



*Northwest Indian Fisheries Commission*

# NWIFC News

Summer 2011

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# What's Good for Orca Is Good for Fishermen

By Billy Frank Jr.  
NWIFC Chairman

Tribes and orcas have a lot in common. Together, we have always depended on the salmon for food.

The last 100 years have been hard on the tribes, the orcas and the salmon. Habitat loss and damage has pushed some salmon populations to the edge of extinction, threatening the orcas, tribal cultures and our treaty rights.

But instead of looking at the main causes for a weak local population of orcas, the federal government is asking us yet again to reconsider how we fish. We just spent several years working with our state salmon co-managers to develop a five-year plan to manage our Puget Sound chinook fisheries in light of the recovery needs for fish listed under the federal Endangered Species Act.

Now, a half-step away from final approval, the federal government asked us to go back to the drawing board and quickly produce a new two-year harvest plan that addresses how our fisheries might affect orca populations.

The state and tribal co-managers have been driving down impacts from treaty and non-treaty fisheries for decades in response to declining salmon runs caused by lost and damaged habitat. Our harvest levels have dropped to the point that harvest reductions alone can no longer recover salmon. Impacts caused by development, pollution and other factors have increased steadily and continue harming salmon 24 hours a day on every watershed.

Development and pollution are only a couple of factors that can hurt orca populations. Increasing ship traffic, military use of SONAR and the growing popularity of whale watching all hurt orcas, increasing their stress levels and making it difficult for them to find food.

As our fishing impacts go down, those impacts go up, yet we're the ones held accountable. Maybe developers, the U.S. Navy and whale watchers should be required to come



up with a plan to address how their actions over the next few years are going to affect orcas and salmon.

About 10 years ago, a pod of orcas visited Dyes Inlet in the Suquamish Tribe's fishing area. The orcas were there for the same reason as tribal fishermen, to harvest chum salmon returning to Chico Creek. Despite a slow season, tribal fishermen stopped fishing to let the orcas get their fill.

Since then, the Suquamish Tribe has spent millions of dollars and countless hours protecting and restoring the Chico Creek watershed, making sure that there will be enough salmon for everyone to share. This is the kind of response we need to help orcas and salmon. Nothing else will do.

Asking the salmon co-managers to write a shorter-term harvest plan in the meantime won't get us one inch closer to figuring out what we need to do to help orcas. It just puts us back on the plan-writing treadmill, ignoring the main causes and best solutions for the problems that we, the orcas and the salmon all face.

We know what salmon need and we know what orcas need. They need each other and they need us to help them survive. What's good for one is good for the other and each one of us.

In the meantime, the federal government needs to stop holding fishermen responsible for something that we all know is caused by lost and damaged salmon habitat.

## NWIFC News

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**On the cover:** From left, Tulalip shellfish biologist Cathy Stanley, shellfish technician Rocky Brisbois and crab fisherman Adam Cepa sample Dungeness crab in the Everett area. *Photo: K. Neumeyer* See related story, page 12.

# Chinook Plan Updated

Habitat protection and restoration in the Nisqually watershed during the past 20 years could lead to a 60 percent increase of fall chinook salmon. To reflect those improvements, the Nisqually Indian Tribe, in cooperation with state salmon co-managers, is rolling out an update to the 2001 Nisqually Chinook Recovery Plan that governs salmon in the watershed.

“The main reason more naturally spawning fish survive is that they have enough habitat where they can spawn and rear,” said David Troutt, natural resources director for the tribe. “The Nisqually is one of the few places in the entire Puget Sound where you can easily say we’ve increased salmon productivity.”

The Nisqually Tribe has been working with partners throughout the watershed to increase the productivity of naturally spawning salmon. Habitat restoration projects on two important chinook tributaries – the Mashel River and Ohop Creek – and restoration of the river’s estuary will result in more naturally spawning chinook.

To separate hatchery-produced chinook salmon from naturally spawning fish migrating upriver, the tribe will begin operating a weir this summer on a stretch of river on the Fort Lewis military reservation.

“This weir is the next step in salmon management on the Nisqually River,” Troutt said. “We have an obligation and now the opportunity to create a productive and locally adapted stock. But first we have to control straying of hatchery fish onto the spawning grounds. The most direct way to do that is with a weir.”

Since the 1960s, when the native chinook stock in the Nisqually River was killed off by hydroelectric practices and overharvest, all chinook returning to the Nisqually (both hatchery and natural origin) have been predominantly descended from an imported Green River stock.



E. O'Connell

Tribal fisherman Aaron Squally hoists a salmon into a tote during the Nisqually Tribe’s chinook fishery last fall.

The weir will help the tribe monitor the overall health of the entire run.

“We’ll have a real-time understanding of exactly how many fish are in the river,” Troutt said.

“We’ll get strong salmon populations because we’ve been smart about restoring and protecting habitat, in addition to being smart about fisheries management,” said Georgianna Kautz, the tribe’s natural resources manager. – E. O’Connell

## *Alternative Methods Could Preserve Tribal Chinook Fisheries*

The Nisqually Indian Tribe will experiment with alternative fishing techniques that may preserve the tribe’s chinook fishery while allowing natural origin chinook to take advantage of newly restored habitat.

The tribe will experiment with an in-river tangle net during a two-year pilot study. Tangle nets allow non-targeted species to be released. Throughout the chinook run, tribal staff will catch and tag 800 chinook and sample them later at hatcheries and in a weir.

The tribe also will test the

feasibility of other techniques, such as fish wheels.

“What we’re trying to figure out is what techniques are the best for fishermen in terms of success and also what is best for salmon in terms of survival,” said David Troutt, natural resources director for the tribe.

“The Nisqually is a unique place in western Washington where mark-selective fishing could benefit salmon and tribal fisheries,” he added. “This approach wouldn’t work everywhere. The combination of available habitat, successful hatcheries and harvest

pattern make it possible in the Nisqually.”

In a mark-selective fishery, natural origin fish that haven’t had their adipose fin removed in a hatchery are released. A new tribal and state recovery plan for the federally protected fish requires fishermen to lower their impact on natural origin Nisqually chinook by almost 40 percent.

