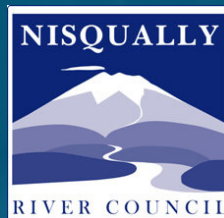


**"THE SALMON DANCE, ON ITS FIRST ARRIVAL"**

# **Yil-me-hu**

**SPRING 2026**



**THE NISQUALLY  
WATERSHED SALMON  
RECOVERY NEWSLETTER**

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**Cover Photo:** Nisqually Winter chum carcasses on Yelm Creek.

Photo Credit: Christopher Ellings



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# Yil-me-hu

**Yil-me-hu, Nisqually word that means "the salmon dance, on its first arrival."**

**The first fish ceremony** — The first fish caught in the spring was prepared in an earth pit stove, shared and eaten by members of the village. The bones, left intact, were returned to the river, pointing upstream. This display was symbolic. It meant that the villagers were respectful to the fish spirits and wished that, because the ceremony had been done correctly, many more fish would come up the stream during that year. A dance followed the ceremony called the "yil-me-hu," a Nisqually word that means "the salmon dance, on its first arrival!"\*

\* Carpenter, Cecilia Svinth, Fort Nisqually: A Documented History of Indian and British Interaction. A Tahoma Research Publication. 1986. p13.

Nisqually Indian Tribe



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**David Troutt**  
Director of Natural Resources  
for Nisqually Indian Tribe



Photo Credit: Sarah Molsenbocker

For the Nisqually Indian Tribe, salmon are not simply a natural resource. They are the foundation of the Tribe's culture, economy, and identity. They connect people to this place across generations. When the Tribe's ancestors signed the Treaty of Medicine Creek in 1854, they reserved the right to fish in their usual and accustomed places—not as a privilege granted by the government, but as a right the Tribe already possessed. That treaty was a promise that salmon would always be here.

Today, that promise is being tested.

Across Washington, thousands of miles of streams remain blocked or impaired by undersized culverts, road crossings, and outdated infrastructure that prevent salmon from reaching the habitat they need to survive. These barriers fragment rivers, cut off spawning and rearing areas, and undermine decades of salmon recovery work. Fish passage is not a technical detail—it is one of the most fundamental requirements for healthy salmon populations.

From a Tribal perspective, restoring fish passage is not optional. It is a legal, moral, and ecological obligation.

Washington courts have been clear that treaty fishing rights mean more than access to the water. They require the state to avoid actions that significantly degrade fish habitat. When salmon cannot reach upstream habitat because of man-made barriers, treaty rights are rendered meaningless. You cannot fish for salmon if there are no salmon.

The good news is that we know what works. Removing fish barriers can open entire watersheds at once. Take for example our partnership with Pierce County on Brighton Creek. A single culvert replacement will reconnect miles of habitat, immediately increasing the productivity and resiliency of our unique Nisqually Winter Chum salmon. These projects deliver measurable returns: more fish, healthier rivers, reduced flood risk, and infrastructure better suited to a changing climate.

The Nisqually Indian Tribe has spent decades partnering with local, state, and federal agencies to restore habitat throughout the Nisqually River watershed—from headwaters to estuary. Fish passage

projects are among the most effective tools we have. They are science-driven, cost-effective, and durable. When we remove barriers, salmon respond.

Yet progress remains too slow.

Funding uncertainty, competing priorities, and short-term budgeting continue to delay fish passage work even as salmon populations decline and climate impacts intensify. Each year of delay means more lost habitat, more stress on imperiled species, and more erosion of treaty commitments. Climate change only raises the stakes: salmon need access to cold, high-quality upstream waters now more than ever.

This is not just a Tribal issue. Salmon recovery benefits all Washingtonians. Healthy salmon runs support commercial and recreational fisheries, sustain orca populations, strengthen local economies, and improve watershed health. Fish passage projects also modernize infrastructure, reduce maintenance costs, and make communities safer during floods. These are shared benefits and shared responsibilities.

Washington has shown leadership before. The state's commitment to correcting fish-blocking culverts demonstrated that honoring treaties and investing in salmon recovery go hand in hand. That leadership must continue—and expand. Local governments, transportation agencies, and utilities all have roles to play. So does Congress, which must provide consistent federal funding that matches the scale of the problem.

For Tribes, fish passage is about keeping faith with the ancestors and protecting the future for seven generations. For the broader public, it is about whether Washington will live up to its values of stewardship, fairness, and respect for the rule of law.

Salmon have sustained this region since time immemorial. They are resilient, but they cannot overcome concrete and steel alone. If we are serious about salmon recovery, we must remove the barriers we built and restore the rivers we altered.

Fish passage is not just an environmental project. It is a promise—and it is time to keep it.

# UNRAVELING THE MYSTERY OF NISQUALLY'S HERRING: A KEY TO SALMON RECOVERY

In the Salish Sea, the health of salmon is closely linked with Pacific herring, a forage fish that plays an important role in the marine food web. Herring and other forage fish are a key food source for both juvenile salmon and larger predators, like birds and marine mammals, that would otherwise feed on juvenile salmon themselves. If herring stocks suffer, as many of them currently do, the ecosystem-wide ripple effect is large.

Oral histories of the Nisqually Indian Tribe account for herring spawning in the Nisqually Reach and tell of indigenous roe harvest in traditional Nisqually territory. The Nisqually Reach also contains eelgrass beds characteristic of typical herring spawn habitat, but there hadn't been confirmed spawning in recent decades. The Washington State Department of Fish and Wildlife (WDFW) has been monitoring individual herring spawning stocks since the early 1970s, though there is not currently a recognized spawning stock for this area that they regularly monitor.

