A publication of the Northwest Indian Fisheries Commission

Northwest Treaty Tribes Protecting Natural Resources for Everyone

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BEING FRANK

Politics, Not Science, Behind Water Protection Rollback



by Lorraine Loomis NWIFC Chair

I don't know how you can be against clean water, but some of the industries in our state are. They have

convinced the U.S. Environmental Protection Agency to roll back the water quality standards we established two years ago.

Now being implemented, these standards are among the most protective of human health in the nation. They were developed in cooperation with industry after 20 years of effort. They reflect the truth of Washington state's economic and cultural connection to water and water-based resources.

The pulp and paper industry, oil companies and others are behind the rollback, using the same old excuses that industry has used for decades to avoid regulation.

Automakers once claimed that air bags, unleaded gas and pollution-reducing catalytic converters – even seat belts – would spell the end of the auto industry. Too expensive, they said. The technology doesn't exist. The standards are too high and their effectiveness is questionable.

Today, the industry accepts those health and safety standards as the cost of doing business. In fact, safety ratings now drive profits. The auto industry was forced to innovate because we had the courage and wisdom to require them to meet new standards.

When protective standards are based on good science, innovation will come. It always does. Industries were given generous implementation timelines to help foster solutions. But this water quality rollback undermines our ability to accept science, make changes and move forward together.

The state's old water standards were based on a fish consumption rate of 6.5 grams per day, or about one 8-ounce serving per month, and included a cancer risk rate of one in 1 million. The new standards are similar to Oregon's. They include a consumption rate of 175 grams per day while keeping the same cancer risk rate.

Agreeing to the 175 grams per day rate was a huge compromise by the tribes, who routinely consume much higher levels of fish and shellfish.

Industry and EPA were at the table when we developed the new standards. What's changed? Not the science. Not the need to protect our waters and our health from toxic chemicals. The only thing that's changed is the politics of the last few years.

Equally as disturbing is the way that EPA is rescinding our standards. There was no consultation with the tribes or state before taking action. Even worse, EPA refuses to take any input from the state, tribes or public until after the rollback is complete.

Here at home, the state of Washington is providing leadership on the issue. The director of the state Department of Ecology, Maia Bellon, has repeatedly called on EPA to stand down and let the current standards be implemented.

We also are encouraged by Gov. Jay Inslee and Attorney General Bob Ferguson, who called the action illegal and vowed to take the issue to court. They point out that under the federal Clean Water Act, tribes and states are responsible for setting water quality standards under their jurisdictions.

Our water protection standards could be tied up in court for decades.

EPA and industry are motivated by short-term profits at the long-term expense of our health and the health of the environment, salmon, orcas and other natural resources. Sooner or later the bill always comes due. All of us who live here will be on the hook. We will pay for it with our health, quality of life and our natural resources.



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On the cover: Nisqually shellfish biologist Margaret Homerding surveys the tribe's traditional fishing area for crab and shrimp abundance and health. Eddie Villegas, natural resources technician, records size, sex and condition. Tribes are working together to research Dungeness crab across the region. See related story page 4.



Hatcheries Guide Recovery, Feed Culture

The Lummi Nation's spring tangle net fishery is fulfilling a key cultural role, while also providing essential information to guide chinook salmon recovery.

Hatchery salmon harvested in the selective fishery are served at community events such as the First Salmon Ceremony in May, Stommish Festival in June and this year's Tribal Canoe Journey, Paddle to Lummi, in July.

These fish were produced at the Washington Department of Fish and Wildlife's Kendall Creek Hatchery on the North Fork of the Nooksack River, and can be identified because their adipose fins were clipped before they were released as juveniles.

Other fish with intact adipose fins can be released alive, because they were tangled in the net by the snout, rather than the gills or body. Some of these salmon are natural-origin and others are part of the tribe's Skookum Creek Hatchery's South Fork chinook recovery program.

The selective fishery enables Lummi fishermen and natural resources staff to limit encounters with natural-origin chinook to 35 to 40 a year. Tribal fisheries on healthy salmon runs can be conducted more efficiently because they do not need to be constrained to protect the weak stock.

The tribe closely monitors and regulates impacts to Nooksack River spring chi-

nook, as managers do for all salmon listed under the Endangered Species Act.

Before they are released, each chinook has a numbered metal tag affixed to its jaw, and a radio transmitter inserted into its esophagus. Biologists also take DNA and scale samples to determine river of origin and age.

The radio transmitters will improve fisheries managers' understanding of the freshwater migration of Nooksack River chinook, which will help future habitat restoration efforts and improve the salmon recovery program.

