



Northwest Indian Fisheries Commission

NWIFC News

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Stand Up for Your Food

By Billy Frank Jr.
NWIFC Chairman

How much fish and shellfish do you eat?

For more than 20 years, the state of Washington has based its water quality standards on the idea that we eat one small bite a day, or 6.5 grams. About the size of a sugar cube.

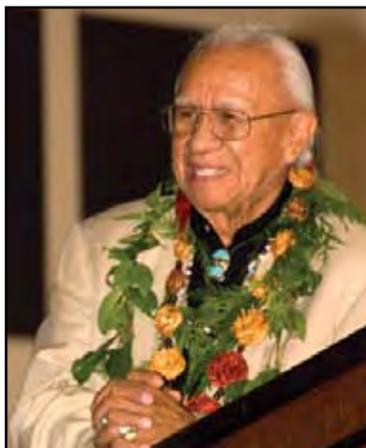
That number is very important to everyone who lives here because it is used to set state standards for how much pollution can be put into our waters legally. The number the state's using right now isn't even close to what most of us eat.

We've been working hard for the past two decades to encourage the state to adopt a more realistic rate that will better protect those waters, the food that comes out of them, and the health of everyone who lives here. Now it finally looks like the state department of Ecology is taking steps to revise the old standards, and that's encouraging.

It's a sad fact that much of our local seafood is contaminated by pollution that seems to be everywhere in our environment. The new consumption standard will be aimed at helping reduce levels of more than 100 pollutants that can hurt people. Over the long term, these poisons can make us sick and even kill us.

Sure, some people don't eat locally harvested seafood at all, but those of us who do sure as heck eat a lot more than a small bite a day. Even though tribal members eat a lot more fish and shellfish than most folks, many thousands of non-Indians – especially our Asian-American and Pacific Islander communities – also make seafood a large part of their diets.

It's a shame that it's taken so long to revise our state's ridiculously low consumption standard, but the polluters have a strong lobby. They'll tell us we can't afford to protect our water, our food and our health, and that new rules



will lead to everything from lost jobs to higher sewer rates at a time when our economy is struggling.

The truth is that we've all been paying the costs of a low consumption rate for many years in terms of the quality of our water, food and health.

Regardless of what number is chosen to update the consumption standard, it's unlikely to even come close to the amount of fish and shellfish tribes eat every day. But revising our state's fish consumption standard is not just a tribal issue. It's a public health issue that affects everyone who lives here. That's why we support a significant increase.

We are standing on the edge of a great opportunity and we need to take bold action. Ecology will be holding public hearings on the new standards and you will have a chance to participate. Stand up for the water! Stand up for your food and your health! Let Ecology know that you eat fish and shellfish from Washington waters. Tell them you want to see the new consumption standard adopted quickly, without major loopholes for polluters.

For us tribes, western Washington is our home, and its waters are the source of much of our food. Our cultures and treaty rights are tied to this place, and we are committed to keeping it a healthy place to live. Fish and shellfish is food. There's no reason it shouldn't be available, plentiful and healthy enough for all of us to eat.

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On the cover: Upper Skagit tribal member Larry Peterson harvests coho salmon in the Skagit River. Photo: K. Neumeyer

LUMMI NATION

Diet Survey to Protect Tribal Health

The Lummi Nation Natural Resources Department is finding out just how much seafood the average tribal member eats.

Seafood consumption rates are used to determine water quality safety standards, but federal and state agencies rely on national studies. Members of fishing tribes in western Washington eat a lot more fish than the average person.

Although Washington state is considering updating its consumption rate, the current state water quality standard is based on a rate of 6.5 grams of fish a day. Other studies of Northwest Indian tribes and Asian and Pacific Islanders reported consumption rates ranging from 100 to nearly 500 grams of fish per day.

“Estimates for seafood consumption from national sur-



K. Neumeyer

A Lummi family harvests manila clams in Portage Bay last spring. Shellfish, which make up an important part of tribal diets, are vulnerable to contamination by water pollution.

veys do not apply to either the Lummi people or other Indian tribes in the Puget Sound area,” said Merle Jefferson, director of Lummi Natural Resources. “We need to know how much seafood our people eat, so we can set regulations that reduce the pollution in the waters where we harvest our food.”

The Lummi Nation plans to use Lummi-specific data to set

its own standards. Last year, natural resources staff members began surveying male tribal members with fishing and shellfishing licenses, including fishermen who harvest for ceremonial and subsistence purposes.

In addition to guiding Lummi’s water quality standards, the results of the diet study will help ensure that the state’s tox-

ic substance criteria protect the health of tribal members.

The study was funded by the Agency for Toxic Substances and Disease Registration, a division of the Centers for Disease Control and Prevention with additional support provided by the federal Environmental Protection Agency.

— K. Neumeyer



K. Neumeyer

Volunteers from Lummi Fisheries, Lummi Indian Business Council and Lummi Fish Commission pass out sockeye salmon to tribal members.

Surplus Sockeye Gets Families through Winter

The Lummi Nation distributed sockeye salmon to tribal members in September for families to can and store for the winter.

“The tribe puts fish away as much as possible when we have an abundance, for ceremonies and all the functions that the tribe sponsors,” said Randy Kinley Sr., policy representative for the tribe. “It’s very important to take care of our people’s needs culturally.”

The fish was caught during the record 2010 Fraser River sockeye run and had been in cold storage. More than 34 million sockeye returned that summer, the largest run in nearly 100 years, but poor returns are expected for the next few years.

“The sockeye season was short this year and we wanted to make sure people have the opportunity to put salmon away for the winter,” Kinley said.

Watch a video about the giveaway at go.nwifc.org/12u.

Water Flows, Sediment Moves, Salmon Return



Kim Soger-Fradkin, Lower Elwha Klallam

The delta of Lake Aldwell is looking more like a river. The partial removal of the Elwha River dam below the lake has drained it significantly, allowing the increased water flow to develop river channels.

