Northwest Indian Fisheries Commission

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Being Frank

State's Duty: Fix The Culverts

By Billy Frank Jr.
NWIFC Chairman

The State of Washington has a duty to the treaty Indian tribes who have always inhabited this region.

That duty is to not allow salmon habitat to be degraded to the point that salmon are no longer available for harvest by the tribes, who gave up nearly all of the land in what is now western Washington under treaties with the United States government. Through those treaties, the tribes reserved certain rights that were the most important for them. Foremost was the right to continue fishing in all of their traditional fishing areas. The tribes reserved this right because the salmon was the very basis of their culture.

Little has changed from the tribal perspective since the treaties were signed. Salmon remains the center of tribal culture today. Sadly, however, the fish that once sustained an entire region have all but disappeared. Over the past two decades, the treaty tribes have voluntarily reduced their overall salmon harvests by 80-90 percent to protect weak wild salmon stocks.

Loss and degradation of salmon spawning and rearing habitat has been – and continues to be – the main reason for the salmon's decline. But so far, the main response to the salmon crisis has been to reduce harvest. Meanwhile, wild salmon and their habitat, continue to disappear.

In 1997, the State of Washington issued a report which stated that blockage of salmon passage by road culverts is "one of the most recurrent and correctable obstacles to healthy salmonid populations in Washington." The report by the Washington Department of Transportation and Washington Department of Fish and Wildlife noted that:

- A minimum of 400 culverts under state roads need to be fixed to provide salmon passage.
- Of that total, 177 culverts block about 250 miles of salmon spawning and rearing habitat.
- If those 177 culverts were repaired and maintained, 200,000 more adult wild salmon would be produced annually.
- Fixing the culverts would have an economic benefit – from commercial and sport fishing revenues and other sources – far exceeding the repair costs.

The report concludes by estimating that fixing the barrier culverts will take between 20 and 100 years, depending on the level of funding that state government dedicates to the project.

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On The Cover: David Crittenden, Makah tribal member and fisheries technician, measures and tags pieces of an engineered log jam on the Sekiu River. The log jams help ensure salmon nests are not destroyed by winter high water flows and also help create more diverse salmon rearing habitat in the river. See story on Page 4. *Photo: D. Preston*

Northwest Indian Fisheries Commission News

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Being Frank—

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What will happen to the salmon – and the tribes' treaty-reserved fishing rights – in 20 to 100 years? Already, several species of salmon in western Washington have been listed as threatened under the Endangered Species Act. More listings are likely. Habitat loss and degradation will not stop, but will only increase as the Puget Sound region continues to grow.

It is likely that there will be only a few salmon – or perhaps none – for the tribes to harvest in 20 to 100 years. As a result, the tribes' treaty-reserved right to harvest salmon will have been made meaningless because the State of Washington has failed to protect and restore salmon habitat.

Only after attempts to reach a negotiated settlement on repair and maintenance of fish-blocking culverts failed, did the tribes filed suit against the State of Washington in federal court on Feb. 12. The tribes are simply asking that the State of Washington acknowledge its duty to the treaty tribes and do the right thing: Fix the culverts within five years instead of 20 to 100 years. The suit seeks only the repair and maintenance of fish-blocking culverts under state roads that affect salmon returning to the traditional fishing areas of the treaty Indian tribes in western Washington. The tribes are not seeking payment for past damages.

The federal government has joined the case on behalf of the tribes, and federal courts have consistently upheld the treaty-reserved rights of the tribes in western Washington. Earlier federal court rulings have clearly indicated that the tribes' treaty-reserved right to harvest salmon includes the right to have habitat protected so that there are salmon available for harvest.

Stream Steward

Jared Whitley turns a shovelful of earth while his dad, Rick, supervises during a recent tree-planting effort along Muck Creek near Roy. The effort was a project of the Nisqually Stream Stewards, a salmon habitat restoration group founded by the Nisqually Tribe. The Whitleys, of Spanaway, were part of a Cub Scout group participating in one of several tree-plantings by the Stream Stewards along tributaries to the Nisqually River during March. In all, some 2,000 native trees and shrubs were planted through the project, a joint effort with the Pierce County Stream Team. The Nisqually Stream Stewards teaches people living in the Nisqually watershed about salmon recovery and involves volunteers in monitoring and restoring salmon habitat. Some of the activities that Nisqually Stream Stewards are involved in include collecting and recording information about stream health and salmon habitat, planting native plants along streams, and weeding and watering existing plantings to ensure they survive. The Nisqually Stream Stewards program issupported by the Nisqually Indian Tribe with federal funds for salmon recovery. More information contact Jeanette Dorner at the Nisqually Tribe's Natural Resources Department, (360) 438-8687. Photo: *T. Meyer*

Contrary to what you might hear, tribes are not seeking veto power over all activities that might harm salmon. The court case does not mean that the tribes will stop working cooperatively with the State of Washington, environmental groups, industry or others. The tribes remain committed to participating in any meaningful effort to achieve salmon recovery.

