



Northwest Indian Fisheries Commission

NWIFC News

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A Sense of Place

By Billy Frank Jr.
NWIFC Chairman

Through our five senses, all of us humans develop another sense: a sense of place. It's a powerful sense that can be lost when we move from home to home, job to job.

I have been blessed with a strong sense of place for my home. The Nisqually River is where I belong.

Our treaty rights are place-based, too.

We 20 treaty Indian tribes in western Washington can only fish in the places we have always fished. These are our "Usual and Accustomed"

fishing areas, the places where we exercise our treaty-reserved right to fish. In some cases, we are allowed to fish only in certain parts of these areas.

For my tribe, the Nisqually, that is an area in southern Puget Sound. For my friends in Neah Bay, the Makah, it is an area around Cape Flattery at the northwest tip of the Olympic Peninsula. As a Nisqually tribal member, I can't go to Neah Bay and exercise my treaty-reserved right to fish.

Good fishing or bad, we have our places. If the fishing is poor, it's poor. We can't pack up like sport fishermen and travel to where the fishing is better. We have to work to make it better from right where we are.

The Puyallup Tribe of Indians has seen its fall chinook fishery shrink to almost nothing in the last few years. Because the wild chinook run returning to the Puyallup is so small, all fisheries must be limited to protect the weak wild run. Even though thousands of hatchery chinook are available to fishermen throughout Puget Sound, the Puyallup Tribe has less than one day of fishing, to protect salmon in their home river.

Our place-based fishing rights require most of our tribes to fish in what are called terminal areas. These include bays and the mouths of rivers where salmon gather before heading upstream to spawn. They are the places we have always fished, and will always fish.

By the time the salmon reach these terminal areas, weak and strong stocks have sorted themselves out. We know where, when and how many fish we can selectively harvest without harming the run.

Place limits on our treaty rights mean we have to be extra careful when managing our fisheries in these terminal areas. We have to focus harvest on strong hatchery stocks while protecting and recovering weak wild stocks. We have to fix the habitat in our watersheds. We have to work hard at management to make sure fish come back to us and that enough survive to spawn and continue the run. We have to watch our fisheries closely and adjust them as necessary to make sure we aren't having too great of an impact on the run.

Time, place and method are the main ways that we control our fisheries. We limit our fishermen to a certain number of days of fishing and then monitor those fisheries closely to see if we need to make any changes. We also regulate fishing methods, such as net mesh sizes and lengths, to provide more protection to the salmon.

So the next time you see tribal fishermen exercising our treaty rights in a bay or at a river's mouth, remember why we are there. We are there because we have to be.

For the treaty tribes, our place is right here on every major watershed in this region as co-managers of the salmon resource.



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Tribal contact information is available under *Member Tribes* at nwifc.org.



On the cover: A male and female coho hover over a redd in Taft Creek, a tributary to the Hoh River. Tribal fisheries technicians counted robust coho returns in most tributaries on the Olympic Coast. See related story on page 3.

—Jon Preston



A pair of coho salmon make their way up Taft Creek, a tributary of the Hoh River. Hoh tribal fisheries technicians said it was a good year for coho throughout the Hoh River system.

D. Preston

Coho Returns Robust on Olympic Coast

As coho swim into Olympic coastal streams, tribal biologists are cautiously optimistic that returns are at least as robust as predicted, and possibly better. That's good news after a summer of extremely dry conditions that dried up streams, possibly stranding and killing large numbers of young coho.

"The coho survival rate forecast for the ocean was 8 percent, up from 3 percent the year before," said Joe Gilbertson, fisheries manager for the Hoh Tribe. "That's a high survival rate, and we are seeing a lot of fish returning to the Hoh River tributaries in our spawning surveys."

The peak of the spawning season occurs in December, so while the final numbers had not been tabulated, Gilbertson said he

felt reasonably confident that the forecast would be met, and possibly exceeded.

"There are a lot of redds (egg nests) out there and it's great to see," Gilbertson said.

A number of streams in the Quillayute River system also are showing good returns of coho, said Roger Lien, fisheries biologist for the Quileute Tribe.

"With all the November rain, it gave the fish a good opportunity to move into the tributaries," Lien said. "We're seeing a lot of coho in some streams, and in others we think we'll see more than usual farther up in the stream reaches because of the higher flows. It's definitely looking like a pretty good year."

Survey crews from the Hoh, Makah and Quileute tribes, and Quinault Indian Nation monitor streams weekly and count the total number of egg nests. These results, coupled with tabulations of out-migrating young fish in the spring, help tribal and state fishery managers predict future returns of fish.

"The Hoh Tribe has been collecting this fundamental information about fish returns in the Hoh River watershed since 1974," Gilbertson said. "This kind of on-the-ground work is critical for fish forecasts and managing the resource."

— D. Preston

Fish Barrier Removal Opens Small Creek to Coho



D. Preston

Bernard Afterbuffalo, fisheries technician for the Hoh Tribe, surveys redds in a new channel of Chalaat Creek.

Adult and juvenile coho will swim in the upper reaches of Chalaat Creek for the first time in decades thanks to a fish passage improvement completed by the Hoh Tribe in the fall.

Chalaat Creek is a tributary to the lower Hoh River. The 5-mile-long creek meanders through mature second-growth timber and forested wetlands on the tribe's reservation about 30 miles south of Forks. It empties into the Hoh River several thousand feet from the ocean.

"This is the first main tributary to the Hoh River that fish encounter coming in from the ocean," said Steve Allison, habitat biologist for the Hoh Tribe. "These kinds of streams

are historically significant coho producers and we think we're going to see a noticeable increase in the numbers of young coho coming out of Chalaat Creek."

The tribe, through a \$218,000 Pacific Coast Salmon Recovery Fund grant, replaced a failing, impassable culvert with a bridge, and created a 330-foot section of stream channel to allow fish access to a pond with about 2.5 miles of additional habitat upstream.

The low-gradient channel gives salmon access to a 2-acre natural pond that provides excellent over-wintering habitat for young fish, Allison said. The reopened miles of stream

above the pond will be used as spawning and rearing habitat.

Tributaries like Chalaat offer more consistent flows and convenient escape from flood conditions in the river as well as a sanctuary for salmon to feed and grow before migrating to the ocean.

"We will monitor these streams and continue to do spawning fish surveys, smolt trapping and coded-wire tagging," Allison said. "We've had as many as 1,000 coho smolts migrating out of Chalaat Creek recently. It will be exciting to see how much more productive it becomes in the years ahead."

— D. Preston



In this 1979 photo, a Quinault Indian Nation tribal member walks the beach in heavy foam near Duck Creek, several miles north of Taholah.

