



Northwest Indian Fisheries Commission

NWIFC News

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Let's Talk, Boeing

By Billy Frank Jr.
NWIFC Chairman



It was the mid-1980s, and Roy dairy farmer Jim Wilcox was worried. As an owner of Wilcox Family Farms, one of the largest dairy producers in western Washington at the time, he was concerned how his business would be affected by the activities of a new group called the Nisqually River Task Force.

I was part of that task force of tribal, state, federal and local governments, businesses and others charged with developing a management plan for the Nisqually River watershed. The aim of the plan was balanced stewardship of the watershed's economic, natural and cultural resources.

Fearing that possible environmental regulations in such a plan could put his family farm on the Nisqually River out of business, Wilcox joined the task force to protect his interests.

His fears melted one day when the task force was touring the watershed and our bus broke down. Waiting for help, Jim and I started talking. I told him that we wanted him to stay in business, but that we needed to protect salmon as well, and that if we worked together, we could come up with a solution.

He agreed to try. Today, Wilcox Family Farms is still in business and the Nisqually River watershed is one of the healthiest in the state. It's a model of how a watershed can be managed for the benefit of everyone.

About that same time, a war was raging in the woods of Washington. Timber companies, environmental groups, tribes, state and federal agencies, and others were battling each other in court over the effects of timber harvests on fish and wildlife. I asked Stu Bledsoe, executive director of the Washington Forest Protection Association, a forest products industry trade group, to see if his members would be willing to join a cooperative effort to develop a solution for everyone involved.

He agreed to try. After many months of negotiations by all of the parties involved, the result was the Timber/Fish/Wildlife Agreement – now called the Forests and Fish Law – which put an end to the war in

the woods with a cooperative science-based management approach that ensures a healthy timber industry while also protecting fish and wildlife.

We find ourselves in a similar situation today with the state's extremely low fish consumption rate that is used to regulate pollution in our waters. The lower the rate, the higher the level of pollutants allowed.

Washington has one of the highest populations of seafood consumers, but uses one of the lowest fish consumption rates in the country to control water pollution. State government acknowledges that the current rate of 6.5 grams of seafood per day – about one 8-ounce serving a month – does not protect most Washington citizens from pollutants in our waters that can cause illness or death.

That fact is especially true for Asian-Americans and Pacific Islanders, as well as recreational fishermen and others who eat more seafood than most. For us tribes, fish and shellfish have always been basis of our cultures. Our treaty-reserved harvest rights depend on those resources being safe to eat.

Oregon recently increased its fish consumption rate to 175 grams per day, the most protective rate in the country. We think everyone in Washington deserves at least that level of protection.

Sadly, some industry leaders such as Boeing are digging in their heels to delay or kill rule-making on a more accurate rate because they say it will increase their cost of doing business.

To find a solution, Gov. Jay Inslee has put together an informal advisory group of tribes, local governments, businesses, environmental organizations and others to help resolve the issue. That group met for the first time recently, and although Boeing was invited, the company chose not to participate.

That's too bad, because I would have told them that we don't want Boeing to leave the state or go out of business. We want them to keep making planes here in western Washington, but at the same time we have to protect the health of everyone who lives here by adopting a more realistic fish consumption rate. I also would have told them about Jim Wilcox and Stu Bledsoe and the many great things that can be accomplished when we sit down together to solve a shared problem.

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On the cover: Quileute tribal member Gary Jackson III pulls a salmon from his net near the mouth of the Quillayute River. D. Preston

MAKAH TRIBE

Halibut Hooks Link to Tradition

A fish hook has tied history, culture and the Makah community together in unexpected ways.

The *čibu-d* (pronounced “cha bood”), or halibut hook, became the subject of a student project during an internship with Makah Fisheries Management.

“I had a student, Larry Buzzell, come to me wanting to do a project that related to historical fishing methods,” said Jonathan Scordino, marine mammal biologist for the Makah Tribe.

Historically the hooks were made of both wood and bone. As the tribe gained access to new materials, they also made hooks from metal.

“The goal of the project was to test if the *čibu-d* was more selective for catching halibut than contemporary circle hooks when fished on a longline,” Scordino said.

Setting up the experiment was challenging because the study required 200 *čibu-d* to be made by hand.

“We decided to put it out to the community to see if they would come in and help us make them,” Scordino said.

The Makah Cultural and Research Center (MCRC) opened its exhibit preparation space for several weeks to allow community members to come in and help make the hooks.

“The response was terrific,” Scordino said. “Several volunteers put in more than 20 hours making *čibu-d*.”

Through trial and error, the group learned it was better to bend the metal hooks cold rather than heat the metal. The design of the hook more closely mimics Polynesian fishing gear than historical North American fishing gear.

Elder Jesse Ides (*Hushta*) watched as young people learned to make the hook he used in his youth.

“It’s terrific seeing them show the determination to make it and use it,” Ides said.

He recalled his father hauling canoes out to the halibut grounds to fish. “You’d catch just halibut with that gear, nothing else,” he said.

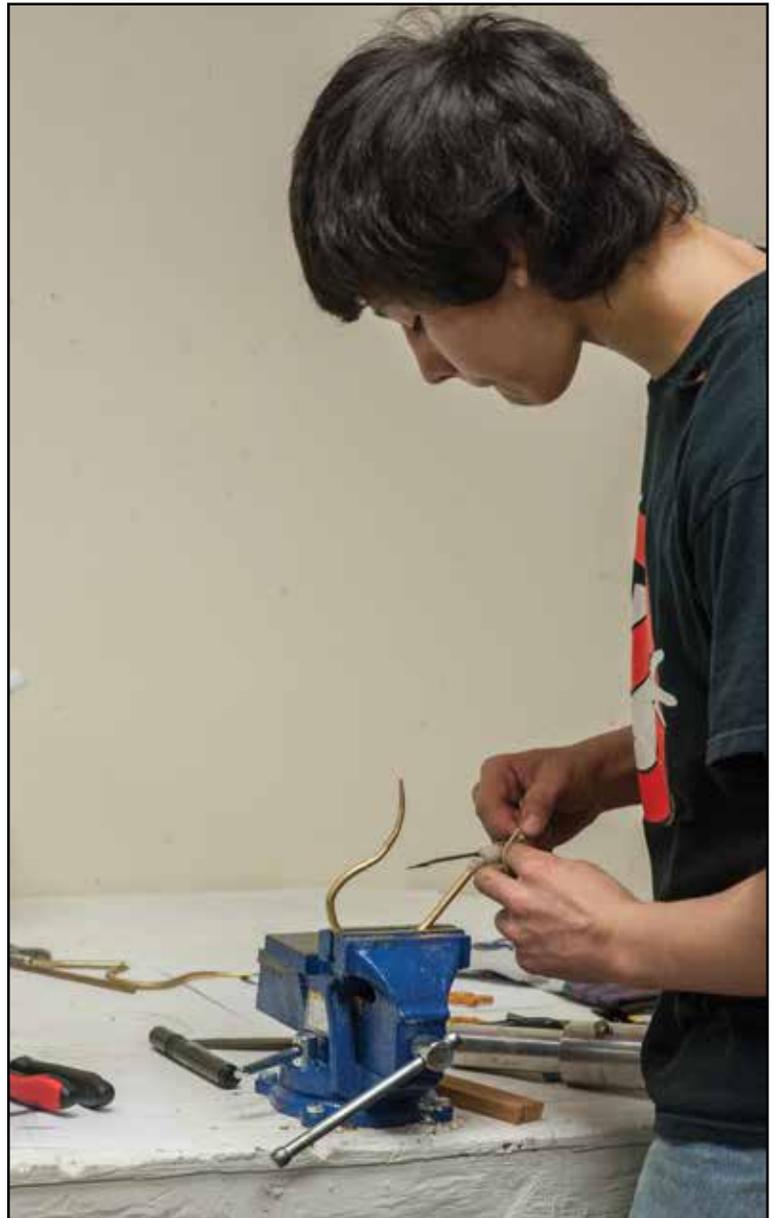
Student Alex Wise is finishing the project by writing up how the catch of halibut and bycatch compared between *čibu-d* and circle hooks during the study.

