



*Northwest Indian Fisheries Commission*

# NWIFC News

Fall 2011  
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# Big Thanks to Lower Elwha

By Billy Frank Jr.  
NWIFC Chairman

We all owe a big “thank you” to the Lower Elwha Klallam Tribe. They never gave up on getting those two dams torn down, and today that dream is becoming a reality. For 100 years they have had to wait for their treaty rights to be restored and for the salmon to return.

The salmon never gave up either. At a recent dam removal celebration, I saw 73 chinook swimming in the clear green water at the foot of the Elwha Dam, ready and waiting. And it won't be long before the river's estuary comes back to life, too, with clams spitting all over the place.

This is a great day for the Elwha people. All of those who have gone before us, they're looking down on the Elwha, too, and they are witnessing what is happening. And they are smiling.

“Economic engine,” “long-term economic growth” and “investment in the future” are some of the words folks have used to describe the benefits of the dam removal project. And they're right.

The Olympic Peninsula has struggled for years as its fishing and timber-based jobs have disappeared. But removal of the Elwha River dams is changing that. Hope is replacing fear, jobs are being created and more will be coming in the long term. More than 3 million people visit Olympic National Park every year, and that number will only increase as the river is restored.

These things tell us that we can conserve our natural resources and create



jobs, that healthy salmon runs and a healthy economy can go hand-in-hand.

The dam removal celebration was really a celebration of treaty rights. For a century the two dams built without fish ladders denied the Lower Elwha Klallam Tribe its treaty-reserved right to harvest salmon, a fundamental part of tribal culture, communities and economies.

The Lower Elwha Klallam people have put their treaty rights to work, restoring the Elwha for all of us, Indian and non-Indian. Their name means “strong people,” and you damn well better believe they're strong. It's the kind of strength we all need on our journey to recover the salmon.

That's because there are many more Elwha dams out there. They might not look the same, and they might go by other names, like floodplain development, shoreline armoring and nonpoint pollution, but they are just as deadly to salmon. And like the Elwha dams, they're just as effective at denying all of us healthy salmon runs, a healthy environment and a healthy economy. We all need to make sure that no more dams get in the salmon's way.

## NWIFC News

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**On the cover:** NOAA Fisheries research biologist Kinsey Frick and Lower Elwha Klallam Tribe project biologist Ray Moses release one of 20 chinook salmon for the first time in nearly 100 years above the Glines Canyon dam. The chinook were outfitted with radio-transmitter tags before being released so biologists can track their migration patterns. *D. Preston*

# Freeing the Elwha: Celebrating Dam Removal



National Park Service Director Jon Jarvis celebrates the start of dam removal with Lower Elwha Klallam Tribe river restoration director Rob Elofson and tribal chairwoman Frances Charles.

The thunderous beat of drums in the tribal gym sounded louder than usual: the beat harder, the men’s voices deeper, the women’s voices louder and the smiles bigger during the Lower Elwha Klallam Tribe’s dam removal celebration Sept. 17.

For nearly 100 years, the tribe has waited to celebrate the demolition of the Elwha River’s two fish-blocking dams, which have violated the tribe’s treaty rights since they were constructed in the early 20th century. The dams blocked all but the lower 5 miles of the river, devastating salmon populations.

Prior to dam removal, a week of celebration included storytelling, drumming, a fundraising gala for the tribe’s education program, interviews with elders and a two-day conference on river restoration efforts with scientists from all over the world.

“We’re numb. We’re excited. We’re enthused,” said tribal chairwoman Frances Charles on the eve of the Elwha Dam demolition. “There are no words for how we’re going to be feeling when we see that machine rock and roll and take that brick out of the dam. Our elders are going to be so joyful with what is taking place out there. They’re saying they just can’t believe we’re able to witness what is going to be taking place tomorrow.”

“I feel sorry that my ancestors and grandparents aren’t here to see the dams removed,” said elder Adeline Smith. “That’s the only sorrow I have. I wish they were

here to see it.”

“My grandma and grandpa lived on the river,” said tribal member Byron Bennett, wearing a black shirt with the words, “It’s About Dam Time 9-17-11.” “Grandpa was one of the original signees of the reservation. He grew up on the river and was a proponent for dam removal.”

As the excavator tore into the Elwha Dam Sept. 17, Bennett said he was thinking of his dad and grandfather.

“The river is going to be given a second chance to restore itself,” Bennett said. “With this project and Mother Nature running her course, we will turn the river back. We are essentially turning the clock back 99 years on this project.” – T. Royal



Adeline Smith

D. Preston (3)



Jordan Saluskin, 2, performs with the Lower Elwha Klallam singers and drummers at the dam removal ceremony Sept. 17.

## By The Numbers: Elwha River Dam Removal

**20 Chinook Salmon**  
Released into the upper Elwha watershed this fall for the first time in nearly 100 years

**66 River Restoration Projects**  
Presented at the Elwha River Science Symposium

**19 Eagles**  
Flew over the ceremony on Sept. 17 at Elwha Dam

**24 Million**  
Cubic yards of sediment that will be removed by truck and/or flown down river

**19 Years**  
Since the Elwha River Ecosystem and Fisheries Restoration Act of 1992 was passed by Congress

**18 Tribal Councils**  
Since river restoration started

**\$325 Million**  
Estimated cost of entire river restoration project

## Scientists Gather for River Restoration Conference

More than 300 scientists gathered at Peninsula College in Port Angeles for the Elwha River Science Symposium during a week of activities marking removal of the Elwha River dams. Researchers have been meeting for the past several years to share their progress on the many projects related to the river’s restoration.

