Fall 2023 – Northwest Treaty Tribes

Protecting Natural Resources for Everyone

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Inside:
- Record number of sockeye return
- Elders savor shellfish dig
- In-school salmon programs growing
- Studying lamprey, invertebrates after dam removal
The truth about orca recovery

by Ed Johnstone
NWIFC Chairman

My mentor Billy Frank Jr. always said that it’s going to take all of us working together to recover salmon.

He also said, “Tell the truth.”

The truth is that sometimes we have to change our thinking when new information comes to light. Several years ago, everyone became very concerned about how the decline in Pacific chinook salmon was affecting endangered southern resident orcas. We were told they ate only wild chinook, which sparked misguided campaigns to save orcas by boycotting chinook salmon.

Later, new research revealed that southern resident orcas also eat coho and chum, as well as steelhead, halibut and lingcod—and they eat both hatchery and natural-origin salmon.

Along, tribal and state salmon managers have been managing chinook harvest sustainably—along with our Canadian counterparts through the Pacific Salmon Commission—in compliance with the federal Endangered Species Act. Only a small percentage of returning salmon are harvested and humans represent a tiny fraction of the competition for salmon. Seals and sea lions take six times as many chinook as the entire fishing industry.

We know that fishing is not to blame for our declining salmon runs or starving orcas, and that the best thing we can do is protect, restore and create new habitat.

With thousands of years of experience managing salmon, tribes have been doing everything we can to rebuild chinook salmon stocks.

Everyone who cares about salmon should support the tribes’ efforts. We need all hands on deck.

However, some people are having trouble changing their way of thinking. Instead of fixing our broken ecosystem or addressing the impacts of climate change, they’re pointing their fingers in the wrong direction.

One misguided campaign claims, “Every bite of king salmon you eat means less food for starving orcas,” before inviting supporters to make a generous donation.

This statement is baseless because most salmon harvested for human consumption already have passed through the waters where orcas might feed on them. The entire campaign misleads and divides the people who care about the environment and want to do the right thing.

A better way to feed starving orcas is to increase the number of salmon produced in hatcheries. This is one of the recommendations from the state’s Southern Resident Killer Whale Task Force and aligns with the National Marine Fisheries Service’s risk reduction measures.

That’s why it is unfathomable to see anti-hatchery groups attempting to interfere with state and tribal co-management—and recovery efforts for both salmon and orcas—with lawsuits that misrepresent the science behind hatcheries.

These groups are as ill-informed as the calls for a chinook boycott. They imagine that halting hatchery production will miraculously recover natural-origin salmon.

This just isn’t true.

Salmon populations can’t recover to sustainable levels unless we restore their spawning and rearing habitat. Meanwhile, stopping hatchery production is a far greater threat to starving orcas than human consumption.

Misinformed campaigns like these, no matter how well meaning, are harmful to salmon recovery and tribal treaty rights. They are divisive distractions that take time, money and resources away from the hard work ahead.

We need to focus on preventing development from destroying habitat, protecting streams from high temperatures and low flows, managing marine mammal predation, and increasing hatchery production.

The worst thing you can do for salmon and orcas is to support one of these organizations working against tribal harvest and hatchery management. We need you on our side so we can all walk the same path toward salmon recovery.
A record number of Baker River sockeye are making their way upriver this year.

The fisheries co-managers—the Upper Skagit and Swinomish tribes and the Washington Department of Fish and Wildlife (WDFW)—are estimating a total return of more than 65,000 Baker River sockeye for 2023. The Baker River is a tributary of the Skagit River.

The sockeye run, which has been on the upswing from fewer than 100 fish in 1985, has already exceeded the previous record of 51,074 fish trapped and harvested in 2015.

Fish captured in the upstream fish trap at the Lower Baker Dam operated by Puget Sound Energy (PSE) are either spawned in the utility’s hatchery or released into Baker Lake where they can spawn naturally. When enough adult fish return, the state opens recreational fishing on Baker Lake.

This year, an “unprecedented number of early returning fish,” according to WDFW, allowed the state and tribal co-managers to increase fishing opportunities.

For the Upper Skagit Indian Tribe, each day of fishing is celebrated.

“Today, we are rich with culture,” said elder Scott Schuyler, the tribe’s natural resources policy representative, as he and family members unloaded their catch.

