

Northwest Indian Fisheries Commission

NEWS



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Inside:

- **Shellfish Case Update**
- **Global Geoducks**
- **Tribes Rescue Elk Surveys**
- **Happy Chinook Returns**
- **Habitat Project Breeds Hope**
- **Study's Goal: Safer Shellfish**

Words Must Be Backed By Action

**By Billy Frank, Jr.,
NWIFC Chairman**

If salmon are to be restored in this state, it will require many efforts. Most of all, it will require a team effort. I've said it before and I'll say it again: The state and the tribes must learn to work together. Like people paddling a canoe, it only makes sense for us to paddle in the same direction.



We hope this is a message that Jeffrey Koenings, the newly appointed director of the Washington Department of Fish and Wildlife, will take to heart. It is critically important for the director of WDFW to be aware of the fact that treaty Indian tribes are co-managers of the salmon resource in this state. It is important for him to understand that decisions regarding the salmon resource must be made on a government-to-government basis, in full collaboration with the tribes from the outset of any natural resource planning process. Just as important, it will be necessary for him to understand the need for the co-managers to work together, as a team, in the man-

agement and restoration of the salmon resource.

We were heartened by Koenings' comments during his first news conference. The tribes aren't just another user group, he said. They are co-managers of the resource.

But it is not enough to say the right words. Those words must be backed up by his actions.

Koenings faces tough challenges, both inside and outside the agency. Confronting a serious budget shortfall within the department is just one of the difficult tasks he must address.

Koenings has pledged, however, to be a good listener. That speaks well of his management approach.

The tribes remain committed to doing whatever it takes to restore the salmon resource to levels that will again support meaningful harvest. We look forward to working with Koenings toward our mutual goals.

We welcome Koenings to our homelands and wish him well in his efforts during the months ahead. We will remember his words about the tribes as co-managers. We hope he will remember those words too — and put them into action.

On The Cover: Morning light shines on the brilliant hues of coho salmon waiting to be spawned at the Salmon River hatchery of the Quinalt Indian Nation north of Lake Quinalt. The coho run on the Salmon River — and many other north coast rivers — was strong this year. *Photo: D. Preston*

Northwest Indian Fisheries Commission News

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Few Changes Made In Shellfish Ruling

The U.S. 9th Circuit Court of Appeals has let stand virtually unchanged the federal district court's ruling re-affirming western Washington treaty Indian tribes as co-managers of shellfish resources.

The state and three other parties to the case have filed separate appeals to the U.S. Supreme Court. The high court will likely take six weeks to decide if it will hear the case. If review is granted, arguments could be heard later this year.

The 9th Circuit's Sept. 25 ruling denied appeals for a rehearing from the state and private property owners. The court also denied the tribes' petition to change the decision about natural clam beds beneath growers' cultivated oyster beds, but added language that if the growers acted inappropriately, the tribes could seek relief in federal court.

"We are confident that any future practices by the growers that trench inappropriately upon the tribes' rights as confirmed in this opinion will be adequately dealt with by the district court. The district court is the best place to manage any wrinkles that might crop up," the appellate court wrote in its decision. "The best way to avoid such problems, of course, is for the parties constructively to work together to respect each others' rights."



Judge Edward Rafeedie's ruling re-established many fisheries for treaty Indian harvesters, such as these tribal members harvesting clams at Dosewallips State Park on Hood Canal. Photo: D. Williams

The treaty-reserved shellfish harvesting rights were re-affirmed in a 1994 court case heard by Judge Edward Rafeedie. In that decision, Rafeedie ruled that treaties signed by the tribes and federal government in the mid-1850s guaranteed the tribes an equal share of shellfish from all usual and accustomed grounds and stations, except those beds staked or cultivated by citizens. While Rafeedie's ruling made artificially enhanced shellfish beds off-limits to the treaty right, the tribes are entitled to harvest naturally occurring shellfish beds underneath an artificially created oyster bed.