Nearly 70 presentations were made on topics that included river and nearshore habitat restoration, wildlife migration patterns, and how 24 million cubic yards of sediment in the river’s reservoirs are going to be managed.

Recaps of some of the presentations can be found at [blogs.nwifc.org/elwha](http://blogs.nwifc.org/elwha).

# No Rest During Dam Removal

Preparing the Elwha River valley for removal of its two dams requires exploring every aspect of river restoration. Recently, the tribe has been watching riverbeds emerge following the drawdown of the dams' reservoirs. The tribe also has set up equipment near the river's mouth to measure sediment that will flow down the river during and after dam removal.



T. Royal

Lower Elwha Klallam Tribe project biologist Rebecca Pradis and tribal environmental quality technician Daniel Bennett test a sediment measuring tool in the Elwha River estuary.

## Behind the Reservoirs

For the first time in nearly a century, the manmade reservoirs behind the Elwha River's two fish-blocking dams are starting to look like riverbeds.

The Aldwell and Mills reservoirs were lowered 20 feet this summer in advance of the removal of the 108-foot-tall Elwha and 210-foot-tall Glines Canyon dams.

"The deltas of the Aldwell and Mills reservoirs are exposed and new river channels are forming," said Mike McHenry, the tribe's fisheries habitat manager. "Reservoir shorelines that have been underwater for decades are finally being exposed, revealing old sandbars and stumps from logging."

A top priority of the reservoir restoration project is to prevent invasive plant species from entering Olympic National Park, McHenry said. More than 150 exotic species have been identified within the Lower Elwha watershed. As the dams are removed, the tribe and the park service will remove invasive species, such as Scotch broom, St. John's Wort and canary grass, found on the reservoirs' shorelines.

Within the two reservoirs, restoration crews will seed 261 acres and plant native vegetation on 440 acres including dogwood, cottonwood, willow, alder and Douglas fir.

## Measuring Sediment

As the dams come down, the tribe will monitor how a portion of 24 million cubic yards of built-up sediment will affect the river's estuaries at its mouth.

For the past century, sediment has built up behind the river's two dams. As the dams are deconstructed the next few years, much of that sediment will come down the river.

"We know a lot of sediment will be deposited within the streambed of the lower river but we don't know how much will be deposited in the estuary and how it will change," said Matt Beirne, the tribe's environmental coordinator.

Estuaries are important for salmon because they provide a place for salmon to hide from predators and to feed and grow before heading to sea.

The tribe has set up 15 sediment monitoring locations throughout the 50-acre estuary. Using a specialized measuring device called a Surface Elevation Table (SET), the tribe will determine at regular intervals how much sediment is building up throughout the estuary. The SET uses fiberglass pins to measure the change in height of the deposited sediment. — T. Royal

# Logs Restore River Habitat

With the help of a heavy-lift helicopter, the Lower Elwha Klallam Tribe placed 140 trees in a 1-mile stretch of the Twin River watershed recently to create better habitat for salmon.

"Many watersheds on the Olympic Peninsula have been affected by historic logging practices in the last century, as well as forest fires, both of which removed stream-side vegetation and simplified fish habitat," said Mike McHenry, the tribe's habitat biologist.

The helicopter placed trees as large as 50 feet long and 30 inches in diameter, and weighing up to 10,000 pounds.

Some of the trees had large rootwads, which act like an anchor in the creek. The rootwad helps slow down the water to create shallow pools where fish rest and feed. They also help create gravel beds suitable for salmon to spawn and create redds, or salmon egg nests.

The Twin River watershed is home to coho and chum salmon, cutthroat trout and coastal steelhead. — T. Royal



T. Royal

Helicopter crew member Stephen Johnson helps direct a log into East Twin Creek.

# Final Dikes Removed in Nisqually Estuary

The Nisqually Indian Tribe removed more than a mile of dike along the Nisqually River this summer, allowing it to migrate naturally for the first time in a century.

Removing 6,670 feet of dike is the last major restoration project in the Nisqually estuary and caps more than decade of estuary restoration. Since 1999, the tribe and the Nisqually National Wildlife Refuge have removed more than 10,000 feet of dikes and restored more than 800 acres of estuary.

Because this is the last dike coming down along the river, the mouth of the Nisqually may choose to move at some point.

“Historically, the river was able to move across its wide floodplain at the mouth,” said Florian Leischner, salmon restoration biologist for the tribe. “But for the past century, it’s been held in one path by the dikes.”

In addition to removing the dikes, the tribe also will reconnect at least three tidal channels.

“These channels are vital to salmon survival in the early part of their life cycle,” Leischner said. The newly restored estuary is giving juvenile salmon from throughout Puget Sound a place to feed and grow before they migrate to the open ocean.

“We’ve been tracking a lot of benefits for salmon in the estuary since it has been restored,” said David Troutt, natural resources director for the tribe. “Our studies show that the young salmon are benefiting. The salmon that are coming into the estuary are finding the food they need here.”

“Restored habitat means more salmon will return to



E. O'Connell

Florian Leischner, biologist with the Nisqually Tribe, observes a dike being removed from the Nisqually River estuary.

the Nisqually,” said Georgianna Kautz, natural resources manager for the Nisqually Tribe. “The right to harvest salmon that the tribe reserved in our treaty is meaningless if we don’t have salmon to harvest and the habitat to support them.” – E. O’Connell

## Weir Separates Chinook Salmon Returning to Watershed



E. O'Connell

Jon Sharp, of Sharp Brothers Construction and a Nisqually tribal member, puts together the first set of panels as part of a new weir on the Nisqually River.