"High water temperatures may be creating vulnerability by affecting the chinook's entry into the South Fork Nooksack River, which may be delaying spawn timing and inducing temperature-related pre-spawn mortality," said Tom Chance, Lummi salmon enhancement program manager. "The future of this recovery program may be seriously affected by future droughts and rising average temperature."

Lummi Natural Resources staff are tracking the tagged fish using radio telemetry. Through aerial and ground surveys, they document when fish enter the Nooksack River from the delta, when they reach the South Fork and how long they spend in the river before spawning or returning to the Skookum Creek Hatchery.

Fisheries managers suspect that chinook hold in certain reaches of the mainstem river until temperatures decrease in the South Fork. This study could tell them if that's the case and where those places are. – K. Neumeyer

Watch a video of the tangle net fishery: nwtt.co/tangle

K. Neumeyer (2)



Top: Lummi fisherman Steven Solomon Jr. pulls a chinook salmon from a tangle net. Above: Solomon releases a chinook that has been implanted with a radio transmitter.

TRIBAL PARTNERSHIPS



Above: From right, Nisqually shellfish biologist Margaret Homerding, Katie Houle, Pacific Shellfish Institute, and Jamie Kilgo, Washington Department of Natural Resources Aquatic Reserve Program, examine the catch from a light trap meant to collect crab larvae. Right: A light trap floats beside the dock at Zittel's Marina. Biologists are setting the traps across the region to learn more about Dungeness crab populations.



D. Preston (2)

Dungeness Crab Studied Regionwide

Tribes throughout the Salish Sea and Washington coast are supporting studies to better understand Dungeness crab populations.

Crab always have been a part of tribal members' diet and culture and also are an important part of tribal economy in Washington state, since salmon fishing is limited by habitat destruction from over-development and decades of overfishing. The Dungeness crab fishery is important to tribal and non-tribal commercial fishermen, contributing the largest value of catch in the state, estimated at \$12.5 million total in 2017-2018.

In recognition of the need to improve Dungeness crab science and management, Swinomish and Lummi launched a cooperative research effort among tribal, state, federal and academic researchers. The newly formed Pacific Northwest Crab Research Group (PNWCRG) aims to promote sustainable Dungeness crab populations. Since the group's inception in December 2018, it has grown to include more than 60 individuals, primarily representing tribal governments.

"Based upon broad partner interest, enthusiasm, and participation in the larval study and upcoming research efforts, it became clear to the PNWCRG that a coordinator was needed to ensure the implementation of standardized methods across all monitoring participants," said Julie Barber, senior shellfish biologist for Swinomish. "Thus, the PNWCRG is partnering with Washington Sea Grant (WSG) to support a WSG Fellow who will serve as the PNWCRG's program coordinator."

The 20 member tribes of the Northwest Indian Fisheries Commission approved \$18,000 to support the position. Individual tribes and the National Oceanic and Atmospheric Administration contributed an additional \$11,000 to match funds from WSG. The fellow's work will include developing a work plan for the group, ensuring standardization of methods, creating data-sharing protocols and managing data. The research group's first initiative is a statewide long-term monitoring effort examining regional variation in larval Dungeness crab abundance. Biologists are using light traps to count tiny Dungeness crab larvae, called megalopae. The traps are made from water jugs with a light inside on a timer. When the light turns on at night, it attracts crab larvae and other small marine life.

Samplers are following a model developed by Alan Shanks at the University of Oregon that found a link between the number of crab larvae collected in light traps and commercial crab catch on the Oregon coast.

"While it will take at least 10 years of data collection before we will know if Dr. Shanks' model works in Washington for predicting coastal or inland commercial crab catch, the larval data we collect now will answer important questions about larval crab populations and the timing of larval pulses throughout Washington waters," Barber said. – D. Preston

Tribes, Partner Track Cougars

Standing still in thick brush on the Olympic Peninsula, Skokomish Tribe wildlife biologist Bethany Ackerman listens for the cries of 3-weekold cougar kittens.

She hears faint meows, so she moves closer through the dense vegetation and peers over a nurse log to find a black-spotted kitten with deep blue eyes.

Ackerman's crew – Skokomish wildlife technicians, Lower Elwha Klallam Tribe wildlife manager Kim Sager-Fradkin and Panthera Puma Program director Mark Elbroch – quietly rush in behind her to study the small cat. Panthera is a global nonprofit dedicated to the study of all wild cat species.

