



Northwest Indian Fisheries Commission

NWIFC News

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Remember Where Food Comes From

**By Billy Frank Jr.
NWIFC Chairman**

The mud and the water have always been a source of food. But when we start to see shorelines and rivers not as places where we get our food, but where we can make money developing property for the best views and highest value, we dishonor the importance of our surroundings.

When pollution has gotten so bad that we can't fish or harvest shellfish from our home waters, we start depending on food from other sources, sometimes thousands of miles away. Folks affected by the Gulf Coast spill are still going through that.

Many people have started to recognize the importance of local food. They are called "localvores," and I think they're on the right track. I didn't know it, but I've always been a localvore. We look for food that comes from where we live. In this place, where rivers run from glaciers and meet the salt water on great tide flats, salmon and oysters are about as local as it gets.

To have these foods, we must protect the environment from where they come. That means protecting habitat by fighting for better shoreline development standards and protecting water quality from failing septic systems and lawn fertilizers.

Treaty tribal and non-Indian shellfish producers are on the front line of monitoring and protecting water quality in Puget Sound and along the coast. We can measure the health of these waters by the



health of the shellfish that live there. Healthy water produces healthy shellfish, and healthy shellfish is good food for all of us.

The problem comes when we stop connecting our food to the place where it comes from. Salmon and shellfish don't come from the grocery store. They come from nature.

Our lands and waters are naturally productive, just like salmon and shellfish. All they need is a little help to let them do what they do. We should be celebrating the fact that we can still produce and harvest salmon and shellfish in western Washington.

Everything is connected. What happens in one part of the environment affects other parts as well. Salmon and shellfish are measuring sticks for the health of our ocean and Puget Sound. While we salmon and shellfish managers can control much of what happens on the water, state and local governments need to do a better job of managing what's happening onshore.

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On the cover: A cow elk munches grasses found underwater in a pond on the Olympic Peninsula. Tribes are involved actively in elk management; see stories on page 9. *Photo: D. Preston*

Tribes' Traditional Knowledge, Management Skills Guide Ocean Policy

Jack Sweet, a Quinault Indian Nation fisherman, spots his quarry bobbing in the waves of the Pacific Ocean near Westport. It's not a fish or a crab pot buoy, but a 5-foot-long canary-yellow torpedo with wings that has been transmitting ocean data to computers during its six-week tour of the traditional fishing waters of Quinault Indian Nation.

Sweet has assisted the Center for Coastal Margin Observation & Prediction by deploying and retrieving this glider for the past two years. This partnership is just one example of the many ways tribes are engaging in national ocean research and policy development.

Low oxygen events in 2006 and 2010 killed thousands of fish and crab. Many seabirds perished in late 2009 after high levels of a phytoplankton stripped the natural waterproofing from the birds' feathers. Unable to dive to feed or keep warm, nearly 10,000 scoters perished. Extreme numbers of another phytoplankton created some of the highest recorded levels of paralytic shellfish toxin in California mussels, closing harvest for most of coastal Washington.

For tribes, these occurrences underscore the need for additional research that will help explain what causes the events, how to predict when they occur and possibly mitigate for them.

As part of engaging in national decisions about research in ocean waters, coastal treaty tribes formed the Intergovernmental Policy Council to provide a regional forum and develop recommendations for management of coastal resources in Olympic Coast National Marine Sanctuary. At the national level, a tribal representative has served on the National Marine Protected Areas (MPAs) Federal Advisory Committee since its inception in 2002.

Joe Schumacker, marine scientist for Quinault Indian Nation, is the current representative for tribes and is working to create a better description of



Members of the Marine Protected Areas Federal Advisory Committee listen to a Chumash tribal representative explain a tile mosaic during a meeting of the committee in Santa Barbara, Calif. Chumash ocean-going canoes, like the one depicted, are called *tomols*. Joe Schumacker, marine scientist for Quinault Indian Nation, serves on the committee as a representative for tribes.

cultural values in connection with proposed MPAs.

Mel Moon, the Quileute Tribe's natural resources director, was a member of the first advisory committee group in 2002, helping other participants understand treaty rights, traditional tribal knowledge of marine ecosystems and tribal scientific capacity. Makah tribal member Jim Woods, Sustainable Resource Management Division manager, continued that work until Schumacker's appointment.

"Mel and Jim laid the groundwork for recognition of tribal rights in marine areas when others were considering MPAs," Schumacker said.

When discussion turned toward recognition of marine

and Great Lakes areas that were culturally important to tribes and indigenous peoples, Schumacker saw that the national system of MPAs could reflect tribal authority to designate those areas. For some tribes, the process fits into the new arena of marine spatial planning.

Coastal marine spatial planning is like land use planning on the water. It is a way to designate areas in the marine environment that are best suited for uses like alternative energy development, cultural uses, conservation and fishing.

Marine spatial planning is a priority of the National Ocean Council, created by a 2010 presidential order to carry out U.S. ocean policy.

The Ocean Council will guide marine spatial planning and ocean policy in nine regions that are still being defined, but tribes will have representatives at the national and regional levels.

The tribes and the state of Washington already have developed ocean research and planning goals – many of which mirror U.S. ocean policy – for a coordinated and comprehensive management effort.

Tribal coastal community identity, culture and economy are inextricably linked with the ocean. Tribal knowledge and natural resources management expertise will be critical to developing ocean management policy for the future.

– D. Preston

Makah Defends Coast Against Oil Spills

Recent federal legislation has increased the Makah Tribe's role in oil spill response efforts and the amount of response equipment positioned in the Strait of Juan de Fuca.

The catastrophic Gulf oil spill and new federal regulations are bringing needed changes not only to oil spill preparedness, but the way federal, state, local and industry representatives interact with tribes who have treaty-protected resources at stake, said Chad Bovechop, manager of the tribe's Office of Marine Affairs.

"We are all starting to work together more efficiently," he said.

