



A publication of the Northwest Indian Fisheries Commission

Northwest Treaty Tribes

Protecting Natural Resources for Everyone

Summer 2016

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Cooperation Helps Us Survive



by Lorraine Loomis
NWIFC Chair

I am glad that the treaty tribes in western Washington were finally able to reach agreement with the state on a package of conservative salmon fisheries for Puget Sound.

It took more than a month of over-time negotiations to make it happen, but cooperative co-management showed us the way.

Western Washington is unique because 20 treaty Indian tribes and the state Department of Fish and Wildlife jointly manage the salmon resource and share the harvestable number of fish returning each year.

That job was a lot easier when there were more fish to go around. But salmon populations have been declining steadily for decades because their habitat is disappearing faster than it can be restored. Salmon returns the past couple of years – especially coho – have taken a sharp turn for the worse.

Some say just stop fishing and that will fix the problem. It won't. From birth to death, habitat is the single most important aspect of a salmon's life. As the habitat goes, so go the salmon and tribal culture and treaty fishing rights.

For millions of years, salmon were abundant in western Washington. Their sheer numbers, naturally high productivity and good habitat provided resiliency from the effects of disease, drought and a host of other environmental factors. We must rebuild that resilience.

As salmon populations grow smaller, management becomes increasingly difficult, and the co-managers struggle to divide a steadily shrinking pie. We must make the pie bigger.

The nonstop loss of salmon habitat in western Washington must be halted so that our habitat restoration efforts can successfully increase natural salmon production. In the meantime, we need to rely on hatcheries to provide for harvest and

help offset the continuing loss of habitat.

We also must build resiliency in the co-manager relationship created by the 1974 ruling in *U.S. v. Washington* that upheld tribal treaty-reserved rights and established the tribes as salmon co-managers.

We remember the bad old days of the late '70s and early '80s when the tribal and state co-manager relationship was new and mistrust ran deep. We spent a lot of time, money and energy fighting one another in federal court hearings rather than focusing together on the resource.

Things didn't begin to change until former state Fish and Wildlife director Bill Wilkerson said enough was enough and sat down with the late NWIFC Chairman Billy Frank Jr. The result was the birth of cooperative co-management in 1984, which led to the annual development of agreed fishing plans that allowed the tribes and state to focus on managing the fish instead of fighting each other in court.

This year, for the first time in more than three decades, the tribal and state co-managers failed to reach agreement on a joint package of Puget Sound salmon fisheries within the North of Falcon process time frame. Instead we developed separate fishing plans for NOAA Fisheries to consider under its ESA authority.

But in the true spirit of co-management, we kept the door open to further negotiations, and it worked. We weathered the storm together and we are stronger for it.

We know our relationship will be tested again in the years to come. But this year has shown us that we can survive those challenges as long as we keep cooperation at the heart of co-management.



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On the cover: Lummi Nation's 2015 Stommish Princess Carla Lawrence sings with the Lummi Blackhawk Dancers at the tribe's First Salmon Ceremony. See related photos, page 5. Photo: K. Neumeyer



T. Meyer



K. Neumeyer

Above left: A flotilla of tribal and non-tribal fishing boats line up at Cherry Point in 2012 to protest the proposed coal terminal. Above: Lummi tribal member Ramona James, with sons Tyrell, left, and Julius, join the 2012 protest on the beach.

Treaty Rights Win Fight Against Coal at Cherry Point

In a victory for tribal treaty rights, the U.S. Army Corps of Engineers in May denied a permit to build a coal export terminal on Lummi Nation usual and accustomed (U&A) fishing grounds at Cherry Point.

“This is a historic victory for treaty rights and the constitution,” said Lummi Nation Chairman Tim Ballew II. “We are pleased to see that the Corps has honored the treaty and the constitution by providing a decision that recognizes the terminal’s impacts to our fishing rights.”

The Gateway Pacific Terminal would have been the largest coal export terminal in the country. Its proposed Cherry Point location, known in the tribal language as *Xwe’chie’Xen*, was a Lummi tribal village and traditional reef net fishing site for hundreds of years. Area tribes and environmental groups opposed the deepwater terminal because it would have destroyed the fishing resource, degraded habitat, increased train traffic and coal dust pollution, and brought with it the possibility of spills and derailment.

“The impact of a coal terminal on our treaty fishing rights would be severe, irreparable and impossible to mitigate,” Ballew said.

A statement announcing the Corps’ decision explained that because of the federal government’s trust responsibility, the “Corps may not permit a project that abrogates treaty rights.”

“I have thoroughly reviewed thousands of pages of submittals from the Lummi Nation and Pacific International Holdings,” said Col. John Buck, Seattle District Commander of the Army Corps. “I have also reviewed my staff’s determination that the Gateway Pacific Terminal would have a greater than de minimis impact on the Lummi Nation’s U&A rights, and I have determined the project is not permissible as currently proposed.”

“Our ancient ones at *Xwe’chie’Xen*, Cherry Point, will rest protected,” Ballew said.

