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Northwest Treaty Tribes

Protecting Natural Resources for Everyone

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Inside:

Being Frank

U.S. Should Honor Billy's Dream

by Lorraine Loomis
NWIFC Chair

Billy Frank Jr., longtime chairman of the Northwest Indian Fisheries Commission, received many awards during his life and continues to be honored since his passing in 2014.

His life was celebrated in November when President Barack Obama posthumously awarded him the Medal of Freedom. It is the nation's highest civilian award.

Billy would have been delighted to receive the medal, but even more delighted by the attention that such an award can bring to the issues he fought for every day: protection of tribal cultures, treaty rights and natural resources.

We hope the United States will honor not only Billy's life, but also his dream, by taking action on the Treaty Rights at Risk initiative that was the focus of his efforts for the final four years of his life.

Salmon recovery efforts cross many federal, state and local jurisdictions, but leadership is lacking to implement recovery consistently across those lines. Billy believed that the federal government has a duty to step in and lead a more coordinated and effective salmon recovery effort. The federal government has both the legal and trust responsibility to honor our treaties and recover the salmon resource.

That's why he called on tribal leadership to bring the Treaty Rights at Risk initiative to the White House in 2011. It is a call to action for the federal government to ensure that the promises made in the treaties are honored and that our treaty-reserved resources remain available for harvest.

Tribal cultures and economies in western Washington depend on salmon. But salmon are in a spiral to extinction because their habitat is being lost faster than it can be restored.

Some tribes have lost even their most basic ceremonial and subsistence fisheries – the cornerstone of tribal life. Four species of salmon in western Washington are listed as "threatened" under the Endangered Species Act, some of them for more than a decade.

"As the salmon disappear, so do our tribal cultures and treaty rights. We are at a crossroads, and we are running out of time," Billy wrote not long before his passing.

Over the past four years under the Treaty Rights at Risk initiative, we have met often with federal agency officials and others to work toward a coordinated set of salmon recovery goals and objectives. Progress has been slow, and at times discouraging, but we remain optimistic.

An important goal is to institutionalize the Treaty Rights at Risk initiative in the federal government through the White House Council on Native American Affairs, created by President Obama in 2013.

Economic development, healthcare, tribal justice systems, education and tribal natural resources are the five pillars of the council. With one exception – natural resources – subgroups have been created for each pillar to help frame the issues and begin work.

That needs to change. A natural resources subgroup is absolutely essential to address the needs of Indian people and the natural resources on which we depend. The subgroup would provide an avenue for tribes nationally to address the protection and management of the resources critical to their rights, cultures and economies.

We are running out of time to recover salmon and we are running out of time for the Obama Administration to provide lasting and meaningful protection of tribal rights and resources. Recent meetings with federal officials have been encouraging. We are hopeful that this subgroup will be created in the coming year.

The creation of a natural resources subgroup for the White House Council on Native American Affairs would truly be a high honor that the United States could bestow on Billy's legacy.

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Tribal contact information is available under Member Tribes at *nwtreatytribes.org*.

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On the cover: The spawned-out carcasses of a male and female coho lie in Lake Creek while Quileute tribal fisheries technicians Dean Jackson and Jack Davis survey redds on the North Olympic Peninsula. See related story, page 12. Photo: *D. Preston*

E. O'Connell

Nisqually Tribal Chairman Farron McCloud, center, holds Billy Frank Jr.'s Medal of Freedom with fellow tribal council members, from left, Chris Olin, Willie Frank III, Antonette Squally, Sheila McCloud, Brian McCloud and Stephanie Scott.

National Museum of American History

President Barack Obama awarded the 2015 Medal of Freedom to 17 people including Billy Frank Jr.

Billy Frank Jr. Receives Medal of Freedom

The legacy of Billy Frank Jr. was honored in November when he was awarded a Presidential Medal of Freedom from President Barack Obama. The longtime NWIFC chairman walked on May 5, 2014 at the age of 83.

"He saved the salmon that had fed his family for generations," Obama said during the ceremony at the White House. "He was spat on, shot at, chased, clubbed and cast as an outlaw, but Billy kept fighting because he knew he was right."

The Medal of Freedom is the highest honor a civilian can receive.

"His message about protecting our treaty rights, sovereignty, natural resources – that never changed," said his son Willie Frank III. "He saw the main picture, the big goal. There's never going to be anyone like my dad."

Billy Frank Jr. Street

Also in November, the city of Bellingham's Indian Street was officially renamed Billy Frank Jr. Street.

Bellingham Council member Terry Bornemann proposed the change in June, after briefly considering renaming a street in honor of Martin Luther King Jr. The idea evolved when someone pointed out that the area's civil rights struggle had more to do with Native American issues.

"It got me thinking she was very right," Bornemann said. "It is more appropriate to name a street in honor of Coast Salish people."

The council approved the change unanimously.

City Council member Roxanne Murphy, a Nooksack tribal member, said that the name change is an opportunity to pass along Billy Frank Jr.'s teachings.

"Children will ask their parents who Billy Frank Jr. was," she said.

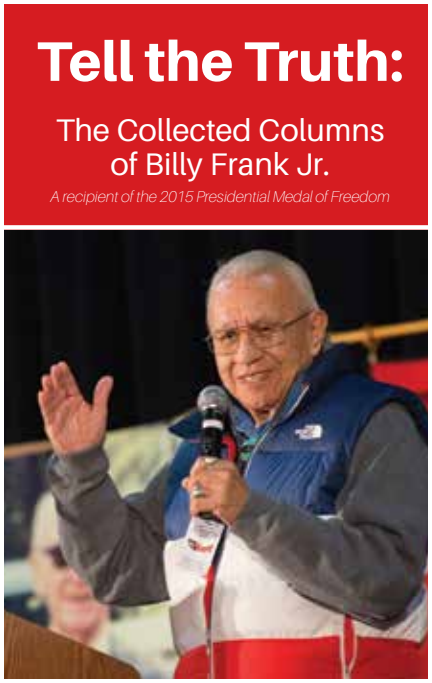
Tell the Truth

Another way his message is being passed on is through the publication of *Tell the Truth: The Collected Columns of Billy Frank Jr.* The paperback is available for $24.99 on Amazon, and proceeds go to the Billy Frank Jr. Salmon Forever Fund, managed by Salmon Defense, a nonprofit founded by Billy to protect Pacific Northwest salmon and its habitat.

In the book's foreword, NWIFC Chair Lorraine Loomis writes: "The political players and news headlines changed over the years, but Billy's message remained the same: We must recover wild salmon populations to levels that can sustain harvest. We are losing habitat faster than it can be restored, and hatchery programs are essential to make up for the lost and damaged habitat." – *K. Neumeyer*

Watch President Obama award the Medal of Freedom to Billy Frank Jr. at nwtt.co/mofceremony.