More than 15 billion gallons of oil are shipped through Makah tribal waters annually. Big oil spills in 1972, 1988 and 1991 led to more than 3 million gallons of oil washing up on the tribe's homeland. Natural resources such as fish, marine mammals and shellfish were devastated.

Tribal efforts to obtain more spill response equipment led to the state government designating Neah Bay as a primary staging area for oil spill response. As a result, two Marine Spill Response Corp. oil spill response vessels, the 73-foot *Arctic Tern* and the 40-foot *Loon*, are permanently stationed in Neah Bay. Tribal members employed on those vessels were part of the oil spill response in Louisiana. (See story next page.)

The tribe has been instrumental in gaining protection for the coast and the Strait of Juan de Fuca, including a rescue tug that is now stationed year-round in Neah Bay.

The tribe created the Makah Office of Marine Affairs in 2008 with funding from the Environmental Protection Agency (EPA). The office was established to protect the tribe's cultural, subsistence and economic resources in connection with oil vessel traffic and spill response processes. With the creation of the office, Makah was the first tribe on the West Coast to be appointed as a voting member to EPA Region 10 Response Team/Northwest Area Committee. It is one of 13 such teams that make up the National Response Team. By understanding the structure of spill response and becoming active in state, U.S. Coast Guard and EPA processes, the tribe has become a leader in protecting its own resources, which benefits the whole region, Bovechop said.

Requirements for oil tanker fire-fighting and salvage response approved by the U.S. Congress in 1990 came into effect as of January 2011.

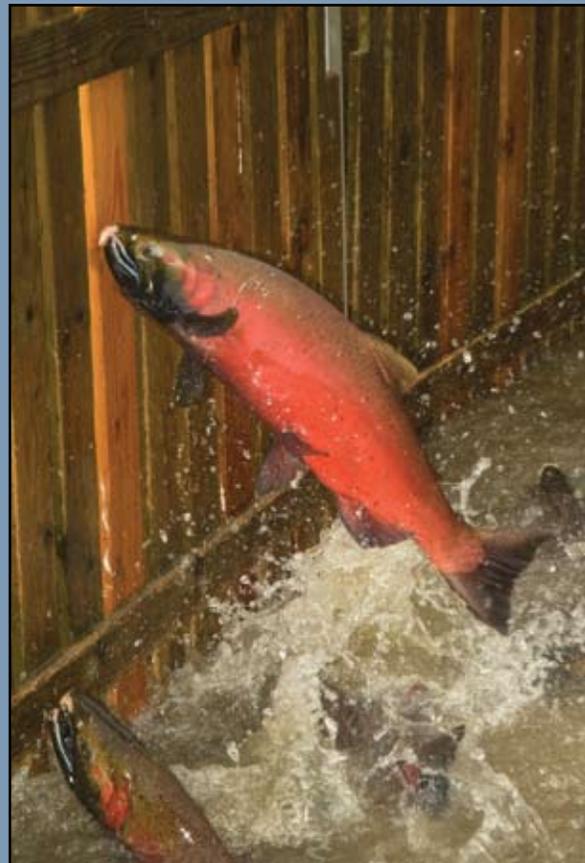
"The U.S. Coast Guard is currently reviewing salvage and fire-fighting capabilities of response organizations," Bovechop said. "The question is whether the lessons learned from the Gulf will drive home the importance of having local resources available. We all have to work together to respond to a catastrophic oil spill." – D. Preston



The crew of the Marine Spill Response Corp. vessel *Arctic Tern*, home-ported in Neah Bay, practices opening the oil skimming doors.

D. Preston

A Hatchery Homecoming



A coho salmon leaps during high flows prior to spawning at Quinault Indian Nation's Salmon River Hatchery.

D. Preston



Bill Lawrence, front, and Ringo McGimpsey, Makah tribal members who work for Marine Spill Response Corp., practice deploying an oil boom in Neah Bay. Lawrence and McGimpsey spent months in Louisiana assisting with last spring's Gulf oil spill.

Makah Tribal Members Respond to Gulf Oil Spill

Even 2,300 miles away from his Neah Bay home, Bill Lawrence found similarities between life as a Makah tribal member and life in Louisiana, where he spent more than two months assisting with the massive cleanup response to the Deepwater Horizon oil spill off the Gulf Coast.

Lawrence and others who work for a Marine Spill Response Corp. unit based in Neah Bay were sent to Louisiana in April as the broken well spewed an estimated 172 million gallons of oil over 86 days into Gulf waters before being capped. The full effects of the spill on sea life and hundreds of miles of Gulf coastline still are being estimated.

Based in Grand Isle and Venice, La., Lawrence completed two tours of duty totaling nine weeks. His first tour began on the second day of the spill. Grand Isle was still reeling from the lingering effects of Hurricane Katrina.

"They were just getting back on their

feet again after Katrina. You still see boats in trees and that kind of thing," Lawrence said. "But the fishermen are survivors, just like they are at home. They say they will just keep plugging away."

Temperatures hovered above 100 degrees on many days that Lawrence and fellow Neah Bay resident Ringo McGimpsey worked on small boats used to deploy oil containment booms and skimmers. The heat left crews drained each night, Lawrence said.

"It was a mantra down there: Water, water, drink water," he added. "Make sure you have sunscreen on."

McGimpsey and Lawrence found that all of their training and hard work paid off when they arrived at the spill.

"It's good to know we're ready if anything like this ever happens here in Neah Bay," Lawrence said. Working with two-person crews on small boats, their job was to protect the hundreds of small bays and

inlets from the spreading oil. McGimpsey also worked to resupply boats each evening with everything they needed to go out the next day.

"The coast there is very different from home," Lawrence said. "It's all flat and very marshy. We would see the glow of alligator eyes at night as we were coming in."

