

NWIFC News

Northwest Indian Fisheries Commission

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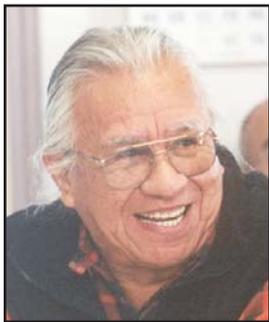
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All Habitat Is Critical



Habitat is the key to wild salmon recovery in western Washington.

That’s why the treaty tribes who have always called this region home were surprised by the Bush administration’s plan to reduce by more than 80 percent the critical habitat needed to recover wild salmon.

We know that harvest and hatcheries also are critical to recovering wild salmon stocks, of which three in western Washington have been listed as “threatened” under the federal Endangered Species Act. Tribes have stepped up to the challenge by

reducing their harvests up to 80 percent over the past two decades. Together with our co-managers, the State of Washington, we are in the fifth year of a hatchery reform project that is helping to recover wild salmon while supporting sustainable fisheries.

Unfortunately, the same level of effort and sacrifice has not occurred when it comes to habitat. We can no longer make up for lost natural production of wild salmon by reducing harvest or simply producing more hatchery fish. Those days are gone. We are left with the difficult and costly task of protecting and restoring the salmon’s home.

The plan to reduce the amount of critical habitat deemed necessary for the recovery of wild salmon will be finalized this summer. It’s hundreds of pages long, and will require extensive analysis to fully determine possible impacts to wild salmon recovery efforts in western Washington. Among those efforts is the Shared Strategy for Puget Sound Salmon Recovery. This cooperative wild salmon recovery effort – endorsed by the National Marine Fisheries Service and the U.S. Fish and Wildlife Service, the federal agencies in charge of implementing the ESA – is bringing together tribal, state, local and federal governments, developers, environmental organizations, and many others to develop a recovery plan for wild Puget Sound chinook. That plan is due next summer, too.

Some will say the federal government’s move to reduce the amount of critical habitat means salmon need a lot less habitat protection than previously thought. That’s the wrong message. It tells county governments that they don’t need to do as much for salmon. It discourages the public from taking the small steps needed to help salmon. Critical habitat is just that – critical.

The Bush administration says that the critical habitat reduction is warranted because those lands are already protected by other conservation plans. But what are the standards being used to evaluate the effectiveness of those plans to protect salmon? We don’t know because they don’t say.

Protection of riparian areas, the land alongside critical habitat streams, would be eliminated or sharply reduced under the government’s plan. Only the stream itself would receive protection, and that’s wrong. Development, agriculture and many other upland activities can have a huge impact on streams – and the wild salmon we are trying to restore.

The habitat reduction plan also removes so-called “unoccupied” waters from protection. These are waters where salmon don’t live, either because there is no suitable habitat, or access is blocked by dikes or tide gates. Just because salmon might not live in these waters right now, doesn’t mean they couldn’t if they had access, or if the habitat was improved. These were once important salmon habitat, and may still affect healthy salmon habitat nearby.

For wild salmon to thrive, four basic biological needs must be met:

- An adequate supply of clean, cold water;
- Access to and from the sea;
- A sufficient number of adult salmon returning to spawn; and
- Properly functioning spawning and rearing habitat.

Providing these basic requirements, however, is proving to be one of the most difficult environmental, economic, political and social challenges ever faced by the United States.

One thing is clear. There is no such thing as unnecessary critical habitat. All habitat is critical to the wild salmon’s recovery and survival.

NWIFC News

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On The Cover: Crew of the Sound Star pull in a haul of chum salmon during the Apple Cove chum test fishery near Kingston. See story on page 8. *Photo: D. Friedel*

Clarification: The Tulalip Tribes should have been included in an article that appeared in the fall 2004 issue of NWIFC News about tribes that fish for Lake Washington sockeye.

Urchins, Otters And Abalone

Species' Interaction Challenges Managers

Nature stands still for no one. After non-Indian fur trappers decimated the Pacific Northwest's sea otter populations, ecosystems formerly populated by the cuddly mammals underwent a dramatic shift.

No longer affected by otter predation, sea urchins could breed freely, swelling numbers of the spiny shellfish and altering the face of Washington's undersea environment. Today, as attempts to recover otter populations grow, management of species that otters like to eat – such as sea urchins, a fishery of growing importance to tribes, and abalone, which is itself endangered – presents tribal and state co-managers with intriguing challenges.

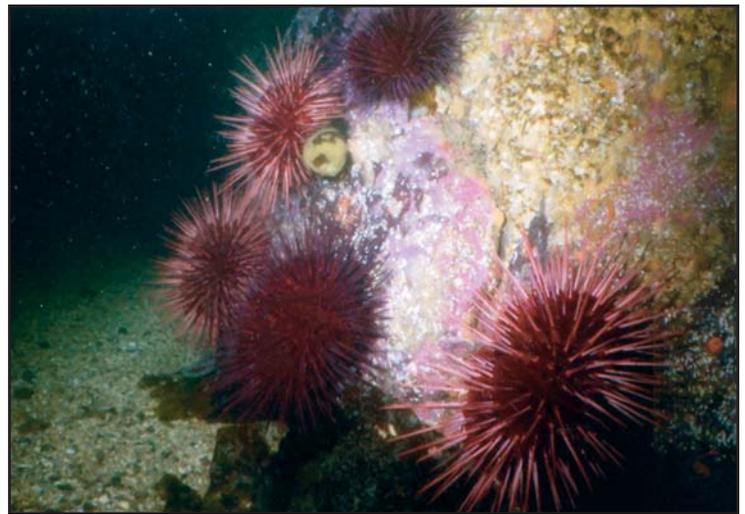
The Tulalip Tribes are leaders in responsible management because the tribal natural resources department doesn't delay common-sense efforts at ecosystem protection in the face of change. This October, Tulalip also hosted a first-of-its-type planning session for the state and tribal co-managers of Washington's natural resources, an event that saw scholars present the latest research about the way these three species interact.

"We always want to stay out in front of management trends, so we can better protect the natural resources we all value," said Mike McHugh, Tulalip's shellfish manager.

Tulalip also conducts biological surveys for many shellfish species of importance, including sea urchins. This enables the tribe's environmental staff to prepare informed analysis and decisions that are essential to protect marine species. Sea otters are listed as a Washington state endangered species, and are also protected under the federal Marine Mammal Protection Act; abalone was listed as a "species of concern" in Washington state in 1996.

As otter populations rebound due to re-introduction and protective measures, some fear urchin populations may flag. This is not just due to otters eating the tasty invertebrates: the resulting urchin breeding transforms entire ecosystems. Urchins are herbivores, and their grazing kills fleshy algae, creating "urchin barrens" that are almost entirely devoid of kelp and other vegetation. These ecosystems make great homes for abalone as well, since research indicates that the large clams prefer rocky expanses and find shelter below the intimidating urchin spine canopy.

