Northwest Indian Fisheries Commission

NWIFC News

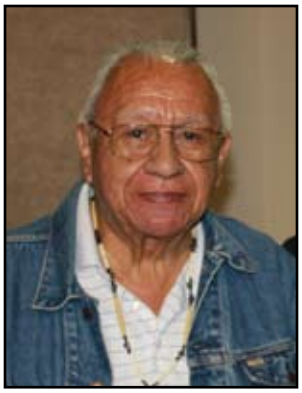
Summer 2012
nwifc.org

Inside:

Being Frank

Hatcheries Are Needed Tools

By Billy Frank Jr.
NWIFC Chairman



Salmon hatcheries are under attack by people with very short memories. They have forgotten why many hatcheries were built in the first place. Most were built to make up for lost natural salmon production caused by habitat damage and destruction.

Today, more than half of the chinook and coho we harvest are hatchery fish. That's a direct reflection of the huge amount of natural salmon production we have lost. We continue to lose more every day.

I think hatcheries are a necessary tool that we can use to help recover wild salmon while also providing limited harvest opportunities. I wish we didn't need hatcheries. I wish abundant wild salmon stocks could thrive in their current habitat, but they can't.

In response to declining wild salmon runs, we have cut harvest to the point that more reductions will not contribute to salmon recovery. That's because there isn't enough good salmon habitat left to support natural salmon production.

Do hatcheries threaten wild salmon stocks? Of course there are risks associated with hatchery programs. There is risk that the program might fail; risk that hatchery salmon will compete with wild salmon for food and space in our rivers; and risk that hatchery fish might affect wild salmon if they interbreed. These are all risks we must measure and balance, and under the science-driven Hatchery Reform effort of the past 12 years, we have done that.

We also need to weigh the risk to wild salmon from lack of habitat. Hatchery salmon were never intended to replace naturally spawning salmon. But that's what's happening after more than a century of habitat degradation. We've become dependent on hatcheries and the fish they produce because we are losing the battle to recover naturally spawning salmon and their habitat.

Another risk we must measure is the risk to our treaty rights. We tribes depend on hatcheries to support our treaty fishing rights, to provide salmon for our tables, our cultures and our economies.

All fishermen – Indian and non-Indian – rely on hatcheries. Some facilities produce fish for harvest, which helps reduce fishing pressure on naturally spawning salmon. Others are dedicated nurseries where weak wild stocks and their offspring are protected from disappearing altogether.

White River chinook wouldn't be here today if not for hatcheries. By 1977, fish-blocking dams and other habitat losses resulted in only 66 adult chinook returning to the river. An egg bank was created that year to save White River spring chinook from extinction.

We were almost too late. In 1986, just six adults returned. But today those fish have a future. In 1989, the Muckleshoot Tribe's White River Hatchery opened to protect, preserve and restore those spring chinook. Returns today number in the thousands every year. It's a direct result of good hatchery management practices, habitat improvements in the upper watershed and cooperation by the tribes, state and others.

Don't get me wrong. Tribes don't prefer to rely on hatcheries for the salmon that are the foundation of our cultures and treaty rights. Hatcheries are not a long-term solution to salmon recovery. But when they are managed as part of a river's ecosystem and combined with conservative fisheries and habitat improvements, they can be effective tools that provide fishing opportunities for everyone.

We can't forget that the true path to salmon recovery requires that we protect and repair habitat. It always has, because habitat is the key to salmon recovery.

NWIFC News

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NWIFC News is published quarterly. Free subscriptions are available. This edition is also online at *nwifc.org*. Articles in *NWIFC News* may be reprinted.

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On the cover: Makah tribal member Aaron Martin harvests butter clams. Shellfish are culturally and economically important to western Washington treaty tribes. See page 13 for more about tribal shellfish management. *Photo: D. Preston*

Learn more about the Tribal Treaty Rights at Risk Initiative at *treatyrightsatrisk.org.*

Coho Fry Found Above Elwha Dam Site

For the first time in nearly 100 years, coho salmon fry reached the upper Elwha River, above the site where the Elwha Dam once stood.

To encourage spawning above the dam, nearly 300 adult coho were transferred last fall from the lower river to Indian Creek and Little River, tributaries located between the fish-blocking Elwha and Glines Canyon dams.

The Lower Elwha Klallam Tribe collaborated with Olympic National Park, National Oceanic and Atmospheric Administration and Washington Department of Fish and Wildlife to complete the transfers.

Salmon have not made it past the dams since the early 20th century, when the dams were built without fish ladders. Since September 2011, the dams have been deconstructed slowly as part of the internationally recognized river restoration project.

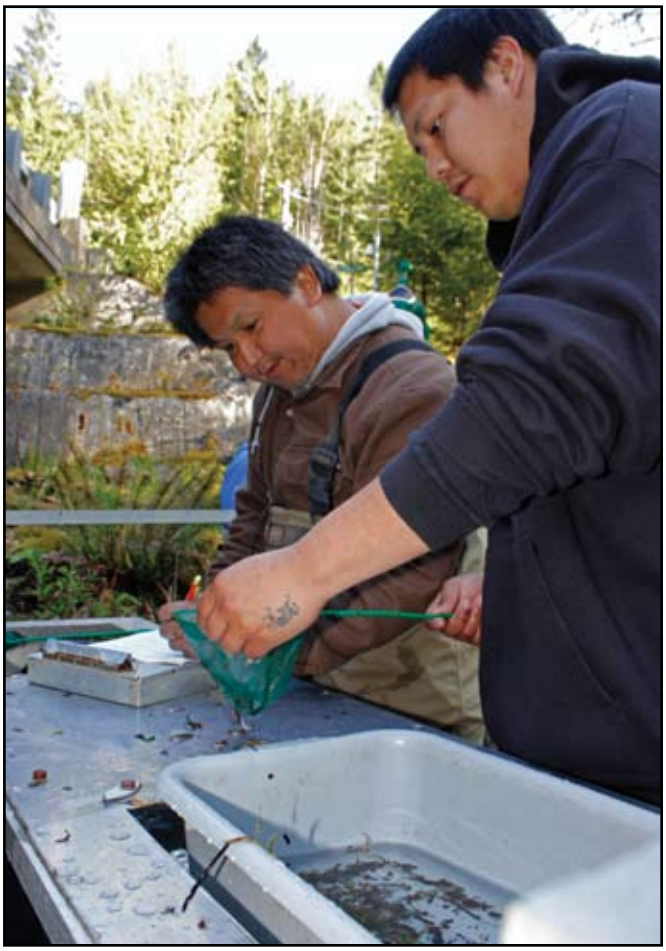
"Given that we released 70 females and 70 males last fall in Little River, having 65 egg nests is a pretty good return," said Ray Moses, tribal project biologist.

Tribal staff counted 2,400 fry emerging from Little River. The fry will stay in the river until spring 2013, when they will migrate to the ocean. In Indian Creek, a crew from the national park has been snorkel surveying for fry.

"Seeing the fish spawn above the former Elwha Dam site is pretty historic and a good testament to how good the habitat is up here," said Mike McHenry, the tribe's habitat program manager.

The tribe also is tracking the river's native late winter steelhead. These fish returned to the lower river in March. More than two dozen were tagged with radio transponders and spaghetti tags. They were then transported to Little River to take advantage of the good spawning habitat, including shallow pools of water for refuge and feeding.

So far, tribal staffers have seen eight steelhead egg nests in Little River. – *T. Royal*



T. Royal (2)

Natural resources technicians Virgil Bennett, left, and Gabe Youngman count coho salmon fry from a screw trap in Little River.

Biologist Ray Moses tries to locate radio-tagged steelhead in Little River. The Lower Elwha Klallam Tribe is tracking adult steelhead that were transported to Little River in the spring. As of May 2012, the tribe found eight steelhead egg nests.