“The *čibu-d* was known to not only fish selectively for halibut, but not catch too small or too big a halibut,” Scordino said. “From a management perspective, that’s exactly the size you want to catch so the older spawners remain and the young grow to be a harvestable size.”

Tribal member Polly McCarty, who helps prepare exhibits at the MCRC, was thrilled to see the community participation.

“This museum and its contents belong to the village,” McCarty said. “It was wonderful to have them come in and interact with the history.”

A parallel project is to film the creation of wooden *čibu-ds*. Additionally an exhibit was created in the Makah Fisheries Management building with the kelp line and hooks, and descriptions of the history. A Preserve America and a cooperative National Oceanic and Atmospheric Administration grant helped pay for the projects. — D. Preston



D. Preston (2)



Top: Makah tribal member Alex Wise wraps a halibut hook he made in the Makah Cultural and Research Center in Neah Bay. Below: A drawing of a historical halibut hook is compared to a new metal one.



D. Preston (2)

Fishing as their Grandmothers Did

Laughter echoes across the Hoh River as Hoh tribal member Cecilia Ashue, 28, and Josie Ward, 23, struggle to remove their first chinook from a net.

“Get the head out,” directs their teacher, cousin Amy Bonally, who patiently observes from shore while the women struggle with the fish. Eventually, they slosh to shore triumphant and grinning as cell phone cameras record the moment.

For both women, that day was the beginning of a new way to support their families. The Hoh reservation is an hour from Forks and farther from Aberdeen. When summer seasonal jobs end, fishing is one of the few ways to make ends meet.

“I had heard from my grandma and mother how hard fishing was, but now I know,” Ashue said. “It’s not as easy as it looks, but it’s getting easier the more I do it. It’s fun to go on the river and it just feels good. Everyone in the village tells you the history of the river, where they used to fish and how far the river has

moved.”

Ashue’s grandmother used to fish right behind her house. The river is now nearly a mile away.

For Ward, learning to fish echoes the stories her grandfather Walter Ward Sr. told her.

“He fished from the time he was a little boy,” Ward said. “Since my first day, I’ve been out fishing with him and my cousin. It’s really good to be out there working together with family.”

Ward also notes that decades ago, there were many women on the river, unlike today.

“Back then, there were lots of ladies on the river,” Ward said. “But the guys watch out for us and make room for us. Our uncles laugh and tell us what to do better.”

Both women have young children to support and are committed to fishing when they can.

“Even the bad moments are good experience,” Ward said. — D. Preston



Above: Hoh tribal members Josie Ward, left, and Cecilia Ashue work to free their first salmon from a net near the mouth of the Hoh River.

Left: Hoh tribal member, cousin and teacher, Amy Bonally, takes a picture of the women with their fish.

Charity Shares Surplus Harvest

Some of the salmon caught by the Nisqually Indian Tribe is being shipped to other tribes throughout the country, thanks to a unique partnership with Faith Harvest Helpers.

“We’ve taken fish down to Arizona, to the Hopis and Apache, and out to tribes in South Dakota,” said Paul Shorb, director of Faith Harvest Helpers. “When we’re in those tribal communities in other states, we tell them: ‘This isn’t from us, this is from the Nisquallys.’”

Faith Harvest Helpers is a ministry of Youth With a Mission, one of the largest Christian charitable organizations in the world. The all-volunteer operation is run out of a small cannery just a few miles from the tribe’s reservation. The organization also operates two food banks in the region.

Since Faith Harvest Helpers began canning fish from the Nisqually Tribe six years ago, they’ve distributed more than 10 tons of salmon.

“Sharing salmon has always been a part of what we’ve done,” said Georgiana Kautz, natural resources manager for the Nisqually Tribe. “We’re glad we can partner with a group like Faith Harvest Helpers to make sure our salmon make it to those in need.”

In addition to receiving donations from



Volunteers with Faith Harvest Helpers prepare tribally caught salmon for canning. *E. O’Connell*

tribal fishermen, Faith Harvest Helpers works with tribal hatchery staff to collect quality hatchery surplus. Even the cans the organization used were donated. They also receive some fish from state hatcheries.

Shorb works to make sure that there is no waste from the canning operation. For example, Nisqually tribal members often request heads from filleted salmon for fish head soup. Other fish heads are donated to a local church to make their own soup. The rest of the fish carcasses are picked up by a local organic farmer who plows them into his fields.

In the next few years, Faith Harvest

Helpers will expand to a larger location even closer to the tribe’s reservation. The new building will include a larger commercial-grade canning facility.

“We can not only can more fish, we can expand into canning other things like produce,” Shorb said. Right now, Faith Harvest Helpers are limited to preparing 22 cans at a time. But using new equipment, they could expand to more than 500 at a time.

“Groups like Faith Harvest Helpers make sure the hungry are fed,” Kautz said. “Salmon are a vital food for us; it is good that it can be shared.” – *E. O’Connell*

Autumn’s Bounty

Tribal member Dulcie Frazier prepares vegetables for the Nisqually Indian Tribe’s fall harvest dinner.

The dinner features produce from the tribe’s community garden, chinook from the tribal fishery and clams from the Nisqually shellfish farm.



E. O’Connell

Lummi Seeks Relief for Sockeye Disaster

The Lummi Nation is seeking federal disaster relief for its fishing fleet following another year of poor returns of Fraser River sockeye salmon.

In September, the tribe passed a declaration of natural disaster under the federal Stafford Disaster Relief and Emergency Assistance Act, and a fisheries economic disaster under the Magnuson-Stevens Act.

Despite a bountiful run in 2010, Fraser River sockeye returns have been declining for 30 years. The U.S. Department of Commerce declared it a fisheries economic disaster in 2002, 2007 and 2008. There was no commercial Fraser sockeye in 2013.

“Our traditional ties to the sockeye are irreplaceable,” said Elden Hillaire, chairman of the Lummi Fisheries Commission. “The lack of harvest interferes with our *schelangen* (way of life).”