Lake Aldwell Reservoir Recovers from Constraints of Dam

The Lake Aldwell reservoir is starting to look like a river again. It's just one of the changes to the Elwha River system that the Lower Elwha Klallam Tribe has been watching with great anticipation since removal of the river's two fish-blocking dams began in September.

By Nov. 1, the 108-foot-tall Elwha Dam had been lowered by 48 feet and the 210-foot-tall Glines Canyon dam by 32 feet. Water from the reservoirs has been spilling over the deconstructed dams, changing the hydrology of the reservoirs as well as the lower river. Only the last 5 miles of the river were free flowing before dam removal began.

"Since the Elwha Dam is about 40 percent gone, the reservoir behind it, Lake Aldwell, isn't really a reservoir anymore,"

said Mike McHenry, the tribe's habitat program manager. "It's starting to look like a river channel. The delta at the south end of the reservoir is more exposed and sediment is being transported downriver."

In addition, construction crews have removed remnants of nearly 100-year-old pilings from Lake Aldwell. Also removed was a log boom that prevented boats from going over the dam. The wood was allowed to flow downriver with the expectation that it will contribute to salmon habitat in the lower river.

"Following the big rains we had in late November, the river was flowing at 10,000 cubic feet per second at one point," McHenry said. "A lot of dynamic stuff is happening with the high flows."

Near the mouth of the river, the tribe has

noticed a small increase of fine sediment building in the estuaries.

"The fine sediment plume from the mouth of the river into the strait is much more pronounced than it was prior to removal activities and its configuration varies during the course of the day," said Matt Beirne, the tribe's environmental coordinator. "We haven't seen significant sediment deposition in the estuary just yet, but we have seen elevated turbidity levels from the finer sediments."

He added, "Although the removal of the dams appears to be ahead of schedule, we don't expect to see significant sediment deposition within the estuary until we experience greater mobilizing flows throughout the system." — *T. Royal*

About the Elwha River Dam Removal

- For nearly 100 years, fish were blocked from the upper Elwha River watershed by two dams that were built without fish ladders.
- More than 20 million cubic yards of sediment have built up behind the dams. Following the removal of the dams, most of it will be allowed to flow downriver and alter the riverbed.
- The dams are owned by the federal government. Olympic National Park is spearheading the removal effort.
- The project to remove the structures and restore the Elwha River ecosystem, estimated at \$350 million, is the largest dam removal project to date in the United States.
- The project is expected to be finished by 2013.

Turn as Elwha Dams Come Down



Lower Elwha Klallam Tribe project biologist Ray Moses releases a coho into the Elwha River.

First Spawners Arrive at Hatchery

As of mid-December, 1,077 adult coho salmon found their way to the new Lower Elwha Klallam hatchery, said Larry Ward, the tribe's hatchery manager.

The state-of-the-art hatchery is closer to the Elwha River than the old hatchery, has access to three times more water, and allows for healthier rearing conditions.

The fish coming back to the new hatchery are a mix of hatchery and natural salmon. All the fish that return to the new hatchery will be moved to the river to spawn in the wild or will be spawned at the hatchery.

The tribe encouraged the returning fish to find the new hatchery by pushing out water from there instead of from the old facility, Ward said. Fish that returned to the old hatchery were allowed to naturally spawn in the river since the tribe was able to meet its escapement goals at the new hatchery

Coho to Repopulate Habitat

There is a sense of urgency as black mesh bags filled with adult coho salmon are relayed down a steep hill toward the Elwha River. Standing on the bank, Lower Elwha Klallam Tribe hatchery manager Larry Ward retrieves a bag, unzips it and gently prods out several salmon. Within seconds, the fish make a splash before quickly swimming away, seeking good spawning grounds.

The tribe, with volunteers from state and federal agencies, transferred 50 coho salmon recently from its new hatchery, House of Salmon, to a stretch of river between the Elwha and the Glines Canyon dams, below the Highway 101 bridge. The dams, built without fish ladders in the early 20th century, had blocked salmon from getting past the lower 5 miles of the river.

"We are putting these fish in an area that hasn't had salmon for nearly 100 years," Ward

said. "We plan to track their movements using radio tags but also expect them to start seeding the area."

The tribe released nearly 600 fish into the river this fall. All the fish will be tagged with spaghetti tags, so they can be identified if harvested. Nearly one-third of the fish also will be outfitted with blue plastic radio tags. The radio tags will help the tribe track the fish that seek spawning grounds in nearby tributaries.

The offspring of these salmon are expected to head to the ocean in spring 2013. When dam deconstruction wraps up in 2014, they will be returning to the river as adults. They will be the first salmon to come back after the dams are removed.

During dam removal, work in the river will be put on hold during fish windows, when fish return to the river to spawn.

— T. Royal



A coho is ready to be released with a spaghetti tag and a radio tag. If harvested, the spaghetti tag will let biologists know where it came from. The radio tag will allow the tribe to track the fish's migration throughout the Elwha River.

T. Royal (2)

Tribe Shares Concern About Dungeness Flooding

Federal and private dikes built along the lower Dungeness River in 1964 and 1983 have caused ever-increasing harm to salmon.

The dikes on each side of the river have protected the homes and property behind them for decades. But now the dikes are leading to flooding problems.

Concerned residents approached the Jamestown S'Klallam Tribe for help to prevent future flooding from destroying their homes.

"We tried contacting local, county, state and federal officials to help us with this, but no one was responding, so we went to the tribe," said resident Mel Groff. "What's going to happen when the river floods again and does even more damage? We're going to get flooded out of our homes."

The tribe has a vested interest in the Dungeness River, because the federal government has a trust responsibility to protect natural resources, such as fish habitat, said Scott Chitwood, the tribe's natural resources director.