Salmon recovery begins and ends with protecting and restoring habitat. Fixing these culverts alone will not save the salmon. It is, however, a simple and cost-effective step toward the goal of salmon recovery. If treaty rights can be used to reach that goal, it is to the benefit of everyone – Indian and non-Indian – who lives in the Puget Sound region.

Log Jams Help Improve Chinook Runs

Andy Ritchie, Makah tribal biologist, right, and John Cambalik, salmon restoration coordinator for the North Olympic Salmon Restoration Lead Entity Group, inspect an engineered log jam on the Sekiu River. *Photo: D. Preston*

The Sekiu River snakes from low coastal hills nestled against the Olympic Mountains, spilling into the Strait of Juan de Fuca, near the town of Sekiu on the western Olympic Peninsula. A coastal rainforest once thrived here. Fallen giants jammed sections of the river, creating pools that salmon loved. Historically, thousands of chinook salmon spawned in the Sekiu River.

Now the river looks like a two-lane freeway. It is straight and wide. There are few fallen trees creating log jams and deep pools. Not coincidently, salmon numbers have dwindled to near extinction, with an average of fewer than 25 chinook observed in recent years.

As with many rivers, people decided to tame the Sekiu from the 1950s through the 1970s to stop flooding and damage to logging roads. Huge bulldozers were driven down the river to clear logs and collect gravel. "The river doesn't sing anymore," said Andy Ritchie, environmental/habitat biologist for the Makah Tribe. "That's what an old timer said to me. A river that is more complex, with wood jams and plunge pools and more variation in water velocity, sounds more musical," he said.

To rebuild salmon runs on the Sekiu, the Makah Tribe is restoring some of the complexity. Using historical photos as a guide, the tribe recently designed five log jams in the first 2 miles of the Sekiu River. Chinook salmon spawn mainly in the lower reaches of the river. Without the jams, the mainstem of the river runs too fast for chinook to spawn successfully. The salmon nests, or redds, are susceptible to high winter flows that wash out the eggs.

The jams will slow the river and deflect some of the main channel into old side channels which still contain woody debris, said Ritchie. The side channels will become good spawning and rearing areas for coho salmon. Over time, the water flowing through the old side channels will pull trees into the water, providing more habitat for fish.

The tribe is conducting the $130,000 project in cooperation with landowner Crown Pacific and with federal Pacific Coastal Salmon Recovery and state Salmon Recovery Funding Board funds. The project was recommended for funding by the North Olympic Salmon Restoration Lead Entity Group.

"While our main emphasis is improving chinook numbers, this will improve habitat for all species," said Ritchie.

The tribe had some difficulty finding trees large enough to stay in place in the river. Large trees were logged long ago from most of the project area. The Makah Tribe contributed seven large spruce trees between 135 and 200 years old that became the key pieces in the five log jams. More than 20 additional logtruck-loads of wood were purchased to build the jams. The wood came from log booms in Neah Bay, and nearby timber harvest sites in the area.

"We don't expect the jams to stay the same," said Ritchie. "A log jam is a dynamic process, not a static structure. But we do want key pieces to stay in place and keep recruiting wood that comes down the river." All the wood has been marked with metal tags to monitor how the jams function and to make corrections for future jams.

"The way I see it, in the past we tore the river apart. Now we are putting the river back together, and giving it the tools to heal. Fish populations are declining. We have to do something or the fish won't survive," Ritchie said. The tribe plans to continue restoration efforts on the Sekiu River, and to reintroduce chinook from native Hoko River stock. – *D. Preston*

A Day In The Life Of A Tribal Fisheries Enforcement Officer

It's 5 a.m. on a frosty December morning on the Quillayute River northwest of Forks. It is still dark, but the whine of outboard boat engines is heard as several Quileute tribal members motor out to fish with the incoming tide.

Gene Harrison, chief of Quileute Fish and Wildlife Enforcement, is up with the fishermen as he pilots his boat out of the Quileute Tribe's marina. The steam from his coffee swirls around his head as he starts his patrol at the mouth of the river. It's the first of three or four trips on the river Harrison will make that day.

"We know most of the guys and where they fish. We have a list of tribal fishermen updated each year and they all have identification numbers that are on their boat and gear," Harrison said.