Elwha Dam Deconstruction Pauses During Fish Window

All in-water construction and sediment removal ceased between May 1 and June 30 for the spring "fish window" to protect fish from high levels of sediment in the river.

At the Elwha Dam site, all remnants of the dam structure were completely gone by early May, nearly eight months after deconstruction started. The river now runs through its native channel. The site of Lake Aldwell, which was formed by the Elwha Dam, is now a sinuous river channel.

Construction crews are excavating the newly exposed earth to the original elevation and topography, preparing it for revegetation.

Deconstruction of the formerly 210-foot-tall Glines Canyon Dam is steady but slow, because of regulated sediment release. When work resumes after the fish window, crews will use controlled blasts to take down sections of the dam over the course of the next year. The $325 million project could be finished as early as 2013. – *T. Royal*

Restoration Project Beautifies Popular Beach

A 1,200-foot stretch of Ediz Hook, a popular beach destination in Port Angeles, will be undergoing habitat restoration this summer.

The Lower Elwha Klallam Tribe and state Department of Natural Resources (DNR) will restore the popular "A-frame" site, a former log dump area that was used until the 1970s. It will be cleared of fill and existing structures during an eight-week construction period starting in June.

"The goal is to improve the shoreline for forage fish, including smelt and sand lance, the critters that salmon like to eat," said Mike McHenry, the tribe's habitat program manager. "It will also benefit people because it will be much more accessible for recreation. It's kind of a dangerous place now because of the fill and the junk that's there."

The over-water dock portion of the A-frame, constructed mostly of creosote-treated pilings, was removed in 2008 by DNR. However, other portions of the structure were left behind, such as shoreline armor, concrete chunks, metal scraps and other debris.

The tribe's habitat restoration crew also will remove 5,000 yards of fill, some of which has been determined to be lightly contaminated by hydrocarbons, including petroleum and wood waste. This material will be replaced with clean sand and gravel to reshape the beach. The crew will add woody debris to stabilize the area, then finish it off by planting native dune grasses. The restored beach will naturally protect Ediz Hook Road, which has been subjected to erosive forces for years.

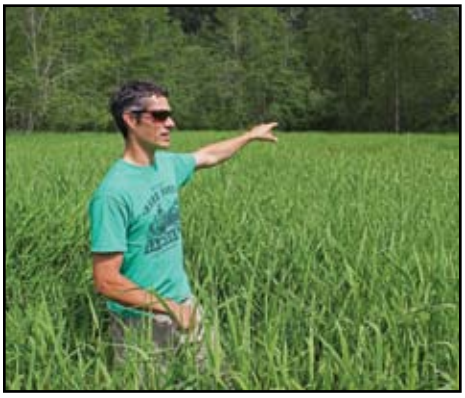
During restoration, the portion of the Port Angeles Waterfront Trail adjacent to the A-frame site will stay open, but the construction area will be fenced, preventing public access.

"The Ediz Hook project is already a great success story and illustrates the effectiveness of partnerships in restoring our shorelines," said Peter Goldmark, the state commissioner of public lands.

"Ediz Hook is a priority recreation area," said Nathan West, city of Port Angeles' director of community and economic development. "The city is very grateful to the tribe and DNR for their effort in ensuring this public vision is fulfilled." *– T. Royal*

T. Royal

Lower Elwha Klallam Tribe natural resources staffers Randall McCoy and Mike McHenry look over the remaining structures at Ediz Hook.



E. O'Connell

Andrew Berger, biologist for the Puyallup Tribe, visits the recently purchased property where the tribe plans to protect salmon along South Prairie Creek.

Puyallup Tribe Protects Winter Coho Run

The Puyallup Tribe of Indians is buying almost 6 acres of property along South Prairie Creek to protect fish habitat.

"This is probably one of the last places you can find strong wild salmon populations in the region," said Andrew Berger, a biologist for the tribe.

After completing the purchase, the tribe will work with the Pierce County Conservation District to remove invasive plants and restore a streamside forest to help keep the creek's water cool for salmon.

"Despite South Prairie overall having better habitat than other nearby streams, we still need to get in there and start replanting the forest," Berger said.

In addition to being a stronghold for federally protected wild chinook and steelhead, South Prairie also is home to a unique winter coho run that usually spawns as late as February or March.

Nearby properties will be protected from flood damage because the land won't be developed and will be able to flood naturally.

"Development right up to a creek's bank is the main reason property is damaged by floods," Berger said.

The purchase is part of a larger effort by the tribe, the conservation district, Pierce County and the Cascade Land Conservancy to protect and restore habitat along South Prairie Creek. Half of the lower 6 miles of the creek already has been protected through purchases and conservation easements.

"It's always cheaper to protect habitat before it's destroyed than to have to come back later and restore it," Berger said.

– E. O'Connell

Cargo Helicopter Assists Salmon Restoration

Logs and rootwads were airlifted to the Skokomish River estuary by a dual-rotor cargo helicopter as part of the Skokomish Tribe's large-scale effort to restore salmon habitat.

Woody debris had been missing from the Skokomish tidelands for the past 80 years after 200 acres of tidelands were diked and developed to create Nalley Island in the 1930s. Upstream activities such as logging, land conversion and dam building prevented woody material from floating downriver to the estuary.

The lack of wood in the river and estuary prevented good salmon habitat from forming. Coho, chinook and chum salmon historically used the tidelands before moving upriver to spawn.

Based on aerial photos of the estuary from 1938, the tribe and Mason Conservation District mapped the best places to install logs and rootwads to recreate historic channels. Using a heavy-lift helicopter, more than 250 pieces of wood were placed within six hours.

T. Royal

Columbia Helicopter crew member Israel Healy gathers the chokers that were used to lower wood pieces by helicopter into the Skokomish estuary.

"Not only do the logs create habitat for salmon, they help trap sediment, which helps trap seeds, promoting re-vegetation and speeding up restoration efforts," said Shannon Kirby, the tribe's habitat biologist.

The wood was donated by Brady's Trucking and Ridge Motorsports Park, and the work was funded through a grant from the Salmon Recovery Funding Board. – *T. Royal*

Salmon Smolts Discover Small Stream After Road Removal

Fish access and tidal flow were restored in March to a high-priority pocket estuary near the Swinomish reservation.

The Skagit River System Cooperative (SRSC) removed a portion of Similk Bay Road and a non-functioning tide gate that isolated about 8 acres of estuary in Turners Bay, about seven miles from the Skagit River delta. SRSC is the natural resources extension of the Swinomish and Sauk-Suiattle tribes.

Within a few months, an SRSC crew discovered an increased number of juvenile chinook salmon using a small stream near the road removal project.

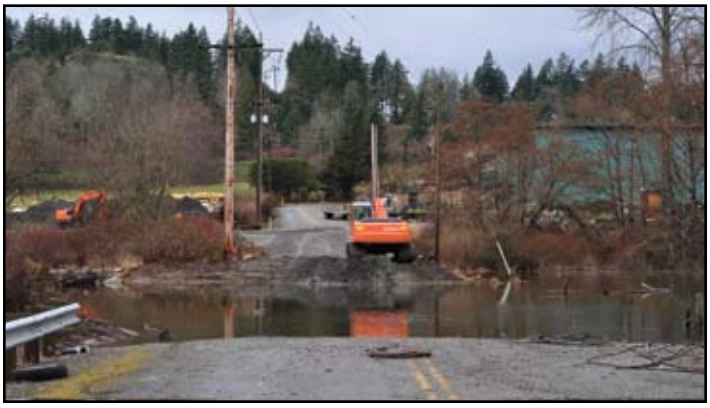
"The main reason the stream now has juvenile chinook is likely because connectivity has been restored between salt water and the mouth of Turners Bay Creek," said Eric Beamer, SRSC research director.

The road removal restored natural processes and access to the headwaters of a nearly 60-acre non-natal, or "pocket," estuary at the head of Similk Bay, which is part of Skagit Bay.