The Nisqually Indian Tribe will boost salmon productivity by using a weir to sort hatchery salmon from naturally spawning chinook migrating upriver.

“In the past 10 years, the Nisqually watershed has seen the largest increase of salmon

habitat in Puget Sound,” said David Troutt, natural resources director for the tribe. “By removing hatchery fish from the spawning grounds, we can develop a locally adapted, naturally spawning chinook stock to take advantage of that habitat.”

Since the 1960s, when the native Nisqually chinook were killed off by indiscriminate hatchery plantings, hydroelectric practices and overharvest, all chinook returning to the Nisqually (both hatchery and natural origin) have descended from an imported stock.

“Given the history of chinook salmon in the Nisqually, restoring habitat is absolutely necessary before you start worrying about the mix between hatchery and natural origin on the spawning grounds,” Troutt said. “To develop a local stock, we need to be sure that only natural origin fish are spawning in the river. That is where the weir comes in.”

Tribal staff will sort chinook by whether they have an adipose fin. Wild fish have adipose fins and hatchery fish are clipped before release. The river-spanning weir, located on the Fort Lewis military reservation, will operate when chinook salmon are in the river. – E. O’Connell

# Gray Whale Offers Educational Opportunity

The Suquamish Tribe acquired a 30-foot-long dead gray whale this summer that will be used for educational purposes.

“We saw this as a great opportunity for the tribe,” said Rob Purser, Suquamish’s fisheries director. “Historically, tribes would trade parts of the whale with each other, since not all tribes had access to them within their fishing areas. Tribal members would use every part of the animal, including fat for cooking and bones for tools. Today, the younger generation seems attracted to whales, so there is a lot of interest in this mammal.”

The whale beached itself on private tidelands on Erlands Point near Silverdale July 27. The property owner said it was alive when it came ashore that morning but died shortly thereafter. The cause of death is unknown.

Biologists from the Washington Department of Fish and Wildlife, Cascadia Research and the National Oceanic and Atmospheric Administration (NOAA) gathered samples from the emaciated young male, determining it to be about 3-5 years old. NOAA then asked the tribe if it would be interested in taking possession of the whale



T. Royal

Suquamish fisheries staff Ben Purser, Jay Zischke and Ron Harrell work from a skiff to wrap the whale in a net so it can be towed.

and using its skeleton for educational purposes.

In August, staff from the tribe’s fisheries department wrapped the whale in nets and slowly towed it from the private beach to a location near the Port Madison Indian

Reservation.

The whale was left in the water to decompose over the next three to six months with the help of crab and other marine animals; the tribe will then assemble the bones for display. — T. Royal



D. Preston

## Marine Fish Die-Off Hits Quinault

Several hundred fish have again washed up on Quinault Indian Nation (QIN) beaches following a low oxygen event off the coast of Washington.

Bottom-dwelling wolf eels, cabezon and crab washed up at Point Grenville near Taholah in the first part of September when low levels of oxygen were recorded by the Center for Coastal Margin and Observation in cooperation with QIN.

“It was a smaller event than in 2006,” said Scott Mazzone, QIN marine and shellfish biologist. “It seems it’s just going to be a part of living on the coast now.” Twice in July of 2006, large numbers of shallow bottom-dwelling fish washed up on QIN beaches and south to Ocean Shores because of low oxygen levels.

The dead zone of low oxygen water is created by a natural upwelling of dense, oxygen-poor but nutrient-rich water that supports the marine food chain.

“When the north winds get interrupted for a while, it stops mixing out at sea and

drives the low oxygen water to shore, chasing these bottom-dwelling fish toward the beach until they run out of room,” Mazzone said. Wolf eels and ling cod typically live at depths of 100 feet or less and are not adapted to low oxygen levels like deeper-water species.

“We have the additional tool this time of the research glider that was recording those low oxygen levels ranging from Grays Harbor north along our coast,” said Joe Schumacker, the tribe’s marine resources scientist. “We need to research it more, but just doing some checking with elders and some of our fishermen, there aren’t any stories about this particular kind of event before 2006. Currents and winds that have been the same for decades may be changing.”

QIN has advocated for additional monitoring tools off the coast and is working closely with the National Science Foundation to place a monitoring buoy south of Taholah. — D. Preston

Wolf eels, like this one, and other bottom-dwelling fish washed up on the beaches of the Quinault Indian Nation reservation recently during several low oxygen events that have killed treaty resources important to the tribe.

# Paddle to Swinomish

More than 100 canoes arrived on the shores of the Swinomish reservation July 25 for the annual Tribal Canoe Journey. The tribe welcomed canoe families from all over the Pacific Northwest and British Columbia, plus Hawaii and New Zealand.

Below: Tribal members Bryson King and Willie Hatch, donning traditional masks, prepare to ask permission for the Quileute Tribe canoe family to come ashore.

Right: A canoe family paddles past Swadabs Landing on the Swinomish Reservation. The canoe landing is part of a new community beach and salmon habitat restoration project, completed in time for the Tribal Canoe Journey. It features three pavilions shaped like traditional cedar hats.



T. Royal



D. Preston

# Swinomish Turning Contaminated Land into Open Space

The Swinomish Tribe is cleaning up a former lime storage area by removing about 280 cubic yards of contaminated soil and 100 creosote wood pilings.

The contaminated site is adjacent to the Swinomish Channel near the mouth of Padilla Bay. When the channel was created in the 1930s, the U.S. Army Corps of Engineers dumped dredge spoils on the Swinomish Reservation, converting an intertidal area of mudflats and marshes into uplands.