Steelhead are the quarry this time of year, but low water has kept many fish from entering the river. Harrison expects to see only four or five fishermen on the river today. Some tribal members are fishing for crab in the ocean, while others are elk hunting.

"That's one of the big misconceptions by non-Indians. They think the whole tribe fishes, but there aren't a whole bunch of guys out here," said Harrison. "Most of the time, there may be eight or nine except for a few weeks in the summer when we will have maybe twice that number. But it depends. If there are no fish, there aren't going to be a lot of fishermen."

Harrison has seen many acts of vandalism directed at tribal fishermen. Non-Indians have dumped bales of hay upriver from tribal fishing nets, collapsing the nets and rendering them useless. He has also investigated the theft of many tribal fishing nets. "It's frustrating. It's very hard to catch people doing it," he said.

A Quileute Tribal fisherman tends his net near the mouth of the Quillayute River at LaPush.

Gene Harrison, chief of fish and wildlife enforcement for the Quileute Tribe, patrols the Quillayute River on a cold winter day. *Photos: D. Preston*

Piloting his boat upriver, Harrison nods to tribal fishermen. He keeps an eye out for any nets that may have been washed down river with high water. "We clear the river as best we can after storms, if the tribal fishermen haven't already done it. We go out and cut and remove any lost nets that we find," he said.

Violations of tribal fishing regulations are referred to tribal court. A fine, confiscation of equipment, or loss of fishing privileges may result, depending on the infraction. "We don't like to confiscate equipment, but if rules are broken, we do it," Harrison said. Tribal and state fish and wildlife enforcement officers work together to protect the resource.

Back in Harrison's office, a map of the river hangs on the wall. He moves magnets with the names of the fishermen to their location on the river. A radio on his desk alerts him to the whereabouts of tribal ocean fishermen. "I keep track of both the river and ocean fishermen as a safety precaution as well as an enforcement responsibility," he said.

Harrison, a Quileute tribal member, has been a Quileute law enforcement officer for six years. He was trained at the Federal Law Enforcement Training Center in New Mexico, the same place federal law enforcement officers for the National Park Service and U.S. Border Patrol, among others, are trained. Harrison and patrolman Doug Woodruff share enforcement duties in LaPush.

Harrison's job is not just about enforcement, it's also about building relationships with tribal fishermen. Harrison believes he has fewer problems with fishermen who know and respect him. He is beginning to see the next generation, both in the six-week gun/hunter safety course he teaches and on the water.

"It's kind of neat. I'm starting to see fathers teaching sons how to fish," Harrison said. – *D. Preston*

Hearing On Makah Whaling Draws 600

In a show of village unity, several hundred Makah tribal members traveled to Seattle Feb. 1 to testify on a range of alternatives contained in a draft environmental assessment under which the tribe can pursue its treaty right to whale.

"As long as the tides go in and out, whaling will be the identity of our tribe. We have been whalers for thousands of years. During that time the populations were fine," said Greig Arnold, Makah tribal chairman. "Then the populations were decimated in 100 years and we were not the cause. We chose, as a management decision, not to whale for 70 years while the populations recovered, but people mistook that as a lack of desire to whale. That is not the case. We are a whaling people," said Arnold.

Non-Indian hunters supporting the Makah Tribe's whaling heritage met anti-whaling activists at a public hearing in Seattle in February. Photo: *D. Preston*

Biologists estimate the gray whale population to be 26,000, at or above their historical numbers prior to non-Indian commercial whaling.

The hearing was the result of a federal appeals court decision last year that set aside an earlier environmental assessment. The most recent draft examines the biology, abundance and distribution of the gray whale, and the affects of human activities on the populations. It also outlines a range of subsistence alternatives under which the tribe can pursue their treaty right to whale, including no whaling at all. The Makah Tribe is the only tribe with the right to whale written in their treaty. NMFS tentatively plans to have the final draft finished this month.

Representatives from nearly a dozen other tribes and a variety of non-Indians also attended the hearing in a show of support for the Makah's treaty right to whale. The 600-seat hall was nearly full and evenly divided between anti-whaling groups and Makah supporters.

Makah tribal representatives testified in favor of the third alternative proposed in the assessment. That alternative puts no restrictions on time or place for the tribe to hunt, but leaves that to be derived by the tribe and NMFS. This allows the whalers to hunt during the safest times, not just during a narrow window of late fall and early spring when the open ocean is dangerous.

Anti-whaling protestors waved signs outside the hall at Sand Point, exchanging verbal jousts with non-Indian hunters who displayed signs in support of the Makah hunt and hunting in general.