Tribal fisheries have been reduced steadily to protect returning chinook. The Nisqually Tribe’s fishery has been reduced by more than three weeks in recent years to

drive down impacts on naturally spawning chinook.

With less time on the water, tribal fishermen have not been able to catch enough returning hatchery fish. In recent years, more chinook have returned to the tribe’s two hatcheries than are needed for spawning.

“Experimenting with this kind of gear isn’t about needing to make sure fish make it back to the spawning grounds,” Troutt said. “We’ve always ensured enough fish are able to spawn.” – E. O’Connell

# New Tools Give Clearer Picture of Migration

The Puyallup Tribe of Indians is getting an even closer look at juvenile salmon and their river environment. The tribe deployed a new smolt trap and a water quality probe in the Puyallup River this spring, allowing tribal staff to collect more data on out-migrating salmon.

“We track the year-to-year natural production of wild chinook salmon in the watershed to help us plan recovery efforts and fisheries,” said Russ Ladley, resource protection manager for the tribe. The smolt trap captures juvenile salmon just above the confluence of the White and mainstem Puyallup rivers.

The new screw trap consists of a large barge with an attached rotating cylindrical screen that spins with the flow of the river. Fish swim into the trap and are kept until they can be identified, counted and measured by tribal staff.

Smolts are juvenile salmon undergoing a physiological change called “smoltification” as they move from fresh water to salt water.

“Usually our catch of the fish moving down river is around 1 to 7 percent,” said Andrew Berger, fisheries biologist for the tribe. “Now, we’re seeing catches up to 12 percent, and we can be more certain of our data.”

The new trap replaces a smaller version that the tribe had used for a decade.

“We’re thinking of putting that trap on the White River to give us a complete picture of salmon productivity in the Puyallup watershed,” Ladley said.

The tribe also attached a water quality probe to the trap to collect constant water quality data during the salmon migration season.

“We can see the environmental condition of the river as salmon are moving out to Puget Sound,” Berger said.

“This trap gives us a pretty good picture of the health of salmon populations in the watershed,” Ladley said. “Salmon need good habitat to spawn and rear. This data lets us know how well the habitat is working for these fish.”

– E. O’Connell



E. O’Connell

Terry Sebastian, left, and Archie Cantrell, Puyallup tribal fisheries staff, help assemble a new smolt trap on the mainstem Puyallup River.



E. O’Connell

A chinook is wanded to see if it was tagged before being released from a hatchery.

The family tree may hold keys to the recovery of White River spring chinook.

The Puyallup Tribe of Indians is working with the state Department of Fish and Wildlife’s genetics lab to analyze years of tissue samples that will help draw the family ties of the threatened fish.

“We can use genetic material to go back

## DNA Measures Hatchery’s Success

in time and see how successful natural origin fish are in comparison to fish that might have one or two parents from a hatchery program,” said Blake Smith, enhancement manager for the Puyallup Tribe. “Are fish with one or more hatchery parents having as many offspring as all natural origin fish?”

Every fish migrating up the White River is caught in a trap at the Buckley hydroelectric diversion dam, allowing fish managers to monitor returns and gather information. The Puyallup Tribe has collected genetic material from returning spring chinook for almost a decade, creating a large reservoir of baseline data.

The Puyallup and Muckleshoot tribes annually release thousands of hatchery-raised spring chinook from acclimation ponds in the upper White River.

“The fish we release from the acclimation ponds are intended to boost the number of naturally spawning pairs in the upper watershed,” Smith said. “If this analysis

shows that they are successfully spawning in the wild and their offspring are returning as adults, then we know we’re doing a good job.”

In the mid-1980s, the viability of White River spring chinook was in serious doubt. One year, only six spring chinook returned to the White River. Since the construction of the Muckleshoot Tribe’s White River hatchery, the spring chinook run has improved slowly, with about 3,000 chinook returning in recent years.

“With this program firmly in place, we hope to prevent catastrophically small returns, like those that happened in the 1980s,” Smith said.

The tribes also have been restoring important habitat in the upper watershed.

“More important to the genetic health of these fish is the health of their spawning and rearing habitat,” Smith said. “Restoring and protecting salmon habitat is the most important thing we can do to recover these fish runs.” – E. O’Connell

# Fish Surveyed After Dark

Snorkeling the Dungeness River at night recently gave Byron Rot a new appreciation for the fish he works hard to protect.

“The river is fast, steep and strong. It’s a hard river to crawl up while snorkeling and surveying, much less swim, especially if you’re a tiny juvenile salmon,” said the Jamestown S’Klallam Tribe’s habitat program manager. “The old management practices that led to a straight and steep river have really impacted the fish and where they can live.”

Rot, eight other snorkelers, and four data recorders spent a spring evening on a three-quarter mile stretch of the river near Railroad Bridge Park in Sequim. The group was looking for fish around the log-jams the tribe built in 2007 and 2008 to create salmon habitat in a stretch of river nearly devoid of it.

The snorkelers counted fish by species and estimated their lengths. Every 75 feet or so, they’d pop up out of the water and call out counts and observations to a data



Dave Shreffler of Shreffler Environmental gets ready to snorkel a shallow area of the Dungeness River to survey fish using newly created habitat. T. Royal

recorder on the bank. Findings included bull trout, steelhead, cutthroat, coho and chinook. All salmon species except sockeye live in the Dungeness.

“We found fish where we expected to find them – mostly in quieter pools of water that had been created by our jams or other natural wood, and very few fish in the faster water,” Rot said.

The tribe plans to work with the U.S. Fish

and Wildlife Service to continue monitoring the river on a regular basis.

Rot hopes that gathering information like this can be translated into public outreach tools for landowners that live near the river.

“People see the beauty and power of the river, but they have no idea of what is going on under the surface,” Rot said.

– T. Royal

## Skokomish Tribe Collects Steelhead Eggs for Hatchery

The Skokomish Tribe is wrapping up the first five years of an intensive 16-year study to enhance steelhead populations in Hood Canal rivers.

An important component of the study is sampling the egg nests, or redds, that naturally spawning steelhead build each spring.