"Estuaries give juvenile salmon a protected place to acclimate to salt water," said Steve Hinton, SRSC restoration director. "Restoring this habitat will lower the risk of mortality by reducing the amount of time salmon fry are exposed to hazards in the nearshore."

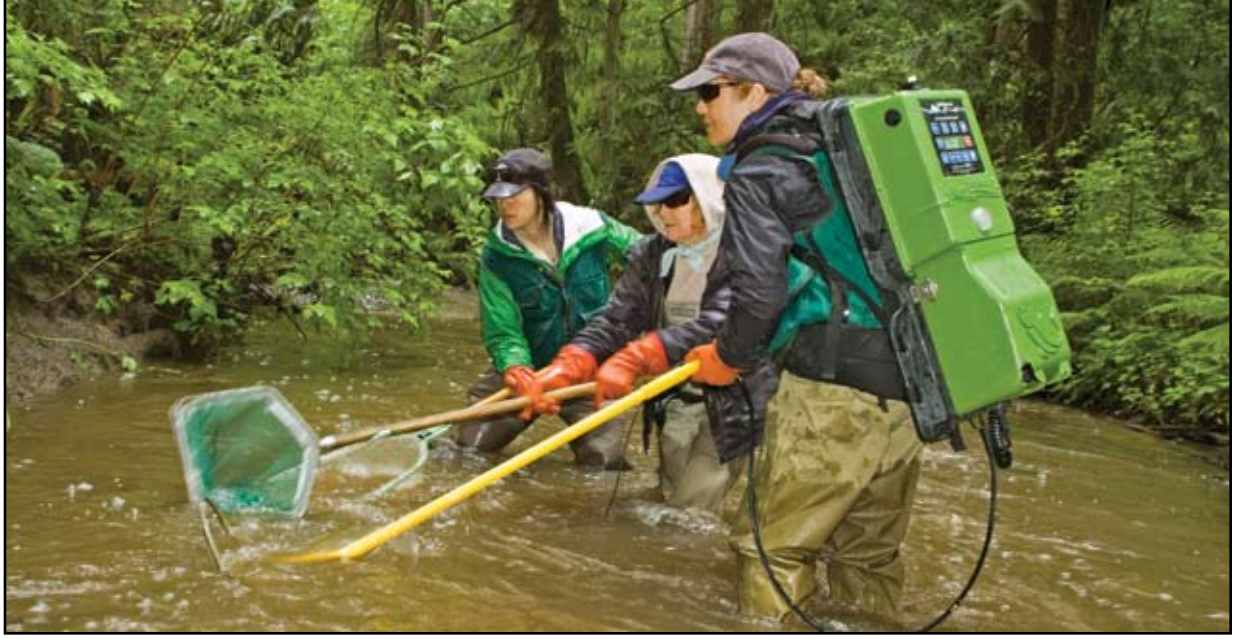
The site was identified using historic survey maps and ocean current data to find pocket estuaries about a day's migration from the delta for juvenile chinook. About 80 percent of the Whidbey basin's historic pocket estuaries have been lost because of development, including nearly 90 percent of those close to the Skagit delta.

– *K. Neumeyer*



Eric Mickelson, SRSC

Tidal flow inundates Turners Bay where the Skagit River System Cooperative removed a portion of Similk Bay Road.



K. Neumeyer

Siana Wong, left, Western Washington University master's student, Stillaguamish technician Robbie Hutton and biologist Jennifer Sevigny electrofish Church Creek, an urban stream in the Stillaguamish watershed, for cutthroat trout.

Stillaguamish Tribe Drug-Tests Watershed

The Stillaguamish Tribe is sampling fish to learn more about the effects of pharmaceuticals and other household products that flush into area streams.

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

The tribe's natural resources department partnered with the U.S. Geological Survey (USGS) to measure water quality and collect cutthroat trout in four sites in the Stillaguamish watershed.

"We're using cutthroat because chinook are endangered and we want to stay as far away from them as we can," said Stillaguamish natural resources technician Jody Pope. "We want to use a salmonid species so we can attribute what we're finding in the cutthroat to other species, including chinook, coho and chum."

USGS brought a mobile lab to sample the cutthroat onsite to test for vitellogenin, a female egg-producing protein.

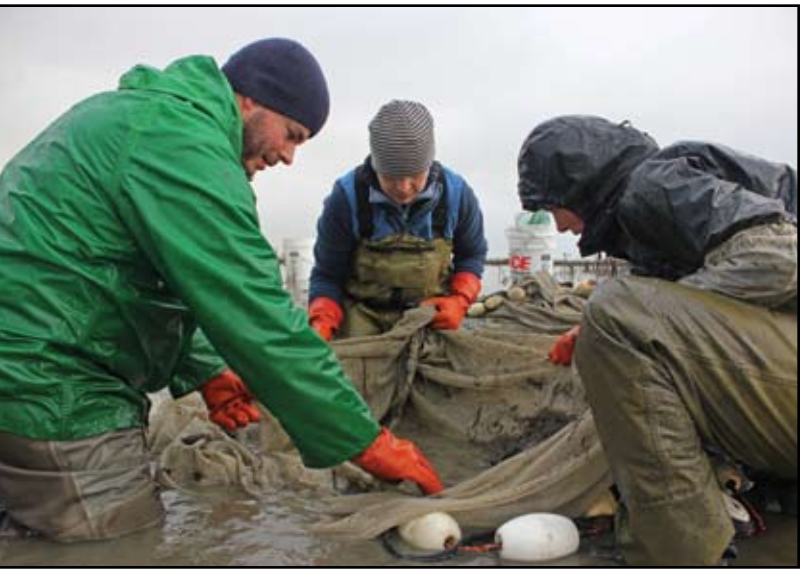
"A lot of things that we're concerned about being in the environment, specifically the stuff that's in birth control pills, will cause males to produce vitellogenin when normally they shouldn't," said USGS biologist Patrick Moran.

Video: *go.nwifc.org/pharm*

The tribe and USGS will compare the water quality samples with fish tissue to determine whether the fish have been affected by chemicals in the water.

"I think it would be great to find nothing because then we could say our creeks are really clean," Pope said. – *K. Neumeyer*

Sampling Fish Before and After Dike Removal



K. Neumeyer

Tribal natural resources staff Kevin Graybill, Jennifer Sevigny and Jody Pope seine Port Susan to monitor fish use before a dike removal.

The Stillaguamish Tribe's natural resources department is monitoring fish use of the Port Susan estuary before and after a 150-acre restoration project.

The tribe was contracted by The Nature Conservancy, which is removing a dike built years ago to create farmland near the mouth of the Stillaguamish River. With the dike removed, the tide will be free to inundate the estuary, giving juvenile salmon access to better rearing habitat.

A loss of estuarine habitat may be a significant limiting factor in salmon recovery. Removing the dike will allow new channels to develop.

Jennifer Sevigny, tribal biologist, and fisheries technicians Kevin Graybill and Jody Pope began beach seining in Port Susan in April 2011, a year before the restoration work began. The initial monitoring provides baseline data that can be used as a reference point for tracking changes after the dike is gone. Future sampling will show how salmon take advantage of the new habitat.

The Nature Conservancy owns the 4,122-acre Port Susan Bay Preserve, which encompasses most of the Stillaguamish River estuary.

– *K. Neumeyer*

Studying Salmonids Inside and Out

Upper Skagit Tribe Reads Scales for Age

The Upper Skagit Tribe is analyzing scale samples to determine the age of steelhead returning to the Skagit River.

Unlike most species of salmon, steelhead can spawn repeatedly before they die. They mature at 2 or 3 years, and can stay at sea up to three years before returning to fresh water to spawn.