Recent observations of mature herring and post-hatch eggs in Oro Bay, along with decades-long declines of herring spawning stock biomass, increased the urgency of determining which stock(s) these fish originate from. Beginning in 2021, the Nisqually Indian Tribe, Long Live the Kings, and other partners began a multifaceted research and monitoring study to fill the data gaps surrounding Nisqually herring. Each spawning season (mid-January through early June) they've deployed evergreen trees and boughs as supplemental spawning substrate at a site historically known for herring roe harvest. The use of evergreen boughs and trees is an adaptation of a traditional practice that has been used by Tribes, First Nations, and Alaska Natives to harvest herring roe for thousands of years. The team has yet to see herring spawn on these deployments and are thus unable to draw conclusions on the efficacy and nuances of this technique for supplementing habitat for herring.

The team has also been catching adult herring in Oro Bay hoping to find mature herring that may be spawning nearby to understand the population structure of herring in the Nisqually Reach. By looking at their ages, sexes, reproductive maturity and their genetic stock identity, a better story of the

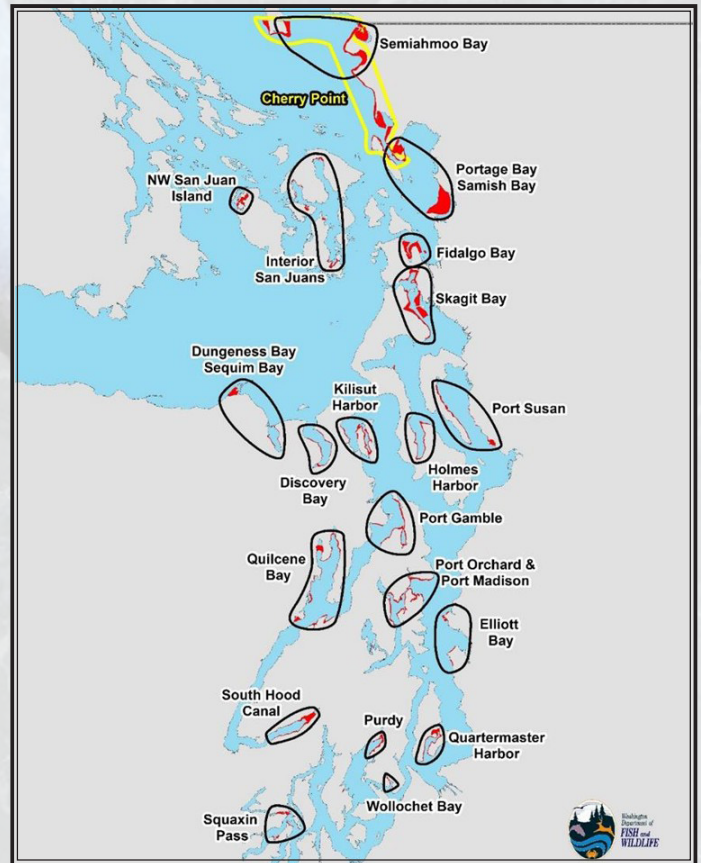


Photo Credit: Adam Lindquist

**Herring stocks are jointly co-managed statewide by WDFW and locally by area Tribal governments. Twenty-one individual spawning stocks are recognized by WDFW and are used for management purposes, depicted in the map above (with the Nisqually Reach added). These individual spawning stocks are isolated to some degree by spawn location and timing and have been monitored by WDFW since the early 1970s.**

composition and behavior of herring populations in the South Puget Sound has begun to develop.

A mixture of maturing and post-spawning adult herring have been regularly captured in these Oro Bay sampling efforts. The genetic data has shown that this mixture includes two of the known genetically distinct spawning populations in Puget Sound. These known populations include the early spawners (January/February), and intermediate spawners (March/April). In addition to the two known populations, the team has also identified a later maturing group of herring (April/May) in the Oro Bay catch. These later-maturing herring appear to be genetically distinct from other Puget Sound herring stocks and are particularly noteworthy because their



Photos taken by LLTK staff

late spawn timing makes their late hatching offspring the right size to be eaten by Nisqually Chinook juveniles as they enter salt water and search for food.

Other documented spawning stocks in South Sound are known to spawn earlier in the season than when the team is documenting mature herring in Oro Bay. While the team had been capturing these later-maturing, genetically distinct, herring in Oro Bay for years, it was still unclear where they were spawning—until this past May. WDFW finally documented a herring spawn event in Oro Bay in the late spring, aligning with the later maturing fish the team has sampled throughout this study. The team was able to collect samples from this spawning event and plan to run genetic analysis to confirm they are part of the distinct Oro Bay population.

Along with general declines of herring biomass, the diversity of herring spawn location and timing is becoming more compressed to early spring, which has an impact on many predators depending on them as a resource throughout the year. The discovery of this later spawning population in Oro Bay represents a critical food source that is available in the Nisqually food web later in the spring. This is particularly significant for juvenile Chinook that rely on young herring in late spring as they outmigrate. The use of Oro Bay by these different herring populations throughout the year suggests that the area may also represent an important staging and feeding habitat for multiple herring stocks in Puget Sound.

