

West End Natural Resources News

A publication of the North Pacific Coast Marine Resources Committee
(NPC MRC) and NPC Lead Entity for Salmon Recovery

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HOH RIVER REUNION

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Building a Future for SALMON

By David Hahn

During the Great Depression of the 1930s, my great grandparents and the extended family lived in a lean-to at Starbuck Beach, an area along the coast near Lake Ozette. They spent a lot of time there and many hours panning for gold to earn a living. My great grandma was in charge of the money and her dream was to buy land. Having land meant having a home. Land back then was selling for a dollar an acre, and people kept telling them that it was a bad investment. In 1937, she took their hard earned money and bought Eagle Creek Ranch. She paid \$100 for 100 acres.

I am the fourth generation to grow up and live here on Eagle Creek Ranch near Beaver, Washington. The ranch is located on the shores of a deep, ninety-degree bend of the Sol Duc River at Mile 41. This bend in the river is referred to by river guides as Barking Dog Hole.

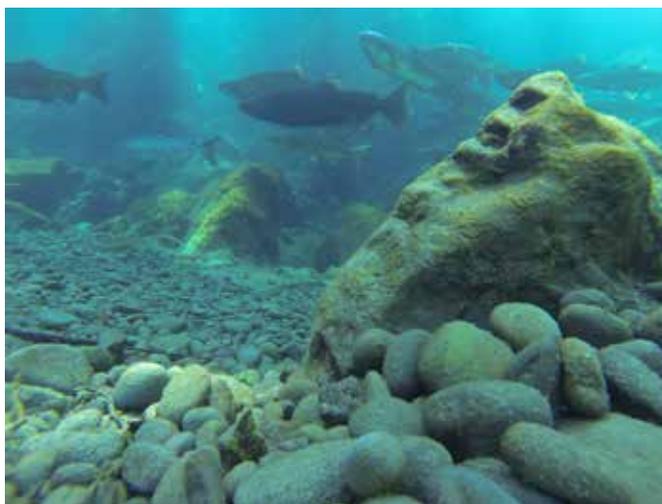
Barking Dog Hole is a survival pool in the Sol Duc River for salmon. Every year, the summer run of Chinook and coho salmon that is destined for Olympic National Park rests at Barking Dog Hole to wait for the fall rains to return. These salmon spend July, August, and most of September swimming in the deep, cool hole in front of my house. When I was a kid, it was common to see two- to three-hundred dark black Chinook salmon in the hole, most of them forty to sixty pounders,



Dave holding the small camera with a big story to tell. Photo: Tami Pokorny

swimming back and forth together. If one of them turned they all had to turn because the hole was packed tight with fish. The returns of wild, native salmon are declining at alarming rates. The days of two- to three-hundred salmon are gone. In the last few years, the run was down to just six Chinook salmon. Last year, 2015, was a reasonably good one. I counted thirty-five Chinook salmon in the summer run.

Barking Dog Hole is critical to salmon habitat and survival in many ways. Its unique location provides a



The salmon refuge known as Barking Dog Hole. Photo: David Hahn

Continued on page 2

resting place for salmon on their long journey home. Another factor is that Eagle Creek Springs pours into the Sol Duc River just yards away. It enters the river's floodplain at the base of a small cliff above the hole. Eagle Creek Springs pumps crystal clear, forty-eight degree water into the Sol Duc River at the bend year round. That cold water keeps these salmon alive during the hot, dry summer weather. Some years, there are three different salmon species that spend their summer there.

After watching the salmon run decline over many years, my family started to look for help to repair the logging damage done to Eagle Creek Springs in the 1950s. At that time in our history, there were no rules to protect salmon habitat. In 1998, we contacted the Pacific Coast Salmon Coalition (PCSC) in Forks. The Coalition enlisted a group of Washington Department of Fish and Wildlife (WDFW) engineers and biologists to develop a "Voluntary Restoration Plan". The project turned out to be so big that WDFW had to ask for a supplemental budget specifically for the project. This was prior to the state's current salmon recovery grant program (www.rco.wa.gov).

During the year, the Sol Duc River Valley receives approximately 125 inches of rain. The Sol Duc River can be at or near flood stage nearly every week in the winter months. When the river is that high and fast flowing, lots of fish seek shelter in Eagle Creek Springs. They survive there until the river drops and calms down. They need a safe holding place where they can maintain their location and conserve energy.