"We've gotten informal support from the non-Indian hunters in the past, but this is the first time they've come out with signs. They see threats to all hunters from some of these groups. It's good to have them here," said tribal chairman Arnold.

The tribe conducted their first whale hunt in more than 70 years in 1999, successfully harvesting one whale after securing a quota of up to five whales a year for five years from the International Whaling Commission in 1998.

"We will not be 're-educated.' We will not wake up tomorrow and decide not to whale," Gordon Smith, Makah tribal councilman testified. "We, the Makah people, care more for the whale than anyone and it will be so as long as there are Makah people living. As co-managers of this resource, we support alternative three. We manage many other resources and we know what we are doing. We are fully capable of managing this resource too."

The nearly five-hour hearing featured a variety of anti-whaling groups. All stated their preference for the fourth alternative, no whaling.

But, several non-Indian scientists also spoke in support of the Makah's treaty right, citing the healthy status of the gray whale and the importance of maintaining the cultural diversity of the tribes.

"We have different value systems, but I don't see why we can't respect each other's value systems, particularly when there is no scientific reason to object to the Makah's subsistence hunt," said Susan Speckman, a marine ecologist.– *D. Preston*

Skagit Salmon Hit Hard By Drought

The onset of dry weather this winter has caused serious consequences for the region's energy producers, power consumers and – possibly most important – the salmon resource in western Washington. Emblematic of the problem is the situation at Puget Sound Energy's Baker River dams, where turbines were closed to power production for the first time this year due to a lack of rain and snow.

The dams on Baker Lake and Lake Shannon were shut down on Feb. 28 because a 55-mile stretch of the Skagit River reached extremely low levels, threatening hundreds of thousands of salmon eggs and recently hatched fish. Without sufficient water, the juvenile salmon can be exposed to the air – which means doom.

"They way that Baker was operated really exacerbated that problem. When all the tributaries were very low, Baker was still running very high," said Stan Walsh, fisheries biologist with the Skagit System Cooperative, the natural resources consortium of the Swinomish Tribe, Upper Skagit Tribe and Sauk-Suiattle Tribe. "Puget Sound Energy was betting the fall rains would come, and that just didn't happen."

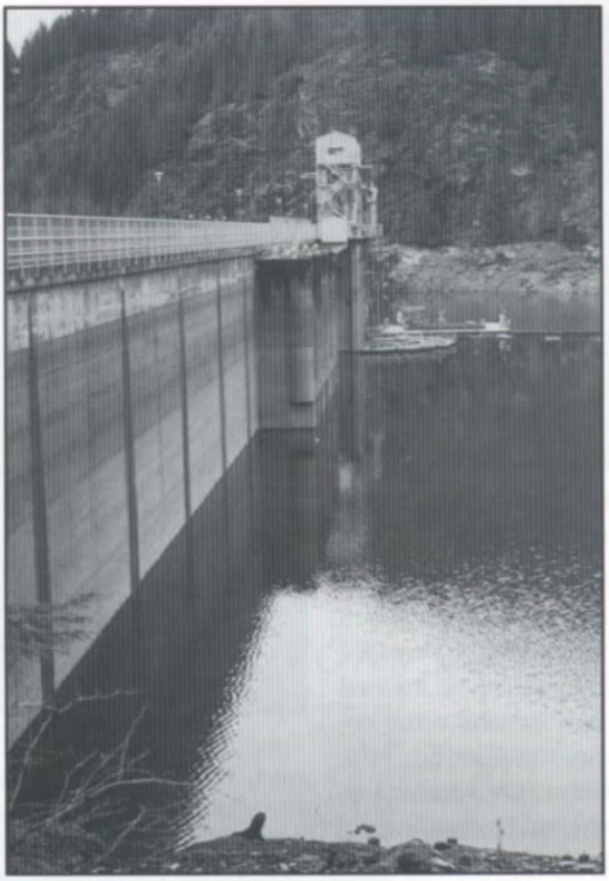
The drought conditions came at a most inopportune time, especially for the Skagit River chum salmon run.

This year's chum run came back very weak – initial projections of 140,000 fish had to be revised down to 40,000 – and to make matters worse, a disproportionate amount of the fish spawned in the middle river, where the water dropped to dangerously low levels.

"Add that to a pretty high strand rate, and you have a significant impact to this year's chum run," Walsh said.

Crises began in earnest over the Thanksgiving weekend, when Puget Sound Energy dropped Skagit River flows to take in water over the turbines. This left hundreds of chum eggs exposed for approximately four days. After the de-watering events began happening around Thanksgiving, SSC has been working with Puget Sound Energy, state and federal agencies to try to minimize loss of fish populations.