Rafeedie's ruling re-established many fisheries for treaty Indian harvesters. Deep water species, such as geoduck, sea cucumber, shrimp, and sea urchin are being harvested in commercial quantities by more than a dozen tribes, providing much-needed income for hundreds of tribal members. — D. Williams

Skokomish Tribe Seeks \$5.7 Billion In Dam Damages

The Skokomish Indian Tribe made good on its promise to sue those responsible for the destruction of the North Fork Skokomish River.

The tribe filed a claim with the United States Department of Justice Nov. 25 seeking \$5.7 billion for economic damages caused by the federal government's failure to regulate the City of Tacoma's Cushman hydro-electric project.

"For more than 70 years the United States has refused to do its legal duty to protect the tribe and general public from reckless, unregulated damage by Tacoma's Cushman Project. It's time for the U.S. to repair the damage," said Gordon James, Skokomish tribal chairman.

The tribe claims the Cushman Project has never been properly licensed. A 1924 license was granted to the City

of Tacoma to flood 8.8 acres of federal land on the North Fork of the Skokomish River, but not to build the two dams and powerhouses, and divert the entire North Fork out of its watershed on the tribe's reservation.

"The United States admits it never licensed the Cushman Project, and admits the resulting damage...but has refused to force Tacoma to reduce or mitigate the damage," James said.

Global Geoduck Market Like A Roller

Tom Hayes knows his job can resemble a roller coaster ride of deep plunges and daunting inclines. These days, the Jamestown S'Klallam Tribe's seafood business manager is riding on a decline. But, as with every other roller coaster, the tracks will bottom out and start heading up again.

It is Hayes' job to line up buyers for the tribe's geoduck, crab, oysters, and other products harvested from the clear, cool waters of the Strait of Juan de Fuca. The tribe's efforts to make economic progress into the global market's present brisk headwind has been slow going of late.

"Hong Kong is off probably 25 percent this year in buying geoduck," Hayes said. "Geoduck is extremely expensive now with their currency devalued. China is about the same as last year, but Japan's purchases are way down. They're not buying much of anything right now."

It's important to keep selling, though, as the Far East market snaps up roughly half of Jamestown Seafoods' geoduck. Besides, Hayes said, it's only a matter of time before Far East economies heal and prices climb higher.

"Every market has its ups and downs, and we're now experiencing a bit of a down trend in the shellfish market," he said. "But it always comes around, and no one is going to panic."

The re-establishment of western Washington treaty Indian tribes as co-managers of the shellfish resources has re-opened many fisheries. Geoduck, sea urchin, and sea cucumber are being harvested commercially once again,

thanks to a 1994 federal court ruling by Judge Edward Rafeedie. The senior judge ruled that the tribes have a treaty right to an equal share of all available shellfish from usual and accustomed harvest areas.

Right now, in the realm of geoduck, it's a simple case of too much supply and not enough demand.

"Supply is up probably 5 to 10 percent worldwide, while demand is down probably 5 to 10 percent worldwide," Hayes said.

"More geoduck is coming from Alaska, and it's of high quality. It used to be just a frozen neck market, but they are learning to export live geoduck."

Canadian geoduck fisheries are also coming on line, meaning more competition for Washington state harvesters.

Despite the increased competition – or perhaps because of the extra players – tribal efforts are increasing to secure more buyers for their products. Jamestown representatives were making plans in early October to attend an international seafood show in Dalian, China later in the year. The show, attended by hundreds of business representatives, is a major opportunity to develop new markets and attract new customers for Pacific Northwest shellfish products.

"We have started doing direct mar-



Jamestown Seafoods' Armando Puaea loads geoducks into boxes for shipment around the world. Photo: D. Williams

keting in China and our goal is to sell as close to the consumer as possible," Hayes said.

Suquamish tribal member Tony Forsman, a longtime participant in western Washington tribal fish and shellfish management, said the tribes must stay active in pursuing shellfish markets in the Far East.

"The problem in China is the infrastructure," said Forsman, who has visited the country to get a firsthand look at market possibilities. "It's hard to move things around once you get them there. Only recently have they begun regular flights into mainland China, and not just Hong Kong." — D. Williams

Coaster Ride

A Day In The Life Of A Geoduck

From sand to soy sauce, the time between a geoduck diver wresting a clam from the bottom of a bay and the time it's on the table in a seafood restaurant halfway around the world is incredibly short:

8 a.m. – A Jamestown S'Klallam tribal diver extracts a geoduck with a high-pressured stream of water from the sandy bottom of the Strait of Juan de Fuca. The clams are brought on deck a few dozen pounds at a time and stacked in crates while more are harvested.

