



Northwest Indian Fisheries Commission

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Habitat Key to Salmon Recovery

By **Billy Frank Jr.**
NWIFC Chairman

We're starting to see some light on the horizon when it comes to restoring salmon, and we have good management to thank for it. For the first time in nearly 25 years, the Stillaguamish Tribe was able to harvest a chinook from the Stillaguamish River for a First Salmon Ceremony.

Sport fishermen on the Skagit River are getting a crack at summer and fall chinook for the first time since 1993.

For the past two years, the Puyallup Tribe of Indians has opened special "elders only" fisheries for spring chinook, the first harvest of these fish by the tribe since the 1980s.

These fisheries are small – the Stillaguamish Tribe planned to take fewer than 20 of the 1,000 chinook returning to the river's north fork – but they are no less important. Each fishery is a testament to strong, sound co-management by the treaty Indian tribes and state of Washington.

We've been ramping up hatchery programs to make sure wild stocks on the edge of extinction don't disappear. The Muckleshoot Tribe's White River Hatchery provides a great example. The hatchery opened in the late 1980s in response to spring chinook returns as low as 30 fish. With help from the state and the Puyallup Tribe, the program has resulted in as many as 6,000 fish returning each year.

But despite the ground we've gained, we are losing habitat faster than we can restore it.

I wish I were talking about hundreds of thousands of fish coming back to our rivers every year. All of the numbers I've shared with you are small for a reason: we've failed to take care of the salmon's home. We've limited our fisheries and sharpened our hatchery programs, but the march of habitat destruction continues.

Since the 1970s, the total amount of impervious surfaces – things like roads, parking lots and roofs – in the Snohomish watershed has nearly tripled. This is the nastiest kind of habitat destruction because it changes the way water flows, causing flooding and killing more salmon than an army of fishermen ever could.

Instead of balancing our region's catastrophic growth on the back of salmon, we need to turn the corner and begin restoring more salmon habitat than we destroy every year.

Salmon recovery begins and ends with good habitat.



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



On the cover: John Mahan, hatchery manager for the Quileute Tribe, releases a Sol Duc River summer chinook into circular tanks as part of the tribe's chinook broodstocking program. See page 10 for story. *D. Preston*

Human Waste Forces Shellfish Bed Closure

Annas Bay Shut Down then Reopened Following Cleanup of Skokomish River Banks

The Skokomish Tribe is encouraged by the efforts taken by Washington Department of Fish and Wildlife (WDFW) and sport anglers to clean the banks of the Skokomish River following reports of observed human waste near important shellfish beds in Annas Bay.

“We encourage them to keep up the good work, behave themselves and be courteous to their neighbors,” said Joseph Pavel, director of the tribe’s natural resources department.

The tribe spoke out in late August after the Washington Department of Health (DOH) closed Annas Bay to shellfish harvesting on Aug. 18, citing “human waste from sport fishers” as the reason for the closure.

It was to remain in place indefinitely. However, following the tribe’s public reaction to the report, sport anglers, private landowners and WDFW quickly removed visible human waste and installed more bathroom facilities and garbage cans.

The western portion of Annas Bay was reopened Sept. 3. Shellfish harvesting in the eastern portion of the bay – already closed because of pollution before the dis-



Skokomish Tribe (Natural Resources Department)

An aerial view of Annas Bay, where the Skokomish River meets Hood Canal. The west side of the delta was closed for shellfish harvesting due to human waste found on the banks of the river.

covery of human waste along the nearby Skokomish River – remains prohibited.

Hundreds, sometimes thousands, of non-Indian anglers have been fishing for salmon, mostly chinook, in the lower Skokomish River since Aug. 1. The river has been open for non-salmon species since early June. Salmon sport fishing in the river is scheduled to continue through mid-December.

The western shore closure area, known as Potlatch East, is a harvest area for the tribe and includes tribally owned tidelands. The tribe currently has more than 170,000 oysters available for harvest on the beaches

Ryan Edwards, of Dee’s Seafood, holds Pacific oysters harvested from an open tideland on Hood Canal.



T. Royal

that were affected by the closure.

The problem isn’t new, tribal officials said. In 2003, DOH and WDFW identified the problem in a report entitled “Skokomish River Detailed Implementation Plan for Fecal Coliform Bacteria,” which addressed the pollution issue and potential solutions, but little action was taken.

“There are many different types of water quality issues that need to be addressed in Hood Canal,” Pavel said. “It was unfortunate that it took this drastic action to trigger a response by the responsible agencies to address something that was readily resolved compared to some of the issues that we are still working to solve.”

For the long term, the tribe hopes the anglers continue to observe the good habits, which will pay off for the overall health of Puget Sound.

“This ultimately points to how important salmon recovery is in Puget Sound, so folks don’t have to stand shoulder to shoulder on the banks of just a few rivers and there are more resources for everyone to share,” Pavel said. – *T. Royal*

Squaxin Island Tribe Tracks Freshwater Mussels

The Squaxin Island Tribe is conducting a census of freshwater mussels in deep South Puget Sound.

The mussels are an anonymous but important contributor to the health of dozens of small streams.

“While they’re usually mistaken for small rocks, freshwater mussels play an interesting role in streams like the ones we have around here,” said Scott Steltzner, biologist with the Squaxin Island Tribe. “Mussels help maintain water quality by filtering water, increasing oxygen levels and distributing sediment.”