But when the endangered otter interacts with urchin and abalone, the efficient predator quickly thins their ranks, limiting size of its prey as well. Glen VanBlaricom, a researcher at the University of Washington, says that scientists started to see urchins harvested by the Makah Tribe decrease in size after otter re-introduction. When otters are present, the urchins and abalone that survive are those protected in rock crevices – which keeps the shellfish alive, but limits their growth.



Sea urchins can transform entire ecosystems by their extensive grazing on undersea vegetation. *Photo: J. Shaw*

Balancing the needs of these interconnected species is a puzzle that resource managers will try to put together over the next several years. Surveys and information-sharing are two important pieces. Decisions about what to do when one protected species eats another are difficult, but tribal research aims to ensure that the best available science guides any policy decisions.

"By getting as much information as possible about existing urchin populations, we can plan and adapt to emerging realities," said McHugh. "Developing baseline data lets us know what to expect in the future and how to prepare for it." – *J. Shaw*

Fast Facts: Urchins And Otters

- The sea urchin's name comes from an Old English word for the spiny hedgehog, which is similar to a porcupine.
- Urchins commonly live to be more than 100 years old, and in some places in British Columbia, they can be up to 200 years old. The oldest geoduck clams and sea urchins today were alive when otters became extinct in the Pacific Northwest.
- Historically, otters in the Pacific Northwest ranged from the Columbia River to the Washington coast and lived throughout the Strait of Juan de Fuca to Port Angeles. After re-introduction, the swift animals scattered all the way to the Nisqually River delta, though the bulk of the population has always been on the outer Washington coast.
- Otters were re-introduced to Washington state in two batches. From 1965-1989, 708 otters were brought from Alaska — many animals came from the Aleutians, where nuclear testing was happening at the time – and from 1987-1989, 103 otters were introduced from California. Now, about 600-700 animals live here, ranging from Destruction Island up the coast to Cape Flattery.

Skokomish Tribe Protects Marine Life

A joint project between the Skokomish Tribe and a Bellingham fish processor is helping protect marine life by keeping hatchery chum salmon carcasses out of oxygen-starved Hood Canal during tribal salmon fisheries this fall.

“The tribe wants to do what it can to help Hood Canal,” said Dave Herrera, fisheries director for the Skokomish Tribe. “By taking as many chum salmon carcasses out of the canal as possible, we might be able to help decrease the chances of further low dissolved oxygen problems. But carcasses are only a small part of the problem. An increase of nutrients into the canal from septic systems, agricultural practices and storm-water runoff will continue to pose a much greater threat to marine life in Hood Canal.”

Prompted by the canal’s oxygen problem, the tribe and American-Canadian Fisheries Inc. have developed a pilot project that will put the carcasses to good use. All male chum salmon harvested by tribal fishermen can be dumped into net pens on the fishing grounds. American-Canadian will process the male chum salmon, which will be donated to food banks or used for pet food.

Tribal fishermen also can sell female chum salmon to American-Canadian, or sell just the salmon roe – eggs – to the company. American-Canadian will process all salmon the company purchases.

Tribal fishermen have the opportunity to sell their product to other buyers. Carcasses that are not purchased will be disposed of at a designated site on the Skokomish Tribe’s reservation. Those car-

casses will be mixed with wood chips and used to create compost for the tribe’s timberland and community garden.

Every fall, Indian fishermen harvest chum salmon returning to the Washington Department of Fish and Wildlife’s Hood Canal Hatchery at Hoodport. Salmon markets in the United States have been flooded in recent years with farmed Atlantic salmon from Canada, Chile and other countries, driving down prices and market opportunities for Indian and non-Indian fishermen in western Washington and all along the West Coast. Unable to sell their catch of chum salmon, tribal fishermen have turned to the roe market where salmon eggs can fetch \$5 per pound.

Because the current market for chum lies not in the flesh but in the eggs, treaty fishermen strip the eggs from the fish. This results in tens of thousands of carcasses requiring disposal, even after thousands of the fish have been frozen or smoked by tribal members or given away to regional food banks. Those remaining salmon carcasses are returned to the canal – a standard enhancement practice in natural resource management.



A Skokomish tribal fisherman transfers his chum harvest to a floating net pen, from which the fish are transferred to a tender for processing. *Photo: D. Friedel*

Plants, insects, wildlife and even other fish benefit from the nutrients that the carcasses provide as they decompose. Hood Canal, however, is desperately starved for the oxygen that is required to break down salmon carcasses. This is because most of the oxygen is used in dissolving high levels of nutrients deposited daily by thousands of septic systems lining the canal, as well as nutrients from storm-water and agricultural runoff.

For thousands of years, salmon have returned to the streams of Hood Canal to spawn and die. Today, however, oxygen levels in the canal can no longer support the natural process of decomposition. Because of the oxygen problem, the tribe is forced to look at other disposal options for the chum salmon carcasses.

“The tribe is very concerned about the low oxygen problem, and we are going to step up and do what we can to resolve this issue,” Herrera said. “We expect local governments, with the help of the federal government and the State of Washington, to address the problems caused by septic systems, agricultural practices and storm-water runoff.” – *D. Friedel*

‘The tribe is very concerned about the low oxygen problem, and we are going to step up and do what we can to resolve this issue.’

*– Dave Herrera
Fisheries Director
Skokomish Tribe*

Garden Sustains Makah Tribe In Many Ways

A few decades ago, it was common to see lengths of pink, yellow, purple, brown and black dyed grasses fluttering on clothes lines outside many houses in Neah Bay.

“I would go with my mother to collect the grasses. She would show us her favorite places to gather it. At home, we would take No. 10 tin cans, mix the dyes and soak the grass,” said Makah tribal elder Edith Hottowe.

Today, few tribal members know how and where to collect the traditional plants needed for baskets, food or medicinal use. Also few are the places where tribal members can go to gather the elements of their culture.

To make traditional plants more accessible to elders and to teach Makah children about those plants, the Makah Tribe created an ethnobotanical, traditional use garden near the Makah Cultural and Research Center (MCRC).

The garden was a dream of tribal elders when the facility was built more than 25 years ago, said Keely Parker, general manager and archivist for MCRC. “They especially wanted it to teach the children about our traditional plants, but they were also afraid that the spraying of herbicides in many of the traditional gathering places was making it impossible to use or eat the plants,” said Parker.

‘The garden is really a community effort for both tribal members and our non-Indian neighbors.’

*– Keely Parker
General Manager
Makah Cultural
And Resource Center*

But it has taken more than two decades of volunteer labor and donations for the dream to come to fruition. The garden has been providing traditional grasses, fruit, vegetables and other plants for several years now, but several improvements are pending.