They take a hair sample, check the sex and weigh her

at 6 pounds. The crew finds a second kitten, a feisty male who paws at the biologists with tiny sharp claws, weighing 4 pounds.

The mother, collared with a GPS unit earlier this year, was not detected nearby.

"She may be gone for as long as two days while out hunting," Elbroch said.

By tracking the GPS collar, Ackerman theorized that the female cougar had given birth because she spent more time in one spot than she would have on a kill site, and kept returning to the same area.

Before leaving the den, Elbroch installed game cameras to collect footage of the kittens.

The Skokomish Tribe is quantifying the local cougar population and studying its





predatory habits on deer and elk. In addition to its own population study, the Lower Elwha Klallam Tribe is collecting data with Panthera about behavior, migration patterns and genetics.

"Lower Elwha and Panthera's interest is in the entire population on the peninsula, while we are looking at just the local population," Ackerman said. "Since we're already out there looking for our cats, we can help them gather the data they need."

Panthera provides the GPS collars and trail cameras, and Skokomish is tracking data for five cats on the southern end of the peninsula. "Our goal is to integrate information," Sager-Fradkin said. "This is a perfect example by working in the field as a team."

Elbroch also is interested in the cougars' habitat and eating habits. The young cats tend to eat smaller prey like beavers, while the adults go after elk and deer.

Suitable habitat for cougars may not be the same kind of habitat that's good for elk and deer, which is often assumed, he said.

"The young bounce all over the place, so tracking them is a great way to learn what habitat they use and where they go," he said. – *T. Royal*

Above: Data from 3-week-old cougar kittens will help tribes better understand wildlife and their habitat on the Olympic Peninsula.

Left: Skokomish wildlife biologist Bethany Ackerman prepares to weigh, sex and take a hair sample from a cougar kitten.



K. Neumeyer (2)

Restoration Gives Juvenile Salmon Room to Grow

Juvenile salmon are using the new habitat at *zis a ba* in the Stillaguamish estuary, where the Stillaguamish Tribe restored tidal flow in October 2017.

Formerly part of the tidal marshes connected to Port Susan and south Skagit Bay, *zis a ba* had been isolated from the river and tides by a dike built more than 100 years ago to protect a homestead from flooding. The tribe purchased the property in 2012 with the intention of setting back the dikes to create more rearing habitat for juvenile salmon, especially chinook. It was named *zis a ba* for a former tribal chief.

"When the fish come out from their spawning areas in North and South Fork Stillaguamish in the spring, they need places to grow larger before they head offshore, and these tidal wetlands are an important stop on that journey to the ocean," said Jason Griffith, Stillaguamish fisheries biologist. "This is an area that fish historically used to use, but they have been cut off from it for a very long time."

Natural resources staff from the tribe and the Skagit River System Cooperative (SRSC) are monitoring the area to see if the restoration project is working as designed.

Biologists use seines to collect fish in several sites on a biweekly basis. When they find juvenile chinook, they take a small fin clip for DNA testing before returning them to the estuary.

"The DNA will tell us what river system they came from," Griffith said. "This area is kind of a mixing ground for the Whidbey basin."

"Even though the project is intended to improve Stillaguamish River stocks, Skagit River chinook have access and use this estuary as well," said Mike LeMoine, a biologist with SRSC, the natural resources extension of the Swinomish and Sauk-Suiattle tribes.

Research in other river systems, including the Skagit and Snohomish, has shown that increasing tidal wetlands leads to fewer fish dying before they reach adulthood, and therefore larger numbers of chinook returning to spawn, Griffith said.

"These projects are pretty important for chinook recovery, for orca recovery, and for ensuring that the tribes and non-treaty fishers have lots of opportunities," he said. – K. Neumeyer

> Watch a video about the fish survey: nwtt.co/zisaba



Top: The Stillaguamish Tribe restored tidal flow at *zis a ba*, tribal property named for a former tribal chief. Above: Biologists from the Stillaguamish, Swinomish and Sauk-Suiattle tribes collect fish in a beach seine, looking for juvenile salmon using the restored estuary.

<u>SKOKOMISH TRIBE</u>

Fish, Plants Thrive in Restored Estuary

A variety of fish and native plants in the 1,000-acre Skokomish Estuary have been thriving within two years of a nearly decade-long estuary restoration.

The Skokomish Tribe has been monitoring the area year-round by sampling 50 channels for fish and studying the resurgence of native plants.

While the tribe has been collecting fish data extensively since 2012, biologists have seen changes over the past few years in out-migrating juvenile and returning adult populations.