2 p.m. – With the day's diving completed, the tribal boat makes for the John Wayne Marina at the head of Sequim Bay where Jamestown Seafoods' truck awaits. The truck takes on several hundred pounds of geoduck and heads to a shipping plant in a Sequim business park.

3:30 p.m. – The geoduck are loaded into Jamestown Seafoods boxes, 50 pounds per box. A few ice packets top off each box which is sealed, addressed, and stacked on pallets.

7 p.m. – The pallets are trucked to Sea-Tac International Airport where they await different flights. On this particular day, all of the boxes were headed to domestic markets – New Jersey, New York City, Philadelphia. The next day they could be headed to Hong Kong, Kobe, or Taipei.

“These will fly out of Sea-Tac by 2 or 3 a.m. and be at their destination by noon and literally on the dinner plate tomorrow night,” said Tom Hayes, business manager for Jamestown Seafoods. “It's less than 24 hours from the time we package them to the time someone eats them.”

Mediterranean Mussels Come To Port Gamble Bay In Test Project

The Port Gamble S'Klallam Tribe's latest potential economic development project sits out in the middle of Port Gamble Bay, barely visible above the waves of an early Autumn wind.

A wooden framework is all that really shows above the waterline. Hanging from the raft into the cool water are bags containing millions of tiny mussels. If the right conditions exist, those mussels will grow to the perfect size in a year and a half, and the tribe will have its first harvest of *mytilus galloprovincialis*.

“Mediterranean mussels” is the easier name to pronounce for the shiny blue-black shellfish that are in high demand at seafood restaurants.

It's possible that Port Gamble Bay is the ideal spot for growing mussels, which require clean, cool water with just enough tidal motion to bring food to the water-straining animals. The shellfish came to the bay via a cooperative pilot project between the tribe and shellfish giant Taylor United.

“It takes 12 to 15 months to grow the mussels to market size,” said Bill Smith, senior planner and grants writer for the Port Gamble S'Klallam Tribe. “After that, we can either keep working with Taylor or we can go off by ourselves and keep buying the mussel seed from them.”

Taylor United's Gordon King, the company's mussel guru and the main contact for the tribe in this cooperative project, said he is enthusiastic about cooperative farming projects between the shellfish grower and the tribes.

“We want to see how well mussels grow in Port Gamble Bay and see how well it works for both parties. It does seem like quite a productive little bay,” King said.

The seed for the project gets its start in life at Taylor's Quilcene Bay hatchery and eventually is set on mesh bags which are suspended from rafts at the growing site. Each raft can produce 20,000 to 25,000 pounds of mussels.

“Pound for pound, they're more valuable than oysters,” King said.

The Port Gamble S'Klallam Tribe's experiment with Mediterranean mussels isn't the first in Indian Country. Both the Squaxin Island and Makah tribes have been working on similar aquaculture projects for a number of years. — *D. Williams*



It takes 12-15 months to grow Mediterranean mussels to market size. Photo: D. Williams

Tribes Rescue Elk Surveys From State Budget Cuts

Population surveys that provide invaluable management information about elk herds in Washington were saved by the Upper Skagit and Muckleshoot tribes from state budget cuts this fall.

The surveys provide a key tool in determining how management efforts are working and what changes are needed in future management. The data becomes especially critical when an elk herd's population drops to historic low levels. Numbering as many as 1,800 animals in the mid-1980s, the Nooksack elk herd has now declined to scattered bands totaling about 300 to 350 animals.

Much of that decline has come in the last five years, yet efforts to reverse the trend faced another major setback this year in the form of a Washington Department of Fish and Wildlife (WDFW) budget shortfall. The budget cuts meant the state was unable to pay for its annual aerial surveys, the continuity of which is critical to monitoring and analyzing the herd's composition and health.