In March, Upper Skagit tribal staff took scale samples from 75 wild steelhead to be examined using equipment at the University of Washington. Analysis of steelhead scales can tell researchers how many years a steelhead has spent in fresh water before outmigrating and how long it spent at sea. The analysis also will show whether the steelhead migrated back out to sea after spawning in fresh water.

''It's important to continue to collect data so we can sustainably manage the steelhead population, which was historically available to the tribe through the long winter months when other species were not available to sustain our culture and feed our families," said Scott Schuyler, natural resources director for the tribe.

Eventually, the tribe plans to acquire its own equipment so tribal technicians can process the scale samples themselves.

Compared to other river systems in Puget Sound, the Skagit River still has an abundance of wild steelhead. Both tribal and non-Indian fisheries have been reduced dramatically since the 2007 listing of Puget Sound steelhead as "threatened" under the federal Endangered Species Act. The primary causes of the decline of steelhead runs are believed to be degraded habitat, fish-blocking culverts and unfavorable ocean conditions.

– K. Neumeyer

K. Neumeyer

An Upper Skagit tribal technician removes a scale from a steelhead to determine its age and learn how long it spent at sea before returning to the Skagit River.

T. Royal

A Skokomish tribal staffer gently flushes the contents of a juvenile salmon's stomach using a small irrigator. The tribe will analyze the contents to see what juvenile salmon are eating.

Skokomish Studies Juvenile Diet

The Skokomish Tribe is studying the diet of juvenile salmon that have taken up residence in the nearly 400 acres of newly restored tidelands in southern Hood Canal.

The researchers are sampling the contents of the juveniles' stomachs by flushing them with a water pick. The microscopic contents, including algae and bugs, are collected and sent off to a lab for analysis.

"The invertebrate community is likely to change as the restoration areas develop, and we are seeing how that affects the salmon diet over time," said Matt Kowalski, the tribe's salmon biologist. "We want to find out what types of insects the salmon are eating and in what proportions."

By regularly collecting data year round from 52 different spots throughout the tidelands, the tribe will get a good idea of what salmon species are using which parts of the tidelands and what they are eating.

"The numbers are slowly progressing like they should in the areas that were restored during the first phase of restoration in 2007," Kowalski said. "Chinook and chum have been found at just about every site, which is what we expected."

Most of the area was diked for decades when it was used for agriculture and hunting. Since 2007, the tribe has been removing dikes and restoring historic estuary channels that haven't been filled with salt water for years.

– T. Royal

Tribes Keep Hatchery Programs Running

Treaty tribes in western Washington are assuming additional fisheries enhancement responsibilities to preserve hatchery programs in danger of closing because of cuts to the state budget.

Puyallup Tribe Pays for Fin Clipping

The Puyallup Tribe of Indians is helping fund a program to restore spring chinook in the upper White River watershed.

"For more than 18 years we've been working with the state to release juvenile spring chinook produced at the Minter Creek hatchery into acclimation ponds in the upper White River," said Russ Ladley, resource protection manager for the tribe.

Because of budget cuts, the state couldn't afford to mark the fish by clipping their ventral fins, so the tribe is pitching in. Returning adults are caught in a trap near Buckley. Those with clipped ventral fins are released to the upper watershed to spawn.

"If the tribe hadn't paid for the special clipping so these fish could contribute to recovery of this endangered run, they would have just been released for recreational fisheries," Ladley said.

In 1986, only six spring chinook returned to the White River. Because of diligent hatchery management, the spring chinook population has increased slowly since then, with returns usually in the thousands.

"We've seen increasing returns to White River tributaries in the upper river," said Blake Smith, Puyallup tribal enhancement manager. "In Huckleberry Creek, we went from zero redds (egg nests) to an average of 35 for the last 11 years."

"Some of the best habitat and the best chance for the chinook to recover is in the upper watershed," Ladley said. "If spring chinook are going to recover in the White River, they are going to do it in the upper watershed." – *E. O'Connell*

D. Preston

Assistant hatchery manager Brent Ramsey, right, and fisheries technician Donovan Ward clean algae from the Bear Springs ponds.

E. O'Connell

Archie Cantrell, technician for the Puyallup Tribe, pours spring chinook into a tanker truck before moving them to acclimation ponds.

Hatchery Under Quileute Management

The Quileute Tribe took over the lease last year of Bear Springs, a fish-rearing facility formerly run by the department of Fish and Wildlife and owned by the Department of Natural Resources.

This spring, the tribe released 50,000 chinook from Bear Springs into the Sol Duc River. The fish are part of a conservation group to bolster the summer chinook returns. The tribe is collecting data to compare returns of fish released from Bear Springs as 1-year-olds to fish released when they were younger and smaller.

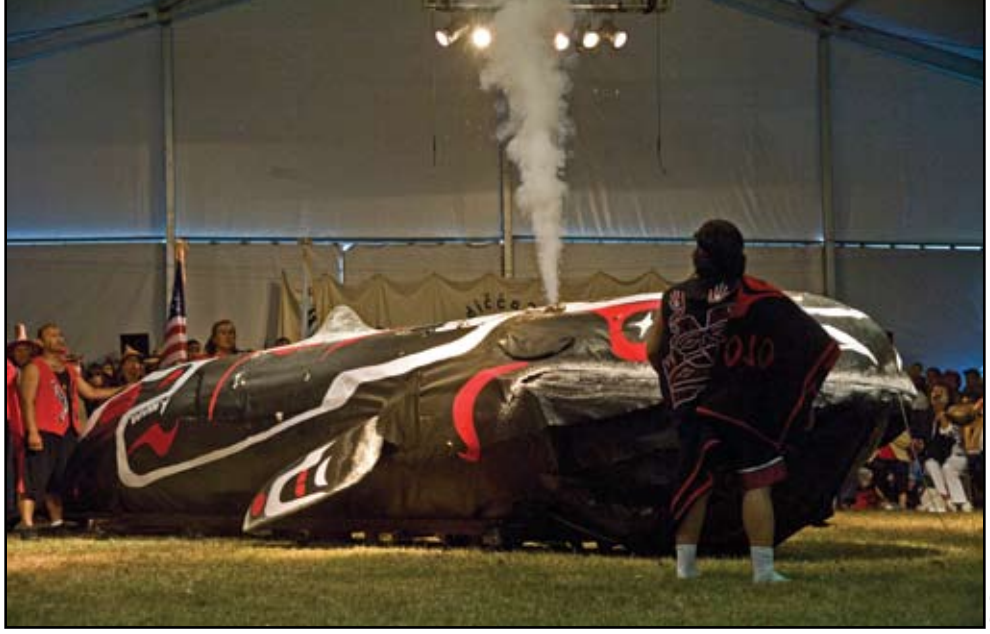
"Experience at other facilities indicates that releases of older juveniles survived better, but we want to evaluate the two release strategies in our river and with our own stock," said Roger Lien, fish biologist for the Quileute Tribe.

The Sol Duc River on the northwestern Olympic Peninsula runs at its lowest and warmest when summer chinook return to its waters every year.

"These fish are survivors," Lien said. After several years at sea, the fish return to their river of birth at a difficult time. Low flows and high water temperatures place enormous stress on the fish and make them susceptible to disease. Water temperatures above 70 degrees can be lethal to salmon.

"The run has never been real robust and it's highly variable, but it's an important one," Lien said. "Bear Springs gives us another reliable place to assure good rearing conditions."

– *D. Preston*



D. Preston

A 30-foot whale replica spouts steam just before its mouth opens and dancers emerge as part of the Makah Tribe's ceremonies while hosting the 2010 Tribal Canoe Journey. The whale is a central part of Makah culture, tradition and diet.

Makah Whaling Right Faces New Obstacle

The Makah Tribe's long, persistent effort to have its treaty right to harvest gray whales honored by the United States was dealt another procedural slowdown.