K. Neumeyer



D. Preston

Right: Tom Oberlander of Bellingham Public Works installs the first Billy Frank Jr. Street sign in the city of Bellingham. Far right: *Tell the Truth: The Collected Columns of Billy Frank Jr.* is available for purchase at *nwtt.co/tellthetruth.*

Harry Butler, natural resources law enforcement officer for Quinault, measures Dungeness crab.

Crab Safe to Eat

Following crab closures in other states, Washington crab fishermen, managers and processors announced that crab harvested here are safe for human consumption.

Biotoxins that can sicken humans are monitored frequently prior to and throughout the harvest season. Tests look for domoic acid, the toxin produced by the harmful algal bloom that affected the entire West Coast this year and halted crab fisheries in California and Oregon.

"Recent domoic acid test results from coastal crab in Washington did not find a health concern," said Jerry Borchert, the Department of Health's Marine Biotoxin Program lead. "The Department of Health will continue testing crab throughout the season to make sure the crab is safe."

Domoic acid at high levels can cause illness in humans but does not harm the crab.

"Our fisheries are conducted under a Consent Decree for Shellfish Safety with the Washington Department of Health that mandates testing of all shellfish harvests and guarantees safety for the public," said Ed Johnstone, fisheries policy spokesperson for the Quinault Indian Nation. "We do this as standard practice for all of our shellfish harvests, not just when there is a threat." – *D. Preston*

Quinault Crabbers First to Monitor Pots Electronically

Quinault Indian Nation fishermen are the first fleet on the U.S. West Coast to use on-board crab pot scanners and video cameras.

The primary purpose is to assure that every fisherman is pulling his own pots and to help prevent theft or tampering while docked in Westport.

"The fishermen asked for these tools," said Scott Mazzone, marine and shellfish biologist for Quinault. The entire fleet of 22 crab boats was equipped this season.

The Dungeness crab fishery is one of the most lucrative fisheries in the state, valued at $62 million in 2014 for nearly 22 million pounds of crab harvested by tribal and non-tribal commercial fishermen.

State and tribal regulations limit overharvest and maintain crab populations by having retention size minimums, allowing harvest of male crabs only and limiting the season length to allow successful molting and breeding.

To monitor the catch, Quinault partnered with Ecotrust Canada to place quarter-sized radio-frequency tags in crab pot buoys. When the pots are pulled on board, the fishermen run the buoy past a sensor that transmits the identification number and GPS location to a computer on the boat. Each pot is registered to only one owner.

"These systems are designed to lessen the theft of gear and catch," said tribal fisherman Junior Goodell, chairman of the Quinault Ocean Fisheries Committee. "We're pioneering these enforcement measures here at home with hopes to influence the entire U.S. West Coast where an electronic monitoring system is much needed for the coastwide crab fishery.

"In addition to enforcement benefits, keeping detailed logbooks and using the camera data could help us bridge some important data gaps." Goodell said. "We hope to see the state start using this gear as well, to improve the management of the fishery overall."

The tags assure that fishermen are fishing the correct number of pots and in the right areas. The camera also works as a backup if the tagging scanner fails. Buoys can be held up to the camera to record the number.

"It's the same technology as the scanner in the department store that reads whether you're leaving the store without paying for something," said Joe Schumacker, research scientist for QIN.

Ecotrust Canada developed the equipment and data processing as they did for British Columbia's fishing fleet.

"As a nonprofit, we are able to provide these tools for the least cost possible to fishermen," said Amanda Barney, electronic monitoring program coordinator for Ecotrust Canada. – *D. Preston*

D. Preston (2)

Each crab buoy will have a radio-frequency identification tag scanned when it is hauled on board.

Tracking Bears to Manage Population

The Quinault Indian Nation is evaluating black bear populations with the goal of developing harvest models to minimize commercial tree damage while maintaining the population.

The black bear, or *chitwin*, has been a mainstay of Quinault Indian Nation (QIN) culture for centuries. However, a dense population of the bears caused significant damage to commercial trees.

An attempt was made to lure the bears away from trees with other food, but it failed to reduce damage sufficiently.

In 2004, QIN established hunts for non-tribal members led by tribal guides. Damage to trees has been significantly reduced and now QIN wants to know how many bears are on the reservation, and create a management plan.

QIN has finished a hair sampling study, paid for by the federal Bureau of Indian Affairs, that non-invasively snags bear hair on barbed wire, allowing genetic identification of individual bears.

Now, the tribe is working to trap and radio-collar bears to learn their home range sizes and how bait stations for the guided hunts are changing bear behavior.

"We have four collars and six more on the way," said Kristen Phillips, Quinault wildlife biologist. "If we are successful in obtaining additional funding, the goal is to collar a minimum of 20 bears."

The research goals are to learn more about denning behavior, cub survival rates, reproductive rates, home ranges and whether there are seasonal influxes of bears from outside the reservation.

"This research will give QIN a much better understanding of current populations and behavior to allow informed management decisions," Phillips said. – *D. Preston*

D. Preston

Kristen Phillips, Quinault wildlife biologist, collects bear hair samples from a strand of barbed wire.

Grant Helps North Sound Tribes Reduce Elk Damage

North Sound treaty tribes are continuing to help landowners keep problem elk off their property with a $300,000 grant awarded to the Stillaguamish Tribe, with assistance from the Sauk-Suiattle Tribe.

The money comes from the state Department of Fish and Wildlife's minor works fund and is a result of efforts by state Sen. Kirk Pearson, chairman of the Natural Resources and Parks Committee, to assist tribes with the work they've been doing for years.

"It will help us in our collaborations with the state and other tribes to provide non-lethal elk damage solutions for landowners in Skagit and Whatcom counties," said Jennifer Sevigny, wildlife biologist for the Stillaguamish Tribe.

Stillaguamish is working with the Tulalip and Sauk-Suiattle tribes as well as other Point Elliott Treaty tribes to complete fencing projects that reduce elk damage to private property.

"We are already tracking a list of priority fences for landowners in Skagit and Whatcom counties, so these funds will be used to address the needs on that list," Sevigny said. "We are committed to help with elk conflict issues where we can. There are positive changes happening on the valley floor."

The tribes have found that elk exclusion fences are a long-term solution that decreases conflict between landowners and elk. Electric fencing options typically are more cost-efficient, take less time to install, and can be retrofitted into existing barbed wire or woven wire fences. Electric fencing can also be temporary and easily dismantled if necessary.