Without a fishery, Lummi tribal fishermen missed out on a potential catch worth \$1.3 million. In part, a declaration of a fisheries disaster would provide services and financial assistance to tribal fishermen who are trying to adapt to a changing industry.

After the 2008 declaration, the tribe received a U.S. Department of Labor grant to create a program called Lummi Fishers, which helps fishermen find training and other careers so they can make ends meet when they can't fish.

Poor ocean conditions, shifting currents and climate change are blamed as potential causes for the Fraser run's decline.



K. Neumeyer

Lummi tribal fishermen operate a purse seine during the 2011 Fraser sockeye fishery. The tribe has declared 2013 a fisheries economic disaster after poor returns canceled this year's fishery worth \$1.3 million.

Temperatures in the Fraser River in 2013 were the highest ever recorded, high enough to be lethal to the salmon.

The Fraser River runs through British Columbia. Nine treaty tribes in western Washington have treaty-reserved rights to catch Fraser River sockeye in U.S. waters

before they migrate upstream. In addition to Lummi, they are the Jamestown S'Klallam, Lower Elwha Klallam, Nooksack, Makah, Port Gamble S'Klallam, Suquamish, Swinomish and Tulalip tribes. – K. Neumeyer

Record Chum Run Returns to Hood Canal



T. Royal

Skokomish tribal member Annette Smith pulls in her beach seine filled with chum salmon near Enetai Creek in southern Hood Canal.

Fishermen in Hood Canal saw a record number of fall chum salmon return this year with an estimated run size of 1.4 million.

Tribal and non-tribal fishermen caught a reported 1.2 million fall chum in Hood Canal when the expected return was only 324,000. Last year, fishermen caught nearly 582,000 from a final run size of 674,000.

Skokomish tribal fishermen in particular were inundated with fall chum, most of which were produced from the Washington Department of Fish and Wildlife's Hoodsport and George Adams hatcheries, and the Skokomish Tribe's Enetai Hatchery.

“With the large amount of salmon returning this fall, our fishermen and buyers attempted to keep up with the non-treaty fleet consisting of purse seine and gillnet vessels,” said Joseph Pavel, the tribe's natural resources director. “The market was flooded by the non-treaty purse seine fleet landing more than 442,000 fall chum in the last week of October.”

Excess salmon were recycled at a composting facility on the reservation. A local yard and garden supplier has been brought in to manage the composting operation. – T. Royal

Squaxin Island Samples Sound Sound Chum DNA

Nearly every chum returning to streams throughout the northern Pacific Ocean looks the same. But surveyors with the Squaxin Island Tribe are looking for tiny genetic differences in local chum that could have a big impact on how they're managed.

The tribe is taking genetic samples during chum spawning surveys so they can tell the difference between local fish and their cousins.

The tribe wants to find out if local chum are caught in fisheries outside deep South Sound.

"We know these fish migrate to the ocean and are caught in fisheries as they're coming back," said Joe Peters, harvest management biologist for the Squaxin Island Tribe. "What we don't know is where, how many and when."

Other commonly targeted salmon species – like coho and chinook – are tracked by small tags inserted into their snouts. These coded-wire tags allow fisheries managers to tell where salmon are from if they're caught in an ocean fishery.

"With chum, because they are so

small when they leave for the ocean, there's no chance to put in a tag," Peters said. "But if we can get a good genetic profile, then we have a better idea what fisheries are impacting our runs."

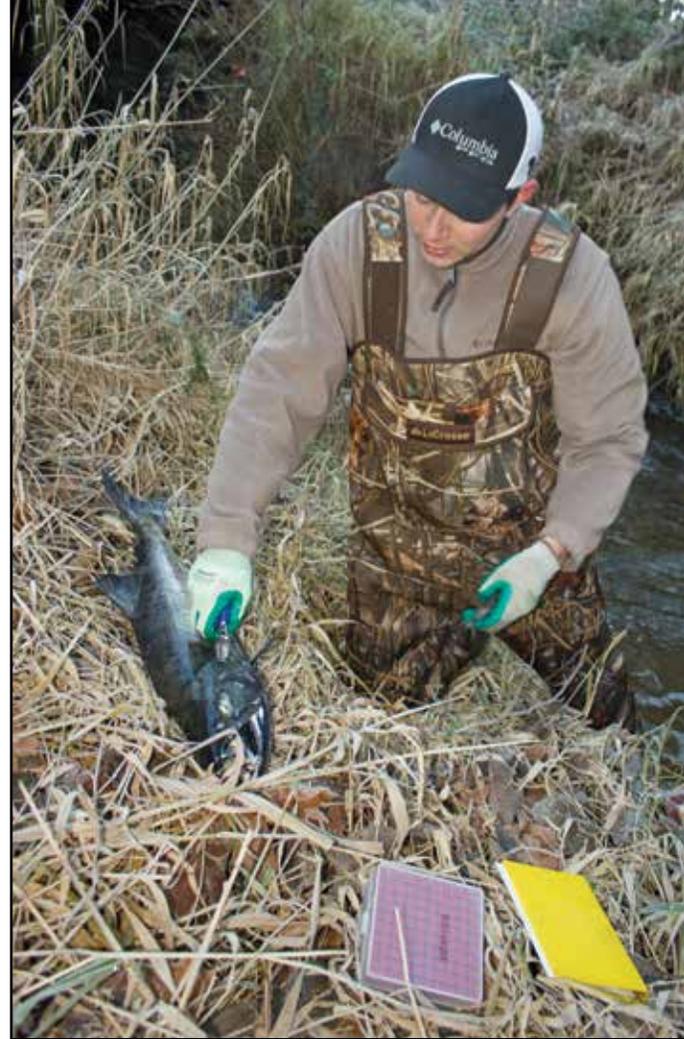
After baseline data is collected, further genetic tests on chum caught in other fisheries will give managers information on what local runs make up the catch.

The spawning surveys themselves give the tribal and state co-managers important information to manage fisheries.

"By keeping a close eye on the salmon in the streams, we can decide whether to open fisheries in adjoining bays," Peters said. "Spawning surveys are the only way to really get a good idea of how many salmon are going up the creeks to spawn."

The surveys also help predict future salmon run sizes.

"Without good data from almost every part of the salmon life cycle, we would have a hard time putting together fishing seasons," Peters said. – *E. O'Connell*



E. O'Connell

Michael West, a natural resources technician for the Squaxin Island Tribe, takes a genetic sample from a chum salmon on Skookum Creek.

State Court Sides with Swinomish in Water Dispute

The Washington State Supreme Court ruled in the Swinomish Tribe's favor in October, to a challenge to the Skagit River Instream Flow Rule amendments adopted in 2006 by the Washington Department of Ecology. The decision found that Ecology's amendments were invalid because they were inconsistent with state laws to protect minimum instream flows for fish and other environmental values.

The 2006 amendments radically changed Ecology's original rule, which was adopted in 2001 and established minimum instream flow levels for the Skagit River and several important tributaries.