Plexiglas signs describe each plant using the Makah name and phonetic spelling, and include information on cultural uses. The plant’s likeness is etched into the sign to allow students to make pencil rubbings for future reference. “We’re working to secure funding to make the signs with material that will withstand the weather here,” said Theresa Parker, MCRC education specialist.



Edith Hottowe, Makah tribal elder, enjoys some huckleberries from the tribe’s ethnobotanical garden. *Photo: D. Preston*

Olympic National Park provided many of the plants for the garden that features three distinct growing areas: bog, open grass and forestland.

Slough sedge, a wetland grass important in basket weaving, is grown in several areas in the garden that are easily accessed by elders. The tribe is experimenting with cultivation of bear grass – notoriously difficult to cultivate and becoming scarce on lands outside Olympic National Park – by trying different soil types. Huckleberry bushes dot the garden as do a variety of trees. Hemlock boughs, for instance, were often used in Makah ceremonial regalia. “My father would wear a crown of hemlock for certain special occasions,” said Hottowe, now in her 70s.

“The garden is really a community effort for both tribal members and our non-Indian neighbors,” said Keely Parker. Ed Wilbur, a Clallam Bay plant expert put several hundred hours of volunteer labor into creation of the garden. He is affectionately called “Bup,” the Makah word for “plant” in recognition of his efforts. Yvonne Wilkie, a Makah language teacher, was instrumental in providing the Makah names for the plants. Some groups make an annual trip to assist the tribe with upkeep of the garden. Students from Pacific Lutheran University worked in the garden for the past five years.

“It’s a wonderful resource,” said Keely Parker. “Younger tribal children play a scavenger hunt game to learn the names of the plants; older students come for their high school biology class. For our elders, it provides convenient access to plants they might not be able to get otherwise. They can gather them right here.”

For Hottowe, helping with the garden is a way to honor her parents and late husband, John. “My mother knew so much about these plants. It’s important for us to pass this information on. Both my husband and my father used to say, ‘If you live here, you have to contribute.’” – *D. Preston*

Passive Elk Traps Aid Efforts To Bolster Herd



Elk graze near one of two passive traps near Mount St. Helens used by Point Elliott treaty Indian tribes as part of a joint effort to supplement the North Cascades elk herd. The traps significantly reduce stress to the captured animals. *Photo: Chris Madsen*

A cooperative effort between the Point Elliott Treaty tribes and the Washington Department of Fish and Wildlife to bolster a weak population of elk in the North Cascades resulted in the successful transfer of four more animals from the Mount St. Helens area this fall. The elk were moved to help augment the flagging Nooksack elk herd, also known as the North Cascades elk herd, while reducing the overpopulated Mount St. Helens herd, which is outstripping its food supply.

“We are pleased with the results of this joint effort,” said Todd Wilbur, Swinomish Tribe, who chairs the Inter-tribal Wildlife Committee of the Northwest Indian Fisheries Commission. “The tribes are committed to enhancing and protecting elk populations throughout western Washington. This project will dramatically improve the health of the North Cascades elk herd.”

Assisted by Mark Smith, president of the Mount St. Helens Preservation Society, the tribes used two passive traps to capture the four cow elk. A larger trapping effort was cancelled due to volcanic activity inside the mountain.

Last year, the tribes and the state worked together using a helicopter to round up 41 animals for transfer. “This project is just one more way the tribes are working to preserve wildlife,” said Scott Schuyler, natural resources policy coordinator with the Upper Skagit Tribe.

The passive corral traps are baited with apples, a favorite elk snack. Once a number of animals have entered the trap to feed, the gated opening is closed by remote control.

“This trap is the least invasive elk capture method people have come up with yet,” said Shawn Yanity, chairman of the Stillaguamish Tribe. “We want to minimize stress on the animals.”

Captured adult cow elk were fitted with radio-transmitting collars before release, which will allow biologists to track their movements and habitat uses. The Point Elliott treaty tribes, working in cooperation with the state co-managers and Rocky Mountain Elk Foundation volunteers, will monitor movements of the transplanted elk for the next two years.

The Point Elliott tribes include Lummi, Muckleshoot, Nooksack, Sauk-Suiattle, Stillaguamish, Suquamish, Swinomish, Tulalip and Upper Skagit.

Biologists believe a number of factors contributed to the decline in the North Cascades elk herd’s population, including habitat changes and over-hunting. WDFW and the tribes have forbidden hunting in the herd’s core area since 1993, and hunting seasons for the area will not be established until elk populations have reached a recovery goal. — *J. Shaw*

Quileute Tribe Assists Deer, Elk Disease Research

The Quileute Tribe is collecting brain stem samples from deer and elk harvested by hunters to check for chronic wasting disease in cooperation with Washington Department of Fish and Wildlife (WDFW).

Chronic wasting disease affects the neurological system of deer and elk and has required the elimination of entire herds in other states. Quileute tribal technical staff, together with non-Indian volunteers, are asking hunters for permission to remove a sample of deer and elk brain stem tissue along with gathering other harvest information. “This is strictly voluntary,” said Frank Geyer, Timber, Fish and Wildlife biologist for the Quileute Tribe. “But information about harvest and the samples we collect really help with the management of the resource in this area.”

Washington treaty tribes and the State of Washington are co-managers of the fisheries and wildlife resources. Tribal technicians were trained by WDFW veterinarians to remove the brain stem for analysis.

The number of samples collected will dramatically increase with the assistance of Quileute technical staff. “We are working to staff as many different hunter exit roads as possible to get the largest sample size we can,” said Geyer.

Surveying for disease is part of the tribe’s comprehensive game management plan. The tribe has an ongoing study of elk herds in the Forks area to track productivity, food availability and overall herd health.

“Harvest pressure in this area is heavy, so all the information we collect is critical,” said Geyer. The Quileute sampling effort is funded by a grant from U.S. Fish and Wildlife Service and supported by WDFW. “While the disease has not been detected anywhere within the state, there is a danger in assuming that it does not exist,” said Geyer. “There has been little sampling done on the western Olympic Peninsula. This effort will help fill that data gap.” — *D. Preston*

Puyallup Tribe Solving Bull Trout Mystery

After gathering clues about the behavior of bull trout, the Puyallup Tribe of Indians is helping to provide a clearer picture of the mysterious fish.

“We know that bull trout live in the Puyallup because we regularly encounter them at the Buckley Fish Trap and occasionally during juvenile capture efforts,” said Russ Ladley, resource protection manager for the Puyallup Tribe.

For the past few years tribal staff have been cataloging their encounters with bull trout. The tribe regularly conducts spawning surveys across the entire watershed and operates a trap to monitor out-migrating juvenile salmon in the lower river. While these projects are not specifically aimed at tracking bull trout, they turned out to be useful in tracking the rare fish.