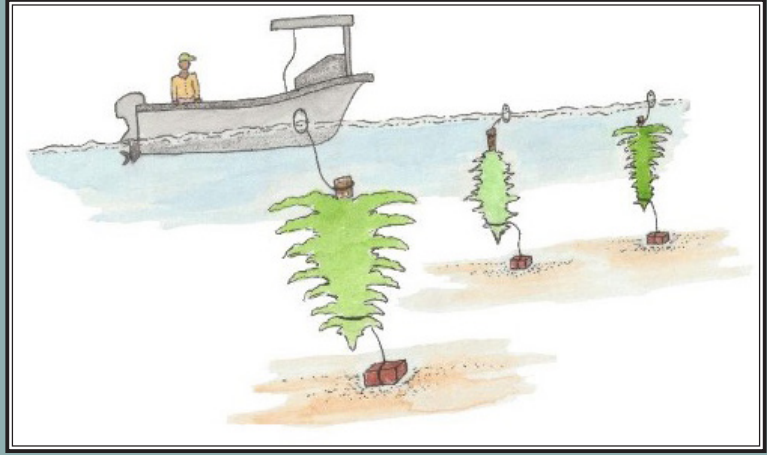
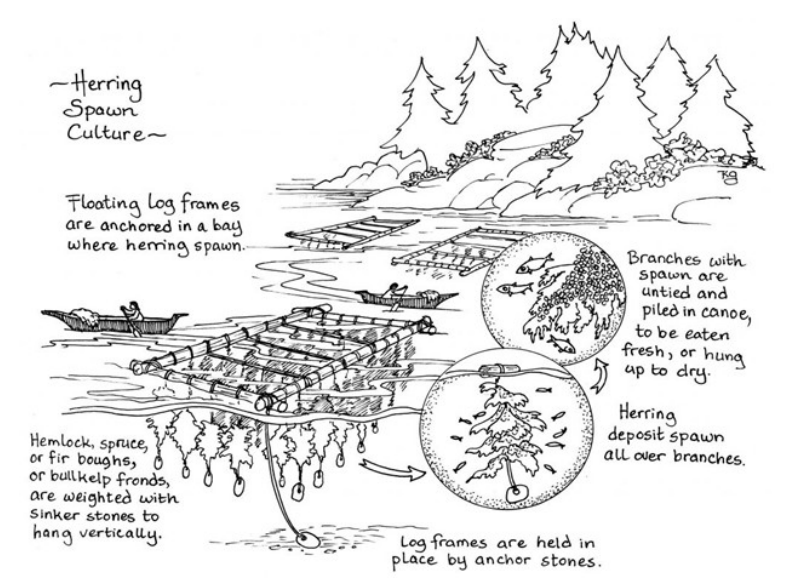


Illustration by Connelli Designs.

Depiction of evergreen trees and boughs deployed as supplemental spawning substrate.

Illustration by Karen Gillmore (Snively & Williams 2016, p. 255)

# RESTORING M

Located in the Southern Puget Sound, McNeil Island, with its long and rich history, offers nearly seven square miles of habitat for wildlife and approximately 12 miles of shoreline that supports a wide variety of marine life, including that of ESA-listed and Tribally significant salmon species and forage fish. With the closing of the state prison in 2011, many of the relic structures and impact areas once used for prison activities were deemed as opportunities for future restoration efforts. It was at this time that Washington Department of Natural Resources (WDNR) and Washington Department of Fish and Wildlife (WDFW), in partnership with the Department of Corrections (DOC), began to take a deeper look at how the island could be returned to natural conditions.

In 2015, WDNR and WDFW launched an effort to survey the marine shoreline of the island to identify restoration and beach clean-up opportunities. Despite the appearance of a somewhat untouched environment, it was found that much of the shoreline, especially on the north side of the island, had been altered to varying degrees by either early settlers or for prison infrastructure needs. The survey called out 24 different options for restoration, including the removal of debris, fill, and shoreline armoring, tide channel restoration, and culvert replacement, to name a few.

Of the 24 projects identified in the assessment, the restoration of Still Harbor rose to the top of the list. Still Harbor encompasses over one mile of marine shoreline and includes multiple habitat restoration actions and management activities. Still Harbor Restoration is being implemented in three Phases, with Phase 1 and Phase 2 now complete.

WDNR completed Phase 1 of the Still Harbor Restoration in 2023. It included the removal of an 328-foot long concrete encased pipe at Lowery Point, which served as an intertidal outfall that impeded sediment transport and restored a small drainage ditch into a natural stream with connection to the tidal influence. In addition to restoring natural processes, WDNR partnered with the Nisqually Indian Tribe's Native Plant



# CNEIL ISLAND

after restoration. Photo Credit: Jordana Warrick



Restoration Crew to plant 1.5 acres of former road and gravel yard with native trees and shrubs.

WDNR was awarded funding through Washington's Recreation and Conservation Office Estuary and Salmon Restoration

Program, a competitive grant program funded by the State's Legislature to complete Phase 2.

Phase 2 of the Still Harbor Restoration Project was completed in 2025 and included the removal of 1,200 linear feet of shoreline armoring. The armoring consisted of 297 tons of creosote-contaminated wood and surrounding sediments, as well as 442 tons of WWII-era metal torpedo netting.