"We spent years collaborating on what became the 2001 rule with the city of Anacortes, the Public Utility District, Skagit County, Upper Skagit and Sauk-Suiattle

tribes and the state of Washington," said Swinomish Chairman Brian Cladoosby. "The result of those efforts was a good rule based on sound science. Our collective agreement provided certainty for agriculture, for the cities, for the county and for the tribes for decades to come."

In 2004, Skagit County sued Ecology challenging the 2001 rule. Multi-party discussions ensued as the Swinomish and other tribes, water purveyors, and the state tried to resolve the county's complaints. Eventually, Ecology and the county settled the lawsuit without consulting any of the other parties to the negotiation. In return for Skagit County agreeing to drop its lawsuit, Ecology agreed to adopt the 2006 rule amendments.

On Oct. 3, the Washington State

Supreme Court ruled that "Ecology's amended rule, which made 27 reservations of water for out-of-stream year-round non-interruptible beneficial uses in the Skagit River basin and which would impair minimum flows set by administrative rule, exceeded Ecology's authority because it is inconsistent with the plain language of the statute and is inconsistent with the entire statutory scheme. The amended rule is invalid."

"We would have preferred to work together to find a solution to everyone's water needs as we did prior to the original 2001 rule," Cladoosby said. "If we had not acted, the stream flows needed to support our diminishing salmon stocks would have been further impacted." – *K. Neumeyer*

Massive Pink Runs Compete with Chinook

Nisqually Counts Pinks with Weir

Ten years after drafting a plan to restore pink salmon, the Nisqually Indian Tribe counted the largest run recorded on the river.

More than 700,000 pinks were forecast to return this year. Every one of the pinks was counted at a weir the tribe uses to manage chinook populations. The purpose of the weir is to separate hatchery chinook from natural origin chinook, in hopes of boosting their numbers. But this fall it also helped track the historic pink run.

Pink salmon used to return to the Nisqually in such small numbers that little was known about them. It wasn't until about 10 years ago that the tribe developed a method to estimate pink populations.

"At one point we considered a pink run of about 20,000 a great year," said David Troutt, natural resources director for the tribe. "Now we're getting twice that many through the weir in a single day."

One likely reason for the dramatic increase in the run also is bad news for other salmon species. While in the ocean, pinks feed on food lower in the food chain than other species like chinook, coho or steelhead.

"An overabundance of what pinks eat could mean other

salmon aren't getting what they need," Troutt said.

Pink salmon leave for the salt water fairly quickly, which means they don't depend on the habitat that has been in decline in Puget Sound.

Unlike other salmon species, pink salmon spawn every other year.

"They spend two years in salt water and come back to spawn," Troutt said.

The sudden resurgence of pink salmon in the Nisqually follows the boom-and-bust life cycle of pinks in other watersheds. The neighboring Puyallup River pink run peaked at nearly 1.5 million in 2009, up from tens of thousands a decade before.

Despite the proximity to the Puyallup, strays from that system aren't likely boosting the Nisqually run. Four years ago the tribe looked at the genetic makeup of Nisqually pinks, and found that their closest relations are pinks from the Snohomish, not other nearby rivers.

"These pinks are coming back strong all on their own," Troutt said. "It certainly is one small success in a region that has had very few good stories about salmon." — *E. O'Connell*

Top: Douglas Squally, a natural resources technician for the Nisqually Indian Tribe, helps a pink salmon navigate through the tribe's weir. Below: A pink salmon approaches a diversion dam in the White River near Buckley.



E. O'Connell (2)

Ocean Conditions Credited for Large Pink Returns throughout Salish Sea

The Jamestown S'Klallam Tribe this fall witnessed the largest pink salmon run in the Dungeness River since 1963.

"Spawning surveyors for the tribe and Washington Department of Fish and Wildlife were having a hard time counting chinook salmon redds because

every piece of spawning gravel was being used by pinks," said Scott Chitwood, the tribe's natural resources director.

The pink salmon return to the Dungeness River was 394,000, compared to the 80,000 fish that returned in 2001.

"Apparently the pinks expe-

rienced hugely positive ocean conditions," Chitwood said.

But it was not just Dungeness pinks returning to their home waters in large abundance.

"All pink populations did well throughout the Salish Sea," he said.

Pink salmon return as 2-year-

old adults. Pink populations in Puget Sound predominantly return in odd years. They are an important traditional food and contribute vital nutrients to the watershed, particularly when they return in large numbers.

— *T. Royal*

Captive Brood Spawned to Protect Elwha Pink Salmon

The Lower Elwha Klallam Tribe didn't want to risk losing the Elwha River pink salmon population when the river's two fish-blocking dams were removed.

The deconstruction of the Elwha and Glines Canyon dams is part of a massive project to restore the Elwha River after nearly 100 years of blocked flows and degraded salmon habitat. A result of the project is that high levels of sediment once trapped behind the dams are now flowing downriver.

"We weren't sure how the pinks were going to be affected by the dam deconstruction activity, so we wanted to take precautions to protect them," said Larry Ward, the tribe's hatchery manager. "The historical population of pinks in the Elwha River was 400,000 to 600,000. The current run is 200 fish, making it a chronically depressed stock."

While pinks have a lower commercial value, they play an important role in a properly functioning ecosystem by providing food for other animals

and contributing nutrients to the watershed.

Pinks returning to the Elwha River in 2011 were collected and spawned. The fertilized eggs were incubated at the Washington Department of Fish and Wildlife's (WDFW) Hurd Creek Hatchery, then sent to the National Oceanic and Atmospheric Administration's (NOAA) Manchester Research Station, where they were reared to adults. The 300 males and 132 females were then brought back to Elwha in August for spawning.

A portion of the fertilized eggs from this fall's spawning will go back into the pink salmon broodstock program, while the rest will be reared to smolts and released from the Elwha Hatchery into the river in spring 2014. The broodstock program is expected to continue through 2015.

The tribe's partners in this program are NOAA, WDFW, Olympic National Park, NWIFC and citizen volunteers.

— T. Royal



T. Royal

Lower Elwha Klallam Tribe hatchery technician Keith Lauderback sorts through pink salmon eggs.

QIN Upgrades Lake Quinault Net Pens



D. Preston

Quinault Indian Nation hatchery technician Skip Pickett feeds young salmon in the new fish pens that are the first of several improvements to hatchery facilities on Lake Quinault.

The Quinault Indian Nation (QIN) has replaced its 35-year-old rearing pens for chinook and steelhead juveniles on Lake Quinault.

"It was way past time," said Marty Figg, hatchery manager for QIN's Lake Quinault pen rearing program.

The \$600,000 cost was paid for by a federal Bureau of Indian Affairs grant, which also will fund replacement of a dilapidated office building at the site.

"The pens are expensive but they are a huge improvement and are a long-term investment," said Ben Gilles, acting hatchery manager for the National Fish Hatchery at Cook Creek. "We talked to folks already using those types of pens

and made sure they were happy with them. We wanted to make sure this was a good fit."