The tribe has counted nearly 200 redds so far this season in the 30-mile-long Skokomish River. Eggs will be collected from 40 of the healthiest redds between mid-May and mid-June.

“We’ve reached our goal of 30,000 eggs every year,” said Matt Kowalski, biologist for the tribe. Once hatched, the juveniles are reared at a state or federal hatchery before being released.

“We’re preparing this spring for the return of the first steelhead that were collected as eggs in 2007,” Kowalski said.

“We’re starting to see more fish in the lower river than we have in the past few years.”

Steelhead are elusive – the tribe will see maybe 20 live fish a year when surveying the river. But based on the number of redds counted, the tribe estimates that 300-400 are returning annually to the South Fork of the river and its tributaries.

“The number of redds determines the success of the project,” Kowalski said. “Early indications from this year show an increase in redds but we won’t know if this trend will continue until we complete more surveys.”

The South Fork of the Skokomish River is just one river that is part of the Hood Canal-wide project.

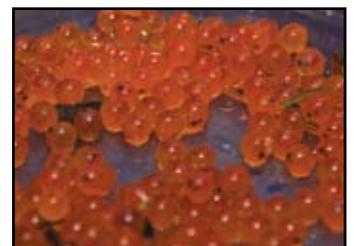
Other partners in the study include Jamestown S’Klallam and Port Gamble S’Klallam tribes, Puget Sound Partnership, National Oceanic and



Matt Kowalski, Skokomish steelhead biologist, Rob Endicott, NOAA fisheries biologist, and Anthony Battista, Skokomish natural resources technician, sort through eggs pumped from a redd. Below: Fertilized eggs are collected from redds in the South Fork of the Skokomish.

Atmospheric Administration, Washington Department of Fish and Wildlife, U.S. Fish and Wildlife Service, U.S. Forest Service and the Point No Point Treaty Council.

– T. Royal



T. Royal (2)



T. Royal

Jon Oleyar, Suquamish Tribe fisheries biologist, counts coho smolts on Wildcat Creek, a tributary to Chico Creek.

## Coho Smolts a Sign of Chico's Healthy Habitat

After a decade of monitoring adult coho salmon runs in the Chico Creek watershed, the Suquamish Tribe is turning its attention to coho offspring.

A new effort is taking place on two Chico tributaries, Wildcat and Lost creeks, where the tribe is counting out-migrating smolts in the spring, in addition to extensive adult coho salmon spawning surveys in the fall.

"We're eager to get an idea of the juvenile coho salmon production coming out of Wildcat and Lost creeks," said Jon Oleyar, a Suquamish Tribe fisheries biologist. "The habitat up here is probably some of the best in the region."

The Washington Department of Fish and Wildlife conducted a similar coho out-migration study almost 30 years ago, which the tribe can use to compare productivity of the two streams.

"I wouldn't expect there to be much difference because there hasn't been much development in this area," Oleyar said. "The number of coho leaving the Chico Creek watershed is a

direct result of the habitat they have available to them. Protecting that habitat is the best way to ensure coho keep coming down."

Wildcat Creek and its source, Wildcat Lake, provide excellent rearing habitat for juvenile salmon. The lake is a critical nursery for juvenile salmon for up to two years until they are ready to head downstream to Chico Bay and eventually to the Pacific Ocean.

"We've been seeing some larger coho smolts coming through the trap recently, which are thought to be coming from the lake," Oleyar said. "This is an encouraging sign concerning the health of Wildcat Lake."

An ongoing concern is passage for both juvenile and adult coho from the lake through a failing Kitsap County culvert.

As of mid-June, about 4,400 coho smolts were trapped, counted and released in the two tributaries to Chico Creek. It's the first time the tribe has trapped out-migrating smolts in the watershed. — T. Royal

## Squaxin Island Beach Restoration Monitored

Tribal researchers are surveying a beach on Squaxin Island to gauge the results of a large-scale habitat restoration project.

Earlier this year, the Squaxin Island Tribe, the Washington Department of Natural Resources and the South Puget Sound Salmon Enhancement Group removed a 350-foot-long bulkhead and a 210-foot-long pier from the island. More than 50 creosote pilings were pulled from the pier. Creosote-treated logs can be toxic to marine species.

"The bulkhead and pier were the only blemishes on the island, which includes some of the most protected beach habitat in Puget Sound," said Andy Whitener, natural resources director for the tribe. "The pier had been used to access a historic tribal longhouse that burned and was abandoned about 20 years ago."

A common impairment along the southern Puget Sound shoreline, bulkheads stop the natural erosion of upland that builds beaches, and increase the loss of beach gravel and fish habitat.

Tribal researchers are looking at the beach's size, shape and composition to determine if the restoration project has had any immediate effects. They're also looking at the beach's nearshore habitat to see how forage fish and young salmon are faring.

"This will give us important baseline information so that we can track restoration over time," said Scott Steltzner, habitat biologist with the tribe.

"Protecting and restoring freshwater and marine habitat is the most important thing we can do to protect our treaty-reserved right to harvest salmon," Whitener said. "This post-restoration monitoring will demonstrate how projects like these can be key in restoring the ecosystem of Puget Sound." — E. O'Connell

Scott Steltzner, biologist for the Squaxin Island Tribe, measures the changing elevation of a newly restored beach.



E. O'Connell

# Lummi Nation Cleans Up

## Community effort addresses illegal dump sites

The Lummi Nation held its biggest community cleanup to date in April.

Lummi tribal members filled 24 dumpsters with solid waste from reservation lands. Nearly 1,000 tires were removed and recycled. About 270 tons of solid waste were removed – nearly twice the 148 tons removed during a similar community cleanup in 2009. More than 9 tons of metal were recycled, including appliances.

Staff members from the Lummi Housing Authority (LHA) were on hand to help unload trucks at the two collection sites, make house calls and clean up illegal dump sites on the reservation.

“We went to 97 homes,” said Christina Solomon, maintenance manager for LHA. “A lot of our residents are low-income and don’t have vehicles to get

rid of trash that won’t fit in their garbage cans.”

The Lummi Natural Resources Department obtained a grant from the federal Environmental Protection Agency (EPA) and partnered with the LHA to conduct the five-day cleanup. The LHA provided the labor, and the Natural Resources Department used the EPA grant to pay for the garbage to be hauled off and disposed at a regional transfer station, and for other materials to be recycled.