For several years, the sockeye run has been the most consistent source of tribal and nontribal fishing opportunity in the Skagit River watershed. The growth of the population is credited to interventions by the co-managing tribes and WDFW under the 2003 Federal Energy Regulatory Commission license for PSE’s hydroelectric Baker River dams—the Lower Baker Dam and the Upper Baker Dam that enclose Baker Lake. Those interventions have included the installation of new fish trapping systems for both out-migrating juveniles and returning adults, and the replacement of a hatchery facility.

“The sockeye program has been a great success,” said Bob McClure, Upper Skagit’s harvest management fisheries biologist.

But, he adds, the goals for the salmon population are bigger yet. The tribes’ goal, which was included in the 2003 PSE license agreement, is to see returns reach up to 100,000 fish.

“Although we are not quite to our 2003 management objective, we are getting closer and Upper Skagit fishers get to have a sockeye fishery at our ancestral village of Shalikwh, at the mouth of the Baker River, almost every year—a cultural experience that was denied prior to 2003,” Schuyler said.

To continue growing, the fish population may require increased hatchery production and habitat restoration to support more natural spawning. Research is ongoing to determine next steps.

In the meantime, co-managers await the final 2023 run size tally. From June through August, nearly 65,000 sockeye returned, including those that were harvested and those that passed through the upstream fish trap. Additional sockeye may arrive at the trap through mid-October. —Kimberly Cauvel
A hands-off method for elk surveys

Helicopter surveys are considered the most reliable way to manage elk populations, but they’re also expensive, laborious and dangerous.

The Quinault Indian Nation and partners are studying whether a camera-based system could make the task cheaper, easier and safer.

The tribe will compare results from a traditional aerial method to a newly developed technique adopted as part of the multi-tribe Olympic Cougar Project.

If results are similar, the promise of the latter method could be fulfilled and would be a boon for scientists, agencies and wildlife beyond the Quinault Reservation.

“It would be a huge benefit if these models work,” said Kristen Phillips, the tribe’s wildlife section manager. “Mark-recapture studies wouldn’t be needed to estimate population size. You could use a remote method where you wouldn’t have to handle the animals.”

With support from the Quinault Business Committee, Phillips was awarded a grant from the U.S. Fish and Wildlife Service. The nearly $200,000 grant funded an aerial survey and follow-up efforts that included locating and temporarily immobilizing elk on the reservation before fitting them with location-tracking collars.

While the animals were immobilized, crews, including staff from the Makah Tribe and NWIFC, also took genetic information and blood samples.

This type of survey can carry plenty of benefits, such as determining a population’s size and composition.

“There’s a huge use for it,” Phillips said. “If you know how many animals you have, and you also know survival and reproductive rates, you can determine the trajectory of a population.”

The grant-funded survey carries additional importance thanks to a team of researchers at the University of Montana. In 2018, they developed a statistical model to estimate wildlife populations that had previously required more resource-intensive methods, such as capturing and recapturing wildlife.

The method required only a system of cameras, and the Quinault Indian Nation had such a system; it is a participant in the Olympic Cougar Project, a collaboration between the the Lower Elwha Klallam, Makah, Skokomish, Port Gamble S’Klallam and Jamestown S’Klallam tribes, and the nonprofit Panthera.

Part of the project includes the use of cameras to estimate populations of wildlife including cougar, black bear, bobcats, deer—and elk.

Elk is an animal of particular cultural and spiritual importance to Quinault tribal members and their treaty rights. Local elk populations are the main source of meat provided to elders, people with disabilities and others in need.

The grant from Fish and Wildlife will tie in directly to those treaty rights beyond providing a useful population estimate; it also funds meetings with tribal hunters and with high-school students interested in wildlife-related careers.

—Trevor Pyle

Seven Generations

The Hoh Tribe conducts a broodstock fishery in 1980 in the Hoh River. The tribe worked with the state departments of Fisheries and Game to collect hatchery broodstock in the late 1970s and early 1980s. NWIFC Archives
When the Muckleshoot Indian Tribe embarked on a pilot program to transport sockeye from the Ballard Locks to a hatchery, it was modest in scale, with 300 fish being transported by truck to avoid the deadly conditions that lay in their path.

Now in its third year, the Ballard Locks Adult Sockeye Transfer (BLAST) program is showing promise that it could help preserve the run for generations to come.

The program started as a way to cut down on high mortality rates for sockeye that, having already been weakened by their long trip to the ocean and back, faced a final ordeal of warming waters and disease before reaching their spawning grounds.