The most recent project is a six-strand electric fence in Concrete, where the cattle farm J&J Livestock has had 25 years of problems with elk grazing and knocking down fences.

The tribes will be collaring a cow elk to learn how the herd reacts to the presence of an exclusion fence.

The design of the electric fences have evolved over time, said Michael Sevigny, wildlife manager for the Tulalip Tribes.

"It is very adaptable for the type of crop to be protected and the needs of the landowner," he said. – *K. Neumeyer*

Michael Sevigny, Tulalip wildlife manager, and Molly Alves, assistant wildlife biologist, install an elk exclusion fence. *K. Neumeyer*

Where Will Salmon Go After Glaciers Have Melted?

The glaciers that provide streamflow and cool temperatures for some of the region's most threatened salmon are disappearing.

"This is probably the largest decline in glacier area and volume recorded in the North Cascades over the last 30 years," said Oliver Grah, water resources program manager for the Nooksack Indian Tribe.

Glacier-fed rivers, such as the Nooksack, depend on enough glacier melt to produce sufficient streamflows and cool temperatures for salmon to spawn. Researchers are concerned that due to climate change, the low- and mid-elevation glaciers on Mount Baker will be gone by the turn of the century.

"Probably glaciers at higher altitudes will persist, but there won't be enough glacier mass up there to produce enough melt to sustain the streamflows and cool stream temperatures we have now in late summer," Grah said.

Already the Nooksack River is impaired by high temperatures and sediment, leading to a decrease in salmon productivity. The river is recognized as "water quality impaired" under the federal and state clean water acts.

"Healthy salmon stocks are vitally important to the Nooksack Indian Tribe; it's ingrained into our identity, our culture," said Gary MacWilliams, the tribe's natural resources director.

For the past four years, tribal natural resources staff has been working with glaciologist Mauri Pelto to measure Mount Baker's glaciers to determine the rate of accumulation compared to melt, or ablation.

"Most of the glaciers on Mount Baker are receding," Grah said. "The line between snow accumulation and glacier ablation is moving higher in elevation. Glacier area and mass are declining."

Preliminary results suggest that valley glaciers on Mount Baker have receded more than 1,000 feet in the last 30 years. The Mazama Glacier in the upper Nooksack River watershed has receded almost 2,000 feet. Low- to mid-elevation glaciers have receded about 700 feet during this time.

With the summer's record high temperatures and drought, the research team saw drastic differences from previous years in the amount of exposed ice, retained snowpack, runoff and sediment loads from the glaciers.

"Most or all of this year's snow accumulation on the low- to mid-elevation glaciers disappeared," Grah said. "Little of previous years' snow remained at the uppermost elevation of the low- to mid-elevation glaciers. Most of these glaciers had exposed ice over most of their areas by the end of September."

The tribe has contracted with the University of Washington and Western Washington University to model glacier behavior and the hydrology of the Nooksack River under different climate change scenarios. Preliminary results show that streamflow conditions experienced this year are very similar to the modeled flows.

"Assuming climate in the future is similar to environmental conditions this year, we have a good idea of what to expect in the future," Grah said.

These conditions will further impede the Nooksack Indian Tribe's ability to harvest sustainable populations of salmon for ceremonial, cultural, subsistence and commercial uses.

"We need to plan now for this changing climate to promote salmon survival and a resilient riverine ecosystem in the future to protect our treaty rights," MacWilliams said. – *K. Neumeyer*

K. Neumeyer (2)

Top: Nooksack Tribe water resources manager Oliver Grah, accompanied by his dog Tillie, climbs the Sholes Glacier. Bottom: Contractor Andy Ingram samples runoff from the Sholes Glacier.

Forest Bank Could Offset Carbon Impacts

The Swinomish Tribe is exploring ways to manage its forestland sustainably by placing a value on trees beyond the price of lumber.

The tribe is in the process of updating its 2003 forest management plan by implementing recommendations from the Swinomish Climate Change Initiative.

"Forest biomass can go a long way toward accumulating carbon volume over time," said Ed Knight, Swinomish planning director. "That has some value in terms of mitigating climate impacts, instead of the sole value of a forest being in harvesting trees."

In recent years, the tribe has purchased forestland, increasing its ownership from a couple of hundred acres to 1,200 acres, making it the largest forestland owner on the reservation.

Most of the 15-square-mile reservation is checkerboarded by different owners and forest types. Tribal allotments have been subdivided across generations of owners, often with multiple family members owning small tracts of forest. Two-thirds of the reservation is undeveloped.

The Swinomish Tribe is partnering with Ecotrust, a conservation and economic development organization, to develop a forest conservation plan using a $528,000 three-year Natural Resources Conservation Service grant.

"The idea is to try to come up with a plan that looks at how the tribal community would like to see the forest for the next generation," said Brent Davies, Ecotrust's vice president of forests and ecosystem services.

The Swinomish Reservation lies across the channel from La Conner. *Jacob Tully, Swinomish*

One possibility is a "forest bank" that could certify market values of unrealized forest resources, and attract investment in Swinomish carbon sequestration. Each ton of carbon "sequestered" by long-term storage in plants and trees is called a carbon credit. Companies can buy credits to offset their own carbon dioxide emissions.

Carbon dioxide removed from the atmosphere through forestation helps moderate global warming by reducing or slowing the buildup of carbon dioxide concentrations in the atmosphere, according to the Environmental Protection Agency.

An ecologically managed forest can store more carbon, provide higher-quality habitat for fish and wildlife, and offer more economic development opportunities, while also supporting a robust forest products industry, Davies said.

"There are not too many models for a forest bank," she said. "That's what we received this grant funding for, to explore the concept and develop a framework for one. We plan to essentially generate a pot of funding that could be paid out to landowners in addition to or in lieu of harvest. Then we can set it up as a model, because there are other reservations that have similar issues and challenges with a mix of landowner types."

"We expect to come out with a better, healthier forest base, and promote and manage that into perpetuity, while returning some value to the owners," Knight said. – *K. Neumeyer*

Upper Skagit Spruces up Weyerhaeuser Land

The Upper Skagit Indian Tribe partnered with Puget Sound Energy (PSE) to improve fish habitat on Weyerhaeuser land along Finney Creek.

The tribe's timberland services department, led by manager Robert Schuyler, found the 3-acre parcel in Finney Creek's channel migration zone. The timber company's land was overgrown with shrubs like salmonberry and thimbleberry that had become too thick to allow conifers to grow. Schuyler's crew cleared the thick understory, leaving existing alder and cottonwood trees intact. The crew then planted 1,350 spruce trees.

Creeks like Finney, a tributary to the Skagit River, need tall conifers to provide shade to keep stream temperatures low for salmon.