Additionally, the dry December weather caused the eggs of chinook salmon – listed as threatened under the federal Endangered Species Act – to be exposed, with as many as 20 percent of those eggs being damaged according to biologists.



Drought conditions significantly reduced the amount of water behind Baker Lake Dam, leaving little water for Skagit River salmon. *Photo: J.Shaw*

Puget Sound Energy is currently beginning the process of renewing their operating license for the Baker Lake dam. This process, says Walsh, should include an accord to boost minimum flow levels in order to prevent future impacts to salmon.

"As soon as possible, we would like to develop an interim flow agreement that would cover the next five years during the licensing process. Hopefully, PSE will reach an agreement with the tribes, the state and federal agencies to increase minimum flow levels," said Walsh, who added that he is optimistic this will happen.

Walsh would like to see a number of additional reforms instituted, including a low-flow release valve installed on the Baker Lake dam which would enable Puget Sound Energy to respond to drought conditions by releasing water. This could help avert the kind of crisis that this year's chum run has suffered during future dry spells. – *J. Shaw*

Editor's Note: As this edition of NWIFC News was going to press, Gov. Gary Locke declared a drought emergency in Washington and ordered official actions in response to the situation, such as tranfer of water rights for temporary periods and financial assistance for those affected by the drought.

Billy Frank Jr., NWIFC chairman urged Locke to maintain the greatest possible instream flows for fish. Frank also urged local governments to institute mandatory measures to conserve water, such as prohibiting lawn watering.

"I hope to see a lot of brown lawns this summer," Frank said. "They will be badges of honor."

Tribal Students STEP To Math, Science

The cold, wind-driven February rain fails to dampen the curiosity of a group of Quinault Indian Nation students as they learn how to conduct razor clam population surveys on a beach near Taholah.

Rain spatters the glasses of 15-year-old Fallon Mail as she records the length of each razor clam pumped to the surface by a water hose inserted into the sand. After being measured, the clams are returned to the sand to continue to grow.

Quinault tribal member Fallon Mail, 15, prepares to measure a razor clam as part of learning the method of surveying the clam population. *Photo: D. Preston*

The Taholah H. School District students are learning about a variety of fishery and forestry jobs available with the Nation as part of a University of Washington program, the Sciences and Tribes Educational Partnership (STEP). Upon completion of a personalized program of study, students may have the opportunity of receiving a full scholarship to the college of their choice in Washington.

"I like the program. It's good experience and you learn a lot," said Marcos Machin, 16, a second-year student in the program.

In a recent week, the students have been under the tutelage of Joe Schumacker, marine shellfish biologist for the Quinault Indian Nation. Schumacker spent a day with the students, describing the razor clam survey method used by the Nation and Washington Department of Fish and Wildlife. Then students tried their hand at the method on a tribal beach near Taholah. A third day with Schumacker will involve creating a mathematical assessment of the clam populations using their survey results.

"I show them how we used the global positioning system to lay out our survey area, then how we randomly pick a spot to survey within that area," said Schumacker. "There is math involved, but we try to make it fun for them. And it's about resources that are important to them and their families, so they are already interested," he said.

All the vagaries and frustrations of field work are in play on the survey day as the winter tide surges and ebbs, creating challenges for completing the survey. The students and technicians run back and forth with the surge of the tides under a steady downpour until nearly 5 p.m. when the waters settle enough to allow the project to be completed.

Jordan Curley, 16, is philosophical about the weather. "Expect the unexpected when it comes to Taholah weather. It's unpredictable." Curley is possibly interested in a career with the Nation in forestry engineering. "I like being outdoors and we did some work with the foresters last year," Curley said.

Those types of comments make Nan Little, STEP program manager, smile. It's what STEP is designed to do – excite tribal students about math and science and prepare them to enter college to pursue careers in fields of their choice.

"The tribes and the school districts have really jumped into this with enthusiasm.They see this as a chance to bring their kids along into these kinds of jobs," said Little.

The program is two years old. Funding is provided by Washington Sea Grant and the federal Fund for the Improvement of Post Secondary Education. Lead faculty are Professor Bruce Miller and Dean of the UW College of Ocean and Fishery Sciences, Arthur Nowell.

"The key difference between this and other programs is that we go to the tribes, the schools and the natural resource departments and find out what works with each one," said Little. "We don't impose a structure, because if it's not working for the tribe or the schools or the kids, that just defeats the purpose. It's about the kids."

The Quinault Indian Nation was the first tribe to participate in the program beginning last year. This year, the Quileute Tribe and Yakama Indian Nation were added and more tribes will be added next year.