"Since the restoration, it seems we're catching more fish per set, but the numbers of salmon go up and down depending on species, site and year," said Anthony Battista, the tribe's steelhead and salmon biologist. "The distribution and diversity of fish found in the restoration sites has equaled or been better than our control sites for not only salmonids but all fish species."

After decades of tidal flow being blocked by tide gates and culverts, the restoration of the Skokomish Estuary created the habitat salmon need for survival. The Skokomish River supports Hood Canal summer chum and Puget Sound chinook, both listed as threatened under the federal Endangered Species Act.

Part of the restoration work included removing dikes and recreating historic estuary channels. Now the channels are restoring themselves, and formerly muddy areas are revegetating naturally, said Lisa Belleveau, the tribe's habitat biologist.

A noticeable change has been in the decline of mud-loving plant species while native salt marsh species have been thriving, she said.

"This is telling us that the formerly muddy habitat is restoring into a healthy marsh community," she said.

Biologists also noticed that sediment is being transported into the estuary and building elevation to help keep up with sea level rise. This stems from ongoing restoration work in the upper watershed, which promotes natural sediment distribution and increased floodplain connectivity, Belleveau said. – *T. Royal*

Top: Anthony Battista, salmon and steelhead biologist for the Skokomish Tribe, counts fish found in one of the Skokomish Estuary channels.

Right: Jennifer Renner, Skokomish finfish technician, and Battista count fish sampled from the Skokomish Estuary. The tribe samples the estuary regularly to track the number and types of fish using the estuary after a nearly decade-long restoration.



T. Royal (2)





Testing Shellfish for Biotoxins

With 2019 forecast to be another warmer-than-usual year, the Lummi Natural Resources Department is making sure that tribally harvested shellfish are safe to eat.

Shellfish biologists are sampling mussels from several locations on the reservation to test for biotoxins caused by harmful algal blooms (HABs), or red tides. When consumed, the toxins can cause illnesses such as paralytic shellfish poisoning or diarrhetic shellfish poisoning.

"In recent years, warming air and warming water temperatures have contributed to frequent HABs in the nearshore areas of the Lummi Nation, which is consistent with current climate change predictions," said Karl Mueller, Lummi shellfish biologist.

Mussels are an early indicator for biotoxins because they are voracious filter feeders that retain any chemicals in the water for two to four months.

In 2018, for the first time in many years, biotoxins from harmful algal blooms reached potentially lethal levels on the Lummi Reservation and nearby Bellingham Bay.

"To avoid illnesses or, in the worst case scenario, mortalities associated with eating biotoxin-laden shellfish, the tribe must be vigilant and remain proactive about monitoring, detecting and disseminating current or real-time information on HABs and shellfish biotoxin levels to the wider Lummi community," Mueller said.

Tribal natural resources staff collect mussels from Lummi and Portage bays, and Gooseberry Point near the Lummi Island ferry terminal. They blend the tissue into a "mussel milkshake." Some of the samples are sent to the Washington State Department of Health, and some of them are tested at the Salish Sea Research Center at Northwest Indian College on the Lummi Reservation.

"The Lummi Nation has relied on shellfish harvesting since time immemorial for ceremonial, subsistence and commercial purposes," said Merle Jefferson, Lummi Natural Resources director. "With climate change increasing the frequency and severity of red tide and other biotoxins in shellfish, it is more important now than ever that we act to protect the safety of the Lummi community."

The tribe also is installing new signs on tribal beaches to inform people about biotoxin closures, warning them when clams, oysters and mussels are unsafe to eat.

- K. Neumeyer

Above: Mussels are collected on the Lummi Reservation. Below: Shellfish technician Taylor Solomon removes the tissue from mussel samples to test for biotoxins.



Spring Clam Hai Following Water

Portage Bay opened to Lummi clam diggers on a sunny afternoon in April for the first time since 2014 when the beds were closed because of fecal coliform contamination.

Closing 820 acres of shellfish beds from April through June left Lummi tribal members with no opportunity to harvest there during daylight hours.

"Now, when the sunny days and low daytime tides are here, our people will again be able to harvest shellfish from Portage Bay," said Merle Jefferson, Lummi Natural Resources director.

Elevated fecal coliform pollution in 2014 likely was caused by a combination of human, pet, livestock and wildlife waste. Lummi worked with federal, state and local agencies, and community partners to improve the water

quality so tribal members could resume their treaty-protected shellfish harvest.

"We are encouraged that recent water quality monitoring data from Portage Bay indicate that on-the-ground practices undertaken by individuals and agencies throughout the watershed have been successful in reducing fecal coliform contamination during the spring months," Jefferson said.