Tribes across the region stood with Lummi in opposition of the coal terminal.

“We have lived along these rivers and shores for millennia,” said Lower Elwha

Klallam Tribe Chair Frances Charles. “Just as it is the Corps’ duty to uphold our treaty rights, so it is our duty to fight for and protect these waters for future generations.”

The Quinault Indian Nation is facing a similar battle against a proposed oil terminal in Grays Harbor, noted Quinault Vice President Tyson Johnston.

“As a Washington tribe whose way of life is being threatened by the development and expansion of three oil terminals, the Quinault Indian Nation rejoices today with our Lummi brothers and sisters,” he said. “The danger that the terminal posed to the culture,

lifestyle and economy of the Coast Salish people was unacceptable, and we’re pleased the Corps did its duty to uphold Lummi’s treaty rights.”

Tulalip Tribes Chairman Mel Sheldon Jr. added, “Our ancestors sacrificed so much to protect these waters and our way of life. Thanks to them, the treaty reserved our rights to harvest fish and shellfish and draw from the abundance of the sea. The Tulalip Tribes applauds the Army Corps of Engineers for its decision to deny the permit for the Gateway Pacific Terminal and protect treaty rights.”

– K. Neumeyer

Salmon Managers Agree to Fishing Seasons in Overtime Negotiations

State and tribal fishery managers agreed on May 26 to Puget Sound salmon-fishing seasons for 2016, ending several weeks of extended negotiations.

Officials with the Washington Department of Fish and Wildlife (WDFW), Gov. Jay Inslee's office and treaty tribes also agreed to work together to improve the process of setting salmon-fishing seasons, known as "North of Falcon." The co-managers did not reach agreement during the annual season-setting process, which concluded in mid-April.

Anticipated low numbers of salmon – especially coho – returning to Puget Sound made this year's negotiations challenging.

"Our first priority is to develop fisheries that are consistent with efforts to protect and rebuild wild salmon stocks," said Jim Unsworth, director of WDFW. "Reaching an agreement on how to do that proved very challenging this year. Ultimately, we agreed on a package of fisheries that places a priority on conservation while allowing for limited fishing opportunities in Puget Sound."

State and tribal fisheries will be greatly reduced this year in Puget Sound as low returns of chinook, chum and coho are expected. The tribes and state have closed all fisheries directed at returning coho, except in a few areas where sufficient fish are expected back this year.

With this season's fisheries resolved, the co-managers will focus on addressing long-term resource management concerns, such as restoring habitat and boosting salmon stocks.

"Habitat restoration and protection must be at the center of that effort," said Lorraine Loomis, chair of the Northwest Indian Fisheries Commission. "There is a direct connection between salmon habitat and fishing opportunities. We can't expect salmon to thrive while their habitat continues to be lost and damaged."

WDFW and tribal leaders said they appreciated the governor's leadership and participation in the process, and that they remain committed to co-management of the state's shared resources. They believe the state and tribes are most effective when working together to conserve fish, wildlife and their habitat. – *T. Meyer*



T. Royal



D. Preston

Above: Skokomish tribal fishermen beach seine for chinook off Hoodspout during the fall 2015 fishery. Right: Sport fishermen shoot through a fast section of the Hoh River above Highway 101 on the Olympic Peninsula.



K. Neumeyer (5)

Blessing the Fleet and Honoring First Salmon

Every spring and summer, tribes across the region honor the first salmon of the season with ceremonies and hold blessings for the safety of the fishing fleet.

Top left: The Edwards family sings at the Swinomish Tribe's Blessing of the Fleet beside four tribal fishermen carrying the remains of four ceremonial salmon. Top right: After the blessing, the fishermen will return the salmon remains to the water in the four cardinal directions. Left: NWIFC Chair and Swinomish fisheries manager Lorraine Loomis (center) and Debra Lekanof, Swinomish policy analyst, wrap a blanket around retiring NWIFC executive director Mike Grayum at the Swinomish blessing. Swinomish Chairman Brian Cladoosby (right) emceed the event.



Below left: During the Lummi Nation's First Salmon Ceremony, tribal members Wendy Cagey, Dana Wilson (center) and Samuel Cagey Jr. prepare the remains of the first salmon to be returned to the water in Portage Bay. Right: Denise and Lawrence Solomon, cultural and language educators for Lummi Nation School, thank those who attended the First Salmon Ceremony.



QUILEUTE TRIBE WELCOMES THE WHALES



D. Preston (2)

Above: Quileute Tribal School students Gene Gaddie Jr., Jerome Eastman and Vincent Jackson walk to the ocean to offer the gift of the salmon to the whales. Right: Tribal member Isabelle Pullen waits to dance during the ceremony.

Each year, the Quileute Tribe welcomes the gray whales that can be seen offshore while migrating to Alaska for the summer. As whales rolled in the surf, students from the Quileute Tribal School and the Quillayute Valley School District sang and offered a salmon to the whales. The celebration is part of the tribe's cultural education program.