Also, since freshwater mussels can live a long time – sometimes more than a century – researchers can use their tissue to track pollution levels.

“Whether mussels are even present can tell us if conditions like temperature and sedimentation are favorable for other species such as trout and salmon,” Steltzner said.

The tribe began the census this summer by studying the mussel population in Little Skookum Creek. Biologists from the tribe’s shellfish and salmon departments worked together to count individual mussels and determine what and how many

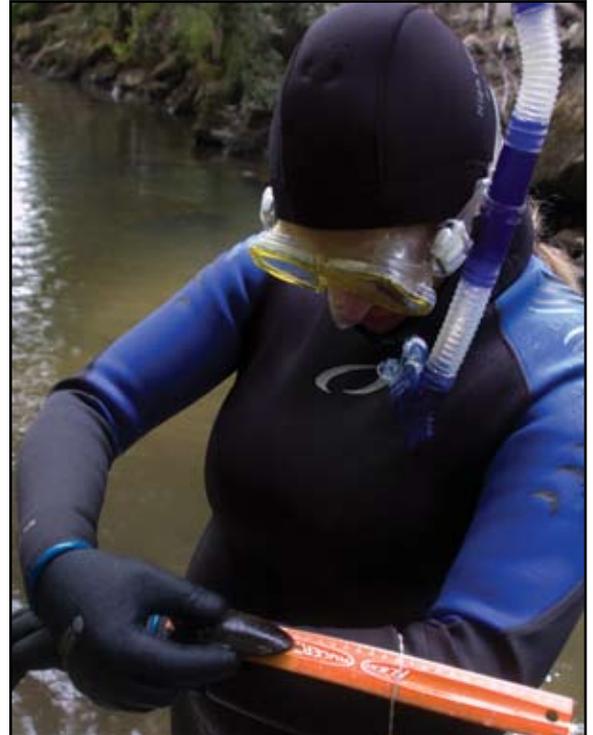
species are present. The tribe eventually will expand the survey to include other small streams in the tribe’s treaty-reserved fishing area.

Little Skookum Creek has been the focus of recent salmon habitat restoration efforts by the tribe. More than a dozen engineered logjams have been placed in the creek to improve salmon habitat. The tribe also is replanting a streamside forest and adding gravel to aid salmon spawning.

“Conditions are likely better now for freshwater mussels in Little Skookum than they were just five years ago,” Steltzner said. “We hope to see a good population of mussels around our restoration projects.”

“There is very little known about the populations of these shellfish down here,” said Eric Sparkman, shellfish biologist for the tribe. “We

know they play a very important role in stream health and supporting other species, but we don’t know much more than that.” – *E. O’Connell*



E. O’Connell

Rana Brown, shellfish technician for the Squaxin Island Tribe, measures a freshwater mussel on Little Skookum Creek.

Jamestown Using Oyster Tumbling Techniques in Sequim Bay

Oysters are taking a tumble in the tides of Sequim Bay in a bid by the Jamestown S’Klallam Tribe to produce a higher quality product for consumers.

“We’re using the tide to manipulate the oysters,” said Chris Whitehead, the tribe’s shellfish biologist.

Oyster tumbling involves putting young oysters into a mesh bag. A buoy is attached to the bag, which is then secured to a horizontal stainless steel rod held in place by rebar stakes driven into the muck at low tide. The bags pivot on the rod and float as the tide rolls in, and sink back to the bottom as the tide recedes. The ebb and flow of the tides agitates the oysters or “tumbles” them. The action mimics nature, encouraging the oysters to break off new growth at the bill,



T. Royal

Jamestown S’Klallam shellfish biologist Chris Whitehead attaches a bag of oyster seed to a tumble bag system in Sequim Bay.

and harden their shells as they mature.

The tumble bag system helps the Pacific oysters focus growth energy to the cup, rather than the bill; the latter is typical in the region. The deeper cup shell gives the Pacific oysters the look of the Kumamoto oysters, which are highly valued by consumers worldwide. The growing method has been used successfully at other shellfish growing operations throughout the region.

“This is a pilot study for us this year, but if we have a successful harvest this fall, we may scale it up next year,” Whitehead said.

Oyster farming has come a long way, from long-lining mother shells, to suspending bags in several feet above the substrate, to the tumble bag system, he added. – *T. Royal*

Students Help Survey Purple Olive Shells

The sound of hundreds of decorative purple olive shells chattering against Makah tribal dancers has not changed in at least 500 years. The 3-quarter-inch shell has been found in the oldest archeological digs in Neah Bay with holes pierced in the end to use for necklaces, headbands, belts and other regalia.

Makah tribal member Evan Bowechop, 16, was reminded of the history as he counted the living shells in the surf on Hobuck Beach in Neah Bay as part of his summer intern job with the Makah Natural Resources Department. He and partner Michael Murner, 17, completed a survey of olive shells that will help Makah natural resources managers get an idea of the numbers and locations of the small, snail-inhabited shell.

“The idea is to have the interns do this survey each summer so we can start to establish population patterns,” said Jonathan Scordino, marine mammal biologist for the tribe. As the interns worked one foggy, misty morning, a group of tribal members harvested the shells farther down the beach.

“I use the shells on button blankets and for necklaces,” said tribal member Ish. Another tribal member had learned how to harvest the shells to make necklaces from her mother who was now too old to come to the beach.