Bull trout captured at an adult fish trap at the Buckley Diversion Dam on the White River, a tributary of the Puyallup, are tagged with individual numbers and measured. “We started paying close attention every time we saw a bull trout,” said Ladley. “We were hoping that each dot would help paint a larger picture.” Bull trout are listed as “threatened” under the federal Endangered Species Act

This summer, the tribe began seeing bull trout that they had tagged in previous years. “They were bigger than when they were sampled previously, but no worse for wear,” said Ladley.

Bull trout are members of the Pacific salmon family and like salmon they can migrate to saltwater. They need extremely cold water in which to spawn and rear, meaning most are found high in the mountains. Bull trout live much longer than any other salmon species, averaging up to 10 years and sometimes living over 20.

“After a few years of tracking these fish, we’re starting to get an idea of what the White River watershed’s bull trout populations looks like,” said Ladley.

There appears to be a main population of bull trout that stays in the icy upper reaches of the Puyallup and White rivers, near the rivers’ glacial sources. The tribe also has tracked a population that migrates down from the upper reaches to the lower sections of the Puyallup watershed. Yet another smaller population, Ladley theorizes, also migrates out to Puget Sound and lives there for up to four years before returning.

“Bull trout in the Puyallup show the wide ranging life histories that we see in bull trout across the region,” he said. “The population is so small here that if you weren’t paying attention, you might not notice it.” Fewer than a hundred bull trout are seen yearly at the fish trap on the White River, compared to tens of thousands of coho salmon.

Knowing more about bull trout helps the tribe and the state co-managers protect all species of Pacific salmon in the Puyallup River watershed. “Bull trout, chinook, coho and all of the other fish in the river don’t live in isolation of each other,” said Ladley. “The more we understand about how one fish species lives, the better we understand all species.” – E. O’Connell



Terry Sebastian, Puyallup Tribe fisheries biologist, checks a tag on a bull trout. *Photo: E. O’Connell*

Award Honors Jamestown S’Klallam Tribe Estuary Project

The restoration of a creek and its estuary at Sequim Bay has earned the Jamestown S’Klallam Tribe national recognition.

In October, the tribe received an Outstanding Conservation Cooperator Award from the U.S. Department of Agriculture (USDA) for the restoration of Jimmycomelately Creek and its estuary. The tribe, which spearheaded the project, was awarded the honor during a visit from Mark Rey, USDA undersecretary for natural resources.

“So many groups pulled together to make this project happen,” said Byron Rot, habitat biologist for the Jamestown S’Klallam Tribe. “While this is a large-scale project in a small watershed, it is representative of habitat problems widespread in watersheds across Puget Sound. We hope that this will be used as a model for other restoration projects in watersheds with similar problems.”

A new meandering channel was created for Jimmycomelately Creek and a tributary, and a large amount of landfill was removed from the shoreline, the former site of a log yard. A new bridge was constructed for Highway 101, which passes over the creek, and two wooden creosote stained railroad bridges were pulled out. Numerous pilings also will be removed from the tidelands.

The \$6 million project was paid for with federal and state grants, along with matching funds from the tribe. – D. Friedel

Chum Test Fishery Key Management Tool

On some days during the commercial chum salmon fishing season the Sound Star is the only purse seiner harvesting chum in southern Puget Sound. What that vessel catches is of particular interest to both South Sound Indian and non-Indian fishermen, because the vessel's haul will help tribal and state biologists determine how much chum salmon each group will be allowed to harvest this season.

Once a week during the month of October, the Sound Star heads to Apple Cove Point near Kingston and conducts a test fishery. The day's catch is used to help the tribes and the state calculate the size of the South Sound chum salmon return, and fine-tune the management plan for the fall chum fishery.

"This test fishery gives us a better understanding of what the run looks like each year," said Bill Patton, South Sound regional biologist for the Northwest Indian Fisheries Commission. The NWIFC and the Washington Department of Fish and Wildlife conduct the joint test fishery. "It's a pretty good tool that helps us update the run size and better manage the fishery, and that helps us sustain the population."

'This test fishery is unique because it's rare that you have a list of consistent data over such a long period of time.'

*– Bill Patton
Regional Biologist
NWIFC*

Tribal and state biologists take scale samples to determine each salmon's age, and also record the ratio of males to females. The theory is male salmon tend to show up early in the return and females later. By looking at the ratio, the biologists can estimate whether the run has passed its peak.

During this fall's test fishery, tribal and state biologists calculated the chum salmon return to South Sound at about 1 million fish, about 330,000 salmon more than the original preseason forecast. Harvests dur-



Crew of the Sound Star bring in a catch of chum salmon during the Apple Cove test fishery near Kingston. The test fishery, conducted annually since 1981, is an important management tool. *Photos: D. Friedel*



Bill Patton, NWIFC South Sound regional biologist, gathers a chum scale sample for age class analysis during the Apple Cove test fishery near Kingston.

ing the test fishery, along with commercial catches and spawning ground surveys, helped tribal and state biologists determine the run size.

A larger return means an increase in harvest for fishermen. After subtracting the escapement goal – the number of fish allowed to pass upstream to spawn – a harvest allocation for Indian and non-Indian fishermen is then estimated. Each group is allowed to harvest half of the surplus chum salmon returning to South Sound, which adds up to about 455,000 fish for each group this fall.



Chum salmon harvested during the test fishery are sold to defray the project's cost.

"If the test fishery results had suggested that the chum salmon run was close to what forecasters had projected earlier in the year, then the harvest quota would probably not have changed," Patton said. "But this fall the run was a little stronger, so we agreed to increase the overall harvest quota."

The Apple Cove Point test fishery has taken place annually since 1981, making it a valuable resource for South Sound tribes and the State of Washington.

"This test fishery is unique because it's rare that you have a list of consistent data over such a long period of time," Patton said. "We are not going to be perfect every time, but it gives us a pretty accurate look at how weak or strong the runs are each year returning to a fairly large area."

– D. Friedel

Chum Spawning Surveys Complement Test Fishery Data, Predict Future Runs



Tribal surveyors seek spawned-out chum salmon to help determine run strength.

Spring Creek is about as small a stream as a salmon could possibly swim up, but Doyle Foster counts 150 fish in just a one-mile stretch.

“There are a lot of stinky fish out today,” said Foster, a spawning surveyor for the Squaxin Island Tribe. The data Foster collects will help the tribe decide whether to open fisheries on the healthy runs of wild South Sound chum this year and for several years to come.

“Spawning surveys are the most basic and important work that we do to estimate how many chum salmon are coming back,” said Joe Peters, fisheries biologist for the Squaxin Island Tribe. “We have to be diligent about getting out to these streams on a regular basis to get a good idea about how many salmon are really returning.”

While Hood Canal summer chum are listed as “threatened” under the federal Endangered Species Act, Puget Sound fall chum stocks have been robust in recent years.

Keeping track of the fish that are returning to the streams is important in managing a fishery. By keeping a close eye on the salmon in the streams, the tribe and state co-managers can decide whether to open fisheries in adjoining bays.

‘Spawning surveys are the only way to really get a good idea of how many salmon are going up the creeks to spawn.’