The Lummi Nation remains committed to working with community partners to improve water quality throughout the watershed.

While failing septic systems and pet waste contribute to fecal coliform contamination, a major concern is manure from dairy cows discharged either directly or indirectly into the Nooksack River, which flows into Portage Bay. Whatcom County is home to more than 45,000 adult dairy cows, which can each generate 120 pounds of manure per day. When dairies store the waste in unlined lagoons, they can leak 900

Lummi tr Portage Is

rvest Reopens ⁻ Improvements

gallons of manure into the ground every day, according to the federal Resource Conservation and Recovery Act.

In 2017, several Whatcom County farmers created the Portage Bay Partnership with Lummi, to develop a water quality improvement plan addressing manure management, improved manure storage, surface and groundwater monitoring, annual animal pen inspections and underground drain tile inspections.

"Farms are not wholly responsible for the contamination, but the farms that have joined the partnership are stepping forward as leaders in fixing it, and we hope others will follow their example," Jefferson said. – K. Neumeyer



ibal member Loren Cultee digs for manila clams on sland.



Jarrett Burns, Jamestown S'Klallam Tribe natural resources technician, spreads Pacific oyster shells on Sequim Bay tidelands to improve the habitat for the Olympia oyster population.

Olympia Oysters Benefit from Shells Spread on Beach

The Jamestown S'Klallam Tribe is making Sequim Bay suitable habitat for Olympia oysters again.

The tribe spread 2,500 bags of oyster shells on its tidelands this year, building on recent smaller but successful restoration efforts. The shells, known as "cultch," provide a surface for oyster seeds to grow on.

"It's becoming obvious that oysters are doing well here but there is not a ton of good substrate," said Liz Tobin, the tribe's shellfish biologist. "Where it is good, they flourish, so we are enhancing the area to give them a leg up."

Historically, there was a sustainable Olympia oyster population in the bay, confirmed recently by the tribe's historic preservation officer, who found a shell midden that was 40 percent Olympia oyster shells carbon-dated back 1,000 years.

In the 20th century, oyster populations suffered because the bay was used as a log yard, filling the head of the bay with fine sediment, Tobin said. Since the restoration of Jimmycomelately Creek in 2005, which empties into the bay, the tidelands have firmed up.

In 2013, the tribe, with the Clallam Marine Resources Committee (CMRC), started enhancing oyster habitat and seeding the bay to reestablish a sustainable population. "We've discovered that Olympias are really habitat-specific," said Chris Burns, a natural resources technician for the tribe. "In addition to needing substrate, they also like the seeping muddy stuff, with the moisture at the surface, which keeps them cool in the mud. Sequim Bay has plenty of that."

The tribe also is working with the Puget Sound Restoration Fund (PSRF) to establish a Sequim Bay broodstock. Last winter, Burns and Tobin, with PSRF staff, harvested Olympia oysters from the beach, then took them to the PSRF shellfish hatchery in Manchester to raise to seed. This summer, the tribe will receive bags of oyster shells planted with those seeds, which will be hardened on the beach before being distributed in spring 2020.

The Olympia oyster is native to the area but was harvested heavily before the Pacific oyster was introduced in the early 20th century and took over the habitat.

The tribe shares a goal with agencies such as CMRC, PSRF and Northwest Straits Commission to restore 100 acres of tidelands for Olympia oysters throughout Puget Sound by 2020.

"The objective of all the partners is to determine what steps are needed to move toward the goal of restoring Olympia oyster populations," Tobin said. – *T. Royal*

Drought Conditions Concern Tribes

The Nisqually Tribe's salmon enhancement program manager doesn't need anyone to tell him it's been drier than normal.

After overseeing hatchery production for more than 25 years, Bill St. Jean had plans to release some young hatchery chinook salmon early because he didn't have enough water to keep them all until the usual release.

"There was no water in Clear Creek early this spring," he said. "We had the driest May to September we have ever seen in 2018 and less rain than usual this winter.

"It was touch and go up until release time. We had to monitor the oxygen in the water daily to make sure we had enough to keep all the fish to the release date. It doesn't bode well for later in the summer when we normally worry about warm water and low flows."

Meanwhile, the Squaxin Island Tribe sent their water conservation guidelines to the community in the spring, which is normally not done until July or August.

"It's a sort of heads-up and request for conservation, because we need to do it now," said Erica Marbet, water resources biologist for the tribe, at the time.

The tribe will conduct normal monitoring, and tribal council will decide if and when there will be required water conservation measures, she said.