Garbage accumulates in undeveloped areas of the reservation as it does in many areas of rural America. People from the reservation community and throughout neighboring Whatcom County who can’t afford to dispose of large items like televisions, appliances and tires dump their trash on the



K. Neumeyer

Lummi Housing Authority staff members empty a truckload of garbage removed from reservation lands.

Lummi reservation, creating illegal dump sites that degrade fish and wildlife habitat.

Community cleanups can help deter that activity, Solomon said. She sent crews to remove the garbage from four of the larger illegal dumps. “In principle, once these dump sites are cleaned up, you won’t see

as much on the side of the road, because people will anticipate the next cleanup,” she said.

“It makes everybody feel better about where they live when it’s cleaned up,” she said. “The hope is, you keep cleaning up, cleaning up and it’s kind of contagious.”

– K. Neumeyer

# Stillaguamish Tribe Reconnects River to Blue Slough



K. Neumeyer

Stillaguamish environmental manager Pat Stevenson inspects a culvert that connects the North Fork Stillaguamish River to Blue Slough.

The mark of a successful restoration project is the presence of salmon in newly created habitat.

This spring, Stillaguamish Natural Resources staff found hundreds of chum in Blue Slough, along with dozens of chinook, coho and steelhead.

The side channel had been cut off from the river by railroad tracks in the 1930s. Restoring the habitat was proposed in the 1970s, and the tribe began the work in 2005. Logjams and fish-friendly culverts were installed, creating 3,000 feet of side-channel habitat and finally reconnecting the slough to the North Fork Stillaguamish River last fall.

Challenges along the way included changes to the natural armoring of the streambed, a flood that lowered the channel

and an increase in groundwater caused by channel excavation.

Prior to the work, Blue Slough connected two large ponds on private property, but was cut off from the river.

“The channel was all groundwater,” said Pat Stevenson, environmental manager for the tribe. “It didn’t have that river smell.” Salmon use an acute sense of smell to navigate back to their natal streams to spawn.

Now, the slough is connected to the river at both ends, where water can flow continuously, providing winter and summer rearing habitat for juvenile chinook salmon. Lack of rearing habitat is a top cause for the severe decline of chinook in the Stillaguamish watershed.

– K. Neumeyer



Puget Sound Restoration Fund ecologist Brian Allen and hatchery and research technician Nate Wight lift a rope that has been seeded with kelp.

## *Traditional Knowledge Guides Kelp Project*

Port Gamble S’Klallam tribal elders remember gathering herring roe in the mid-1900s when bull kelp beds were abundant in Port Gamble Bay and the outer Hood Canal area.

Herring prefer to lay their eggs in thick green beds of kelp. Today little kelp and few herring remain in Port Gamble Bay and no one is really sure why.

In an effort to restore the kelp, tribal elders are working with natural resources staff to find the old bull kelp bed locations and replant them, starting this spring with a 30-foot by 30-foot section just north of Point Julia. At a shallow 15 feet, divers anchored 40 natural-fiber ropes, seeded with hatchery-raised juvenile kelp, to the bay floor.

“Kelp is not only important to the tribe culturally but also for the species that depend on it for habitat, such as herring and salmon,” said Paul McCollum, the tribe’s natural resources director. Bull kelp is among the world’s fastest growing seaweeds. It is found in rocky nearshore areas, providing areas of refuge for fish and birds. It also acts as beach erosion control against tidal currents.

Historically the tribes used the bulb of the bull kelp to hold fish oil for trading. Fishing line was made from the plant’s long stem, called a stipe.

While kelp beds have increased along the Washington coast and Strait of Juan de Fuca, they have disappeared from much of central and southern Puget Sound. Reasons for the decline are uncertain, but likely include shoreline development, climate change and declining water quality.

“Without an established bed, the plant may become vulnerable to predation by invertebrates such as crabs,” said Betsy Peabody, executive director of the Puget Sound Restoration Fund, a partner in the project. “Part of our restoration strategy is to kickstart reproduction in order to boost the population.”

The project was funded by the Russell Family Foundation. Additional partners in this project include the Suquamish Tribe, Washington Pilots Association, Taylor Shellfish and Olympic Property Group.

– T. Royal

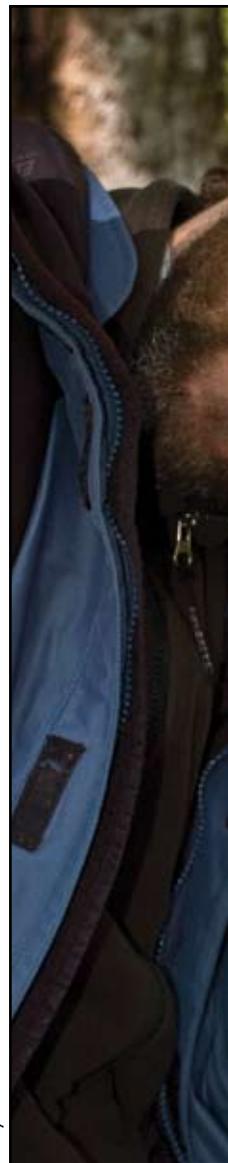
### **Fast Facts: Bull Kelp (*Nereocystis*)**

- Among the fastest growing seaweed species in the world.
- Extensive studies by Washington Department of Natural Resources show kelp has increased significantly along the coast and Strait of Juan de Fuca but decreased in areas closer to Puget Sound.
- Floating kelp beds are small ecosystems, providing a home for juvenile fish and a place for birds to hunt.
- Bull kelp helps control beach erosion caused by strong tides and currents.



T. Royal

# Lower



T. Royal

Above: Jim Adelman song sparrow during t  
A juvenile steelhead i  
The tribe is studying r  
removal this fall.



D. Preston

# Elwha Klallam Readies for Dam Removal



of the Smithsonian Migratory Bird Center captures a the Lower Elwha Klallam Tribe's songbird study. Top left: s transferred from the tribe's old hatchery. Top right: American dippers in the Elwha River ahead of the dam

After 20 years of fish and wildlife studies and habitat restoration efforts, the Lower Elwha Klallam Tribe is making its final push toward September's demolition of the 108-foot-tall Elwha and 210-foot-tall Glines Canyon dams on the Elwha River.