PSE funded the work as part of mitigation requirements of the 2008 relicensing agreement with the Federal Energy Regulatory Commission for the utility's Baker River Hydroelectric Project.

The PSE grant also includes maintenance funding for the timberland services crew to return during the next four years to trim back the regrowth of the understory. – *K. Neumeyer*

Doug Couvelier, Upper Skagit timber, fish and wildlife biologist, checks on newly planted spruce trees to make sure they didn't get washed out by heavy November rains.

K. Neumeyer

Watch a series of videos about the summer chum recovery effort at nwtt.co/chum*.* *T. Royal*

Hood Canal Summer Chum's Path to Recovery

The scent of decomposing salmon might be offensive to some, but to Thom Johnson, it's a sweet reminder of nearly two decades of work.

"That's the smell of success, rotting salmon, nothing like it," said the environmental program manager for Point No Point Treaty Council. "It's the best smell in the world. Those are the nutrients for the next generation."

The Hood Canal/Strait of Juan de Fuca summer chum population was listed as "threatened" under the federal Endangered Species Act in 1999. Now it's one of the few salmon populations that is close to its recovery goals.

After starting with fewer than 1,000 fish in the late 1990s, there are now typically 20,000 to 40,000 summer chum salmon returning to this region each year.

The Hood Canal Coordinating Council, area tribes, state, federal and local agencies, regional fish enhancement groups, land trusts, volunteers and nonprofit organizations have spent nearly two decades implementing a variety of recovery measures after decades of overharvest and destroyed habitat left summer chum on the brink of extinction.

"You can't do a restoration like this without everyone participating," Johnson said.

The effort balanced the three H's of salmon management: harvest, hatcheries and habitat.

Harvest

Since the mid-'90s, harvest restrictions have been put in place, including reduced, relocated and delayed fisheries. In the 1970s, the harvest rate was between 40-60 percent of the population; today it's 8 percent or less.

Hatcheries

A hatchery supplementation program was implemented throughout the region to increase fish abundance. From 1992-2003, hatcheries were operated where needed, including on the Big Quilcene, Hamma Hamma, Lilliwaup, Union and Tahuya rivers and Big Beef Creek in Hood Canal, and on Salmon, Jimmycomelately and Chimacum creeks in the strait.

"We took unique steps that were successful using only wild fish from each creek or river that needed to be boosted, while also being careful to minimize any impact to the fish," Johnson said.

"After four years, numbers in Salmon Creek were good, so we took a representative sample as planned and moved them to Chimacum Creek, which had zero fish," he added. "We wanted to reintroduce summer chum to where they had been spawning as recently as the 1970s. We now have self-sustaining wild summer chum there with about 1,300 fish returning to Chimacum Creek this season."

Habitat

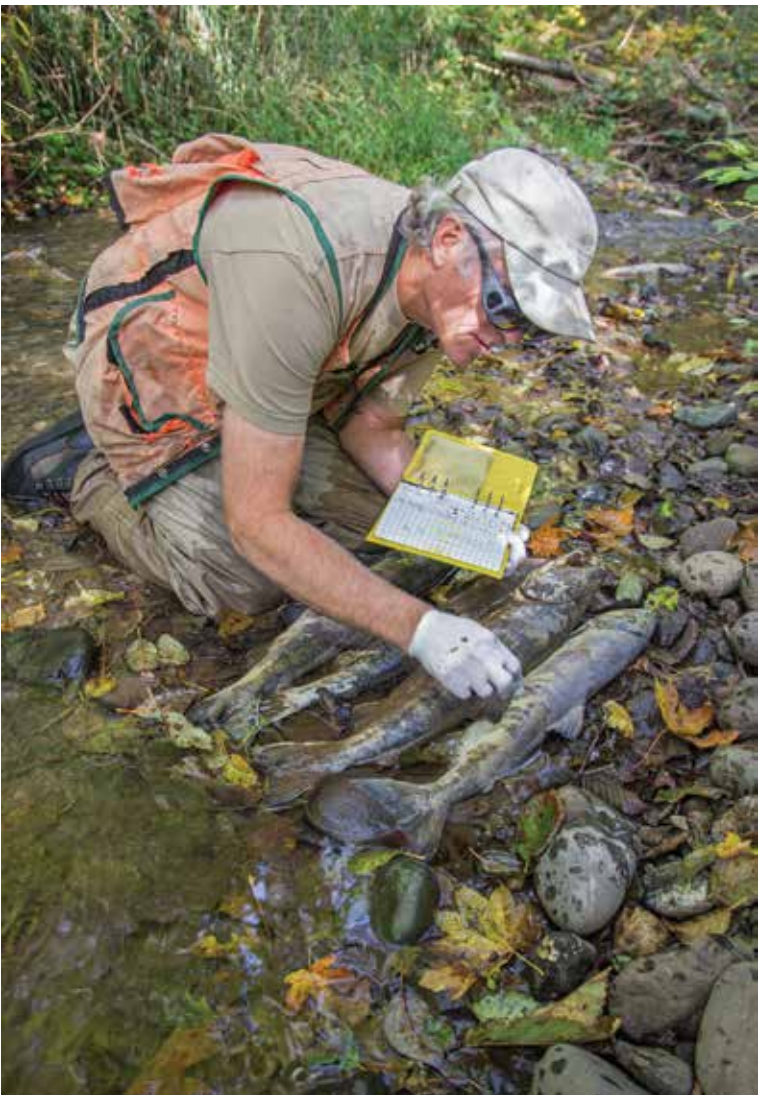
At the same time, habitat projects protected and restored some of the streams in the region, further supporting chum populations.

Salmon Creek, a summer chum stream in Uncas Valley near Discovery Bay, had been altered beginning in the 1890s when the lower valley was homesteaded.

