

NWIFC News



Northwest Indian Fisheries Commission

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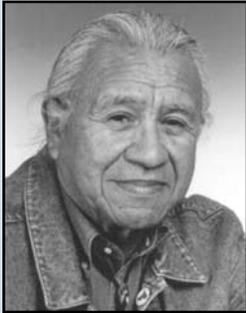
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Connecting The Dots

By
Billy Frank Jr.
Chairman



The truth of natural resource management can be summed up in a single phrase: Everything is connected. See the dots, make the connections and you can see the whole.

Some important dots were connected recently when Gov. Chris Gregoire signed the Puget Sound Partnership into law – on the same day Bob Lohn of the National Oceanic and Atmospheric Administration announced the listing of Puget Sound

steelhead as “threatened” under the federal Endangered Species Act.

For decades, wild Puget Sound steelhead have been doing poorly. In the late 1980s, there was a sharp, naturally occurring dip coastwide in steelhead populations. While Pacific coastal steelhead gradually rebounded to today’s healthy levels, Puget Sound steelhead did not. Their struggle is a reflection of Puget Sound’s health and is directly tied to the climb in the region’s human population.

As she signed her name to create the Puget Sound Partnership, Gov. Gregoire connected some more dots – the clean up of Puget Sound, a sustainable economy and the overall health and well-being of everyone who lives here. She also made the recovery of Puget Sound salmon and steelhead a cornerstone of the Partnership.

She did that by appointing Bill Ruckelshaus as chair of the leadership council that will guide the Partnership in its efforts to clean up much of the Sound by 2020. My good friend Bill also was a driving force behind the Shared Strategy, a sound-wide cooperative effort that led to the creation last year of a federally approved recovery plan for threatened Puget Sound chinook.

We’re going to need a lot of that kind of cooperation as we work to recover the health of the sound and its inhabitants.

A good example that’s just getting started is a 16-year study of steelhead in Hood Canal by the Skokomish Tribe and others.

We should applaud the ESA listing of wild Puget Sound steelhead and celebrate creation of the Puget Sound Partnership. These are just the kinds of medicines we need to heal the sound.

And as we heal the sound, we will heal steelhead, salmon and all of the other species that live beneath its surface, a surface that might look clean and healthy, but disguises dirty secrets lurking beneath.

Restoring steelhead, and other species, will take funding and hard work. But mostly it will take commitment, cooperative spirit and the vision we all need to connect the dots.

NWIFC News

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On The Cover: Upper Skagit tribal member Janelle Schuyler digs for clams on the Whidbey Island naval air base. In May, the Upper Skagit Tribe held a community clam dig at the site for the first time since Sept. 11, 2001.

Photo: K. Neumeyer

Tribes, Shellfish Growers Reach Settlement

Puget Sound treaty Indian tribes and commercial shellfish growers have finalized an agreement that will protect and enhance the resource while resolving legal issues from a 1994 federal court ruling that reaffirmed treaty-reserved tribal shellfish harvest rights.

The agreement preserves the health of the shellfish industry, recognizes the importance to the tribes of their shellfish harvest rights and provides greater shellfish harvest opportunities for everyone in the state.

“We had a choice, and we chose cooperation,” said Billy Frank Jr., chairman of the Northwest Indian Fisheries Commission. “Everyone loses when we turn to the courts to settle natural resource issues. The shellfish resource is too important – to tribal cultures, to the shellfish industry and to everyone who lives in the Puget Sound region – for us to fight over it.”

“Shellfish growers and the tribes have developed a fair solution to a difficult problem. This agreement will right a historical wrong and will put more shellfish on the tidelands for everyone,” said Bill Taylor, president of Taylor Shellfish Co.

“Shellfish are an important resource in Washington and the fact that everyone came together to reach an agreement underscores their vital role in our economy,” said Gov. Chris Gregoire.

The settlement brings closure to unresolved issues from Judge Edward Rafeedie’s 1994 federal court ruling that upheld 17 tribes’ treaty-reserved right to half of the harvestable shellfish in western Washington. The ruling also affirmed the tribes as



Upper Skagit tribal members participate in an elders’ clam dig. Photo: NWIFC file

The shellfish resource is too important – to tribal cultures, to the shellfish industry and to everyone who lives in the Puget Sound region – for us to fight over it.”

*- Billy Frank Jr,
Chairman,
Northwest Indian Fisheries Commission*

co-managers of the resource with the state of Washington.

Implementing Rafeedie’s ruling, however, proved extremely difficult because the state and federal governments had allowed many of the best tribal shellfish harvest areas to be sold to private owners more than a century ago. The purchasers were never told that those tidelands might be subject to tribal treaty harvest, and

over the years, the commercial shellfish industry flourished in the region. Today, in Mason County alone, the shellfish industry is the second largest private employer.

Chief among several unresolved aspects of Rafeedie’s ruling was how tribes were to harvest their share of naturally occurring shellfish on private commercial tidelands.

While the ruling prohibited tribes from harvesting shellfish from “staked and cultivated” beds enhanced by private owners, it upheld the tribes’ right to half of the naturally occurring shellfish on those tidelands. Accessing those shellfish, however, would be hugely disruptive and cost prohibitive for commercial shellfish growers who had spent many years enhancing those tidelands.

Key components of the agreement between the tribes and shellfish growers:

- The tribes will forgo their treaty right to harvest an estimated \$2 million of shellfish annually from commercial shellfish growers’ beds.
- During the next 10 years, growers will provide \$500,000 worth of shellfish enhancement on public tidelands of the state’s choosing, adding value to the agreement that benefits all citizens of the state.
- The tribes will be able to access a \$33 million trust, established with \$11 million in state funds and \$22 million in federal funds, to acquire and enhance other tidelands to which they will have exclusive access.

