

Northwest Indian Fisheries Commission **NEWS**



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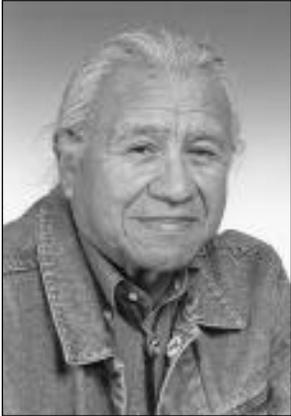


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Right Track, Wrong Direction

**By Billy Frank Jr.
NWIFC Chairman**



I've spoken about the need for us all to get back on track in natural resource management. A lot of the legislators in Olympia must have agreed, because they have hopped out of the train, put their shoulders to the wheel and begun pushing it at full steam. Unfortunately, they have been pushing the wrong direction. The water-related bills that many of them have backed were pushed at the expense of the public trust, and in deference to treaty-pro-

protected rights and the federal trust responsibility to the tribes.

These bills jeopardize the flow of water through rivers and streams without regard to the needs of fish and wildlife. They also would legalize unlawful water use at the expense of those who have followed the legal process and would purposely complicate the job that must be done by the Department of Ecology to protect water resources. Further, they would call for the state to abandon its legitimate role in government in an effort to put it into the hands of special interests at the local level. Failing to acknowledge treaty-protected rights and the federal trust responsibility is very short-sighted and should be enough, in itself, to concern all responsible citizens of the state.

Please don't think the tribes always stand completely at oppo-

site ends of the political spectrum. We understand the need to water crops and quench the thirsts of the cities. We have no argument with these objectives. But, in the process, we want protection of ample, clean water in the streams and rivers, so fish and wildlife can have a fighting chance to survive.

A few weeks ago, backers of the water legislation issued a news release in an effort to add more momentum to their backward moving train. In it, they said there is no water shortage in this state. I admit that it is hard to visualize a water shortage in the wake of our winter floods, but there is a water shortage in this state and it worries me when state officials think otherwise.

When rivers and streams run low, or even dry, there is an impact on fish and wildlife.

The water and the salmon, as well as deer, elk, bear, and eagles, are all public resources that are supposed to be protected by these elected officials.

The news release also stated that there is a water management problem in the state. This may be true. But abandoning responsibilities and pressing to get more water to big business at the expense of the overall public is no way to solve such a problem. In fact, solutions to water management problems in this state were well under way with the Chelan Agreement and other collaborative approaches when the unprecedented assault on our water resources that exists today drove those efforts right off the track. Solution-based management is the train we all need to get behind.

On The Cover: Crab design by Peter Dunthorne. In the wake of federal court Judge Edward Rafeedie's ruling re-establishing western Washington treaty tribes' right to harvest shellfish throughout their usual and accustomed harvest areas, species such as Dungeness crab have assumed an important role in fulfilling tribal economic needs.

Northwest Indian Fisheries Commission News

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Shellfish Case Appeals Begin

It's been more than two years since federal judge Edward Rafeedie made his historic ruling re-establishing western Washington treaty tribes' right to harvest shellfish throughout their usual and accustomed harvest areas. In that time, many tribes have established successful commercial, ceremonial and subsistence fisheries for geoduck, crab, sea urchin, and other shellfish.

But the tribes, the State of Washington, commercial shellfish growers and private tidelands owners are preparing to head back into federal court to begin the lengthy process of appealing various portions of Judge Rafeedie's December 1994 ruling. The federal Court of Appeals is scheduled to begin hearing oral arguments the week of May 5 in Seattle.

Some parties' appeals to Judge Rafeedie's decision were actually filed as early as two years ago, and every party to the case found something in the judge's ruling to appeal.

Coinciding with the court appeals process, a court-appointed mediator is preparing his final proposal after going through several rounds of gathering settlement proposals from each party and distributing them to the groups.

The parties must unanimously approve the mediator's proposal for it to become law, and that's not likely to happen, said attorney Phil Katzen of Columbia Legal Services in Seattle. Katzen and Mason Morisset are the tribes' co-lead attorneys.

The tribes involved in the shellfish case are: Port Gamble S'Klallam, Lower Elwha Klallam, Jamestown S'Klallam, Lummi, Makah, Muckleshoot, Nisqually, Nooksack, Puyallup, Sauk-Suiattle, Skokomish, Squaxin Island, Suquamish, Stillaguamish, Swinomish, Upper Skagit, Tulalip, Quileute, Quinault and Hoh.