The Squaxin Island Tribe's usual and accustomed fishing areas do not include places with year-round snow. Water tends to infiltrate into the

groundwater table, then flows back into streams over the summer. Less precipitation over the winter and spring means lower streamflow during the summer, negatively affecting salmon survival.

Low flows make it hard for salmon to spawn, and reduce water available to hatcheries for fish rearing. Reduced flow means pools are shallower and can heat up more, creating temperatures too high for young salmon.

The U.S. Geological Survey has a large swath of northwest Washington listed at 25 to 75 percent of normal streamflow so far this year, including many Northwest treaty tribal territories and state areas where fish hatcheries are located.

"Despite significant lowland snow and the coldest temperatures in recent

memory during late winter, snowpack now averages 48 percent of normal statewide, the 5th lowest in the past 30 years for the middle of May. Statewide precipitation Jan. 1 through April was the 15th driest since 1895," according to the drought order issued by the state Department of Ecology. As of June, the drought order listed 27 watersheds that are likely to receive less than 75 percent of their water flow between April and September.

Even Forks, part of the coastal rain forest, had the driest March on record, according to the National Weather Service. Average rainfall for March in the Forks area, encompassing the traditional territory of the Quileute and Hoh tribes, was 1.5 inches. An average rainfall for the month is 7 to 8 inches.

What this means for tribes and the salmon they rely on is that groundwater recharge is lower than normal, so streams are lower than normal.

Snow melt into rivers such as the Quillayute, Quinault, Hoh and Nisqually could improve streamflow, depending on how fast it melts.

"Our water situation was making us a bit nervous prior to the rains we've been getting lately," said Frank Geyer, director of natural resources for the Quileute Tribe. "We'll continue to monitor the situation and plan to have discussions with our Resource Committee every month into the fall.

"Flows are certainly going to be on our watch list as we go through the summer and into the fall fishery," he said. - D. Preston



Junior Slape, left, and Craig Smith, assistant natural resources director and harvest program manager, stand in a dry Exeter Springs during a fish survey in December 2018. Exeter Springs feeds into Muck Creek before flowing into the Nisqually River. Low flows during the record dry winter prevented fish from accessing spawning habitat.





D. Preston (2)

Nisqually Tribe Aids Interpretive Training

Left: Three generations of the McCloud family sing for attendees. From left, Hanford McCloud, son Jason, son Aiden, father Don McCloud Jr. and brother Joe. Right: Yonit Yogev, Mount Rainier National Park Service interpreter, examines a traditional Pacific Northwest cedar hat beside the iconic national park ranger hat.

For nearly a decade, the Nisqually Tribe has helped educate the Mount Rainier National Park seasonal interpretive staff as part of preseason training. Tribal members give a history of the tribe in the region and the mountain, and discuss the cultural importance of the area. There were more than 2.2 million visitors to the park in 2018. "I heard a statistic once that 60 percent of Americans have no connection with an indigenous person," said Lauren Huckle, a seasonal employee new to Rainier who has worked in seven other national parks. "This training is compelling. It's different from anything else l've attended."

Mount Rainier National Park maintains a relationship with six Indian tribes that have connections with the mountain, including Nisqually, Puyallup, Squaxin Island, Muckleshoot, Yakama and Cowlitz.

GENERATIONS

Sarah Guy, married to a Makah tribal member, hangs fish to dry. A scarecrow stationed nearby keeps the birds away.

The photo was taken by James G. McCurdy circa 1900 and was provided as a print image to the tribe by the Museum of History and Industry.



Courtesy of the Makah Cultural and Research Center

Coho Salmon Found in Lake Sutherland



The Lower Elwha Klallam Tribe sample a 20-centimeter (7.8 inches) coho smolt migrating from Lake Sutherland to the Elwha River via Indian Creek.

The Lower Elwha Klallam Tribe found bigger-than-expected coho smolts headed out of Lake Sutherland this spring.

During the tribe's annual monitoring of Indian Creek, which connects Lake Sutherland to the Elwha River, the tribe found smolts up to 10 inches long in the tribe's fyke net. Coho smolts are typically half that size.

"Coho do well in low energy environments such as lakes, with lots of food such as zooplankton and other fish, so they're going to get big," said Mike McHenry, the tribe's habitat program manager. "I suspect that's what's happening – their diet starts with zooplankton and insects, but as they grow, they will switch to eating fish, which Lake Sutherland is filled with, such as red-side shiner and kokanee. And this is good because the bigger the fish, the higher survival rate."