The restoration efforts of Phase 2 will greatly prepare the shoreline for the next phase of restoration, tentatively scheduled to begin in 2028. Phase 3 will include naturalizing a mile of shoreline, including the removal of 13 perched culverts, restoring four stream mouths to function as pocket estuaries, enhancing a wetland complex, and an extensive native vegetation planting effort to be implemented by the Tribe's Restoration Crew.

As a result of this phased restoration project, 1.4 miles of shoreline of McNeil Island will be restored and protected into perpetuity.

WDNR's effort to restore Still Harbor is only a small piece of the efforts ongoing at McNeil Island.

WDFW has successfully completed restoration at the Milewa Creek Estuary, Floyd's Cove, and Bodley Creek. Each of these efforts have led to the reconnection of wetlands, tidal influence, and restored fish passage. There is also an effort funded by the WA State Legislature that will allow DOC to assess existing relic prison infrastructure, looking into demolition and restoration options.

As with most large undertakings, the restoration of McNeil Island will take the work of several project partners and stakeholders working together. It's with this continued commitment, along with patience and funding, that this island will finally be restored.



A very high powered magnet was used to remove shards of metal debris that sloughed off the torpedo netting during removal. Photo Credit: Jordana Warrick

# “Real-Time”

## NISQUALLY WINTER CHUM MANAGEMENT

The Nisqually Watershed is extraordinary because of its natural diversity. The river is fed by glaciers on the majestic Mt. Rainier and spills into the Salish Sea through banks of salt marsh meadows in the Nisqually Delta. Along its relatively short course, the Nisqually River is joined by a diverse suite of tributaries with unique hydrologic and geologic characteristics. The tributaries range from high gradient rivers flowing off the Cascade Mountains, like the Mashel River, to low gradient systems dominated by ground water and flowing through the Puget Lowland Prairie Ecosystem like Muck Creek. The diversity of riverine habitats, seasonal flow patterns, nutrients, and temperatures (to name a few) in the Nisqually Watershed has resulted in a diverse salmon community, including the Nisqually Winter Chum salmon whose life history patterns are found nowhere else on the Pacific Rim.

The bulk of the chum salmon that return to rivers throughout Puget Sound are fall chum, entering freshwater throughout October and are done spawning by mid-November. The Nisqually Winter Chum are the latest returning chum in the Pacific Rim, entering the Nisqually River throughout November and into December with peak spawning in early January. The unique run timing of Nisqually Winter Chum is a result of thousands of years of local adaptation to the unique flow patterns of the groundwater fed prairie streams within the Nisqually Watershed. The late returning chum are extremely important to the Nisqually people, providing a plentiful food source during the darkest, coldest, and most challenging time of the year. Nisqually Winter Chum, like most of the salmon populations in Puget Sound, have experienced a downturn in abundance, leading fisheries managers to be extremely cautious when setting fishing seasons for this unique fish. This often results in early closures of Puget Sound fall chum-directed fisheries and the complete closure of the in-river fishery. Closing the winter



Photo Credit: Rene Bracero

chum season directly impacts the Nisqually people and their ability to exercise the treaty right to continue to engage in the culturally invaluable fishing tradition. The solution to this was to find a way to manage the fishery “in-season,” as a way to provide fishing opportunities, while not threatening the long-term health of the Nisqually Winter Chum population.

Salmon fishing seasons are typically developed before the fish reach the fishing area. The seasons are based on ‘pre-season’ forecasts of salmon abundance and set to ensure an adequate number of salmon reach the spawning grounds and hatcheries. Even though the forecasts are made using sophisticated models and the best available information, they often miss annual fluctuations in abundance which are typical for

ocean-dependent species of salmon like chum, leading to broad closures of fisheries even if the run sizes could support fishing in a particular year. In order to find a better, more flexible fisheries management tool, the Nisqually Indian Tribe's Harvest Program evaluated decades of Nisqually Winter Chum abundance both in small streams, where counts of spawning fish are relatively easy, to mainstem Nisqually River counts, where it is typically very difficult to count fish. They found a high correlation between live fish observed in one of the small prairie streams and the watershed-wide abundance of chum. This correlation is really important because now fisheries managers can open and close Nisqually Winter Chum fisheries during the chum return to their spawning areas. This enables managers to fine tune the fishing season and allow for limited harvest of these culturally significant fish without risking their long-term viability. The "in-season" approach is conservative because it prioritizes spawning abundance over fishing opportunity, which is consistent with the goals of Tribal leadership and managers.

The Nisqually watershed is an interconnected system draining a diverse landscape from over 14,000 feet to sea level. The varied landscape of the Nisqually Watershed has resulted in a unique salmon community that reflects this diversity. Nisqually Winter Chum are a powerful example of how a particular landscape, the Puget Sound Lowland Prairie, can result in watershed-specific life history diversity. Additionally, for thousands of years the Nisqually people have relied on the unique timing of



Photo Credit: Craig Smith

Nisqually Winter Chum to fill smokehouses for the long winter. Fisheries managers have often struggled to balance the conservation of the fish with the cultural benefits of harvesting because fisheries models are done "pre-season" and lack the precision necessary to accommodate annual variability in abundance, especially for species like chum which are highly influenced by ocean conditions. The development of an "in-season" tool for managing the Nisqually Winter Chum salmon fishery is a major milestone in Nisqually fisheries management which protects the chum run while providing for invaluable fishing opportunity when the abundance is sufficient.

Photo Credit: Craig Smith

Photo Credit: Walker Duval



# FROM THE HEADWATERS TO THE MA



Photo Credit: Tristan Olson

Marco Pinchot overlooking the headwaters of Busy Wild Creek.