Meanwhile, implementation of the judge's ruling has continued.

Point No Point Treaty tribes recently signed a cooperative agreement with a Hood Canal tidelands owner to manage shell-



Tulalip shellfish biologist Kelly Toy, left, and shellfish technician Jerry Bentler, gathered information on Hat Island shellfish populations last summer. *Photo: L. Harris*

fish on his property. The agreement provides guidelines for access, harvest and enhancement on the tidelands.

Several less friendly Hat Island property owners watched recently as members of the Tulalip Tribes, led by Chairman Stan Jones Sr., successfully exercised their treaty right to dig clams on the privately owned island. The dig took place the evening of Feb. 7.

"We accomplished what we went over there to do — to exercise our treaty rights," said Francis Sheldon, Tulalip Fisheries and Wildlife Executive Director, "and we left word that we would return with our people to exercise our treaty rights."

Five buckets of clams were harvested, which were donated to Tulalip elder and ceremonial programs. It marked the first subsistence and ceremonial dig on the island since 1989 for the Tulalips, whose cultural and spiritual bond with the shellfishing site spans centuries.

Other than a few verbal attacks and the pulling of stakes designating dig sites, there were no major confrontations between island residents and tribal members and staff.

Some island residents had threatened a physical confrontation after the tribe announced its intention to conduct a ceremonial harvest last summer. The threats prompted the tribe to twice postpone the Hat Island harvest. — *D. Williams & L. Harris*

Larger Quinault Crab Fleet Leads To More Harvest

Quinault tribal crab fishermen have invested heavily in new boats and equipment in order to increase harvests this year, and that risk has paid off in larger catches. Until recently, the Quinault Nation did not have enough boats to put a dent in the crab harvest, estimated at several million pounds available along the coast alone.

Last year just eight Quinault boats captured a total season's catch of 200,000 pounds, while this year at mid-season 19 tribal boats had harvested 285,000 pounds from the combined Grays Harbor and ocean areas. Quinault boats, with a cooperative harvest agreement negotiated with the state Department of Fish and Wildlife, fish for crab in an exclusive 34-square-mile special management area between Copalis Head and Ocean Shores.

According to Quinault shellfish biologist Dave Molenaar, tribal effort was strong until mid-December when winter storms forced most boats back into the harbor. "Crab landings tapered off with bad weather, but we expect the boats to be back out there for fairly steady effort until the black cod season opens in the spring," he said.

"This season continues until Sept. 15, 1997, with expectations of a total catch over 400,000 pounds," said Molenaar.

Currently, there are 253 non-treaty crab fishing boats registered in Washington with an estimated capacity to fish 100,000 pots, according to Molenaar. "So competition for the 8 or 9 million pounds of estimated crab harvest potential will be real intense — it already is," he said. — *K. Boyesen*

Students Learn What's 'Bugging' Streams

Calf-deep in a remote section of Roaring Creek, Andrew Berger is scraping sand and small pebbles from the stream bottom into a long-handled filter net.

After emptying the net's contents into a pan, the 19-year-old sifts through the gravel with a pair of tweezers. He's searching for macroinvertebrates, or bugs. A mayfly here, a stonefly there, he deposits the bugs into small laboratory-bound containers.

"It makes us feel good to know our information will be used, but it also feels bad to be out there seeing what's happening to the environment."

— Andrew Berger

Berger, a Bellingham-born Chippewa, is enrolled in an Aquatic Insects class at Northwest Indian College on the Lummi Nation Reservation.

But he and three other students are learning more than simply which bugs are found in what streams. They are learning how human-caused disturbances affect streams, and how the presence of insects can provide insight into the condition of a watershed. And, perhaps most importantly, they are learning how their efforts in sci-

ence can make a difference.

"It's just a great feeling of helping the environment," Berger said.

The information the students are gathering with instructor Nancy Gible will be used as baseline data for the Lummi Nation's Natural Resources Department. It will help the tribe find out how its habitat restoration projects are working and how to best target future projects.

Berger says the real education is seeing first-hand how logging and development impact streams and the creatures that depend on a healthy watershed.

"It makes us feel good to know our information will

be used, but it also feels bad to be out there seeing what's happening to the environment," he said.