"The original stream

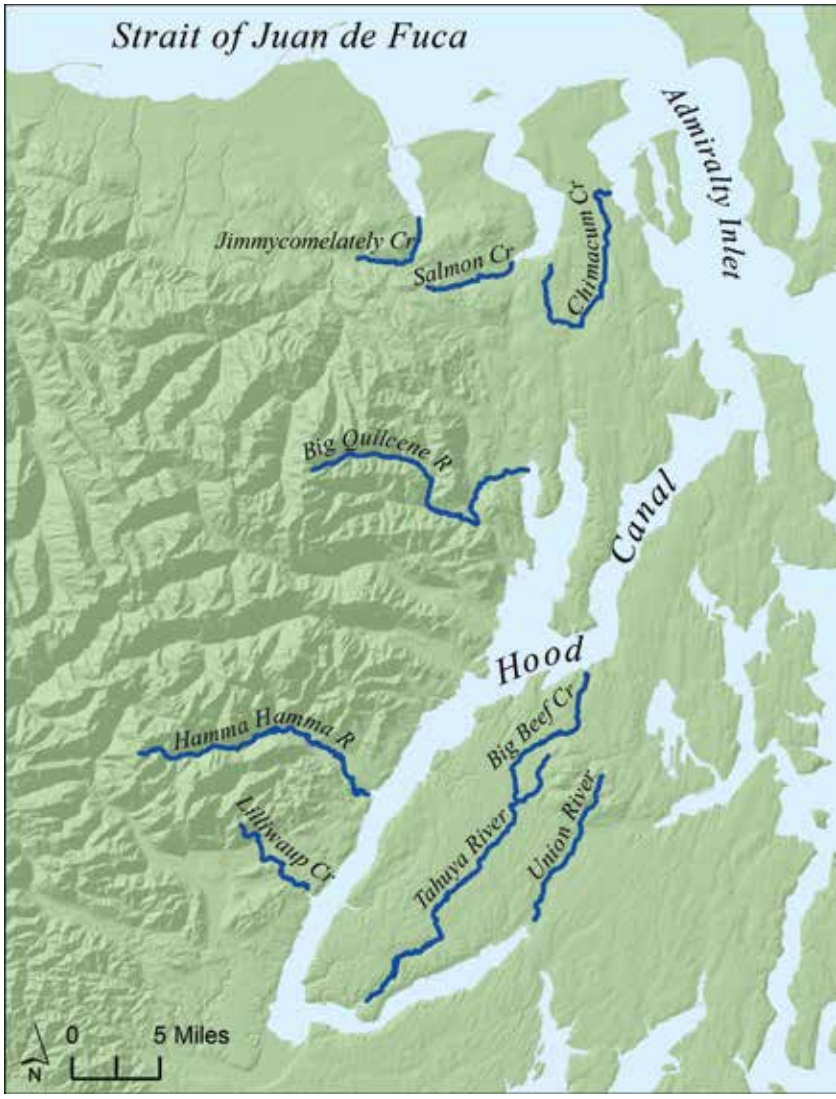
"Habitat is where it's at. We need to redouble our habitat protection and restoration efforts throughout the region. We're close, very close to recovery and that's exciting, but we've got to be smart and strategic and keep working together."

– Thom Johnson, Point No Point Treaty Council environmental program manager



T. Royal

Thom Johnson, environmental program manager for the Point No Point Treaty Council, samples Hood Canal/Strait of Juan de Fuca summer chum in Salmon Creek.



Sarah Smith, PNPTC

Hood Canal summer chum migrate from freshwater rivers to marine waters through Admiralty Inlet and the Strait of Juan de Fuca.

channels on the property were straightened or drained with the excavated gravel placed on the banks, all to help maximize the pasture land," Johnson said.

"We were able to buy about 200 acres of lower valley from willing landowners and put the curves back in the stream, get rid of dikes to allow water to flow into the floodplain, add logjams to help stabilize the stream and naturally distribute the sediment load, and plant a nice streamside forest to keep the temperatures cool.

"Plus, much of the upper watershed now has conservation easements in place that will protect the forest and control any new development," he added. "It's a nice package that makes instream habitat more hospitable for salmon eggs in the gravel."

Downstream, the estuary in Discovery Bay underwent a similar restoration led by the North Olympic Salmon Coalition and partners.

Near the mouth of Salmon Creek, nearshore armoring, an old railroad grade and an old log mill site with a toxic sawdust pile were removed, and historic shoreline, tidal marsh and tidal channels were restored.

"These summer chum start in a nice freshwater habitat and hit a healthy estuary habitat," Johnson said. "We are monitoring the number of summer chum adults coming into the stream in the summer and fall and the number of summer chum fry migrating to the bay the next winter and spring. This allows us to estimate the survival from egg-to-fry over time and to evaluate the restoration measures that are in place."

There are other good examples of habitat restoration in the region, but overall more needs to be done to further recover summer chum.

As for the next steps, the protective harvest measures will continue. The hatchery supplementation programs have reached their goals and mostly have been phased out.

"Habitat is where it's at," Johnson said. "We need to redouble our habitat protection and restoration efforts throughout the region. We're close, very close to recovery and that's exciting, but we've got to be smart and strategic and keep working together."

– T. Royal

T. Royal

Construction crews place the first new span of the Olympic Discovery Trail near the Dungeness River Audubon Center.

Railroad Trestle Replaced with Salmon-Friendly Span

After a major storm damaged a popular walkway over the Dungeness River in early 2015, the Jamestown S'Klallam Tribe saw a chance to restore salmon habitat, remove creosote pilings and build a better trail.

The river is used by chinook, coho, chum and pink salmon, and steelhead and cutthroat trout, while the Olympic Discovery Trail that crosses over it is used by more than 100,000 people a year. The site is part of the tribe's Dungeness River Audubon Center.

The old 570-foot-long wooden walkway was supported by 185 creosote pilings, impeding the river's ability to flow into the floodplain.

"In addition to being (infused with) creosote, the pilings were a nightmare because they were so close together," said Randy Johnson, the tribe's habitat program manager. "They were trapping debris coming downriver and preventing the river from moving back and forth like it needed to."

The new steel walkway, 750 feet long, has four cement piers, allowing the dynamic river to move.

The structure was tested in November when the river flow peaked at 5,000 cubic feet per second. The river was able to expand within the floodplain like it should, Johnson said.

Following the initial damage in early 2015, the tribe could have done a quick fix, Johnson said. But he and his colleagues realized this was the right time to address the environmental problem – the creosote pilings – by removing the old walkway altogether, fixing the floodplain issue at the same time and improving the trail user experience.

The removal of the old structure started in August and the trail is expected to open to the public by early January.

"It benefits so many," Johnson said. "Trail users have a safer pathway and salmon have much healthier habitat to move through." – *T. Royal*

Butterfly Bush Ambushed on Dungeness

Thousands of butterfly bushes didn't stand a chance against restoration crews armed with herbicide, shears and chainsaws on the Dungeness River this summer.

The Jamestown S'Klallam Tribe, North Olympic Salmon Coalition (NOSC) and Washington Conservation Corps collaborated to remove the invasive shrub from the lower 11 miles of the river.

After years of piecemeal removal efforts throughout the river valley, the tribe and NOSC teamed up when the coalition received a grant for work on a larger scale. The grant allowed for hiring conservation crews to cut shrubs to the stump and treat them with an herbicide that is safe along streams.