The area was leased by a non-tribal member from 1964 to 1989 when it was used to store lime and other products for agricultural use. The storage building was demolished in 2003, but a concrete slab, debris and a burn pile remain.

Contamination at the site includes bioaccumulative toxins that could end up in marine waters through surface water runoff into the Swinomish Channel.

The tribe intends to restore open space on the site, which is near the Swinomish casino, gas station, RV park, and a hotel under construction.

“Our economic development area is blighted by the debris at the lime storage site,” said tribal Chairman Brian Cladoosby. “We need to remove the debris and contaminated soil to make the area safer for everyone. It’s a step toward undoing decades of environmental degradation.” – K. Neumeyer



K. Neumeyer

Old creosote pilings contaminate marine waters and sediment. The Swinomish Tribe plans to remove 100 degraded pilings from the mouth of Padilla Bay.

# Rediscovering Old Ways

Tulalip tribal leaders have dreamed for decades of a museum to preserve and pass down their culture. One phase of that dream came true in August, with the opening of the 23,000-square-foot Hibulb Cultural Center building.

In the museum, a traditional dugout canoe lines a hallway that leads to interactive exhibits, a model longhouse, research library, classrooms and gift shop. Hibulb features certified collections and an archaeological repository, entrusted with the responsibility to manage historic tribal artifacts discovered throughout Puget Sound.

However, teaching traditional life ways can't happen entirely indoors, so Tulalip also is working on a 50-acre natural history preserve next to the museum. The forested area will be enhanced with native plants, pathways, viewing areas and tribal sculptures.

"The Hibulb Natural History Preserve will be a place for community rediscovery," said Hank Gobin, Tulalip cultural resource manager. "The preserve will continue to promote respect and an understanding of our environment through prayer and only taking from nature what is needed, with as little damage to the environment as possible."

While it will be many years before the nature preserve is complete, the tribe's Re-Discovery summer youth program already is using it to teach traditional gathering methods. In late July, program coordinator Inez Bill showed Jess Moses how to harvest the leaves of fireweed for tea, without harming the flower.

"We don't uproot the plants, because we want them to come back," Bill said.

A key benefit of the nature preserve is that it allows tribal members to teach youth about traditional foods and medicinal uses of plants, Gobin said.



K. Neumeyer

Re-Discovery student Joyce Bagley sorts jars of traditional plants that she helped gather during the summer youth program.

"Our diets have changed over the past 500 years, which has adversely affected our people," he said. "Doctors tell us if we go back to our natural diet, our health will improve." – K. Neumeyer



Hibulb Cultural Center, Tulalip Tribes

## Generations

This rare picture from 1915 features two sisters of Snohomish Tribal Chief Schiamkin. On the left is Sally, whose Snohomish dialect name was pronounced "TJEL-tzah," meaning "bow on dress." On the right is Amanda, whose Snohomish name "TSEES-oh-lahs" means "canoe going along." Between them is their friend "Ad-ZOO-leetza," meaning "clean dress."

The Tulalip Tribes are the successors in interest to the Snohomish, Snoqualmie and Skykomish tribes.

# Skokomish Tribe Receives Cushman Settlement



T. Royal

Skokomish Tribe natural resources director Joseph Pavel speaks to a crowd during the recent land transfer celebration.

The Skokomish Tribe celebrated the transfer of 1,000 acres of waterfront land into tribal ownership recently as part of the Cushman Hydroelectric Project license settlement.

The land transfer was the result of nearly 40 years of negotiations between the tribe and city of Tacoma over the relicensing of the two Cushman Dams on the North Fork of the Skokomish River. During a celebration on Lake Cushman Sept. 9, Skokomish Tribal Chairman Guy Miller signed the

deeds to several parcels of land.

The tribe received more than 500 acres at the mouth of the Skokomish River, where the tribe has been restoring the tidal estuary; nearly 3 acres of land at Saltwater Park with more than 470 feet of shoreline on Hood Canal; and more than 500 acres of land along Lake Cushman that contains significant tribal cultural sites.

In addition to an \$11 million payment, the tribe also will receive 7.25 percent of the value of electric production from the Cushman No. 2 powerhouse. Additionally, as part of the license conditions, Tacoma Power will install a new generator, construct a fish passage facility and operate the dams until 2048.

“We’ve all worked long and hard to reach a consensus on how to operate the project, mitigating and taking into consideration the natural resources and the tribe’s spiritual and cultural concerns,” said Joseph Pavel, the tribe’s natural resources director. “These are the conditions that both parties could agree upon.”

The two dams were built on the North Fork 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’s 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

## *Lummi Nation Seeks to Keep Fishermen in the Industry*

Fishing is a seasonal career.

With many salmon runs on the decline, tribal fishermen are finding it harder than ever to make ends meet all year long. Even when salmon returns are plentiful, commercial fishermen who make a lot of money during part of the year might have no income at all after the season ends.

The Lummi Fishers Project is helping tribal members develop skills and business plans that allow them to remain in the fishing industry and still earn a living.

“We’re not training them out of the industry,” said Elden Hillaire, chairman of the Lummi Nation Fisheries Commission. “Our fishermen are always going to be fishermen.”

With the help of a \$3.4 million U.S. Department of Labor grant, Lummi Fishers works individually with commercial fishermen to match them with training and careers that are linked to their existing skills.

Lummi purse seiner *Oceanaire* fishes for sockeye near Point Roberts. The Lummi Fishers Project is helping fishermen earn a living even when the season is closed.

For example, some tribal members are training at Skagit Valley College’s Marine Manufacturing and Technology Center to get certified in all phases of boat building.