The work study, which includes class and field work, is but one component of the program. During the summer, most of the students attend a one-month Summer Institute. They conduct a research project in the field, then spend time at the University of Washington where they make computer representations of their projects and design presentations.

"This gets them familiar with the university and where things are, as well as comfortable with this kind of study. We have teacher's assistants who stay in the dorms and we also have tribal elders participating," said Little.

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A Math, Engineering, and Science Achievement curriculum forms a third component for both middle and high school students. Tim Brown, a Yakama Indian Nation member and UW graduate student, has created a curriculum for the STEP program students. It gives them the background in tribal housing to design and engineer traditional tribal houses and buildings.

"The students are then given the assignment of designing a house that works for their tribe and sending the plans to Washington, D.C. so they can be reviewed by the Department of Housing and Urban Development," said Little.

For Schumacker, his time is worth it if some of the kids return to the tribe to work. "Tribal members should have these jobs." – *D. Preston*

Quileute tribal member Cynthia Barajas, 14, checks the salinity of a sea water sample with the help of Mitch Lesoing, Quileute tribal biologist. *Photo: D. Preston*

Native Plant Nursery Will Help Salmon, Youth

Skagit Valley treaty Indian tribes are helping the environment and local young people at the same time by offering support to an innovative community program.

The Upper Skagit Tribe has agreed to donate two acres of tribal land to an ecological work-experience program for youth. The SKY (Service-Knowledge-Youth) Native Plant Nursery Education Program will cultivate indigenous plants on the reservation. The Skagit System Cooperative, the natural resource consortium composed of the Swinomish, Upper Skagit and Sauk-Suiattle tribes, has also donated funding to help start the native plant nursery.

Besides an immediate monetary donation, SSC is also engaging in cooperative grant-writing with the nursery program to help defray future costs.

"A native plant nursery benefits everyone," said Scott Schuyler, natural resources policy coordinator with the Upper Skagit Tribe. "The Upper Skagit Tribe and Skagit System Cooperative want youth in our community to have educational and employment opportunities, and we want salmon to have productive habitat – the SKY program helps us work toward both goals, and we're proud to support it."

Upper Skagit tribal members plant trees on land that was logged recently. The tribe is developing a native plant nursery on two acres of reservation land to produce trees and other vegetation indigenous to the area. *Photo: J. Shaw*

SKY, the Pacific Northwest Trail Association's collaborative trail–based learning program, was founded as a community partnership to help at-risk youth gain work skills and education while doing good environmental work. The nursery program participants began planting on Tuesday, Feb. 20. Work is continuing on the project four days a week.

"The tribes have been absolutely wonderful," said Jeri Krampetz, executive director of Pacific Northwest Trail Association. "The Skagit System Cooperative really came forward and helped us a lot."

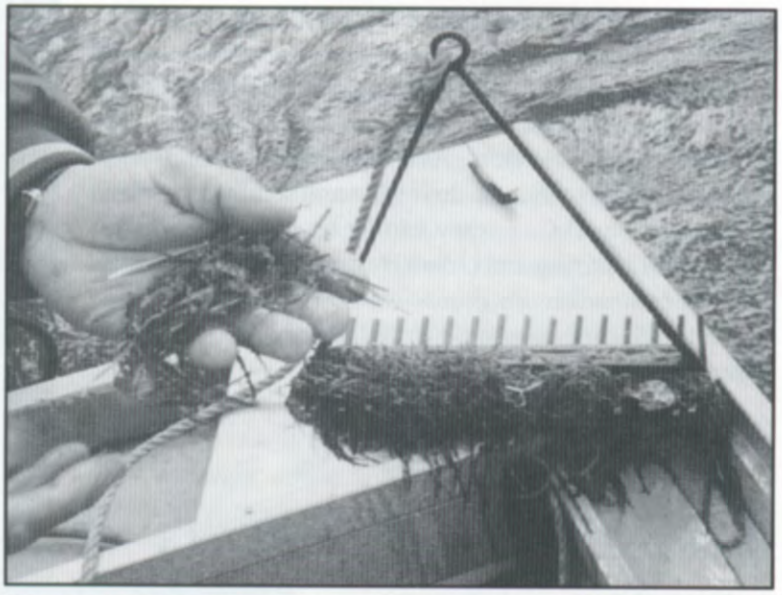
Funding from SSC helped SKY to purchase 100,000 plant seedlings. Krampetz hopes to raise enough funds for another 100,000.

At the Upper Skagit Reservation, SKY participants will plant cedar trees and other native plants: willows for stream enhancement; wildlife forage; ground cover for trail systems; and other plants important to the tribe.