Butterfly bush – also called *Buddleja* – is an Asian ornamental sold in nurseries, except in Oregon and California, where its sale has been banned. Contrary to popular belief, the invasive species does not provide habitat for butterfly larvae but crowds out native floodplain species, such as willow and cottonwood.

Each purple cone flower carries up to 40,000 seeds so each bush can have up to 2 million seeds. The seeds spread by wind and water, and the plant thrives on disturbed and nutrient-poor soils like the gravel bars of the Dungeness.

Invasive riparian plants have been shown to negatively impact native floodplain communities, and alter physical processes in the river.

"A functioning river corridor dominated by native plants is a critical component in the restoration of Dungeness salmon stocks," said Hilton Turnbull, the tribe's habitat biologist. – *T. Royal*

T. Royal

Washington Conservation Corps crews remove butterfly bush by hand near the Dungeness River in July.

Helping with Weather Satellite Data Verification

QIN supports NASA's effort to learn more about the Northwest's soggy weather

The Quinault Indian Nation (QIN) is partnering with NASA to help verify weather satellite data.

QIN provided a key site for a radar station for NASA's Olympic Mountains Experiment (OLYMPEX), which is using mobile radar, rain gauges and instrument-bearing airplanes to measure storms.

The field project is designed to verify data from a group of satellites known as the Global Precipitation Measurement (GPM).

The Olympic Mountains have a pattern of heavy rainstorms that come from the ocean. As the rain clouds are forced up the mountains, the varying amounts of precipitation create microclimates.

For example, the city of Forks receives more than 100 inches of rain a year while Port Angeles, 60 miles away, receives about 30 inches. The Olympics create a "rain shadow" on the eastern side of the mountains because the rain has been wrung out on the coast side.

OLYMPEX's technology has been tested in drier climates that don't have the variability of the stormy Olympic Peninsula. Understanding whether satellites can make fine distinctions in rainfall, snowfall and weather patterns will go a long way to improving weather and climate predictions.

After a number of meetings with NASA representatives, the QIN council approved a short-term lease for a site on the reservation.

"They said they wanted a site for radar that would provide a view up the Quinault valley as well as the sea," said Dave Bingaman, director of Quinault's Natural Resources Division. "We had a couple of tribal employees who had a place in mind right away and it was exactly what they were looking for."

The testing is taking place from November through January. The radar site is about 100 feet by 100 feet and leveled to provide a stable platform.

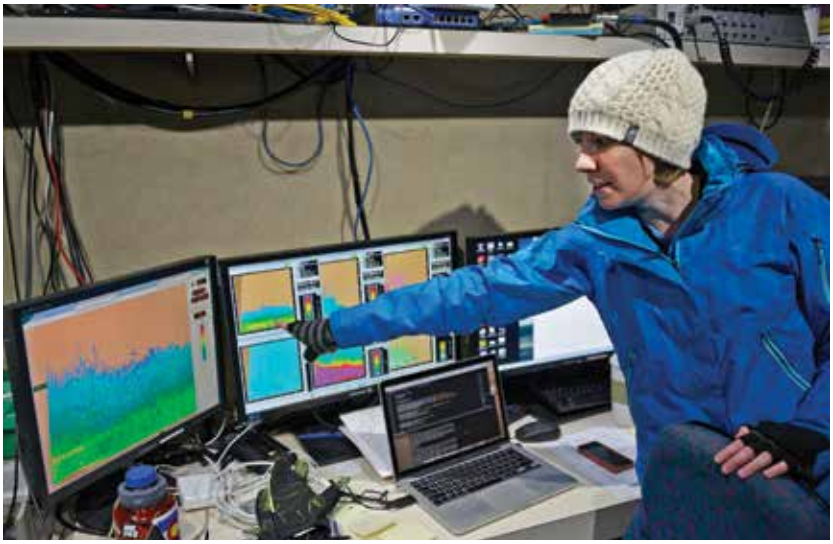
"QIN believes that while there may not be an immediate benefit, the information is going to be vital to providing better weather predictions for our fishing fleet," Bingaman said. "The information about climate change can give us time to prepare for the future."

Two significant storms in November provided immediate opportunities to gather information.

"They had weather balloons and planes up," Bingaman said. "With the satellite's data verified, they can accurately assess weather anywhere in the world even if there is no equipment on the ground."

– D. Preston

Larry Workman (2)



Top: A visitor observes NASA equipment at the Quinault site during a November storm. Below: Angela Rowe of the University of Washington explains what the radar unit reveals about clouds over the southwest corner of the Olympic Peninsula.

"The information is going to be vital to providing better weather predictions for our fishing fleet. The information about climate change can give us time to prepare for the future."

– Dave Bingaman, Quinault Indian Nation resources division director

Fewer, Smaller Coho in Washington Rivers

Treaty tribes around Puget Sound and on the coast struggled with unexpectedly low returns of coho salmon this fall.

While fisheries managers already were expecting smaller runs based on last year's pre-season planning data, the actual numbers proved to be record lows for some river systems.

The Quinault Indian Nation (QIN) saw such low coho returns that it halted fishing for all species in October.

"The closure will hurt our fishermen and reduce opportunity to harvest hatchery coho and other species, but the situation was so dire that Quinault Nation felt that even incidental impacts to wild coho need to be avoided at this point in the season," said Ed Johnstone, QIN policy spokesman.

"We had expected low returns of natural-origin coho to the Queets River during pre-season planning, but actual returns appear to be well below the spawning escapement goal," said Tyler Jurasin, QIN fishery operations manager.

Quileute fisheries personnel noted that while the Quillayute coho catch was one-third the number of last year's, the run came in above forecast, with many fish returning later than expected.

Across the region, the coho that did return were undersized.

"Many of the fish we caught were about half the size of the fish we usually see," said Joe Peters, Squaxin Island Tribe natural resources policy representative. "This was hard on our fishermen because for the same effort, their landings had much less value."