The new, taller pens are especially helpful in controlling otter predation, Figg said.

The Lake Quinault hatchery is a critical part of QIN's enhancement program, providing fish that are caught by tribal fishermen commercially and non-tribal sport fishermen who fish the lower Lake Quinault River with a QIN guide.

The hatchery also rears eggs from wild sockeye as part of the QIN's effort to restore the iconic blueback salmon.

Additional improvements to QIN's Salmon River Hatchery are slated for 2014.

— D. Preston



E. O'Connell

Staff from the Nisqually Tribe set a beach seine in the Nisqually estuary in 2011, sampling out-migrating chinook salmon. Beach seining for juvenile salmon is one of the ways fisheries managers plan to research marine survival rates.

Tribes Partner on Salish Sea Marine Survival Project

Survival Poor in Salt Water

Marine survival rates for many stocks of chinook, coho and steelhead that migrate through the Salish Sea are less than one-tenth of what they were 30 years ago.

“We have a solid understanding of the factors that affect salmon survival in fresh water,” said Terry Williams, commissioner of fisheries and natural resources for the Tulalip Tribes. “To improve ocean survival, we need a more complete understanding of the effects of the marine environment on salmon and steelhead.”

The Tulalip, Lummi, Nisqually and Port Gamble S’Klallam tribes are among the partners in the Salish Sea Marine Survival Project, which also brings together state and federal agencies from the United States and Canada, educational institutions and salmon recovery groups. The Salish Sea is the name designated to the network of waterways between the southwestern tip of British Columbia and northwest Washington.

Led by the non-profit Long Live the Kings and the Pacific Salmon Foundation, the project is coordinating and standardizing data collection to improve information sharing and help managers better understand the relationship between salmon and the marine environment.

The project is entering a five-year period of intensive research, after which the results will be converted into conclusions and management actions. The following are examples of some of the studies.

Fisheries managers studying poor ocean survival of salmon are concentrating their research on juvenile fish and their preferred prey. Several tribes are collaborating on studies slated to begin in 2014.

The Tulalip, Nisqually, Port Gamble S’Klallam, Lummi, Swinomish and Sauk-Suiattle tribes are among the collaborators that have signed on to sample zooplankton throughout the region.

Zooplankton and ichthyoplankton are the preferred prey for juvenile salmon. Researchers want to find out whether prey availability has changed in the Salish Sea during the critical period of juvenile salmon development, leading to poor growth and survival.

“This effort will fill critical knowledge gaps in understanding the lower levels of the marine food web that affect juvenile salmon,” said Paul McCollum, director of natural resources for the Port Gamble S’Klallam Tribe. “The data will contribute to the development of ecosystem indicators that have already been demonstrated to greatly improve adult salmon return forecasting.”

“The increasing inability in recent years to accurately estimate annual salmon returns is impacting tribal treaty rights and implementation of the U.S.-Canada Pacific Salmon

Treaty,” said Terry Williams, commissioner of fisheries and natural resources for the Tulalip Tribes. “It also impairs the critical decision-making necessary to achieve salmon recovery goals and sustainable fisheries.”

The Tulalip and Nisqually tribes also are partnering on a study of juvenile salmon in the Snohomish and Nisqually river watersheds and adjacent near-shore and offshore marine areas.

The study will examine the entire community structure of competitors and predators, including plankton and other fish species. Smolt traps operate continuously on both rivers from winter through summer to collect timing, size and abundance data for out-migrating salmon. Both tribes also sample juvenile fish use of nearshore marine areas and pocket estuaries using fyke nets and beach seines.

This sampling data should allow researchers to identify the life stage, timing and locations where growth of juvenile salmon is limited.

In Hood Canal and Admiralty Inlet, the Port Gamble S’Klallam Tribe has been conducting near-shore research and monitoring on juvenile salmon and forage fish, using acoustics, trawl and beach seine methods, as well as zooplankton sampling.

– K. Neumeyer

Salmon Finding Way into Restored Habitat



E. O'Connell

Puyallup Tribe salmon biologist Eric Marks climbs over a newly installed logjam in Clearwater River during a coho spawning survey.

The Puyallup Tribe of Indians is already finding salmon using newly restored habitat on the Clearwater River.

“It’s great to see salmon using the habitat so soon after the completion of the project,” said Russ Ladley, resource protection manager for the Puyallup Tribe. “In a few months, the offspring of these fish we’re seeing migrate and spawn in the Clearwater will be able to use this habitat to rear and find food.”

So far this year, the tribe has counted more than 100 chinook and 250 coho within about a mile of restored river.

The project was managed by the South Puget Sound Salmon

Enhancement Group (SPSSEG).

Last summer a total of 18 large and small engineered logjams were installed in the Clearwater River about two miles from where it joins the White River. Placement of these logjams will reconnect flows to a network of 11 existing side channels, dissipate floods, and increase instream structure and cover in the river.

“Adding the wood and instream structure to the river will encourage the river to move and create habitat,” said Kristin Williamson, SPSSEG project manager.

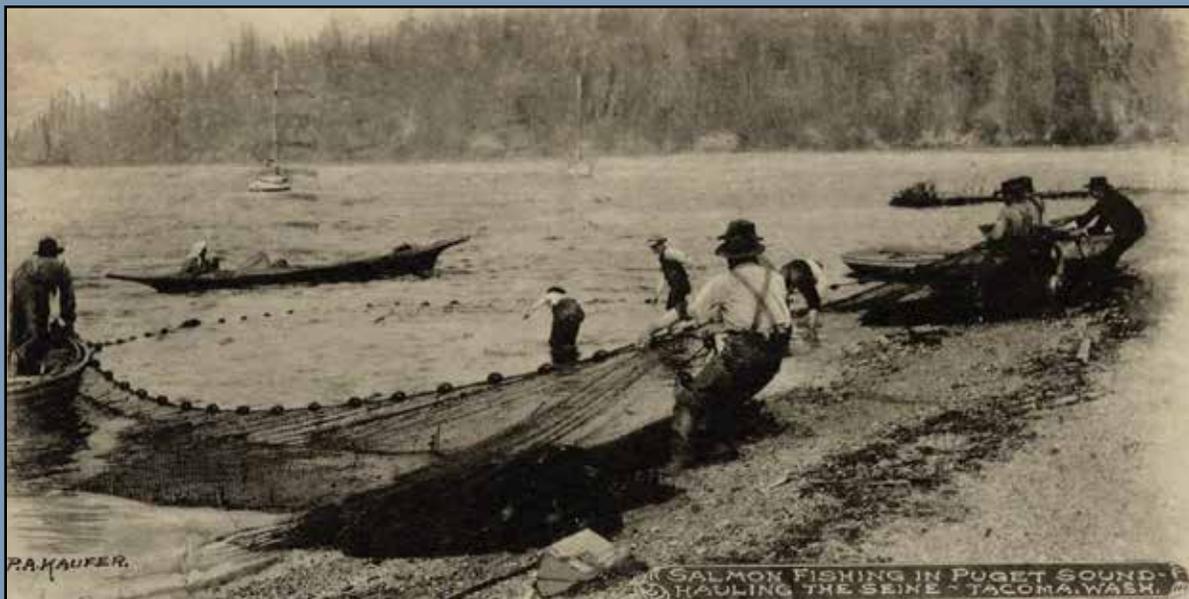
The Puyallup Tribe conducts extensive spawning surveys throughout the river for chinook, coho and pink salmon. Data from spawning surveys help natural resources managers assess the success of habitat projects. Fisheries managers also use the data to help build future salmon fisheries.