“A lot of our guys are interested in boat building,” said Kathy Pierre, project director for Lummi Fishers. “That’s the skill set they already have, but they just might not be certified. Gaining the certification opens up a whole set of doors to other jobs.”

Others have been trained to participate in the commercial squid, sardine and herring industries in Alaska, California and Oregon. They’ve acquired new skills such as hanging different nets, working with hydraulics and repairing boats.

An ideal example is a diver who also is a welder by trade, Pierre said. He is training in underwater welding, which will make him employable all year long. – K. Neumeyer



K. Neumeyer



D. Preston

Quinault Indian Nation fisheries technicians conduct their annual survey of Kalaloch Beach with the assistance of Hoh tribal fisheries technicians, including Mario Reyes, shown recording clam sizes before returning them to the beach.

## QIN Expects Good Razor Clam Season

Razor clam populations are a mixed bag on beaches from Copalis to Kalaloch, according to an annual survey by the Quinault Indian Nation (QIN) and Washington Department of Fish and Wildlife. Some beaches had fewer clams available for harvest; others had more.

QIN and the state set a harvest rate of 25.4 percent of the population for clams 3 inches or larger, leaving 75 percent of

the clams to reproduce and increase the population. Harvest is split evenly between tribal and state diggers.

Razor clams are important culturally and economically to QIN. Commercial harvest on beaches south of Kalaloch is processed as clam steaks by QIN or sold as bait.

“While numbers are down a little on Kalaloch this year, they are actually better than they

were in 2006 or 2007,” said Scott Mazzone, QIN marine and shellfish biologist.

A razor-clam specific disease, Nuclear Inclusion X (NIX) is likely not affecting clam populations this year.

“While we believe NIX is present at low levels in some of the clams on our beaches, it isn’t killing clams like it does when we have outbreaks,” said Joe Schumacker, marine resources

scientist for QIN. A NIX outbreak can wipe out nearly all of the razor clams on a beach. “You see half-dead and dead clams all over the beach during an outbreak,” Schumacker said.

The disease does not affect humans who eat clams. The last severe outbreak occurred in the 1980s. – D. Preston

## Toxin Closes Sequim Bay Shellfish Beds for a Month

The Jamestown S’Klallam Tribe took an economic hit recently when shellfish harvesters were forced off the beaches by diarrhetic shellfish poisoning (DSP) in Sequim Bay.

DSP was found in high concentrations only in mussels, but the tribe recalled all harvested shellfish from August and shut down tribal harvesting to be on the safe side.

“This was the first time DSP showed up in harmful levels in the United States,” said Kelly

Toy, the tribe’s shellfish program manager. “Fortunately, bloom season is nearly over.”

The biotoxin was discovered when a Seattle family reported getting sick in June after eating mussels harvested from Sequim Bay State Park.

Shellfish tissue samples take more than a week to be tested because the state Department of Health doesn’t have the equipment to test for DSP; Samples have to be sent out of state.

– T. Royal

### Fast Facts: DSP

- Diarrhetic shellfish poisoning is caused by a toxin produced by an algae called *Dinophysis*, commonly found around Sequim Bay and Puget Sound.
- Before now, the toxin has been detected in non-harmful amounts.
- A combination of higher temperatures, sunlight and nutrient-rich waters may have enabled the algae to bloom and reach more toxic levels.



Dawn Moran, Woods Hole Oceanographic Institution

- DSP in people can cause symptoms including diarrhea, nausea, vomiting, abdominal cramps and chills.
- Cooking or freezing the shellfish does not kill the DSP toxin.

# Puyallup Saves Redds by Returning Creek to Channel

The Puyallup Tribe of Indians has improved habitat for chinook and steelhead eggs by rerouting the lower portion of Boise Creek into a restored channel.

During a flood last April, Boise Creek split its flow between a newly restored channel and a former channel. Once the storm subsided, water levels became dangerously low in both.

“Unfortunately, there isn’t

enough water for salmon when the two channels try to share the same low flow,” said Russ Ladley, resource protection manager for the tribe.

Five steelhead redds (egg nests) were dewatered completely when the creek’s flow was split.

“We came back out after the high water to see what happened to those redds,” Ladley said “By the time we got out

there, the eggs were dead.”

Tribal staff built and maintained a temporary dike during the summer, forcing the main flow of the creek back into the new channel.

When flows began to drop, tribal staff monitored the lower end of the creek before it joins the White River. Temporary shading was installed by King County staff to control water temperature. The county is con-

sidering filling in the former channel, permanently blocking the creek from rerouting again.

Boise Creek has one of the highest densities of steelhead and chinook spawning in the entire watershed.

“It is vital for salmon to have good habitat where they can spawn and rear,” Ladley said.

– E. O’Connell



E. O’Connell

Eric Marks, a fisheries biologist with the Puyallup Tribe of Indians, shores up a temporary dike built by tribal staff to protect salmon on Boise Creek.

## *Muckleshoot Eyes Pools that Keep Salmon Cool*



E. O’Connell

Patrick Reynolds, left, and Martin Fox, Muckleshoot biologists, survey a pool on the Green River in Auburn.

Biologists working for the Muckleshoot Indian Tribe are taking a close look at pools in the lower Green River to help protect them for spawning salmon and steelhead.

Pool habitat is rare in the Green River, which has been degraded by levee modifications and bank stabilization projects.

More levee and bank work is planned by local governments and the U.S. Army Corps of Engineers in the next decade. Tribal staff want to survey and map the remaining pools and gain a better understanding of how salmon use them.

“Because there are almost no trees along the Green River where there are dikes and levees, potentially one of the only ways adult fish can find cool water is in these

deep pools,” said Martin Fox, habitat biologist for the Muckleshoot Tribe.