*The Nisqually Community Forest (NCF) is pleased to introduce Marco Pinchot as its first Executive Director. Marco joined the NCF in April 2025 to help manage the daily operations and growth of the Forest. In this role, he works closely with the Nisqually Indian Tribe's Natural Resources Department to ensure that the 5,500 acres of shared forest land along Busy Wild Creek are managed according to the Tribe's priorities for salmon recovery and cultural access.*

*Marco is focused on supporting the Tribe's long-term goals for the watershed. His work includes coordinating forest operations and strengthening the partnership between the NCF and the Nisqually community.*

## A Different Kind of Forestry

The Nisqually Community Forest and the Nisqually Indian Tribe collaborate on management of over 5,500 acres in the Busy Wild Creek watershed. This area is a critical location for our watershed's threatened Chinook salmon and steelhead. Water from these forests flow down Busy Wild Creek into the Mashel River, which is the largest tributary of the Nisqually River.

Unlike industrial timberlands that are typically clear-cut every 40 years, the Community Forest is being managed to restore forest health. We are using a method called ecological thinning. This means we are thinning overcrowded stands to let in light and help the remaining trees grow larger and stronger.

Over the next 20 to 30 years, we will return to plant a diversity of native trees and shrubs. This will include species important to the Tribe for medicine and food. By moving the forest back toward an old-growth structure, we help the land act like a sponge. This allows it to hold onto snow and release cold, clean water into the Mashel River during the dry summer months.

## Supporting Salmon Recovery

The work in the Community Forest is a key part of the broader salmon recovery efforts led by the Nisqually Indian Tribe. In 2026 and 2027, wood thinned from the Community Forest will be used as "fish logs" for restoration projects happening in the Ohop Valley. This will create a direct link between the headwaters and the creek restoration. The trees thinned at the top of the watershed will become habitat for salmon further down the system.

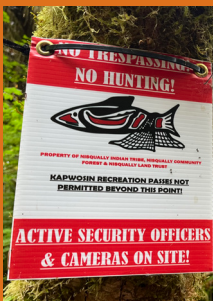
## Direct Benefits for Tribal Members

While the forest is a place of work, it is first and foremost ancestral land. We are working to make sure Tribal members feel the benefits of this ownership:

**Successful Hunting:** This year, we launched a pilot hunting program. Two Nisqually hunters were chosen by lottery through the Tribe's Fish Commission. They were able to hunt the Busy Wild area for several months before the winter snows arrived. We look forward to doing this again in 2026.



Two types of huckleberry, mountain huckleberry and oval-leaf huckleberry.



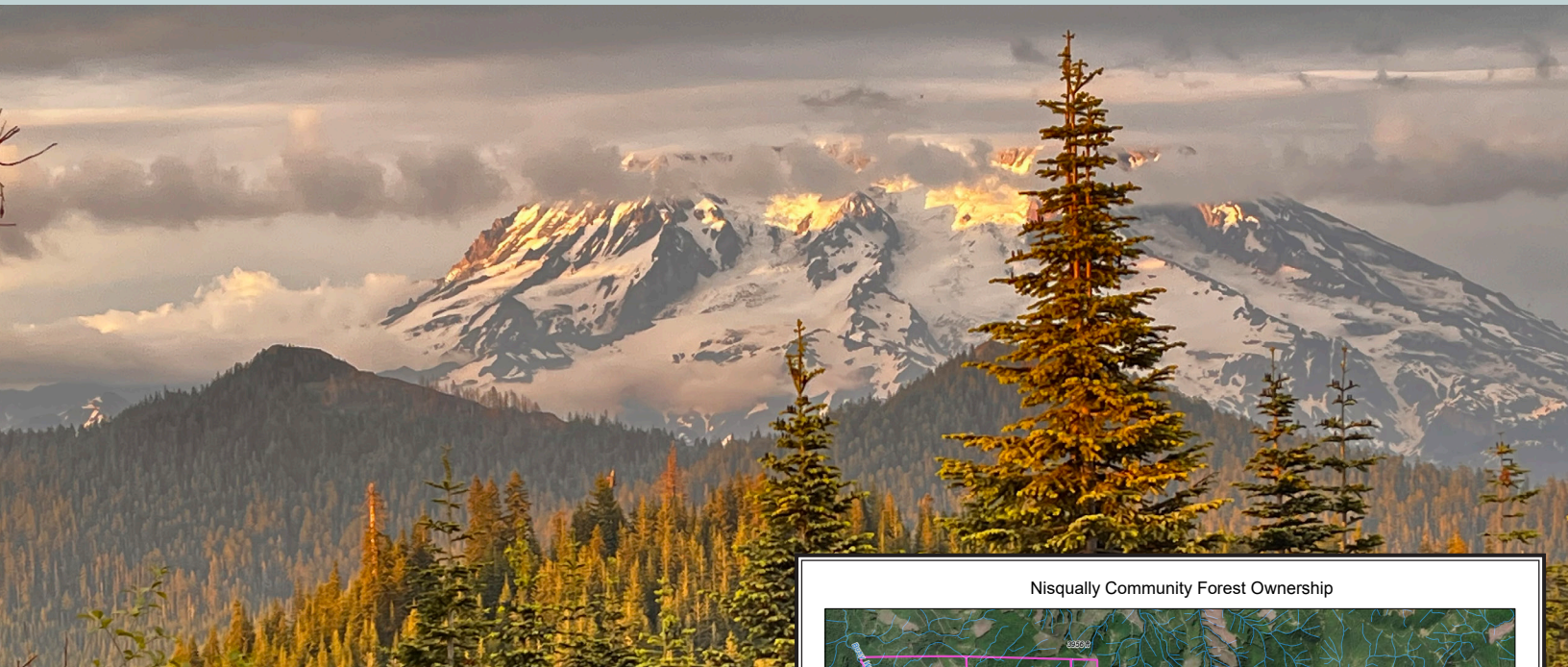
NIT no-trespassing sign Natural Resources crew down on the Busy Wild. harvesting firewood during the 2025 shutdown.