The hospitality of the people, however, was familiar. When workers from outside the area left to go home, a local fisherman would throw a community barbecue and seafood feed to honor them. Lawrence was honored at a dinner at the end of his second tour. "It's pretty similar to a community gathering at home – boil it up and put it out there for people to eat," Lawrence said.

"As a Makah person, protecting the environment is important," McGimpsey said. "It was good to get down there and help them with the problem." – D. Preston

Tribes Skilled at Retrieving Tiny Fish Tags

The Suquamish Tribe is helping deliver information critical to managing salmon in the Pacific Northwest.

Tiny coded-wire tags inserted into the noses of young hatchery salmon are part of the foundation of fisheries management, but they aren't easy to retrieve when the fish return as adults. When combined with the large volume of tags recovered, it can take more than a year for the Washington Department of Fish and Wildlife to analyze and report tag findings to the treaty tribal co-managers.

A metal detector is used to electronically sample for the tags when the fish are harvested, return to hatcheries or reach spawning grounds. When examined under a microscope, the tag reveals where the fish originated. When that information is combined with where and when the fish was harvested, it enables managers to monitor survival rates, migration patterns, run timing and harvest levels.

The needle-thin 1 mm tags are inserted when the fish are fingerlings. By the time they return as adults weighing an average of 20 pounds, the tag is buried deep in the fish's head. That makes recovering the tags time-consuming. Technicians use the metal detector, scalpels and other tools to



T. Royal

A Suquamish Tribe natural resources technician works with a frozen chinook head to remove a coded-wire tag.

slowly dissect the head to find the tag, then decode it with a microscope.

"The state has five people processing thousands of fish heads for the entire Puget Sound region and results typically don't come back until the following fall," said Anja Huff, the Suquamish Tribe's fish lab manager. "Our small staff of three can remove 2,000 tags in a few months and our biologists get the data about this fall's run

by January. By being able to analyze this data sooner, we are able to get an accurate idea of overall returns and can better plan for the future."

The coded-wire tag program conducted by the treaty tribes, state of Washington and federal government is the largest animal mark-and-recapture project in the world. – T. Royal

Fish Samplers Track Tribal Catch

As a fish sampler, Hoh tribal member Bernard Afterbuffalo has to use a variety of skills. The job sounds simple – find fishermen and check their catch for tiny tags embedded in the noses of hatchery fish, retrieve the tag and record the catch.

In practice, however, it takes both social and technical skills to get the job done. Throughout the day during fishing seasons, Afterbuffalo and his co-worker Kevin Bolstrom cruise riverbank fishing locations and the tribal village at the mouth of the Hoh River looking for fishermen and their catch.

Afterbuffalo can tell with a quick look at a house whether the fisherman who lives there had any luck that day.

"He backs his truck in if he has fish," Afterbuffalo said. "It's parked nose in, no fish." A cluster of plastic fish totes stored at a certain location also can be a sign of success.

"Fishermen let us know what to look for so we aren't constantly knocking on their door asking if they have fish," Afterbuffalo said.

The men sometimes also exchange hand signals with fishermen as they drive past.

"A fisherman can be having a bad day, so it's better when you don't talk too much and just get the job done," Afterbuffalo said.

"We know this process is a pain for fishermen," said Joe Gilbertson, fisheries management biologist for the Hoh Tribe.

"It's extra handling of the fish before they can ice them down. We have to mar or remove the head of a tagged fish, and that reduces the value of that fish."

The tribe offsets the lost value with a small payment for tagged fish.

"It's important information about how many fish are coming back, so we try to make it as quick and painless as possible," Gilbertson said.

"We are sampling more than 80 percent of the catch," Gilbertson said. "That's important information for fish managers. We also collect genetic and age information that assists with run forecasts."

– D. Preston



D. Preston

Bernard Afterbuffalo, Hoh fisheries technician, uses a metal detector to check for coded-wire tags in the nose of a coho.

Coho Spawn in Newly Created Habitat

Coho Creek didn't exist 10 years ago. Tulalip tribal natural resources staff created the tributary to Quilceda Creek out of a drainage ditch.

"This restoration work is part of our plan to balance development on tribal lands with the preservation of fish and wildlife habitat," said Tulalip Chairman Mel Sheldon.

This fall, more coho salmon were seen in the restored habitat than have been found since work started. In a year when most coho runs in the region were disappointing, spawning surveys counted almost 50 coho using in the new habitat so far.

Although coho were the focus of the restoration, about 1,000 chum salmon also were seen using the habitat.

"Every time we put new gravel in there, you see fish using it," said Kurt Nelson, environmental division manager for the Tulalip Tribes. "That shows just how limited the spawning habitat is."

Tribal staff are tracking the survival of the salmon eggs hatched in the new habitat by monitoring outgoing juvenile salmon in a smolt trap below the restoration work. The number of juveniles has been climbing slowly. Last spring several thousand chum fry and coho smolts were observed leaving the restoration area – the most observed since monitoring started.

The Coho Creek restoration began in 2000, with the replacement of a perched culvert. No salmon had been using the creek, but after the culvert was replaced, chum salmon were seen unsuccessfully attempting to spawn in the sandy ditches.

Since 2000, 2,500 feet of stream channel have been created, with thousands of feet of spawning gravel added. Eighteen culverts were removed or replaced, a half-acre forested pond was constructed, several log weirs were built and 4 acres of stream bank were planted.

In the future, additional stream channel and wetlands will be created to offset the impact of further development of the tribes' Quil Ceda business park.

"Our plans to expand the business park will use only one-third of 1,500 acres west of 27th Avenue," Sheldon said. "The rest will be preserved or restored as fish and wildlife habitat." – *K. Neumeyer*



K. Neumeyer

Coho salmon spawn in a tributary to Quilceda Creek that the Tulalip Tribes created. In the past decade, Tulalip has restored 2,500 feet of stream channel near the tribes' Quil Ceda Village.

Restoration returns tide to estuary

Work is under way on the Qwuloolt estuary project to return tidal processes to 350 acres of isolated floodplain in the Snohomish River watershed.