Last year, the tribe’s fisheries staff measured and mapped the pools using ocean depth sounding. This summer they looked at physical factors such as temperature, water velocity, instream cover, and where fish are hanging out.

Temperature is a vital factor in the health of returning salmon. Warm water forces adult salmon to expend more energy as they migrate upriver. If they can’t find deep, cool pools, they could die before spawning.

The areas being surveyed are near where local governments are proposing to rebuild existing levees. – E. O’Connell

# Adding Gravel Improves Spawning Habitat

The Squaxin Island Tribe has added tons of gravel to Little Skookum Creek, near Kamilche, to help spawning and rearing salmon.

“Skookum Creek lacks the kind of gravel that salmon need to spawn,” said John Konovsky, environmental program manager for the tribe. The creek likely is starved for gravel because it is cut off from hills on the north side of the watershed – a prime source of rock – by a railroad that runs the length of the creek valley.

“Several small streams that had carried gravel to the main channel can’t now because the culverts under the railroad bed are too small,” Konovsky said.

The natural production of the creek can be restored temporarily with gravel brought in from other sources.

The tribe dumped the gravel along the banks of Skookum Creek last year and is tracking progress as it spreads throughout the streambed. The most immediate impact of the additional gravel has been more room for migrating salmon to



E. O’Connell

Scott Steltzner, a habitat biologist with the Squaxin Island Tribe, inspects gravel that is supplementing salmon habitat on Skookum Creek.

spawn.

“We should see the benefits as soon as salmon make their way into the creek,” said Scott Steltzner, tribal habitat biologist.

In addition to adding material where salmon can spawn, gravel also cools the stream.

The past few years, the

Squaxin Tribe has built dozens of logjams along Little Skookum Creek that are helping to create more habitat for adult and juvenile salmon.

“The wood structures built along the creek provide shade and places to hide and feed,” Konovsky said. “Normally they would also help catch gravel

and maintain gravel beds, but the lack of rock in Little Skookum Creek hampered natural accumulation.”

Salmon populations in south Puget Sound are far smaller than historical levels, in part because of damage to stream habitat. – E. O’Connell

## Judge Rules for Tribe in Water Withdrawal Appeal

Thurston County Superior Court ruled in favor of an effort by the Squaxin Island Tribe to protect the Johns Creek basin.

The Squaxin Tribe filed suit last year asking the state to impose a moratorium on drilling new wells until the state determines whether water is available legally to supply those wells.

Judge Paula Casey ruled that the state’s inaction was “arbitrary and capricious.”

“We’re elated that the court took a step to protect Johns Creek,” said Andy Whitener, the tribe’s natural resources director. “But our mission will not be accomplished until state agencies take concrete actions to increase stream flow and benefit salmon.”

The tribe petitioned the state Department of Ecology twice in two years to stop new water withdrawals in the Johns Creek basin until enough scientific information is avail-

able to quantify the environmental impacts of pumping water out of those newly drilled wells. The state rejected both requests, citing budget constraints.

“Every year since record keeping began in the 1950s, Johns Creek has had less and less water, and in every one of those years, more wells have been drilled in the basin,” Whitener said.

The state set minimum flows in 1984, but since then more than 200 “permit-exempt” wells have been drilled in the Johns Creek basin. The state allows these wells to be drilled without obtaining a permit first and to withdraw up to 5,000 gallons a day.

“While we seek cooperation first in all of our natural resources management efforts, there are times when we must go to court to protect our culture and treaty rights,” Whitener said. – E. O’Connell

### Fast Facts: Johns Creek

- There is solid evidence that Johns Creek and its groundwater are highly interconnected, largely because the creek is located on deep glacial outwash.
- Johns Creek is fed mostly by groundwater.
- An alternative water supply is available from the city of Shelton via a soon-to-be completed water pipeline constructed by the local public utility district.

# Tribe Maps Eelgrass Beds With Video

The Jamestown S’Klallam Tribe hopes that trolling an underwater video camera in Sequim Bay will help reveal the health of the bay’s eelgrass and its habitat.

The camera, attached to the bottom of a research vessel, *Brandon’D II*, is lowered into the water until it hovers just a few inches above the bay floor. The boat then trolls the bay, recording everything in view.

Marine Resources Consultants, the company conducting the survey, will later analyze the video, later mapping where eelgrass and seaweed are present, along with other parameters that will provide a baseline that can be used to detect changes over time.

“The idea with the underwater survey is to see what’s here now, how eelgrass and seaweed may be impacted over time, and what steps may need to be taken if we see problems,” said

Lohna O’Rourke, the tribe’s environmental biologist.

Juvenile salmon depend on eelgrass as a place to feed and hide from predators as they make their way to the ocean.

Eelgrass habitat is affected by upland activities such as leaky septic systems and lawn fertilizers. An excess of nutrients in the water can cause algae blooms, which shade eelgrass and prevent growth. When the blooms die off, they are decomposed by bacteria that consume oxygen in the process. Fish and shellfish need oxygen to survive. If they can’t escape the low dissolved oxygen areas, they die.

This project is an important part of the tribe’s Sequim Bay water quality monitoring project. Since 2009, the tribe has been monitoring nitrogen and phosphorus levels, nutrients that promote marine plant growth. – *T. Royal*

Jamestown S’Klallam environmental biologist Lohna O’Rourke records images of eelgrass taken by an underwater camera.

*T. Royal*



*T. Royal*

Port Gamble S’Klallam habitat biologist Hans Daubenberger lowers a SONAR device into Port Gamble Bay.