In 2017, a lakefront property owner filmed six coho spawning in Falls Creek, a small creek that feeds into the lake, said Rebecca Paradis, a project biologist for the tribe.

"Three of them had Floy tags, indicating they were surplus adult coho relocated from the tribe's hatchery, and three of them didn't have tags," she said. "That tells us these coho found each other in Indian Creek, swam to the lake and then up Falls Creek. Now, two years later, we're seeing these huge smolts."

Even though coho salmon typically are river spawners, they will use lakes if available, Paradis said.

Other systems in Washington where coho have access to lakes via creeks, such as Snow Creek in Discovery Bay, have shown to be productive.

Indian Creek is proving to be highly productive, McHenry said. Raw catch data to date at a smolt trap in lower Indian Creek shows 5,500 coho smolts caught between January and May. The trap will continue fishing through August.

The tribe has been monitoring Indian Creek since 2011, when the removal of two fish-blocking dams on the Elwha River began. At the same time, the tribe moved surplus adult coho salmon from its hatchery to the creek to kick start coho spawning.

As a result, the majority of the coho returns used to be hatchery fish, but now they are mostly naturally produced, McHenry said. – *T. Royal*



Elwha Steelhead Used for Broodstock

The Lower Elwha Klallam Tribe collected adults from the Elwha River's late winter steelhead run this spring to assess population recovery following the removal of the river's two dams.

The goal is to determine the ratio of hatchery fish and natural-origin fish returning to the river, and also to collect broodstock for the tribe's hatchery program, said John Mahan, the tribe's hatchery manager.

The tribe operated a captive broodstock program from 2005 to 2016 to ensure steelhead weren't wiped out during dam removal. They collected fry from the river's naturally spawning stock.

In a captive broodstock program, juvenile fish are raised in a hatchery to

the adult stage, then spawned, and their progeny are released into the river.

Now that dam removal is complete, the tribe is collecting adult broodstock that are ready to be spawned. The tribe will release the progeny of these adults as smolts in April 2021.

"We're still in the early phases of population and habitat recovery following dam removal," Mahan said. "Until we meet restoration goals for this population, we are going to continue the production of steelhead."

Spawning surveys have shown that steelhead are using the river's newly opened habitat and spawning in tributaries and the mainstem beyond the old dam sites. – *T. Royal*

Lower Elwha Klallam Tribe hatchery manager John Mahan transfers an Elwha River steelhead to the tribe's hatchery.

Beetles Destroy Scotch Broom Seed

Northwest tribes are using seed-eating insects to manage the spread of Scotch broom, one of Washington state's most invasive species.

The Scotch broom seed beetle and seed weevil prevent the plant's distribution, which may ultimately reduce populations and help with long-term weed management, said Kim Williams, Lower Elwha Klallam Tribe revegetation supervisor.

"It's a seed reduction technique using biocontrol," she said. "Scotch broom seeds can remain viable for up to 30 years, even if the soil conditions aren't perfect, like on roadsides, which is likely why the plant is so prolific."

Washington State University (WSU) Extension is providing the seed-feeding beetle to noxious weed control groups and other tribes, including Snoqualmie, Swinomish and Makah.

The weevil isn't distributed as often because it is not as abundant as the beetle, said Jennifer Andreas, the WSU Extension Integrated Weed Control Project director. The beetle is the more dominant species at most sites and likely more effective at reducing seed production.

The insects are native to Europe. Any biocontrol agent released in North America must go through extensive testing to make sure it will not attack native plants or crops before being released, Andreas said. Typically, when biocontrol agents successfully reduce a weed population at one site, they will fly to other weed populations or perish, and not move on to other plant species.

The insects, the size of pinheads, feed on the flowers in the spring before laying eggs within the seedpod. Weevils insert eggs into the seeds, and beetles glue eggs on the outside of the seedpod wall. The larvae of both species nestle inside the developing seed to feed and then pupate within. Newly formed adults are released from the seedpod when it bursts open to release the seeds.

The tribe was given 600 beetles by WSU for dispersal this spring. The insects were released at three different sites on the reservation that won't be mowed or sprayed with herbicide: the Upper Housing and Spokwes neighborhoods, and a horse pasture on Elwha Road.

In the late summer, just before seed dispersal, the tribe will collect a sample of pods for WSU to dissect to see how many seeds were attacked by the beetles.

"Our purpose is to boost the insect population and try to make a dent in the seed distribution," Williams said.

The only way to get rid of the plants and seeds otherwise is to compost, spray or mow, because if the seeds are allowed to disperse, they spread and survive, she said.