"Poor dike planning has harmed fish and wildlife habitat and put natural resources at risk for years," Chitwood said. "Now property owners are being affected."

In 1964, the U.S. Army Corps of Engineers built 2.3 miles of dike on the east bank of the lower river to block floodwaters from flowing across farmland and through the Dungeness community before entering Dungeness Bay.

Without the historic outlet to the east, floodwaters could only spread west. In response, a private property owner on the west side of the river constructed a 4,000-foot dike on the west bank in 1983.

Meanwhile, residential development was occurring on Ward Road, just upstream of the dikes. Flooding along the



Mel Groff

Ward Road resident Mel Groff's property was flooded after a December 2010 rainstorm brought the Dungeness River up and over its banks.

'Poor dike planning has harmed fish and wildlife habitat and put natural resources at risk for years. Now property owners are being affected.'

**SCOTT CHITWOOD,
NATURAL RESOURCES DIRECTOR,
JAMESTOWN S'KLALLAM TRIBE**

road, which always had been minor, became progressively worse.

In December 2010, Ward Road and adjacent properties suffered from severe flooding, although river flows were nowhere near record high levels.

The Ward Road property owners believe that the flooding was caused by excessive trees, rocks and debris that flowed downstream. The neighbors have watched the riverbank continue to erode and move closer to the road.

The dikes have prevented the river from depositing its sediment into the once-expansive Dungeness River floodplain. Now the only places left for river sediment

to accumulate is in shallow Dungeness Bay – which is filling in – and the river channel – which is building up. With the sediment buildup and downstream dikes constricting the river, flood waters spill out

of the river channel, causing increased flooding of the Ward Road properties.

Unfortunately, because the dikes were built by a federal agency and a private owner, the tribe can't do anything to prevent the flooding. However, the Corps is considering a proposal, endorsed by the tribe, Clallam County and the Washington Department of Fish and Wildlife, to move a segment of its dike away from the river and reconnect the stream with part of its former floodplain.

– T. Royal

Residents Mel Groff, left, and Rod Normandin stand beside the Dungeness River, which they've watched change during the past year.

T. Royal





NOAA research biologist David Baldwin simulates stormwater runoff with a mixture of lead, copper, nickel and other chemicals.

Urban Stream Pollution Target of Mortality Study

Biologist David Baldwin pours a mixture of copper, zinc, lead and other pollutants into a large tank of water at the Suquamish Tribe's Grovers Creek Hatchery, then slips four adult coho salmon into the dirty brown liquid. The poisonous soup simulates the stormwater runoff salmon frequently encounter, especially in urban streams.

The tribe is working with Baldwin, a National Oceanic and Atmospheric Administration research zoologist, and Steve Damm, a U.S. Fish and Wildlife biological scientist, to figure out if toxins in stormwater runoff are killing adult coho salmon. Vehicle exhaust, dust from brake pads, oil and gasoline are among the main contributors to polluted stormwater.

Scientists have observed adult coho dying within 24 hours of returning to urban streams. In most cases, death occurs before the fish can spawn. Pre-spawn mortality is commonly seen in streams near large urban areas such as Seattle.

"In urban streams, we are finding 60 to 90 percent of coho salmon dying before they spawn," Baldwin said. "We want to figure out first what contaminants, if any at all, are causing the mortalities, then figure out how much of it actually kills them."

At the hatchery, coho are exposed to the chemicals for 24 hours and then monitored for changes in their behavior. Liver, gill and bile samples are then taken for analysis. The contaminated water is filtered then disposed of at Kitsap County's wastewater treatment plant in Kingston.

For comparison, another group of coho is placed in a tank of clean water for 24 hours. Like those in the polluted tank, the coho are watched closely and the same tissue samples taken.

Biologists chose Kitsap County as the site for the project because it is an area where increasing population and development are rapidly turning healthy rural streams into polluted urban creeks. — T. Royal

Workshop to Improve Marine Monitoring

With the goal of making a myriad of marine information available to tribal, public, governmental and commercial interests, an Integrated Ocean Observing System (IOOS) workshop is being held Feb. 2 on the Microsoft campus in Redmond.

IOOS is a tool for tracking, predicting, managing and adapting to changes in the ocean, coastal and Great Lakes environments.

"Pacific Northwest Waters: Gateway to Our Future," is being organized and sponsored by the Northwest Association of Networked Ocean Observing Systems (NANOOS) and the Interagency Ocean Observation Committee. NANOOS is a regional agency involved in many important monitoring efforts in Puget Sound and the Washington coast.

Joe Schumacker, marine resources scientist for the Quinault Indian Nation, is helping organize the workshop.

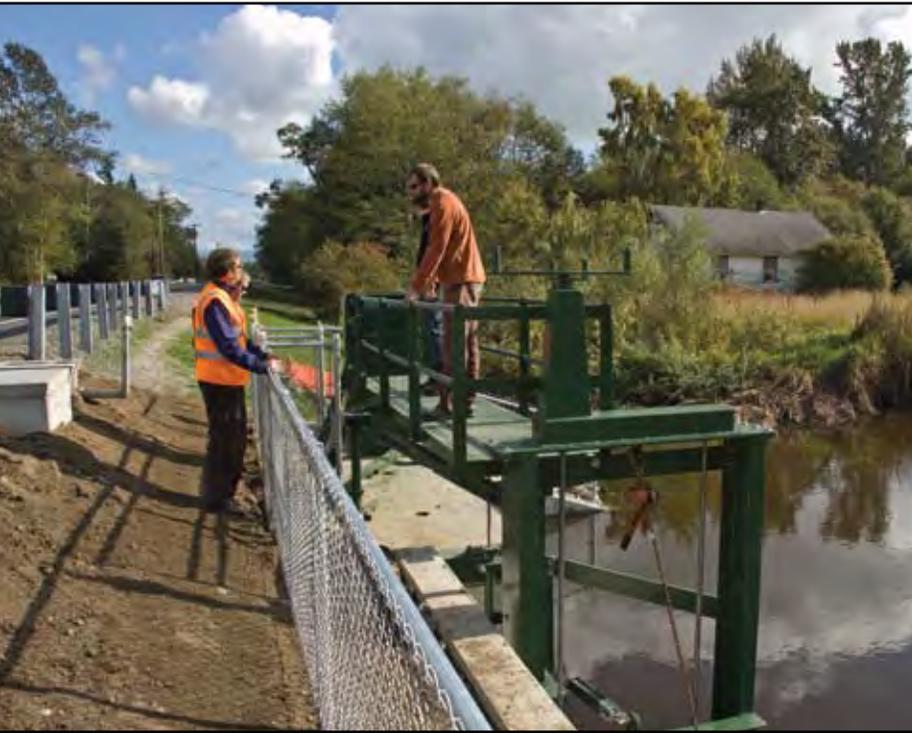
"It's important that tribes give feedback about how this monitoring information is best distributed to be useful," Schumacker said.