Larry Workman, QIN

Seabird Deaths Highlight Need for More Ocean

In only the second incident of its kind reported in scientific journals on the West Coast, thousands of seabirds died on the Washington coast as the result of the effects of a harmful algae bloom.

Foam generated from a brown algae (*akashiwo sanguinea*) acted as a detergent, stripping the birds' feathers of their waterproofing protection. Unable to dive to feed or keep warm, the birds died. Nearly 10,000 scoters perished, representing up to 7 percent of the total West Coast population, along with hundreds of loons, murrens and several

other species.

Tribal members and technical staff from the Hoh, Makah and Quileute tribes, and Quinault Indian Nation (QIN) were among those who helped record the magnitude of the problem. They counted and identified bird carcasses and gathered water samples for testing. Results were used by ocean researchers to assess the event.

For some tribal members, the bird die-off wasn't anything new; they'd seen similar events in the 1950s and 1960s. "We would get that foam nearly up to our shoulders – every year – and the birds

would die then too," said Gerald "Juke" Ellis, a QIN tribal member who has fished for decades.

"We had really good ocean conditions back then too – like we have out front in our fishing grounds now," said Ellis, 65. Other signs of those times are being seen now, too. Anchovies and other small baitfish are showing up in large numbers in the waters near Taholah.

Scientists have been tracking West Coast algal blooms for only about 30 years, but tribal members have stories about them that are hundreds of years old.

"It's kind of an interesting

thread to follow when you talk about this recent event," said Joe Schumacker, marine scientist for QIN. "There are signs that the ocean conditions in QIN's traditional fishing area are becoming colder and more productive in terms of feed for fish, like they were in the 1960s and early 1970s. Maybe these algae events are the double-edged sword of productive ocean conditions. You get improved fish feeding conditions, but you also maybe get more of these kinds of algae events."

Large numbers of seabird deaths were probably not as noticeable in the 1960s because the populations were so much larger, Ellis said. "Now, there aren't as many birds – so when a lot of them die, it's a big deal."

Some of the largest bird losses occurred between Neah Bay and LaPush on the Olympic Peninsula. In those waters, the algae was found in high densities. Heavy surf caused the algae cells to break down and create foam. The brown algae was so thick that the ocean looked like the muddy

Quinault Helps Host Timely Symposium on Harmful Algal Blooms

As an algal bloom slowly waned along the Washington coast, nearly 200 of the nation's leading researchers and scientists gathered for the fifth National Harmful Algal Bloom (HAB) Symposium in Ocean Shores.

The Quinault Indian Nation helped host the bi-annual symposium that provides a forum for scientific exchange on all aspects of HAB research in the United States.

"It was timely in that it allowed the researchers and managers to meet and discuss the HAB event we had on our coast," said Joe Schumacker,

marine scientist for the Quinault Indian Nation said. The group plans to produce a scientific paper based on the algal bloom.

"Between the seabird event and our continuing trouble with toxic algae and shellfish, we really highlighted the HAB research and monitoring needs for our northwest region," Schumacker said.

QIN and other coastal tribes participate in the Olympic Region Harmful Algal Bloom (ORHAB) partnership that investigates toxic algae blooms.



D. Preston

A dead scoter lies on the beach south of the Hoh Tribe's reservation following an algae bloom in September.

Research

waters of the Mississippi River, said Jonathan Scordino, marine mammal biologist for the Makah Tribe.

Additionally, Scordino said he typically observes about 1,000 sea lions in the waters around Neah Bay in the early fall, but during the algae bloom, he counted fewer than 300.

"In fact, most of the marine mammals seemed to have gone elsewhere during the peak of these algae events," Scordino said.

For the tribes, recent algal events underscore the need for additional research that will help predict when these events occur and understand what causes them.

"This is an example of why we need to continue to do data collection and add additional ocean moorings," said Ed Johnstone, fisheries policy representative for QIN.

"We know now that gathering just temperature and salinity isn't enough. Ocean currents and wind play a big part in some of these events." — D. Preston

Bridging the Gap to Salmon Habitat

A pair of fish-blocking culverts was replaced with bridges by the Quinault Indian Nation (QIN) to open up more than 2 miles of salmon habitat in tributaries to the Quinault River.

The two projects on the Quinault reservation were on forest roads near the Moclips Highway south of the Quinault River. Both were completed last summer.

The Hatchery Creek bridge replaced a 5-foot-diameter culvert that was a barrier to salmon migration. Since the culvert was undersized, substantial streambed material accumulated upstream of the culvert while the downstream section was severely eroded. Rock weirs were installed in the streambed to create grade control, help retain gravel and minimize turbidity as the creek regrades following the removal of the blocking culvert.

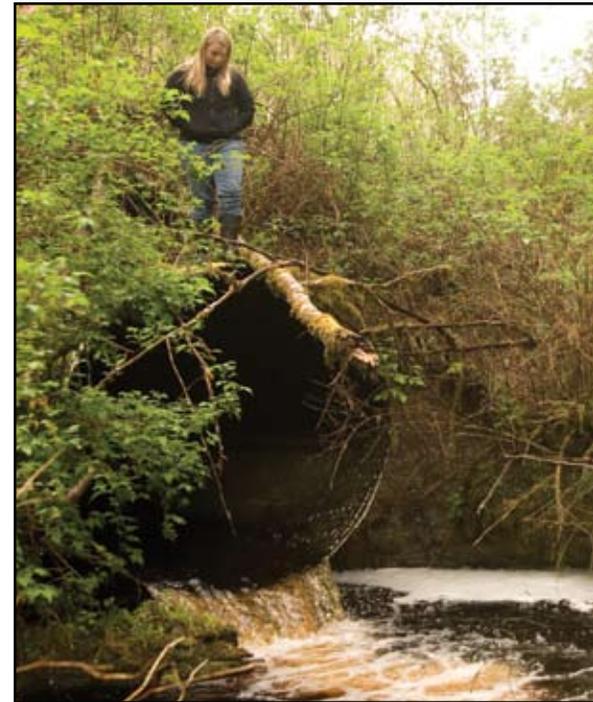
"The weirs are great because they are catching sediment, creating pools and allowing nice spawning gravel to accumulate behind them," said Nicole Rasmussen, fish habitat biologist for QIN. More than half a mile of spawning and rearing habitat is now accessible to all fish.

The second blocking culvert was replaced in Chow Chow Creek. Rock weirs also were installed as part of this project to control the grade and retain spawning-sized gravel. The undersized culvert was replaced with a

channel-spanning bridge. This project opened 1.5 miles of spawning and rearing habitat. The project also provided salmon access to a large wetland that is ideal rearing habitat for young fish.

"Adult coho have been seen above each of the projects this fall," Rasmussen said. "It's great they are using the reopened habitat right away."