T. Royal

Jamestown S'Klallam shellfish biologist Ralph Riccio checks on bags of oyster shells that will help increase seeded cultch on the tidelands.

Olympia Oysters Make a Comeback in Sequim

Thumb-sized baby Olympia oysters have been spotted on the Sequim Bay tidelands where Jamestown S'Klallam tribal members and staff tossed Pacific oyster shells last summer.

"We spread these shells in an area that looked good for Olympias after a tribal picnic to add to the shoreline habitat since oysters need shells to survive," said Ralph Riccio, Jamestown's shellfish biologist. "This is amazing because now there's a bunch of baby Olympia oysters growing in this little area."

Riccio's observation is a testament to Sequim Bay's role as a poster child for the resurgence of Olympia oysters. The small oysters are native to the Northwest but have declined to dangerously low numbers.

The nonprofit Northwest Straits Commission (NWSC) aims to restore 100 acres of tidelands for Olympias by 2020. The tribe collaborated with the Clallam County Marine Resources

Committee, which received funding from the NWSC.

In 2013, the tribe spread 200 bags of seeded oyster shells, known as cultch, on an acre of Sequim Bay tidelands, followed by another 100 bags on the same area plus another half acre in 2014.

In 2015, the tribe put out non-seeded cultch to create more habitat and support natural recruitment, providing substrate for naturally produced spat (shellfish seed) to settle on.

The three years of work have paid off.

"The recruitment levels of oysters have been good," Riccio said. Within the 1.5-acre restoration site, "it is hard to find shells that have not been colonized by Olympias."

Olympia oysters are not highly regarded in the commercial market, Riccio said, but they are native to the region, and tribes have been harvesting them for millennia. – T. Royal

Traditional Cedar Gathering Requires Cooperation from Timberland Owners

Laughter echoes in the woods south of Forks with the metallic sound of machetes being hammered into the bark of cedar trees.

These sounds signal the Quileute Tribe's annual gathering of cedar bark used to weave hats, vests, baskets and regalia for ceremonies.

Tribal members Tonya Williams and Lucy Ross enjoyed their first attempt at cutting the bark themselves.

"I'm using mine to make a vest," Williams said. "I like that I am collecting the material for it myself."

Families and groups of friends often sit together at the harvest site visiting with one another and separating the rough outer bark from the inner bark. The inner bark is dried for months and then soaked briefly to make it pliable enough for weaving. Natural resources staff also collect and separate bark for elders who can't make it to the site.

Most tribes in western Washington traditionally gathered cedar in an area larger than their designated reservations. For the past 14 years, the Quileute Natural Resources department has co-

ordinated access to traditional areas with local timberland owners such as Rayonier Inc. and the state Department of Natural Resources (DNR). Prior to that, the Quileute Tribal School arranged access, and still participates as part of the cultural curriculum.

Natural resources employees assist newcomers with the basics of cutting the bark, using only one-third of the tree so it survives.

Each year, more people participate, said Frank Geyer, deputy natural resources director. "It's a great thing to see people learn how to harvest it appropriately," he said. "The downside is that cedar grows slowly relative to other species here. It's dwindling on private timberlands and it's getting harder to find."

As part of the management plan, DNR leaves cedar when thinning stands of timber and also replants cedar in logged areas.

"We really appreciate how willing timberland owners like Rayonier are to work with us," Geyer said. "It's just getting tough to find areas that have both abundance and accessibility." – D. Preston



D. Preston

Tonya Williams, Quileute tribal member, pulls bark from a large cedar on state Department of Natural Resources land south of Forks. The tribe works in partnership with the state and private timberland owners to provide cedar harvest opportunities for tribal members.



Forks Timber Museum collection

GENERATIONS

Quileute tribal women weave baskets near the Pacific Ocean in La Push in this undated photograph.

Forest Partnership Expands Tribal Restoration Projects

Hundreds of potentially hazardous trees are finding new purpose in restoration projects, thanks to a partnership between North Sound treaty tribes and the Mount Baker-Snoqualmie National Forest.

The National Forest regularly assesses trees in developed recreational sites, removing those that are diseased or otherwise in danger of falling. Trees that are close enough to a stream or river are placed directly into the water. Others are being donated to North Sound tribes for salmon habitat restoration projects in Whatcom, Skagit and Snohomish counties.

“We are making our recreation areas safer for visitors while also offering a valuable resource for habitat improvement,” said Peter Forbes, Darrington district ranger for the forest.

The partnership began in 2013, with 40 logs donated to the Nooksack Indian Tribe’s engineered logjam projects in the Wildcat reach of the North Fork Nooksack River. An additional 23 logs were donated in 2015 for the tribe’s Farmhouse reach project. The tribe has continued to partner with the forest service and is working to acquire logs for upcoming and

future North Fork Nooksack projects.