While the tribal members collected the shells, Murner and Bowechop continued to count the shells that can number more than 1,000 in a 3-foot



Makah tribal members Evan Bowechop (left) and Michael Murner count olive shells in a tract as part of their summer internships with the tribe’s natural resources department. D. Preston

by 3-foot tract of beach. The snails are counted and moved to another side of the area so they can burrow their way back into the sand.

The teens are two of three students who worked in the tribe’s summer internship program. Each year, students work in a variety of natural resources departments, learning about the jobs and assisting with the natural resources management activities. The hope is that some tribal members will become interested in pursuing their degree in a related field and come back to work for the tribe.

They finished the summer by presenting a paper to tribal members about their activities and specific topics assigned to them, including Murner’s paper on the results of their olive shell surveys.

– D. Preston



D. Preston



D. Preston

Left: A young Makah dancer wears olive shells as part of her dancing attire. Right: A pile of olive shells are collected by Makah tribal members for use in necklaces, headbands and button blankets.

Accounting for All Tideland Species

The Lummi Nation is surveying every species living on more than 7,000 acres of tidelands on the tribe's reservation.

The Lummi Intertidal Baseline Inventory (LIBI), funded by the energy company BP, will be crucial in the event of a catastrophic oil spill from activities associated with four nearby oil refineries: BP and ConocoPhillips in Ferndale, and Tesoro and Shell at Anacortes.

"We want to know what's living here now, so if there is a spill, we will know the extent of the damage," said Merle Jefferson, Lummi Natural Resources director. "After the Exxon-Valdez spill, they had no pre-disaster data to compare it to."

Lummi Natural Resources Department staff inventoried the tidelands in four ways:

- Monthly shorebird survey;
- Monthly finfish sampling using a lampara net (similar to a purse seine);
- Visual survey of geoduck and horse clams; and
- Dig survey of other species such as hard shell clams, crabs and worms.

They also contracted with the Oregon-based firm Watershed Sciences to measure tideland elevations from the air using LIDAR (Light Detection and Ranging).

"It's incredibly ambitious to include everything," said Craig Dolphin, the tribe's shellfish biologist coordinating the inventory. "But the LIDAR data and the four surveys have come together to give us great results."



Julie Barber, Lummi Nation

Ankle deep in eelgrass, Lummi Nation tribal member Delanae Estes digs a sample for the tribe's intertidal inventory.

The dig survey was conducted over a period of four months by four teams of two: a scientist paired with a seasoned clam digger who had traditional ecological knowledge of the area.

The teams dug samples at 366 sites, collecting bags of sand containing eelgrass, clams, worms and other organisms. The collected samples were taken back to the lab, identified and counted. So far, at least 150 different species were counted from the dig survey alone, including varieties of clams such as native littlenecks, manila clams and invasive mahogany clams.

— K. Neumeyer



Lummi Nation Records and Archives

Generations

Lummi Nation members Art Humphreys (left) and August Casimir cook salmon in this photo, which is likely from the 1950s. This traditional method of spearing salmon on sticks and cooking over an alder fire is still used today.

Chinook Run Timing Expanded

In a few years, fishermen might be able to hit the water for chinook in Sinclair Inlet a month earlier than they can now.

Hatchery chinook generally return to the inlet near Gorst in August and September. An effort to expand the run timing would have fish swimming into Sinclair Inlet in July.

As part of this year's annual spring release of juvenile chinook from the Gorst Hatchery, the tribe released 900,000 juvenile chinook, which are expected to return in July and August 2012. The tribe also released another 900,000 juvenile chinook that will return in August and September 2012.

The early returning fish are from Washington Department of Fish and Wildlife's Minter Creek Hatchery on Carr Inlet in South Sound; the later returning fish are from the tribe's Grovers Creek hatchery in Indianola.

"When these fish return in three years, we want to see if we can have a longer fishing season in Sinclair Inlet," said Mike Huff, Gorst Hatchery manager. "We have experienced good survival from the Grover's Creek-timed fish we have been releasing for years, so some studies will be necessary to determine how well the Minter-timed fish perform at this location.

"These fish are for everyone, tribal and non-tribal fishermen," he said. "The more we have, the better opportunities for all."

Like most hatcheries that produce



T. Royal

Gorst Hatchery juvenile chinook before being released into Gorst Creek.

fish specifically for harvest, the Suquamish Tribe marks their hatchery chinook so they can be distinguished from their wild cousins. Puget Sound chinook and Hood Canal summer chum are listed as "threatened" under the federal Endangered Species Act.

"Isolated terminal fisheries in places like Sinclair Inlet, where abundant hatchery fish are not intermingled with natural runs, allows for fishermen to take advantage of

our enhancement efforts," said Jay Zischke, the tribe's fisheries management biologist. "By focusing our hatchery efforts in locations where wild fish are not, we can benefit from our investment while protecting weak wild runs.

"By expanding the run timing, we hope to give both sport and treaty fishermen a longer season overall, and more opportunity for chinook fishing," he said. – T. Royal

'We hope to give fishermen a longer season overall.'

JAY ZISCHKE,
Fisheries Management Biologist,
Suquamish Tribe

Quileutes Save Sol Duc Coho

The Quileute Tribe has saved more than 350,000 young Sol Duc River coho that were slated for extermination at the state's Sol Duc Hatchery this year. Budget cuts by the Washington Department of Fish and Wildlife (WDFW) meant the Sol Duc Hatchery did not have the money to rear the fish to release size.