The coastal treaty tribes have supported a number of NANOOS projects including sea gliders and buoys that gather ocean condition data in traditional tribal fishing areas. NANOOS projects include monitoring oxygen levels in Hood Canal as well as biotoxins that can sicken or kill humans throughout Puget Sound.

The workshop is free. For more information on the workshop and to register, visit iooc.us/pnw.

— D. Preston

Road Project Reduces Floods, Creates Channel



K. Neumeyer

Standing on the newly installed tide gate beside the elevated portion of Marine Drive, Lummi watershed restoration project scientist Eric Stover, right, discusses the project with engineers.

The Lummi Nation Natural Resources Restoration Division raised a segment of Marine Drive recently and installed a tide gate to reduce flooding and restore passage for salmon.

The improvements were part of a larger project to connect the Nooksack River delta with Lummi Bay and increase estuary habitat.

Marine Drive between Kwina Slough and Lummi Shore Road was raised to 16 feet so it now serves as a levee in the Nooksack system. Part of a dike that was breached during a 2009 flood was removed and a channel was created to connect Kwina Slough with Smugglers Slough.

The old culvert under Marine Drive was damaged, so the tribe replaced it with a reinforced concrete box culvert 12 feet wide, 6 feet high and 65 feet long. The larger culvert allows more water to flow into Smugglers Slough during normal flows, while a self-regulating tide gate will prevent the water level from rising too high. The tide gate is adjustable to maximize flow while minimizing the impact to nearby farms.

Before the area was settled by Europeans in the mid-1800s, the Nooksack River drained into Lummi Bay. Beginning in the late 1800s, levees were constructed to force the river's flow into Bellingham Bay.

"Smugglers Slough once connected the Nooksack and Lummi deltas," said Merle Jefferson, natural resources director for the tribe. "This project restores that connection, providing access to important rearing habitat for out-migrating juvenile salmon."

— K. Neumeyer

Squaxin Island, Land Trust to Protect Forestland

The Squaxin Island Tribe and the Capitol Land Trust are hoping to purchase an important piece of forestland between Henderson and Budd inlets as part of a joint effort to restore and protect habitat between the two South Sound inlets.

"In total, we would protect almost 60 acres," said John Konovsky, environmental program manager for the Squaxin Island Tribe. "Most importantly, the property contains more than 10 acres of a vital 70-acre wetland."

The purchase will be funded largely by a grant from the U.S. Environmental Protection Agency. The balance of the funding would come the LOTT Clean Water Alliance, the local wastewater utility.

Protecting the forestland and shoreline between Budd and Henderson inlets is a

high priority for both the tribe and the land trust because the area is relatively undeveloped.

"Since this area is so close to an expanding urban center, it's important to protect as much as possible before it is destroyed by development," Konovsky said.

In addition to land purchases, the partnership also could lead to habitat restoration projects, such as culvert removals.

"The tribe has expertise with research and directly managing natural resources, while the land trust has worked with hundreds of landowners to protect important areas," Konovsky said. "We have had a long-time working relationship."

The Squaxin Island Tribe has been studying deep South Sound for decades and recently completed a habitat assess-

ment of Budd Inlet, where the tribe has been monitoring juvenile salmon populations.

"Protecting and restoring habitat is the single most important thing we can do to restore salmon and to bring Puget Sound back to health," said Andy Whitener, natural resources director for the tribe. "Restoring salmon and repairing Puget Sound is a massive undertaking. It's great that we have been able to find partners in the community to help us out."

He added, "Protecting our treaty-reserved right to harvest depends on a healthy ecosystem, we appreciate the support we get from our neighbors."

— E. O'Connell

Skokomish Tribe Monitors Fish in Restored Estuary

Following the Skokomish River estuary restoration effort in 2010, the Skokomish Tribe has been monitoring the project site closely in hopes of seeing salmon using the new habitat for feeding and refuge.

Since August, natural resources staff members have been seining dozens of locations within the restored 349-acre area, as well as 330 acres of tidelands nearby that escaped development.

The project area includes 219 acres of tidelands (formerly Nalley Island) that were restored in 2010, and 130 acres restored in 2007, mainly through culvert and dike removal.

The tribe is looking for juvenile chinook, chum and coho salmon. The beach seining efforts also have found Pacific herring, surf smelt, sculpins, pipefish, flounders, gunnels, anchovies and shrimp.

“The undeveloped tidelands are about the closest thing to a natural salt marsh in the Skokomish estuary,” said Matt Kowalski, the tribe’s steelhead biologist. “This area creates a great opportunity to compare what is living here versus what is coming back to the newly restored areas.”