In the Skagit watershed, the Skagit River System Cooperative (SRSC) provided the crew to transport cut trees to two projects so far. The wood restored 2,000 feet of fish habitat in Cumberland Creek, completed in January 2014, and more than 100 logs have been donated to the ongoing Illabot Creek restoration.

The National Forest also is planning to contribute logs to some of the Stillaguamish Tribe’s upcoming restoration projects.

“The Forest Service is invested in salmon recovery and wants to help enhance projects that the North Sound tribes have identified as priorities for salmon recovery,” said Erin Uloth, Mount Baker district ranger.

The logs include 40-foot-long Douglas fir, hemlock and cedar trees with diameters 24 inches and larger. Because of the sheer abundance of sizable logs, engineers have been able to expand the logjam designs to increase habitat benefits at little or no additional cost.

“We will be including larger habitat structures than originally planned for the Illabot Creek project, and these logs also



K. Neumeyer

Cut logs are stacked on a truck to be transported to the Illabot Creek restoration project.

help meet our grant match requirements,” said Devin Smith, SRSC senior restoration ecologist. – K. Neumeyer

Salvaged Trees Help Fund Elk Forage Meadow

Trees that blew down in a windstorm last spring are helping to support elk forage restoration in the North Cascade Mountains.

The Upper Skagit Tribe’s timberland services department was contracted to help Seattle City Light (SCL) manage the project as part of

mitigation for habitat lost due to the Skagit River Hydroelectric Project.

While clearing 14 acres in preparation to plant a wildlife meadow, timberland services manager Robert Schuyler and his crew salvaged the fallen trees to sell to Sierra Pacific to offset the cost.

SCL has acquired more than 10,000 acres in the Skagit and Nooksack watersheds as part of the 1991 Wildlife Settlement Agreement among the public utility, tribes, and federal and state resource agencies.

The Pacific silver fir and Western hemlock trees on this parcel had grown too close together, which, along with the

fallen logs, prevented quality forage from growing and made it difficult for the Nooksack elk herd to pass through.

The tribe and SCL are planning to seed the area in late summer with a nutritious, non-invasive blend of quality forage for elk.

Degraded and disconnected habitat is one of the main causes of the decline in numbers of Nooksack elk to about 300 animals in 2003. Since then, tribal and state co-managers have worked to improve elk habitat in the region, and the herd has recovered enough to allow limited tribal and sport harvest. – K. Neumeyer



K. Neumeyer

The Upper Skagit Tribe’s timberland services department removes trees that fell down during a windstorm. Sale of the trees will help pay for an elk forage restoration.



D. Preston (3)

Fire Maintains Culturally Important Plants

What fire burns becomes new. It's a land management principle used by Quinault Indian Nation (QIN) people for thousands of years.

In addition to using fire to manage reservation timberlands, QIN plans to use burns to maintain important habitat for cultural plants on Moses Prairie northwest of Lake Quinault.

A \$64,000 Washington Coast Restoration Initiative grant, facilitated through the state Recreation and Conservation Office and acquired by QIN Natural Resources director Dave Bingaman, will fund the estimated 20-acre Moses Prairie burn as well as educational outreach.

"This is a pilot project to provide understanding of traditional management of the six prairies on the reservation by the Quinault people," Bingaman said. "We believe each prairie had specific uses and

are trying to capture historical information to provide future guidance on prairie management."

Quinault people used fire to maintain camas and beargrass for thousands of years, said Justine James, Quinault cultural resources specialist. Camas is the purple flower of the prairies that has been used as food and medicine by tribes.

Burning often occurred twice a year. A light burn in spring cleared away vegetation that prevented camas and other plants from thriving. A second burn in the fall removed

accumulated duff.

"The fall burn had the control of rain that would usually occur within days," James said. "The Quinaults of the time had a much better understanding of the weather patterns. With no private property ownership issues, there wasn't the fear of burning someone's property and needing to pay for lost resources."

Management burns ended in the late 1800s, around the time treaties were signed creating reservation boundaries, according to fire history and ecological restoration research.

Land adjacent to the tribe's reservation was homesteaded by non-tribal people, further preventing tribal access to the prairie.

"I found one story of a family that would move every summer for one month out to the prairie to harvest beargrass in particular, as well as huckleberries and other plants," James said.

He is hopeful that the prescribed burn this fall may spur growth of dormant beargrass, a sought-after plant used for baskets, as well as huckleberries. — D. Preston

Above left: Camas blooms on Moses Prairie south of Queets on the Quinault Indian Nation Reservation. Above right: A tree frog proves that the forest has begun to invade Moses Prairie. When prairies are not burned regularly, the encroaching forest can eventually eliminate the prairie.

Right: Environmental anthropologist Joyce LeCompte-Mastenbrook photographs Moses Prairie during a tour.





Port Gamble Studies Steelhead at Hood Canal Bridge

Juvenile steelhead are having a hard time getting around the Hood Canal Bridge and scientists want to know why.

Over the next several years, the Port Gamble S'Klallam Tribe and partners will be collecting data about water circulation, noise and light pollution, physical barriers, food sources and predators.