The projects were paid for by combined funding from QIN, the National Resources Conservation Service and the state Salmon Recovery Funding Board. — D. Preston



D. Preston (2)

Before: Nicole Rasmussen, right, fisheries habitat biologist for the QIN, stands on a culvert that was replaced later by a bridge on a stream south of Lake Quinault. After: A channel-spanning bridge, below, and habitat improvements allow fish to move upstream on Hatchery Creek.





T. Royal

Lake Sutherland kokanee are examined as biologists gather data prior to the removal of the Elwha and Glines Canyon dams.

Tribe Studies Kokanee Ahead of Dam Removal

It's an annual one-day operation, but what comes of it will help the Lower Elwha Klallam Tribe learn more about Lake Sutherland kokanee.

The tribe has been studying the landlocked sockeye salmon within the Elwha River watershed for four years, including the population's health and genetics. The purpose is to gather baseline data about the population before the river's fish-blocking dams are removed starting in 2011. The lake is connected to the river via Indian Creek.

Like sockeye, kokanee spawn only once in their life cycle, typically in rivers and streams that are tributaries to lakes, but also on lakeshores where groundwater comes up through gravel.

Unlike sockeye, however, kokanee spend their entire lives in fresh water. Because they don't migrate to sea to feed, kokanee are much smaller than their anadromous sockeye cousins.

"After the dams are removed, we'll continue this effort and see if anadromous fish begin to use Lake Sutherland, and see if there is change in the health

profile of the kokanee," said Larry Ward, the tribe's hatchery manager.

It's possible that the kokanee may leave the lake and head for the Strait of Juan de Fuca after the dams come down, but it is more likely the fish will stick to the fresh water, Ward said.

"Having a solid database of the health of the kokanee will help us keep tabs on the health of the watershed," Ward said. "It's all part of learning more about the enormity of the Elwha River system and what species have what roles in it. The database we are building is incredibly valuable on its own, but more so if anything were to happen to this population."

Fish pathologists from the Northwest Indian Fisheries Commission and U.S. Fish and Wildlife Service sample the fish for diseases and to develop genetic profiles. Special attention is paid to looking for Infectious Hematopoietic Necrosis (IHN), to which sockeye are susceptible. The fish disease causes death by destroying blood-forming tissues such as the kidney and the spleen.

— T. Royal

Tracking Olympic Peninsula Elk



D. Preston

A bull elk with moss entangled in its antlers stands in the upper Quinault River watershed. Elk are important to tribes culturally, providing meat as well as items for regalia. The Quinault Indian Nation (QIN) manages its elk harvest through research and harvest data gleaned from the tags that successful tribal hunters are required to turn in.

Jeremiah Johnson, below, wildlife technician for the Makah Tribe, inserts a radio transmitting device into a cow elk while Chris Conklin, water hydraulics biologist for QIN, assists. The two helped wildlife biologists capture 27 elk in Quinault's traditional hunting area to equip with radio transmitting devices. The ongoing study aims to establish home ranges for the elk herds as well as population estimates and survival rates for calves.



D. Preston

Shellfish Beds Reopen after Sewage Addressed

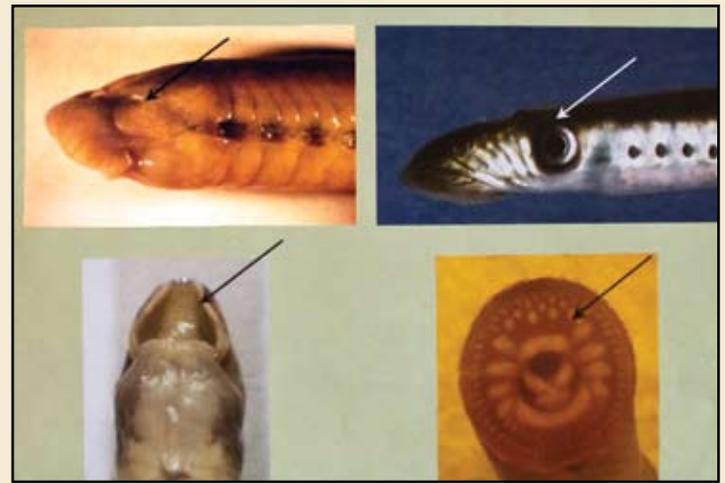
Approximately 300 acres of shellfish beds in Annas Bay near the mouth of the Skokomish River were reopened to harvest this fall.

“We’re very pleased to know that more of Annas Bay has been opened up to shellfishing,” said Joseph Pavel, the Skokomish Tribe’s natural resources director. “Though much of this particular area is owned by private growers and not currently available for tribal harvest, it is a sign that efforts to protect and restore water quality are beginning to have a positive effect.”

The bay’s poor water quality in 2005 forced the state Department of Health to close the beaches to harvesting because of high levels of pollution coming from nearby farms and septic systems. Water quality improved, thanks to better management of animal waste and education about faulty septic tanks.

Last summer, however, there was an emergency closure because anglers were using the riverbanks as a toilet.

Soon after the closure, the Department of Fish and Wildlife and sport fishermen worked together to clean up the riverbank. Garbage containers and additional portable toilets were installed. The shellfish beds near the mouth of the river, with more than 170,000 oysters available for harvest, were reopened a month later. – *T. Royal*



Guide Aids Lamprey Identifications

A new field guide to lamprey on the Olympic Peninsula is now available.

Funded by the Lower Elwha Klallam Tribe, “Lamprey of the Olympic Peninsula Field ID Key” has been published by Western Fishes. The 11-page document is filled with detailed information and pictures of pacific and western brook lamprey. River lamprey also are included, even though they have only been found in Puget Sound and Fraser River drainages.

Researchers are interested in any reported sightings of these specific lamprey, as well as any odd-looking specimens.

Copies of the key are available by contacting Larry Ward at 360-457-4012 ext. 17 at Lower Elwha or Tiffany Royal at 360-297-6546 at the Northwest Indian Fisheries Commission.

Passage Restored to Chico Creek through Golf Course

Recent passage improvements on Chico Creek paid off for salmon returning to Kitsap County’s biggest salmon-producing stream.

“Gravel berms, logs and rootwads were installed at the mouth of the creek near Kittyhawk Drive to help create better salmon habitat,” said Jon Oleyar, a Suquamish Tribe fisheries biologist. “It worked tremendously because the chum were able to move into the system quickly this fall.”

Changes such as these help slow down the water velocity and create pools of water for salmon to rest, feed and spawn.

The fish used to have only a four-hour window to make it through the road’s culverts because of the tides, Oleyar said, but after the first survey of the watershed in October, he saw fish in every tributary in the system.