Culture, Science Are Key To Tribal Shellfish

Tribe Studying Shrimp Fecundity

Aleta Erickson gently tweezes 100 eggs, each the size of a large grain of sand, from the body of a pregnant female spot shrimp. Taking the time to count shrimp eggs – a female can carry as many as 5,000 – is giving the Jamestown S’Klallam Tribe important information about the spot shrimp population in the Strait of Juan de Fuca. Erickson, the tribe’s marine ecologist, and Lohna O’Rourke, the tribe’s biologist, have been looking at shrimp fecundity, a measurement of egg production, during the yearlong study.

As part of this study, females with eggs are closely measured and the total number of eggs are counted – a method that, while time consuming, is believed to be the most accurate method of determining fecundity. In a traditional fecundity study, a representative sample of the eggs is counted and weighed to determine an



The eggs of a female spot shrimp are removed to be counted and weighed. *Photo: T. Royal*

average number of eggs produced. Both methods are being evaluated to determine the extent of their differences. The number of eggs a female carries has been shown to

be related to the size of the shrimp. It appears that the difference in fecundity is related to size and not environmental factors.

Adding to the complex situation, shrimp begin their lives as males and for a short time period, move into a transition stage, and then become females.

“An important goal of shellfish management is maintaining the population at an adequate level to ensure availability for future harvest,” said Kelly Toy, Jamestown S’Klallam Tribe’s shellfish manager. “To measure the effects to the harvestable population, managers need to know to what extent fishing reduces the egg production of a stock. This requires estimates of many factors, including the average fecundity.”

“We can not determine what the sustainable harvest quota is pre-season, so our hope is that this study will fill in one gap in shrimp management data,” Toy said. “It would be helpful to develop a recruitment model that managers could use to determine sustainable quotas. Currently, we are locked into these quotas that do not take into account high or low years of abundance.”

– *T. Royal*



Sequim resident Ann Elliott and Jamestown biologist Aleta Erickson spread a net over a clam garden to keep birds from eating the planted baby clams. *Photo: T. Royal*

Shellfish Garden Educates About Water Quality

Planting a shellfish garden sounds like a good idea, but when that garden sits on the tidelands of Dungeness Bay, there’s one big problem – levels of fecal coliform bacteria are too high for safe eating.

In fact, the water quality of Dungeness Bay is so poor that the shellfish in the recently planted garden may not be harvestable when they mature, said Aleta Erickson, Jamestown S’Klallam Tribe’s marine ecologist.

But that didn’t stop Erickson, Washington State University Beach Watcher volunteers and area residents from spreading shellfish seeds on a 25-foot by 50-foot plot on tidelands at Dungeness Landing County Park in Sequim in mid-May.

“We’re hoping this garden will provide a visual reminder to residents about how polluted our bay is and how it affects the natural resources in our backyard,” said Erickson.

Shellfish on this beach were harvested regularly until 1998 when fecal coliform bacteria levels forced its closure by the state Department of Health.

Failing residential septic systems along the bay and dramatic population increases are contributing to the problem, as well as pet waste, animal waste and wildlife.

A similar shellfish garden in Drayton Harbor near Bellingham has been a great success, said Lyn Muench, Jamestown’s environmental planning manager, and was the inspiration for the shellfish garden in Sequim.

The garden includes 9,000 manila clams, 200 geoducks and about 3,000 oysters.

– *T. Royal*

Management

Tribal Harvesters Return To Clamming Sites After Closures

Just recently, after years-long closures, the Suquamish and Upper Skagit tribes have been able to access clam harvesting sites that previously restricted tribal members from taking part in traditional activities.

For the past six years, heightened security measures on military bases cost the Upper Skagit Tribe access to an important shellfish harvest area. Before that, the tribe's clam harvest came mainly from two shellfish beaches. One of them is on Naval Air Station Whidbey Island.

The tribe had held community clam digs regularly on the naval air base, but they were prohibited from returning after the terrorist attacks of Sept. 11, 2001.

"We used to come here all the time," said Scott Schuyler, policy representative for the tribe. "We understand the need for increased security after Sept. 11 but we are thrilled to come back this year."

In May, about 30 tribal members returned to the naval base for a dig. The group included children as young as 3 years old digging for the first time, and elders who watched from shore. Clams gave away their locations by squirting small geysers from beneath the rocky surface. They were so bountiful, diggers found the shellfish no matter where they dug.

Within a few hours, tribal members had filled up buckets for their own families and those of elders and others who weren't able to attend the community event.

"In our culture, we help those who need assistance," Schuyler said. "It's not just one person, one family. Nobody's really digging for themselves. We're digging for everyone."

For the first time in more than 30 years, the Suquamish Tribe will soon be able to harvest shellfish from beaches that, until recently, have been closed to pollution.



Conner Anderson takes part in a traditional Upper Skagit tribal clam dig. *Photo: K. Neumeyer*

The shellfish harvest ban was lifted from Chico Bay in April by the Washington Department of Health, based on work completed by Kitsap County Health District. The area had been closed to shellfish harvesting since the 1960s and the reopening was welcomed by the tribe because of the area's historic cultural significance.

"Shellfish are central to the tribe's culture and economy and the reopening of this beach will provide more harvest opportunities for members," said Debbie Kay, Suquamish Tribe shellfish coordinator. Typically, about 60 tribal members participate in a harvest.

The newly opened area is on the west side of Erlands Point, plus an additional half mile south of the Chico Bay boat ramp – about 19 acres all together.

"This opening may increase clam availability to tribal harvesters by about 30 percent," Kay said. – *K. Neumeyer and T. Royal*

Skokomish Tribe Seeds Future With 700,000 Young Manila Clams

Skokomish tribal fisheries staff Chris Whitehead and Shane Miller toss 250,000 baby manila clams by the handfuls into the tide at Twanoh State Park.

Since April, the tribe has scattered 700,000 manila clam seeds on Hood Canal beaches at Twanoh State Park and at the mouths of Rendsland and Eagle creeks, said Whitehead, Skokomish's shellfish management biologist. The tribe wanted to seed more beaches in the area but was prevented by tight budget restrictions.