The state program was saved this fall by the Upper Skagit Tribe, which secured \$10,000 from the Bureau of Indian Affairs to pay for the helicopter surveys. The tribe hopes to repeat the survey funding the next two years.

"Without help from the tribe, we would have had to end these important surveys. We just didn't have the money," said Mike Davison, WDFW area biologist.

Based on observed herd population trends, the Upper Skagit Tribe closed the Nooksack herd to hunting two years ago. Tribal leaders say reversing the herd's decline will save a species inextricably linked with Upper Skagit and bring back a culturally important tribal hunting opportunity.

"We hope to use the survey information to formulate a real recovery plan for the herd," said Scott Schuyler, Upper Skagit Tribe natural resources policy coordinator. "Right now, the only action being taken to reverse the decline is to restrict hunting. The tribe will examine the herd population trend over the next two years to evaluate the overall benefits of harvest limitations in relationship to all other detrimental factors."

Loss of habitat, increased recreational land use, natural

predators, state-approved damage control hunts, poaching and automobiles are among the factors tribal leaders suspect contribute to the Nooksack herd's decline.

Meanwhile, the Muckleshoot Tribe, provided WDFW with \$2,600 for elk surveys of the Mount Rainier North herd and some \$2,000 more for surveys in Green River Game Management Unit 485 to

make sure the surveys continued. The state historically funded most of the surveys, with some assistance from the National Park Service and Tacoma Water.

"Maintaining continuity is important in conducting elk surveys," said David Vales, wildlife biologist with the Muckleshoot Tribe. "To provide an accurate assessment of those herds, we cannot afford to miss a year of survey data."

This step toward game management is in addition to ongoing radio-collared elk studies in the White and Green river watersheds. The tribe has funded nearly all of a cow elk study and has contributed more than \$16,000 toward a cooperative calf study in the Green River watershed. The Muckleshoot Hunting/Wildlife Program employs two professional wildlife biologists and three enforcement personnel.

"As a co-manager of the wildlife resources, we felt that it was important that the tribe contribute toward monitoring big-game populations," said Pete Jerry, Muckleshoot Hunting Committee Chairman.

The examples of cooperation on aerial elk surveys by Upper Skagit and Muckleshoot may provide a hint of what's to come as the state and tribes continue to develop a joint hunting management plan this winter.



Ed Fernando, chief of enforcement for the Upper Skagit Tribe, left, and Mike Davison, a biologist with the state Department of Fish and Wildlife, plan an aerial survey of elk populations.

Photo: L. Harris

(See related story on next page.)

State Supreme Court Hears Treaty Hunting Case

The Washington State Supreme Court is expected to rule sometime during 1999 whether a Nooksack tribal member from western Washington had the right to harvest elk on state-owned land in eastern Washington.

Two lower courts already have ruled that Donald Buchanan was simply exercising his reserved right under the Treaty of Point Elliot to hunt on "open and unclaimed land" when he harvested the two bull elk in Yakima County in 1995.

Buchanan was cited by state Department of Fish and Wildlife enforcement officers for possession of big game during a closed season. A Yakima County Superior Court judge dismissed the charges.

In pursuing the case before the Washington Court of Appeals, the state argued that treaty hunting rights only apply to lands ceded by the tribes in the treaties or on lands which tribes traditionally hunted. The appellate court disagreed, stating that treaty hunting rights extend "anywhere in the territory that is 'open and unclaimed,' " the court ruled, as long as the land being hunted on is compatible with that use.

The state Supreme Court heard arguments in the case in early November. It will likely be several months before the court issues its findings.

"Clearly, these court rulings point out the need for the tribes and state to work together to manage wildlife resources," said Todd Wilbur, chair of the Inter-tribal

Hunting Committee of the Northwest Indian Fisheries Commission. Since January, tribal leaders and the Washington Department of Fish and Wildlife have been working on a joint hunting management plan. The joint effort involves more than two dozen tribes, he said

The plan would provide a general framework for cooperative statewide hunting management. Local wildlife population management would be addressed on a regional basis through development of individual plans, Wilbur said. The framework plan is expected to address information sharing about regulations, population estimates and harvest results; cooperative wildlife studies; and enforcement procedures for hunting violations. The plan also calls for establishing joint work groups to address policy issues, technical management concerns, enforcement procedures and public information.