Upstream, the creek runs through Kitsap Golf and Country Club. Last spring, a new stream channel was developed with proper salmon habitat, such as native vegetation and a meandering waterway, to help salmon migrate through the property.

“It’s thrilled me to see the fish being able to utilize all this,” Oleyar said. – *T. Royal*



Suquamish Tribe

Fish passage improvements to Chico Creek, which runs through the Kitsap Golf and Country Club, allow fish to reach habitat upstream.

Lower Elwha Restores Fish Passage with Huge Culvert

The Lower Elwha Klallam Tribe reached a milestone this fall in its massive effort to restore salmon habitat in the Salt Creek watershed.

The tribe worked with Clallam County, private landowners and the state to remove a 5-foot-wide concrete culvert and replace it with an 18-foot-wide metal culvert on Nordstrom Creek, a tributary to Salt Creek, which empties into the Strait of Juan de Fuca.

“Getting rid of barrier culverts is crucial to salmon survival in watersheds,” said Mike McHenry, the tribe’s habitat program manager. “Very few of the fish that get to these culverts can jump up and into the culvert, much less swim along the concrete bottom. Fish need gravel and shallow water to help them get deep into the watershed and spawn.”

The new culverts are buried halfway underground and their bottoms are lined with gravel to aid fish passage.

During an intensive study of the Salt Creek watershed in 2004, the tribe discovered 31 fish-blocking culverts on state, county and private land needing replacement. The tribe’s analysis showed that the culverts blocked access to more than 25 miles of tributary habitat. So far, the tribe has replaced 17 of the 31 culverts with bridges or modern fish-friendly culverts.

Coho, steelhead, cutthroat and the occasional chum inhabit the highly productive Salt Creek watershed. On Salt Creek alone, as many as 30,000 young salmon have been counted making their way downstream to sea.

“There are so many fish-passage barriers in this watershed,” McHenry said. “People tend to only correct them if they are an immediate hazard. Not everyone has the resources, so we’re helping the best way we know how – partnering with others to get it done.”

The tribe was awarded \$1.5 million for this project from the National Oceanic and Atmospheric Administration’s (NOAA) Open Rivers Initiative, the U.S. Department of Commerce and the state Salmon Recovery Funding Board. – *T. Royal*

Lower Elwha Klallam Tribe habitat program manager Mike McHenry, left, peeks inside the new metal culvert on Nordstrom Creek, while Clallam County engineer Rich Fox looks on.



T. Royal



E. O’Connell

Joe Puhn, environmental program technician for the Squaxin Island Tribe, samples water to measure dissolved oxygen.

Testing Underwater O_2

Tribal researchers are tracking dissolved oxygen closely on a handful of small creeks in deep South Sound to figure out how much oxygen is available for salmon eggs before they hatch.

“Measuring dissolved oxygen gives us a handle on something that might be limiting the survival of salmon just as they hatch,” said John Konovsky, environmental program manager for the Squaxin Island Tribe. Dissolved oxygen is the amount of oxygen suspended in water.

“Fish can suffocate when dissolved oxygen levels are too low,” Konovsky said. “Fish breathe the same oxygen we breathe.”

While juvenile and adult salmon can avoid some low oxygen areas, salmon that are still developing in the gravel are dependent on oxygen levels in their immediate environment. “If their parents spawned in an area with low dissolved oxygen levels, those salmon may never hatch,” Konovsky said.

Coho salmon, which spend a larger part of their life cycle in fresh water than most other salmon species, have been in steady decline in deep South Sound. “Coho salmon depend more on the quality of freshwater habitat than any other species of salmon,” Konovsky said.

“There are probably a number of factors, mostly habitat related, for the decline in coho populations down here,” Konovsky added. “Dissolved oxygen levels on the spawning beds may well be one of the major factors leading to their decline.” – *E. O’Connell*

Stillaguamish Tribe's Wetland Project Expands with State Highway Funding

The state Department of Transportation (DOT) and a crew of inmates helped the Stillaguamish Tribe restore 40 acres of floodplain adjacent to Interstate 5.

The tribe acquired the parcel of land along Pilchuck Creek with plans to restore wetland habitat. The state offered to contribute to the project because it needed to mitigate for 2 acres of wetlands that would be destroyed during safety and congestion improvements to Highway 532.

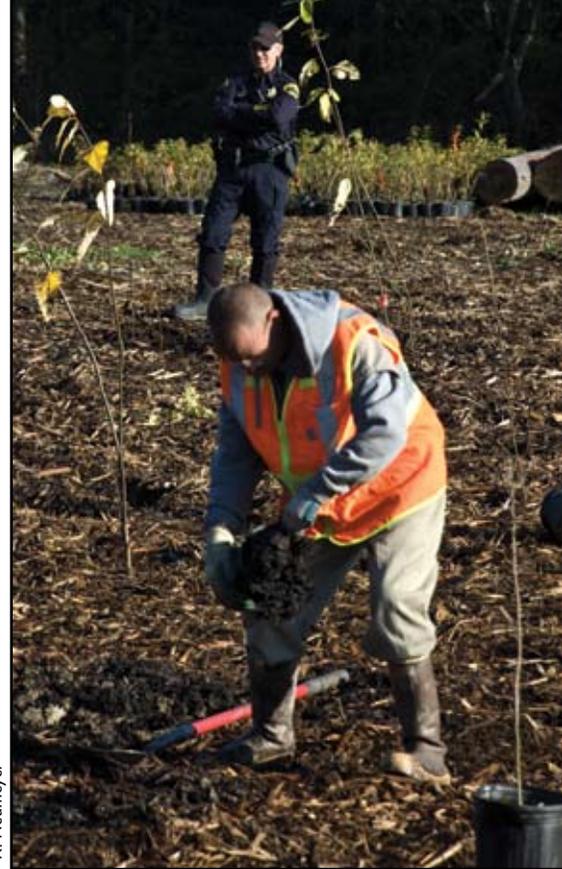
During the past 100 years, the land around the creek near its confluence with the mainstem Stillaguamish River was cleared, graded, farmed and eventually turned into a dirt bike track.

"We were just going to plug the ditches and contour the fields so there were high and low spots," said Pat Stevenson, environmental manager for the tribe. "DOT is paying for a more elaborate wetland project than we proposed."

With DOT's support, the project expanded to include more extensive ditch filling, earth moving and planting. Up to 15 acres of new wetlands will be created, some of which will be banked by the state to mitigate for future improvements.

The Pilchuck Creek restoration will create quality salmon rearing habitat, frog ponds, floodwater storage and wildlife habitat. State Salmon Recovery Board funding is contributing to restoration separate from the mitigation work paid for by the DOT.