In an intensive two-month push this spring, the tribe used a hydroacoustic sensor to map fish within a half mile of the bridge. Sound waves measure the size of fish and their location in the water column. They are also measuring water quality and taking zooplankton samples.

"We're looking at the ecological reef effect, which is how water and organisms flow around structures and how that affects the food web," said Hans Daubenberger, the tribe's fish habitat biologist.

The tribe is collecting data as one of many partners in a multi-year study with Long Live the Kings, the Hood Canal Coordinating Council, state Department of Fish and Wildlife, National Oceanic and Atmospheric Administration (NOAA), Pacific Northwest National Laboratory (PNNL), and others.

NOAA plans to do an intensive acoustic tag study to determine whether fish are passing under the bridge. The state will study predator and prey populations. PNNL will look at circulation around the bridge, and a private company will study fish DNA found in seal scat.

Because the bridge is affecting steelhead, it could be affecting other species of salmon, Daubenberger said.

"We spend so much time and money restoring habitat in Hood Canal, but if

Above: Juvenile fish are having trouble getting past the Hood Canal Bridge, pictured here with Mount Baker. Below: Natural resources technician Mike Jones Jr. observes data picked up by the hydroacoustic sensor.



T. Royal (2)

high numbers of fish are not getting past the bridge, then it's hard to recover the population," he said. – T. Royal

Testing Coho Survival Beyond South Sound

Juvenile coho salmon are disappearing before they migrate out of South Puget Sound, so the Squaxin Island Tribe barged thousands of fish past the Tacoma Narrows Bridge to see if they fare any better.

The tribe released the juvenile coho near Vashon Island and Point No Point to determine whether they can survive at a higher rate than fish released from net pens near Olympia.

In an earlier multi-year study, the tribe fitted wild and hatchery coho with acoustic tags, tracking their migration using receivers throughout the sound. Only six of the 175 tagged coho could be found beyond the Tacoma Narrows Bridge.

"That sort of drastic drop-off is not what we would have expected," said Daniel Kuntz, the tribe's salmon biologist. "We know that really only 5 percent of coho survive to return as adults, but there shouldn't be this drastic of a drop so soon."

This year, the tribe used three different coded-wire tags on their net pen coho. Two groups of 45,000 each have different tags than the main group released from the net pens. Coded-wire tags are millimeter-sized threads of metal with a code engraved on them. Fisheries managers recover the tags after salmon have been caught or found on the spawning grounds. The tags aid fisheries managers by providing information such as migration patterns and marine survival. – E. O'Connell



E. O'Connell

Keenan Vigil, Squaxin Island natural resources technician, loads coho into a holding tank on a barge before transporting them near Vashon Island.

Keeping an Eye on Climate Change and Food Sources

The Squaxin Island Tribe is taking a close look at how climate change, and specifically sea level rise, will impact the tribe's treaty foods.

The tribe is undertaking an in-depth study of forage fish populations on Squaxin Island. Forage fish, like sand lance and herring, are vital food for juvenile salmon migrating to the ocean.

Tribal staff take samples from the top layer of intertidal beach on Squaxin Island and sift out the rocks and sand until they can spot individual forage fish eggs.

"These fish spawn and rear in a specific portion of the shoreline," said Candace Penn, the tribe's climate change specialist. "When sea level rise happens, it will change the character of the beaches on Squaxin Island. We will see huge changes, and in some cases decreases, in important habitat for forage fish."

"We will see huge changes, and in some cases decreases, in important habitat for forage fish."

– Candace Penn, Squaxin Island Tribe climate change specialist

Squaxin Island provides a good representation for a typical deep South Sound shoreline.

"Squaxin Island isn't the only place we're interested in," Penn said. "Looking there first gives us a good idea of how the rest of our treaty-reserved harvest area will be impacted."

"Sea level rise caused by climate change could cause our first foods to no longer be available to our people," Penn said. The tribe also is looking at other resources, such as shellfish and cedar trees, and how long-term climate change could impact those resources.

"A change of just a few degrees could greatly impact where cedars grow," Penn said. "We need to assess these impacts across the board so we can decide how to adapt and move forward." – E. O'Connell



E. O'Connell

Tribal climate change specialist Candace Penn sets a transect to collect samples of forage fish spawning.

Port Gamble S'Klallam Tribe Readies for Natural Disasters

The Port Gamble S'Klallam Tribe is proactively preparing for natural disasters and sea level rise.

Instead of reacting to a natural event that could severely damage the reservation, the tribe has hired engineers and scientists to gather information about its current state, including the shoreline bluff.

"Over the years, tribal members living along the shoreline have noticed changes in their yards or on the beaches below that have raised some questions and concerns," said Kelly Sullivan, the tribe's executive director. "This spurred discussion about preventive measures we could take to educate our homeowners and find ways to help them save their property from becoming any smaller."