"We lost critical salmon habitat in the early 1900s when the Marysville marshes were drained and the area was diked for farming," said Tulalip tribal Chairman Mel Sheldon. "Restoring Qwuloolt and other estuary wetlands are key to regional salmon recovery. The effort also provides critical habitat for waterfowl, shorebirds, eagles, river otter, harbor seals and other plants and animals."

The Qwuloolt project is a partnership among the Tulalip Tribes, city of Marysville, and state and federal agencies. Historic natural conditions will be restored to two streams, and fish-blocking tide gates will be

removed to open fish access to 16 miles of spawning and rearing habitat.

Tidal channel work and ditch filling began in 2010. Eventually, the Ebey Slough levee will be removed and a new setback levee will be constructed.

The Qwuloolt estuary supports a large commercial and recreational salmon fishery and provides spawning, feeding and rearing habitat for chinook, coho, chum and pink salmon, steelhead and resident trout.

Chinook, bull trout and steelhead are listed as "threatened" under the Endangered Species Act, but all stocks are at risk because of the historic losses of estuary habitat and continued environmental degradation.

For more information about the project, visit tulalip.nsn.us/qwuloolt. – *K. Neumeyer*

Deceiver Meets Beaver Dam Needs

Beaver are tenacious animals whose mission in life is to stop the flow of water so they can create a pond for their lodges. Unfortunately, their dams often block fish passage.

Tribes have had to find creative ways to discourage beaver activity enough to let salmon access spawning habitat.

“Beaver deceivers” have become a popular and inexpensive way to deter the animals, but they aren’t effective in every situation.

“We need to find site specific alternatives,” said Jon-Paul Shannahan, fisheries biologist for the Upper Skagit Tribe.

Beaver dam building behavior

is triggered by the sound of flowing water. A beaver deceiver is a box that constricts water flow in a stream just enough to allow a pond to form. Large pipes are enclosed inside the box to obscure the source of running water. Since the beavers can’t hear the flowing water and their pond needs are being met by the increased water level, they aren’t compelled to build a dam. A fish ladder inside the beaver deceiver enables adult salmon to pass upstream.

“Beaver deceivers only work when there is just one point of constriction where beavers like to build dams,” Shannahan said.

Working with the National Oceanic and Atmospheric Administration, the Upper Skagit Tribe installed a deceiver that has been effective in keeping beavers from blocking a Skagit River channel in Rockport.



Lisa Cooley

Above: Beavers instinctively dam rivers to create ponds. Below left: A beaver deceiver installed in a Skagit River channel in Rockport has been effective at keeping beavers from blocking fish passage.



Upper Skagit Tribe

Near the Port Gamble S’Klallam reservation, beavers blocked a road culvert in Martha John Creek, preventing chum salmon from moving upstream into an open wetland.

“We’d like to see the chum and coho from Port Gamble Bay make their way up here to spawn,” said Hans Daubenberg, the Port Gamble S’Klallam Tribe’s habitat biologist. “Chum can get only to the culvert before they are stopped. This is the only part of the stream that hinders their progress.”

The tribe worked with Kitsap County and Great Peninsula Conservancy this fall to remove existing beaver dams

and install cattle fencing to enclose the culvert’s upstream opening.

The enclosure establishes a considerable space between the fence line and the water running through the culvert, discouraging beavers from building dams along the fence. The culvert will be replaced with a larger one in a few years by the county, but the tribe didn’t want to wait to open the culvert for fish passage. Once the properly-sized culvert is installed, the beaver problem will disappear.

“The sooner we get it flowing, the better,” said Jessica Coyle, the tribe’s response program manager.

— K. Neumeyer and T. Royal

Upper Skagit Tribe Monitors Habitat for Beaver Dams

For the past several years, the Upper Skagit Tribe has been monitoring five channels along the Skagit River to make sure beaver activity doesn’t keep salmon from reaching their spawning grounds.

Beavers had taken over several side channels that were constructed for chum salmon habitat. The Washington Department of Fish and Wildlife built the channels years ago to replace habitat that had been lost to development, including Seattle City Light hydroelectric dams on the Skagit River.

“These human-built channels produce a large percentage of the chum in the Skagit,” said Scott Schuyler, natural resources

director for the Upper Skagit Tribe. “It’s our responsibility to make sure fish passage is possible during the crucial spawning season.”

Tribal natural resources staff visit the channels weekly from October to January to remove beaver dams that block fish passage. The process was too time-consuming before fencing and beaver deceivers were installed.

“Instead of spending two days a week kicking out the dams, we were able to prevent beavers from blocking the channels in the first place,” said Jon-Paul Shannahan, fisheries biologist for the Upper Skagit Tribe. — K. Neumeyer



K. Neumeyer

Upper Skagit fisheries technician Tim Shelton dismantles a beaver dam in Marblemount, releasing the branches and debris downstream.

Lower Elwha Tribe Collars Roosevelt Elk

The Lower Elwha Klallam Tribe and the National Park Service (NPS) collaborated recently to study elk in Olympic National Park.

The park service and the tribe worked with a helicopter crew to capture 18 elk and fit them with radio collars this fall.

The collars will help show biologists the migration patterns of herds within the Elwha River valley and around lakes Aldwell and Mills before and after the removal of the Elwha River's two dams. The dams will be removed starting in September 2011.

The biologists also are interested in how the elk use the area for habitat, including feeding and resting.

The local U.S. Geological Survey and NPS offices are trying to get accurate counts of elk populations in the river drainages in the core area of the park, including the Queets, Quinault, Hoh and Elwha watersheds. The Lower Elwha

Klallam Tribe has been conducting its own elk population studies in the area, so the two entities decided to work together.

"We wanted to put radio collars on elk that reside in the high country during summer but who use the shores of Lake Aldwell and Lake Mills during winter," said Kim Sager-Fradkin, the tribe's wildlife biologist. "We hope to monitor use by elk of the restored floodplains after dam removal. The tribe and the park are both interested in knowing how the elk will respond once the reservoirs no longer contain water."