In the late 1930s, a large portion of the Skokomish estuary was converted from pristine habitat to the Nalley Farm. Dikes and ditches were used to drain the former tidelands, which had been rich with marine life.

The tribe hopes to start a third phase of restoration in 2012, which will include removing remaining smaller culverts and dikes by hand.

“The project’s goal to restore riverine and tidal hydrology within the treatment areas is expected to allow natural physical and biological processes to restore the salt marsh’s wetlands,” said Alex Gouley, the tribe’s habitat manager. – *T. Royal*

Skokomish natural resources staff beach seine to sample fish in the restored Skokomish River estuary.



T. Royal



D. Preston

Scott Mazzone, a biologist for the Quinault Indian Nation, and Melissa Minder, research associate and Multi-Agency Rocky Intertidal Network (MARINE) database manager, inventory tidal species.

Surveying Tidal Species

The Quinault Indian Nation (QIN) has learned that to protect the marine resources they depend on, they must conduct a meticulous inventory.

QIN and other tribal communities are using a common data-gathering method established by the Multi-Agency Rocky Intertidal Network (MARINE). MARINE is a partnership of agencies, universities and private groups committed to determining the health of the rocky intertidal habitat and sharing information with the public.

“Quinault has been planning this kind of cataloging for years,” said Scott Mazzone, shellfish and marine biologist for the tribe. “We have been collecting some of this data for 25 years, but now we are doing it the same way as everyone else, and that makes it easier to share important information about the health of our marine

resources.”

A 2-acre intertidal site south of the Raft River will allow QIN personnel to inventory a variety of species including sea stars, blue mussels and other sea life. By visiting the site once a year, Mazzone and QIN fisheries technicians can track the numbers of intertidal species and determine changes based on weather and ocean conditions.

“We’re also interested in climate change and its effects, but that’s a long-term study – decades really,” Mazzone said. “As the water gets warmer, we would expect to see mussels move higher up in the intertidal areas and see other southern species appearing. As the ocean becomes more acidic, we would also expect to see fewer new barnacle sets because they have trouble forming shells.”

– *D. Preston*

Assessing Shellfish for Potential Harvest

The Nisqually Indian Tribe is counting clams in hopes that shellfish harvesting may return one day to tidelands between the mouth of the Nisqually River and Tacoma.

The tribe's shellfish assessment is part of a larger project led by the state Department of Health (DOH) to see if water pollution can be cleaned up along the important stretch of shoreline.

"Sewer outfalls have meant a large piece of deep South Sound has been closed to shellfish harvest for decades," said David Troutt, the tribe's natural resources manager. "It also means that no one has really looked at the status of the shellfish resource in this area."

Some outfalls recently have been rerouted or are being upgraded to lessen pollution into Puget Sound.

"With a decrease in pollution, we could see shellfish harvest open back up," Troutt

said. "If it does, we want to see what the resource out there looks like."

The tribe is conducting surveys using underwater video and on-the-beach assessments at low tide.

"We're finding a range of fairly bad shellfish habitat to very good habitat, especially for subtidal geoduck clams," Troutt said.

Where the tribe found poor shellfish habitat, the likely reason is miles of bulkheads built decades ago to protect a railroad. The bulkhead prevents the natural erosion of nearby bluffs that contribute to good shellfish beaches.

In addition to the tribe and DOH, other partners in the larger project include Joint Base Lewis-McChord and Pierce County. Other tasks include a historic land use survey and studies on water circulation and dilution of pollutants.

— E. O'Connell



Michael Kyte, shellfish biologist for the Nisqually Tribe, looks for clams at Solo Point near the mouth of the Nisqually River.

E. O'Connell

Henderson Inlet Cleanup Effort Paying Off

The Nisqually Indian Tribe is rehabilitating a 120-acre shellfish farm on Henderson Inlet, a large part of which has been closed for years due to pollution. The area is now clean enough to harvest shellfish and the tribe is hoping they can start as soon as next spring.

"We've spent most of the past year just getting the farm ready," said Sue Shotwell, the tribe's shellfish farm manager. Eventually, tribal employees will harvest and process clams and oysters on the farm.

The farm sits midway up Henderson Inlet in an area that was recently approved for harvest because of work by local residents to improve water quality. The county drove changes in septic systems, stormwater management and other actions that cleaned up the inlet.

"That we're able to come in here and grow clams and oysters is a testament to the vision of the local community," said James Slape, a tribal council member. "This is what a restored Puget Sound will look like."

The farm's previous owner was forced to stop farming shellfish in much of the inlet because of pollution. "This place hasn't been cared for in recent years, so a lot of our work now is just getting it ready," Shotwell said.

The tribe is working with another shellfish grower to harvest a crop of 5-year-old oysters left by the farm's previous owner.

About 3,000 bags of oyster cultch (oyster shells on which oyster larvae grow) are now overwintering at the farm. They will be spread across the tidelands in the spring.

The tribe has been working closely with neighbors. "Many of the neighbors involved in the cleanup also operate a small community shellfish farm," Slape said. "The tribe's tideland is right in front of their farm, so we're loaning them an acre of tideland that will allow them to increase their production five-fold."

— E. O'Connell



Sue Shotwell, shellfish farm manager for the Nisqually Tribe, checks juvenile clams before they're spread onto the tribe's tideland.

E. O'Connell

Hoh River Fish Data Valuable for Tribes, State

Hoh fisheries technician Monty Arthur has walked the Hoh River and its tributaries while counting salmon redds (egg nests) for more than 25 years. He's one of many tribal staffers throughout western Washington who know their rivers and the fish that return there better than anyone else.

Arthur provides an invaluable count of returning salmon that is used in fish forecast models for the entire region. With a severely shrunken state budget, fewer of his state counterparts are doing similar work, making the tribes' data that much more important.