A reseeded project is important to help sustain a clam resource for commercial, subsistence and ceremonial uses, as well as for recreational fishermen, Whitehead said. The clams seeded this spring should be ready to harvest in winter 2008.

"Historically, shellfish have been the economic backbone of the Skokomish Tribe," Whitehead said. "But the population has steadily declined because of minimal enhancement. We're trying to fix that." – *T. Royal*



Skokomish biologist Chris Whitehead enhances the beach at Twanoh State Park with clam seeds. *Photo: T. Royal*

Snares Snag Bear DNA

It only takes a single hair to identify one of the largest mammals on the Olympic Peninsula.

To supplement knowledge about numbers of bears and their movements on tribal lands, Makah tribal biologists have constructed simple bear hair snares. “The snares provide a sample of hair that can be analyzed for the unique DNA characteristics of each bear,” said Rob McCoy, Makah wildlife manager. “This gives each bear its own genetic fingerprint. The hair snares enable us to efficiently and cost-effectively get a more accurate number of bears in any given area.”

The hair snares supplement information obtained from 24 tagged black bears on reservation lands. Tribal biologists have also radio-collared nine adult female bears to provide information about habitat use, hibernation sites, home ranges and reproduction. While the collars provide more detailed information, collaring and tracking the bears is costly and time-consuming. The snares consist of a single strand of barbed wire strung in a triangle, two feet off the ground. Bait is suspended above the triangle. The height of the wire requires the bear to either step



A bear paw print shows recent bear traffic in a snare location.

over it or crawl under it to get to the bait. The barbs snag hair from the animal as it passes the wire. Hair samples are collected once a week and are analyzed to determine the unique DNA of each bear.

“We’ve already



Jake Sawyer, Makah wildlife technician, strings barbed wire for a bear hair snare with wildlife biologist Jon Gallie, rear, and Tony Pascua, middle. Photos: D. Preston

conducted genetic analysis on the tagged bears. But these hair snares will give us a much better idea of just how many bears we have on the reservation,” said Jon Gallie, wildlife biologist for the Makah Tribe.

Bear population information is important to the tribe because bears cause considerable damage to trees on Makah forest lands. In early spring, when food supplies are most limited, bears eat the inner bark of young conifers such as Douglas fir and hemlock. Bear damage can reduce the tree’s value and may kill it. Surveys of the tribe’s forestlands reveal that black bears prefer the taste of silver and Douglas fir trees, but because hemlock is most available, it sustains more damage than any other species.

Results of the bear hair snare and radio collaring will be used to produce a black bear management plan for the reservation at the conclusion of the three-year study. – D. Preston



Generations

This picture of a Quinault Indian Nation tribal member with four sturgeon and fish smoking was taken by Emma Damon at Oyhut (just north of Ocean Shores), in the early 20th century. Photo: Used by permission of Damon’s granddaughter, Emma Minard Tanner

IWC Renews Makah Whale Harvest Quota

The Makah Tribe's subsistence whaling quota of an average of four gray whales per year through 2012 was renewed by the International Whaling Commission (IWC) at its annual meeting in Anchorage on May 30.

The IWC's 76 member nations approved the quota request by consensus. The IWC's scientific committee met and recommended approval of the Makah quota and noted the Eastern North Pacific stock of gray whales is robust and appears to be nearing the carrying capacity of its range. The tribe's quota, shared with the Chukotka indigenous people of the Federation of Russia, was last renewed in 2002.

About 60 members of the Makah Nation, Chukotka people and Alaska Natives opened the IWC session with a procession into the main hall with powerful singing and drumming.

"Before, IWC delegates heard only words about aboriginal subsistence cultures. Here, they saw the living, breathing embodiment of those cultures all around them," said Micah McCarty, Makah tribal council member and part of the U.S. IWC delegation.

Although the IWC's decisions do not supersede treaty rights, the Makah Na-



Makah tribal members Greig Arnold, foreground, and Wade Greene, rear, drum and sing with a group of dancers and singers, including children Cedar and Keith Johnson, as they open the International Whaling Commission meeting held in Anchorage in May. Photo: D. Preston

The tribe received its first IWC quota 10 years ago and harvested a single gray whale in 1999.

"We have a federally approved whaling management plan and a strong working relationship with the U.S. IWC delega-

people through exchanges of traditional cultures and scientific information."

Meanwhile, the Makah Nation anticipates that the National Oceanic and Atmospheric Administration will present a draft Environmental Impact Statement (EIS) on the tribe's whaling proposal for public comment this fall.

The EIS is required as part of the process for the tribe to receive a waiver under the Marine Mammal Protection Act (MMPA). The tribe was forced to seek the waiver because a federal court ruled in 2002 that the tribe's whaling is subject to the MMPA, despite language in the act that says it is not intended to abrogate any treaty. For now, the tribe is celebrating the support shown for aboriginal and subsistence cultures by IWC delegates, but the work is far from over. "It's important that we continue to institutionalize aboriginal and subsistence rights in the context of these international forums," said McCarty.

- D. Preston

'It's important that we continue to institutionalize aboriginal and subsistence rights in the context of these international forums.'

- Micah McCarty,
Council Member,
Makah Tribe

tion is committed to participating in the process because it is the only international whaling management forum that focuses on issues such as sustainable harvests and improving whale populations. The Makah Nation is the only tribe whose treaty with the United States specifically reserves the right to harvest whales.

tion," said McCarty, who has been involved in the tribe's effort to exercise its whaling right since the early 1990s. "We are also building good relationships with other subsistence whalers such as the Bequians of St. Vincent and the Grenadines in the Caribbean. We continue to strengthen our ties to the Chukotkan

Steelhead Get ESA Listing; Tribes Aid

Editor's Note: On May 7, Puget Sound steelhead stocks were listed as "threatened" under the federal Endangered Species Act. Degraded habitat, fish-blocking culverts and unfavorable ocean conditions were listed as primary causes for the steelhead's decline. Puget Sound steelhead join Puget Sound chinook, Lake Ozette sockeye and Hood Canal summer chum on the "threatened" list. Treaty Indian tribes are working throughout the region to stem steelhead's decline and restore its once healthy populations. Following are a few examples of those efforts.