The National Oceanic and Atmospheric Administration (NOAA) is scrapping the existing Draft Environmental Impact Statement (DEIS) on the tribe's request for a waiver under the Marine Mammal Protection Act that would allow them to harvest North Pacific gray whales in their usual and accustomed areas of harvest as outlined in their treaty.

The agency will issue a new DEIS based on information regarding a group of gray whales that do not migrate to Alaska to feed, but remain along the Washington coast and Strait of Juan de Fuca. Along with this new information about the whales, known as the Pacific Coast Feeding Group, NOAA is seeking new public comment on revised hunt alternatives.

Five alternatives have been proposed, from no hunt to an adaptive management hunt that considers population changes and avoids bycatch of the Pacific Coast Feeding Group. Other alternatives impose limits on where and when the tribe can hunt to avoid the non-migrating whales.

Meanwhile, the International Whaling Commission's (IWC) scientific review committee will issue its report on gray whales at the end of June. The IWC was created under the International Convention for the Regulation of Whaling, signed in 1946. The purpose of the convention was to provide for the proper conservation of whale stocks. In addition, the commission encourages, coordinates and funds whale research, publishes the results of scientific research and promotes studies into related matters such as the humaneness of whale harvest.

The Makah Tribe shares an IWC quota of gray whales with a Russian indigenous group. Court injunctions have prevented the tribe from harvesting any whales since the harvest of a single gray whale in 1999. The quota is renewable every five years. – *D. Preston*

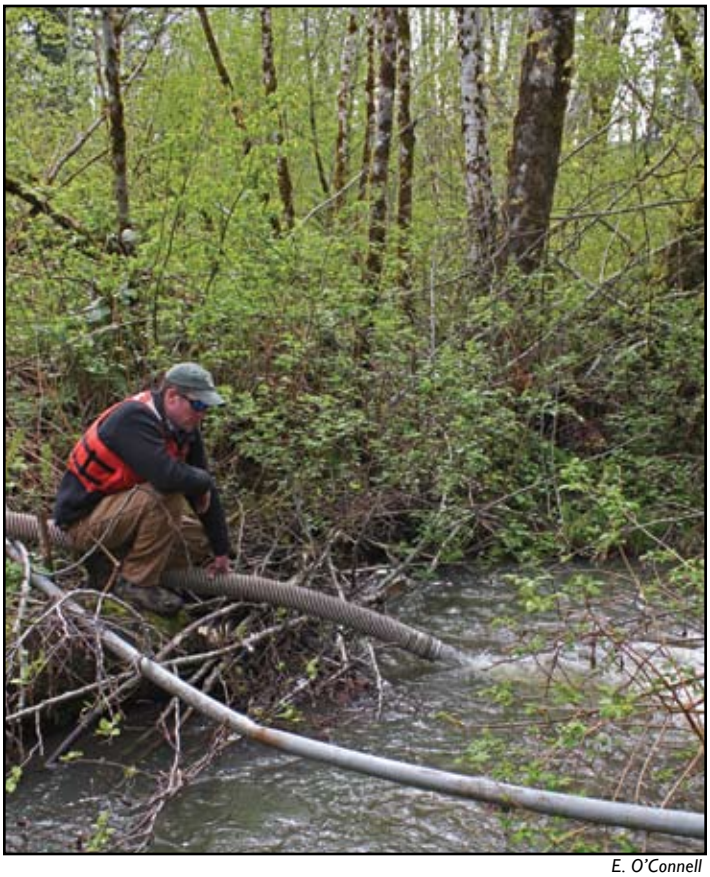
Asahel Curtis, courtesy of Washington State Historical Society

Generations

Makah tribal members use a canoe and seal floats to bring a gray whale to shore in this photo from 1910.

When the Makah Tribe ceded thousands of acres of land to the United States in the 1855 Treaty of Neah Bay, tribal leaders reserved the right to continue whaling and sealing. The Treaty of Neah Bay is the only Indian treaty that includes such a clause.

Determining What Habitat Salmon Prefer



E. O'Connell

Jason Smith, staff at the state's Ellis Creek hatchery, helps distribute juvenile coho to the upper Deschutes River watershed. The Squaxin Island Tribe will come back in the summer to find out what habitat the salmon use.

The Squaxin Island Tribe released thousands of juvenile coho into the Deschutes River to see what habitat they prefer.

"In order to find out where the good coho habitat is in the Deschutes, we need to put some coho in the river," said Scott Steltzner, salmon biologist for the tribe.

Increasingly low runs of coho to the Deschutes in recent decades mean there are not enough coho to count.

"We can make all the assumptions we want about what habitat coho like, but the best way to study their habitat is to see where they live and feed," Steltzner said.

A couple of months after releasing the young coho, the tribe will conduct snorkel surveys throughout the watershed, looking for stretches where the fish go to feed and grow.

Because coho salmon spend an extra year in fresh water before heading to the ocean, they are more dependent on that habitat than other salmon species.

In the past, the Deschutes River was the largest producer of coho in deep South Sound. Coho have been returning in low numbers for more than 20 years since a landslide sent tons of sediment into the river.

"The landslide wiped out coho in their main stronghold on Huckleberry Creek and they haven't been able to re-establish themselves since," Steltzner said.

New forest practice rules put into place since the landslide likely would prevent the same type of catastrophic event from happening again.

The tribe will use the information from the snorkel surveys to plan restoration and protection efforts.

"Finding where salmon rear in the Deschutes is the single largest data gap in proceeding with much-needed habitat work," Steltzner said.

Because the upper Deschutes River is relatively undeveloped – less than 10 percent has been paved over – it's still possible to restore salmon habitat and productivity.

"There is a chance here to restore salmon productivity to historic levels," said Andy Whitener, natural resources director for the tribe.

"Our way of life, our culture and economy have always been based around natural resources," Whitener said. "Protecting and restoring salmon habitat is the most important thing we can do to restore salmon in the Deschutes and protect our treaty right to fish."

– E. O'Connell

How Streamflow Affects Fish and Habitat

In order to establish how much water salmon need to survive during the summer months, the Squaxin Island Tribe is starting a lengthy examination of streamflow in the Deschutes River.

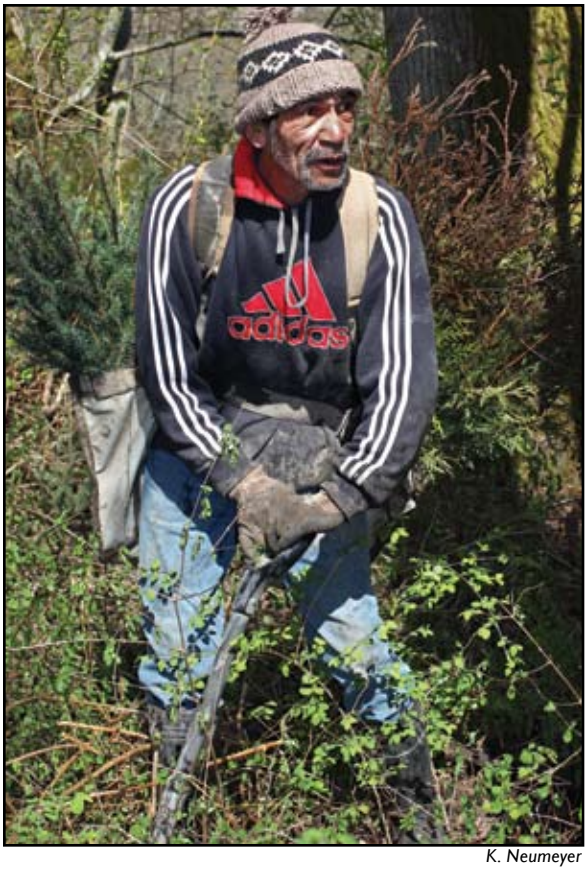
"We want to look at the relationship between flows and salmon habitat," said John Konovsky, environmental program manager for the tribe. "As flows decrease, available habitat also decreases. We're trying to identify the point when that lack of flow and habitat becomes critical for juvenile salmon survival."