From studying tiny invertebrates in the river to establishing a steelhead broodstock program and monitoring elk herds in the area, the tribe has covered a lot of ground in the lower 30 miles of the valley. Recent efforts have included constructing a new hatchery, studying river otters and American dippers, and using SONAR to monitor fish migration.

The tribe recently constructed a larger hatchery and transferred 160,000 Elwha River steelhead juveniles to brand new rearing ponds in May. The steelhead are part of a broodstock program to preserve a run that is listed as "threatened" under the Endangered Species Act.

"We have better rearing conditions for fish at the new hatchery, including greater control over water temperatures while salmon eggs are incubated," said Larry Ward, the tribe's hatchery manager. There are more raceways for rearing fish and the new facility is closer to the river, allowing access to three times more water.

The tribe has been studying the river valley's wildlife closely, including the way river otters and songbirds are affected by the presence of the dams. The tribe so far has outfitted one otter with an implanted radio-transmitter to track its movements, and has acquired scat and tissue samples to conduct genetic and dietary analysis of the river's otter population. Similar samples have been taken from American dippers, Pacific wrens and song sparrows in the watershed.

"We know that otters, American dippers, and other songbirds use the Elwha River below, between and above the dams, but we don't know a lot about their population status, movement patterns, or how their diets have been affected by the lack of salmon above the dams," said Kim Sager-Fradkin, the tribe's wildlife biologist. "Getting this information now is important so we can monitor changes after the system is restored."

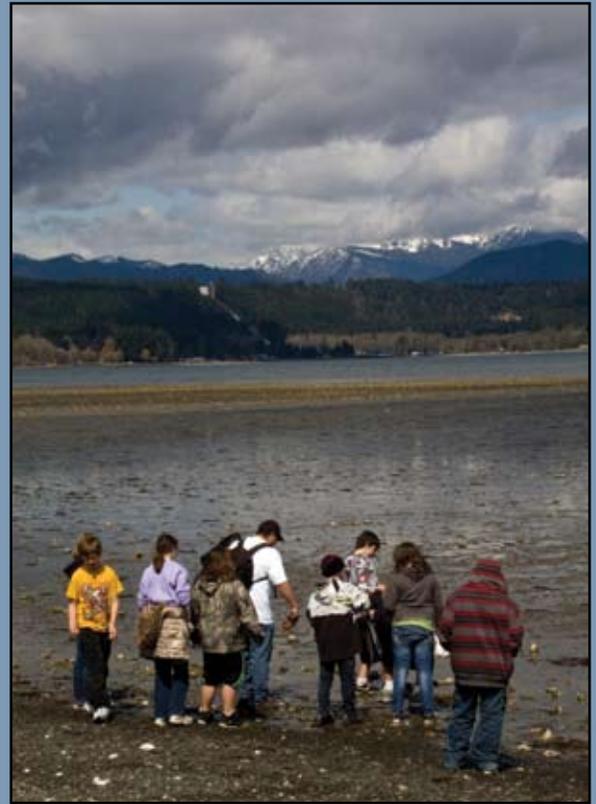
In an effort to count the Elwha River summer chinook and winter steelhead moving through the river before dam removal, the tribe installed a SONAR camera in the lower river. Sound waves beam across the river, capturing images of fish that swim past and allowing biologists to track their movements.

"Our aim is to make this a year-round counting station," said Keith Denton, a consultant to the tribe for the SONAR project. "We can use this data to evaluate population recovery after the dams are removed."

A major milestone toward removal of the dams took place June 1, when powerhouses at both dams were shut down. Lake Mills, the reservoir behind the upper Glines Canyon Dam has been lowered by 6 feet this spring to help erode the sediment that has built up behind the dam. An estimated 20 million cubic feet of sediment is believed to have accumulated behind the dams over their 100-year lifetime. — T. Royal

# Earth Day on Hood Canal

Nearly 300 students from the nearby Hood Canal School visited the Skokomish Tribe's Nalley Island estuary for Earth Day, where tribal staff talked about estuary restoration work during the past few years, and pointed out the marine life and wildlife that reside there. Below: Hood Canal School sixth-graders Alex Light and Lea Townsend look at what's just off shore in Hood Canal. Right: Skokomish Tribe natural resources technician Arthur Gouley works with students to pick up garbage along the shoreline, with the Olympic Mountains in the distance.



T. Royal (2)

# Working Toward a Better Dam for Fish

The Skokomish Tribe participated in a groundbreaking ceremony at Lake Kokanee this spring to celebrate the start of construction of a new upstream fish passage facility and a new dam powerhouse on the North Fork of the Skokomish River. The work is part of the effort to restore the health of the river and to rebuild and restore fish populations that have been harmed by the operation of the city of Tacoma's Cushman Hydroelectric Project.

"Getting to this point has been a journey that we have fought long and hard for," said Joseph Pavel, the tribe's natural resources director. "We look forward to working with Tacoma and seeing the fish population benefit from restoration efforts."

The fish passage facility will allow adult coho, steelhead, spring chinook and sockeye salmon to be released into Lake Cushman and the upper North Fork of the river, upstream from the city's two fish-blocking dams.

This upstream passage plan is one of more than 20 plans that the city must design and operate or implement as part of a January 2009 settlement agreement between Tacoma, the tribe, and federal and state agencies. The plans will be designed to protect, restore and monitor habitat, restore salmon and steelhead populations, enhance wildlife, provide recreational opportunities, and protect water quality, endangered species and historical properties in and around the North Fork of the river.



Skokomish Tribe

The Skokomish Tribe and staff from city of Tacoma released rainbow trout into Lake Kokanee to commemorate upcoming restoration work on the North Fork of the Skokomish River.

The tribe also recently learned that the Federal Energy Regulatory Commission (FERC) denied requests from Skokomish Valley landowners for a rehearing of FERC's order incorporating settlement conditions into the license, allowing the city of Tacoma to move forward with its plans to restore the Cushman area.