Skokomish Part Of Restoration Study

The Skokomish Tribe is embarking on a 16-year effort to evaluate the effects of releasing hatchery reared steelhead in Hood Canal rivers to help boost the wild population.

"The tribe has a strong interest in restoring and conserving the steelhead population in the Skokomish River and in the greater Hood Canal watershed," said Jim Huinker, the tribe's finfish management biologist. "We're hoping the results of the study will provide better information on how hatchery supplementation affects the naturally spawning steelhead population."

A central part of the study is collecting eggs from redds (fish egg nests in rivers) for the next eight years from the Skokomish, Duckabush and Dewatto rivers.

The eggs will be reared in several state hatcheries and then released back into the rivers of origin at various stages in their life cycle, from juvenile to adulthood. A



Staff from the Skokomish Tribe, Washington Department of Fish and Wildlife and National Oceanic and Atmospheric Administration work together to pump steelhead redds from the South Fork Skokomish River for a 16-year steelhead study. *Photos: T. Royal*

similar study on the Hamma Hamma River that began in the late 1990s is showing that the number of redds increased with this method.

For the last four years of the 16-year project, biologists will stop supplementing the naturally spawning salmon population to monitor the effectiveness of the effort.

The Tahuya, Dosewallips and Hamma Hamma rivers and Big Beef Creek are also included in the study but will be monitored separately for comparison. Every major steelhead-producing river in Hood Canal will be included in the project.

Researchers will record steelhead spawning and migration patterns and col-

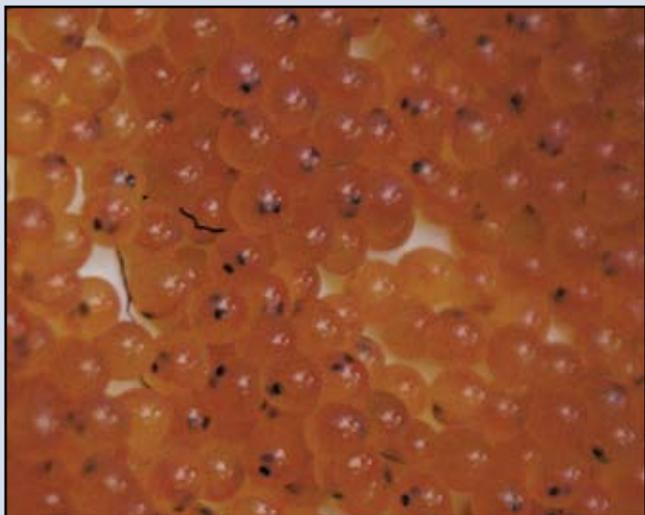
lect tissues samples to determine the genetic makeup of the fish.

The study will also provide information on return survival rates from radio telemetry transmitters surgically implanted into a percentage of the smolts.

"After studying hatcheries for 100 years or more, we still don't have a good idea of how hatcheries affect natural populations," said Barry Berejikian of the National Oceanographic and Atmospheric Administration (NOAA), the project's lead biologist. "The study will help answer whether this conservation hatchery will lead to increases or decreases in the natural steelhead population."

The project is a collaboration of the tribe, NOAA, Washington Department of Fish and Wildlife, U.S. Fish and Wildlife Service, Point No Point Treaty Council, Long Live the Kings and the Hood Canal Salmon Enhancement Group.

—T. Royal



The redds are pumped just as the eggs reach the eyed-egg stage.

Recovery Efforts

Tribes Boost Wild Run Through New Program

Twenty-five thousand White River juvenile steelhead smolts were recently released through a new restoration program aimed at boosting an imperiled run of wild steelhead in the Puyallup River watershed.

“Steelhead have been declining throughout the watershed for almost two decades,” said Mike Mahovlich, a Muckleshoot tribal biologist.

In the past four years, the number of steelhead seen at the Buckley trap has only averaged about 160 fish per year. Sixteen years ago, the average was 1,125 fish. “This program won’t stop the decline totally, but we are hoping that it will stabilize the stock. Our long-term goal is to rebuild the stock to a healthy, harvestable level,” Mahovlich said.

The young fish are the offspring of dozens of wild adult steelhead captured at the Buckley trap by tribal staff on the White River, a tributary to the Puyallup. The project is a joint effort between the Muckleshoot and Puyallup tribes and the state Department of Fish and Wildlife. After the fish are spawned and incubated to the eyed

stage at a state hatchery in Orting, the eggs are then transferred to a Puyallup tribal hatchery, where they hatch. The fish are reared for six to eight months before they are taken to the Muckleshoot Tribe’s White River Hatchery for acclimation and release.

“Bringing troubled stocks of native fish into a hatchery environment is a very positive role for hatcheries these days,” said Dennis Moore, a biologist for the Muckleshoot Tribe. A similar program for native Green River steelhead is starting to show the success that was hoped for as well as what has been done with the White River spring chinook stock rebuilding effort.

The fish will be kept at the White River hatchery for about two months before they’re released. Like all salmon, steelhead return to their birth river to spawn. “The parents of these fish were White River fish, so it’s vital that they be acclimated to this part of the watershed,” said Mahovlich.

No one is sure why steelhead populations have crashed in the Puyallup watershed. This problem is not unique to Puyallup because many South Sound steelhead stocks have been declining at an alarming rate



Juvenile steelhead, like this one, were acclimated at the Muckleshoot Tribe’s hatchery on the White River before being released. Photo: T. Royal

over the last two decades. Both treaty and non-treaty harvest has nearly ceased or been strictly limited for many years in response to the declining run. “We know survival rates of hatchery steelhead have diminished from 10 percent to less than one-tenth of a percent in the past 20 years, and wild steelhead in the Puyallup and White rivers have exhibited a similar trend,” said Russ Ladley, resource protection manager for the Puyallup Tribe. “However, the reasons behind the decline remain a mystery.”