## *SONAR Fills Gaps in Nearshore Survey*

The Port Gamble S’Klallam Tribe is using a torpedo-shaped SONAR device to assess the nearshore environment in Hood Canal and Admiralty Inlet.

The purpose of the study is three-fold – to prioritize nearshore habitat restoration projects; to determine where species are living throughout Puget Sound waters; and to learn more about habitat conditions in the nearshore environment.

Since May, the tribe has been beach seining, tow-netting and using the underwater SONAR device weekly to gather information about the size and population of fish found in the top 15 feet of the water column. That includes species such as chinook, coho, steelhead, cutthroat and herring. Puget Sound chinook and steelhead are listed as “threatened” under the federal Endangered Species Act.

“Beach seining and tow-netting help get a snapshot of what’s out there, but those tools miss the wide open areas that the SONAR can cover,” said Hans Daubenberger, the tribe’s habitat biologist. “It gathers tons of that information – such as the depth the fish are swimming – without hurting the fish.”

The “torpedo” is towed behind a boat through sampling areas and beams sound waves that capture images of fish that swim past. The SONAR information will be correlated with data from beach seining and tow-netting to create a comprehensive database of fish distribution, abundance and health conditions throughout Hood Canal and Admiralty Inlet.

Funding for the project comes from the Pacific Coastal Salmon Recovery Fund and Puget Sound Partnership.

– *T. Royal*



Chinook salmon are raised at the Stillaguamish Tribe's hatchery.



Carlín McAuley of Manchester Research Station ultrasounds a chinook salmon with Stillaguamish biologist Charlotte Scofield to determine if it has matured and is ready to spawn.

K. Neumeyer (2)

## Broodstock Raised to Save Threatened Chinook

The Stillaguamish Tribe's captive juvenile fall chinook soon will have a new home. The tribe has converted an old trout farm into a hatchery facility at Brenner Creek on the South Fork Stillaguamish River.

The tribe expects the Brenner fish hatchery to be completed by the end of the year. The tribe has been rearing the fall juvenile chinook from the brood years between 2008 and 2010 at its Harvey Creek Hatchery.

Fall chinook, which mostly rear and spawn in the South Fork Stillaguamish, are geneti-

cally distinct from summer chinook, which primarily use the North Fork. A hatchery program has been in place in the North Fork for more than 20 years, with about 1,500 summer chinook returning each year.

Stillaguamish fall chinook by comparison have declined to fewer than 100 fish – so few that there aren't enough adult chinook in the South Fork to capture and use for broodstock.

For three years, tribal natural resources staff have been seining for juvenile fall chinook, which they raise in small com-

partments, called "fish condos," until they are large enough to move to a larger space.

In August, fisheries biologist Carlín McAuley from the federal Manchester Research Station visited the Harvey Creek hatchery to ultrasound the 2008 fish to see if any of them had matured enough to spawn. Three fish, likely males, had matured.

"We will learn about how long it takes them to fully ripen up and how long they will last before dying," said Kip Killebrew, enhancement biologist

for the tribe.

"With these first captive brood fish, we are learning how to raise, monitor and hold wild chinook salmon from infancy to old age and death," he added.

"We have never tried this before with the Stillaguamish Tribe's hatchery program and it will help us ramp up a full-scale captive brood program to try and keep South Fork fall-timed chinook from going extinct."

– K. Neumeyer

(A video of this project can be viewed at [go.nwifc.org/12c](http://go.nwifc.org/12c).)

## Upper Skagit Tribe Upgrades Waste Filtration Plant



Dan Tolliver, Upper Skagit Tribe

A crew installs a wastewater treatment facility on the Upper Skagit reservation, replacing a more than 20-year-old septic system.

The Upper Skagit Tribe is upgrading its wastewater treatment from several large septic systems to an advanced sewage filtration system. The new wastewater treatment plant will serve the existing 76 homes and eight community facilities, as well as meet future growth plans.

The tribe is installing technology from Orenco Systems, using textile sheets to filter effluent in an oxygen-rich environment where naturally occurring microorganisms remove impurities. The treated effluent will be returned harmlessly to the environment through rapid infiltration basins.

This method of wastewater treatment is economical and

ideal for the small community of the Upper Skagit Indian Tribe's reservation on Helmick Road, which has been relying on septic drainfields for more than 20 years.

"The members of this community have been waiting for years for their wastewater treatment to be updated," said Lauren Rich, environmental planner for the Upper Skagit Tribe.

Well-functioning wastewater treatment facilities protect public health and the natural environment. Failing septic systems can lead to groundwater contamination. Waste also can make its way to the surface if soil loses its capacity to absorb effluent. – K. Neumeyer

## MAKAH TRIBE

# *Bull and Calf Collars Reveal Elk Herd Health*

Bull elk on the north Olympic Peninsula are surviving today at roughly the same rate as they did in the late 1980s and early 1990s, according to early results of a two-year study.

The Makah Tribe is halfway through the second year of a bull and calf elk survival study to update data gathered in the 1980s.

“We want to be sure enough mature branch-antlered bulls and spikes are making it through each year to maintain a healthy population,” said Rob McCoy, the tribe’s wildlife division manager.

Last year, the tribe implanted 20 bulls with radio transmitters; 21 more were implanted this spring.

“Approximately 25 percent of the bulls implanted last year survived hunting and natural predators,” McCoy said. If that holds true for a second year, McCoy is confident that the harvest rates will assure healthy herds along with the hunting opportunity.

Elk calf survival also is a good indicator of herd health. Of 40 calves given radio collars last year, half of them survived, which is enough for the herd to thrive.