Elk need habitat that includes plentiful water, grasses and woody plants.

"Gathering various types of data helps round out the overall population assessment that we're trying to conduct of these elk," said Patti Happe, the park's wildlife branch chief. "We figured this would be a great opportunity to get elk movement



Leading Edge Aviation

A crew member from Leading Edge Aviation places a radio collar on a Roosevelt elk in Olympic National Park.

patterns prior to dam removal and follow through with restoration activities."

The 108-foot Elwha Dam and the 210-foot Glines Canyon dam are owned by the federal government. Olympic National Park is spearheading

the removal effort. Estimated at \$350 million, it is the largest dam removal project to date in the United States. — T. Royal

Skokomish Plants Elk Forage

The Skokomish Tribe and U.S. Forest Service collaborated this fall to plant native trees and shrubs on 30 acres of pre-commercially thinned stands in the South Fork of the Skokomish River, to improve elk habitat in the Olympic National Forest.

Plants included red elderberry and snowberry bushes, willow and red osier dogwood trees. During the fall of 2009, cuttings of the four species were obtained from the watershed and the plants have been growing for the last year with Sound Native Plants of Olympia.

Native plants make good habitat because they appeal to the animals and are highly nutritious, said Bethany Tropp, the tribe's wildlife biologist. She hopes the herd of 43 elk that live in the area will use the area more now that there is better habitat.

"These plants also provide food for a

number of other mammal and bird species," said Betsy Howell, an Olympic National Forest biologist who worked with Tropp on the project. "We know these stands that have been clear-cut generally have lower plant species diversity. Augmenting what is there with nutritious wildlife forage is one way to improve that."

Slash in the stands was cut and piled to make planting easier and eliminate migration hazards for the herd.

"Elk won't enter areas full of brush because they can break their legs easily," Tropp said. "They are more likely to go through areas with easier access such as clear cuts, but those areas may have lower quality nutrition. We expect them to utilize these improved areas more."

Funding for this project came from the tribe and Olympic National Forest.

— T. Royal



T. Royal

Eric Brassfield of GreenTree Landscaping plants a red osier dogwood in the Skokomish River drainage.

Nisqually Tribe: Habitat and Holistic Efforts Work



Georgianna Kautz is the Nisqually Indian Tribe's natural resources manager.

The Nisqually watershed community took quick action 10 years ago when Puget Sound chinook were listed as “threatened” under the federal Endangered Species Act.

We were the first watershed to develop a holistic approach to the federal listing. We prioritized recovery steps from habitat restoration to harvest and hatchery management to bring back wild chinook.

Chinook habitat priorities were straightforward: restore the Nisqually River estuary and enhance habitat on two important tributaries, the Mashel River and Ohop Creek. There has been significant progress on all three fronts recently by the tribe and our partners:

- The Nisqually National Wildlife Refuge, with support from the tribe, breached dikes to open 760 acres of habitat. Together with the 140 acres already restored by the tribe, the combined estuary restoration effort is the largest in Puget Sound.
- The Nisqually Tribe restored instream habitat by building engineered logjams in the Mashel River, which passes through the community of Eatonville.
- The South Puget Sound Salmon Enhancement Group, the Nisqually Land Trust and the tribe created a new, salmon-friendly channel for Ohop Creek.

On their own, each project was substantial. It took a great deal of planning, coordination and leadership from the ground up. These projects didn't happen without the buy-in from local landowners and communities.

The coordinated response to the chinook listing was marshaled by the tribe at the request of the Nisqually River Council, as the state-designated lead entity for salmon recovery in the watershed. Across the state, lead entities act as clearinghouses to help coordinate salmon recovery efforts.

The tribe reacted quickly because we saw declining salmon runs as a direct threat to our treaty-reserved right to harvest salmon. Working with our neighbors was the quickest, easiest and most cost-effective way to start bringing these salmon back.

Our plan includes more than restoring habitat – it is aimed at protecting what we have before it is destroyed.

The Nisqually River is unique in Puget Sound because we have worked aggressively with our partners and neighbors, resulting in 73 percent of the riverbank being placed in protected status, while the watershed remains largely rural. But urban development is coming our way.

Growth is going to happen here just like it has all over Puget Sound. That growth usually has led to lost and damaged habitat. Our goal is to find a way to absorb growth, create a healthy economy, and sustain strong salmon populations in the Nisqually watershed.

Georgianna Kautz is the Nisqually Indian Tribe's natural resources manager.

Generations



Nisqually Tribal Archives

Johnny Bobb, a Nisqually tribal fisherman, removes salmon from a net in this photograph from 1915.

Fish Bacteria Studied

The Lummi Nation's Skookum Creek Hatchery is working with the University of Idaho's Department of Fish and Wildlife Resources to study a bacterial disease that attacks coho salmon.

Flavobacterium psychrophilus causes the disease, called bacterial coldwater disease, which is often fatal to salmon raised in hatcheries. The bacterial disease is thought to be passed to the next generation within eggs from infected female fish. The disease also can be spread between fish through the water and by fish-to-fish contact.

"Bacterial coldwater disease is a chronic problem at many salmon hatcheries," said Skookum Creek hatchery manager Bill Finkbonner. "We treat our fry twice with antibiotics to prevent them from becoming infected. If we can find a way to control the disease or cure it, that would be a huge help to hatcheries."

Without antibacterial treatment, the disease can move quickly through the juvenile population, killing fish with no visible symptoms. When the disease progresses more slowly, it can eat away at the fish's skin, fins and muscle, eventually exposing the backbone.

"This disease is generally perceived to be the most troublesome bacterial disease of salmon in the Pacific Northwest," said Craig Olson, the NWIFC fish pathologist serving the Lummi hatchery program.