Photo Credit: Kyle Kautz

Photo Credit: Tristan Olson

# ASHEL: A FOREST FOR THE SALMON



**Mount Rainier at sunset from the Nisqually Community Forest** Photo Credit: Jeff Barney

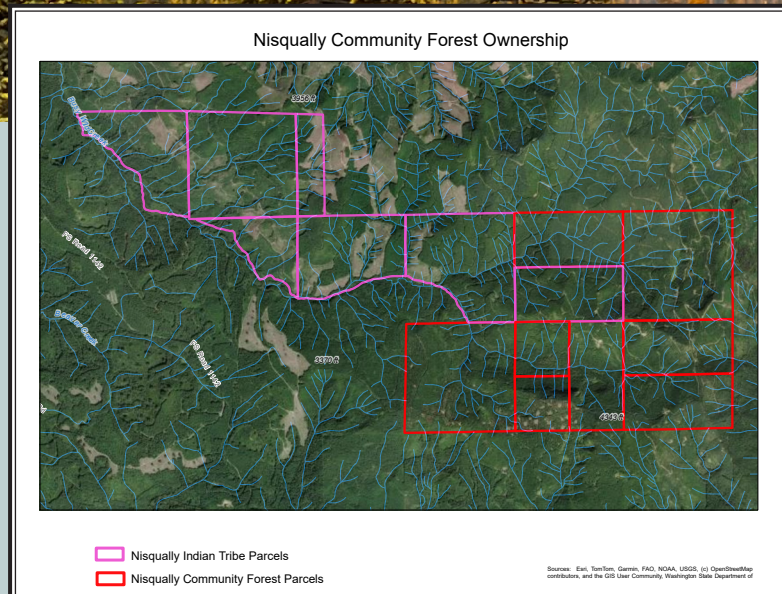
**Emergency Firewood:** During the federal government shutdown, access to firewood at JBLM was cut off. The NCF was able to provide a solution. The Tribe's Natural Resource crew harvested down firewood from this season's log landings in the Community Forest to ensure the community had what they needed.

**Cultural Gathering:** We are working with Hanford McCloud at the Culture Center to plan beargrass harvests for Canoe Journey. We also plan to host berry-picking and mushroom-hunting days for next summer and fall.

**Local Jobs:** Tribal member Jon Sharp spent much of the summer clearing overgrown roads using his mini-excavator. Having Nisqually contractors leading work on the ground is a core goal of the NCF.

## The Busy Wild Creek Resilience Project

A grant from Allen Family Philanthropies is helping jumpstart this restoration work. Because ecological thinning on steep slopes is expensive and uses specialized cable logging, these funds help cover the costs. This will allow the Tribe to perform critical thinning over the next two years that would otherwise be difficult to fund. This work also



Map Credit: Marco Pinchot

### A map of the Nisqually Community Forest ownership.

generates a small amount of revenue to help cover other forest management needs.

The grant also funds a hydrology study to help us understand how our work impacts water for salmon. We have already installed snow-study cameras in the forest. As soon as the snow melts this spring, we will install sensors to measure soil moisture, stream flow, and water temperature. This data will help us ensure our forestry practices are providing the greatest benefit to the river. Finally, we are excited to host paid Tribal youth internships over the next two summers to give students hands-on working experience in the woods.

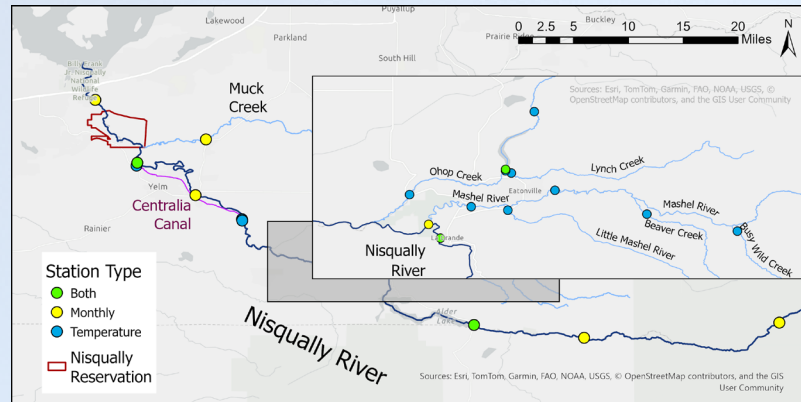
# Water Quality Monitoring

## COMES TO NISQUALLY TRIBE!

The Nisqually Indian Tribe is pleased to announce the implementation of a water quality monitoring program aimed at testing several sites throughout the watershed. The goal of this program is to better understand and document water quality starting at the top of Mount Rainier National Park, all the way down to the Nisqually Delta, and everywhere in between.