"We all do our surveys the same way, but we definitely have more people doing it," said Joe Gilbertson, fisheries biologist for the Hoh Tribe. Tribal and state surveys are combined for the final numbers for each species before use in the fisheries management planning process.



Monty Arthur, fisheries technician for the Hoh Tribe, scans the Hoh River for steelhead and chinook egg nests as part of a weekly survey.

D. Preston

"It's a good method. We cover a lot of ground and that means there isn't as much estimation," Gilbertson said. The method had been held up as a model for other states such as

Oregon and California.

One of the key stocks for the Hoh Tribe is steelhead. The 2010-2011 wild winter steelhead surveys observed strong returns of more than 3,200

spawners.

"Our goal is 2,400, so that's a 30 percent increase over the past several years of counts either at or below the goal," Gilbertson said. — D. Preston

Nisqually Tribe Tracks Steelhead Population



E. O'Connell

Craig Smith, harvest biologist for the Nisqually Tribe, surveys Yelm Creek for spawning steelhead.

The Nisqually Indian Tribe is expanding a search to determine the range of troubled steelhead in the Nisqually River watershed.

"For years we've been surveying the mainstem by boat and helicopter, now we're also trying to get the true geographic scope of these fish in the Nisqually watershed," said David Troutt, the tribe's natural resources manager. "We've doubled the amount of walking surveys we're doing, so we're getting a better sense of how steelhead use the watershed."

In the early 90s, the population of Nisqually steelhead decreased from 6,000 to fewer than 1,000.

"Since they fell off a cliff, their population seems to have stabilized," Troutt said. "The overall population data we're seeing indicates that they're finding somewhere to spawn successfully."

The expanded surveys will include smaller creeks and streams often overlooked in traditional spawning surveys.

Nisqually steelhead are part of a larger Puget Sound steelhead population that is listed as "threatened" under the federal Endangered Species Act.

Participants in the tribe's "Salmon Watchers" program also keep an eye on small creeks, looking for steelhead.

"If they think they see a steelhead, we'll send out a survey crew to walk the creek and look for spawners," Troutt said.

It's not clear why Nisqually steelhead are at such low levels.

"We know fishing pressure isn't the problem," Troutt said. "The Nisqually Tribe hasn't fished for steelhead for almost 20 years and sport fishermen stopped fishing for them seven years ago."

Additionally, the fish have relatively good freshwater habitat available to them. The reason for the decline likely lies in the marine habitat.

— E. O'Connell

Restoring Shelton Harbor

The Squaxin Island Tribe is tracking young salmon throughout Shelton Harbor to learn where they're hanging out before heading to sea.

The tracking project is part of a cooperative effort between the tribe and local timber company Simpson to restore fish and wildlife habitat in the Shelton Harbor portion of Oakland Bay in the southwestern end of Puget Sound. Last year, the tribe started working with harbor landowners to make a list of projects to improve conditions there.

"We've used this technology to track coho across deep South Sound,

but now we're taking a closer look at Shelton Harbor," said Scott Steltzner, salmon biologist for the Squaxin Island Tribe.

Tiny transmitters implanted into juvenile coho allow researchers to track the young fish as they make their way out to salt water. The coho salmon will be taken from a smolt trap operated by the tribe on Goldsborough Creek, which flows into Shelton Harbor.

An array of acoustic receivers along the creek and in Shelton Harbor will track the fish as they begin their ocean migration. A tagged coho's individual frequency is picked up when it passes by a receiver and its movements are tracked for several hundred yards.

Habitat improvements as part of the partnership between the tribe and Simpson will further boost coho production in Goldsborough Creek, the main tributary to Shelton Harbor. Coho populations already have significantly increased in Goldsborough after the tribe, Simpson and other partners removed a dam on the creek 10 years ago. Shelton Harbor is important to salmon because the Goldsborough Creek estuary is the largest in Oakland Bay.

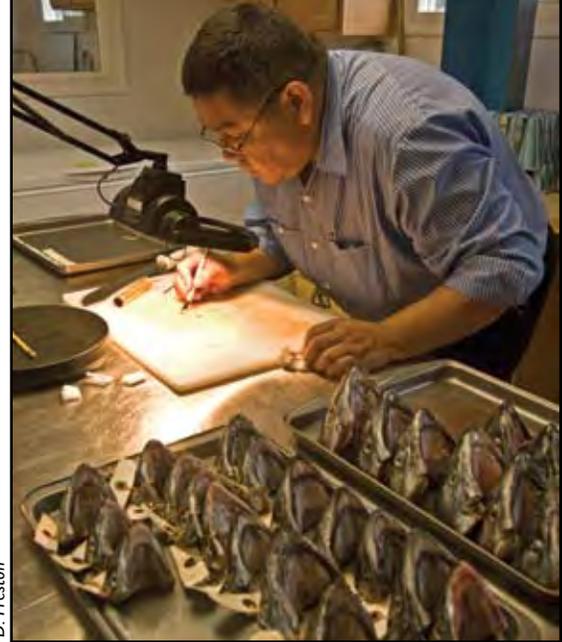
"Estuaries are where salmon grow and feed as they transition from fresh water to ocean-going fish," Steltzner said. "It's important for them to have resources there to survive."

"This research will give us a better idea of what parts of Shelton Harbor are important to coho and where we could start our restoration efforts," said Andy Whitener, natural resources director for the tribe. "This sort of large-scale restoration needs to be based on the best information we can muster." — *E. O'Connell*



E. O'Connell

Joe Peters, salmon biologist for the Squaxin Island Tribe, measures an out-migrating coho salmon on Goldsborough Creek.



D. Preston

Duane Parton, Makah seasonal fish sampler, removes coded-wire tags from salmon caught by tribal fishermen.

Makah Tribe Manages Fish Tagging Data

The Makah Tribe needs the best information it can get, as quickly as possible, about the fish tribal members catch, because their treaty-reserved fishing area is at the intersection of many different salmon runs.