The end result of the tribe's research will be a set of minimum flow targets or standards for the watershed between April and December. A state-adopted standard would mean that if flows dropped beneath the minimum, the state could take corrective action to bring flows back up. The state set a minimum flow standard more than 30 years ago for the winter months, but didn't address summer flows.

A historical analysis by the tribe shows that in recent decades, summer flows have gotten lower while winter and spring floods have been more frequent and larger. The analysis points to an increase in impervious surfaces and a loss of forest cover as prime causes of the change in hydrology. Those changes have decreased flow during the summer months by at least 20 percent.

"We've seen a massive influx of people into the watershed and a corresponding increase in development," Konovsky said. "When forestland is replaced with parking lots and subdivisions, less water seeps into the ground during winter rains. And for our groundwater-fed systems like the Deschutes, that means less water in the river in the summer for fish." – *E. O'Connell*

Mitigation Bank Protects Nooksack Estuary



K. Neumeyer

Lummi tribal technician Dusty McClusky plants conifers in the Nooksack delta where the tribe is enhancing habitat for a wetland mitigation bank.

The Lummi Nation is enhancing nearly 2,000 acres of habitat in the Nooksack and Lummi river deltas as part of a tribal mitigation bank.

"We're proud to be creating the first tribal wetland and habitat mitigation bank in the country," said Merle Jefferson, Lummi natural resources director. "We're not only improving habitat in the Nooksack River estuary, but we're also providing an economic benefit for the tribe."

Eventually, credits in the bank will be sold or transferred to developers who are required to mitigate for unavoidable adverse effects their projects might have on wetlands and associated buffer areas. These projects are expected to include homes built on tribal members' land assignments and Lummi Nation projects as well as development off-reservation.

The Nooksack River is home to threatened chinook salmon, steelhead and bull trout. Habitat degradation is a leading cause for the decline of salmon populations.

This spring, a tribal crew planted western red cedar, sitka spruce and willow in the Nooksack delta portion of the mitigation bank. The native plants will help create wetland and upland buffer habitat where fish and wildlife can breed, feed, rear and migrate. The rapid growth of the willow will shade out invasive weeds such as reed canary grass.

Tribal members will be able to continue to use the habitat to exercise their treaty-reserved fishing, hunting and gathering rights. Other recreational, educational and scientific activities will be allowed as long as they do not conflict with conservation of the area.

The bank is being developed in phases, with the first phase expected to be operational soon. Once complete, the mitigation bank will require approval by the Inter-Agency Review Team (IRT), which currently includes the U.S. Army Corps of Engineers and federal Environmental Protection Agency. Although not a member, the state Department of Ecology participates in the IRT so that the bank can be certified to allow use of bank credits for off-reservation projects. – *K. Neumeyer*

Lummi Teen Builds Fishing Boat

Students like Lucas Kinley give Lummi Nation Chairman Cliff Cultee hope for the future of tribal fishing.

Kinley built a 32-foot aluminum boat for his senior project at Ferndale High School. He named it *Golden Eagle* for his high school's mascot, and plans to use it for crabbing, shrimping and longlining.

"It's really good to see some of our youth thinking long range with the guidance of their parents," Cultee said. "To be able to say, 'I'm in this for the long haul,' and still be continuing with education. That's good to see those two things go hand-in-hand."

A fourth-generation fisherman, Kinley started setting crab pots when he was 8 years old and has been running a boat since he was about 13. He had an idea a few years ago to build a boat with the help of a family friend who builds boats professionally.

Ferndale High School's senior project requirement motivated Kinley to embark on the effort.

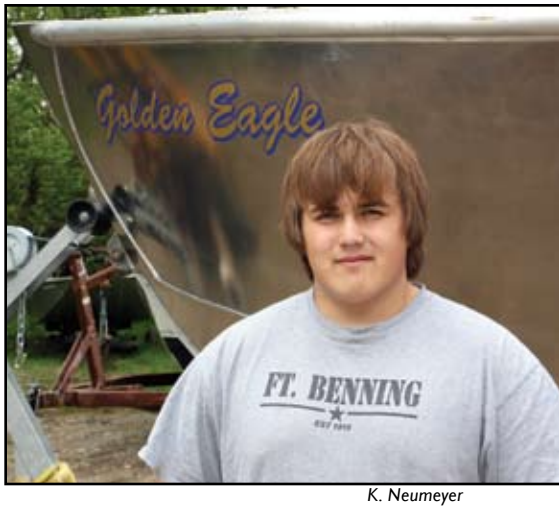
"His friends were building things like speaker boxes," said Ellie Kinley, Lucas' mother. "He decided to build a boat."

Although many modern boats are assembled like jigsaw puzzles from pre-cut pieces, Kinley made his boat from scratch, starting with a 34-foot sheet of heavy duty aluminum.

"It's how boats were made in the past," he said. "It's been quite the adventure. I learned a lot about welding and how everything fits together. All the little things that go toward building a boat."

Kinley plans to study welding and diesel technology at Bellingham Technical College in the fall, although he doesn't plan a future career in boat-building.

"Since as long as I can remember, I've been around boats," he said. "Fishing is something I've always done, something my family's always done." – *K. Neumeyer*



K. Neumeyer

Lummi tribal member and Ferndale High School senior Lucas Kinley built an aluminum fishing boat for his senior project. He named it *Golden Eagle* after his high school mascot.

Fish ID Important for Tribal Fisheries Management

Identifying every species of rockfish that comes to the dock is harder than it looks, but for the Quinault Indian Nation (QIN), it provides vital information about their fisheries.

"Our fishermen are required to keep everything they catch and that gives us a really good picture of the types of non-targeted species found in our fishery," said Joe Schumacker, marine scientist for the QIN.

When commercial fishermen participate in the halibut and black cod longline fisheries, other species are caught incidentally and must be accounted for as part of managing the fishery.

The Pacific Fisheries Management Council and National Marine Fisheries Service tightly control the allowed catch of certain species. Annual coastwide catches of these species cannot exceed an amount that would diminish their populations. Some species of rockfish are of particular concern.

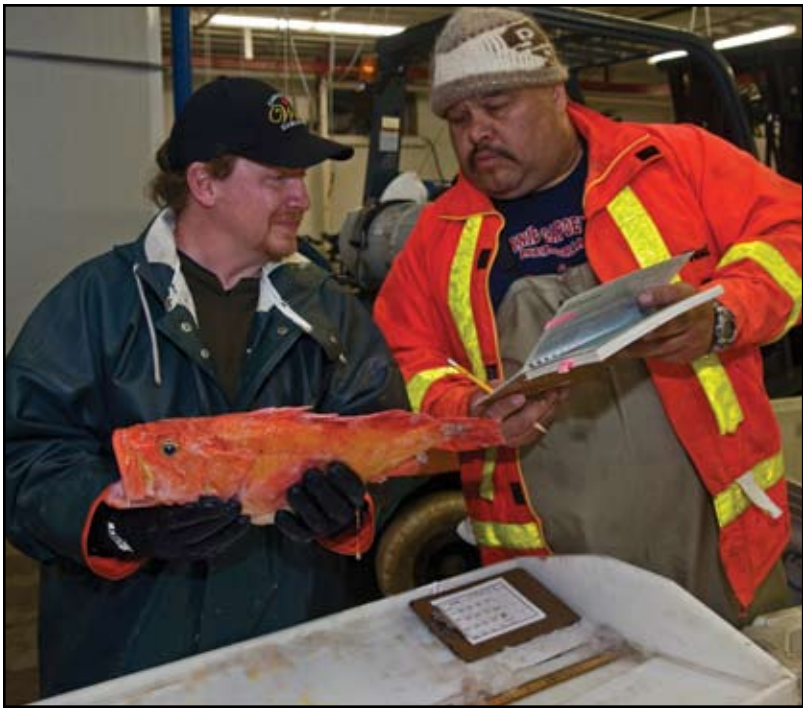
"We want to make sure that information is accurate as we go forward, both to manage the stocks and protect our fishery from inaccurate data," Schumacker said.