"The tribes are good managers. Many tribes have hunting regulations that are virtually identical to those set forth by the state. We enforce those regulations, too," Wilbur said. Treaty tribal hunters make up about 1 percent of the total number of hunters in the state, and harvest only about 8 percent of the total number of deer and elk harvested annually, he added.

"The treaty right is clear. We need to move forward now and work together to address the real issues facing wildlife in this state, such as habitat loss," Wilbur said.

Makahs Continue Preparations For Gray Whale Hunt

While winter storms pummel the North Olympic Peninsula coast, the Makah Tribe continues to prepare to hunt their first gray whale in 75 years.

Since Oct. 1, the tribe has focused on preparations to take their first whale. The tribe agreed not to take gray whales called "residents," pushing the available time to hunt into the winter when the large migrations of whales from Alaska begin. "Resident" whales often spend the summer near shore and in bays, joining the migration as it passes.

The Makah Tribe plans to hunt up to an average of four gray whales annually for five years, as stipulated in a quota received from the International Whaling Commission in October 1997.

As winter begins, some of the more visible opposition to the hunt has left the harbor. Makah tribal leaders met with Sea Shepherd Society representatives in late November in return for the withdrawal of the two Sea Shepherd ships from Neah Bay. The large media presence has also dwindled without the

immediate gratification of a hunt.

"The crew will go when it's time and they know when it's time. They are preparing themselves mentally, spiritually and physically," said Denise Dailey, whaling commission director.

The treaty right is again under legal attack from a group headed by U.S. Rep. Jack Metcalf, R-Wash., which is appealing a U.S. District Court decision that dismissed a suit seeking to halt the hunt. That appeal is still pending, but isn't affecting the preparations for the hunt.

Coho Production Focus Of Study In South Sound

A study now under way by the Squaxin Island Tribe will help shed light on just how well a pair of south Puget Sound streams produce coho salmon.

This spring, outmigrating juvenile coho salmon in Mill and Goldsborough creeks will be trapped, measured, counted and then released to gauge natural coho salmon production and other factors. The information will, among other things, help fisheries managers determine how many spawning adult salmon are necessary to achieve a desired level of production.

On Mill Creek, the tribe's project will build on similar work conducted by the state Department of Fish and Wildlife from 1976 to 1986. Results of the tribe's study, funded by the tribe, Pacific Salmon Treaty and other sources, will be compared with the agency's data to determine how production in the watershed has changed over time.

The project could help provide an added salmon production perspective on Goldsborough Creek, where Simpson Timber Co. owns a dam that has been identified as a partial barrier to coho and a total barrier to chum salmon migration. The tribe, timber company and other agencies have applied for funding to remove the dam and correct the inadequate fish passage problem.

Results of the tribe's study could be combined with results of a simi-



Squaxin Island Tribe technician Troy Matheny, Nez Perce, constructs a weir that will be used to trap migrating young coho salmon on two creeks in southern Puget Sound.

Photo: T. Meyer

lar study conducted after the dam is removed to gauge whether salmon production in the creek has been improved. The tribe also hopes to conduct adult trapping studies and combine that information with the smolt trapping data to determine spawner productivity.

"Protecting and sustaining naturally spawning populations of salmon are key goals of the tribes as co-managers of the resource," said tribal biologist Rebecca Bernard. "Projects such as this one help us to better understand these fish and what they need."

Results of this year's effort may lead to similar studies in other south Puget Sound creeks to gather further information on coho productivity in the region, she added.

— *T. Meyer*

Elwha River Restoration Funding Stalled

Funding that would have led to removal of the Elwha Dam has again been put on hold when the Clinton administration refused to accept Senator Slade Gorton's language to put Columbia and Snake river dams off-limits for possible breaching or removal.

"We are especially concerned that the failure to provide any project funding beyond acquisition will impede progress on chinook salmon stock preservation," said Michael Q. Langland, tribal river restoration director. "We hoped that with the prospect of the Puget Sound chinook endangered species listing, federal officials would have done more."