A work-release crew of minimum-security inmates from the Snohomish County Jail is planting the newly excavated floodplain with 60,000 plants and shrubs. The tribe has employed an inmate crew for years. In a typical year, the crew plants trees and shrubs in about 30 different riparian projects. — K. Neumeier



K. Neumeier

A Snohomish County Jail inmate plants native vegetation along Pilchuck Creek.

LUMMI NATION

Estuary Project to Help Build Homes, Create Wetland Bank

A combination of Lummi Nation projects not only will repair past destruction of more than 2,000 acres of salmon and wildlife habitat, but also will help build homes for tribal members.

The Lummi Natural Resources Department is reconnecting tidal channels and restoring wetlands to provide rearing habitat for juvenile salmon along Smuggler's Slough. In a separate but related project, Lummi is creating the first tribal wetland and habitat mitigation bank in the country. The wetland and habitat mitigation bank will generate credits to offset any unavoidable impacts of development elsewhere, including homes built on tribal members' land assignments and Lummi Nation economic development projects.

While the two complementary projects share the goal of restoring habitat and fish passage, the funding is separate. Restoration project grant money cannot be used for work that generates mitigation credits.

Smuggler's Slough once provided fish passage between

Bellingham Bay and Lummi Bay, but it was turned into a drainage ditch in the 1930s when most of the Nooksack River delta and associated estuary was converted to farmland.

The restoration project will provide fish access to 6.7 miles of slough habitat and wetlands, and restore tidal flow to 640 acres of potential salt marsh habitat.

Some of the former estuary had been deeded to tribal members after it was turned into farmland. The tribe bought that property outright or obtained conservation easements using funding from the state Salmon Recovery Funding Board, U.S. Department of Agriculture's Natural Resources Conservation Service Wetlands Reserve Program and the U.S. Fish & Wildlife Service through the Department of Ecology's

Coastal Wetlands Program.

Additional funding for the restoration project comes from the National Oceanic and Atmospheric Administration's Coastal Wetlands American Recovery and Reinvestment Act, the U.S. Fish and Wildlife's Coastal Program and Tribal Wildlife Grant, and the state Estuary and Salmon Restoration Program.

The tribe is funding the wetland and habitat mitigation bank for now, but eventually, the mitigation bank will be supported through the sale of mitigation credits sold to developers in exchange for rehabilitating and enhancing wetland

areas. In addition to hundreds of acres on Smuggler's Slough, the tribe has set aside 1,000 acres of the Nooksack delta and 760 acres of the Lummi delta for the mitigation bank.

"We have a shortage of buildable land for homes on our reservation, because so much of it is wetlands," said Merle Jefferson, natural resources director for the tribe. "These two projects not only will restore fish and wildlife habitat and improve water quality for shellfish beds, but also will generate income to stimulate the local economy."

— K. Neumeier

Lummi tribal technician Chris Phair excavates a channel that eventually will reconnect the Nooksack River delta with Lummi Bay.



K. Neumeier

Puyallup Tribe: Rivers Need Room to Move

Diking and other methods used to control the Puyallup River and its tributaries are making floods worse and slowly driving chinook into extinction.

It didn't used to be this way. Floods historically served

a constructive role for salmon. They created new habitat like logjams and off-channel wetlands. Today dikes allow only damaging, egg-scouring floods.

When the river had more room to move, floodwaters had slower velocity, and did less damage to private property.

Fewer and fewer places are left in the watershed where chinook can successfully spawn, so when a flood happens, there aren't many salmon eggs left to kill.

The Puyallup Tribe and our partners have been trying to reverse this trend. Over the last few years, we've taken part in three projects to reconnect important wetlands to the river. The most recent project, the Sha Daxd off-channel restoration, reconnected 17 acres of habitat to the main river.

When the river rises, juvenile fish need a safe, calm place, just like people who live in the river's path. Off-channel habitat gives young salmon shelter as they prepare to migrate to sea.

Salmon habitat is disappearing like never before. Ten years ago, we proposed a mile-long dike setback near Orting that would allow a tributary to the Puyallup to return to its natural meandering course. That project evaporated when a 170-acre housing development was built within yards of the river-hugging dike.

We're encouraged that Pierce County is taking a broader view of the flooding issue and is creating a countywide flood planning process. We hope we can move forward with the county to tackle flood protection in a way that protects both people and salmon. — Fred Dillon is the policy representative for the Puyallup Tribe of Indians.



Fred Dillon

Taking a Closer Look at Habitat

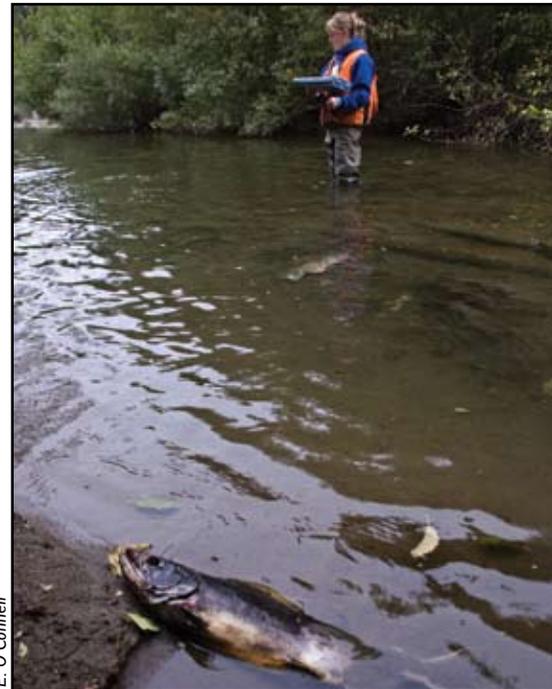
The Puyallup Tribe of Indians and the South Puget Sound Salmon Enhancement Group (SPSSEG) are getting the lay of the land on the Greenwater River before a significant salmon habitat restoration project breaks ground next summer.

The tribe and the enhancement group are restoring 3 miles of salmon habitat on the Greenwater, a major tributary to the White River. But before they can begin, they're conducting a series of habitat surveys so that an accurate comparison can be made after the project is complete.

"Being able to get a good pre-picture of the project site gives us a better idea of how successful we are in the long run," said Russ Ladley, resource protection manager for the tribe.

Next summer, the tribe and enhancement group will build a series of 15 logjams and remove 4,500 feet of forest road riprap berm from the floodplain. Logjams are important for salmon because they help create stable habitat for shelter and places for juvenile salmon to eat. Riprap hardens riverbanks and alters flows, damaging salmon habitat.

"About 50 or so years ago, logging around the Greenwater pretty much removed any of the trees that would usually fall into the river and eventually build logjams," said Kristin Williamson, project manager for



E. O'Connell

Kristin Williamson, a project manager with the South Puget Sound Salmon Enhancement Group, surveys habitat on the Greenwater River.