"It's an educational experience that helps foster community service and stewardship of the natural world," said Krampetz. "SKY is one of the few educational experiences that combines real-world work skills with a supportive learning community." – *J. Shaw*

Herring Rebound In Port Gamble Bay

'An Encouraging Trend,' Biologist Says



Herring are spawning in increasing numbers in Port Gamble Bay. Herring eggs are laid on eelgrass, where they hatch in 11-12 days in water temperatures of 50 degrees Farenheit. *Photo: E. O'Connell*

The Port Gamble S'Klallam Tribe is finding rebounding numbers in a herring population that just two years ago was at an all time low.

For the last few years, the tribe was finding fewer herring eggs on eelgrass and algae in and around Port Gamble Bay, a body of water that at one time contained some of the most productive spawning beds in Puget Sound.

The tribe discovered the rebounding runs during a study they conducted in cooperation with the Washington Department of Fish and Wildlife.

"This is an encouraging trend because herring are an important food source for many other animals higher up on the food chain, but especially for salmon," said Aimee Keller, a biologist with the Port Gamble Tribe who worked on the surveys.

Herring surveys have occurred in Port Gamble Bay since the mid-70s, when the State of Washington discovered that it had one of the largest herring runs in the region.

Since the 70s the biomass – the estimated weight of mature herring – in Port Gamble Bay has remained consistently between 1,500 and 2,500 tons. After peaking in 1995 at around 3,000 tons, the biomass dropped to less than half that two years later. In 1998 that total dropped again to its lowest point at 971 tons.

Increasing numbers were seen the following two years. Early surveys this year where not encouraging, showing only light spawn (fertilized eggs). But, in recent weeks, heavier spawn has been seen.

The higher numbers of spawning herring parallel similar numbers in other parts of the Sound. Areas as close as Port Orchard and Port Madison are seeing some of the highest numbers of spawning herring in decades.

Several factors might have contributed to the decline, said Keller. Habitat loss and pollution from shoreline development is a major culprit because herring spawn in shallow areas of protected waterways, such as Port Gamble Bay.

"If you degrade the habitat near and in the spawning areas, you aren't going to have good spawning success," said Keller.

The study of Port Gamble Bay herring is helping the tribe outline ways to protect the population of herring.

For example, when herring spawn, the tribe's geoduck fishery is closed in Port Gamble Bay. Areas outside the bay are closed to geoduck harvesting at depths shallower than 35 feet to protect spawning beds from excessive noise and sediment deposits.

"We don't want to do anything harvesting one resource that would damage another," said tribal shellfish manager Tamara Gage. "By curtailing our geoduck harvest, we help protect a major food source for the salmon."

Port Gamble Bay Herring Facts:

- The herring spawning season typically lasts from February to mid April.
- A female herring produces between 19,000 and 29,000 eggs.
- Herring usually spawn at night when water temperatures are between 40 and 50 degrees Fahrenheit.
- Eggs hatch in 11-12 days when water temperatures are 50 degrees Fahrenheit.
- Juvenile salmon and birds eat herring eggs and larvae. In inshore waters, adult herring are also an important food source for mature salmon, dogfish, marine mammals and birds. In offshore waters, herring are a traditional food source for salmon, hake, dogfish, sablefish and Pacific Cod. – *E. O'Connell*

Stillaguamish Smolt Trap Will Help Fill 'Data Gap'

In an attempt to gather key information on young chinook salmon, the Stillaguamish Tribe has begun an innovative and comprehensive research project. By operating a smolt trap, a safe and effective fish capture device, tribal officials will learn more about juvenile salmon life and behavior – which will help develop conservation plans to protect fish in the Stillaguamish River.

"We can't accurately say what's happening with juvenile chinook in the Stillaguamish River without a smolt trap," said Pat Stevenson, environmental coordinator for the Stillaguamish Tribe. "That represents a big data gap in the chinook recovery plan."

Hence, the tribe has launched a seven-year study of juvenile salmon production and behavior in the area.

"We're in it for the long haul," says Jason Griffith, a biologist with the tribe. Stillaguamish crews will operate the trap from early March until August each year.

The equipment the tribal team uses – called a 'screw trap' – allows technicians to monitor fish without injuring them. Fish are drawn in through the trap's wide 'cone,' which is designed to safely capture the young salmon, and funnel them into a holding tank. There, the juvenile salmon and trout will be counted, measured and set free.

"Chinook are a primary concern for us: the tribe has put a lot of time, effort and money into chinook recovery work," said Griffith. "But this trap will help us gain valuable information on other species of fish as well, such as coho salmon, bull trout, steelhead, sockeye, chum and pink salmon."