*– Joe Peters
Fisheries Biologist
Squaxin Island Tribe*



Marylyn Peters pulls a chum salmon out of a beach seine during a Squaxin Island tribal fishery. Spawner surveys help determine fishery openings. *Photos: E. O’Connell*

“If the tribe wants to open a chum fishery in Totten Inlet, for example, we need to make sure enough chum salmon are making their way onto the spawning grounds on Kennedy Creek, which flows into Totten,” said Peters. “Spawning surveys are the only way to really get a good idea of how many salmon are going up the creeks to spawn.”

Data gathered during spawning surveys will 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,” said Peters. In addition to conducting spawning surveys, the tribe also operates juvenile salmon smolt traps to track out-migrating salmon, which helps determine a creek’s overall production.

Chum salmon runs are an important part of the Squaxin Island Tribe’s economy and culture. In recent years, the chum fishery has been one of the most dependable for the tribe, even though the commercial market for chum salmon meat has been poor. “This is the first year in awhile that we’ve had any demand for chum salmon,” said Peters. “Most years, fishermen will sell some fish locally and smoke some for their own use.

“The chum runs that the Squaxin Tribe fishes on are healthy because of well managed fisheries and good habitat. The health of these runs emphasize the need for protecting and restoring salmon habitat,” said Peters. “Without good spawning habitat, chum salmon would be in deep trouble.” – *E. O’Connell*

Chum Salmon Fast Facts

- Chum salmon (*Oncorhynchus keta*) are the most widely distributed salmon on the Pacific coast, and are the most abundant wild salmon in Washington.
- The majority of chum salmon mature between 3 and 5 years of age.
- Chum salmon use small coastal streams and the lower reaches of large rivers to spawn.
- On average, mature chum salmon weigh between 10 and 15 pounds.

Judge Boldt's Ruling Echoes Around World

Editor's Note: This is the last in a series of articles marking the 30th anniversary of U.S. v. Washington (the Boldt Decision), which re-affirmed the reserved rights of the treaty Indian tribes in western Washington.

Of all the legacies left behind by U.S. District Court Judge George Boldt, perhaps the most lasting is his decision in *U.S. v. Washington*, the famous "Boldt Decision." As important as that decision was to the treaty Indian tribes of Washington state, in the three decades since the case was decided, it has proven nearly as important to other indigenous communities around the world.

In the three decades since Judge George Boldt handed down his ruling on the *U.S. v. Washington* case, the Boldt Decision has influenced the legal landscape for indigenous rights cases across America and as far away as Australia.

The facts of the 1974 case are clear: Indian people cited five treaties negotiated between the federal government and the tribes, all of which included provisions preserving "[t]he right of taking fish, at all usual and accustomed grounds and stations, is further secured to said Indians in common with all citizens of the Territory."

Since treaties with Indian tribes are declared by the U.S. Constitution to be the "supreme law of the land," the tribes argued, these rights to take fish and other traditional foods were sacred. Unfortunately, these obligations were soon forgotten, and after years of rights violations, the tribes were forced to seek defense of their treaty rights in federal court.

Using volumes of historical information, testimony from tribal elders and legal expertise, Judge Boldt re-affirmed these rights, which had been violated for more than 100 years

"We knew the rights our treaties secured for us," said Billy Frank Jr., chairman of the Northwest Indian Fisheries Commission. "When Judge Boldt defended those rights, we rejoiced. But we never dreamed of how far around the world his decision's influence would reach."

At home and abroad, the Boldt Decision continues to serve as the foundation for numerous efforts to protect the rights of indig-



Judge George Boldt

enous peoples. Indeed, many legal scholars say that no single decision in the past century has had as much impact.

Hundreds of tribal treaty rights cases across the United States have cited *U.S. v. Washington* as precedent, using Judge Boldt's analysis.

"A number of commentators have called the Boldt Decision the most significant Indian rights case in the last century," Mason Morisset, an attorney who defended the Boldt ruling against appeals from the state, told the Seattle Post-Intelligencer. "I would have to say they're probably right."

Great Lakes-area tribes used the Boldt Decision as a basis for their argument that Indian tribal governments should have a voice in natural resources management in the Midwest states of Michigan, Minnesota and Wisconsin.

For instance, the Mille Lacs Band of Chippewa Indians won a 1994 case defending the hunting, fishing, and gathering rights they reserved in an 1837 treaty. The Chippewa work with Minnesota's Department of Natural Resources to regulate walleye harvest in Lake Mille Lacs, a cooperative planning effort that resembles Washington's co-management arrangement. Like the Boldt Decision, the case was upheld by the U.S. Supreme Court.

Additionally, Oregon, Montana, Idaho and California tribes have successfully litigated hunting and fishing rights cases using the Boldt Decision as a springboard.

The impact doesn't stop at America's borders, however. To the north, Canadian First Nations say that a legal framework is necessary to implement their inherent rights, and cite *U.S. v. Washington* as a template for such a framework.

Indigenous peoples in as far-flung locales as New Zealand and Australia have also used the Boldt Decision as an example of

how to preserve their rights in the laws of their respective countries.

A prime example is the Muriwhenua people of New Zealand, a group of indigenous Maori who appealed to a tribunal in Wellington for protection of their fishing rights. The Waitangi Tribunal is a commission of inquiry estab-

lished by New Zealand's government whose responsibility is to address violations of indigenous rights.

"We were struck by the close similarity of the Muriwhenua tribes' circumstances with those of the Washington Indian tribes in the case referred to, as described by the United States District Court in 1974," reads the Muriwhenua claim before New Zealand's Waitangi Tribunal. "We decided to examine that case in greater detail not only because of the factual approximations, and the questions of treaty interpretation and fish allocations involved, but because the judgment, commonly called the Boldt Decision, provided a comprehensive analysis of the tribal position and issues arising."

While a regime to protect indigenous fishing rights might be "radical by New Zealand standards," the Muriwhenua argued, the Boldt Decision shows just how correct such an approach would be.

— J. Shaw

'...we never dreamed of how far around the world his decision's influence would reach.'

— Billy Frank Jr.
Chairman
NWIFC



Sharing A Whaling Heritage

Timofey Tymneve, left, part of the Chukotka native dance troupe Ergyron, performs for Makah tribal members in Neah Bay. Below, Dylan Markishtum, 8, thanks Ergyron dancer Nina Merker for performing. The Chukotka people from Russia contributed part of their whaling quota to the Makah in 1997. A cultural exchange continues as part of that relationship. A Makah delegation plans to visit the Chukotka next summer to observe their whaling activities. *Photos: D. Preston*



Quileute Tribe Helping To Restore Dickey River's Voice

Something is missing from the middle and west forks of the Dickey River. Noise.

Absent is the musical sound of water moving over logs and rocks. The removal of most of the wood in the rivers over the years and little elevation change in the Dickey system leaves the river oddly quiet and lake-like except during seasonal rains.