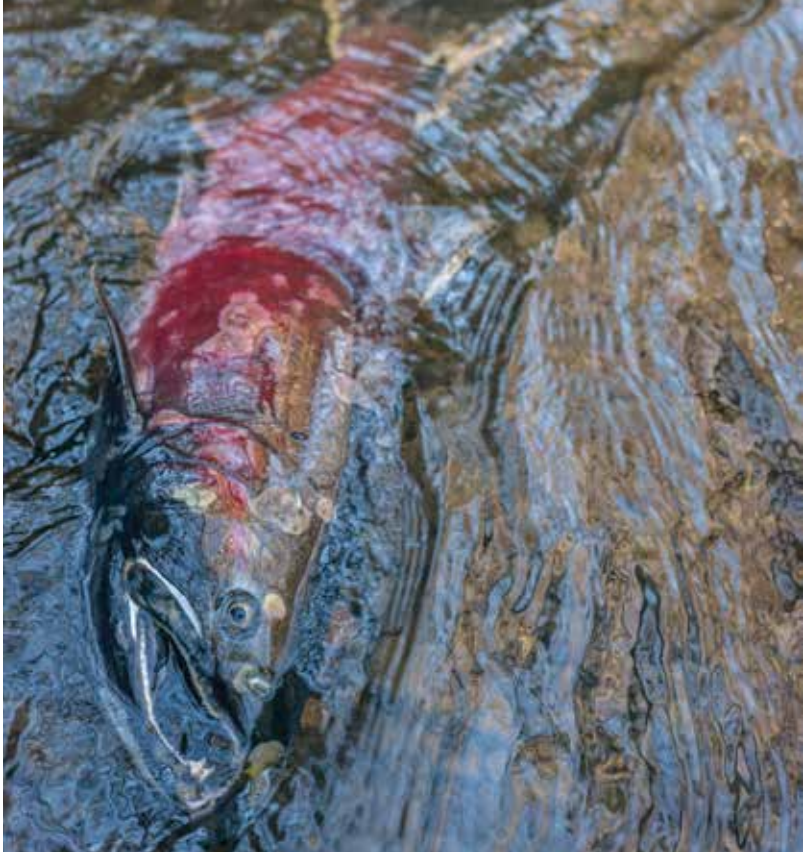
These smaller, immature salmon are called jacks.

"If there is a high proportion of jacks coming back now, we'll likely see an increase in adults from that brood group next year," said Doug Morrill, Lower Elwha Klallam fisheries manager.

"Based on the fisheries pre-season planning last year, we knew the natural coho runs in the Strait of Juan de Fuca were going to be low, but not as low as we're seeing now," he said.

Elwha lost 80 percent of its hatchery coho production a few years ago due to a pump failure in the hatchery, but that shouldn't have contributed to the extremely low overall returns this year, Morrill said.

Port Gamble S'Klallam had a forecast of 20,000 coho to return to Port Gamble Bay, but fishermen only harvested 223, said Abigail Welch, Port Gamble's finfish management biologist. Comparatively, they harvested more than 3,000 in 2014 and more than 6,600 in 2013.



D. Preston

A spawned-out coho lies in Lake Creek, a tributary of the Sol Duc River.

"It is most likely a result of ocean conditions," she said, noting that the warm 'blob' in the Pacific Ocean possibly impacted the quality and availability of salmon prey. The blob is the mass of warm water in the Pacific Ocean off the west coast, which negatively affects the entire marine food chain.

The coho returning to the Suquamish Tribe's Grovers Creek Hatchery were nominal, with 25 coho adults and 360 jacks.

"I'm stumped," said hatchery manager Mike Huff. "I don't know if this is going to be the new norm."

The smaller fish size could be the result of a combination of factors, including ocean conditions or this year's lack of rain.

– D. Preston, E. O'Connell, T. Royal

T. Royal

Enetai Hatchery lead technician Richard "Dickie" Adams prepares a male chum for spawning.

Skokomish Takes Fewer Eggs Due to Drought

While fall rains helped replenish western Washington's water supply, Skokomish Tribe fisheries managers were still dealing with effects from the summer drought.

"We normally take 3.5 million eggs from chum salmon, but we're only taking 2.5 million this fall," said Laura Swaim, the tribe's Enetai Hatchery manager.

"Because of the water shortage, we only have so much for our incubation system."

The hatchery is supplied by a shallow spring-fed aquifer that lost 25 percent of its flow over the summer.

The tribe applied for emergency drought relief grants issued by the state of Washington and received $100,000. Swaim is working with the state to come up with a plan for a new well by next June.

Despite the warm weather and water conditions, chum returns were high, with nearly 9,600 adults returning to the hatchery. A majority were sold to local fish buyers and donated to the tribal community for smoking and elder meals.

– T. Royal

Squaxin Island tribal staff Michael West and Candace Penn snorkel a tributary to the Deschutes River looking for juvenile coho.

E. O'Connell

Habitat Restoration in Deschutes Supports Coho

Two out of every three years, coho are practically nonexistent in the Deschutes River. But the Squaxin Island Tribe knows how to bring them back.

The tribe recently completed a recovery plan for coho salmon in the Deschutes. It found that a combination of habitat restoration in the upper watershed, removing a lower river dam and restoring the river's estuary would recover the run within a few decades.

"Estuaries are vital transition areas for salmon to go from fresh to salt water," said Scott Steltzner, salmon biologist for the tribe. "If they don't get what they need there, their ability to survive in the ocean plummets."

Deschutes River coho runs were healthy through the late 1980s. A combination of declining ocean conditions and landslides in the upper Deschutes drove down the productivity of the run.

"Coho return every three years, so each year in a three-year cycle is a separate population of fish," Steltzner said. "Only one of those age classes for Deschutes fish return in any numbers anymore; the other two are functionally extinct."

The formation of waterfalls centuries ago prevented salmon populations from establishing until the 1950s, when the state built a few fish ladders.

The recovery plan outlines habitat restoration projects that would reduce sediment, develop more complex habitat and lower temperatures.

"There are a lot of problems in the watershed, mostly in the upper reaches of the river and its tributaries," Steltzner said.

Restoring the river's estuary is key to the effort.

"We could do everything else, be as aggressive as we can be in the upper watershed, and we wouldn't see decent results until we increase the number of fish that come back from the ocean," said Andy Whitener, the tribe's natural resources director. "The most logical way to do this is to restore the river's estuary." – *E. O'Connell*

Tribes Close Coho Fisheries Early to Ensure Future Runs

Tribal fishing for coho salmon in Chambers Bay did not open this year, making sure that enough adult salmon made it back to the spawning grounds to produce the next generation of fish.

Three tribes – Squaxin Island, Nisqually and Puyallup – have treaty-reserved rights to fish in Chambers Bay. The tribal fisheries target a strong run of hatchery coho.

"Future fisheries depend on there being enough fish making it back to spawn each year," said Chris Phinney, fisheries management biologist for the Puyallup Tribe. The tribes closed their fisheries because of a lower than expected return of coho.

The tribal fisheries in Chambers Bay are at the end of a long series of fisheries impacting coho.

"A lot of people have had their crack at these fish already, largely sport fishermen across the region and commercial fisheries in Canada and Alaska," said Craig Smith, harvest biologist for the Nisqually Tribe. "But to make sure we have fish in the future, the tribes that would've fished last aren't fishing at all."

The tribes practice careful in-season management to make sure salmon fishing remains sustainable.