Monitoring includes monthly sampling, annual sampling, and temperature monitoring. Monthly monitoring includes stations in Mount Rainier National Park, Ashford, Elbe, McKenna, Yelm, and down in the Nisqually Valley. Many of the Nisqually River's important tributaries, including Ohop Creek, the Mashel River, and Muck Creek are also sampled. Monthly sampling measure nutrients and bacteria levels, as well as temperature, pH and other water quality parameters. Annual sampling in October also included testing for toxic metals, legacy pesticides, and other emerging contaminants of concern. Each temperature monitoring station has an instrument installed in the water that records temperature every 30 minutes from May through November. This information will help us to better understand if there are any locations throughout the watershed where water temperature is making it difficult for salmon to thrive.

The Nisqually River is critical habitat for salmon and steelhead; keeping the water clean, clear, and cold for the fish is vital for healthy fish populations. After decades of conservation and restoration, the Nisqually Watershed is one of the healthiest watersheds in Puget Sound. However, threats to water quality and long-term watershed health from issues such as climate change and population growth need to be monitored to inform continued conservation efforts. The Nisqually Indian Tribe's water quality monitoring program covers the entire watershed as a way to detect changes before they become chronic problems.



Map Credit: Shannon Nardi

**Nisqually DNR Water Quality Monitoring Program stations. Blue dots show places where temperature monitors are installed. The inset is centered on the town of Eatonville, WA and shows the sampling and temperature monitoring locations on Ohop Creek and the Mashel River and their tributaries.**



Photo Credit: Rose Wells

**Installing a temperature monitor in the Little Mashel River.**



Photo Credit: Shannon Nardi

**Floating the Nisqually River**

### MEET THE WATER QUALITY BIOLOGIST

Hello! My name is Shannon Nardi and in February I started a new position as the Nisqually Indian Tribe's Water Quality Biologist. I'm also a part-time raft guide, certified forklift operator, and have my 100-ton captain's license. Before this, I worked in various technical and biologist roles for industry as well as for several Washington state agencies and for the federal government at the National Oceanic and Atmospheric Administration (NOAA). In my new role, I am eager to use my skills and experience to build a strong water quality program to understand and protect the quality of the Nisqually River for future generations.

In my first year, I've jumped into all the activities the Nisqually Department of Natural Resources and our partner organizations do and figure out where I can help! I have sampled herring and helped haul crab pots in Puget Sound, floated the river tracking tagged local Nisqually Chinook salmon, started the monthly water quality monitoring program, collected storm samples for 6PPD-q, hiked the tributaries in the Nisqually Community Forest and so much more. I'm really enjoying this work and looking forward to expanding this program in the coming years!

# Science, Stewardship, and Salmon:

## INSIDE NREP'S WATER QUALITY PROGRAM

With support from the Nisqually River Education Project (NREP), students throughout the entire Nisqually watershed visit their local waterways each fall equipped with a suite of scientific materials: chemical test kits, thermometers, safety goggles, data sheets, and more! They've spent the past few days in the classroom practicing and preparing to get out into the field and answer one specific question: is their local stream or river healthy enough to support salmon? When students arrive at their site, they quickly break into groups, gear up in their safety goggles and gloves, and get right down to business.

Salmon are more than just an iconic species of the Pacific Northwest; they are a powerful indicator of overall stream health. Because salmon require cold, clean, oxygen-rich water to survive each stage of their life cycle, safe places for them to spawn can be few and far between. In the Nisqually watershed, where salmon have cultural, ecological, and economic significance, monitoring water quality helps students understand how factors like temperature, pollution, and habitat changes can directly affect the survival of these fish.

Over the course of the field trip, each student will have the chance to run many experiments: testing the amount of oxygen dissolved in the water, how acidic the water is, how clear or cloudy it appears, and more! Each test provides a different piece of the puzzle, helping students understand how physical and chemical conditions work together to shape stream health. By collecting multiple measurements at the same site, students can begin to draw evidence-based conclusions about whether the water can support salmon.

Since students are testing at sites from Ashford down to Lacey, NREP staff can compile the data from each site and see the health of the watershed as a whole. Overall, results showed that several of the sites had warmer water than is optimal, likely due to the hot, dry summer and later than typical rainfall. Because warmer water holds less oxygen, those warm sites unsurprisingly had lower than optimal dissolved oxygen levels as well. Aside from dissolved oxygen and temperature, other parameters students tested indicated positive signs about the water quality in the Nisqually Watershed. With decades of restoration projects implemented that enhance water quality and aid salmon recovery, students have data to celebrate. Equally important are the water quality hotspots that they observed through their field trips. They return to their school with the task of researching more about what could cause these suboptimal results and specific actions that they can take to improve water quality.

During the fall 2025 water quality season, 884 students from 35 classes across 19 schools tested water at sites near their school. Together, these hundreds of students contributed to a snapshot of water quality across the entire Nisqually watershed, turning individual field trips into a collective learning effort. By gathering real data from real places, students are not only practicing the skills of scientists, they are learning that their local streams and rivers are connected, and that their observations matter. Through hands-on experience and shared data, NREP's water quality program helps students build a deeper understanding of the watershed they call home and the role they can play in protecting it for future generations of salmon.