Roaring Creek and adjoining Deer Creek carve through timberland in north Skagit County before feeding into the Nooksack River's South Fork. Much of the heavily-logged area was formed from centuries of



Charlotte Clausing, a Chippewa tribal member, empties a bug net as Nancy Gible, Aquatic Insects instructor at Northwest Indian College, helps out. Photo: L. Harris

glacial deposition and its soils are unstable. The Lummi Nation began bank and slope stabilization projects in 1994 to stem sediment problems caused by an earlier major landslide. Deer and Roaring creeks were impacted again by later landslides. That's where the insect data comes into play.

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New Makah Marina Means Safety, Opportunity For Tribe

Makah tribal fishermen will soon have safer, permanent moorage provided by the completion in May of a new \$8 million marina. The development concludes a 32-year effort by the Makah Indian Nation to provide a modern facility capable of supporting the fishing fleet and stimulating new economic opportunity.

The project, which has taken two years to build, includes moorage for 190 vessels, parking, and restrooms with showers. The community is expected to grow from 1,500 to 2,000 because of new businesses associated with the improvements.

"We have a lot of friends with trawlers, commercial fishing boats and luxury cruisers interested in tying up here. It'll help our economy by creating more jobs," said Makah Tribal Council Chairman Hubert Markishtum.

Key to the project was a \$4 million, 1,700-foot-long breakwater by the U.S. Army Corps of Engineers. Grants and funds received from 11 state, federal and tribal agencies covered the remaining

\$3.5 million needed, said Bob Buckingham, Makah harbor development manager.

An art and crafts store and Native design shop have been opened in preparation for increased traffic generated by the project. Local construction companies, which were having a hard time getting business, are seeing an increase with the marina's arrival.

"This will increase tourism and give tour boat operators a destination," said Donna Wilkie, tribal land and business planner.

Makah Natural Resources Director Dave Sones said the marina will allow the tribe to take better advantage of marine resources caught off the coast with additional facilities to process and market the catch. There may be future opportunity for whiting, crab or other species in other markets.

"This gives us the potential for a broader range of fleet services involved in fisheries and marine-based business," Sones said.

— K. Boysen

Tribes, State Relocate Elk

The problems of too many elk in the farmlands of the Elma Valley, and too few elk in the remote South Fork Skokomish River were solved when two dozen animals were moved from one region to the other.

The move was organized by the Point No Point Treaty Council (PNPTC) and Washington Department of Fish and Wildlife (WDFW).

State officials were receiving calls from property owners in the small Grays Harbor community of increasing crop and fence damage from the large herd. The Elma herd had about 160 animals before the move, and was expected to have nearly 200 after calving season this spring.

Despite hunting closures, the Skokomish herd has dwindled to fewer than 20 animals – less than one-quarter its size two decades ago. Only one calf was born in 1996. Causes for the decline include poaching, winter kill, and cougar and bear kills.

Two helicopters were used in the relocation project. One carried a WDFW biologist with a rifle loaded with anesthetic-packed darts, and herded elk into open areas where they could be darted.

Five darted elk inexplicably ran into a rain-soaked field with deep standing water. As the powerful anesthetic took effect, the animals collapsed in the water. Despite immediate rescue efforts from ground crews and the state biologist who darted



Wildlife biologist Sally Nickelson looks after a drugged elk. Photos: D. Williams

the elk and jumped into chest-deep water after the animals, four drowned.

“The deaths were a freak occurrence,” said Sally Nickelson, PNPTC wildlife program director and airlift organizer. “The ground crews did some really heroic things to try to save those animals. They did manage to save one.”

A second helicopter, working in unison with ground crews who rushed to each drugged animal and loaded it onto a special platform, ferried the drugged elk to a landing site where they received a thorough check from volunteers under the supervision of a WDFW veterinarian.

An ear tag was placed on each animal, and 12 elk had radio transmitting collars fitted around their necks. The collars don't interfere with the animals' movements and give biologists information about the herd's migration patterns, habitat uses and mortality rates.

Genny Rogers, a Skokomish tribal member and a member of the tribe's hunting committee, was one of dozens of volunteers participating. Her husband, two sons, a cousin, and family friends also took part in the move. Her job was to monitor each anesthetized elk's temperature with a rectal thermometer, a task none of the other volunteers seemed eager to do, but something Rogers knew needed to be done. High temperatures are lethal to anesthetized elk, and several volunteers had to pour cool water on the animals that Rogers found to be overheating.

“It was an excellent experience, and I'm tickled pink to have been involved,” Rogers said.

Nickelson and PNPTC wildlife biologist Paul Anderson will ground track the herd weekly.