Adult sockeye arrive to the Ballard Locks’ fish ladder relatively healthy, said Muckleshoot harvest management manager Mike Mahovlich, but the environment beyond is treacherous, with alarmingly high mortality rates.

“If we didn’t do anything, they’d be extinct in a few years,” he said.

The tribe partnered with Washington Department of Fish and Wildlife to collect sockeye and truck them to a hatchery where they spend up to four months in clean water until they are ready to spawn.

Staff involved with the BLAST program are attentive to every detail, from the temperature of the water in the trucks to the origin of the ice—sourced from the Cedar River watershed—used to combat the high water temperatures during the transfer.

“A lot of details go into making the fish as comfortable as possible,” Mahovlich said.

Due to the dwindling run and looming threats, the last Lake Washington sockeye fishery was held in 2006. Mahovlich envisions the BLAST program leading to a time of harvesting sockeye again.

“The goal of the program is to stop the decline and get back to sustainable productive fisheries,” he said.

While much work remains to be done, the program’s early results are promising, with low mortality rates and high egg takes among the transported sockeye. After 300 fish were transported the first year, around 900 were moved the second year. Both years saw a mortality rate around 2%, a dramatic improvement compared to about 50% without intervention.

“This is just another good example of a co-management success story that is against all odds in this urban concrete jungle of a watershed,” Mahovlich said. —Trevor Pyle
Intertidal survey accrues valuable data

Quinault Indian Nation fisheries staff surveyed beaches near the Big and Little Hogsback volcanic formations in July to help track changes to intertidal habitat and species composition across decades.

The intertidal survey is a yearly effort to give the tribe and partners a window into how populations of mussels, sea stars and other intertidal species are faring over both short- and long-term periods.

“It’s a great tool to monitor for climate change,” said Scott Mazzone, Quinault marine fish and shellfish biologist, who led staff members on this year’s survey.

The project, which began in 2011, follows a protocol created by scientists at the University of California, Santa Cruz, to monitor a declining population of black abalone. The effort led to the formation of the Multi-Agency Rocky Intertidal Network (MARINE), which includes many agencies that share monitoring data.

The protocol calls for participating agencies to drive bolts into rocks near certain populations in intertidal areas, such as barnacles, mussels or other species of interest. Each year, staffers follow an established map to the bolts' locations and photograph the nearby populations of interest, allowing them to monitor those populations closely.

“Are the populations getting bigger? Are they getting smaller? Are they getting new critters? Over 10 or 20 years, you can see trends over time,” Mazzone said.

The tribe’s participation in the effort already revealed the presence of sea-star wasting disease, which may not have been identified using other methods.

“Once we went back and looked at the data, there was a definite decline in the number of individuals,” Mazzone said.

The effort will be a crucial tool in the tribe’s efforts to document and mitigate the effects of climate change.

“One of the things we’ll watch for is sea level rise. If there is a rise, we’ll see barnacles and mussels move higher up the rocks,” Mazzone said. “If the water warms, we’ll see species we usually see in California move up here. If the ocean becomes acidic, we’ll see fewer mussels and barnacles; their shells will be eroded.”

The effort also led to a biodiversity study of the area conducted by UC Santa Cruz scientists, which will be an important snapshot to refer back to in the future.

The plan is to repeat this comprehensive survey every four to five years.

Mazzone said the survey wouldn’t be possible without the vigorous support of the tribe and the hard work put in by the fisheries technical staff.

“Those guys are absolutely amazing,” he said. “I appreciate their enthusiasm and effort.” —Trevor Pyle
Shellfish digs resume after three-year closure

More than 40 Suquamish tribal elders participated in a clam dig in Chico Bay in July, for the first time since harvest was shut down in 2020 for polluted water and remained closed because of COVID.

“It’s rewarding. It’s a cultural tradition. Everybody makes a little pocket change, we socialize. It’s enjoyable,” said tribal elder Georgia George. “And this beach is real prolific. It rejuvenates itself easily because of the flow of the tide.”

Usually the tribe holds several harvests a year specifically for elders on this beach off Erlands Point, said Nik Matsumoto, a shellfish biologist with the tribe. In 2020, the beach had to be shut down due to several leaking septic systems within the Chico Bay watershed, making the clams unsafe to consume.