– E. O’Connell

Lower Elwha Tags Juvenile Steelhead

Raymond Moses scoops up a 3-inch steelhead fry out of a bucket and measures its height and weight. Gently grasping the fish, Moses injects a small cylindrical copper and black tag, no longer than a quarter-inch, into the fish’s belly. Meanwhile, geneticist Gary Winans clips a tiny piece of fin tissue from each fish for genetic analysis.

The 30-second process was repeated on 1,600 other steelhead fry during a four-day period this past winter, helping the Lower Elwha Klallam Tribe create a broodstock to boost the native winter steelhead population in the Elwha River. It is expected that the eventual removal of the river’s two nearly 100-year-old dams within the next decade will allow native steelhead populations to rapidly rebuild. Production of a non-native early-timed steelhead population currently maintained at the Lower Elwha Hatchery will be reduced and possibly eliminated following dam removal.



An ID tag is inserted into an Elwha River steelhead as part of a broodstock program. Photo: T. Royal

During the past few years, the tribe has been gathering newly hatched fry annually from egg nests, also known as redds, in the lower five miles of the river. The fish will be reared to adulthood at the tribal hatchery and then spawned to produce additional native steelhead. Those fish will be released as yearlings into the river after the dams are removed. Gathering the steelhead from the redds in the Elwha River and genetic analysis of each fish helps guarantee that the tribe is using native steelhead, said Moses, the tribe’s project biologist. The fry are late winter steelhead, which are native to the river.

Winans, of the National Ocean and Atmospheric Administration, is studying each fish’s DNA to help confirm its genetic origin. The DNA analysis will help the tribe determine which fish to spawn together. “The idea behind studying the DNA and inserting ID tags is to be able to distinguish between the unique families and to maximize genetic diversity in future breeding programs,” Moses said. – T. Royal

Tribes To Hunt 15 Nooksack Bull Elk

Treaty tribes and non-Indian hunters plan to share 30 permits to harvest surplus bull elk in the Mount Baker-Snoqualmie National Forest.

In the 1990s, Indian and non-Indian hunters stopped hunting the Nooksack herd because it was rapidly declining. Today, as a result of restoration efforts by the tribes and the state of Washington, the herd numbers about 600 elk, up from fewer than 350 in recent years. Twenty years ago, the herd numbered about 1,700 elk.



In a thriving elk herd, surplus bulls can be harvested without affecting productivity. Photo: D. Preston

“This is a strong sign that the herd has rebounded to the point that it can sustain itself through a hunt,” said Todd Wilbur, chairman of the NWIFC Inter-Tribal Wildlife Committee and a member of the Swinomish Tribe.

Although tribes develop and enforce their own hunting regulations and seasons, they work cooperatively with the state and share harvest data. The tribes have contributed close to \$1 million and thousands of hours toward restoration work in the Nooksack River watershed. Individual tribes have spent as much as \$250,000 during the past decade. When state Department of Fish and Wildlife funding shortfalls threatened the work, the tribes provided supplemental funding. Tribes have biologists dedicated to elk issues and have been working

with landowners to address the impacts of elk on private property.

“Elk, like salmon, have always been central to our culture,” said Scott Schuyler, policy representative for the Upper Skagit Tribe. “Elk meat is often part of the feasts at tribal ceremonies and celebrations throughout the year. We harvest a small number of animals each year for these ceremonies and for food.”

Tribal and state efforts to rebuild the declining Nooksack herd (also known as North Cascades elk) have included

relocating 98 elk from the Mount St. Helens area, projects to improve elk forage and a decade-long moratorium on hunting. Wildlife biologists determined that the herd now has an adequate bull-to-cow ratio to allow a limited hunt of 30 bull elk. The harvest will not interfere with the herd’s productivity. The nine Point Elliott Treaty tribes would share 15 permits, and non-tribal hunters would be able to harvest the other 15 bull elk. After each of the participating tribes hunts one of the 15 bull elk of the tribes’ allocation, the remaining permits could be determined by a lottery, with the animals shared among the Point Elliott tribes. “Tribes will have a significant enforcement presence,” Wilbur said. “It will be a highly coordinated hunt.”

– K. Neumeyer

Lummi Nation Revives Tradition Of Trade With Oregon Tribe

Venison is a traditional food that the Lummi Indian Nation plans to serve when it hosts this summer’s canoe journey. But hunting opportunities are limited in North Sound, so the tribe traded some of its shellfish for venison from the Confederated Tribes of the Umatilla Indian Reservation in Oregon.

“I found out they had a abundance of deer and elk; we didn’t. We had some shellfish; they didn’t, which created the opportunity,” said Harlan James, a policy representative for the Lummi Nation. “We revived an old tradition that our ancestors did in years past.”

In the late 1990s, Lummi and other North Sound tribes participated in a meat salvage program with a community in the Methow Valley.

The tribes received deer meat that was salvaged from the roadside following col-

lisions with vehicles. While the tribes appreciated the venison, they prefer to obtain ceremonial food via traditional methods, such as bartering their valuable shellfish resource for deer from another tribe.

The first year of the trade, Lummi tribal members traveled to Umatilla to demonstrate how to cook the hundreds of pounds of shellfish they brought.

“We had to show them how to clean crab, and I had to cook geoduck and oyster stew,” said Elden Hillaire of the Lummi Fish Commission.

This year, Lummi tribal members cooked some of the crab in advance and vacuum packed or flash froze most of the remaining crab, prawns and clams for Umatilla.

“They want it preserved so they can use it all year long,” Hillaire said.

– K. Neumeyer



The Lummi Nation has resumed a traditional barter, by trading Dungeness crab, like those pictured here, for deer from an Oregon tribe. Photo: NWIFC File

Dead Seabirds Sign Of Coastal Change

The bulbous, orange beak on the dead seabird tells Kenny McCoy, Quinault Indian Nation (QIN) wildlife technician, that he is looking at a dead horned puffin. McCoy rarely sees puffins during his monthly beach survey of dead seabirds on the southwest Washington coast.