Gorton offered a budget proposal that would have allocated \$22 million for the Elwha project this year. In return, Clinton officials would have had to agree to not order the removal or breach of a Federal Energy Regulatory Commission-controlled dam for at least five years, unless Congress or the dam licensee gave its consent.

Langland said the lack of funding is of major concern to the tribe.

"We're operating on limited amounts. We're looking at alternative funding, perhaps some foundation funding, just to keep things going," he said. "What funds we have are to keep two staff members on board."

Those staff members are needed to prepare for dam acquisition talks that are expected to begin soon.

"The tribe is confident that once acquisition is complete, dam removal will follow closely," Langland said. "We're still looking at getting both dams out simultaneously over two years."

Chinook Returns Please Tribe, Anglers

Jim Swinth of Forks was smiling despite a heavy mist coating him as he fished for king salmon on the Sooes River near Neah Bay.

“I gotta hand it to the tribe. The Makahs have done a good job with this fishery. I hooked a king salmon last week on 12-pound test, but it snapped the line. It sure is fun,” Swinth said.

The fall chinook or king salmon run was down to 150 fish or fewer 20 years ago. That’s when the Makah Tribe and Makah National Fish Hatchery took action to bring the fish back from the brink.

“Just restricting fishing wasn’t doing the job. We needed to add more fish to assure more survival,” said Russ Svec, Makah fisheries manager.

Last year, 3.2 million young king salmon were released, said Makah National Fish Hatchery manager Dan Sorensen. Ocean survival rates were not as good this year as last, but sport anglers and tribal commercial rod and reel fishermen still had 1,000 chinook to catch compared to 4,000 last year. Many fish were passed above the hatchery to spawn naturally while others were retained at the hatchery for spawning there.

“We didn’t have any net fishing for chinook and only a limited net fishery for coho this year,” Svec said. “We had non-tribal anglers and tribal commercial rod and reel fishermen elbow to elbow on the river. I think everyone got a little something out of this and our guys were even making a little money.”

Makah chief biologist Steve Joner remembers the long negotiations the tribe entered into with U.S. Fish and Wildlife Service to convince them to use the few remaining native stock to bring the chinook back to meaningful numbers.

“The talk then was that 150 fish wasn’t genetically viable. We were persistent, however, about the unique characteristics of this particular chinook stock that give it the best chance of survival. They wanted to use a stock from a different river system,” Joner said.

By spawning sooner than most other chinook runs, the Sooes River native chinook can survive higher water temperatures and heavier silt loads from logging. The young



Angler Jim Swinth of Forks tries his luck for chinook near Neah Bay.
Photo: D. Preston

offspring spend less time in the river before heading to sea.

“The native run was predominately large 4- and 5-year-old fish. The eggs were much larger than other fish and they had this unique run timing,” Joner said. “Previous releases of chinook into the Sooes from other river systems had failed. It became clear that the native Sooes chinook stock should be preserved and rebuilt.”

The sacrifice on the part of tribal fishermen was an equally important component of rebuilding the run.

“The pressure from the Canadian fishery, plus the poor river conditions, meant that the tribe couldn’t even fish for coho when they overlapped with the chinook,” Joner said. “Any incidental catch of chinook would have been detrimental. It was a real hardship for a lot of fishermen, and not the most popular thing in the world, but they committed to it.”

The returning, harvestable numbers of chinook in the last two years have been the reward for all fishermen. The goal is to continue to build the run to higher numbers, Sorenson said.

Word is getting around. The tribe sold 546 of the non-tribal licenses so far this year.

“When the rebuilding of a fish population is done right, it can really be a success,” Joner said. “You get wild, naturally spawning fish along with a viable fishery.”

— D. Preston

Deepwater Slough

Fisheries Managers Hope Project Will Inspire Landowners

With a critical estuary habitat restoration project now approved for the Skagit River's delta, state and tribal fisheries managers are hopeful the ambitious project will inspire private landowners to ratchet up voluntary salmon recovery efforts.