After working with property owners to connect to the local sewer system, the state Department of Health upgraded a portion of Chico Bay as open for harvest, but the presence of COVID became an issue.

“We didn’t think it was a great idea to have our elders gathering for a harvest during COVID, so we had to suspend all elders digs,” Matsumoto said.

By 2023, with COVID restrictions lifted in Washington state, tribal elders showed up in full force to Erlands Point in mid-July, carrying lawn chairs, food, buckets, harvest bags and clam forks to the beach.

“It feels great to be here,” George said. “It’s a social thing for all the tribal people to get together on the beach like we have for forever. And as we age, we get the younger ones to dig for us.”

Elders are allowed to have a helper dig for them if they’re not able to dig themselves. Younger tribal members scampered around the tidelands, digging the allotted 200 pounds for one family member, reporting it to the shellfish monitor, calling out which relative they were digging for, then rushing off to dig for another.

Harvested clams were purchased by the tribe’s seafood company or taken home for personal consumption.

“It’s a good time because I can come out and visit with family and friends that I don’t see very often anymore,” said tribal elder Kevin George, who had his nephew harvest for him. “We’re all stay-at-home kind of people nowadays. It’s good to get out to visit and have a good time and talk to people who you haven’t seen in a long time.” —Tiffany Royal

Above: David Mills, left, and Ed Cordero, right, dig for clams during a tribal elders harvest on Erlands Point this summer.

Right: Dan Burgess, spouse of tribal elder Barbara Burgess, rinses a bag of clams before weighing it. Tiffany Royal (3)
A partnership between the Puyallup Tribe of Indians and two nearby schools is inspiring students to learn more about salmon—and helping the tribe learn how to better protect the fish.

The tribe provided chinook to the Science and Math Institute (SAMI) and Chief Leschi School so that students had opportunities to spawn, study and raise the fish. About 60,000 chinook were released in July.

The hope is that the hands-on experience may spark a wider interest in natural resources.

“They’ve involved students who may not have thought about fish before, let alone worked with them,” said Blake Smith, the tribe’s fisheries enhancement chief.

SAMI students in both life sciences and the math and physical science pathways participate with duties including water quality testing, feeding the fish, and learning about threats salmon face.

In a recent expansion of the program, students also designed, built and deployed underwater robots to monitor the net pens holding the salmon and to gauge the health of the ecosystem.

SAMI co-director Liz Minks said the program continues expanding. As chinook return to spawn after their journey to the ocean, students studying statistics will help monitor the fish.

The results will give the tribe an opportunity to learn if those fish, raised in and released from net pens in Puget Sound, are safer from toxic chemicals and predators than those released in the Puyallup River.

“We’re hoping to see better survival rates,” Smith said. “Time will tell.”

—Trevor Pyle

Shellfish day at summer school

Suquamish shellfish technician Molly Phillips shows sea critters in a touch pool to students from the Chief Kitsap Academy’s Summer School. Students spent a day learning about shellfish and other underwater life from the tribe’s scientists. Tiffany Royal (2)
Colleagues learn from each other

Scientists exchange knowledge at workshop

Being surrounded by peers can make a positive difference in a learning environment. That was the goal of a two-week coldwater fish culture class in July for western Washington tribal hatchery managers and technicians.

The class, taught by the U.S. Fish and Wildlife Service, enabled hatchery staff to learn alongside colleagues with similar work experience.

“Tribal hatchery staff do a lot of on-the-job learning and many have not yet had the chance to attend classes on fish culture,” said Marcia House, tribal fish health program manager at NWIFC. “This class thoroughly covers fundamentals for good fish culture practices, which advances the skill level of the staff at our facilities.”

The focus on tribal staff from the western Washington region gave students the opportunity to share their knowledge and experience with peers.

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“Since most hatcheries are in remote locations, staff from different tribes do not often get to gather, and time spent together learning, both from the instructors and each other, builds a stronger community,” House said. “Now that they have been through two intensive weeks together, the class members know who to reach out to when they want to talk through questions.”

With classroom work, hands-on training and field trips, 37 students from 14 tribal hatcheries and NWIFC, plus a Washington Department of Fish and Wildlife employee, dug into the art and science of taking care of fish.

“Hearing how other people run their hatchery or what they do in this situation or that situation has been educational,” said Mike Jones Jr., manager of the Port Gamble S’Klallam Tribe’s hatchery. —Tiffany Royal

Understanding water quality and fish health data is critical to protecting and managing treaty resources such as salmon. A group of Indigenous students who participated in an IndigiData workshop hosted by Lummi Nation this summer learned how the tribe and researchers at Northwest Indian College employ that type of data.

