding for restoration would continue long enough given the Chehalis Basin Strategy relies mostly, if not solely, on biennial appropriations from the Legislature.

How could the dam affect recovery of Southern Resident orcas?

The reasons for the decline of orcas are complex and varied, but come down to three major problems that are interrelated and compound each other.

- Noise and disturbance from vessel traffic make it harder for the whales to find and catch already scarce salmon.
- Too much toxic pollution in the waters of Puget Sound builds up in orcas' fatty tissues which can weaken their immune systems, harm their reproductive health and make them more vulnerable to infection and disease.
- The decline of Chinook salmon runs, which make up the bulk of the diet for Southern Resident orcas, means they aren't getting enough to eat.

The main link between the dam and orca recovery comes down to how the dam would affect Chinook salmon. Spring Chinook in particular are important for Southern Resident orcas for the same reason as Columbia Spring Chinook in that their migration timing comes at a critical feeding time for this population. Southern resident orcas typically travel along the Washington and Oregon coasts in Spring to hunt for Spring Chinook which are especially rich in fat and have the highest caloric value of all salmon species and runs.

Photo courtesy of U.S. Marine Mammal Commission

What are alternatives to the dam to both reduce flood damage and restore aquatic species?

By law, the upcoming Draft Environmental Impact Statements are required to provide alternatives to the dam. Addressing the flooding challenges in the Basin without building a dam would likely rely on many and varied actions such as restoring natural floodplain functions, moving people out of harm's way and keeping them out of danger in the first place.

Many actions, such as forest and wetlands restoration, installing engineered logjams and building other structures to restore the complexity of river channels and banks, would also improve conditions for salmon and other aquatic species. Additional actions could include voluntary property buyouts and easements, improved land use practices, and flood proofing measures such as building walls and raised platforms to protect specific structures and provide refuge for people and livestock.

What is the Quinault Indian Nation's position on the dam?

The Quinault Indian Nation does not have a position on the dam. Based on the best available science, the Nation will continue to evaluate how the dam may affect treaty-protected resources. The Nation will be looking to the environmental review process and independent science to understand and determine whether the dam poses an unacceptable risk to treaty resources, particularly commercial and subsistence fishing for salmon.

Salmon and the habitat they depend on have already been greatly diminished throughout the Basin. According to recent modelling contained in an analysis of the proposed dam by fisheries biologist Larry Lestelle, the decline in the abundance from historic levels of salmon species that occupy the Upper Chehalis River are 92.4% for Coho, 81.4% for Fall Chinook and 97.9% for Spring Chinook. Spring Chinook are highly prized by the Quinault people as it is often the first salmon species to return to the rivers in the spring time.

Many tribal fishers derive their entire economic livelihood from fishing and shellfishing, including from the Chehalis River system. Salmon have particular historic significance as a vital cultural and economic resource for the Quinault people. Salmon represent a means for employment in fishing, guiding and processing jobs.

Often fish are used in trade between tribal members for other foods or goods. Salmon and razor clams are communally served at social and community events, such as ceremonies and funerals. Often, salmon and other fish and shellfish are shared with family members, elders and others in the community who do not, or can no longer, fish. As QIN Cultural Resource Specialist Justine James puts it:

"The Quinault are a salmon people. Salmon have always been part of our diet, religion, economy and every aspect of our life. We feel a deep responsibility to be good stewards. Our priority today is doing everything we can to protect and restore the habitat salmon need to be resilient into the future."

Photo courtesy of Larry Workman