As QIN fishermen land their catch in Westport, Scott Mazzone, shellfish and marine biologist and Bruce Wagner, fisheries technician, identify each fish and mark it on a tally sheet.

"Differentiating some of these rockfish species sometimes comes down to the number of spines on the head or even around the eye sockets," Schumacker said.

The earbones, or otoliths, from halibut also are collected to provide information about the age of the fish for the International Pacific Halibut Commission and tribal managers.

– D. Preston



D. Preston

Scott Mazzone, shellfish and marine biologist, and Bruce Wagner, fisheries technician for the Quinault Indian Nation, consult a rockfish identification guide while tallying all species that come in with QIN fishermen's targeted catch of halibut and black cod.

New Name for an Old Girl

Makah tribal member Jongi Claplanhoo, 14, dries the name decal on the family's newly acquired fishing boat.

The name is derived from a Makah word meaning "strong one."

Skippered by Stan Claplanhoo, the *Tyah* was preparing for the halibut fishery opener this spring.

D. Preston

Jamestown Tests for Shellfish Poisons

The Jamestown S'Klallam Tribe is testing a variety of shellfish species for diarrhetic shellfish poisoning (DSP).

After discovering dangerous levels of the toxin in Sequim Bay last summer, the tribe wants to better understand how shellfish are affected by DSP. Consuming shellfish contaminated with high levels of the toxin can cause severe flu-like symptoms. Cooking or freezing the shellfish does not kill the toxin.

"We learned last year that different types of shellfish react differently to DSP toxins in the water," said Lohna O'Rourke, the tribe's environmental biologist. "One example we found is that clams and oysters seem to be less sensitive to the toxin than mussels, or may flush it out of their systems at different rates.

"It's important for the tribe to understand this to help reduce economic and cultural hardships as a result of shutting down all shellfish harvesting at the same time. If we can be selective when shutting down harvesting due to a DSP event, all the better," she said.

The tribe is collecting and testing several dozen shellfish on a weekly basis through the summer from Sequim Bay State Park and the tribe's tidelands at the south end of Sequim Bay.

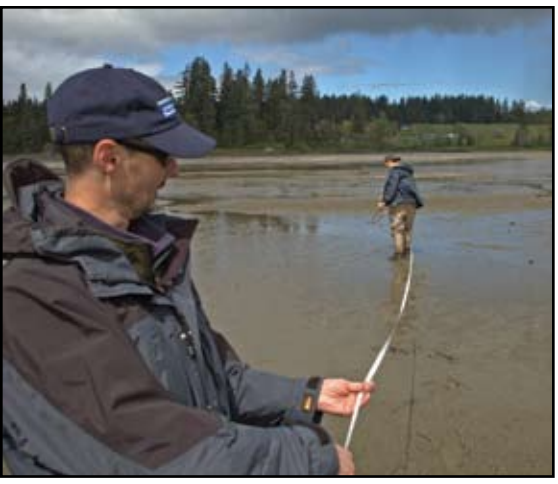
DSP toxins are typically found in the fat of shellfish, which is tested in the tribe's laboratory using specialized test kits. The same samples are sent to the National Oceanic and Atmospheric Administration's lab in Seattle for verification of DSP toxins using specialized equipment.

In addition, the tribe will try to determine what environmental conditions play a part in the growth of the phytoplankton that produces DSP toxins and if a combination of the density of the plankton in the water and the on-site testing can be used as early warning for DSP events. – *T. Royal*

T. Royal

Jamestown S'Klallam Natural Resources technician Chris Burns retrieves a cage of shellfish to test for diarrhetic shellfish poisoning.

Working Together for Clean Shellfish



E. O'Connell

John Konovsky, Squaxin Island Tribe environmental program manager, left, and Joe Puhn, natural resources technician, survey Oakland Bay.

The Squaxin Island Tribe and Mason County have formed a new partnership to protect an extremely productive shellfish growing area.

The new working relationship will manage an enhanced Pollution Identification and Correction (PIC) program, as part of the state's recently announced shellfish initiative.

"The enhanced program will bring a new emphasis to making sure cleaned up areas stay clean," said John Konovsky, environmental program manager for the tribe. The tribe will monitor water quality to make sure corrective actions are working and continue to work. These may be implemented through voluntary compliance or, as necessary, enforcement against polluters who fail to cooperate.

"We're going to work with landowners to make sure they clean up pollution, and we're going to keep going back to trouble spots to make sure they stay clean," Konovsky said.

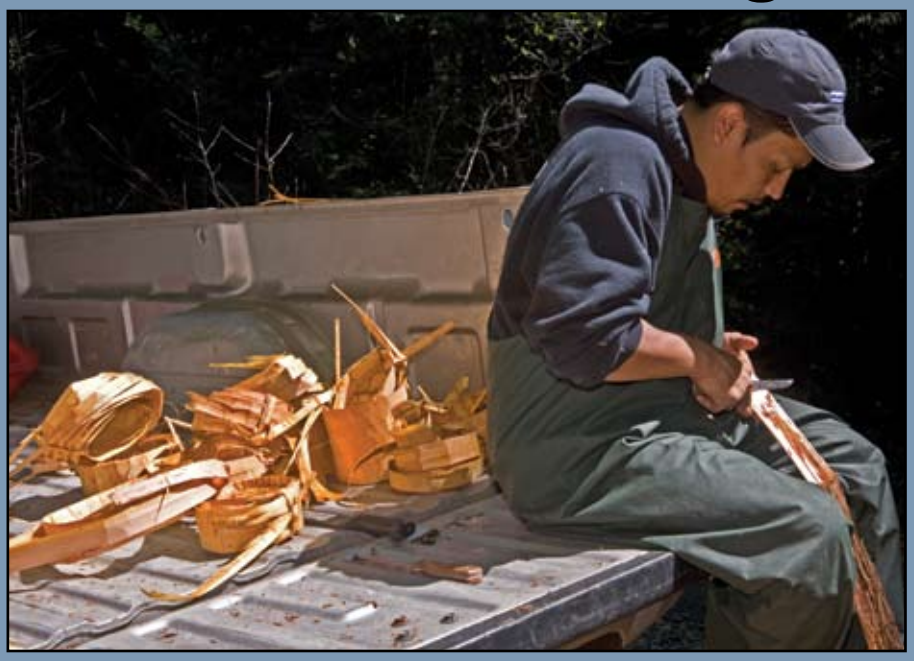
The waters of Oakland Bay and the rest of South Sound are much more sensitive to pollution than the remainder of Puget Sound.

"Our community must be more diligent than most in keeping waste out of the water if we are to continue to have the opportunity to harvest shellfish," said Andy Whitener, natural resources manager for the tribe.

The shorelines of Mason County are among the most productive shellfish growing areas in the world. For example, 40 percent of the country's manila clam production is from Oakland Bay.

Shellfish are a large part of the tribe's culture and economy. More than 20 percent of Squaxin Island tribal members make part or all of their income from harvesting shellfish. – *E. O'Connell*

Traditional Gathering



D. Preston (2)

Above left: Perry Black, Quileute tribal fisheries technician, separates the rough outer bark from the smooth inner bark harvested from a cedar tree, preparing it for elders and others who are unable to obtain the cedar themselves. The Quileute Tribe has an ongoing arrangement with landowner Rayonier to access cedar stands, providing important cultural material used in baskets, regalia and many other items. Above right: Jeffery Rosander emerges from the woods with cedar bark he has culled from trees. Only a quarter of each tree is stripped to allow the tree to continue to grow.