“Spawning surveys are a simple and essential tool for managing salmon,” Ladley said. “Nothing beats getting out on the water and counting fish.”

Downstream from the project site, the tribe recently built a new juvenile chinook acclimation pond. The Puyallup Tribe annually transfers as many as 800,000 juvenile spring chinook from either a state or Muckleshoot tribal hatchery and raises them in several acclimation ponds in the upper White.

“Coho and chinook populations in the White River have demonstrated an encouraging upward trend over the past 15 years,” Ladley said. “We hope this project and other similar efforts will allow this trend to continue and extend to other species such as steelhead that have not responded favorably. The best way to bring them back is to repair what habitat we can and protect what they have left.” – E. O’Connell

Generations



Puyallup Tribe of Indians

Puyallup tribal members in the early 1900s fish for salmon in Commencement Bay. Tribal members frequently used beach seines to catch salmon before they migrated into the Puyallup River. This part of the waterfront is now heavily urbanized, putting pressure on the tribe’s once-thriving fishery.

Fish Surveys Vital to Salmon Management

The Quillayute River system is vast, covering hundreds of square miles and comprising the Dickey, Sol Duc, Calawah and Bogachiel rivers. The Quileute Tribe's fisheries staff walks or floats a large part of those rivers and tributaries to survey the salmon redds (egg nests) each year.

This time of year, the staff is juggling surveys of three species at once – chinook, coho and sockeye salmon.

"We're fortunate this year because the weather has cooperated and given us a little more time to survey chinook," said Roger Lien, a fisheries biologist for the Quileute Tribe. "We like to get that extra bit of information about the later end of the run when we can, before the rains really set in."

The information collected by the tribe is used to help set fishing seasons for tribal and non-tribal fisheries. Additional surveys are conducted by Washington State Fish and Wildlife (WDFW) and Olympic National Park staff, but the majority of the surveys are carried out by the tribe. State budget cuts have reduced the numbers of surveys conducted by WDFW.

Some crew members have been doing the surveys for more than a decade.

"Overall now, up and down the rivers, people know who we are now and what we're doing," said Lien, who has worked for the tribe for 23 years. "Most of the sport fishermen are friendly and cooperative."

Lien is still collecting the numbers for chinook, but preliminary results indicate that this year's return for chinook may be better than recent years.

"It's a large drainage and a lot of places to get to," Lien said.

– D. Preston



D. Preston

Quileute fisheries technician Dustin Larkin walks part of the North Fork Calawah River during a salmon survey.

Lunchtime Face-off

A raccoon kit takes a break from chasing fish for lunch near Taft Creek, a tributary to the Hoh River. Later, it swam across the pond to join its mother and two siblings.



D. Preston

Coho Salmon React Well to Filtered Stormwater

Rain gardens filter toxic chemical contaminants from stormwater before it flows into Puget Sound streams, but no one knows how well they protect the salmon that spawn in those streams.

That was this year's question during the annual coho salmon stormwater experiment at the Suquamish Tribe's Grovers Creek Hatchery.

Since 2011, tribal, federal and state scientists have been studying how spawning salmon are affected by stormwater.

In previous years, the research team found that adult coho were dying prematurely when returning to spawn in urban watersheds throughout many areas of Puget Sound. Working with the tribe, the team hopes to better understand why stormwater runoff is so toxic, and also identify stormwater treatment methods that can effectively protect adult spawners.

At the hatchery this fall, scientists ran raw stormwater through four barrels of sand and compost. The barrels mimic the filtration that occurs when runoff is cleaned using various green stormwater infrastructure or low-impact development technologies. Unfiltered and filtered stormwater were then placed into large tanks with fish to monitor their survival and observe their behavior. The team also exposed fish to clean well water from the hatchery.

"The Washington Department of Ecol-



T. Royal

ogist Jenifer McIntyre takes water quality data while fish are exposed to clean hatchery water, raw stormwater and filtered stormwater. Raw stormwater was filtered through the blue barrels on the left, which are filled with sand and compost to mimic runoff filtration systems.

ogy recommends this kind of filtration technique for bioremediation and new low-impact development," said Julann Spromberg, a National Oceanic and Atmospheric Administration toxicologist. "We wanted to see how well it would work from the perspective of the fish – can we remove enough of the pollution from urban runoff to keep the coho spawners alive?"

Preliminary results show that fish in the filtered water for 24 hours were alive and

behaving normally, Spromberg said. In addition, the fish exposed to hatchery well water and raw stormwater responded as expected: the former survived, the latter did not.

"We don't know exactly which contaminants are causing the fish to die, but we do know the bioretention filtration technique is effective," Spromberg said. – T. Royal

Surf Smelt, Pacific Sand Lance Important to Salmon Diet

Shannon Miller and John Hagan keep a close eye on the phases of the moon so they can determine the best time of the month to collect samples of pinhead-sized translucent forage fish eggs.

"We found that the moon phases may be a potential spawning cue," Miller said. "There are more eggs around the new moon and full moon phases during the fall and winter months, so we schedule our surveys around that and the tides. That makes for an interesting work schedule."

Miller and Hagan are Point No Point Treaty Council (PNPTC) biologists who are studying the spawning rates of surf smelt and Pacific sand lance, both important food sources for salmon. The

PNPTC is a natural resources management agency for the Port Gamble and Jamestown S'Klallam tribes.

"Past studies have focused on the presence or absence of eggs in the intertidal zone but have not necessarily tracked egg densities," Miller said. "We're trying to build a better quantitative data set to see if they're reproducing enough offspring for salmon to eat. They're an important part of the food chain and an indicator of the health of the sound's ecosystem."

Since 2011, the biologists have been collecting bags of sand from beaches on Indian Island in areas with prime forage fish habitat, including sandy gravel shores. The bags are taken back to the PNPTC



T. Royal

lab, where the eggs are separated from the sand and then individually counted. In the 2011-2012 sampling period, more than 450,000 eggs were sampled.

"We're finding many more eggs than in past studies, but we are also sampling more intensively," Miller said.

This five-year project will look at the timing of incubation and emergence of forage fish embryos, as well as the environmental conditions for spawning, such as water temperature, that determine successful spawning rates.

– T. Royal

Chinook Return after Dam Removal

The Lower Elwha Klallam Tribe is seeing changes to the Elwha River occur faster than anticipated since deconstruction of the two fish-blocking dams on the Elwha River started two years ago.

The most recent milestone is that 4,700 chinook salmon returned to the river this year – the most since 1992.