SPSSEG. "Because those trees are just now starting to grow back to the size that supports the habitat salmon need, we can kick-start the process." — E. O'Connell

Generations



The Puyallup Tribe of Indians and the Washington State Historical Society

Yelm Jim and George Leschi operate a fish trap on the Puyallup River in the 1880s. Traditional fisheries management required that fishing only occur during a portion of the salmon migration season, so that enough salmon reached the spawning grounds to perpetuate the run.

Salmon to Benefit From Better Habitat

To make the most of underutilized habitat, the Squaxin Island Tribe, the state Department of Fish and Wildlife, and the Allyn Salmon Enhancement Group (ASEG) are planning to release 30,000 juvenile coho salmon into Schumacher Creek.

The supplementation comes after a multi-year investigation by the tribe and the South Puget Sound Salmon Enhancement Group (SPSSEG) into salmon habitat and production in the Sherwood Creek watershed, to which Schumacher Creek is a tributary.

“This kind of supplementation works because while the number of adult spawners we get back is enough to be self-sustaining, there is more habitat in the system than they actually take advantage of,” said Scott Steltzner, salmon biologist for the tribe. “Supplementation isn’t a one-size-fits-all solution, it has to be suited to the watershed.”

“In the case of the Sherwood watershed, and especially Schumacher Creek, there is underutilized habitat,” Steltzner said. The

additional juvenile fish are coming from the state’s nearby Minter Creek hatchery.

Until 2007, salmon eggs were planted in the lower Sherwood Creek watershed using Remote Site Incubators (RSIs) by the ASEG, which turned out to be an inefficient way to boost salmon populations.

“Salmon were being put in, but they weren’t producing more adult fish,” Steltzner said. “The only thing the RSIs did was mask the real productivity of the creek.”

The tribal and state salmon co-managers halted the use of RSIs to allow for the study of the local coho salmon population. The tribe’s research eventually pointed to direct supplementation in the upper watershed as the best approach.

“The research we completed gave us a good idea of how many fish are using the system and how many the system can actually support,” Steltzner said. “Instead of eggs in RSIs, older juvenile coho released in the fall in the upper watershed will likely be more successful.” – *E. O’Connell*



Joe Peters, fisheries management biologist for the Squaxin Island Tribe, measures a coho salmon migrating out of Schumacher Creek.

Tribe Restricts Fishing at Arcadia to Protect Chum



Bear Lewis, a fisheries technician with the Squaxin Island Tribe, scans a coho salmon for a coded-wire tag.

The Squaxin Island Tribe closed its coho fishery this fall at a popular tribal fishing site to protect a unique run of wild chum salmon.

Coho fishing was closed at Arcadia Beach, a tribally owned boat launch that is one of the easiest spots for tribal fishers to access. The beach also is situated on the migration route of chum salmon returning to Kennedy Creek at the same time tribal fishermen are targeting coho in the area. The normal tribal coho fishing season remained open throughout South Sound.

“Usually, chum and coho migrate during different time windows, but Kennedy Creek chum tend to show up early, so they can be caught during coho season right around Arcadia,” said Joe Peters, the tribe’s fisheries management biologist.

An unusually high number of chum were caught at Arcadia during coho season last year. That led the tribe to close its chum fishery for a couple of weeks in November to ensure enough fish made it back to Kennedy Creek to perpetuate the run. Benefits to the chum run outweigh the loss of fishing opportunity for coho, Peters said.

In addition to closely monitoring tribal harvest, spawning surveys are conducted by the tribe on area creeks to determine how many fish have returned to reproduce.

Restricting fishing in a particular area is a common method of fisheries management. Squaxin Island Tribe fishers only harvest coho outside South Sound inlets.

“The outside-the-inlet fisheries method ensures we are targeting only healthy stocks of hatchery coho,” Peters said. “More than 90 percent of our catch consists of hatchery fish when we harvest outside of the inlets.”

Like most South Sound chum stocks, the Kennedy Creek chum run is strong, with more than 30,000 fish returning annually, Peters said.

“Still, we want to boost the overall run to be as certain as we can that enough fish get back to the creek every year,” he said. “Our extensive monitoring of harvest and escapement allows us to adjust our fisheries quickly, even in mid-season.”

– *E. O’Connell*

Road Becomes Salmon Habitat

It took just three weeks for spawning adult salmon to find their way into newly created habitat that had once been a frequently flooded road.

River Road, a little-used access road just north of the Skokomish River and south of the Skabob wetlands, was acting like a dike by preventing the wetlands from draining

into the river, said Ron Figlar-Barnes, the tribe's natural resources planner/EPA Coordinator.

Failing culverts under the road were blocking water which was pooling on the road each spring. Juvenile salmon would move into the road pools during spring runoff, become trapped in the summer months, and die when the water evaporated before the fall rains.

The tribe had planned this fall to repair the road, remove the failed culverts and reconnect the wetlands to the river, but then decided to take it a step further.

Approximately 1,000 feet of the road were permanently closed, culverts were removed, areas were deepened and the wetlands were reconnected. Fish can now use the road as a side channel to access the Skokomish River.

The result of the restoration is a shaded, meandering waterway with a gravel bed, which is prime salmon spawning and juvenile rearing habitat.



Skokomish Tribe

River Road is now a meandering streambed full of prime habitat for salmon that are coming up the Skokomish River, seeking areas like this to spawn.

Within three days of completion, a crayfish and newt were found in the restored area. Three weeks later, after October's first big rain, a chinook and three salmon redds were found at the site.

"Seeing chinook use this stream so soon was incredibly exciting," Figlar-Barnes said. "Soon after, we saw chum salmon spawning in the creek, too, and we're expecting to see coho make their way into the stream as well." – T. Royal



Skokomish Tribe

Old road berms are removed as River Road is transformed into a new side channel.

Enetai Hatchery Receives Much-Needed Upgrades

When the Skokomish Tribe's hatchery manager Laura Swaim came on board in September 2008, she had fewer than three weeks to prepare the aging Enetai Hatchery for the annual influx of about 4,500 Hood Canal chum.

With the aid of assistant hatchery manager Lenora Gouley, the women built a brand new incubation system and developed an efficient milt and egg collection method. They also toured the Nisqually Tribe's Clear Creek hatchery to learn more about efficient spawning procedures, and implemented changes for Skokomish's chum spawning system.

As soon as last year's spawning was complete, the women got busy overhauling the hatchery, including building new structures to hold eyed embryos, fixing the leaking raceways, getting proper water flow to all of the hatchery's seven raceways and installing a new cleanout trap for

the hatchery's water mainline. Three of the raceways had inadequate flow due to debris buildup in the mainline.