Finkbonner and Skookum Creek hatchery staff worked with NWIFC pathologists to sample 30



C. Olson

Skookum Creek assistant hatchery manager Marlin Dennis samples adult coho for a study of bacterial coldwater disease.

spawning female coho and incubate their eggs. From these 30 females, University of Idaho graduate student Amy Long selected five with varying severities of the disease. Eyed eggs from those females were sent to the university in December where Long will study how the infection progresses.

"There's strong suspicion that the disease is passed down through the eggs," Olson said. "This research could prove it and tell us more about how it happens."

– K. Neumeyer

Federal Grant Assists Fraser River Sockeye Fishermen



K. Neumeyer

The Lummi purse seiner *Marathon* fishes for Fraser River sockeye in the San Juan Islands. Although sockeye runs were large last summer, the past decade of fishing has been poor, devastating the tribal fishing community.

The U.S. Department of Labor recently announced a \$3.4 million grant to assist Lummi Nation fishermen who have been affected by the decline of the Fraser River sockeye salmon fishery over the past decade.

The grant will help the tribe develop programs such as basic skills training, individual career counseling and occupational skills training to help fishermen transition to stronger areas of the tribal economy.

"Our fishermen are always going to be

fishermen," said Elden Hillaire, chairman of the Lummi Nation Fisheries and Natural Resources Commission. "We hope to create new programs and expand existing ones to help fishermen adapt to the economy and find off-season employment."

The tribe's job development plan includes training to work at tribal and state hatcheries, and in metal fabrication, outboard motor repair and equipment parts businesses.

The Fraser River sockeye fishery was plentiful this summer, but had been poor since 1999 and was declared a commercial fishing disaster in 2008.

"Layoffs in the fishing industry constitute a serious crisis for this community," said U.S. Secretary of Labor Hilda L. Solis. "Just as we are committed to helping workers in other communities across the country, we will ensure these workers get the opportunity to acquire the skills needed to promptly enter good jobs that pay family-supporting wages and offer real opportunities for advancement." – K. Neumeyer



T. Royal

Port Gamble S’Klallam information specialist Abigail Welch and Aleut tribal member John Melovidov gather a sediment sample for the NaGISA survey.

Port Gamble S’Klallam First to Conduct NaGISA Survey

The Port Gamble S’Klallam Tribe was the first organization in Washington state to contribute to a worldwide coastal biodiversity census. The tribe and volunteers spent a day in June studying the beach at Tala Point, near Port Ludlow, and conducting standardized surveys for the NaGISA Project.

Derived from the Japanese word for “nearshore zone,” the project is an international effort aimed at inventorying and monitoring coastal biodiversity while encouraging local communities, students, teachers and researchers to participate. The data collected are entered into a database that includes information from more than 280 participating groups around the world.

Led by tribal biologists Janet Aubin and Hans Daubenberger, tribal staff and volunteers

studied 15 randomly selected plots on a stretch of beach, counting eelgrass strands and invertebrates, as well as taking sediment and algae samples. Some of the 1-square-meter sampling areas had as many as 300 strands of eelgrass, plus a variety of tubeworms, hermit crabs and sea anemones. Expert species identification assistance was provided by Sandra Lindstrom, a phycologist and adjunct professor in the Department of Botany at the University of British Columbia.

“This type of global effort to establish baseline biodiversity data is invaluable,” Aubin said. “It will allow us to track changes over time, as well as increase our understanding of the habitat diversity within our region.” – T. Royal

Tribe Follows Salmon Migration Patterns

Most of the juvenile salmon that live in southern Puget Sound’s Budd Inlet during the summer don’t come from nearby rivers, as shown from years of research by the Squaxin Island Tribe.

Just more than 10 percent of the fish sampled in Budd Inlet came from the Deschutes or Nisqually rivers. Most came from the more distant Puyallup River watershed.

“We know the marine ecosystem supports fish from a lot of different places, but it’s striking to find that the majority of the chinook in Budd Inlet come from farther away,” said Scott Steltzner, a Squaxin Island Tribe biologist.

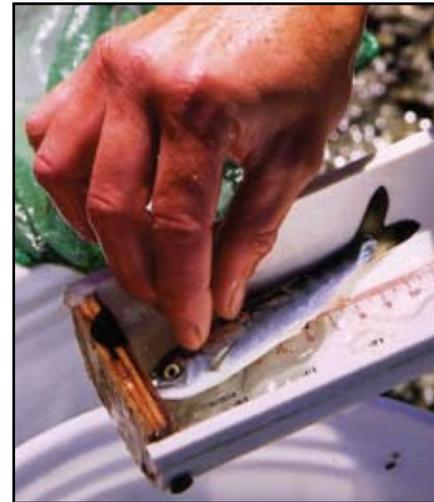
“Weak salmon runs across Puget Sound would benefit from restoring habitat in Budd Inlet,” said Andy Whitener, the tribe’s natural resources director. “That work should include restoring the historic estuary in the lower Deschutes by removing the 5th Avenue dam that created Capitol Lake.”

The tribe has been tracking young coho from South Puget Sound for seven years, hoping to understand what kind of habitat they use most.

“The fish we are seeing will have the opportunity to hang out inside Puget Sound before they have to face the open ocean, where they will grow into adulthood,” Steltzner said. “We’ve been studying how the life cycle of salmon is related to the nearshore environment of deep southern Puget Sound.”

The tribe has 20 seining locations south of the Tacoma Narrows, five of which are in Budd Inlet.

“Our main interests are the different salmon species, where they are going, when they migrate, and what habitat they use,” Steltzner said. Tribal researchers also are tracking the ratio of hatchery to wild salmon captured in the surveys. – E. O’Connell



E. O’Connell

The Squaxin Island Tribe has been sampling salmon in the nearshore of South Puget Sound for several years.

Chum Run Counted

Before the Puyallup Tribe of Indians starts fishing for fall chum, they conduct an assessment fishery to get an idea of the size of the returning run. Two tribal research boats fish the lower river, carefully counting their catch.