“The overall return is double what we’d seen in the past two decades,” said Mike McHenry, the tribe’s habitat program manager. “But that’s nothing compared to what we expect to see in the future.”

In mid-September, biologists from the tribe and federal and state agencies spent one day surveying 13 miles of the river, from the mouth at the Strait of Juan de Fuca to the Glines Canyon Dam site, plus tributaries Indian Creek, Hughes Creek and Little River.

On that day alone, biologists counted 1,741 adult chinook and 763 salmon egg nests. Of the total number, approximately 75 percent of the salmon and redds were found upstream of the former Elwha Dam site.

In addition to seeing the chinook, biologists found that the salmon habitat between the Glines Canyon and former Elwha Dam site was in excellent condition, McHenry said. Salmon had spread themselves throughout various parts of the watershed, including the river’s mainstem, former Lake Aldwell, and the river’s tributaries and side channels.

“We found the biggest concentration of chinook at the base of Glines Canyon Dam, which indicates to me that they want to continue on,” McHenry said.

Habitat Looking Healthy

Contributing to the prime salmon habitat are the engineered logjams that the tribe has been building in the lower river for the past 14 years.

“We’re up to 45 logjams and now it’s just a matter of monitoring them as well as watching how the river is reconstructing logjams on its own,” McHenry said. “We need to deter-

mine if we need to build any more since so much wood is transporting down the river and ending up on the old Aldwell reservoir, naturally creating more logjams.”

The tribe is in its third year of releasing coho salmon into Indian Creek and Little River, two tributaries to the mainstem. Nearly 1,000 salmon reared at the tribe’s hatchery were spaghetti-tagged, and a small portion of those were radio-tagged so their migration patterns can be monitored by the tribe.

“It’s been a very successful program,” McHenry said. “We’ve been tracking where they spawn, plus looking at the juvenile communities and finding smolts.”

Checking The Estuaries

Near the mouth of the river, Matt Beirne, tribal environmental quality coordinator, and his crew have been monitoring the fish communities in the estuaries.

Every two weeks since April, Beirne and staff have seined the estuaries and collected stomach contents of juvenile salmon to study what they are eating by gently pumping their stomachs.

“The work we’re doing now will be compared to similar work we did in 2007 and 2008, so we can see what kind of changes have been taking place during dam removal, such as what species are using the estuaries and what they are eating,” Beirne said. “Some surprising catches have been a few lampreys and an abundance of reddsides shiners, which we’ve never caught in the estuaries before. We assume that they have moved downstream from Lake Sutherland since the removal of the Elwha Dam.”

The preliminary results of the diet sampling suggest that juvenile salmon are feeding mostly on land-based invertebrates. Ongoing deposits of fine sediment in the estuary have temporarily disrupted the aquatic invertebrate populations that make up much of their diet. – T. Royal



T. Royal

Lower Elwha Klallam Tribe biologist Ray Moses prepares a coho salmon for release into Indian Creek, a tributary to the Elwha River.

Dam Deconstruction Resumes

Dam removal at Glines Canyon was halted in October 2012 because sediment clogged the Elwha Water Treatment Plant, forcing deconstruction to stop until filtering issues were worked out. Deconstruction resumed this fall, but due to the fish window in November and December, has stopped and will start again in January.

Complete dam removal is still expected by end of 2014. The Elwha Dam is completely removed, with salmon moving beyond the site to spawn upriver.

River Exhibit at Burke Museum

The University of Washington’s Burke Museum in Seattle is showing an exhibit about the river restoration project, based on *The Seattle Times* reporter Lynda Mapes and photographer Steve Ringman’s book, *Elwha: A River Reborn*.

The exhibit, which runs through March 9, 2014, includes stories, videos, timelines and photos of the dam removal process.

‘The Gulch’ Made More Salmon Friendly

The Tulalip Tribes recently improved rearing habitat in a small coastal stream popular with juvenile chinook.

Known to locals as “the gulch,” the unnamed stream had one of the highest densities of juvenile chinook of all the coastal streams sampled in the Whidbey basin by the Tulalip Tribes and Skagit River System Cooperative. During one electrofishing survey, natural resources staff found 280 chinook among a total of 600 juvenile salmon that also included coho and other species.

“They can live there for many weeks, so it’s more than just acclimating,” said Derek Marks, Timber/Fish/Wildlife manager for Tulalip. “They’re actually rearing and growing in there.”

Despite those numbers, the tribes saw room for improvement. At the time, the gulch was little more than a ditch overgrown with invasive plants. Old county stormwater assessments referred to it as

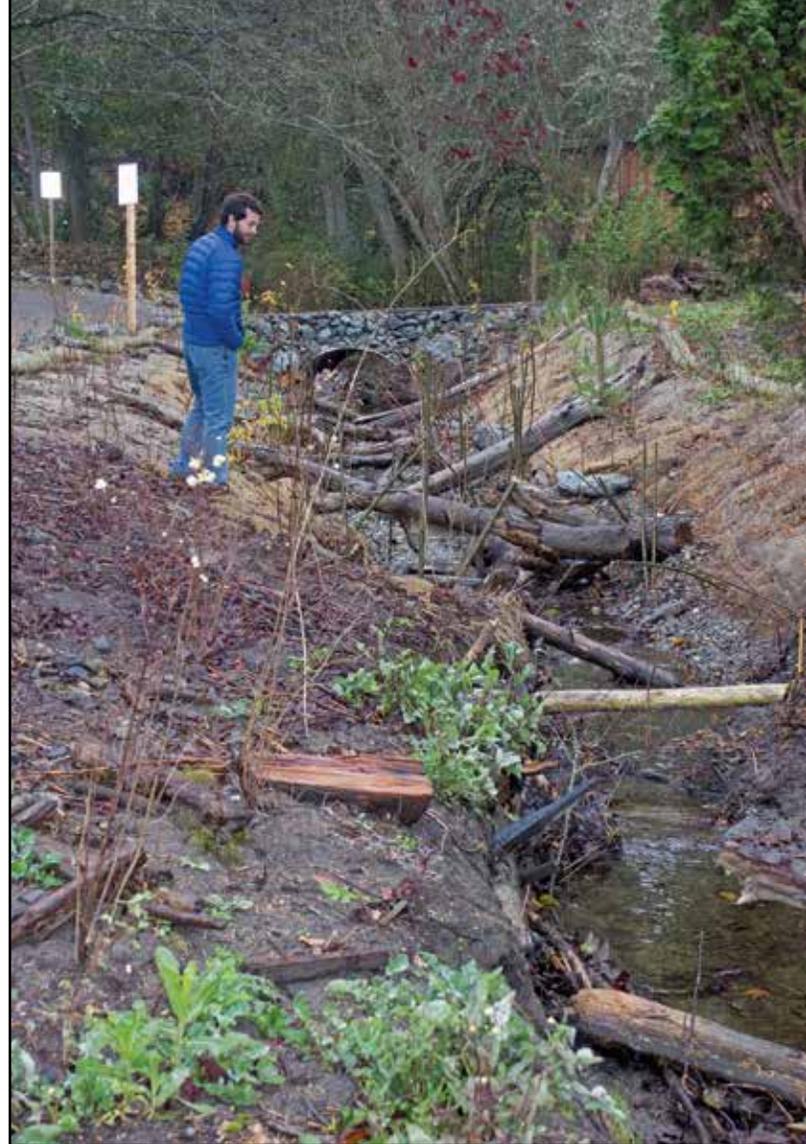
Greenwood Creek, probably named for a nearby grange.