"Our new custom-designed lift has made a world of difference this year too," Swaim said. "We didn't have to use a front-end loader/back hoe and a bucket this year to retrieve fish from the spawning channel."

When chum started showing up in late October, everything was ready to go for the nearly 5,000 chum salmon that came back to the hatchery. The tribe now has about 2.5 million eggs in its incubation system.

Using a Bureau of Indian Affairs cyclical maintenance grant and self-governance funds, the tribe completed \$22,000 in upgrades, including designing the spawning lift, re-piping water to seven raceways, installing security fencing and constructing a spawning shed.

– T. Royal



T. Royal

Enetai Hatchery manager Laura Swaim rinses chum eggs during a spawning session this fall.

Native Plants Major Part of Ohop Project



E. O'Connell

Rachel Simmons, left, and Eddie Villegas, both Nisqually Indian Tribe members, plant willow stakes during a riparian restoration project along Ohop Creek.

The Nisqually Tribe is using an unusually large amount of local plants for a riparian restoration project along Ohop Creek.

"It's pretty rare for this much native plant stock to be harvested nearby for a restoration project," said Cathy Sampselle, restoration biologist for the Nisqually Tribe. While most of the plants will come from native plant nurseries, which truck the plants to the restoration site, a lot will come from either the project site itself or will be donated by local landowners.

Not only does using local plants save money on shipping, they probably are more likely to survive.

"Local plants mean that their genetics are adapted to that particular area," Sampselle said.

Because of an agreement worked out with a local landowner by Brian Combs, a project manager with the South Puget Sound Salmon Enhancement Group, even more native plants will be coming in. Tribal crews will spend about a week harvesting willow and cottonwood before beginning to plant.

The planting is part of a much larger salmon habitat restoration project by the tribe, the group and the Nisqually Land Trust. The project involved digging an entirely new channel for the creek to create better quality habitat for salmon than the current channel.

"The creek will be rerouted into the new channel next year, but before that, we're going to restore the native vegetation that historically would have been alongside the creek," said David Troutt, the tribe's natural resources director.

Riparian habitat is important because it helps shade the creek, keeping water temperatures cool enough for salmon.

"Salmon need trees and plants along the creek to survive," Troutt said.

"Getting the most out of the money you have to spend on any particular project is important in salmon restoration," Troutt added. "Every year there is less and less money available for these vital projects, so when we can stretch a dollar, we do the best we can."

— E. O'Connell

Squaxin Island Tribe Tracks Low Water Flows

Work Will Help Protect Coho, Habitat

The Squaxin Island Tribe is tracking low flows in a dozen small South Sound streams to try to figure out how low the flows can drop in late summer. The tribe is one of 19 treaty Indian tribes in western Washington participating in a regionwide study with the U.S. Geological Survey (USGS) to build a model that can predict low stream flows.

"This is important information for protecting salmon, and it's something we don't know a lot about in ungauged stream systems," said John Konovsky, environmental program manager for the tribe. "The science tells us that the more water there is in summer, the more rearing coho there are."

Tribal staff take weekly recordings during rain-free periods in late summer and early fall (when streams flows are the lowest) carefully quantifying any drop in flow. All streams within the Squaxin Island Tribe's treaty-reserved fishing area depend exclusively on rain or groundwater for their flows.

Understanding low-flow variability is important to protect species like coho and trout because they spend a good portion of their lives in fresh water.

"As the water levels drop each summer, salmon habitat disappears and water temperatures increase, which is harmful to salmon," Konovsky said. "Being able to predict that is important."

The tribe is especially concerned about the health of coho, which have been on a downward slide for years. The tribe suspects that a decline in the health of coho freshwater and saltwater habitat is the cause, but the specific reasons remain a mystery. — E. O'Connell



E. O'Connell

John Konovsky, environmental program manager for the Squaxin Island Tribe, takes a low-flow measurement on Schneider Creek, which flows into Totten Inlet.

Stillaguamish Tribe, City, USGS Studying Wastewater Pollutants

Something in the water could be slowing salmon reproduction rates.

Wastewater containing pharmaceuticals and other products that mimic estrogen can interfere with the endocrine system of fish, potentially resulting in males displaying both male and female characteristics, which inhibits breeding.

The Stillaguamish Tribe has partnered with the U.S. Geological Survey's Water Science Center in Tacoma and the city of Arlington to look at contaminants in the wastewater that winds up in the Stillaguamish River and Port Susan Bay.

These "emerging contaminants" have become an increasing concern because they are present in the environment on a global scale. They include endocrine disruptors such as

pesticides, birth control pills, detergents and other industrial, agricultural and household products.

In 2006 and 2007, the tribe partnered with the National Oceanic and Atmospheric Administration to test adult male chinook at the Harvey Creek Hatchery for the female egg-producing protein, vitellogenin. The protein was present in all male fish, but at levels that may not lead to feminization in adult fish. The tribe is concerned that chronic low levels of emerging contaminants could combine to have a toxic effect on fish.

"The Arlington Wastewater Treatment Plant is upgrading its system to filter some of these compounds out of the water before it is discharged into the river," said Jennifer Sevigny, a biologist with the Stillaguamish Tribe. "We



City of Arlington

Mike Wolanek, right, water resources planner for the city of Arlington, samples water at the city's Wastewater Treatment Plant.

are documenting what is there now and what we find after the upgrades are complete. Arlington is a small municipality and they are way ahead of larger cities in trying to improve water quality." — K. Neumeyer

Upper Skagit Uses Unique Tree-Planting Method



K. Neumeyer

A crew from WildLands plants trees uses a mechanized rotary stinger, which was developed by S&K Environmental Restoration, a division of the Confederated Salish and Kootenai Tribes.

The Upper Skagit Tribe is using an unusual mechanized tree-planting device to plant more than 50,000 trees in the Hansen Creek floodplain.

The tribe is working with WildLands and S&K Environmental Restoration, a division of the Confederated Salish and Kootenai Tribes that developed the rotary stinger to plant trees more efficiently than traditional methods.

The tree planting is part of a project that began last summer to restore 140 acres of salmon habitat around Hansen Creek, a tributary to the Skagit River near the Upper Skagit Tribe's reservation.

The restored freshwater floodplain habitat will create 53 acres of river delta and 87 acres of forested wetlands in the Skagit County-owned Northern State Recreation Area.

The past 60 years of dredging and levee maintenance has degraded spawning habitat and interfered with natural stream processes.

"We have all six species of salmon in the Skagit watershed," said Scott Schuyler, the tribe's natural resources director. "Hansen Creek supports chinook, steelhead, coho, chum and pink salmon, but it has been straightened, narrowed and disconnected from its floodplain fan and wetlands."