A good management plan, including clamping down on illegal hunting, and keeping the watershed closed to legal hunting for at least three years, could ensure the Skokomish herd doesn't go extinct, Nickelson said.

“When we do open up this area again to hunting, it will be on a permit only basis with a limited number of permits each year,” she said.

About \$11,000, or 70 percent, of the relocation project's cost was borne by PNPTC. WDFW paid volunteer expenses, plus staff time. The Rocky Mountain Elk Foundation paid for the radio transmitting collars and supplies to ensure safe travel for the elk. — D. Williams



A transplanted elk gets its first look at the Skokomish area.

ESA:

Are Tribal Fisheries At Risk From Weak Stocks And A Strong Law?

For more than two decades, the Endangered Species Act (ESA) has been the federal government's most powerful tool for preserving animal and plant life that otherwise might have vanished forever. Signed into law by President Nixon in 1973, the ESA is now up for reauthorization. Treaty Indian tribes are working with the Clinton Administration to ensure the Act remains strong but doesn't trample treaty rights.

There are currently four salmon populations in the Pacific Northwest with ESA protection: Snake River sockeye are listed as endangered, while Snake River spring/summer and fall chinook are listed as threatened. Cutthroat trout from southern Oregon's Umpqua River are also listed.

That number could grow significantly, as the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service are reviewing the status of all salmonids along the West Coast. According to preliminary reports, the most likely candidates for new listings in western Washington are Hood Canal summer chum, Puget Sound chinook, Lake Ozette sockeye, and southwest Washington coho, with other potential candidates coming from the Oregon coast and the Columbia River system.

There is concern among tribal leaders that the ESA's power to protect a species might impede the treaty-protected rights of the tribes to harvest fish. Some treaty Indian sockeye salmon fisheries have been altered in recent years to avoid harming the marbled murrelet, a federally protected seabird.

How much of the burden of preserving and restoring weak species should the tribes have to shoulder?

"The tribes should be the last to suffer reductions to their treaty-protected harvests," said Billy Frank Jr., chairman of the Northwest Indian Fisheries Commission. "We did not build the dams that block thousands of miles of spawning grounds, or clearcut the watersheds that have ruined the salmon streams. We should not be forced to take on a disproportionate share of the burden of bringing these stocks back to health."

Tribes Helping Develop A National ESA Policy

Tribal leaders from across the United States came together in December 1996 with federal representatives to develop a national policy that would provide ground rules for how a re-authorized ESA would interact with treaty-reserved rights.

The group developed a draft of a secretarial order, a policy guideline, that it hopes will be adopted by the Clinton Administration. The order calls for a government-to-government relationship between federal agencies and the tribes that would:



Protecting the endangered marbled murrelet has meant reshaping both treaty and non-treaty fisheries.
Photos: D. Williams

- Promote healthy ecosystems;
- Recognize the tribes as the appropriate entity to manage Indian lands and trust resources;
- Support tribal measures that preclude the need for conservation restrictions; and
- Be sensitive to Indian culture, religion and spirituality.

Learning A Lesson From The Columbia River Tribes' Woes

While the threat of ESA listings for salmon stocks loom for western Washington tribes, it is a fact of life for tribes living along the Columbia River where dams, water withdrawals and habitat loss have reduced historic salmon populations to mere fractions of their former numbers.

Dozens of dams were built on the Columbia/Snake river system in this century, destroying fish habitat and blocking access to countless miles of spawning habitat. Hatcheries constructed as mitigation for some dams can only replace some of the lost fish, and the tribes who have fished the Columbia River for thousands of years have seen their fish slowly taken away – first by greedy European settlers with large fishing fleets, then by the dams, and now by the ESA.

"ESA means the tribes are faced with another layer of work and bureaucracy to deal with," said Laurie Jordan, tribal policy assistant for the Columbia River Inter-Tribal Fish Commission (CRITFC). "This stretches resources and makes it hard to do a good job."

Jordan called ESA listings for salmon stocks "a huge threat to the tribes' sovereignty and their treaty rights. These are direct attacks on their fisheries."

While the threat of greatly reduced or eliminated fisheries lies still in the future for western Washington tribes, those threats are reality for tribes on the Columbia.



Larry Telles, assistant manager of the Quilcene National Fish Hatchery, cradles a Hood Canal summer chum salmon. Fisheries managers have developed a successful captive broodstock recovery program for the fish.