Particularly, the trap will help complete the picture of the chinook life cycle. The Stillaguamish Tribe has gathered significant amounts of information on the adult chinook salmon, but not as much on the juvenile fish. By operating the trap, tribal biologists will learn more about juvenile salmon production levels; rates of survival for the young fish; migration timing; size at migration; and a myriad of other helpful facts.

Stillaguamish biologist Jason Griffith captures a hatchery salmon during a test run of the tribe's new smolt trap. *Photo: J. Shaw*

"With that data, we'll be able to pinpoint the problems and fine-tune the way we address those problems," said Griffith.

The new trap joins several other tribal operations. The Lummi Nation has operated a trap on the main stem of the Nooksack River near Ferndale since 1994. Crews from the Nooksack Tribe and Lummi Nation jointly operate one on the south fork of the Nooksack River. The Tulalip Tribes launched a smolt trap in the Skykomish River in April of 2000. – *J. Shaw*

Year-Round Tug Needed For Coast, Makah Tribe Says

Makah tribal members remember oiled birds by the hundreds on the Olympic Peninsula coast as the result of spills from ships in 1988 and 1991.

It's those memories and the fear of more spills that drive the tribe's efforts to have a year-round tug stationed at Neah Bay to assist crippled ships off the Olympic Coast and in the Strait of Juan de Fuca.

The tribe supports a bill that was expected to pass in the Washington State Legislature requesting that the federal government assume the $3.1 million annual cost for the tug. The state has committed to paying for the tug for two years, but wants Congress to appropriate money for the long term stationing of the tug. Funds from the 1991Tenyo Maru oil spill settlement and the U.S. Navy were used to help pay for the stationing of a tug in Neah Bay last year. The tug responded to several vessel distress calls and the tribe wants to see that protection continued.

"We consider this our Galapagos Islands," said Dave Sones, natural resources director for the Makah Tribe. "We have been trying for 10 years to secure some protection for the resources out here.

"The state has really stepped up and supported our efforts to get a tug stationed here, but it's important to secure this protection for the long-term from the federal government," said tribal council member Gordon Smith. "A tug doesn't mean a spill won't happen, but it gives us a lot of prevention. "We've trained tribal members in rescuing birds and oil clean up, but we don't want these resources impacted," he said. "It affects everyone, not just us, when these spills happen." – *D. Preston*

Study Will Help Protect Eagle Habitat

Seeking to protect bald eagle habitat along the North Fork of the Stillaguamish River, the Stillaguamish Tribe is studying habitat most critical to the bird. *Photo: D. Preston*

Like most wild creatures, what the bald eagle needs to survive is relatively straightforward: an expanse of habitat to roam, an abundant food source, and a safe and remote place to roost, breed and raise young. Before those areas most essential to eagle survival can be protected, though, they must first be located. A newly-completed study by the Stillaguamish Tribe accomplished just that. In cooperation with the U.S. Forest Service's Darrington Ranger District and The Nature Conservancy, tribal biologist Jen Sevigny painstakingly documented eagle habitat along the North Fork of the Stillaguamish River. The study commenced in November and concluded with the release of a report in March. Among the study's findings: the Squire/Ashton Creek area is critical habitat for bald eagles in the watershed. One of the main reasons for this: the area contains a night roost site for numerous eagles along with a large number of salmon carcasses for foraging birds. Finding the predominant night roost area was one of the study's primary objectives.

"Once you can document where the roosts are, you can move to protect the site," Sevigny said.

That's especially important given the state Department of Natural Resources' desire to log some portions of the watershed. Due to concern about the impact this might have on wild bird populations, the study was designed to enumerate the most essential zones for protection. Sevigny said that the study will help reinforce where buffer zones between logging areas and vital habitat should be placed.

"Because DNR is proposing timber harvests in the area, we thought it was necessary to determine where the critical habitat areas were," she said. "We just want to be sure that the buffer zones are adequate to protect both day use and roost habitat."

The tribe's efforts to preserve habitat for birds in the region will continue this April, when a new study on the use of forest birds as indicators of riparian (streamside) habitat quality is initiated.

"Wherever mature forest and riparian habitat exists, there is critical habitat that needs to be protected for birds as well as other species. Our wildlife studies are directly connected to restoring salmon – by preserving mature forest and maintaining riparian habitat health, we can improve the quality of life for salmonids," said Sevigny.

These studies, the tribe hopes, will have a direct impact on restoration of both fish and wildlife habitat.

"We hope our studies help lead the way to sound management practices," said Sevigny. "With our wildlife program we are attempting to take a landscape approach and give consideration to both fish and wildlife species and how their requirements are interrelated." – *J. Shaw*

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