The workshop included lectures and activities about fisheries science, field research methods such as eDNA (e for environmental), and lab techniques such as metabarcoding and data visualization.

Lummi fisheries staff offered workshop sessions and Indigenous scholars from the Port Gamble S’Klallam, Hupa, kanaka and Shinnecock tribes, and from bands of Chippewa, Dine, and Ojibwe ancestry took turns presenting on various topics.

The workshop group toured Lummi’s aquaculture and fish hatcheries, as well as research facilities at Northwest Indian College.

IndigiData is an educational workshop program organized through the nonprofit Native BioData Consortium, a research institute led by Indigenous scientists in the United States. —Kimberly Cauvel

Rosa Hunter, a researcher and lab manager at Northwest Indian College on the Lummi reservation, describes to IndigiData students how she studies tiny organisms in the water that can affect traditional foods including clams. Kimberly Cauvel

Tribal hatchery staff converge at fish class

Tribal hatchery staff member Andy Williams, Tulalip, looks on as Donald Rogers, Port Gamble S’Klallam, counts eggs during the coldwater fish culture class. Tiffany Royal
New salmon habitat for lower Skokomish River

For the thousands of chinook salmon that return to the Skokomish River every year, the new habitat at River Mile 5 will be a welcome sight.

Fish will find pools and gravel bars created by strategically placed logs and rootwads—all to increase habitat complexity and improve the area for fish to rest, feed, hide and spawn.

This is the first phase of a multi-phase restoration project to improve salmon habitat between river miles 5 and 6.5, focusing around the Highway 101 bridge, said Joseph Pavel, the Skokomish Tribe’s natural resources director. Project partners include Mason County and the Mason Conservation District.

“We felt that this was a prime opportunity to implement this style of restoration project and have it be highly effective and have a substantial beneficial outcome that could enhance survivability of fish, both juvenile and adult,” he said. “It’ll provide unique habitat features and ecological functions that are well served for the life history of salmon in the Skokomish River.”

Historically, the river used to produce the largest runs of salmon and steelhead in Hood Canal, but degraded habitat from logging upstream and nearby land issues changed the river’s ecological functions over time, leading to declining populations, Pavel said.

However, coho, fall chinook, pink, fall chum and sockeye salmon, winter and summer steelhead, rainbow trout, bull trout and coastal cutthroat all have been documented using the river.

Putting wood back into the river and creating side channels that restore connectivity between the mainstem and off-channel habitats will help further support those fish populations, said Alex Papiez, the tribe’s restoration biologist.

Eight structures were installed within River Mile 5 this summer, including one large, engineered logjam at the head of a gravel bar. The logjam will encourage the deposition of sediment and gravel downstream, and form pools along the face and side of the structure, narrowing and deepening the river channel.

Downstream, seven smaller engineered logjams were installed along the banks as deflectors, to further stabilize the bank and slow erosion, allowing for riparian vegetation to grow, while also providing shade and cover for salmon.

In addition, a new side channel was created between the river and Purdy Creek, restoring a connection between the mainstem and off-channel habitats. Revegetation will include planting native riparian species and removing reed canary grass. —Tiffany Royal
Addressing problem culverts across watersheds

Beneath the network of roads that allow people to move across the landscape, fish access to habitat is often disrupted by poorly placed or undersized culverts.

The Tulalip Tribes’ natural resources department is streamlining efforts to find and fix these human-made tunnels, to restore fish access to valuable habitat in the Snohomish and neighboring watersheds and give chinook, coho and chum salmon a better chance of survival. Central to the effort is a new and growing inventory of culverts, including their locations and conditions for fish.

“We are trying to help the fish,” said Natasha Coumou, a restoration ecologist for the Tulalip Tribes. “It will serve the tribal members because it is a resource they subsist on.”

This year, Tulalip began systematic field surveys of sites where roads and driveways intersect with fish-bearing streams.

A survey of about 250 sites on the tribes’ reservation began in May. With the help of a Washington Conservation Corps crew, the survey is populating a digital database showing where culverts are located and what problems they present for fish.

The database will help Tulalip prioritize future fish passage project sites and improve the odds of securing funding.