A degraded culvert partially impeded fish passage upstream.

“The culvert was rusting and on its way out,” said Tulalip biologist Brett Shattuck, project manager for what became the Greenwood Creek Stream Enhancement Project. “The stream was lined with rocks that created more of a flume than a channel.”

Greenwood Creek is county-owned and in a public right-of-way. The tribes and Snohomish County worked with Adopt-a-Stream to replace the culvert, clear the invasives and realign about 250 feet of habitat.

Interpretive signs are planned to help the public understand the importance of small coastal streams to migrating salmon. Before the restoration, people may not have realized that the small drainage ditch was being used by juvenile salmon. – K. Neumeyer



K. Neumeyer

Tulalip biologist Brett Shattuck observes the newly restored Warm Beach project, now known as Greenwood Creek.

New Program Offsets Impacts

The Tulalip Tribes have partnered with the U.S. Army Corps of Engineers and Environmental Protection Agency to compensate for the impacts of development at the tribes’ Quil Ceda Village.

In November, Tulalip established the first tribal In-Lieu Fee (ILF) program for aquatic resource impacts and mitigation. Payments to an ILF program are “in lieu” of project-specific mitigation or buying credits from a mitigation bank.

“The Quil Ceda Village In-Lieu Fee Program is for the future of the Tulalip people,” said Mel Sheldon, chairman of the Tulalip Tribes. “Only by protecting and restoring our watershed do we fulfill our obligations to leave future generations a healthy, productive environment, while also allowing us to develop and manage our lands to yield a stronger, more diverse tribal economy.”

Tulalip plans to build on one-third of the undeveloped 1,500 acres of the Quil Ceda Village business park, leaving the rest to be preserved or restored as fish and wildlife habitat. Developers will pay a fee to the ILF program to



K. Neumeyer

Coho spawn in Coho Creek, a tributary to Quilceda Creek, in 2011. The Tulalip Tribes created Coho Creek out of a drainage ditch as part of efforts to balance development on tribal lands with the preservation of salmon habitat.

fund a restoration project elsewhere in the watershed that mitigates for the wetland resources lost or degraded as a result of the project.

“We believe that our record on environmental restoration, protection, and natural resource management has prepared us to implement and administer a smart and effective program by providing high-quality mitigation,” Sheldon said.

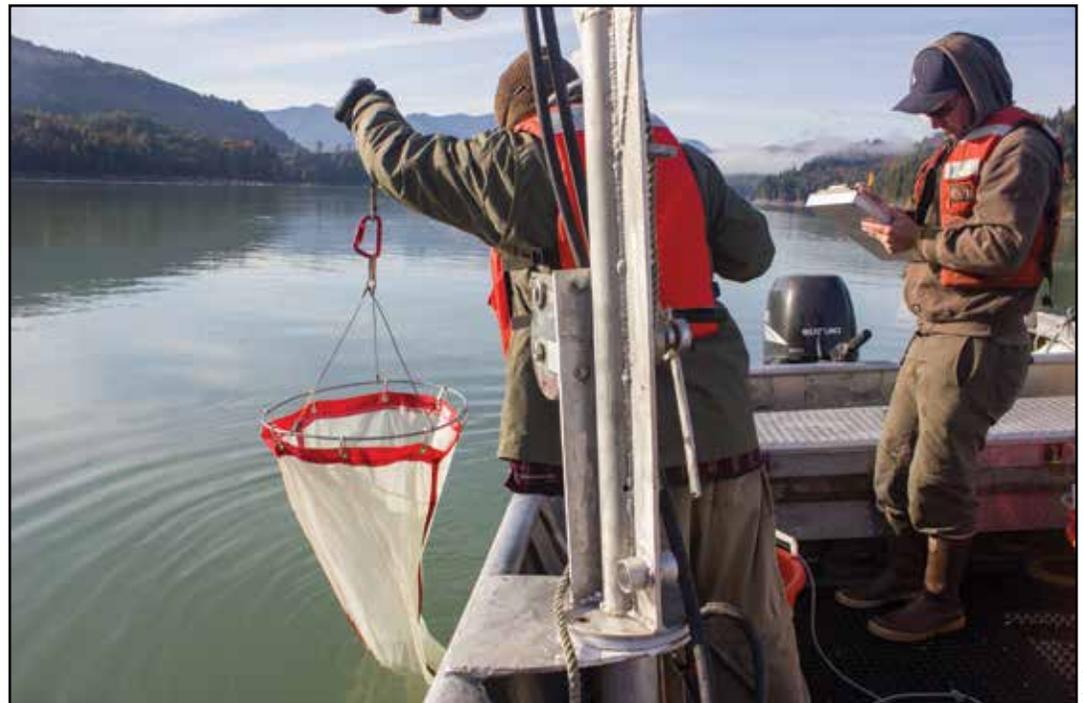
Managing Salmon Begins with Food Source

The Upper Skagit Indian Tribe is sampling zooplankton in Baker Lake and Lake Shannon to track the availability of food for juvenile sockeye salmon.

The results will let fisheries managers know whether the reservoirs can support an increase in sockeye production at Puget Sound Energy's (PSE) Baker River hatchery. The Upper Skagit Tribe took over zooplankton monitoring from PSE two years ago, after the utility's Federal Energy Regulatory Commission license was renewed.

"Sampling zooplankton, the preferred prey of sockeye, will let us know what time of year they become most abundant," said Jon-Paul Shannahan, biologist for the tribe. "That way, we can manage the sockeye hatchery releases when the most food is available."

Tribal natural resources staffers collect zooplankton from the lakes during spring and summer, the primary growing season for sockeye salmon. The samples are sent to a lab in Idaho that identifies the types of zooplankton and calculates the abundance and



Upper Skagit natural resources staff members Josh Adams (left) and Mike Bartlett sample zooplankton in Lake Shannon.

biomass in the two reservoirs.

PSE's Baker River Hydroelectric Project consists of two dams on a tributary to the Skagit River. Built in 1925, the Lower Baker Dam created Lake Shannon, and in 1959, the Upper Baker Dam enlarged and raised Baker Lake.

Recently, the Baker River hatchery increased production of sockeye salmon from 1 million to 5 million fish in Baker Lake, and began releasing 2 million fish into Lake Shannon.

"In a 2010 study of Baker Lake and Lake Shannon, there was a noticeable decline in the

preferred zooplankton biomass as numbers of sockeye increased," Shannahan said. "The tribe wants to make sure the food source will be able to sustain a larger number of fish."

– K. Neumeyer