“Most of the time we find different species of gulls and cormorants, but we rarely find species like puffins, auklets and murrelets,” he said.

Yet over the past year, McCoy has been finding all of those birds during his surveys for QIN and the Coastal Observation and Seabird Survey Team (COASST). COASST is a citizen science project of the University of Washington in partnership with Olympic Coast Marine Sanctuary and coastal tribes. The surveys help determine a baseline mortality rate for all seabird species, allowing researchers to determine when unusually high die-offs are occurring.

Because horned puffins stay at sea almost their entire life, finding even a few carcasses on the beach is unusual. But over the past few years, McCoy and other COASST surveyors have found high numbers of emaciated seabirds on Northwest beaches, creating concern that the birds are not finding enough food.

“We obviously need to dedicate a lot more resources to study events like these because there seems to be a lot of uncertainty among experts about why they are occurring more frequently,” said McCoy.



Kenny McCoy, wildlife technician for the Quinault Indian Nation, measures and records data from a bird carcass he found near Taholah. *Photo: D. Preston*

There are other indications that conditions in the ocean have changed. For example, in 2006, thousands of normally bottom-dwelling fish were found dead on QIN beaches after a low-oxygen dead zone drove many to beach themselves trying to escape or killed them on the spot.

Most scientific theories about the seabird and fish die-offs center around the idea that major changes are occurring in the ocean currents, possibly related to global warming. These changes can alter food abundance and availability.

QIN became involved in the COASST program to collect baseline information that could help measure damage to tribal

resources in the event of an oil spill. QIN has been collecting the information for its database nearly 10 years on 20 miles of QIN beaches.

“Unfortunately, the possibility of an oil spill is viewed not as an ‘if,’ but a ‘when,’” said Grover Oakerman, QIN wildlife section manager. Monitoring sea bird mortality can provide an early warning system that is sensitive to changes in the marine ecosystem.

“Marine birds are like the miner’s canary in the coal mine,” said Oakerman. “When the marine ecosystem is disrupted, their mortality rates can abruptly change.”

– D. Preston



A Fawn Friend

A black-tail deer fawn sports a radio collar after Makah wildlife biologists, technicians and other professional volunteers collared 50 fawns this spring as part of the tribe’s study of hair slip disease. The tribe is conducting a multi-year study to determine if the disease is limiting deer populations on the north Olympic Peninsula. The lightweight elastic collars expand as the fawns grow and fall off after about one year. *Photo: C. Madsen*

Hoh River Coho Get Together For Winter

The Hoh Tribe confirmed this spring that thousands of young coho from five different tributaries to the Hoh River spent the winter in one large side channel connected to Braden Creek about four miles from the river's mouth. Using an innovative new tracking approach, the Hoh Tribe is finding out where Hoh River Valley coho travel to survive the winter. The tribe tagged thousands of young coho 11 months ago in the five tributaries with a tiny injection of a rubbery material in their anal fin. Each group of fish was injected with a different color of the substance, called elastomer. This spring, the tribe set up smolt traps on four of the tributaries and downstream ponds and side channels to recapture the tagged fish to find out where they had traveled.

"Many young coho die during their first winter," said Joe Gilbertson, fisheries biologist for the Hoh Tribe. The tagging will help the tribe identify important coho over-wintering habitat and also help prioritize its restoration and preservation.

"It was pretty amazing to see so many fish from so many different locations all end up in this one side channel," said Gilbertson. As an example, coho tagged in the South Fork of the Hoh traveled 26 miles to winter in Braden Creek side channel. "We had several high water events that may have brought most of them to this area," said Gilbertson. "We're hoping to do more of this kind of tagging over several years. This has been a real eye-opener for me in terms of confirming the value of these side channels and associated wetlands to fish." – *D. Preston*



(Above) Bobby Jo Ashue, Hoh tribal fisheries technician, cleans the screens on the Hoh Tribe's smolt trap on Braden Creek. (Below) A coho smolt displays a tiny pink elastomer tag in its rear fin.

Photos: D. Preston



New Elliott Bay Net Pen Healthier For Young Hatchery Coho

Muckleshoot biologist Gail Larsen scoops fish food pellets to throw into a new 177,000-cubic-foot fish net pen in Elliott Bay. Small flashes of silver break the surface as 18-month-old coho juveniles feed on their daily meal.

A marine net pen is used to help young hatchery fish transition from fresh to salt water. The transfer period plays a significant part in the high survival rates of these coho. This new net pen, which includes spars, anchors and net, was jointly paid for by the Suquamish and Muckleshoot tribes. The tribes and the state Department of Fish and Wildlife have worked together on the project for 14 years.



Gail Larsen, a Muckleshoot tribal biologist, feeds coho in a new marine net pen in Elliott Bay. *Photo: T. Royal*

"It's a great example of a cooperative enhancement effort – both tribal and non-tribal fishermen catch these fish," said Jay Zischke, Suquamish's marine fish program manager. "In addition to terminal fisheries, Elliott Bay net pen fish

consistently make strong contributions to fisheries in the Strait of Juan de Fuca, where they are typically caught during the recreational season."

WDFW spawned and raised the salmon for a year at the Soos Creek hatchery before they transferred them the Muckleshoot Tribe's hatchery at Keta Creek.

Compared to the previous system of two nets, the new net pen has stronger netting and more eco-friendly anchors.

Having one entire net – holding about 390,000 coho this spring – is easier and more efficient to maintain and creates a healthier environment for the fish.

"If we continue to have good quality water in Elliott Bay and healthy fish, these fish will likely have the highest survival of any hatchery coho released from south or central Puget Sound this year," said Paul Dorn, the Suquamish Tribe's salmon recovery coordinator. – *T. Royal*

Ten Times More Chinook In Dungeness River

Strong tribal and state co-management efforts have led to a 10-fold increase of chinook in the Dungeness River in the past decade. Since 1997, the Jamestown S’Klallam Tribe and the state Department of Fish and Wildlife (WDFW) have worked together to boost the number of chinook returning to the river from fewer than 100 annually to more than 1,500 last year. Dungeness River chinook are listed as “threatened” under the federal Endangered Species Act.