But the tribe stepped up and offered \$31,000 to finish raising the fish and added working hours from their own staff to finish the job.

"It's a one-time deal," said Roger Lien, fisheries biologist for the Quileute Tribe. "The cuts in the state budget occurred after the fish had already been spawned. What we're doing is saving this bunch so they can be released next year, but the eggs won't even be collected next year."

The Quileute Tribe and WDFW work cooperatively on a number of different salmon and steelhead projects out of the state's Sol Duc Hatchery and in conjunction with the tribe's Lonesome Creek Hatchery.

"This helps everybody," Lien said. "When the guys at the hatchery told us what was going to happen to these fish, we asked them to tell us how much they needed and council approved the cost." – D. Preston



D. Preston

WDFW hatchery specialist Brandon Kilmer (left) checks the size of the hatchery coho with Quileute hatchery manager John Mahan (center) and assistant hatchery manager Brandt Ramsey.

Hard Work , Good Management Yield W

While overall salmon populations continue to decline mostly because of lost and damaged habitat, 2009 was a bright year for many stocks. Indian and non-Indian fishermen enjoyed harvests in some areas for the first time in years. While the tribal and state co-managers work hard every day to minimize impacts to wild salmon stocks from harvest and hatchery practices, salmon recovery will ultimately be successful only with a strong commitment to protecting and restoring salmon habitat.

Pink Salmon Benefit Bull Trout and Steelhead

A record number of adult bull trout and juvenile steelhead migrated through the Puyallup River watershed this year, boosted by nutrients from a massive run of pink salmon two years ago.

“There simply was more food in the system in the last couple of years because decaying pink salmon carcasses fed practically every sort of organism in the river,” said Russ Ladley, resource protection manager for the Puyallup Tribe. “This shows that salmon restoration doesn’t just benefit one species, because all of the species in the river are interconnected.”

The tribe counted more than 100 bull trout – the entire run – at a trap on the White River, a tributary to the Puyallup, where fish are collected before being trucked over Mud Mountain Dam. While still a small return, it was more than double the previous record return in 2003.

More than 400 wild juvenile steelhead were counted by the tribe from an out-migrating smolt trap on the lower Puyallup River. That’s the sec-



Pink salmon mill together in the White River, a tributary to the Puyallup River.

ond highest count since the tribe began counting in 2000.

“This year’s pink run is also looking pretty big, so we hope to see similar benefits down the road,” Ladley said.

“We have to keep in mind that the entire bull

trout run is only about 100 fish,” Ladley said. “This is an incredibly small run, but it’s important to note the uptick this year. I also say this is the largest bull trout run ever, the largest since we’ve been counting in the decades.” – E. O’Connell



D. Preston

Quinault Holds Sockeye Harvest for First Time in Years

After four years of low sockeye returns, Quinault Indian Nation (QIN) fishermen welcomed the chance to harvest a limited number of culturally important sockeye early this summer.

While QIN has addressed several freshwater problems that hamper sockeye from once again flourishing, good ocean feeding conditions have brought intermittent bounty that allows harvest.

“This fishery has been good for the community,” said Ed Johnstone, Quinault Indian Nation fisheries policy representative. “There’s a lot of food in people’s freezers now. Fishermen know the families that can’t afford to keep food on the table and

they give fish to those who need it along with their own extended families.”

To help stabilize and grow sockeye returns to historic levels, the nation also has begun an ambitious, decades-long restoration of the upper Quinault River watershed. Past forest practices outside the reservation removed much of the wood from the river and its floodplain, destabilizing its flow. The river channel now moves back and forth across the river valley more rapidly, erasing sockeye spawning channels. Where once there were more than 55 miles of sockeye spawning habitat in the river, there are now fewer than 3 miles.

Thirteen engineered log

jams installed last summer in the river above Quinault diverted him away from Alder Creek, one of the few remaining spawning channels used by sockeye. Additional channels are being formed within the area as well as debris that benefit all salmon and steelhead. The tribe worked to boost zooplankton that sockeye feed on by increasing nitrogen and phosphorus. Finally, the tribe has an ed sockeye supplementation program where adult sockeye are captured, and their eggs are released at the tribe’s Quinault Hatchery.

– D.

Quinault tribal member Gary Martin hauls sockeye out of a boat near the mouth of the Quinault River.

Wild Results

Upper Skagit Opens Fishery for Chinook

On a rainy spring afternoon, Upper Skagit fisheries enforcement Officer Jerry Marsicek measured and took scale samples from a small catch of chinook salmon.

Tribal fishermen Len Rodriguez and Jason Boome warmed up by a fire while Marsicek scanned each fish for a coded-wire tag. The small tags are inserted into the snouts of hatchery fish before they are released. When a hatchery fish is caught, its head is cut off to retrieve the coded-wire tag.

Before Rodriguez and Boome could load their catch into an ice chest in the back of their truck, each fish had to be sampled to give the tribe a complete record of the fishery.

Last year was the first time in many years the Upper Skagit Tribe opened a fishery for Skagit River spring chinook, targeting hatchery fish.

Tribal members had stopped fishing for spring chinook to protect the wild run. Region-wide, tribal fisheries have decreased about 80 percent in the past two decades to protect weak wild runs.

When the tribal and state co-managers plan fisheries, they aim to protect weak wild runs while providing limited harvest opportunities for treaty tribal and non-Indian sport and commercial fishermen.