Along with the on-reservation survey, Tulalip is coordinating with partners to expand the effort into areas along the Snohomish, Skykomish and Snoqualmie rivers and their tributary streams, and the Stillaguamish and Pilchuck river systems. About 1,000 culverts in the region are an immediate priority because they are in areas where salmon spend significant time during migrations to and from the saltwater, Coumou said. Thousands more will need to be assessed in the future.

As survey data becomes available, replacement projects will be prioritized in places where malfunctioning culverts impact treaty fish, as well as where they create problems for community members.

“There’s an impact to infrastructure and a diminished quality of life for residents when they are repeatedly flooded,” Coumou said.

Before the streamlined inventory efforts began, Tulalip was already working on culvert replacement projects to address fish passage and flood issues.

Sections of Coho Creek, for example, are often inaccessible to fish because culverts get clogged and flood low-lying areas of the reservation. Tulalip is preparing culvert replacement projects at the major thoroughfare of 88th Street, as well as in a rural setting where beaver activity routinely blocks a culvert and floods the road.

“To open the whole Coho Creek basin, we want to replace those culverts,” said Matt Pouley, Tulalip Tribes restoration biologist. —Kimberly Cauvel

Super soaker salmon

Tia Myers, natural resources technician Stillaguamish Tribe of Indians, left, and Jody Brown, water resources program manager for the tribe, get splashed by chinook salmon as they collect the fish from the North Fork Stillaguamish River for broodstock.

Staff, along with representatives from the Washington Department of Fish and Wildlife, conducted the annual collection in August for the tribe’s Harvey Creek Hatchery. The effort includes divers who monitor the salmon underwater and veterinarians who monitor fish health at the hatchery. Kimberly Cauvel
Three types of lamprey historically resided in the region: Pacific, river and western brook.

The lamprey’s mouth is adapted for clinging and sucking. While they look like they belong to the eel family, lamprey are more closely related to sharks and hagfish. They are considered the second oldest fish, next to hagfish.

A lamprey has no true fins, jaws, or bones and can grow up to 30 inches in length and weigh more than a pound.

Pacific lamprey reside from Baja California to the Bering Sea across to Russia and Japan.

Like salmon, Pacific and river lamprey are anadromous—born in freshwater streams, migrating to the ocean, and returning to fresh water as adults to spawn. Western brook lamprey spend their entire lives in fresh water.

Lamprey Facts:

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Looking like a Ghostbuster, Lower Elwha Klallam Tribe project biologist Justin Stapleton shoulders a backpack with boxes and switches connected to two long wands before stepping into Morse Creek. With a wand in each hand, Stapleton wades into the creek, lowering the ends of the wands into the water to create an electric circuit as he searches for Pacific lamprey using a technique called electrofishing. Safe for aquatic life and humans, the electric circuit stuns the fish or encourages them to swim toward the electric field for survey collection.

Stapleton focuses on lamprey habitat, which includes sandy edges of the creek and dark spaces near logs or large rocks. When a lamprey surfaces, it is captured by dip net and placed in a bucket. After several passes along the creek, each lamprey is measured for length and weight, and a snip of a DNA sample is taken from its tail. Larger lamprey receive a PIT tag (passive integrated transponder) to help identify previously sampled lamprey.

Lamprey are an important part of the recovering Elwha River ecosystem as they filter water, provide food for fish and wildlife, and contribute nutrients in areas where they spawn. Lamprey also are threatened by stream and floodplain degradation, dewatered streams and rivers, poor flow management and climate change. Looking at distribution and migration patterns will shed light on some of those issues.

It also will help make clearer the roles of Pacific and river lamprey in urban streams on the Olympic Peninsula, Stapleton said, especially as a food source for salmon predators, leading to increased salmon abundance.

The lamprey numbers and their range have shrunk from where they were found historically. Unlike salmon, lamprey have not been widely surveyed and often are overlooked during surveys of other fish species, Stapleton said.

“We’ve been finding ourselves trying to conserve what is probably one of the most broadly distributed freshwater fish in western North America, but we don’t know a lot about it,” he said.

It is relatively unknown how many lamprey occupy the nearby urban streams in Port Angeles. The tribe is expanding its lamprey monitoring program to obtain more information about lamprey locations and behaviors to help the tribe improve the resilience of its restoration efforts, while updating population distribution on the peninsula.