“These sorts of management steps are important to ensure the fishery is targeting only healthy stocks of fish,” said Chris Phinney, the tribe’s fisheries biologist.

Each fish is measured and a scale sample is taken. From the scales, tribal scientists can determine the age of each fish, which helps them predict future runs.

Another goal of the fishery is to find out whether the coho

run, which returns to the river just ahead of chum, has migrated through the tribe’s fishing area.

“We don’t want our chum fishery impacting the end of the coho run,” Phinney said. “This is especially true this year when we have a very small coho run and what we expect to be a very large chum run.”

Although fishing seasons are agreed upon by the tribal and state co-managers earlier in the year, inseason management – like the assessment fishery – ensures the plans reflect reality.

“If we’re not seeing the fish in the river, the tribal fishermen won’t be able to hit the water,” Phinney said. – *E. O’Connell*



E. O’Connell

Gabe Roy, left, and Archie Cantrell, Puyallup tribal fisheries technicians, sample chum salmon caught during the tribe’s assessment fishery.

Fish Discover New Sha Dadx Wetland

Coho salmon are already using the 17 newly restored acres of the Puyallup Tribe’s Sha Dadx wetland project. The tribe reconnected an old oxbow lake to the lower Puyallup River two years ago through a cooperative interagency effort. This summer, the tribe set up a two-way fyke net to count how many fish were coming and going.

“We found a lot of coho moving in and out of the reconnected wetland,” said Russ Ladley, the tribe’s resource protection manager. Unlike other salmon species that move quickly from fresh to salt water, coho stay for a year in fresh water.

“Coho need quality freshwater habitat, more so than other salmon like chum or pinks,” Ladley said. “It’s encouraging to see them using this habitat.”

The tribe installed the custom-built fyke net toward the end of the salmon out-migration season.

“We didn’t get a complete picture of how many fish are using the habitat, but we do know they’re going in there,” Ladley said. This year, the tribe will install the trap as early as January and monitor results throughout the salmon out-migration season.

In addition to the fyke net at Sha Dadx (pronounced shad ducks), the tribe operates a smolt trap on the mainstem Puyallup River. The trap safely captures out-migrating young salmon so they can be counted and measured, providing important data about salmon productivity throughout the watershed.



Puyallup Tribe of Indians

Puyallup tribal fisheries staff, from left to right, Blake Smith, Terry Sebastian and Justin Paul, install a fish trap at the Sha Dadx wetland.

Juvenile fish use off-channel habitat to get out of the river’s mainstem flow to rest and feed. Small side channels, tributary creeks and wetlands connected to the mainstem all provide important off-channel habitat.

“Historically, the Puyallup wasn’t constricted by dikes and was able to carve new paths and create new off-channel habitat,” Ladley said. “Since the diking and building in the floodplain started, a lot of off-channel habitat has been lost.”– *E. O’Connell*

Mushrooms Could Improve Water Quality



Wikimedia

Pleurotus ostreatus is one of the species of mushrooms that the Squaxin Island Tribe is testing to see whether it can remove bacteria from wastewater.

Tribe, county will test fungi to clean up bacteria in water

Mushrooms might help treat one of the most widespread causes of water pollution – fecal bacteria from human and livestock waste in stormwater runoff. If it works, the system can be used to protect the rich shellfish heritage of Puget Sound.

The Squaxin Island Tribe is teaming up with Mason Conservation District and Fungi Perfecti to test how well the vegetative growth (mycelia) of fungi filters fecal coliform bacteria out of running water.

The theory is that mycelia act as biological filters. As they grow, they capture and consume bacteria from contaminated water, eliminating them from the environment.

“Several field studies have demonstrated that mushroom mycelia can capture and remove bacteria in running water,” said John Konovsky, the tribe’s environmental pro-

gram manager. “The Jamestown S’Klallam Tribe worked with Battelle Laboratories on a large treatment system and found that fungi mycelia can reduce bacteria concentrations. We’re trying to figure out just how well it works on a smaller scale.”

The tribe will test polluted water at Mason County’s Allyn wastewater treatment plant and track how well the water cleans up over time. If the mushroom technique works on this small scale, it might become a very cost-effective method for removing fecal coliform from running water.

Polluted upland runoff washing into Puget Sound each winter is a common cause for closing shellfish harvest.

“Shellfish growers fear this yearly cycle of pollution,” Konovsky said. “We need innovative and cost-effective solutions to solve the problem.” – *E. O’Connell*

Removing Invasive Plants Goes a Long Way for Fish

The Squaxin Island Tribe is trying to get some unwelcome visitors out of the Skookum Creek watershed. Tribal biologists are eradicating several populations of invasive plants to help boost wild salmon populations.

“Invasive plants can be a huge hurdle in terms of maintaining strong salmon populations,” said Sarah Haque, the tribe’s habitat biologist.

A recent survey by tribal staff found about 20 acres of invasive plants in the watershed. During the summer, the tribe removed plants from those sites and restored native plant populations.

Invasive plants like blackberries, knotweed and reed canary grass outcompete native plants that provide better habitat for fish and wildlife.

“Degraded habitat doesn’t always look like degraded hab-

itat,” Haque said. “A stream could be surrounded by plants, but if they aren’t shading the creek or giving fish the nutrients they need, they’re providing very little benefit to fish.”

Tribal staff physically removed most of the plants using mowers, brush cutters or by digging them out. They followed up with a small amount of chemical treatment to make sure the invasive plants don’t re-establish themselves.

“Typically, a project like this takes three years of care before native plants can continue on their own,” Haque said. “We’ll need to come back to make sure the invasives don’t return.”

A nearly 4-acre pilot plot has seen good results from similar treatment last year.

“After only a year, we’re seeing a great response from native plants,” Haque said.