“It’s important to continue to collect accurate data to maintain the sustainability of these fisheries,” said Scott Schuyler, the tribe’s natural resources director. “We’re able to back up what we intended – a fishery designed to target hatchery fish while maintaining wild run sustainability.” – *K. Neumeyer*



K. Neumeyer
Upper Skagit tribal enforcement Officer Jerry Marsicek scans a chinook for a coded-wire tag.

Stillaguamish Welcomes Back Chinook with First Salmon Ceremony

mented the North Fork Stillaguamish chinook with a hatchery program. Now, 1,000 fish or more return to spawn each year.

“First fish ceremonies are not ‘first fish’ ceremonies,” said Billy Frank Jr., chairman of the Northwest Indian Fisheries Commission. “They happened here at Stillaguamish thousands of years ago. We call it the first fish ceremony because our salmon come back.”

Tribal members held a private ceremony at the river, before celebrating the first salmon with a crowd gathered at the tribe’s Victoria Ranch property.

A group sang, drummed and danced around a cedar basket carrying the large chinook salmon, the first caught by the tribe in 25 years.

“We gave up fishing for a while to preserve our culture, to preserve our relative, the salmon. We couldn’t go any longer without practicing our culture or it too would die,” said Shawn Yanity, Stillaguamish fisheries manager.

“Our staff at natural resources has done everything,” he added. “We’ve done the politics, we’ve done the work, we’ve raised the money. We’ve got the science, the manpower, the collaboration with all the agencies: state, federal, local, city, county and the oth-

er tribes. We’re working together to protect Stillaguamish chinook so there is a future for not only our generation but everybody’s opportunity to fish. The only piece we didn’t do was honor this gift. It was time we put the culture back into it.” – *K. Neumeyer*



K. Neumeyer

A young tribal member dances during Stillaguamish’s First Salmon Ceremony, the first to be held in generations.

The Stillaguamish Tribe held a First Salmon Ceremony for the first time in years on July 25. The tribe had refrained from fishing for Stillaguamish River chinook since 1985, to help the dwindling stock recover.

In the meantime, the tribe supple-



K. Neumeyer

Fisheries manager Shawn Yanity cooks salmon for the Stillaguamish First Salmon Ceremony.



D. Preston

Quileute fisheries technicians Jack Davis (left) and Ruben Flores capture an adult chinook for the tribe's broodstock program.



D. Preston

Quileute fisheries technician Donald Penn examines a Sol Duc chinook scale sample.

Quileute Tribe Boosts Sol Duc Summer Chinook

The Sol Duc River on the northwestern Olympic Peninsula runs at its lowest and warmest when summer chinook return to its waters every year. Despite being in one of the world's greatest temperate rain forests, near-drought conditions often occur in late summer before the fall rains begin in earnest.

"These fish are survivors," said Roger Lien, fish biologist for the Quileute Tribe. After

four or five years at sea, the fish return to their river of birth at a difficult time. Low flows go hand in hand with higher water temperatures, placing enormous stress on the fish and making them susceptible to disease. Water temperatures near 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. "That's why the Quileute Tribe saw it as a good candidate

for supplementation."

Each year, the tribe captures wild male and female chinook from mid-July to September to spawn and rear about 200,000 of their offspring cooperatively with the Washington Department of Fish and Wildlife at the agency's Sol Duc Hatchery. The fish are later transferred to the tribe's Lonesome Creek Hatchery before being released in the Sol Duc River.

The supplementation effort

aims to support, not replace, natural salmon production in the system. Adequate numbers of returning adults are allowed to pass upstream to maintain natural escapement – the number of fish needed to spawn and perpetuate the run.

"There isn't much in-river fishing opportunity in the summer, so these fish can help put food on the table and provide for cultural ceremonies," Lien said. – D. Preston

Spawning Chinook Discover North Fork Side

Chinook salmon spawned this summer in a North Fork Nooksack River side channel that was restored last year by the Nooksack Tribe.

The side channel was dry during the summer spawning season before the tribe constructed six logjams to redirect the flow of water. The aim was to increase flow into the existing side channel to provide stable spawning habitat that experiences less scour in the winter.

In late August, less than a year after the logjams were completed, tribal and state biologists were delighted to see chinook salmon spawning in the newly watered channel. A survey at the likely peak of spawning found 34 live chinook, 32 carcasses and 31 redds (egg nests). Last year, fewer than 1,300 spring chinook spawned in the north and middle forks of the Nooksack River.

K. Neurneyer



Tulalip Tribes, State Act Fast to Prevent Chinook Egg Shortage

Following record high temperatures this summer across western Washington, Tulalip tribal biologists noticed that chinook salmon weren't making it all the way to Wallace River, a tributary to the Skykomish River.

The Tulalip Tribes and the state share eggs collected at the state's Wallace River Hatchery, but this year's returns were far below normal. Most years, the combined Wallace and Tulalip programs collect about 4 million summer chinook salmon eggs and the tribe gets about 2.4 million of those for its hatchery program.

Initial estimates predicted that the total egg take could be as low as 1.4 million, leaving the tribe with only 400,000 eggs.

The estimated return to the Wallace Hatchery this year was expected to be as low as 1,200 fish, compared to an average run of more than 3,500. The minimum to achieve the egg take goal is 3,200 fish.