The dams were built on the river more than 80 years ago, providing electricity to the city of Tacoma but blocking salmon from the upper watershed. The dams reduced the North Fork of the Skokomish River flow to a trickle and altered the biology and geology of the river system, while also affecting the tribe's culture and treaty-reserved fishing rights. — T. Royal

# DO Levels, Stream Temps Vital to Fish Survival

*Salmon need cool, clean, highly oxygenated water to survive. Following are a couple of examples of how tribes are working to ensure the water quality needs of fish are being met.*

## Monitoring DO in gravel

As part of monitoring the restored Jimmycomelately Creek, the Jamestown S’Klallam Tribe is testing the dissolved oxygen (DO) levels within the streambed’s gravel, where salmon make their egg nests, also called redds.

The tribe is taking water samples from 21 locations within the creek. To get a sample, the tribe engineered a special tube and pump system. A small aquarium air stone is attached to one end of a 68-inch-long plastic tube. The stone is buried 7 inches below the streambed surface, mimicking the typical depth of a redd. The remaining 59 inches of tubing floats in the water. When gathering a sample, a special pump is attached to the exposed end, drawing up water from within the gravel.

Preliminary results show that DO levels are acceptable in the upper stream where the streambed has not been altered. In the lower reach, near where the creek empties into Sequim



D. Preston

Warren Scarlett, water quality and habitat biologist for the Hoh Tribe, places a thermograph in the Hoh River watershed while Bernard AfterBuffalo Jr., fisheries technician, brings wire to hold it in place.

Bay, results are mixed. Some areas show sufficient DO levels while others are less than what is needed for egg incubation.

Dissolved oxygen measuring 8 milligrams per liter or more is considered satisfactory; samples measuring 3 milligrams per liter or less are considered lethal.

“It’s too early to tell if the inconsistent levels in the lower creek are because the creek is still recovering from past farm practices, restoration efforts or other factors,” said Lori DeLorm, a Jamestown S’Klallam natural resources

technician. “With a few more years of data collection, we will get an idea of which sites are meeting the oxygen demands for incubating eggs and emerging fry.”

## Monitoring stream temperatures

The Hoh River watershed might look healthy to the casual observer. Yet, many of the key salmonid nursery streams located outside of Olympic National Park have a history of exceeding the state standards for water temperature. Elevated stream temperatures can kill or harm salmon or other aquatic organisms.

The Hoh Tribe has been monitoring stream temperatures in the Hoh River watershed since 1992. The tribe now has 50 thermographs stationed around the watershed to automatically record water temperatures. Some streams have several thermographs, one toward the upper end and one in the lower reach. Control areas such as wells also are monitored, along

with streams inside Olympic National Park where no harvest activities occur.

The instruments are wired to large submerged vegetation or attached to metal stakes driven into the streambed.

“The key to obtaining accurate temperature readings comes from installing the instruments in areas where the water is well-mixed, away from direct sunlight and areas strongly influenced by groundwater input,” said Warren Scarlett, water quality and habitat biologist for the Hoh Tribe.

Elevated stream temperature is one of the cumulative effects of land management activities, which have altered surface water runoff, groundwater recharge, streamside plant communities, and in-channel structures such as logjams.

“In all likelihood, continued land management activities will preclude many streams from a complete recovery of natural temperature conditions,” Scarlett said.

– T. Royal & D. Preston



T. Royal

Jamestown S’Klallam Tribe natural resources technician Lori DeLorm tests water samples from Jimmycomelately Creek for dissolved oxygen levels.

## Crabs Tested Before Harvest

Tribal crabbers were eager to hear the results of the Tulalip shellfish program's crab survey in late May. They wanted to know if Dungeness crab shells had hardened enough for harvest to begin.

Mature crab shed their exoskeletons each year in a process called molting, enabling them to grow a larger shell, which takes time to harden. The crustaceans are more vulnerable during the soft-shelled phase and contain a low quality of meat that can be mushy, watery or jelly-like.

Commercial crab fisheries don't open until 80 percent of the crab sampled have hard shells. Tribal fishermen return female and soft-shelled crabs to the water as part of sustainable crab management practices that allow for continued abundant harvest in the future.

"Buyers won't even take crab with soft shells because they don't have enough meat," said Rocky Brisbois,



K. Neumeyer

Tulalip tribal crabber Adam Cepa, left, and shellfish technician Rocky Brisbois lift a pot full of Dungeness crab to test for shell hardness.

Tulalip shellfish technician.

Brisbois and shellfish biologist Cathy Stanley, along with tribal crabber Adam Cepa, surveyed the Tulalip tribal harvest area every couple of weeks starting in April. They sampled crab from nearly 40 pots in separate surveys in Port Susan and the Everett area, squeezing each crab for soft spots

and measuring its width.

Last year's crab season began in early May, but this year, the surveys found the crab to be too soft to harvest until early June. Crab seasons vary from year to year. One reason for the late start this year could have been lower salinity and temperatures delaying the molt, Stanley said. — K. Neumeyer

## Hydrolab Transmits Data About Water Conditions

A solar-powered yellow buoy bobbing in the middle of Port Susan is collecting information that will help forecast migration conditions for Stillaguamish River chinook.

The Stillaguamish Tribe's Natural Resources Department deployed the buoy with the help of an Island Transporter barge in late March.

A large concrete block was lowered into the water to anchor the buoy. Divers ensured that the anchor was placed properly and did not impact any eelgrass beds.

The yellow buoy is an oceanographic hydrolab that will transmit real-time data about temperature, turbidity, salinity, chlorophyll and dissolved oxygen.

"We know these factors affect food resources in the estuary for out-migrating chinook smolts and migration conditions for returning adults," said Don Klopfer, a biologist for the tribe.

Stillaguamish chinook are among the most threatened salmon populations in Puget Sound. When state and tribal co-managers plan fishing seasons, Stillaguamish chinook are one of the runs they strive to protect.



K. Neumeyer

Stillaguamish biologists Charlotte Scofield, left, and Don Klopfer tie up to a buoy that monitors water conditions in Port Susan.