Some of the most important information comes from tiny coded-wire tags (CWT) inserted into the noses of young hatchery fish before release, then recovered when the fish return as adults.

Because of the large number of tags recovered, it was taking more than a year for the Washington Department of Fish and Wildlife to analyze and report tag findings to the treaty tribal co-managers.

"Because we need to know, for example, how many Columbia River fish we are catching in-season, we needed to be able to do our own CWT analysis here. It allows us to be better managers," said Russ Svec, the tribe's fisheries manager. "Our fisheries technician, Zac Espinoza, has worked removing tags for years. He now enters the data in-season and is assisted with tag removal by a seasonal technician."

The need for speed led the tribe to create its own CWT program in 2008 that has become a full-scale operation. Makah tribal natural resources staff created the lab used to retrieve the coded-wire tags, which also is used by the tribe's marine mammal biologist and other fisheries staff.

— *D. Preston*

Keeping a Close Eye on Nisqually Winter Chum

In recent years, the Nisqually Tribe has restricted fishing near the mouth of Muck Creek, an important chum spawning tributary to the Nisqually River.

“A third of the chum spawning in the watershed come back to Muck Creek,” said David Troutt, natural resources director for the tribe. “But the creek only flows after there has been enough rain. By pushing the fishery away from the creek’s mouth, we can be sure enough chum get in there.”

Because chum leave fresh water soon after they hatch from the gravel in the spring, they’re able to leave Muck Creek before it dries up again in the summer.

Managing a fishery on one of the few all-wild runs of salmon in Puget Sound takes great care. The Nisqually Tribe keeps a close eye on both their commercial chum harvest and fish on the spawning grounds.

“Chum is the most important fish, culturally and economically, to us,” said Georgiana Kautz, tribal natural resources manager. “We want to make sure enough salmon make it up the river to spawn so there will be fish in the future.”

In addition to closely monitoring tribal harvest, spawning surveys are



E. O'Connell

Melano Lavato, a volunteer for the Nisqually Tribe, hoists a fish during the tribe’s chum salmon fishery.

conducted by the tribe on area creeks to determine how many fish have returned to reproduce.

“Practically every other salmon run that supports harvest in Puget Sound is largely hatchery-supported,” Troutt said. “The Nisqually chum run is unique in Puget Sound because it is an entirely wild run of salmon that can support harvest.”

Also, because the Nisqually chum run is wild, it is critical that the fish

have quality spawning habitat when they return.

“The tribe has been working for decades to ensure that there is enough quality habitat to support the chum,” Troutt said. The tribe has worked with Fort Lewis and the Roy community to restore several miles of chum habitat along Muck Creek.

– E. O’Connell



Muckleshoot Preservation Program’s Library and Archives Collection

Generations

Muckleshoot tribal member Big John is shown holding a dip net outside his home on the Muckleshoot Reservation around 1913. The photograph was taken by noted ethnologist Arthur Ballard.

Ballard described this type of net as “the kind used in connection with the salmon weir to retrieve salmon. A network of cords is strung between the crossbars, one of the cords being held in the hand of the person holding the net.

“With the hoop resting on the bottom in the enclosure of the weir, a salmon entering and colliding with the cord network makes his presence known to the fisherman whereupon the apparatus is raised from the bottom, the net fills out, imprisoning the salmon, which is immediately clubbed and thrown ashore.”

Tribe Welcomes Shovel-Nosed Canoe



K. Neumeyer

Sauk-Suiattle tribal members gather in the longhouse around a shovel-nose canoe that was carved by Lummi master carver Felix Solomon, far right.

The Sauk-Suiattle Tribe has welcomed home a shovel-nosed canoe, carved from a 700-year-old cedar tree that survived a lightning strike and forest fire, and has been lying under a road for a century.

"This canoe is a representation of what our people and other tribes have gone through," said Michael Hoffman, Sauk-Suiattle council member. "This canoe does have a heart."

The tribe held a ceremony in late summer when Lummi Nation master carver Felix Solomon delivered the 30-foot canoe to

the Sauk-Suiattle reservation near Darrington.

Once the main form of transportation for many Northwest tribes, hand-carved dugout canoes have become something of a rarity. Out of about 100 canoes at the 2011 Tribal Canoe Journey, only 10 were dugouts, Solomon said.

In 2010, Solomon carved a shovel-nosed canoe for the Stillaguamish Tribe.

"I feel very fortunate to be able to carve a second one so close to the first one," Solomon said. "It's still fresh in my heart."

Canoe carving requires

geometric precision. Solomon received grants to study traditional carving methods and was aided by his mentor, renowned Northwest carver Duane Pasco.

A week before the canoe was delivered to Sauk-Suiattle, Solomon and Hoffman put it in the water for the first time.

"What this canoe will do for future generations, I can't even imagine," Hoffman said. "In 100 years, Sauk-Suiattle will still be around and so will this canoe." — K. Neumeyer

More Canoes Collect Water Quality Data

Although the tribe's canoe was not yet finished, the Sauk-Suiattle Tribe participated in the 2011 Tribal Canoe Journey's water quality survey. They traveled down the Sauk and Skagit rivers to the Swinomish reservation with Shane Turnbull of Chinook Expeditions, towing a water quality probe on the back of the canoe.

For the past four years, tribal canoes have worked with the U.S. Geological Survey to monitor water quality along the journey route. This was the first year the survey included data from a river.

The probes measure water quality by collecting information about temperature, conductivity, salinity, pH, dissolved oxygen and turbidity.

The results are posted on the USGS website: usgs.gov/features/coastsalish.

In addition to Sauk-Suiattle, other tribes that participated in the 2011 survey were Squaxin Island and Swinomish, and the Squamish First Nation and Musgamagw Tribe of British Columbia.