Shoreline bluffs provide silt, sand and gravel for natural beach habitat for fish and shellfish. The shoreline is largely unmodified now, so the current work is to assess the situation and calculate risk, as well as look at opportunities to stabilize erosion using natural vegetation and soft shoreline methods, said Deb Ladd, a geo-

technical engineer contracted by the tribe.

"We're figuring out what the bluff geology is so we can determine what kind of behavior it may show over time," Ladd said.

"If the water comes to the toe of the bluff now, if it gets higher and undercuts or undermines the bluff, how much faster will it erode?" Ladd added. "We're looking at what kind of monitoring could be done."

On the positive side, Port Gamble's bluff is not extremely high, topping out at about 60 feet at several locations along the shoreline.

Jamey Selleck, a marine ecologist, is looking at the beach to determine how to balance functional habitat while protecting people's homes.

The work also will allow the tribe to set up measures to mitigate damage to the reservation from natural disasters. This work involves talking with homeowners and considering the tribe's cemetery at the top of the bluff. – T. Royal



T. Royal

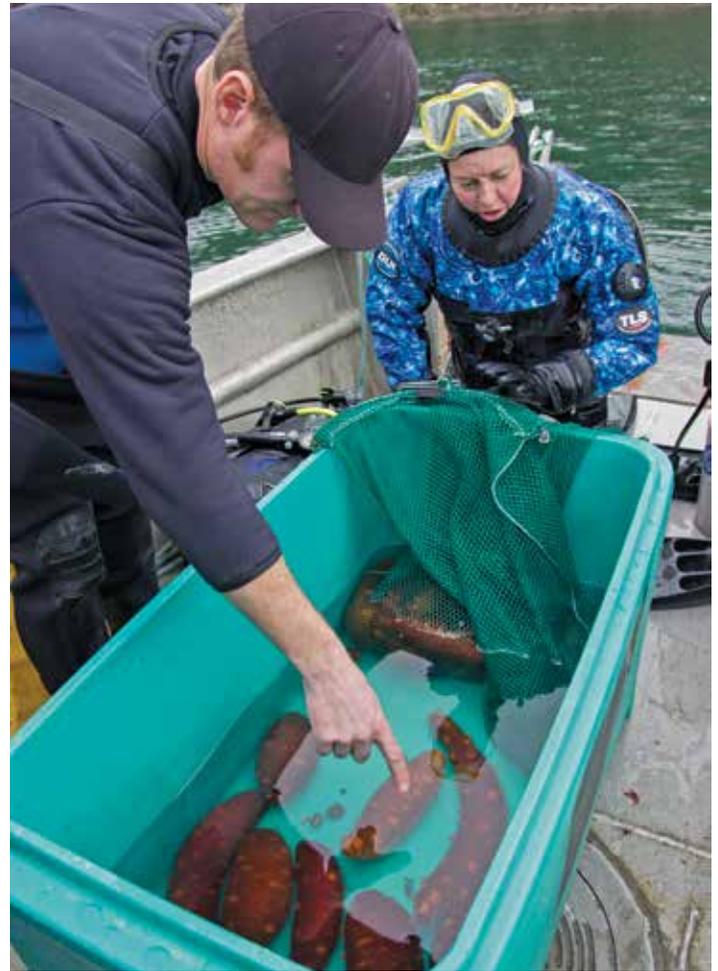
Geotechnical engineer Deb Ladd looks at a bluff overlooking Port Gamble Bay and Point Julia.

Restoring Puget Sound's Sea Cucumber Population



Right: A sea cucumber is sampled in Central Puget Sound. Far Right: Suquamish shellfish biologists Luke Kelly and Viviane Barry examine the sea cucumbers gathered by divers.

T. Royal (2)



A foot-long sea cucumber squirms in Elizabeth Unsell's hands as she transfers the slug-like creature from a net to a bucket.

"They're a little bit slimy, and very soft because they're full of water," said the Suquamish Tribe shellfish biologist as she ran her finger over the bumpy crimson-and-yellow spotted flesh.

Unsell was part of a team of divers that gathered a sample of the bottom dwellers for a study about the overharvested local species.

The tribe is partnering with the Puget Sound Restoration Fund, National Oceanic and Atmospheric Administration (NOAA) and the state Department of Fish and Wildlife to restore the population through a broodstock program and to learn more about the life history.

The sea cucumber may not seem like a valuable resource to protect, but it has been a traditional food for tribes for millennia. In Asia, it is a popular delicacy, where it is served raw, grilled, fried or in soup.

The Central Puget Sound population was overharvested in the late 1980s and early 1990s and has not recovered. Currently, there is a moratorium on harvesting because of the depressed population.

"Before 1995, sea cucumbers were managed by WDFW by rotating harvest regions every three years with no quota

or limit," said Viviane Barry, the tribe's shellfish program manager. "The state fleet harvested 2.4 million pounds in 1989 and more than 900,000 pounds in 1993 from this area. We're interested in making sure the population comes back."