"Information we learn from this buoy in Port Susan will be combined with existing Puget Sound and North Pacific oceanographic data to further improve our forecasting model," said Shawn Yanity, Stillaguamish tribal chairman.

The buoy also will help document changes in saltwater acidity, which is a symptom of climate change, and monitor the effectiveness of marine habitat improvement projects. — K. Neumeyer

## Clams for Bait Dyed Blue

Shellfish beds near a sewage outfall might be contaminated, but there's no reason they can't be harvested.

This spring, Swinomish tribal members harvested clams for the first time near Monroe Landing on Whidbey Island. While not safe for human consumption, the shellfish can be used for crab bait. Any traces of bacteria ingested by the crab are destroyed when it is cooked.

The bait fishery allows tribal members to continue to exercise their treaty right to gather shellfish, even though water pollution has taken away the ability to eat one of their traditional foods.

At the end of each day of the bait fishery, tribal diggers brought their harvest to shellfish biologist Julie Barber and fisheries technician Dora Finkbonner, who dunked the bags of butter clams and cockles

in blue dye, like Easter eggs. The blue dye is required by the state Department of Health to let buyers know that the clams are not for eating. The buyer tags also are marked, "not for human consumption – bait use only." Tribal diggers either sold the bait or used it themselves.

Northwest tribes have a long history of living off the land and making the most of the region's natural resources.

"We've lost so much of our traditional gathering areas to development and habitat degradation," said Swinomish fisheries manager Lorraine Loomis. "I wanted to provide a harvest opportunity for fishermen who don't have boats."

– K. Neumeyer



K. Neumeyer (2)



Swinomish fisheries technician Dora Finkbonner dyes harvested clams blue, so buyers will know they are for bait, and are not safe to eat.

## Upper Skagit Tribe Enhances Tidelands for Harvest

The Upper Skagit Tribe is cultivating shellfish beds in Samish Bay to meet ceremonial needs, with the intention of expanding eventually into a multi-faceted shellfish growing operation.

The tribe acquired 80 acres of beds with money from a 2007 settlement between treaty tribes and non-tribal commercial shellfish growers. The settlement compensates tribes for lost opportunities to gather shellfish at traditional areas, enabling them to acquire and enhance tidelands elsewhere.

"We want to develop these beaches to provide resources for tribal members long after the settlement money is gone," said Scott Schuyler, Upper Skagit's natural resources director. "Our goal is to have a self-sustaining operation within the next five to 10 years."

So far, tribal natural resources staff has planted 20 acres with Pacific oysters and manila clams.

"We hope to branch out to grow other species, like geoducks," Schuyler said. "I'm proud of how much progress we've made with the site."

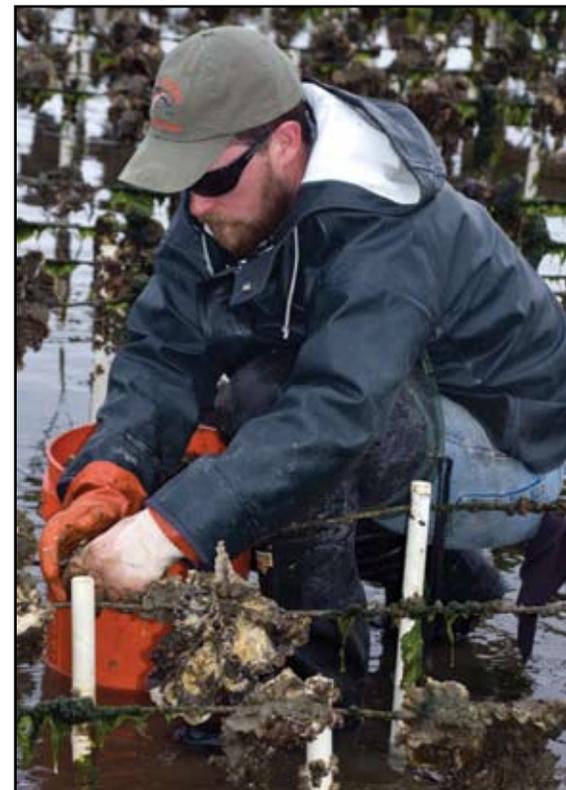
Oysters and clams from the tribe's beds were served at the Upper Skagit Blessing of the Fleet this spring. Future plans include developing a site near Larrabee State Park near the border between Skagit and Whatcom counties.

Shellfish harvest in Samish Bay frequently is closed because of potential fecal coliform pollution from stormwater runoff and nearby farms.

"Shellfish closures caused by water pollution violate our treaty right to gather shellfish," Schuyler said. "These continual closures are an issue that needs to be seriously addressed at all levels of government." – K. Neumeyer

Upper Skagit natural resources technician Tim Shelton harvests oysters in Samish Bay.

K. Neumeyer





D. Preston

## Seeking Marbled Murrelets

The pungent smell of wet earth permeates the forest in the early dawn hours near Neah Bay. A fine mist creates a slow drip of water from every leaf and needle as the first birds of dawn are heard.

Rob McCoy, wildlife division manager for the Makah Tribe, is listening for the distinctive “keer, keer” of the marbled murrelet, a robin-sized bird that spends most of its time at sea, but nests in old-growth trees up to 50 miles inland. It is listed as “threatened” under the Endangered Species Act.

The Makah Tribe has 555 acres of forest set aside for marbled murrelet habitat, as well as wilderness lands with suitable murrelet habitat. These lands are considered crucial to the bird’s continued survival on the Washington coast.

The acreage was paid for by a reparation fund established after the 1991 Tenyo Maru oil spill. An estimated 10 percent of the marbled murrelet population along the Washington coast died as a result of the 100,000 gallons of fuel oil that fouled the waters and beaches.

Rob McCoy, wildlife division manager for the Makah Tribe, scans the early morning sky for murrelet activity as part of a required seabird survey for any proposed timber sale that has suitable marbled murrelet habitat.

When timber sales with suitable marbled murrelet habitat are proposed on lands within the Makah reservation, McCoy surveys for nesting murrelets both in the proposed sale area and the area surrounding it.

“I survey for two years, with a set number of visits to a set number of stations within the proposed area,” McCoy said.