The Washington Fish and Wildlife Commission considered restoration options at the state's Deepwater Slough site of the Skagit Wildlife Refuge that ranged from completely opening up all 400 acres of estuarine salmon habitat unavailable due to diking, to preserving its fully-diked freshwater status for waterfowl. In the end, commissioners voted for a compromise that will restore 300 acres of salmon habitat skirting the South Fork of the Skagit River.

With work expected to begin next summer, the breaching and removal of dikes, and the repair and building of others, will cost \$1.9 million.

"This action marks a dramatic change in the management of the delta," said Bob Everitt, who manages the Washington Department of Fish and Wildlife's Puget Sound region. "It has been managed primarily to benefit waterfowl for 50 years and now we are going to help fish while continuing to support waterfowl that provide viewing and hunting opportunities."

Skagit System Cooperative (SSC), the fisheries management



A duck hunter plies the waters at Deepwater Slough near the Skagit River's mouth.
Photo: L. Harris

consortium of the Swinomish, Upper Skagit and Sauk-Suiattle tribes, initiated the effort to restore delta habitat six years ago.

"We are disappointed the commission didn't do everything they could have done, but we are encouraged that the state made a significant contribution to the restoration of key habitat at Deepwater Slough," said Lorraine Loomis, Swinomish fisheries manager. "We look at it as a step in the right direction. Hopefully, local landowners will see this commitment and consider the types of things they can do to recover salmon."

Most of the property adjacent the lower Skagit River and its tributaries — where traditional salmon habitat is most affected by land use practices — is in private hands. Without the cooperation of private landowners in efforts like re-establishing riparian (streamside) habitat and opening up fish passage blocked by dikes, fish managers say true watershed recovery will be extremely difficult.

"It is our hope that this project will demonstrate to landowners that significant improvements to fish habitat can be made while still allowing

some existing land uses to continue," said Everitt. "We are asking private landowners to follow our example and do everything they possibly can to benefit fish."

Among the most critical areas of Skagit River salmon habitat affected by land use is the Skagit River delta. It is estimated that the Skagit delta has lost more than 80 percent of its intertidal wetlands to diking, filling and channelization. Because of the size of the Skagit Basin, this habitat loss accounts for 62 percent of the total tidal wetland loss for all rivers in Puget Sound.

Estuaries provide a protected and food-rich environment for juvenile salmon growth and allow a transition area for both juvenile and adults between fresh and saltwater environments. The habitat becomes more critical with chinook salmon in the Skagit Basin proposed for listing as "threatened" under the Endangered Species Act in the coming months.

Restoring the Skagit delta area will be important to chinook because the Skagit River system historically has produced Puget Sound's largest wild runs.

— *L. Harris*

Quileutes, NOAA Team Up For Safer Shellfish

Predicting when shellfish will contain the toxin that kills and sickens people is much like trying to win the lottery. The possible causes that come into play are numerous — the odds of guessing correctly are astronomical.

A cooperative study carried out this summer by the Quileute Tribe and the National Oceanic and Atmospheric Administration (NOAA), however, may help provide a clearer picture of how population explosions of tiny microscopic ocean plants called phytoplankton produce the deadly toxins in shellfish.

Public health is not the only concern. These blooms of different kinds of phytoplankton cost commercial fishermen and coastal tourism millions of dollars each year as they wait for domoic acid levels in shellfish to come down. The Dungeness crab fishery alone is worth millions of dollars to Washington tribal and non-tribal commercial fishermen.

“There are just so many variables, including water temperature, tides, time of year and El Nino. But it sure will be great if these studies get us down the road a little more toward knowing when these events will occur,” said June Schumack, Quileute tribal water resources technician. “As tribal members, we’re always going to need to know whether the shellfish are safe or not. That’s never going to change.”

The tribe is located on the Olympic Peninsula outer coast at the mouth of the Quillayute River. Tribal technical staff collect shellfish twice a month to test for domoic acid levels in their usual and accustomed areas of harvest. The tribe pays for this monitoring and testing, benefitting all commercial and non-commercial shellfish harvesters as well as protecting the shellfish-eating public.