– *E. O’Connell*



E. O’Connell

Squaxin Island tribal habitat biologist Sarah Haque inspects recently treated Japanese knotweed.

Floodplain Prepared For Dike Setback

The Jamestown S’Klallam Tribe is preparing a 1-mile section of a dike within the lower Dungeness River for a major setback, preparing to open up the historic floodplains to water and salmon once again.

“We’ve planted 58 acres of former pastureland outside the dikes with 16,000 native plants, which helps create good salmon habitat,” said Byron Rot, the tribe’s habitat manager.

For the past five years, the tribe and Washington Conservation Corps volunteers have planted trees and shrubs such as grand fir, Douglas fir, western red cedar, wild rose and snowberry bushes on the lower floodplain of the river.

“Establishing native plants now increases their chances of survival when the dike is set back and the river naturally gets into the floodplain,” Rot said. Setting back the dike will return the river to a more natural state, allowing it to meander and prevent sediment buildup, allowing for better salmon spawning habitat.

Studies will determine the best way to remove the dike, which was built by the U.S. Army Corps of Engineers in 1964 to prevent flooding.

“We are moving away from dredging the riverbed, which has been a common solution to reduce the gravel buildup,” Rot said. “Across western Washington, where dikes confine relatively flat river channels, there is almost certainly a buildup of sand and gravel. This often causes the riverbed to be much higher than the surrounding floodplain, increasing flooding risk to communities behind the dike.” – *T. Royal*



T. Royal

Washington Conservation Corps volunteer Gabrielle Stilwater pours mulch around the base of a tree near the Lower Dungeness River.

Miller Bay Tides Flowing Once Again

A small estuary at the Indianola Waterfront Preserve, blocked from tidal flow for more than 40 years, was reopened to juvenile fish this fall – part of a broader effort to restore natural resources damaged by a 2003 oil spill at Point Wells in Snohomish County.

The Suquamish Tribe and Kitsap County Public Works replaced a fish-blocking 18-inch pipe under Chief Sealth Drive with a 16-foot-wide by 8-foot-tall culvert. County public works also removed fill material at the site to widen the estuary from 30 to 150 feet.

Restoring the small or “pocket” estuary at the Indianola Waterfront Preserve will provide juvenile Puget Sound chinook, coho and chum salmon a refuge area for resting, eating and hiding from predators.

The estuary preserve was filled with dredge spoils and the small culvert was installed in the 1970s, when the adjacent Indianola spit was developed for housing and the inner bay was dredged for moorage. Historic photos prior to the development show the estuary functioning properly with tidal flows.

“When the road was built for new development, the original estuary was cut off from Miller Bay,” said Tom Ostrom, the tribe’s environmental



T. Royal

A new culvert under Chief Sealth Drive will allow salmon and tides to flow freely between Miller Bay and the Indianola estuary.

biologist. The pipe placed under the road was too small and at an elevation that allowed for water exchange only at very high tides, he said, making it difficult for fish to move in and out of the estuary.

“Removing the spoils and installing what is essentially a bridge will allow salmon and other fish to take advantage of the improved habitat,” Ostrom said. – *T. Royal*

Beaches Nourished for Spawning Fish

Tribes and state agencies are fighting shoreline erosion and restoring forage fish habitat in Fidalgo Bay.

The beaches on the west side of March Point near the Tesoro and Shell oil refineries once were prime spawning and rearing habitat for forage fish such as surf smelt, sand lance and Pacific herring. Forage fish prefer to spawn in coarse sand and gravel, but industrial activity, shoreline armoring and polluted runoff have eroded the beaches and degraded the habitat.

The Skagit River System Cooperative, the natural resources arm of the Swinomish and Sauk-Suiattle tribes, is working with the state Department of Natural Resources and the two refineries to restore the beaches.

In October, crews spread pea grav-



K. Neumeyer

A conveyor truck spreads beach nourishment materials on the shoreline of March Point in Fidalgo Bay.

el and beach sand along the eroding shorelines. These nourishment materials replace the naturally occurring sediment that has been lost over the years. Restoring this habitat benefits the species that feed on forage fish, including juvenile salmon, clams and shorebirds.

– *K. Neumeyer*

Lessons From a Rain Garden



The Nisqually Indian Tribe and Stewardship Partners built a rain garden on the tribe's reservation this fall. Tribal youth got a chance to get their hands dirty and participate by helping plant native wild strawberries. The garden is also a teaching tool for learning about low-impact development.

The garden will collect water flowing from the roof of the tribe's education center and will be used to water the area. It is being planted with native plants as well as those important to the tribe's culture, such as grasses and other vegetation found in the forest.



E. O'Connell (2)

Walking On

Christian "Jiggs" Penn Jr.



Quileute tribal elder and *U.S. v. Washington* court witness Christian "Jiggs" Penn Jr., 81, died Dec. 14 after a long battle with cancer.

The lifelong fisherman was born May 24, 1929, to Christian Esau and Lillian Payne Penn. He married Eileen Penn 50 years ago in September. They had three children. He was the only Quileute court witness in the 1974 Boldt Decision. He

also talked to Judge George Boldt directly about life in LaPush and the importance of the treaties.

Penn served on the tribe's fish committee for many years, was a Korean War veteran and coached sports for more than 25 years. The family provided financial assistance and paid for sports supplies for youth in need. He encouraged youth to get an education.

In honor of his Korean War service, the American Legion Freedom Riders Honor Guard escorted his body from Harper-Ridgeview Funeral Chapel in Port Angeles to the tribal cemetery in LaPush. While in the U.S. Army, he received the Bronze Star, Korean Service Medal and United Nations Service Medal.

In addition to his wife, he is survived by daughters Ann Penn Charles and Fern Penn; son, Christian "Sonny" Penn III; sisters Norma Penn and Hazel Black; and brothers Dan Penn Sr., Esau Penn Sr. and Doug Pullen; 12 grandchildren; many great- and great-great-grandchildren and nieces and nephews.