Lamprey nest and larval surveys are taking place in five Port Angeles urban streams: Tumwater, Valley, Peabody, Ennis and Morse creeks. The project includes partnerships with Clallam County, Pacific Lamprey Conservation Initiative and private homeowners.

—Tiffany Royal

A lamprey is fitted with a tiny passive integrated transponder tag to help the tribe track its migration patterns. Tiffany Royal (2)
More than a decade since dam removal on the Elwha River, the bug communities in the river’s estuary appear to be rebounding to pre-project levels with critters like worms and flies providing significant food sources for juvenile salmon.

Removal of two fish-blocking dams between 2011-2014 unleashed millions of cubic yards of sediment from the river’s former reservoirs, much of it flowing downstream and expanding the river’s delta and creating new habitat.

“While major changes to the estuary would have happened during dam removal, current invertebrates are living through regular sediment deposit activity, now that it’s in a more normal range,” said Justin Stapleton, a project biologist for the Lower Elwha Klallam Tribe. “We find a lot of chironomids (a family of two-winged flies) and oligochaetes (the earthworm subclass).”

“The diversity of insects also may continue to increase over time as the vegetation grows in and around the newly expanded estuary,” said Matt Beirne, the tribe’s natural resources director.

To monitor those changes, the tribe has been studying the bugs in the estuary and the salmon that eat them since 2007—before, during and after dam removal.

The tribe collects fish from the estuary and pumps their stomachs to see what they’re eating. The tribe also takes sediment samples to look for insects and other macroinvertebrates, and compares the sediment samples to the stomach samples.

“The diet study is a complement to the sediment work, which enables us to evaluate possible effects of dam removal impacts on the juvenile salmon diet,” Beirne said.

While the 2023 data is still being analyzed, the tribe, National Oceanic and Atmospheric Administration, U.S. Fish and Wildlife Service and U.S. Geological Survey examined samples collected in 2007 and 2013, and found the influx of fine sediment and cloudiness in the river following dam removal temporarily diminished the availability of food for fish.

Many insect species disappeared briefly during this period but juvenile salmonids appeared to change the way they foraged by eating more terrestrial types of invertebrates in the river, or other species like plankton and stickleback fry in the estuary, so the amount of energy in their diets stayed the same, Beirne said.

Eventually, this year’s data will be analyzed with 2007, 2013 and 2017 data to reveal even more connections between the sediment, salmon and bugs of the evolving Elwha watershed, Beirne said. —Tiffany Royal
Floating ban to protect salmon

Floating down the South Fork Nooksack River in an inner tube, kayak or other flotation device as a summer pastime was prohibited downstream of Acme for the first time this year.

The Whatcom County Council passed the flotation ban in July to protect chinook salmon returning to the South Fork and its tributary creeks to spawn.

The Nooksack Indian Tribe and Lummi Nation, together with the Washington Department of Fish and Wildlife, have advocated for the ban over the past year, as high water temperatures and low flows, worsening with climate change, have left the already imperiled South Fork Nooksack early chinook population in crisis.

In 2021, about 2,300 fish died in the South Fork before reaching Lummi’s Skookum Creek Fish Hatchery or having a chance to spawn. Scientists determined that warm water—and bacteria that thrive in those conditions—were to blame as a result of habitat degradation and low flows.

Preliminary estimates suggest hundreds of fish died again in 2022.

As people get in and out of the water, they also can trample sensitive salmon eggs, tucked in delicate pebble nests called redds—reducing the number that survive incubation and emerge as young fish.

“South Fork chinook are stressed by high temperatures and low streamflow, and tubing constitutes a cumulative impact that further compounds existing stresses, posing an unacceptable risk of increased mortality,” states a letter of support for the ban from the Watershed Management Board for the Nooksack Basin. “It is imperative that we do what we can to protect them, while we continue to work to protect and restore their habitat.”

South Fork chinook are listed as threatened under the federal Endangered Species Act.

“Returning ESA-listed chinook salmon are already stressed from the long journey home and the high water temperatures in the South Fork,” said Merle Jefferson, director of Lummi Natural Resources. “This floating ban is a step in the right direction to help give them safe passage to their spawning grounds.”

The Nooksack Tribe and Lummi Nation have invested millions of dollars into habitat restoration projects in an effort to restore the species. Lummi also operates a chinook hatchery program to supplement the natural-origin population.