"Low flows and warm temperatures will slow or even stop upstream migration," said Mike Crewson, the tribe's fisheries enhancement biologist. "We wind up with stressed fish holding in warm, shallow water, making them more vulnerable to disease."

The tribes and state had to take action to collect enough eggs to ensure there will be salmon to harvest four years from now. Both the tribe and the state closed their fisheries while the tribe opened its fish ladder in Tulalip Bay to capture the adult chinook that under normal circumstances would return to the Wallace Hatchery 40 miles away.

"We knew that this could be a real problem for us in four years," said Ray Fryberg Sr., the tribe's fisheries director. "When we talked to our fishermen, they were understanding. They know it's important to take measures to make sure we don't have gaps in our fishery. We don't want, years down the road, to have no fish at all."

The tribe collected 630 chinook in Tulalip Bay and held them at the tribe's Bernie Kai Kai Gobin Salmon Hatchery until they were ready to spawn. The state and the tribes also worked together to



K. Neumeyer

Tulalip tribal member Nathan Bayhurst, a summer youth worker, places a chinook salmon in a net in the tribe's fish ladder in Tulalip Bay.

capture an additional 530 fish below the hatchery on Wallace River. In September, the tribe spawned hundreds of the fish and expects to be able to fertilize more than 1.3 million eggs this year.

"Thanks to our joint efforts, it looks like the tribe and state both will achieve our egg takes," Crewson said.

Photos and video of this project can be viewed at nwifc.org/section/video. – K. Neumeyer

Channel Restored by Nooksack Tribe



About 300 of those were of natural origin.

"It's exciting that salmon are taking advantage of the newly formed habitat," said Victor Insera, the tribe's watershed restoration coordinator. "It gives the tribe's crews that constructed the logjams a real sense of accomplishment."

The inspiration for the restoration was a nearby forested channel island known as Lone Tree, where a tall cottonwood is home to an eagle's nest. A natural logjam helped create what is left of the island, which provides stable ground for trees to mature and eventually contribute natural wood that is critical to forming good salmon habitat.

Taking advantage of newly restored habitat and a late August rainfall, a chinook salmon spawns in a side channel of the North Fork Nooksack River.

Historically, logjams enabled islands and side channels to form, but those have been disappearing over the past 100 years, largely because of the loss of woody debris.

The salmon recovery plan for the watershed lists channel instability as the highest priority limiting factor for North Fork Nooksack spring chinook, and identified Lone Tree as a restoration priority.

Work began in September on the second phase of the project, building additional logjams to create more secondary channels and to encourage the river to flow into the reconnected side channel. – K. Neumeyer



D. Preston

Katie Rathmell, research associate with the Center for Coastal Margin Observation & Prediction, prepares the research glider Phoebe for deployment from a Quinault Indian Nation fishing boat.

Quinault Ocean Glider Looks Below Surface

In the past, the Quinault Indian Nation (QIN) had only occasional glimpses into the health of the vast ocean that is their traditional fishing area, stretching north about 50 miles from Grays Harbor to Destruction Island.

But this summer, thanks to a computer-directed underwater research glider that looks like a motorcycle-sized torpedo with wings, QIN was able to gather comprehensive data throughout their fishing area for more than four weeks. The Center for Coastal Margin Observation & Prediction (CMOP) worked with QIN marine scientist Joe Schumacker to plan a data-gathering project for the glider named Phoebe.

“This mission provides us with important information about the Quinault traditional ocean waters that would be cost-prohibitive to obtain otherwise,” Schumacker said.

The glider, deployed and recovered by a QIN fishing vessel, gathered salinity, dissolved oxygen, fluorescence and temperatures at different depths, then transmitted the collected data to CMOP.

QIN is particularly interested in dissolved oxygen levels after an episode of low oxygen left hundreds of normally bottom-dwelling creatures on the nation’s beaches in 2006. Tribal Dungeness crab fishermen were bringing up pots that were either empty or full of dead crab.

“We’re still looking at the results from the glider’s mission,” Schumacker said. “We’re excited to get this kind of information, particularly over Quinault Canyon,

which features prominently in the upwelling that feeds marine life in our area.”

Nutrient-rich but oxygen-poor water wells up from the depths and feeds marine life. Natural mixing of the water column is important to offset the negative effects of the deep water’s low oxygen levels. The glider mission will help QIN understand where lower oxygen levels occur and if there are any hints of possible fish kills in the future.

“Up until now, the only similar information we can get is from one seasonal buoy in this area and that is just a snapshot of the water quality in that one specific area,” Schumacker said. “Phoebe gives us a look at a large piece of the ocean that we really have not had the ability to examine before.”

QIN wants to deploy sensors that would give early warning of where low-oxygen fish kills may occur and hopes to conduct more data-gathering missions with Phoebe. “This shows what we can do when we’re involved in the process,” said Ed Johnstone, fisheries policy representative for QIN. “It’s not a substitute for a holistic approach to research needs off our coast, but it’s timely information we can use.”

– D. Preston



D. Preston

CMOP researcher Michael Wilkin checks Phoebe after some pre-release tests near Grays Harbor.

Breakthroughs in Skagit Basin Estuary Projects



K. Neumeyer

An excavator makes the last cut in a berm, allowing the tide to flow into the Crescent Harbor salt marsh for the first time in 100 years. Watch a video of the final cut at nwfc.org/section/video.

The Skagit River System Cooperative (SRSC) celebrated the success of two major estuary restoration projects in August. The SRSC is the natural resources management arm of the Swinomish and Sauk-Suiattle tribes.