"The tribes stopped fishing on upriver summer chinook in 1965 for conservation, and haven't had a fishery on them since," Jordan said. "Not since 1977 have we had a commercial spring chinook fishery. That's the most valuable fishery in the river."

Subsistence fisheries for spring chinook, which is the most culturally significant fish to the tribes, are all but a memory, too, Jordan said. "The last couple of years, the tribes have had to go to hatcheries to get fish for ceremonies."

Coho fisheries have met a similar fate, with the tribes' harvest down to about 20,000 hatchery fish. Jordan said the tribes made a deal many years ago to harvest a larger share of returning sockeye salmon, which carry a high commercial value, in exchange for reducing coho harvests, which are a favored target of sport fishermen. Soon after, sockeye stocks crashed.

Fisheries from Idaho to Alaska have been cut to reduce harvests. Hydropower and irrigation operations have been restricted to further improve the chance of stock recoveries. Hatchery programs that may dilute wild stock gene pools are being closely eyed by federal agencies. The current annual cost to fund programs for protecting anadromous fish in the Columbia/Snake river basin is approximately \$300 million, according to the Washington Department of Fish and Wildlife (WDFW).

How To Avoid ESA Listings

Franks said western Washington treaty tribes are prepared to meet the ESA challenge. A number of dams on rivers emptying into Puget Sound are up for federal re-licensing, and talks could lead to changes in dam operations to help bring the fish back, he said. Recent federal ESA actions for other species might clear the way for a better working solution with regard to salmon listings.

"President Clinton's Forest Plan to protect the spotted owl on federal lands is an example of how we can work cooperatively

with landowners to protect and restore habitat," he said. "It's time to reach out to the residents of all the different watersheds and encourage people to be advocates for salmon and salmon habitat."

Several steps have been taken to strengthen weak stocks and avoid ESA listings. Six years ago, WDFW and the tribes developed a Wild Stock Restoration Initiative. The first step was to make an inventory of all salmonid stocks and their health. Data collection took several years, but the Salmon and Steelhead Stock Inventory is valuable information for restoration efforts.

Next is the Salmon and Steelhead Habitat Inventory Assessment Project (SSHIAP). Begun in 1995, SSHIAP will give fisheries managers a complete assessment of the effects of habitat loss and degradation in crucial watersheds on the health of wild stocks.

At a 1993 cooperative management meeting, the tribes and state proposed a process for developing a Comprehensive Coho Management Plan to maintain and restore wild stocks "in a manner that reflects the region's fisheries objectives, production constraints, and production opportunities."

The group proposed to change the way it managed coho salmon by moving away from using a fixed number as a harvest target and toward a percentage of the overall run size, known as an exploitation rate, in concert with freshwater habitat improvements. This approach has been used for Hood Canal coho management for the past two years, and fisheries managers are working on applying the process throughout western Washington.

The co-managers are working on a Wild Salmonid Policy which will provide for some overall guidance and consistency for man-

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Tribal Fishers Still Facing Harassment

Some western Washington tribal members are still subjected to harassment for trying to harvest salmon and steelhead – a right won back by the tribes more than two decades ago.

Whether it's a stray insult or an obscene remark shouted from a passing pickup truck, or vandalism, the theft of fish or fishing gear, a rise in such incidents has led to many Lower Elwha Klallam tribal fishermen giving up fishing on remote streams along the North Olympic Peninsula.

Gillnets have been shredded with knives, or cut from their lines and piled up on the riverbank. Bales of hay, logs, and other debris has been dumped into fishing nets. Some non-Indians have even stolen fish caught in a tribal net, then reset the net and returned for more fish.

Tribal fishermen once fished for steelhead in several small rivers in Clallam County, including the Lyre and Clallam rivers and Morse Creek, said Pat Crain, fisheries manager for the tribe.

"These rivers were traditionally fished by the tribes, and now they aren't. They've been virtually taken over by the non-Indian fishermen, which results in a misallocation of the resource on those streams," Crain said.

Mel Elofson, a Lower Elwha Klallam tribal member, said he quit steelhead fishing on remote Peninsula streams three years ago when steelhead prices dropped and incidences of vandalism increased. To Elofson, it just wasn't worth the hassle any more.

"Vandalism has always been there, mainly in steelhead (fishery) openings," he said. "Once in a while you get a guy who gets real brave and decides he's going to do the steelhead

as well as the amount of time it takes to repair such gear, was almost too much for Serena Antioquia, a Lower Elwha Klallam tribal member, and one of the first tribal members to fish the smaller "outer" Olympic Peninsula streams after the Boldt Decision.