“By working well together, we’ve been able to make real progress toward recovering Dungeness chinook,” said Scott Chitwood, Jamestown S’Klallam Tribe’s natural resources director.

The project began in the early 1990s with the collection of adult wild chinook eggs in the Dungeness River. These eggs were incubated at WDFW’s Hurd Creek Hatchery in Sequim.

Instead of being released from the hatchery to migrate out to sea, the young fish were raised to adulthood at the hatchery. At maturity, these captive broodstock fish were spawned to pro-



A coded wire tag is inserted in the snout of a juvenile chinook. *Photo: T. Royal*

duce offspring that were released into the Dungeness and Gray Wolf rivers starting in 1997.

Today, steadily increasing numbers of adult chinook return to spawn naturally in the Dungeness River and continue to provide eggs to supplement the river’s wild chinook production, Chitwood said.

The work is far from over, however. As more fish return, the tribe and WDFW have begun to closely evaluate the success of natural spawning.

That process includes inserting coded wire tags in the nose of each juvenile chinook before it is released. The tags can be detected electronically when the fish return to the river as adults. This helps distinguish the hatchery-origin fish from wild fish.

“If we can measure an increase in the number of chinook produced in the wild, our chances of recovering the population

improve dramatically,” Chitwood said. “To succeed, we really need to raise the productivity of chinook habitat in the Dungeness River.” – *T. Royal*

Tulalip Hatchery Program Supports Bubble Sport Fishery

The first batch of summer chinook reared and released by the Tulalip Tribes returned to Tulalip Bay to the benefit of both Indian and non-Indian fishermen.

Four years ago, the Tulalip Tribes started using a broodstock native to the area and released summer chinook from the Skykomish River instead of fall chinook from the Green River. Those hatchery fish started returning to the bay in May. Few wild salmon return to the small terminal fishery in the bay, so any fish caught there is likely to be a hatchery fish returning to its place of release.

The Tulalip Tribes release up to 11 million salmon annually to reduce fishing pressure on wild stocks and provide more opportunities for harvest in Puget Sound. The hatchery chinook, coho and chum migrate as far north as Alaska before returning to Tulalip Bay.

Each year, the tribes and state open a “bubble” fishery to give tribal and sport fishermen a shot at the hatchery salmon in Tulalip Bay. The bubble fishery focuses the harvest on the abundant returning hatchery fish and minimizes impacts on wild fish.

For 20 years, Tulalip fishermen have confined chinook fishing to Tulalip Bay and a small surrounding area. Studies using ear bone (otolith) mass marks have shown that more than 90 percent of the chinook the tribes harvest in this fishery comes from the tribal hatchery.

“We’re contributing to the harvest for tribal and non-tribal commercial fishermen, as well as recreational fishermen,” said



Anglers head out for a day of fishing on Tulalip Bay.

Photo: K. Neumeyer

Terry Williams, commissioner of fisheries and natural resources for the Tulalip Tribes. “But our long-term objective is to restore natural production so that tribal fisheries can one day target wild fish again. We conduct our hatchery and harvest programs so that there can be fishing opportunity with the smallest possible impact on protected wild chinook salmon.”

– *K. Neumeyer*

Chinook Feed In Restored Estuary

The Nisqually Tribe is using fine mesh nets to collect and count young salmon moving into habitat provided by newly accessible sloughs in the Nisqually River estuary. Last fall, the tribe restored more than 100 acres of estuary, opening up several tidal channels that had been blocked behind dikes for decades.

Tribal researchers set the nets in the channels at high tide. As the tide goes out, the juvenile salmon are caught in the net so tribal staff can collect biological information. A few fish are kept for further study, but most are returned.

“It’s exciting to see how quickly the site is developing and providing habitat for juvenile salmon,” said Jeanette Dorner, salmon recovery manager for the Nisqually Tribe. “We’re seeing rapid tidal channel re-establishment and new salt marsh plants colonizing the site, replacing the old pasture grasses.”

Juvenile salmon use estuaries on their way out to the open ocean. “This is a stressful time for these salmon because they are experiencing saltwater for the first time, so it is vital then that they have enough food to survive,” said Dorner.

The tribe is studying how the new habitat is sustaining the young salmon, by looking at what they eat once they get to the estuary. In March, the tribe caught 20 young wild chinook; some had already fed on a type of marine shrimp found there.

“The habitat is not even a year old and we already are finding wild juvenile chinook on the site with food from there in their stomachs,” said Sayre Hodgson, salmon recovery biologist for the tribe. Estuary protection and restoration is key to recovering Nisqually River wild chinook, which are listed as “threatened”



Emiliano Perez, a Nisqually tribal technician, collects water quality data in front of a fyke net, which the tribe is using to count juvenile salmon using the newly restored Nisqually River estuary. *Photo: E. O’Connell*

under the federal Endangered Species Act. “We have a unique opportunity in the Nisqually to restore almost the entire estuary,” said Dorner. If the whole estuary was restored, the number of returning wild chinook would double. During the past five years, the Nisqually Tribe has restored 140 acres of estuary. The Nisqually National Wildlife Refuge plans to restore an additional 700 acres of estuary. “By finding out how salmon are using this new habitat, we also find out how to protect and recover them,” said Georgianna Kautz, natural resources manager for the Nisqually Tribe. – *E. O’Connell*

Bugs Nourish Returning Salmon

Salmon aren’t the only critters benefiting from habitat restoration on the Nisqually River. The Nisqually Indian Tribe is tracking a large population of insects and other invertebrates in the newly restored Nisqually River estuary. “We’re seeing a huge increase in the number of insects out there, which is an energy boost for all the other animals that feed on them – including salmon,” said Jeanette Dorner, salmon recovery manager for the Nisqually Tribe. Following the removal of the dikes holding back Puget Sound, the estuary’s natural ecosystem has been recovering with each change of the tide.