The Quileute Tribe, in cooperation with landowner Rayonier Inc., is trying to restore the river's voice by re-establishing logjams in the river. The absence of sufficient large woody debris in the river reduces habitat important to fish. Logjams create pools and eddies important for salmon to thrive and survive. They also help create the rushing water sound associated with vibrant streams.



Dean Jackson, Quileute fisheries technician, anchors a cable used to pull a log into place and create better salmon habitat on the Dickey River. *Photo: D. Preston*

"Putting large woody debris back in the Dickey River was one of the things identified in a watershed analysis of the area," said Frank Geyer, Timber Fish, and Wildlife biologist for the Quileute Tribe.

The \$104,000 project was funded by the federal Bureau of Indian Affairs and included a donation of \$6,000 from Rayonier. Rayonier was also key in providing site access, wood for the project, and in obtaining permits for forest practices associated with the project. Other cooperating partners in the project included the Washington Department of Fish and Wildlife and state Department of Ecology, which served in a consulting capacity.

After completion of the logjams, the Quileute Tribe will plant trees on lands adjacent to the river and conduct several years of monitoring for fish presence and use, and evaluate the function of the logjams.

"Habitat projects like this one are vital to restoring the salmon fishery," said Mel Moon, natural resources director for the Quileute Tribe. "Quileute and Rayonier have successfully partnered on similar projects in the past. We have every expectation that the results will be positive for the Dickey as well." — *D. Preston*

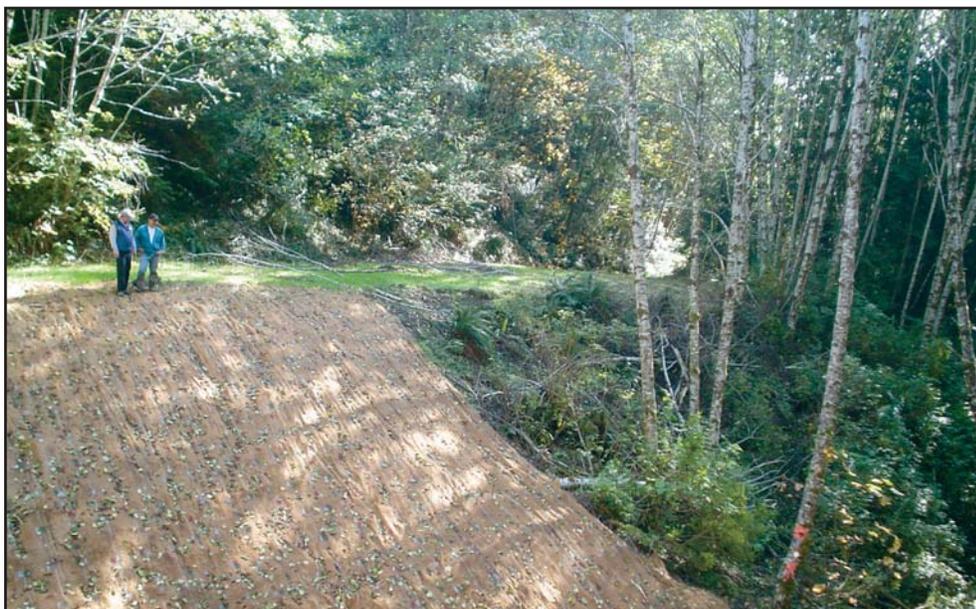
Abandoned Road Helps Restore Habitat

It's not often that removing a road will provide better access, but for fish it does just that.

Salmon and trout in the Clallam River now have more access to spawning and rearing habitat after an old logging road was partially removed and closed in August. The joint project between the Lower Elwha Klallam Tribe and the Washington Department of Natural Resources involved removing landfill, culverts and a bridge along the nearly one-mile stretch of road near Clallam Bay.

"This was an old logging road that had essentially become unnecessary," said Mike McHenry, fisheries habitat manager for the Lower Elwha Klallam Tribe. "In order to improve salmon habitat along a portion of the Clallam River, we decided to take out as much of the road as possible, remove any fish barriers and replant native vegetation."

Two culverts, and the landfill around them, were removed from the road. In their place, large ravines now dissect the road, allowing two unnamed streams to flow into the Clallam River. With better access to the tributaries, salmon and trout can now reach important spawning and



Jim Bolstrom, restoration field manager for the Lower Elwha Klallam Tribe, and Eric Carlsen, Washington Department of Natural Resources, survey an area where part of an old logging road and culvert were removed to protect and restore salmon habitat in the Clallam River. *Photo: D. Friedel*

rearing habitat. Removing the clay landfill reduces the risk of sediment flowing into the river, degrading water quality and possibly harming salmon spawning nests.

A 60-foot bridge that crossed the Clallam River also was removed. The

bridge was dismantled and the large wood beams used to make the span were placed in the river to help create logjams. Those logjams will provide shelter for juvenile fish and slow the stream, creating pools and riffles essential for spawning salmon. The Clallam River supports coho and chum salmon populations, as well as steelhead.

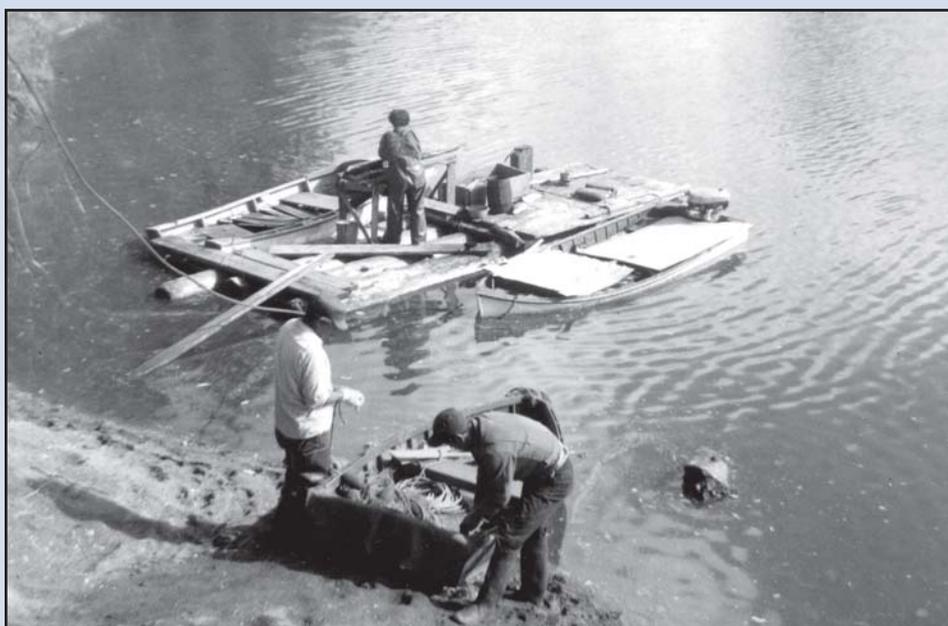
Portions of the road were graded at different slopes, and the entire stretch also was seeded with grass and covered with hay to control erosion.