Gathering nearly 100 sea cucumbers from Rich Passage, the divers took them to the nearby Ken Chew Shellfish Research and Restoration Hatchery at NOAA's Manchester facility, where they will be spawned this spring. Scientists will assess their growth and survival rates in different nursery habitats to find the best way to restore the population.

"They grow slowly but we don't know much more beyond that to help us establish a harvest rate," Barry said. "They don't have a hard structure to determine age, like with a geoduck, where you can look at the growth rings in the shell."

Offspring will be released in Dyes Inlet and Agate Pass when they reach an appropriate size. Students at the tribe's Chief Kitsap Academy on Agate Pass will assist with projects, including establishing

a sea cucumber nursery and monitoring growth.

The tribe also wants to know if restoring sea cucumbers could help with ocean acidification and low oxygen levels, as they are regular consumers of decaying carbon-rich material, much like an earthworm.

"Bacteria that feed on decaying material use up the oxygen and release carbon dioxide, increasing acidity levels in the water," said Paul Williams, the tribe's shellfish management policy adviser. "Sea cucumbers feed on it too but incorporate some of the carbon into their tissues. That carbon is removed from the system when they are harvested."

"That's one ecological benefit, but there might be others," he added. "The population is only around 5 percent of what it was 30 years ago. As we reestablish them, we'll be monitoring for changes in the water and sediments around them to try and find out." – T. Royal



T. Royal (2)

ALL HANDS ON MARINE LIFE

Above: Second-graders from Wofle Elementary School near Kingston spend an afternoon at Point Julia, where Port Gamble S'Klallam tribal natural resources staff and community volunteers catch nearshore marine life for a hands-on demonstration.

FIRST FISH

The Lummi Nation organizes a series of events as part of a program to educate tribal youth about the natural resources that sustain their *schelangen*, or way of life.

Right: Seventh-graders, some of whom had never seen a salmon harvested, watch Lummi Natural Resources staff Tony George, left, and Austin Dennis scan a hatchery chinook for a coded-wire tag.

Below: Fourth-graders from Lummi Nation School release coho fry into Schell Creek in Ferndale. The class reared the fish from eggs.

K. Neumeyer (2)



Harbor Seals Listening for Steelhead



Above: Emiliano Perez, left, Nisqually Tribe, and Tom Friedrich, tribal staff, hold a harbor seal while Steve Jeffries, state Department of Fish and Wildlife, attaches an acoustic receiver. Right: The acoustic receiver is glued to the seal's hair so when the seal molts, the receiver will fall off with the hair.



E. O'Connell (2)

The Nisqually Tribe is using harbor seals to collect data about the decline of steelhead in Puget Sound.

The tribe has partnered with NOAA Fisheries and the state Department of Fish and Wildlife to attach acoustic receivers to a handful of seals. The seal-mounted receivers will work with an array of stationary receivers to track the progress of Nisqually steelhead fitted with acoustic tags.

The tribe is concerned that ever-increasing populations of harbor seals are having an impact on out-migrating steelhead.

“What we suspect is happening is that these seals are eating a lot of juvenile steelhead,” said Chris Ellings, the tribe’s salmon restoration manager. “But even if the seals aren’t eating the steelhead, they are both swimming in the same water and they’ll likely be able to hear the steelhead go by.”

The project partners captured and fitted dozens of juvenile Nisqually steelhead with acoustic transmitters. When a steelhead carrying a transmitter passes between a pair of receivers, its individual frequency is recorded and tracked for several hundred yards.

Just because harbor seals are eating steelhead doesn’t make them responsible for the population’s decline.

“What we’re looking at out there is an ecosystem out of whack,” said David Troutt, the tribe’s natural resources director. “Because seals are not finding the prey they historically have, such as forage fish like sand lance, they focus on already weak stocks of juvenile steelhead.”

The tribe funded the steelhead tagging project last year to observe the impact of a large number of transient orcas arriving in South Puget Sound.

“What we ended up seeing is that in the places we knew there was orca activity, there was also a much greater survival of steelhead,” Ellings said. Transient orcas prey solely on marine mammals. Even if transient orcas don’t end up eating that many seals, their hunting activity could disrupt the seals’ ability to hunt steelhead, Ellings said.

Decades ago, the Nisqually River had one of the strongest runs of steelhead in Puget Sound, with more than 6,000 returning every year, but the population crashed almost 20 years ago. Tribal and state co-managers would like to see about 2,000 steelhead return to spawn every year to the Nisqually, but since 1993, fewer than 1,000 have come back.

The study is part of the Salish Sea Marine Survival Project coordinated by Long Live the Kings.

– E. O'Connell

Learning More About the Steelhead Life Cycle

Fisheries managers are hoping to better understand the life cycle of steelhead to determine the status of the Skagit River run.

The Upper Skagit Tribe is implanting juvenile and adult steelhead with passive integrated transponder (PIT) tags that enable managers to collect data on fish survival and movement with minimal handling of the fish.