The primary goal of our project was to turn Eagle Creek Springs into an overwintering pond. We planned to connect the pond to the Sol Duc River using a salmon-friendly culvert with a built-in fish ladder. WDFW completed the installation of the culvert in 1999. The original stream was about three feet deep, and the finished pond is closer to nine feet in depth. The new culvert cost \$100,000 and is supposed to last eighty years, so I keep a close eye on it and remove vegetation that could block it. That's sometimes a very labor intensive process – especially when the beaver move in and dam it up.

For the last three years, Boy Scout Troop 1539 from Silverdale, WA has supported our project. The troop spends weekends camping out, earning badges and donating many hours of hard work. In spite of the beavers, each spring we add woody debris to the pond to protect the salmon fry from birds and other predators. The scouts also load floating triangle platforms built out of plastic PVC pipe with tree branches. A second group of scouts, the "tug boat" crew, then position the platforms along the edges of the channel. These triangles are the perfect place for new salmon fry to hide. For the last two years, we have also planted donated hemlock and Douglas fir seedlings in the drier areas surrounding the creek. When you don't have a budget, volunteer labor and

donated materials are very much appreciated. There's a downside to all the new woody debris added to the creek: we will now fight the beaver that continue to try to block the culvert opening.

In the fall, PCSC employees and volunteers deliver surplus salmon carcasses from the Sol Duc River Salmon Hatchery. We lay them out along the stream banks to build up those critical marine-derived nutrients and to promote insect populations that salmon love. Last year, we received a significant

number of carcasses, and it didn't take long for eagles and other birds to find them. A blue heron stayed so long we started calling him "Bob".

I feel it is important to educate and inspire others about the issues facing salmon and ways we can all help make a difference. I bought GoPro® HERO cameras and made videos showing what we've been accomplishing. I use them to monitor the fish and habitat conditions in Eagle Creek Springs and the Sol Duc River. We share the videos with WDFW, the UW Olympic Natural Resource Center and School of the Environment, students in the 6th grade Life Science classes at Forks Intermediate School, and members of the public. Two of my videos have been shown at the River & Ocean Film Festival in Forks.

One of my favorite educational projects is working with the sixth graders at Forks Intermediate School. Together with



Boy scouts from Troop 1539 load vegetation platforms and tow them into place. Photo: David Hahn

Hoh River Reunion: We are Chalá·at

By Nicole Harris

The journey, to explore the deep connections of the Hoh Tribe's culture with the Hoh River, began last August in Olympic National Park. Traditional resources have been protected there since 1938. Hoh Tribal Council Member Gene Sampson and Hereditary Chief of Quileute Tribe and Hoh Tribal Council Member David Hudson led with a song and prayer. Twenty youth ranging in age from five to nineteen, then set off to harvest native red huckleberry, salal berry and fern as they hiked the Hoh River Trail and learned about traditional plant uses from Elizabeth Campbell, a cultural expert from Northwest Indian College. This was the first day of last summer's inaugural youth camp. Day two of the camp started at Rainforest Paddlers, where participants and facilitators piled into four rafts for a two-day, thirty-mile journey

down the Hoh River – a journey common to Hoh Tribal ancestors.

Jay Powell, a cultural expert and professor emeritus at the University of

British Columbia, is a fluent Quileute language speaker and anthropologist. He and his wife Vickie Jensen participated in the camp, teaching participants their Quileute language, as well as identifying important and traditional resource harvesting sites within the tribe's Usual and Accustomed Area.

"I first started to spend time with the Hoh elders in the late 1960s. They made it clear that the heart of their territory is their river...the Hoh. Theodore Hudson told me, 'That river over there is our highway. The salmon go up and our canoes full of elk come down. Our tribal lifeways may change over time to the extent that our grandchildren don't even know our land.' In fact, most of the young people on the Hoh River float trip last summer had never been on the upper river before,"



Kandace and her father, Ruben Hernandez, watch Jay Powell, an authority on coastal tribal languages, show the Pala Pala Game that teaches the Hoh word for sword fern. Photo: Debbie Preston

said Jay in response to later questions about the trip.