NOAA identified the Quileute Tribe as the perfect partner for a study to better understand the nature of these harmful algal blooms.

“The tribe is in a unique location and has the technical abilities we needed for help in this study. The technical staff knows the coast and how to access shellfish sample sites,” said Vera Trainer, NOAA marine biotoxin research biologist. “Just getting out and collecting is a big part of the job because of the number of samples needed,” she said.



June Schumack, Quileute water quality technician, gathers a water sample. Photo: D. Preston

The goal was to establish a consistent database of information about correlations between rises in the specific phytoplankton levels in the water and rises of domoic acid in shellfish. Trainer and Quileute marine shellfish biologist Mitch Lesoing determined that the levels of the problem-phytoplankton might go up based on similar events elsewhere on the Pacific Coast. Lesoing knew from past observations that the seasonal increases of the phytoplankton were common, but not predictable.

The tribe and NOAA were able to conduct a study that each had wanted to do for some time, but lacked the resources to do on their own.

“It was a little bit of a shot in the dark,” Trainer said. “Mitch and I kind of guessed that because of outbreaks of similar organisms in California and Oregon, some kind of event might happen up here. We started the monitoring in hopes of catching all the stages of a bloom event because there is no predicting when they will occur.”

The calculated guess paid off. In June, shortly after Lesoing and Quileute resources technician Schumack began testing sea water samples for the levels of the phytoplankton *Psuedonitzschia*, the numbers of the phytoplankton began to climb to historic levels. While the tribe collected near shore, Trainer and her staff collected in deeper water in the same areas.

Levels of the microscopic plant were so high, that both razor clams and crab, which are known to eat razor clams, tested very high in domoic acid two weeks after the high-

Continued On Next Page

Shellfish

Continued From Page 11

est levels of the microscopic plant were recorded in the water. Razor clam harvest is closed if tests reveal domoic acid levels of 20 parts per million (ppm) or more. These clams tested at 300 ppm.

Recreational digs for razor clams were postponed. Dungeness crab harvesters had to remove all crab entrails, substantially reducing their market value. The entrails possibly become toxic because the crabs eat razor clams. The toxin doesn't affect the shellfish, just people who eat them.

Eating shellfish with high levels of domoic acid causes amnesic shellfish poisoning. Severe symptoms include permanent short-term memory loss and coma. Less severe symptoms include nausea and vomiting.

Testing shellfish tissue samples is the accepted method of detecting the presence of domoic acid. It's costly and time consuming. Commercial fishermen and public health agencies nationwide are pushing for more information about the various harmful algal blooms so predictions of high levels can be made or on-site tests for shellfish toxin levels can be developed.

Passages

Douglas 'Oly' Woodruff Sr.



Douglas 'Oly' Woodruff Sr.

Douglas "Oly" Woodruff Sr., chairman of the Quileute Tribal Council, died Dec. 16 at the age of 53 in a Port Angeles hospital. He was born July 19, 1945 in LaPush to Fred Woodruff Sr. and Sarah Ward-Woodruff.

He was highly-regarded as a leader of the Quileute Tribe, serving a total of 12 years on the tribal council, including the past eight years as chairman. His strong belief in education was mirrored in his fostering of seven children in the Head Start programs in the past year.

An avid sportsman, Mr. Woodruff coached youth basketball and Little League baseball. He was a drummer in traditional Quileute drum and dance ensembles. Prior to his work for the council, Mr. Woodruff worked as a logger, fisherman, bartender, and was an on-air personality for KVAC radio. He enjoyed hunting elk and deer.

"He was one of our good leaders," Chris Penn, Quileute Tribal Council vice chairman said.

"I had to advise Quileute commercial fishermen not to harvest crab because I'm waiting four days for the state Department of Health to get back to us about the domoic acid levels in our samples," said Lesoing. "It's costing the guys money and it's a potential threat to tribal and non-tribal sub-

sistence and recreational harvesters who don't know about the danger."

The Quileute Tribe hopes research will lead to the development of an on-site test for either toxin or levels of specific kinds of phytoplankton in water that indicate whether shellfish are safe for harvest. — D. Preston

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