"Even though we've been planning a coho fishery here for months, tribal fisheries management is nimble enough to close a fishery in case runs aren't coming back as we expected," said Joe Peters, natural resources policy representative for the Squaxin Island Tribe.

– *E. O'Connell*

E. O'Connell

Puyallup tribal fishermen harvest salmon in Chambers Bay during the 2012 fishery. The Puyallup, Nisqually and Squaxin Island tribes closed their fisheries there in 2015 to protect a weak run of coho.

Finding Pollutants That Kill Salmon

T. Royal

Jen McIntyre, Washington State University toxicologist, takes a blood sample from a coho.

Stormwater runoff in Puget Sound is killing fish.

Following a four-year stormwater study, scientists from the National Oceanic and Atmospheric Administration (NOAA), Washington State University, U.S. Fish and Wildlife Service, and the University of Washington, with support from the Suquamish Tribe, are investigating what is in that runoff.

"We know the cause of pre-spawning mortality is stormwater, and we know using state-recommended bioretention systems such as stormwater filtering systems work to prevent pollutants from getting in the streams," said Julann Spromberg, a research toxicologist with NOAA. "Now we're looking at the chemistry makeup of the stormwater to figure out what exactly in the water is killing the fish."

Over a five-week period this fall, scientists exposed 45 coho from the tribe's Grovers Creek Hatchery to stormwater collected from streets around Puget Sound. Blood, organ and tissue samples were taken from each fish.

Researchers from the University of Washington, a new partner in the project, will test the samples and profile the specific chemicals found in both the fish and stormwater.

The team also is looking at how chum salmon fare.

"We know coho are affected after a few hours of exposure to stormwater and wanted to see if chum were affected too," Spromberg said. "We exposed the chum to stormwater for the same length of time and found they were not as sensitive as the coho."

The team has added a new tool to the diagnostic arsenal: blood chemistry.

So far, many blood chemistry parameters of coho salmon are affected by urban road runoff. The blood of chum is not affected the same way by stormwater. – *T. Royal*

Generations

Annie Fredricks cooks salmon on Squaxin Island during the early 20th century.

Squaxin Island was once the primary land base of the tribe. While no one lives on the island anymore, it remains a reminder of the tribe's history and culture.

Squaxin Island Tribe

Tribe Ends Pink Captive Broodstock Program

Pink salmon in Elwha River were protected during dam removal and river restoration

The Lower Elwha Klallam Tribe has finished a four-year captive broodstock project that protected the Elwha River's pink salmon population during dam removal.

Removal of the Elwha and Glines Canyon dams was a key part of the massive project to restore the Elwha River after nearly 100 years of blocked flows and degraded salmon habitat.

Concerned that a huge amount of sediment trapped behind the dams might harm pink salmon, the tribe began a captive broodstock program to protect the stock. Adults were captured and their offspring reared in hatcheries to improve their chances for survival.

While pink salmon have a low commercial value, they play an important role in a properly functioning ecosystem by providing food for other animals and contributing nutrients to the watershed.

About half a million pink salmon historically called the river home. After the two fish-blocking dams were built in the early 1900s, the run dwindled to just 200 fish. Following dam removal, more than 1,000 pinks were observed in the river in 2015.

"This is definitely the most we've seen in the river since we started observing them in the early 1990s," said Mike McHenry, the tribe's habitat program manager. "This year we saw them above the old Elwha dam site for the first time since the dams were taken out. That's huge. They haven't been up there in more than 100 years."

In 2011 and 2013, pinks returning to the Elwha River were collected and spawned. The fertilized eggs were incubated at the Washington Department of Fish and Wildlife's (WDFW) Hurd Creek Hatchery, then sent to the National Oceanic and Atmospheric Administration's (NOAA) Manchester Research Station, where they were reared in seawater to adults. Those adults were then brought back to Elwha the following summer for spawning.

In 2013, a portion of the fertilized eggs went back into the pink salmon broodstock program at WDFW and NOAA, while the rest were reared to smolts and released into the river from the tribe's House of Salmon Hatchery in 2014. In 2015, the tribe spawned its last group of adults from Manchester, and will release the offspring into the river in spring 2016.

To estimate how many hatchery and captive brood fish contributed to the river's salmon population, these fish were marked by altering the water temperature during incubation. This leaves a distinct pattern on the fish's otolith – a mineral structure often referred to as an ear bone, which accumulates daily rings.

This mark is unique and differentiates these fish from other pink salmon stocks. Otolith and tissue samples were taken from returning adults in 2013 and 2015, and will be taken from pinks returning in 2017.

– *T. Royal*

T. Royal

Lower Elwha Klallam Tribe assistant hatchery manager Mitch Boyd prepares a pink salmon for spawning at the tribe's House of Salmon Hatchery.

"This year we saw them above the old Elwha dam site for the first time since the dams were taken out. That's huge. They haven't been up there in more than 100 years."

– Mike McHenry, Lower Elwha Klallam Tribe habitat manager

Nisqually Tribe Giving Chinook Salmon a Hand Up

Chinook born in the Nisqually River were taken into protective custody by the Nisqually Indian Tribe this fall.

The tribe trapped and spawned natural-origin chinook because so few have returned in recent years. Instead of passing naturally produced chinook above a tribally operated weir, the tribe trucked them to its nearby Kalama Creek Hatchery.

The fish were spawned at the hatchery and their offspring will be released into the river next spring.

"We're seeing a sharp decline of natural-origin chinook returning to the river, so we want to make sure these fish are as successful as they can be," said David Troutt, the tribe's natural resources director. "Instead of bringing in just a few, we need to bring in every single natural fish we can to protect them."

To make sure some chinook spawn in the wild, the tribe released up to 600 adult hatchery-produced chinook into the upper watershed. That way, even more naturally produced chinook will leave the river next year.

"The genetic difference between natural and hatchery-origin chinook on the Nisqually is small," Troutt said.

All of the chinook in the river are descendants from an imported hatchery stock planted decades ago. The native chinook stock was killed off in the 1960s mostly due to poor hydroelectric practices that left the river dry for months at a time.

The tribe has been closely managing the mix of natural and hatchery-spawned fish for the past five years to help mitigate hatchery influence on the stock.

"Our goal is to let the natural habitat, instead of the hatchery environment, drive adaptation of the stock," Troutt said. "By mixing in natural-origin fish at the hatchery, we bring in better genetic traits to improve salmon productivity. This means more fish for everyone."

– E. O'Connell

E. O'Connell

Tom Friedrich, biologist with the Nisqually Tribe, holds an adult chinook salmon that is about to be spawned at the tribe's Kalama Creek Hatchery. The salmon was jaw-tagged at a tribally operated weir in the lower river to mark it as a natural-origin fish.