The Scotch broom insects do not destroy the current stands, or feed on seeds already in the soil. Over time, as plants start to die off naturally, there will be fewer seeds in the soil to germinate and continue the population.

"Although we are still analyzing the data, we know that some sites can have more than 90 percent of the seeds reduced by the biocontrol agents," Andreas said. "Reductions at that level may have long-term implications for future Scotch broom populations." – *T. Royal*



Kim Williams, Lower Elwha Klallam Tribe

Above: WSU field technicians Allison Bachner, foreground, and Maya Giddings look for beetles already present at a site on the reservation before releasing beetles. Below: Scotch broom seed-eating beetles are dispatched to lay eggs inside the invasive plant.

Jennifer Andreas, Washington State University



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SUQUAMISH TRIBE

Walking a Healthy Salmon Watershed

All the technology in the world can't replace hiking 50 miles to accurately identify stream conditions in a watershed.

The Suquamish Tribe is surveying the entire Chico Creek watershed over the next few years, on foot, to update the state's stream map of the area.

The watershed is home to the most productive chum salmon stream in Kitsap County, and also supports coho salmon, steelhead and cutthroat trout. The tribe has been monitoring the salmon runs in the watershed for nearly 20 years and has improved salmon habitat by removing fish-blocking culverts.

"The information from this survey work can help anyone with an interest in the watershed, including government agencies and property owners," said Alison O'Sullivan, the tribe's senior biologist.

The tribe's environmental staff will survey Chico Creek, its primary tributaries – Lost, Wildcat, Kitsap and Dickerson – and numerous unnamed tributaries, including any new ones they discover.

The work includes physically verifying stream locations, length and whether they are fish-bearing or not. The surveys will occur annually from March through July until complete.

The area's streams were mapped originally in the 1980s, in part hand-drawn from topographic maps and aerial photos. However, some streams are missing or misidentified, and may not be receiving the protection they warrant under existing regulations, O'Sullivan said.

The tribe is starting with existing data from the state departments of Natural Resources, and Fish and Wildlife, which have been updated over the years with information submitted by the tribe, state and environmental organizations. – *T. Royal*



Suquamish Tribe forest practices coordinator Debbie Kay observes the conditions of Lost Creek, a tributary in the Chico watershed.

A Clammy Earth Day



T. Royal

The Skokomish Tribe held its annual Earth Day celebration on the Skokomish Estuary in April with sixth-, seventh- and eighth- graders from Hood Canal School. Students cleaned up garbage, learned why recycling is important, and held a competition of which grade could dig up the most varnish clams, an invasive species on the estuary.

TRIBAL CULTURE

Tribes Celebrate First Salmon Ceremonies





Many Northwest Treaty Tribes annually celebrate the return of salmon through various ceremonies, while blessing tribal fishermen for a prosperous and safe fishing season.

Top: Puyallup tribal youth Codi Dillon, front, and Easton McCloud take the tribe's first fish to a boat where it will be returned to the Puyallup River to encourage more fish to return. Above: Graduating high school seniors carry the remains of salmon during the Swinomish Tribe's Blessing of the Fleet and First Salmon Ceremony. Left: Richard Solomon returns the remains of the first salmon to the water in Portage Bay following the Lummi Nation's First Salmon Ceremony.

K. Neumeyer (2)

BILLY FRANK JR. AWARD

Stanley Moses, left, receives the third annual Billy Frank Jr. Leadership Award from NWIFC Chair Lorraine Loomis, with Quinault Indian Nation Fisheries Policy Spokesperson and NWIFC treasurer Ed Johnstone (from left); Willie Frank, Nisqually tribal council member and son of Billy Frank Jr.; and Leo LaClair, Muckleshoot intergovernmental affairs specialist.

Moses, a Muckleshoot Fish Commission member and treaty rights activist for 50 years, fought for his tribe's fishing rights, including being arrested on the Duwamish River in the late 1960s as part of a fish-in. He was one of several important witnesses during U.S. v.*Washington*, which led to the 1974 Boldt decision.

Following the Boldt decision, Moses oversaw fisheries enforcement and management as well as the development of two Muckleshoot fish hatcheries.

The Billy Frank Jr. Leadership Award recognizes initiative, commitment and accomplishment in protecting tribal sovereignty and natural resources in western Washington.



D. Preston

NWIFC OFFICERS







Elections for NWIFC officers took place at the May Commission meeting. Lorraine Loomis was re-elected chair, Shawn Yanity retained his position as vice-chair, and Ed Johnstone was re-elected as treasurer.