Despite those efforts, hatchery and natural-origin fish have been succumbing to deadly water conditions. The average number of natural-origin chinook returning to the South Fork also remains low, at about 2% of the ESA-required recovery plan goal of 9,900 fish, Coe said.

—Kimberly Cauvel
Derelict boat removed from fragile habitat

For nearly 15 years, the sunken 65-foot sailboat *Windjammer* sat derelict near the shore of Kiket Island, where the Swinomish Indian Tribal Community co-manages the Kukutali Preserve with Washington State Parks.

The algae- and barnacle-crusted boat was abandoned in 2009, imposing on the fragile intertidal ecology surrounding the island. That ended this summer when Swinomish, the state Department of Natural Resources and the Northwest Straits Commission removed the boat in July.

“Ensuring a clean, healthy marine environment is critical to preserving traditional practices and protecting the treaty-reserved rights of the Swinomish people,” said Steve Edwards, Swinomish Indian Tribal Community chairman.

The waters around Kiket Island include Similk Bay, an area with eelgrass meadows and beaches where forage fish spawn.

“The intertidal area in this region is very rich in species diversity,” said Julie Barber, the tribe’s senior shellfish biologist. “Swinomish Fisheries has long known that this stretch of beach could serve as an important area for future biocultural restoration projects, but our ability to move forward on those ideas has been thwarted by the presence of the derelict sailboat. The removal of the sailboat opens up opportunities for future work toward improving fisheries resources for the tribe.”

Over the years, *Windjammer* impacted access to Swinomish tidelands, partly because it was presumed to contain asbestos, lead paint and PCBs that pose a risk to public safety.

As derelict vessels like *Windjammer* deteriorate over time, those pollutants can leak into the water, endangering marine life and diminishing the recreational value of coastlines. *Windjammer* was one of more than 300 such vessels of concern identified for removal in Washington’s waterways.

—Kimberly Cauvel

Salmon chef

Makah tribal member Joe Jimmicum, above, cooks salmon for a community event in Neah Bay in July with the help of his grandson José Jimmicum, below. Tiffany Royal (2)

The sailboat *Windjammer* was lifted from Similk Bay in July using a floating crane. A boom was placed around the derelict sailboat to capture any pollutants loosened during extraction. Jason Thompson, Swinomish Indian Tribal Community
Jeromy Sullivan passed away June 30 after a brief illness. He was a member of the Port Gamble S’Klallam Tribe and the tribe’s chairman since 2009.

He presided over many significant environmental, cultural and economic milestones for the tribe. Sullivan was guided by a love of family, community and his tribe. He was raised with strong connections to the water and beaches and was passionate about protecting the environment and tribal treaty rights.

As a geoduck diver and shellfish harvester, Sullivan saw firsthand the environmental impacts of a sawmill on the shores of Port Gamble Bay, an important ancestral and cultural waterway for the tribe. He made it a priority to work with the former mill’s owners and others to clean up the bay, while using his signature tenacity and good humor to educate anyone he could about the tribe’s history and culture.

In recognition of his work to restore the bay, Sullivan received the Billy Frank Jr. Natural Resources Protection Award from the Potlatch Fund in 2015.

As chairman, Sullivan increased the tribe’s land holdings from 1,340 acres to more than 2,700, including the former mill site. Under Sullivan’s leadership, the tribe expanded programs that supported the health and welfare of the tribal community, including becoming the first tribe in the nation to run its own foster care and adoption program and constructing a state-of-the-art health center. As chairman, he oversaw the expansion of the tribe’s economic holdings, which helped secure the tribe’s future while increasing job opportunities for tribal members and the community at large.

Before being elected to tribal council, Sullivan was employed by his tribe, first in the original bingo hall and later in IT.

Sullivan loved sports of all kinds, always cheering for the Seattle and Little Boston teams and often wearing a favorite jersey. In recent years, Sullivan discovered a love for golf.

He loved spending time with his many lifelong friends and cousins. Sullivan and his wife, Toni, married in 2000 and raised their two children, Samantha and Jacob, in Little Boston.

Sullivan is survived by his wife and children, as well as parents Melvin “Poe” Sullivan (Wendy) and Diana Purser; brothers Chad (Angela) and Corey; nieces Julianna, Maddy, Chloe, Libby and Coraline; and nephew Devyn.

He was preceded in death by his grandparents Aaron Purser, Geraldine Heimann, and Frank and Cyrene (Dolly) Sullivan.