On Aug. 19, an excavator made the final berm cut to allow

full tidal flow to 200 acres of the Crescent Harbor salt marsh on Naval Air Station Whidbey Island for the first time in about 100 years.

The salt marsh had been cut off from fish access, with a minimal tidal exchange through a tide gate built in the 1900s.

“Our ancestors walked this earth right here before there were any non-Indians,” said Brian Cladoosby, chairman of the Swinomish Tribe. “They lived out here when all of this was marsh land, so to have the tidal flow reintroduced is really amazing.”

Marking the success of another project, on Aug. 18, crews removed the last of the old dikes and levees that prevented the tide from flowing into a former

estuary around Wiley Slough in the Skagit River delta.

The state-owned parcel of land, known as the Headquarters Unit of the Skagit Wildlife Area, was converted from an estuary to a recreational area in 1962 – using dikes, drainage ditches, culverts and tide gates.

The 175-acre Wiley Slough restoration was proposed in 2002. It was completed in partnership with the tribes, Washington Department of Fish and Wildlife, Seattle City Light and the Skagit Watershed Council, with funding from several agencies including the state Salmon Recovery Funding Board, the U.S. Fish and Wildlife Service, U.S. Bureau of Indian Affairs and NOAA Restoration Center.

– K. Neumeyer

Squaxin Island Tribe Revisits Creek Years After Dam Removal

For the first time since a dam was removed on Goldsborough Creek nearly 10 years ago, scientists are taking a comprehensive look at the creek’s salmon habitat.

“This is probably as close a look you can take at freshwater salmon habitat,” said Sarah Haque, habitat biologist for the Squaxin Island Tribe. In addition to conducting habitat surveys throughout the creek and three of its tributaries, the tribe is surveying juvenile salmon populations and collecting water temperature data.

“This will help us find out where the most important habitat is for salmon and trout in the Goldsborough watershed,” Haque said.

Since the dam was removed in 2001, the tribe has tracked a steady increase in juvenile coho production.

“We’ve had at least one smolt trap to count salmon during the out-migration season,” Haque said. Smolt traps are devices used to safely capture, count and release out-migrating juvenile salmon. “Coho are finding their way to the habitat that was opened up after the dam came out. What we’re doing now is finding out exactly where they’re hanging out.”

The 34-foot-high Goldsborough Dam prevented salmon from accessing 25 miles of habitat.

“Above the old dam site, there is a lot of wetland and stream habitat that we thought would be great for salmon, but we’ve never had a chance to look,” Haque said. “The increasing run numbers indicate salmon are up there using that habitat.”

Because coho salmon spend their first year of life in



E. O’Connell

Sarah Haque, habitat biologist for the Squaxin Island Tribe, measures the depth of a section of upper Goldsborough Creek.

freshwater, they can be found year round. Tribal biologists will snorkel several areas in the watershed looking for the most popular places for young coho.

“Because they overwinter, coho are especially vulnerable to changes in freshwater habitat,” Haque said. “That makes this kind of basic habitat research essential to preserving salmon.”

Overall, wild South Sound coho populations have been dropping at a steady pace for more than a decade.

“While numbers for Goldsborough have been up, we’ve seen lower coho runs throughout the area,” Haque said. “These kinds of research projects get us closer to understanding the problem.” – E. O’Connell

HABITAT BRIEFS



T. Royal

Lower Elwha Klallam staff fill in a ditch in the Elwha River floodplain.

Upper Skagit Tribe Hansen Creek

The Upper Skagit Tribe began work this summer on a project to restore 140 acres of salmon habitat around Hansen Creek, a tributary to the Skagit River near the tribe's reservation.

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

Hansen Creek supports chinook, steelhead, coho, chum and pink salmon, but

Lower Elwha Klallam Tribe Elwha River

The Lower Elwha Klallam Tribe has begun preparing the lower Elwha River's floodplain for the influx of sediment expected to come down the river after the Elwha and Glines Canyon dams are deconstructed starting in 2011.

The goal is to reconnect as much of the historic floodplain to the mainstem as possible, undoing historic channelization actions that have simplified the river.

With \$2 million in funding from the Na-

tional Oceanic and Atmospheric Administration, the tribe will be constructing 20 engineered logjams, removing three man-made dikes, replacing two culverts with a larger culvert and a bridge and planting native vegetation. This summer, the tribe filled in an unused 1,500-foot-long hatchery outfall ditch that was built in the middle of the floodplain in 1977. The work will help improve the river's function ahead of the dams' removal. – T. Royal

the past 60 years of dredging and levee maintenance has straightened, narrowed and disconnected it from its floodplain and wetlands.

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

– K. Neumeyer



K. Neumeyer

A crew places logs in Hansen Creek near the Upper Skagit reservation.



E. O'Connell

Kim Grindley, project manager for the South Puget Sound Salmon Enhancement Group, walks through the new channel of Ohop Creek.

Nisqually Tribe Ohop Creek

Next summer Ohop Creek will flow through a new channel that is now being dug by the Nisqually Land Trust, the South Puget Sound Salmon Enhancement Group and the Nisqually Indian Tribe. The new channel will stay cooler for salmon and include features such as logjams that benefit both juvenile and adult fish.

More than a century ago, Ohop Creek was ditched to clear the area for farming, turning a shallow, meandering stream that was good for salmon into a straight deep ditch. The Nisqually Land Trust owns the 120 acres of property being restored.