Photo Credit: Davy Clark

**Students at Columbia Crest Elementary testing for nitrates in the Nisqually River near Ashford.**



Photo Credit: Julia Fregonara

**Students at GRITS (Growing Relationships In The Soil) testing the dissolved oxygen in Ohop Creek.**



Photo Credit: Davy Clark

**Students from Seven Oaks Elementary testing the water at Medicine Springs.**

# LESSONS IN CLIMATE RESILIENCE: 2025 SUMMER INSTITUTE FOR TEACHERS

*"This is what the world needs more of."*

That's what one teacher said at the close of this year's Summer Institute for Teachers, a three-day gathering that has a tradition of inspiration, connection, and action for teachers participating in Nisqually River Education Project, South Sound GREEN, and Chehalis Basin Education Consortium's programming.

Each summer, right after school lets out, we bring together a vibrant network of educators from across the South Sound, including Clover Park, Bethel, Yelm, Eatonville, North Thurston, Olympia, Tumwater, Montesano, Rochester, and Rainier School Districts. This year, 50 educators joined us to explore outdoor learning and climate action, grounded in the places we live and teach.

The 2025 theme, *Climate Resilience: Ecology & Community in South Puget Sound*, brought real-world environmental issues into focus through a local lens. Over three days, scientists, community members, and educators shared stories, led workshops, and guided field experiences that were all designed to help teachers bring environmental learning to life in their classrooms. Keynote speaker Erik Neatherlin, Director of the Governor's Office of Salmon Recovery, kicked things off with a powerful message. Through the story of salmon, a species that connects ecosystems and communities, Erik reminded us that resilience is already in our environment's DNA. There is hope when we give habitat the space to heal and thrive, and even more hope when we get involved through active restoration.

Usually, teachers are the ones planning logistics for their students' outdoor learning field trips. But during

Summer Institute, we flip the script and take teachers on a field trip to deepen their connection to their local environment. Teachers spent three days engaged in hands-on breakout sessions, exploring everything

from sea level rise and king tides to creating pressed seaweed art and making healing salves from native plants. Each session provided tools, ideas, and resources that teachers can bring directly into their curriculum.

This year, we ferried all 50 educators out to Anderson Island for a low-tide exploration of the Puget Sound shoreline. Equipped with muck boots and field

guides, we arrived just as the tide pulled back to reveal a hidden world. Experts from the Nisqually Indian Tribe Shellfish Program, Pacific Shellfish Institute, and Salish Sea Guillemot Network were on hand to guide teachers through the intertidal zone. Above us, pigeon guillemots darted back and forth, headed to their cliffside burrows. Below, geoducks, moon snails, nudibranchs, forage fish, and other marine creatures were revealed. Teachers knelt in the sand and rocks, asking questions, sharing discoveries, and marveling at the diversity of life along the shore. If there's a recipe for awe, it might just be a pair of boots, a pocket field guide, and an hour on a quiet beach at low tide.

Our third and final day shifted focus from ecosystems to human systems. Julia Pinnix, Visitors Services Manager for Nisqually National Wildlife Complex, led a powerful workshop on emotional resilience, helping educators create classroom communities that foster connection, hope, and a sense of agency. Her strategies for integrating emotional and environmental learning struck a deep chord with participants. Many left not just with resources and lessons, but with renewed energy and purpose.



Photo Credit: Tristan Olson

**2025 Cohort of Summer Institute Teachers enjoy the ferry ride to Anderson Island for their field trip to explore the nearshore environment.**



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Photos taken by NRF Staff

## IN THEIR OWN WORDS: TEACHER REFLECTIONS

Here's what some of our 2025 participants had to say:

***"The emotional resilience topics were huge to me. They helped me focus on small steps I can take to build resilient ecosystems and communities. Pairing emotional and climate resilience was exactly what I needed heading into summer."***

***"This was the best and most engaging training I've ever attended. I loved all the hands-on breakout sessions and built connections with colleagues across districts."***

***"It was incredible to take a field trip ourselves. Exploring the beach with experts, asking questions about shellfish, birds, and native plants—I'll be using so many of these resources in my classroom next year."***

***"Getting updated on local environmental issues was so useful. The focus on both ecological and emotional resilience gave me hope."***

## Thank You to Our Partners

Events like this don't happen without a big community collaborating. We're grateful to all of our partners and guest presenters:

Nisqually Indian Tribe, WA State Governor's Office of Salmon Recovery, Washington Sea Grant, Washington Office of Superintendent of Public Instruction, Salish Sea Guillemot Network, Salish Magazine, Washington Trails Association, North Thurston Public Schools, Cascadia Research Collective, Anderson Island Parks Commission, Nisqually Land Trust, Billy Frank Jr. Nisqually National Wildlife Refuge, Wild Grief, Thurston County Public Works, Firecraft Northwest, Beavers Northwest, and Salish Roots Farm.

Thank you for helping us empower the educators who will inspire the next generation of environmental stewards.



Photo Credit: Tristan Olson

**Aimee Christy of Pacific Shellfish Institute aids teachers in shellfish identification.**

Nisqually Indian Tribe



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# SPOTLIGHT ON WATERSHED PARTNERS

Conservation and restoration efforts in the Nisqually Watershed is through the work of many local and regional groups. If you want to learn more or get involved in the Nisqually, please visit their websites for more information.



[nisquallyriver.org](http://nisquallyriver.org)



[nisquallyriver.org](http://nisquallyriver.org)



[nisquallycommunityforest.org](http://nisquallycommunityforest.org)



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