If McCoy detects a murrelet coming into the area, he must increase his number of surveys. The surveys are conducted for two hours beginning at dawn when both adult murrelets are bringing food to a lone chick. Murrelets are slow to reach sexual maturity and lay only one egg each year, usually in the fork of a large branch in an old-growth tree or using mistletoe growth on younger trees. Not all pairs, who usually mate for life, reproduce annually.

If a murrelet nest or activity indicating a nest is found in a proposed timber sale, harvest does not occur until surveys show no nesting activity. — D. Preston

## Enhancement Efforts Help Nooksack Elk Rebound



D. Preston

The Nooksack elk population is benefiting from tribal habitat restoration projects.

Two decades of tribal efforts to recover Nooksack elk are paying off, wildlife biologists noted during helicopter surveys this spring.

Biologists estimate that the herd is continuing to grow, with surveys showing roughly 800 to 850 elk in the Nooksack survey area. Twenty years ago, the Nooksack elk population was about 1,700 elk. Tribal and state wildlife managers agreed to stop hunting the herd in the 1990s, because of the population decline. But by 2003, the herd had declined to about 300 elk, largely because of degraded and disconnected habitat.

In addition to numerous restoration projects to improve elk forage, state and tribal co-managers boosted the Nooksack herd

in 2003 and 2005 by relocating about 100 cow elk to the North Cascades from the Mount St. Helens region.

One of the strongest signs that recovery efforts were working came in 2007, when tribal and state wildlife co-managers determined that the Nooksack herd was stable enough to support a small hunt of 30 elk.

Limited hunts have taken place each year since then. This year, non-tribal hunters and Point Elliott Treaty tribal hunters will have the opportunity to share the harvest of 40 bull elk. The Point Elliott Treaty tribes are Lummi, Nooksack, Muckleshoot, Sauk-Suiattle, Stillaguamish, Suquamish, Swinomish, Tulalip and Upper Skagit.

— K. Neumeyer

# Youth Collect Cedar for Elders

Sunlight filters through the forest as students from the Quileute Tribal School search for cedar trees suitable for harvesting bark. Cedar bark has been used for thousands of years by Northwest tribes for many purposes, including clothing and baskets.

Each spring, the students collect cedar for the Quileute tribal community to use in cultural projects throughout the year, such as making cedar hats and weaving baskets.

“We always do it around the time of Seniors Week,” said Arnold Black Jr., who works with the teens.

The entire Quileute community works to honor tribal elders during the

week. Elders show the young people how to make cedar items central to Quileute culture.

“The elders show the kids how to use it, how to treat it and the techniques they use,” Black said.

Only one-third of the tree’s bark is harvested at a time so the tree will continue to grow. After it is stripped from the tree, the rough outer bark is peeled away, leaving the smooth layer used in weaving. It is usually weathered for up to a year before being soaked in water overnight prior to use.

Commercial timberlands owner Rayonier has donated access to cedar stands on company land for a number of years. Quileute Natural Resources personnel coordinate the gathering. Elders in particular benefit from being able to drive to the harvest area.

“Rayonier has partnered with us for a number of years to give easier access to this important cultural resource,” said Frank Geyer, deputy natural resources director/TFW program manager for the Quileute Tribe. “The whole community benefits by participating in gathering and the students learn from the elders how to harvest and use it.” – D. Preston



D. Preston (2)

Above: Alexis Ward, left, and Sylvia Sheriff pull cedar bark from a tree as part of an annual gathering of bark for use by the Quileute community. Left: Mary Leitka, Hoh tribal member, packages cedar. Leitka brought family to the Rayonier lands to gather cedar.



Photo courtesy of the Quileute Tribe

## Generations

Nina Bright, Quileute tribal member, is pictured with some of her baskets in LaPush in a 1929 photograph that was part of a series taken of renowned Quileute basket makers at the time.

Baskets were used for trading and gathering. Weaving skills have been passed down through generations and are still practiced.

# Coastal Tribes Assist with Marine Mammal Strandings

Spring brings an expected increase in dead marine mammals washing ashore on tribal beaches.

Gray whales, porpoises, seals and sea lions are just a few of the mammals that wash up. Gray whales migrate north from Mexico to Alaska in the spring. They do not feed while wintering in Mexico, which leaves them in weak condition and makes strandings more common in the spring.

Two gray whales already have washed up on beaches south of the Quinault Indian Nation's reservation, as well as a porpoise and an elephant seal. While anywhere from two to 10 gray whales a year in Washington is a typical number of strandings, an increased number of porpoise strandings since 2006 in Oregon and Washington has researchers puzzled.

"There have already been a number of porpoise strandings on the central and southern Washington coasts this spring, and the peak season for harbor porpoise strandings doesn't usually start until summer," said Jessie Huggins, stranding coordinator for Cascadia Research Collective, an Olympia-based non-profit marine

mammal research and education center.

Huggins said no single disease or environmental factor has been found to explain the trend, but researchers are still investigating.

Tribes have long noted the patterns of die-offs as ways to know when ocean conditions may be poor for harvesting shellfish or other seafood.

Tribal interest in marine mammal health has led the Makah Tribe to develop its own marine mammal stranding network. Other tribes actively support and contribute to marine mammal stranding response.

An elephant seal, still clinging to life, was found by Quinault Indian Nation (QIN) razor clam harvesters recently. Scott Mazzone, marine fish and shellfish biologist for QIN, alerted Cascadia staff, who were in the area.

"We loaded it up on a stretcher and they took it with them in hopes of rehabilitating it," Mazzone said.

"Tribes have been quite helpful with notifying us of strandings both on and off reservation," Huggins said. "They escort us when necessary and get dirty with



D. Preston

A dead gray whale lies on the beach near the Quinault Indian Nation's Resort and Casino near Ocean Shores.

us when there is a large whale exam that needs to be done."

Speed is important because decomposition and predation occur quickly and can obscure clues to the cause of death.

"The quicker we get reports and can recover animals, the better information we get for disease screening, human interaction, food habits, genetics and contaminants," she added. — D. Preston



D. Preston

## Dinner For One

An eagle and a crow compete for a porpoise carcass on Grenville Beach, south of Taholah. More than eight eagles were vying for the remains.