"The plan is to let nature take over this area and allow what's left of the road to become part of the landscape," said Eric Carlsen, public works engineer for the Washington Department of Natural Resources. "This was a great cooperative project."

"By removing this old road, we have reduced the risk of sediment flowing into the river and further degrading the habitat, and we have limited access to some sensitive areas," McHenry said. "This project will benefit salmon and trout populations in the Clallam. The hope is we can do more cooperative habitat restoration projects in the near future."

— D. Friedel

Generations



Makah tribal members Tye Parker, bottom left, an unidentified fisherman, and Leah Smith-Parker, on the raft, process their catch of salmon on the Hoko River in late 1959 or early 1960. *Photo: Lydia Miller-Parker-Vogel, courtesy Makah Cultural and Research Center*

Some Like It Hot, But Not Salmon

Puyallup Tribe Looks At High Water Temperatures In South Prairie Creek

The Puyallup Tribe of Indians is examining why South Prairie Creek gets too hot for salmon as part of a cooperative effort with state and local governments to solve a host of water quality issues in the creek.

“South Prairie Creek, with all its problems, is the backbone of salmon production in the Puyallup watershed,” said Char Naylor, water quality manager for the Puyallup Tribe. One of the key water quality concerns in the creek is temperature. Over the past three years tribal staff have gathered continuous temperature data in the creek.

Half of all the steelhead and a healthy number of other species of salmon from the Puyallup River watershed return to this small creek each year. “Despite the human impacts that have occurred here, such as farming and logging, South Prairie Creek is home to some of the best habitat for salmon in the watershed,” said Naylor. “That is why it is so important that we ensure every part of this creek’s health is up to par.”

Temperature is the biggest problem faced by salmon growing in South Prairie Creek.

“Adult and juvenile salmon have a hard time living in water that is too hot,” said Naylor. “We know that any water over 70 degrees hurts fish.”

One of the reasons South Prairie Creek gets too hot is that in several places the creek is too wide and shallow. “Too much sediment, likely caused by logging higher in the creek’s watershed, is widening the creek bed,” said Naylor. As sediment fills in the creek, water is displaced, moves outward and creates a wider and shallower streambed.

“When a creek becomes so shallow that salmon can’t find deep pools to hide or cool down in, it causes serious problems,” said Naylor. “Stream temperature influences the entire life cycle of salmon; from when they’re just out of the gravel to when they return to spawn.”

In the future, lack of water could also drive up temperatures in the creek. Like many streams and rivers in western Washington, South Prairie Creek has been over-appropriated. “There have been more paper water rights issued on South Prairie Creek than the actual amount of water flowing in the creek,” she said. “To ensure that there is enough water in the creek, we need to untangle water rights.”

In the short term, planting more trees along the creek will help solve the temperature problem. “More trees along the creek helps both in terms of shading water and protecting the banks from eroding,” said Naylor. “If we want South Prairie Creek to stay one of the best places for salmon in the Puyallup River watershed, we have to improve water quality.” – E. O’Connell



Christen Williamson, Puyallup Tribe fisheries biologist, looks for spawning salmon in South Prairie Creek.

Photo: E. O’Connell

Speedy Salmon

A coho salmon, bright with spawning colors, blasts its way up Voights Creek in the Puyallup River watershed. *Photo: E. O’Connell*



Fish, Residents Benefit From Habitat Project

A tribal salmon recovery project on an important tributary of the Skagit River will re-establish road access for homeowners and improve habitat for thousands of fish.

“Floods can destroy homes for people and for salmon,” said Lorraine Loomis, fisheries manager with the Swinomish Tribe. “This is one example of how tribal projects can combine environmental restoration work with other efforts to benefit everyone in the Skagit Valley, as well as the salmon.”

Historically, Bacon Creek’s natural meanderings provided top-notch habitat for all species of salmon. As the Skagit River tributary flowed this way and that, its waters created side channels that coho and chinook salmon thrived in. Young fish grew successfully in the stream’s eddies and riffles – until a road installed near Bacon Creek restricted its movement, fundamentally changing the creek’s natural function.

For years, landowners along Bacon Creek suffered from floods. Fish saw their property values degraded, too, as the complex wild stream was straightened and its abundant side channels lost. Ultimately, a flood last year severely damaged the existing road – inconveniencing homeowners, but creating an opportunity to help fish.



Devin Smith, SRSC senior restoration ecologist, and Darla Boyer, SRSC restoration ecologist, survey habitat work on Bacon Creek. *Photo: J. Shaw*

‘Rearing habitat is something we’ve lost a lot of in the Skagit basin – 70 to 80 percent according to some estimates.’

*– Devin Smith
Senior Restoration Ecologist
SRSC*

For the salmon to come back, tribal ecology specialists say, so must its habitat. Moving this road that hems in Bacon Creek, the Skagit River System Cooperative (SRSC) reasoned, would repair almost one mile of degraded stream habitat. SRSC, the natural resources arm of the Swinomish and Sauk-Suiattle tribes, is on the verge of completing removal of the existing road and installing a more salmon-friendly one.

“Rearing habitat is something we’ve lost a lot of in the Skagit basin – 70 to 80 percent according to some estimates,” said Devin Smith, senior restoration ecologist with SRSC. “By restoring Bacon Creek’s natural function, we’ll get a significant amount of that rearing habitat back.”

The failing road will be replaced with one farther from the water and on a hill, permitting Bacon Creek to wander as it pleases. Besides creating side channels for fish, allowing Bacon Creek to spread naturally across the flood plain will improve habitat in the stream’s main stem.

Bacon Creek is extremely important for salmon, including Skagit River chinook, listed as “threatened” under the federal Endangered Species Act. Bacon Creek and Illabot Creek are the two most productive tributaries of the Skagit River. The Skagit River is home to one of the largest chinook runs in the U.S.

Moving the road isn’t all the tribal organization is doing for Bacon Creek. Construction crews will remove about 600 feet of rip-rap, large chunks of rock used to stabilize the creek’s main channel. Rock is a temporary fix for flooding, but doesn’t work over the long term, and undermines salmon recovery.

“Rip-rap doesn’t completely eliminate fish habitat, but it does degrade habitat quality,” said Smith. In contrast to natural bank material like fallen trees, large rocks don’t provide young salmon refuge from predators like birds and larger fish. Rip-rap also prevents side channels from forming, limiting development of additional habitat.

Eliminating rip-rap and installing an improved road, says Roger Nichols, a watershed restoration specialist with the U.S. Forest Service, is also more cost-effective than other quick fixes. Installing rip-rap is initially cheaper than road work, he said, but still costs tens of thousands of dollars. A project that costs more initially, like this one, can save significant funds in the future by solving Bacon Creek’s needs in the long run.