Unlike most species of salmon, steelhead can spawn repeatedly before they die. The timing of their migration to the ocean can vary, and they can stay at sea up to three years before returning to fresh water to spawn.

Upper Skagit natural resources staff are collecting, tagging and releasing juvenile steelhead from multiple locations on Hansen and Illabot creeks. Individuals that out-migrate from the creek have their tags read by receivers installed on the creek bottoms. Adult fish returning to spawn are collected in tangle nets and tagged before being released. The same receivers that detect out-migrating juveniles also detect returning tagged adults.

“The day we capture an adult fish that we tagged as a juvenile will be a big day,” said Josh Adams, one of the natural resources technicians working on the project.

PIT tags enable automatic detection of individual fish as they swim past a receiver, compared to coded-wire tags, which are best suited to mass-marking groups



K. Neumeyer

Upper Skagit Tribe fisheries technician Josh Adams transfers a steelhead from a net pet to sample and tag it before releasing it back to the river.

of fish and only tell managers where and when a hatchery fish was released. Coded-wire tags must be retrieved from a fish after it is harvested or recovered from the spawning grounds, while PIT tags can be read externally by a hand-held or in-stream receiver while the fish is still alive.

The tribe is working with an automated electronic field database to record and centralize the large amounts of data gathered from tracking individual fish over their life cycles.

“With coded-wire tags, we know

whether 100 out of 1,000 fish return, but with a PIT tag, we know what happened to *Charlie*,” said Jon-Paul Shannahan, Upper Skagit natural resources managing biologist.

The database was developed by Real Time Research, Inc., in close coordination with Upper Skagit Tribe biologist Rick Hartson. The Upper Skagit Tribe is hoping to collaborate with the state fisheries co-manager to track steelhead.

– K. Neumeyer



T. Royal

BUNDLING EELGRASS

Lara Aston, left, and Sue Southard of Pacific Northwest National Laboratory work with staff from the Suquamish Tribe, and National Oceanic and Atmospheric Administration to bundle eelgrass for an eelgrass restoration project at the old Milwaukee Dock site off Bainbridge Island.

They tie five eelgrass rhizomes together with a twist-tie before transplanting in a sub-tidal area.

Eelgrass is recognized as one of the most valuable ecosystem components in Puget Sound. This project will contribute to the Puget Sound Partnership’s goal of increasing the amount of eelgrass habitat by 20 percent over the current baseline by 2020.

Grayum Retires, Parker Named NWIFC Director

Justin Parker, Makah, is the new executive director of the Northwest Indian Fisheries Commission.

Parker, 45, joined the organization in 2000 and for the past five years has served as Intergovernmental Affairs Policy Adviser. Prior to that he was Director of Administration. He will begin his new duties in July.

Before joining the NWIFC, Parker worked as Director of Administrative Services at the Makah Tribe and as a fisherman. He is a graduate of Peninsula College.

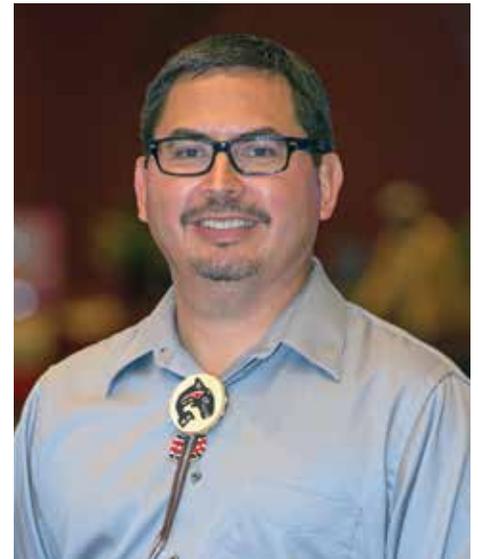
He will replace Mike Grayum, who retires June 30. Grayum has served as executive director for the past 11 years. Grayum previously served as director of NWIFC Fisheries Services for 28 years.

“Justin has the experience and knowl-

edge necessary to be a top-notch executive director,” said Lorraine Loomis, NWIFC chair. “As a tribal fisherman, he understands our goals to restore the salmon resource and protect tribal treaty-reserved rights.”

“The NWIFC is a center of excellence in providing natural resources management assistance to our treaty tribes, and we will continue that tradition,” Parker said. “I am honored to help support the work of our tribes and leaders such as the late Billy Frank Jr.”

Parker also serves as vice president of the Salmon Homecoming Alliance Board of Directors and as treasurer of the Affiliated Tribes of Northwest Indians/Economic Development Corporation Board of Directors.



Justin Parker

Commission Re-elects Officers

NWIFC held its annual election of officers at the May commission meeting.

Lorraine Loomis, Swinomish, was re-elected chair for a new three-year term. Shawn Yanity, Stillaguamish, was re-elected vice chair, and Ed Johnstone, Quinault, was re-elected as treasurer.



Lorraine Loomis



Shawn Yanity



Ed Johnstone