The Upper Skagit Tribe is removing parts of the levee and building logjams that will restore natural sediment movement and improve salmon habitat. The project will restore nearly 2 miles of side-channel habitat, as well as hundreds of feet of mainstem habitat to support fish productivity.

The fragmentation of habitat in Puget Sound has resulted in the loss of freshwater wetlands important to salmon survival. The Hansen Creek restoration is an important part of the salmon recovery effort.

Puget Sound chinook and steelhead are listed as "threatened" under the federal Endangered Species Act, and Skagit coho are listed by the state Department of Fish and Wildlife as a species of concern. — K. Neumeyer

See a video demonstration of the rotary stinger at go.nwifc.org/2qfsfn

Swinomish Making Choices For Climate Change

Swinomish Tribe water resources department staffers have been recognized as “Protectors of Mother Earth” for making a simple change at the annual community clam bake.

Instead of using paper plates and disposable utensils, the department brought real plates and silverware to the event held last summer at Lone Tree beach and the Thousand Trails Lodge.

The tribe’s newly formed Climate Change Education and Awareness Group (CEAG) recognized the water resources department’s effort in the monthly *Kee-Yoks* newsletter. The group is encouraging tribal members to make small changes that will benefit the environment and help reduce the causes of climate change.

“Our tribal leaders are at the forefront of the climate change movement,” said Shelly Vendiola, communications facilitator for the group.

The Swinomish Indian Senate signed a proclamation forming a Climate Change Initiative in October 2007. The tribe’s planning and community development department released a climate change impact assessment report this fall, in partnership with the University of Washington Climate Impacts Group and the Skagit River System Cooperative.

The assessment found that more than 1,100 acres of Swinomish Reservation lands and about 160 residential structures are potentially at risk of inundation from increasing sea levels or tidal surge. Traditional tribal beach seining sites and shellfish beds are at significant risk of permanent inundation and potential loss. Shellfish and salmon are at risk of higher levels of contamination from algal blooms and other diseases that may be exacerbated by increased temperature.

Not only are heat-related illnesses a concern for the reservation population, especially those who are ill or elderly, but tribal members in particular may be at risk of ailments such as asthma and toxic poisoning from the combined effects of pollutants.

“We’re looking at global issues and making the link to our local tribal community at Swinomish,” Vendiola said. “We are starting to raise awareness about climate change and its impacts, and how it’s going to affect such things as land use, transportation, hous-



Swinomish Tribe

Swinomish tribal member Divenity Kochuten wins a tote bag at the Climate Change Education and Awareness Group’s booth at the tribe’s Halloween party.

ing, facilities, and natural and cultural resources such as shellfish, salmon and forested areas.” – K. Neumeyer

Crack A Cone With Your Toes

A pile of shredded pine cones at its feet attests to this Douglas squirrel’s proficiency getting seeds, one of the mainstays of its diet. In the fall, the squirrel will cache green cones, as well as mushrooms, so they will keep all winter.



D. Preston

Tips To Help :

- Recycle. Reuse. Renew.
- Unplug unused electronics.
- Install low-flow shower heads.
- Switch to compact fluorescent light bulbs.
- Take your own bags to stores.

What is climate change?

Climate change, also known as global warming, is from increased amounts of carbon dioxide in the atmosphere. Changes that can be seen on the ground include rising sea levels, melting glaciers, reduced snowpacks, hotter summers, wetter winters and increased drought conditions.

Visit the Web site for the Climate Change Initiative at swinomish.org/departments/planning/climate_change/climate_main.html

Walking On

Frederick “Sonny” Woodruff



Frederick “Sonny” Woodruff, of the Quileute Indian Nation, joined his Creator Sept. 26 following a half century of contributions to his people.

Born Jan. 6, 1951, Woodruff was the epitome of traditional and contemporary life. He was a fisherman all his life, fishing from a dugout cedar canoe, and a master operator of heavy equipment.

He was a tireless spokesman for Indian rights and chairman of countless committees and boards, including the tribal school board, the housing board, the fish committee, the planning board, the cultural committee, a natural resources policy representative for the Northwest Indian Fisheries Commission and many more.

“He was everything to our tribe,” said his niece Bonita

Cleveland, vice chair of the Quileute Tribal Council. “We were so close, like brother and sister. We grew up together and I have never known anyone like him. He never, ever asked for a thing, but always gave recognition. He was a strong leader, someone who made sure all things were right.”

Woodruff, a graduate of Forks High School, is the son of Fred Woodruff Sr. and Sarah Hines Woodruff, both of whom preceded him in death. Also awaiting him at the Spiritual Council Fire are his brother, Doug, and his sisters Pearl and Shirley.

Woodruff is survived by his wife, Jill Woodruff; two sons, Dakwa Woodruff and Rick Woodruff; three daughters, Sharrah Woodruff, Brandy Woodruff and Maria Erickson; one brother, Russell Woodruff; five sisters, Pat Matson, Delores Woodruff, Bertha Wallstedt, Mary Eastman and Donna Jamie; and numerous nieces, nephews and grandchildren.

Andrew “Sonny” McCloud Jr.



Andrew “Sonny” McCloud Jr., of the Puyallup Tribe of Indians, died Nov. 27 at St. Peter’s Hospital in Olympia.

McCloud was born on Dec. 3, 1921 in Mud Bay, Wash., just west of Olympia, to Andrew McCloud and Angeline Tobin McCloud on the James Tobin Indian homestead allotment.

At age 7, he moved to Frank’s Landing on the Nisqually River, where his mother, Angie, had married Bill Frank Sr. The elder Frank died at age 104 in

1983. Andrew’s mother died in 1986 at age 95.

McCloud was a retired member of International Brotherhood of Electrical Workers (IBEW) Local 77. In his nearly 40 years as a journeyman lineman, McCloud worked throughout much of the Pacific Northwest.

Until his early 40s, McCloud was also a fisherman on the Nisqually River.

McCloud married Edith Kanine after being discharged from the U.S. Army following World War II. They purchased a 20-acre home site in Yelm, Wash., where they raised their family. In recent years, Andrew traveled regularly back and forth between Yelm and Pendleton, Ore., where his wife Edith worked in cultural education and language programs for the Confederated Tribes of the Umatilla Indian Reservation, where she is an enrolled member.

McCloud is survived by his wife, Edith, sister Maiselle Bridges and brother Billy Frank Jr.; 12 children; dozens of grandchildren, great-grandchildren and a great-great-grandson; and many nephews, nieces and cousins.

Preceding him in death were son Russell McCloud; daughter Linda Rose McCloud; sisters Rose Fredericks John and Elsie McCloud Capoeman; and brother Don McCloud.