'I remember nets getting cut up and a whole bunch of sport fishermen just standing there watching us.'

— Serena Antioquia

"The Lyre River was the worst, but Morse Creek was bad, too," said Antioquia. "I remember nets getting cut up and a whole bunch of sport fishermen just standing there watching us. The next time we went out to that river to fish, we brought rifles. The county cops, the Washington State Patrol, and our own cops were all out there then. I remember one of the cops asked us why we had our guns with us, and we just said it was to kill snakes."

Antioquia, stopped fishing about six years ago, and is disappointed that many smaller Olympic Peninsula river systems, though open to tribal fishing, aren't being fished.

"We need to keep up our access rights," she said. "People are eroding our rights. Back then, you had to know the Boldt Decision, and you had to know the treaty, and you had to be able to tell people about the law."

Crain said it is a Class C felony for non-Indians to participate in tribal fisheries, but prosecutors would have to prove that the nets were being reset.

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"They used to leave our nets alone during the daytime and vandalize them at night."

— Mel Elofson

sportfishermen a favor by vandalizing an Indian's net. It's usually done by people not from the area, but from over in Seattle or down south – guys who are really into steelhead fishing.

"They used to leave our nets alone during the daytime and vandalize them at night. Then a couple guys got brave enough to start vandalizing them in the daytime, too," said Elofson, now a tribal hatchery technician. "They would cut up the nets and dump the fish. Some guys would steal the fish and reset the nets. That went on for a couple years."

Elofson said he and other fishers often camped next to the river to protect their fishing gear.

One night while sitting in his car next to his fishing spot, Elofson watched a vandal hack his gillnet to shreds. He chose to not retaliate. "I'm not going to stoop to their level," he said.

But the anger of watching a total stranger damage fishing gear,



New Device For Low-Cost Fish Enhancement

The Lower Elwha Klallam Tribe has an affordable new tool that could help them rebuild salmon runs in the Elwha River.

A test of a newly designed salmon egg box – an egg incubator that’s buried in a stream bottom alongside wild salmon egg nests – is under way in Boston Creek. The stream, which received a major habitat restoration overhaul in 1996, was once the main channel of the Elwha River.

Depending on water temperatures, the eggs incubate for one to two weeks after going into the egg boxes. Hatchlings swim from the trays into gravel to absorb their yolk sack before entering free-flowing water. The hatchery crew retrieves the boxes once the fry have migrated.

“We’re testing this outplanting method to look at its applicability for rebuilding coho and other stocks in the upper Elwha



Rick Blair, left, and Mel Elofson install a chum egg incubator in Boston Creek. Photo: D. Williams

River in a dam removal scenario,” said Mike McHenry, fisheries biologist for the Lower Elwha Klallam Tribe. Two dams, built without fish passages, are proposed to be torn down as part of a restoration plan.

“I think egg boxes would work well up there because the fry would be entering an environment with no adult salmon

predators,” McHenry said.

The first step in outplanting is likely the most important: Finding the right place to bury the egg boxes. Biologists and hatchery technicians have to be careful to avoid damaging wild salmon nests, called “redds.”

Boxes must be buried in the same clean gravel that salmon choose for a redd, with stones ranging in size from marbles to baseballs.

Adults from this outplanting will return in another three to five years, and spawn in the same stretch.

The eggs came from adult chum at the Elwha hatchery where they were fertilized and incubated for three weeks.

“This outplanting method is simple and cost-effective,” McHenry said. “At about \$35 for each five-panel unit, they’re cheap and they can be used over and over.”

—D. Williams

Tribes, State Improve Skagit Spawning Estimate Methods

Improved methods of determining Skagit River coho salmon escapement show fish managers have historically underestimated how many are returning to spawn.

For the past decade, Skagit River tribes and Washington Department of Fish and Wildlife have often used the status of Skagit River wild coho as a key factor in determining fishing levels in the ocean and Puget Sound. Because escapement estimates play a crucial role in assessing this stock’s status, the state and tribes have conducted research aimed at improving spawning escapement estimates.

Fish managers suspected historical escapement estimates might be low.

Indeed, new research shows actual escapement as much as three times higher than previously-published estimates. The studies have prompted the state and tribes to revise escapement estimates considerably higher, which means the run-size numbers used this year, and in future years, will also be scaled higher.