Tulalip Tribes Enhancing Huckleberry Fields for Harvest



Jason Gobin, Tulalip Tribes

Tulalip tribal youth gather huckleberries on Harlan Ridge in an area that has been enhanced through a partnership between Tulalip and the U.S. Forest Service.

The Tulalip Tribes and the U.S. Forest Service have partnered to enhance huckleberry fields for tribal gathering in the Mount Baker-Snoqualmie National Forest.

Wild mountain huckleberries are sacred to Northwest tribes, but traditional gathering areas have suffered from generations of fire suppression and forest management activities favoring old-growth forests that don't support mountain huckleberry species.

For the past two years, Tulalip staff helped thin forest stands in the Darrington Ranger District to reduce competition from older trees. A controlled burn is planned to rejuvenate the huckleberry fields by reducing the tree canopy. Northwest tribes have a long history of using fire as both a cultural practice and a forest management

tool.

"For thousands of years, tribes nurtured the landscapes they depended upon for their health and survival," said Hank Gobin, director of the Tulalip Tribes Hibulb Cultural Center and Natural History Preserve.

"That included land management practices to maintain a diversity of plant and animal populations, like burning for wildlife forage, and pruning or burning for huckleberry."

Huckleberry plants in the North Cascades thrived after the mature forest was harvested in the 1980s, but fruit production has declined as conifers have re-established themselves. It may take several years after the controlled burn to see a measurable increase in fruit production.

— K. Neumeyer

Slime Equals Smile



T. Royal (2)

Tribal hatcheries aren't filled with just fish in the fall – school groups often crowd the facilities for a hands-on experience to learn about returning salmon. Left: Students from MAC program at Franklin Elementary in Port Angeles help fertilize eggs at the Lower Elwha Klallam Tribe's new hatchery. Right: Students from Clear Creek Elementary in Silverdale watch fish spawn at the Suquamish Tribe's Grovers Creek Hatchery.

Students and Staff Benefit From College Laboratory

The Port Gamble S'Klallam Tribe and Northwest Indian College recently added a science lab to the college's satellite campus on the tribe's reservation to meet the needs of a growing number of students in the college's native environmental science degree program.

"The key for this space coming to fruition was the enthusiasm of the students and the need for it," said science instructor Joyce

T. Royal



McClain. "There really is a need for more native environmental professionals in tribal natural resources departments."

Tribal members as scientists bring a cultural knowledge to their work, in addition to using mainstream research methods, said Joel Green, the college's science director.

The lab allows the college to provide more science-based classes on the Port Gamble S'Klallam campus, while doubling as a computer lab and classroom. It is available also to the Port Gamble S'Klallam's natural resources department, which works with students through internships and classes to give them an idea of what they can do with their degrees.

Dave Fuller, the tribe's hydrogeologist and water resources manager, has a master's degree in geology and will help teach a geology class required for a bachelor's degree in native environmental science.

"A lot of tribal members want to get college degrees, but have family responsibilities and have difficulty leaving the reservation," Fuller said. "Having the college extension campus provides a win-win situation for training tribal members so they can take jobs within the tribe and responsibly address environmental issues from a tribal perspective."

The college's main campus is on the Lummi Nation reservation near Bellingham, with extended campuses on six reservations in Washington and Idaho. – T. Royal

Northwest Indian College science instructor Joyce McClain sets up barnacles under a microscope in the college's new science lab on the Port Gamble S'Klallam Tribe's reservation.

Walking On

Howard Hudson

Howard Dean Hudson, 75, a lifelong resident of the Hoh River area, passed away Nov. 21, at Harborview Medical Center in Seattle.

Hudson was born April 3, 1936 in Forks to Theodore and Pansy (Howeattle) Hudson.

Hudson was a lifelong treaty fisherman, hunter and gatherer and served as chairman of the Hoh Tribe during the Boldt decision. He taught his children and others the skills and culture associated with proper harvest. Potato Hill was a favorite destination to pick huckleberries and he was frequently surrounded by children.

He was a renowned canoe racer and builder and taught his sons and nephews the keys to winning as well as assisting

with repairing and remodeling competitors' canoes from other tribes. As a young man, he played basketball and baseball, including a stint with the Seattle Thunderbirds managed by his cousin, Reggie Ward. He managed a similar team made up of Hoh and Quileute tribal members.

He enjoyed traveling and spent time in places all over the United States and Mexico.

He is survived by his wife of 51 years, Yvonne Marguerite (Inman) Hudson, of Hoh River; son Joseph Dean Hudson Jr. of Hoh River; brothers William E. Johnstone of Cosmopolis, Edward E. Johnstone, Guy R. McMinds and sister Lillian Ida Johnstone of Taholah; many grandchildren, great-grandchildren, nieces and nephews;



Blanchard Matte

Blanchard Merle Matte, 72, of Neah Bay, died Dec. 2 in Gig Harbor.

He was born Jan. 2, 1939 in Neah Bay to Richard and Amy (Markishtum) Matte. He was married to Phyllis Sampson of the Lower Elwha Klallam Tribe and later to Katherine Logan of Everett.

The Makah tribal elder served six years on tribal council following service in the U.S. Navy and earning his associate of arts degree at Peninsula College. He was a grants writer and business planner for the tribe as well as a fisherman. One of his proudest achievements was working with many others to get the Indian Child Welfare Act approved by Congress and

see it working.

He was a member of the Assembly of God church, the Veterans of Foreign Wars in Neah Bay and the Makah Tribal Bar Association.

Matte was preceded in death by his parents and sisters Ann Tryon and Sherry Matte.

He is survived by his daughters Colleen Matte and Phyllis "Amy" Matte of Lower Elwha; sisters Sarah McKenney of Neah Bay, Shirley Matte of Neah Bay and Dixie Smith of Seattle; brother Richard Matte of Portland, Ore.; and six grandchildren.