This project, funded by a Seattle City Light salmon restoration program, cost \$116,500; installing more rock might have cost \$40,000 – while harming salmon and failing to provide a long-term solution. The Forest Service and SRSC have been working together to develop this project for the past several years, said Nichols, because “we both want the same fundamental result: a naturally functioning flood plain.” – *J. Shaw*

Razor Clam Death Rate Focus Of Joint Project

A five-year cooperative effort by the Quinault Indian Nation (QIN) and Washington Department of Fish and Wildlife will improve estimates of natural razor clam mortality and may lead to higher harvest limits.

Razor clams play a small, but important, role in the QIN economy. The nation is the only Washington tribe that has a commercial razor clam enterprise. Culturally, razor clams have been a part of tribal diets and ceremonies for thousands of years.

“The co-managers have been using the same information to predict clam mortality

for a couple of decades, and it hasn’t made use of our much-improved system for assessing clam populations,” said Joe Schumacker, marine shellfish biologist for QIN. “The old mortality method was based on a way better suited for estimating fish populations. It was a decent method, but clams do not behave like fish and we have a better way of assessing those populations now.”

Today, the tribes and state use a hydraulic method to count clams in the summer and the results are used to set harvest lim-



Quinault Natural Resources staff inject water into a beach to flush razor clams to the surface for study.

its. Water is pumped through a hose in the sand to force all the clams in the sample area to the surface. All of the clams are counted, then returned after their size and population density is recorded.

A question the mortality study could answer is the rate – and at what size – clam populations die off. How populations fare af-



A tribal fisheries technician records clam sizes on a beach near Ocean Shores. Photos: D. Preston

ter harvest will be compared to the part of a control beach that has never been harvested. “We’ll resample for the next four years in the same manner and in the same sites in September,” said Schumacker. “We may see a big die off each year, which might mean we’re in a ‘use them or lose them’ situation with adult clams. But we aren’t making any assumptions. This project will allow us to model mortality more effectively and responsibly.”

– D. Preston

Upper Skagit Tribe Upgrades Habitat

The fates of human beings and the salmon are fundamentally linked together, tribes have always maintained.

The Upper Skagit Tribe is putting those principles into practice with an ambitious salmon habitat improvement project that will benefit people in the community as well. In November, the tribe concluded a comprehensive effort to upgrade fish habitat on the reservation that foreshadows restoring a healthy run of wild coho – and completing a reservation-wide walking corridor where community members can watch those salmon spawn.

“To build healthy communities, we need healthy salmon runs,” said Scott Schuyler, the Upper Skagit Tribe’s natural resources policy coordinator. “Through this project,

we provided immediate benefits to fish – and laid important groundwork for healthier salmon runs and stronger communities in the future.”

The tribe replaced a box culvert at Nuwahaah Lane with a larger model that is superior for fish passage, replanted riparian vegetation on the creek’s banks and implemented a series of storm water runoff controls. Also, tribal staff installed a new water intake system for the tribe’s hatchery, which will filter out fine sediment that threatens chum salmon eggs. This will help more young chum salmon from the tribe’s hatchery be born and move out to the Skagit River.

Fixing the troublesome culvert also enabled the tribe to complete several road

upgrades at the same time, upgrades that were necessary for a planned reservation-wide walking path. The walking corridor has been planned for more than one year.

The reforms will help hatchery fish thrive. Working in conjunction with Skagit County, the Upper Skagit Tribe is also using this project to help re-establish a natural coho run throughout the reservation. Historically, coho spawned here – and, tribal environmental staff believe, will do so again.

Grants from the federal Environmental Protection Agency and the Bureau of Indian Affairs’ road program, along with a \$71,500 federal Hatchery Reform Project grant, funded the project. – J. Shaw

Groundfish

Improved Species Research Critical To Management

Centuries ago, Makah fishermen had a unique understanding of their traditional fishing grounds and knew the populations of groundfish, such as halibut, from years of harvesting in the same area.

“Families fished the same areas year after year. They knew the fluctuations in the populations, and if the fish numbers were healthy, they would allow other tribal members to fish in their area,” said Russ Svec, fishery manager for the Makah Tribe. “Today, it’s a lot more complicated. We have to be involved in the scientific assessments of populations as co-managers of the resource. We continue to push for better area assessments so we can move toward a regional management approach instead of relying on California-and Oregon-heavy research to set our management goals up here,” said Svec.

The Makah Tribe is located in waters rich in halibut and other groundfish species such as black cod. Tribal fishing economies have increasingly relied on these fish as salmon stocks and prices have dropped. The need to know area-specific information about groundfish species has also grown as more fishermen, tribal and non-tribal, harvest the more lucrative fish.

The Pacific Fishery Management Council (PFMC), the entity that manages fisheries in waters 3-200 miles off the West Coast, manages the various groundfish species as a single, coastwide management unit. Harvest levels are set either as a single quota



Tribal and federal groundfish biologists record species of groundfish captured during a survey last summer.

Photo: National Marine Fisheries Service

or as two regional quotas. This has led to disproportionate landing trends along the Pacific coast. Under this management approach, harvest is not directly related to the abundance of targeted species in a particular area. Consequently, harvest off the California coast can lead to increased harvest restrictions off Washington.

The existing data gaps result in the need for restrictive fisheries coastwide, regardless of regional differences in the health and abundance of some rockfish stocks.

Roger Bain, a Makah tribal member who has fished for more than 20 years, believes in the value of moving toward regional fish

management. “For instance, we have more yelloweye up here (a rockfish species of concern) than they do in California, and it’s found in shallower water,” said Bain. “You can’t accommodate those area differences in the current management scheme.”

Bain’s expert knowledge was key to reducing bycatch of yelloweye during tribal halibut fisheries by scheduling fisheries earlier in the spring. “I think the PFMC is doing better at getting specific information about each of these species. Now we need more specific area information about canary and dark blotch rockfish,” said Bain.

This year, as in past years, groundfish biologists from Makah and the Northwest Indian Fisheries Commission helped National Marine Fisheries Service complete two concurrent surveys for groundfish over 19 days. The tribal biologists worked the survey beginning in Newport, Ore., and finishing in Neah Bay. It is one step in the direction of obtaining better data for the different regions, tribal fisheries officials said. The tribes would also like to see better surveys conducted in groundfish habitat, which is rocky. Much of the current surveys for groundfish occur in areas with smooth bottoms, which is not the habitat they prefer.

“This information is critical for us,” said Svec. “Decisions made about the resource have impacts that ripple through our community here. It’s very close-knit. Fishing changes impact our village economically, socially, and culturally.

“We’re not going anywhere. We aren’t as mobile as the non-treaty fleet. They can move on if an area becomes depleted. This is our home. We are the natural stewards. We have to preserve the ecosystem here.”

— D. Preston

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