The revisions don’t mean Skagit coho will be exploited more heavily. Marine survival of Skagit coho and other Puget Sound stocks is now much lower than it was in the 1980s. Because exploitation rates must be reduced to maintain ideal salmon production, state and tribal fish managers will carefully examine proposed 1997 fisheries to ensure that harvest rates do not exceed the allowable level.

The first indication of problems appeared in 1984, when the Skagit System Cooperative, a consortium of the Swinomish, Upper Skagit and Sauk-Suiattle tribes, discovered the incidence of hatchery fish in a test fishery (as shown by coded-wire tags) was lower than the estimated percentage of hatchery fish in the total spawning escapement. This pointed to the possibility of wild escapement underestimation.

“This shows how research and test fisheries can directly benefit sport and commercial fisheries by providing better management information,” said Lorraine Loomis, fisheries director for the Swinomish Tribe.

'Bugging' Streams

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"I think macroinvertebrates and the input from riparian (stream-side) vegetation to the food chain have been overlooked, so it's important we start looking into that," said Dan Neff, Lummi fisheries biologist. "By characterizing the species composition, you can get an indication on how healthy the watershed is. If you have a lot of species with few individuals it's a good sign; whereas, if you have only a few species but a lot of individuals, that means a lot of species aren't surviving there."

The tribe is also interested in a thesis that Gible, a graduate student from Western Washington University's Huxley College of Environmental Studies, is working toward. Gible is comparing the differences between Roaring and Deer creeks with nearby Plumbago Creek, a similar stream which hasn't experienced a serious debris slide in more than 10 years.

"We want to compare the sites based on different degrees of disturbance," Gible said.

Project funding comes from the All Nations Alliance for Minority Participation at Northwest Indian College, and the Centennial Clean Water Fund. Students earn academic credit and are paid for field research. — *L. Harris*

Harassment

Continued From Page 8

He said treaty fisheries enforcement officers conduct stakeouts on various rivers to look for illegal fishing activity as well as vandalism, but trying to catch vandals in remote areas is difficult.

Tribal enforcement officers say catching vandals is a high priority. To that end, they have increased patrols in some regions and have set up fishing nets they watch specifically for vandalism.

— *D. Williams*

ESA

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aging and recovering wild salmon and steelhead stocks through potential harvest, hatchery production and habitat protection strategies.

A 1995 initiative, "For the Sake of the Salmon," was developed and embraced by tribal, federal, state and local governments, plus user groups, industry, environmental organizations and the public. Participants in this coastwide strategy to ensure the long-term health of the region's natural resources will work to protect healthy habi-

tat, develop watershed partnerships to improve degraded habitat, and improve government efficiency in restoration efforts.

The co-managers aren't waiting for all of the reports to come in before taking steps to save some wild stocks. A four-year-old tribal/state/federal effort to rebuild Hood Canal wild summer chum salmon resulted in near-record returns in 1996. White River spring chinook salmon stocks have been strengthened, thanks to a tribal/state effort. Programs are in place to re-

build chinook stocks on the Nooksack, Tucannon, and Dungeness rivers.

"There is no doubt that the only way we will ever be successful is through a cooperative effort," said Frank.

— *D. Williams*



Scaling Dam's Effects

Slim Simpson, Washington Department of Fish and Wildlife fisheries technician, plucks a scale from a Green River steelhead while Warren KingGeorge, Muckleshoot tribal fisheries technician, records data on the fish. Their work is part of a three-year study to determine how steelhead migrating downstream are affected by Howard Hanson Dam. The study is a joint effort of the Muckleshoot Tribe, Washington Department of Fish and Wildlife, Trout Unlimited, Tacoma Public Utilities, and the U.S. Army Corps of Engineers. *Photo: T. Meyer*

Nooksack Tribe Rehabilitates Anderson Creek

When Hubert Williams was a boy Anderson Creek was full of salmon, not garbage. Things changed in the last two decades.

A former Nooksack Tribal chairman, Williams, 61, is now water programs director for the tribe. He remembers being heart-sick upon seeing the extent of garbage dumping on the Nooksack River tributary.

“It was disheartening,” Williams said. “There was garbage — tires and batteries — and some of it was thrown right up to and in the creek. It was really a shame. There was no way to stop people from dumping there.”

As Whatcom County grew, the creek suffered from sedimentation from development and logging. Water quality was also affected by contaminants from an abandoned rendering plant. In 1993, the state Department of Ecology listed the creek as threatened and impaired under the federal Clean Water Act.