“These small creatures make up the base of the food web in the estuary,” said Dorner. “That we’re seeing so many insects is an indicator that estuary restoration is really working.”

There is a direct relationship between invertebrates and salmon. A tribal study has shown that young salmon are feeding heavily on invertebrates in the estuary.

“The estuary restoration project is benefiting every living thing using the estuary,” said Georgianna Kautz, natural resources manager for the Nisqually Tribe. – *E. O’Connell*



Insects float in the newly restored Nisqually River estuary. *Photo: E. O’Connell*

Forage Fish Spawn In Critical Nearshore Areas



A sandlance forms in an egg surrounded by beach gravel.
Photo: South Puget Sound Salmon Enhancement Group

Where small fish lay their almost invisible eggs tells a lot about how a stretch of beach supports endangered salmon.

The South Puget Sound Salmon Enhancement Group (SPSSEG) and the Nisqually Indian Tribe are collecting forage fish eggs along a 20-mile stretch of shoreline between Tacoma and the Nisqually River. Forage fish, such as herring, sandlance and candlefish, are important food for juvenile salmon. The spawning ground marks critical habitat for salmon.

“We’re looking for where these forage fish spawn so we can get a better understanding of how the nearshore habitat supports them,” said Kristin Williamson, project manager

for SPSSEG. Nearshore habitat is a productive swath of land close to the coast that serves an important role in the life cycle of salmon.

The forage fish survey is part of a larger assessment of nearshore habitat from Nisqually to Tacoma, which will eventually produce a list of possible restoration projects. Eelgrass and other seaweed beds, small pocket estuaries, forage fish spawning areas and other habitat will be mapped and assessed.

Estuary and nearshore habitat provide important rearing areas for juvenile salmon before they move out to the open ocean. Development along the shoreline has significantly changed the habitat, including changes in beach composition and loss of vegetation.

“We need to look at the nearshore and its restoration as a whole,” said Jeanette Dorner, salmon recovery manager for the Nisqually Tribe. “By taking into consideration as much of the salmon life cycle as possible, we’re helping ensure healthy salmon populations.” – *E. O’Connell*

Swinomish Hosts Earth Enhancement Celebration

Volunteers at the Swinomish Tribe’s Earth Enhancement Celebration helped landscape new salmon habitat recently at Lone Tree Creek.

Months earlier, the Swinomish Tribe’s Water Resources Program and Public Works Department, with technical assistance from Skagit River System Cooperative, replaced a system of small culverts and ditches with larger culverts and a bridge. This allows waters and fish to flow more freely through the estuary.

“The recovery of Skagit River chinook hinges on the restoration of estuarine habitat,” said Lorraine Loomis, Swinomish fisheries manager. “Projects like these help us move toward our goal.”

Replacing fish-blocking culverts is one of the easiest and most cost-effective ways to improve salmon habitat and increase natural production, she added.

On the Swinomish Reservation, Lone Tree Creek passes through the Thousand Trails RV campground, on its way to northern Skagit Bay. Before the restoration, the creek was used mostly as drainage for the RV park.

Last fall, four undersized culverts in Lone Tree Creek were replaced with larger culverts that improve stream function. A fifth culvert was replaced with a 40-foot bridge that allows water to flow from Lone Tree Lagoon into a new salmon resting pool. Chinook salmon already have been seen using the newly accessible habitat. – *K. Neumeyer*



Volunteers clear invasive weeds from Lone Tree Creek at the Swinomish Tribe’s Earth Day event. *Photo: K. Neumeyer*

Bacteria, Wind Add To Oakland Bay Pollution

Harmful bacteria leaking from failing septic systems and other animal sources may be getting trapped in the top layer of tideland sediments in upper Oakland Bay. The bacteria may be growing stronger especially during the warm summer months. "Bacteria feeding on nutrients in the sediment can amplify the actual pollution problem," said John Konovsky, environmental program manager for the Squaxin Island Tribe.

One piece of evidence to support the sediment theory is the relationship between wind and bacteria levels. The windier the conditions, the higher the fecal coliform counts. When the wind kicks up, the churning action of the water re-suspends sediment and any bacteria present.

The tribe is investigating this phenomenon by collecting samples from the top goeey layer of sediment in the bay, and studying how fecal coliform in the sediment relates to the water column bacteria levels and wind conditions. "The tainted sediment isn't the source of the pollution, but it can make a small pollution problem a lot worse," said Konovsky. "The sediment could be masking the original source of pollution."

Bacteria such as fecal coliform usually can't survive long in saltwater and sunlight, but if they become trapped in the tideland sediments, nutrients stimulate the production of a chemical that allows the bacteria to persist. "When bacteria respond to nutrients in the sediment,

they endure much longer and a little problem becomes a big problem," said Konovsky. "It makes it all the more important to find the original bacteria sources no matter how small."

About 60 acres at the head of Oakland Bay was downgraded to restricted shellfish harvest status by the state Department of Health late last fall because of the fecal pollution. To rectify the bacteria problems, Mason County formed a Shellfish Protection District around Oakland Bay this spring. It is the first action taken under the newly formed "Mason County Clean Water Initiative."

Expansion of harvest closures in Oakland Bay would be disastrous for tribal harvesters and would hamstring the local shellfish industry, a vital part of the local economy.

More than \$10 million of shellfish is taken from the bay every year, including



John Konovsky, environmental program manager for the Squaxin Island Tribe, collects sediment samples from tidelands on Oakland Bay. Photo: E. O'Connell

more than 3 million pounds of clams and 1.8 million oysters.

"Tribal members always have depended on shellfish as a source of nutrition, for income and as a way of life," said Andy Whitener, natural resources director for the tribe. "We need to get a better idea of where the pollution is coming from and how to prevent it from further closing Oakland Bay shellfish beds."

— E. O'Connell

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