“Cougars are really the only calf predator we documented,” McCoy said. “Deer fawns have multiple predators, such as coyotes, bears, bobcats and cougar.”

A second group of 34 elk calves were collared this spring and the results of their survival will be factored into the study. Calf survival rates combined with cow survival rates indicate whether an elk population is growing.

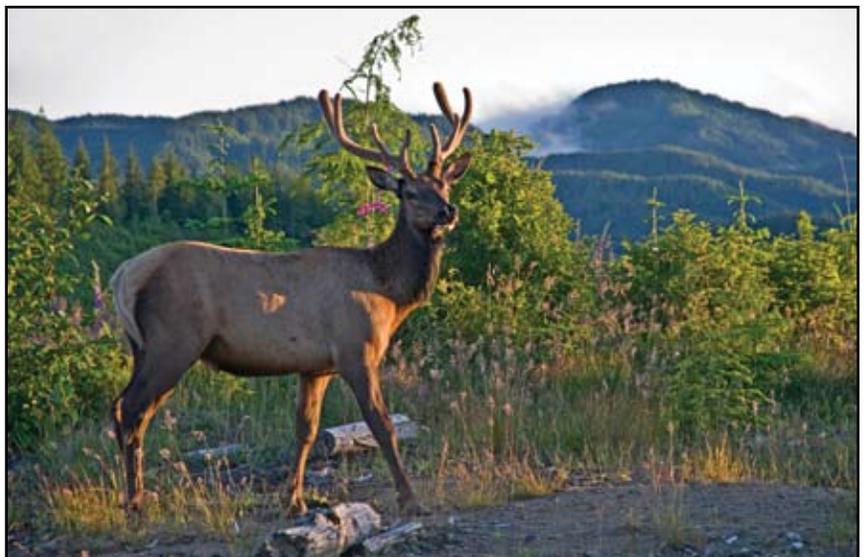
A three-year Administration for Native Americans Environmental Regulatory Enhancement grant through the Department of Health and Human Services helped pay for the study. Volunteers from KBH Archers of Bremerton assisted with the captures along with Makah tribal members and wildlife biologists from other tribes, and personnel from the state Department of Fish and Wildlife.

— D. Preston



D. Preston (2)

Above: Rob McCoy, wildlife division manager for the Makah Tribe, and wildlife biologist Shannon Murphy weigh a radio-collared elk calf. Below: A bull elk prepares to run off after waking from a tranquilizer that was used while biologists placed a small radio transmitter in its stomach.



## Walking On

### Robert Joe Sr. Wa-Walton

Swinomish tribal leader Robert “Wa-Walton” Joe Sr. passed away June 21. He was 76.

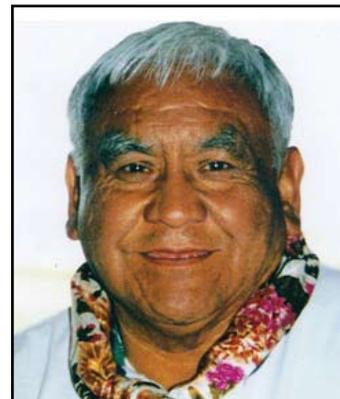
He was born Feb. 16, 1935 to Andrew and Louise (John) Joe. Robert attended school in the La Conner School District and graduated with the class of 1954.

He was a fisherman in Alaska. In Washington state he ran the *Bober* and the *Betty Jean* boats. He joined the Swinomish Smokehouse in 1985.

Robert was elected into the Swinomish Senate and served for 25 years. In 1978 he was elected tribal chairman and served for 18 years.

Robert is survived by his son, Robert Joe, Jr., many sisters, brothers, grandchildren and great-grandchildren.

He was preceded in death by his parents and Mary Helen Cagey whom he called “Mom,” godmother Laura Wilbur, sister Vivian Joe and granddaughter Jamie Joe.



### Clifford Elvin Bengston

Cliff Bengston, biologist and hatchery manager with the Tulalip Tribes from 1976-2002, passed away peacefully at his home on Tulalip Bay Aug. 9.

He was born July 24, 1940 in Seattle, but the family moved to Monroe while Cliff was in grade school. After high school, Cliff worked as a logger in the northern California redwoods, a printer for Boeing in Seattle, then an industrial photographer for the Applied Physics Laboratory. He graduated from the Uni-

versity of Washington College of Fisheries.

Cliff was one of the first tribal biologists in the Boldt case area and was manager of the Tulalip Tribes’ Bernie Kai-Kai Gobin Hatchery from its founding in 1982 until his retirement in 2002. After his retirement, he continued to work part time for the tribe as an adviser.

He is survived by his wife, Kit Paulsen, sister Sandy Bloor, and brothers Ed and Don Bengston, as well as many nieces and nephews.



### Clayton D. Finkbonner

Clayton D. Finkbonner, 61, of Lummi, passed away July 9. Clayton was born in Bellingham to Richard and Marlene Finkbonner.

Clayton was passionate about economic development for Lummi. He worked on projects such as the Lummi Mini Mart, Lummi Casino, Gooseberry Point, Lummi Fish Co. and most recently, the Gateway Center.

He served on the Lummi Fisheries Commission and was a commercial fisherman in the San Juan Islands for many years with his wife,

children, father and siblings.

Clayton was preceded in death by his mother, Marlene; brother Brian and grandparents.

He is survived by his wife of 33 years, Sandy; children Shannon and Brooke, Coreen and Marc, Amy, and Casey and Nichole; grandchildren Jalissa, Ariana, Phoenix, Kingston and Chevelle; father Richard “Bronk”; brother Rick; sisters Karen (Rick) and Jan (David); and numerous other relatives.