After the new channel is finished, they will wait a year before rerouting the creek into the new bed, to avoid the risk of having everything washed away in a flood. Waiting a year after digging the channel gives creekside plants time to grow and stabilize the bank.

This summer's 1-mile-long restoration project could be the first step in restoring most of the Ohop Creek valley for salmon and other wildlife. Eventually, 7 miles of Ohop Creek might be restored under a plan being developed jointly with local landowners. – E. O'Connell

Jamestown S'Klallam Tribe Dungeness Marsh

The Jamestown S'Klallam Tribe is placing engineered logjams in a side channel of the Dungeness River, in hopes of seeing federally listed Puget Sound chinook and Hood Canal summer chum using 18 acres of restored estuary in the river delta.

The restoration work includes building the logjams, creating tidal channels

and breaching dikes built for road access in the 1960s to allow water to move freely throughout delta's two salt marshes.

Breaching the dikes should help reintroduce salt water vegetation and make the habitat even more hospitable to salmon, by allowing extreme high tides and river flow to flood the area. – T. Royal



T. Royal

Construction equipment moves an oversized stump into a side channel of the Dungeness River.

Paddle to Suquamish



T. Royal

Nearly 100 canoes and thousands of people descended upon the Suquamish Tribe's Port Madison Reservation in August for the annual Tribal Canoe Journey.

Canoe families from all over western Washington and British Columbia traveled there via their ancestral high-ways to practice their traditional way of life, as well as pass these lessons on to younger generations.

This year also marked the 20th anniversary of "Paddle to Seattle," when several U.S. tribes and Canadian first nations traveled to Suquamish to sing, dance and share stories before paddling to Seattle. It was then that canoe families were challenged to travel to Bella Bella, B.C., in 1993.

Since then, tribal journeys have taken place annually at various sites throughout the Northwest. The Makah Tribe will host the 2010 celebration in Neah Bay.

A link to video and photos from the Canoe Journey can be found at nwifc.org/section/video. – T. Royal



T. Royal

Above left: Volunteers from the U.S. Navy help carry a canoe onto the beach on the Suquamish reservation. Above: A canoe family waits to be invited ashore during the Tribal Canoe Journey in August.



T. Meyer

Tribes Welcome BIA Leader Larry EchoHawk

Assistant Secretary-Indian Affairs Larry EchoHawk greets a canoe family at Paddle to Suquamish in August, during his first visit to the region as the head of the U.S. Bureau of Indian Affairs.

EchoHawk, a member of the Pawnee Nation, spent a full day with leaders of the 24 treaty Indian tribes in the Pacific Northwest, discussing natural resources management and the federal government's trust responsibility to tribes.

Watch a video of EchoHawk's visit at nwifc.org/section/video.

Walking On



Alison Gottfriedson

Alison Kay (Bridges) Gottfriedson, a central figure in the struggle for Indian fishing rights and an advocate for Indian people, passed away on July 18. She was 57 years old.

The daughter of Alvin James Bridges and Puyallup tribal leader Theresa (Maiselle) McCloud Bridges, Gottfriedson grew up in the Frank's Landing Indian community. She was arrested many times, along with her sisters Suzette and Valerie, and uncle, Billy Frank Jr., for fishing on the Nisqually River in accordance with Indian treaties.

"She started out as young girl, watching us all go to jail," Frank said. "Then pretty soon, as she got older, she was going to jail. We never got out of that fighting for our rights."

Gottfriedson became prominent in the Indian treaty fishing rights movement in 1970 after a photo of her being arrested was used in national publications and on television to draw attention to the issue. Her activism extended to other Indian treaty rights such as land claims, education and tribal gaming. She was a member of the National Indian Education Association,

National Congress of American Indians and National Indian Youth Council, as well as a founding member of the United Indians of All Tribes Foundation. She was chairwoman of the Wa He Lut school board and vice-chair of the parent support service, the Alesek Institute.

She is survived by her mother, her husband, Hank Gottfriedson, sons Adochas and Spapull Gottfriedson, sister Suzette Bridges, uncles Andrew McCloud and Billy Frank Jr., and several grandchildren.



Nick Lampsakis

Nicholas D. Lampsakis, senior tribal fisheries biologist for Point No Point Treaty Council for more than 30 years, passed away of a heart attack July 14. He was 66.

Lampsakis was born May 2, 1943 in Salonika, Greece, to Demetrius N. and Maria (Georgolo). He graduated from the University of Washington with a master's degree in fisheries science. He was married 44 years to Marcella McDowell.

Lampsakis was one of the original biologists for Point No

Point Treaty Council when it was established in 1976 following the Boldt decision. He was a tireless advocate for treaty rights for Northwest tribes, as evident through his work with the Port Gamble S'Klallam, Jamestown S'Klallam, Lower Elwha Klallam and Skokomish tribes. Lampsakis was dedicated to his work in fisheries, being one of the first to use a computer for fisheries database management in Indian Country, and received an award for his work from the Northwest

Indian Fisheries Commission for "Excellence in Quantitative Sciences." Lampsakis also was a well-known figure in both domestic and international fisheries issues. He participated in many fisheries management forums, including the Pacific Fishery Management Council and was co-chair of the chum technical committee for the Pacific Salmon Commission. He also was regarded as a technical "go-to" guy during the North of Falcon annual salmon season setting process.