Perhaps the most tragic result of Anderson Creek’s water quality problems is some salmon and steelhead runs simply quit using the tributary for spawning and rearing habitat.

“At one time Anderson Creek was a good salmon producer with nice healthy runs of chum, chinook, coho, cutthroat trout and steelhead,” said Nooksack harvest manager Gary MacWilliams, noting that only coho and chum now use the stream.

The Nooksack Tribe worked with the county, Indian Health Service and the Nooksack Salmon Enhancement Team several years ago to clean the stream. More than 40 dump truck loads of garbage were hauled to the county landfill free of charge. The area was fenced and gated to prevent further dumping.

But the creek’s remaining water quality problems are less visible than garbage. The tribe is working on the second stage of a three-phase project to restore the creek and its fish runs. The creek’s water quality is being monitored so the tribe can best target rehabilitation efforts in specific problem areas.

Nooksack water resources planner Chris Woodward said



Nooksack tribal fisheries technicians George Swanaset Jr. and Mike Williams (in raincoat) monitor water quality on Anderson Creek. *Photo: L. Harris*

Nooksack staff this year will collect temperature, sediment and flow data, and document bank erosion sites and stream flow problems. “This will show us the significant areas we need to work on,” she said. — *L. Harris*

Quinault Watershed Analysis: From Glacier To Sea

The terrain and life zones that a drop of Quinault glacier water flows through displays the range of concerns the Quinault Indian Nation has developed in a project charting the watershed’s health.

The Quinault Department of Natural Resources has outlined an ecosystem management plan incorporating watershed analysis of the Quinault River.

“Of critical importance to the Quinaults is reduced returns of Lake Quinault sockeye salmon. We are trying to determine if this is just a cyclical decline or if there are habitat factors in the watershed that are affecting lower sockeye numbers,” said Mark Mobbs, Quinault Timber/Fish/Wildlife program manager.

Watershed analysis is a biological and physical assessment of the condition of selected natural resources in a watershed.

The information forms a database that helps resource managers decide how to improve land management activities.

The project is a federal interagency effort with Olympic National Forest, Bureau of Indian Affairs, U.S. Geological Survey, U.S. Fish and Wildlife Service, the Environmental Protection Agency, Olympic National Park, and the tribe. Methodology for the project will be based upon the federal model that separates the study into modules to identify current and historical conditions within the watershed.

According to Mobbs, the modules include geology, hydrology, vegetation, riparian, river and stream channel, human and cultural uses, water quality, fish, and wildlife. Current and historical conditions are determined for each module, and human activities that have influenced these changes are described, he said.

— *K. Boysen*

Agreement Will Boost Skagit Steelhead Production

Swap Will Improve Program Efficiency, Augment Egg Supply

Steelhead enhancement on the Skagit River should get a nice boost from a new cooperative arrangement between Skagit System Cooperative and the state Department of Fish and Wildlife.

"We've always worked closely with the Marblemount Hatchery, but this really steps up our cooperation," said Scott Schuyler, Upper Skagit Tribal Hatchery manager.

The Upper Skagit Hatchery will ship about 150,000 fertilized steelhead eggs to the state's Marblemount Hatchery this year in exchange for up to 30,000 yearling smolts (juvenile fish) in the spring of 1998. Details on specific numbers in the agreement are still being hashed out.

"It will work out great in years when our egg take is pretty low," said Steve Stout, Marblemount hatchery manager. "In exchange, we'll give them the yearlings they need for their program."

In the past, Skagit System Cooperative — the fisheries management consortium of the Swinomish, Upper Skagit and Sauk-Suiattle tribes — has raised its own steelhead. As many as 75,000 steelhead per year were reared at Lake Shannon for release into Baker Lake. But rearing steelhead into the smolt stage is labor intensive and high summertime temperatures at Lake Shannon can put the fish at risk.

Under the new arrangement, the efficiency of SSC's steelhead program will improve while also augmenting the state's steelhead egg supply. The state shifted the rearing of its Skagit steelhead production to the Marblemount Hatchery from out-of-basin hatcheries in 1995.

"As long as, on the local level, we have the same relationship with Skagit System Cooperative we have now, cooperative projects like this are just going to do nothing but grow," Stout said. — *L. Harris*



Cliff Edwards, Skagit System Cooperative fisheries technician, sorts through steelhead eggs the Upper Skagit Hatchery will ship to the state's Marblemount Hatchery this year. *Photo: L. Harris*

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