Tribal Fisherman Shares Pink Salmon Harvest

Suquamish tribal fisherman Ray Forsman is continuing the tradition of sharing his harvest with the community, ensuring that tribal members have enough to eat.

After harvesting Fraser River pink salmon in the San Juan Islands, Forsman worked with the tribe to have more than 8,000 pounds canned at the Swinomish Fish Co. cannery and delivered to Suquamish.

Forsman has been donating some of his catch to the tribe for a number of years, but it was only distributed to Suquamish elders and the tribe's food bank. Last year, he approached the tribe's fisheries department about conducting a subsistence harvest to benefit the entire community. In May 2012, tribal members received one case of canned pink salmon while elders received two.

"I heard two cases of salmon were available and I couldn't believe it," said tribal member Vicky Doyle. "That's a lot of salmon."

Remaining fish will go to the Suquamish food bank.

Since fish is a part of the tribal members' traditional diet, it's important to make sure it's available to tribal community. Health benefits of salmon include servings of Omega-3 fatty acids, calcium and Vitamin D.

"Each can has enough for two sandwiches," said tribal member Marjorie Lawrence. "I know elders who put it in ramen. It'd be a good substitution for chicken on top of a Caesar salad."

"The whole crew feels good about this," Forsman said. "We want to continue a tradition that has been around for a long time. It is our goal to make this an annual distribution effort for the Suquamish community."

– T. Royal

T. Royal

Suquamish Human Services staff member Jackie Demain-Severson labels cases of salmon. Staff from the Suquamish Tribe's Human Services Department handed out canned pink salmon to each Suquamish tribal member.

Training Safer Divers

The Lummi Nation organized a dive safety course this spring for 32 tribal divers.

Underwater harvest of sea cucumbers, geoducks and sea urchins is integral to the livelihood of many tribal fishermen, especially in light of declining salmon runs.

"Our *schelangen*, or way of life, depends on the natural resources of the sea," said Lummi Chairman Cliff Cultee. "Crab, prawn and salmon seasons are short, so dive fisheries can be a more stable source of income."

Most tribal divers use a surface supplied air system rather than scuba gear. An umbilical hose connects the diver to an onboard air compressor at the surface.

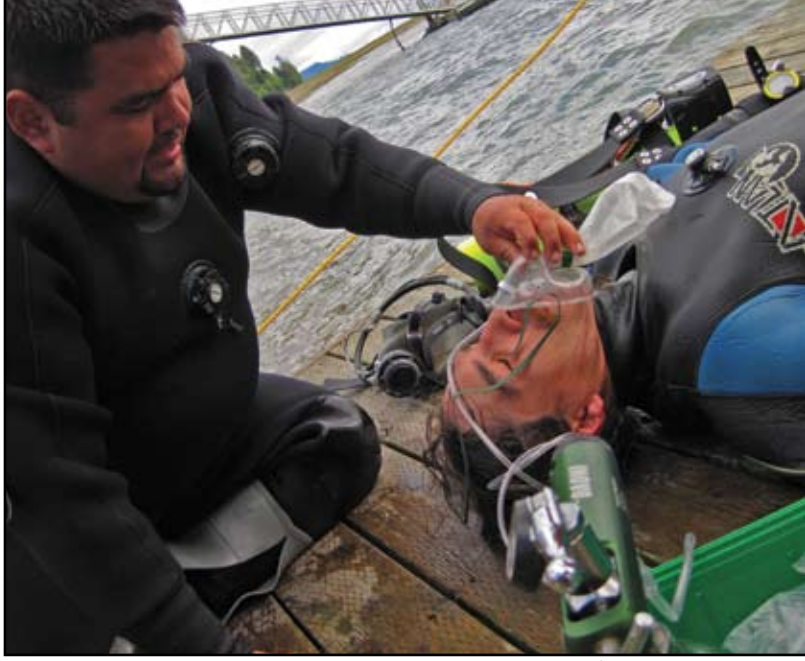
"The primary reason for using surface supplied air is to maximize divers' bottom times without limiting their air supplies while exerting themselves underwater," said Lummi fisheries management biologist Karl Mueller.

Dive safety is like first-aid training, and should be reviewed regularly. Mueller organized the course at Edmonds Technical Diving Services in Hoodsport, and is planning to hold at least one more this year.

"The participants had a wide range of experience, from veteran divers to those recently certified," he said. "Everyone got something out of the course."

The training included CPR using oxygen and an automatic defibrillator, equipment maintenance and rescue scenarios. Divers simulated tugging the umbilical line to communicate during a failure in voice communication, and bringing an unconscious diver to the surface

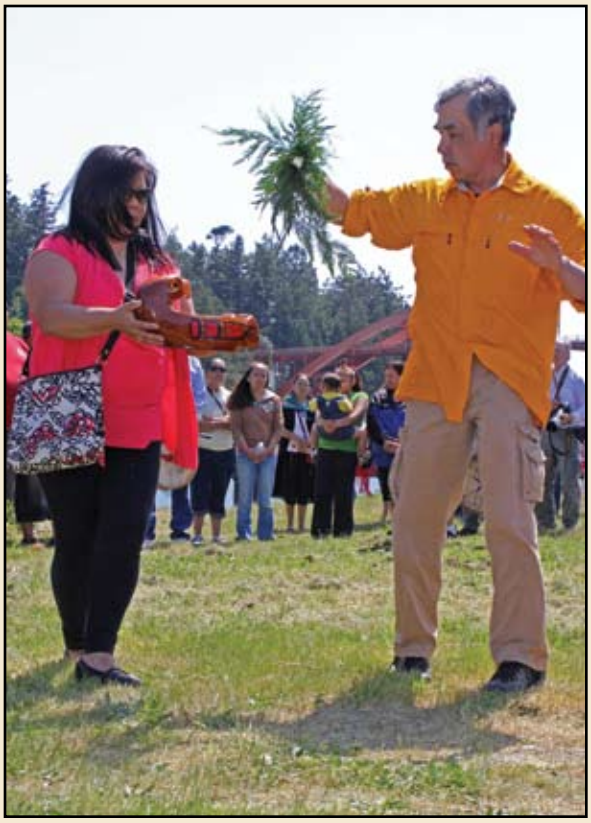
"In the diver down scenario, they practiced stripping gear efficiently," Mueller said. "The fastest anyone was able to administer oxygen was 20 seconds." *– K. Neumeyer*



Karl Mueller/Lummi Nation

Recently certified diver Michael Alexander administers oxygen to experienced diver Jason Sieber during an unconscious diver rescue scenario.

North Sound Blessings



Left: Swinomish tribal member Jimmy Wilbur blesses tribal fishermen with a cedar bough during the Swinomish Tribe's annual Blessing of the Fleet and First Salmon Ceremony. Below: Lummi tribal member Harlan James presents the remains of the first salmon to each of the four directions before it is released into Hale Passage during Lummi's First Salmon Ceremony.

K. Neumeyer (2)

Annual Election of Board Officers

At the Northwest Indian Fisheries Commission Board of Officers annual election in May, NWIFC Chairman Billy Frank Jr. was re-elected to another three-year term as chairman of the board. Frank is a Nisqually tribal member.

The board also re-elected Swinomish fisheries manager Lorraine Loomis as vice chair and Quinault Indian Nation policy representative Ed Johnstone as treasurer. Both officers hold one-year terms.

Biography Available of NWIFC Chairman

A new book about NWIFC Chairman Billy Frank Jr. was released in June.

Where the Salmon Run: The Life and Legacy of Billy Frank Jr. was published through The Legacy Project, part of the Office of Secretary of State, in association with the University of Washington Press.

"Billy's story, in many ways, is the story of the original Washingtonians: Northwest Indian tribes," said Secretary of State Sam Reed. "It's the controversial story of their fight for their heritage and their cultural icon."

The book is available to order through *www.sos.wa.gov/store* and as a free download. It also is available on the Amazon Kindle.