He continued, "Back in about 1970, Herb Fisher told me how important the river is to the Hoh people. He said it this way: 'We Hoh River people are the Chalá·at (The ones who live in the territory of the southern river of Quileute-speaking territory). This is the river where the runs of sat's (king salmon), ilaksi (silvers), kwot'osha (humpies) and kwawiya (steelhead) swim upriver just as they always have...where the k'ikilh (elk), hawayishka (deer) and akil (bear) live... where we dig for kwala (camas) and pick k'it'sa (berries) and gather iba (bear grass) just as we always have. And it's the land where T'ist'ilal (the Thunderbird) flies over on his way back to his lair just below the Blue Glacier. This land with our river flowing down the middle of it isn't only where our ancestors lived. It's where we Chalá·at (Hohs) still live and always will.



Hoh tribal youth Kandace Hernandez eats huckleberries from bushes near the Hoh River. Photo: Debbie Preston



Ruben and Kandace Hernandez walk by the Hoh River during a day hike to pick huckleberries and walk by the river in Olympic National Park. Photo: Debbie Preston



Approaching a bend in the Hoh River. Photo: Nicole Harris

So, is it important for the Hoh River people to know their river? It's vital.' And the Hoh River drift trips are the way the Hohs are making sure that their descendants never lose touch with that river."

Hoh Tribe Natural Resources staff and Hoh Tribe Youth Support Services worked in partnership with Olympic Coast National Marine Sanctuary education staff to conduct the camp which focused on connecting participants with their culture, treaty rights, traditional resources and harvesting and on climate change and its effects on resource sustainability.

"Although the Hoh people have been here for hundreds of years, we're fairly new to the modernness of the world. Waterways were the main transportation and food source prior to the 1950s. We've been losing bits and pieces of our culture since then. We're now coming back full circle. Our children need to know the basics. It boils down to love, talk and play with our children and getting rid of the noise. Electronics is



Relaxing at journey's end. Photo: Nicole Harris

mainly what I'm talking about. When we bring kids out on this kind of adventure they're having an amazing time. There was never once an, 'I'm tired' or 'I'm bored'. I think it had to do with that they were all together and we had the fun teaching element in there too with Jay, Nicole and Jacqueline," remarked Lorraine Cress, Hoh Tribe Youth Support Program manager. The 2016 camp session was held earlier this month.



Vi Riebe, Hoh tribal elder, Phil Riebe, Vi's grandson and Hoh fisheries enforcement officer, and Ruben Hernandez, Hoh fisheries technician, prepare a community feast at the river mouth. Photo: Nicole Harris

Future for SALMON *from page 2*

Life Science Teacher Kim Kearns, we look at the salmon life cycle, threats and risks to salmon, habitat and ecosystem sustainability, hatchery vs. wild native salmon issues, how salmon populations impact our Forks families and community, and how we can all make a difference in saving and protecting salmon habitat. As part of "Salmon Month" we also take a field trip to the Sol Duc Salmon Hatchery.

During my classroom visits as a volunteer, I have the opportunity to show kids a wilder side of the Sol Duc River. I introduce them to my project and what we do for the wild, native salmon. The first questions I ask them are, "When was the last time you took a trip to Port Angeles?" and "Did you know that you crossed over the Sol Duc River five times in each direction?" I use the videos I've shot at Barking Dog Hole to take them from the bridges into the river itself and show how the fish reproduce, live, grow, migrate, and return to our very own rivers and creeks to spawn. I try to get them to fall in love with these rivers and give them a sense of belonging to our forests and rivers. These kids are the ones who fish the rivers and drive quads along the banks. I want every one of them to respect and understand what it takes to have a healthy salmon run. My hope is that we are building future generations of salmon lovers who will continue on with the critical work of saving our salmon!

The Value of Beach Cleanups

By Jon Schmidt

Washington CoastSavers is an alliance of partners and volunteers dedicated to keeping the state's beaches free of marine debris. The CoastSavers community accomplishes this in many ways, whether it's directly picking up debris on the beach, registering or feeding volunteers, or helping to spread the word. All of you are CoastSavers.

Many of you have contributed to the beach cleanups in recent years. If so, you know the physical and mental challenge it can be to remove loads of debris from the beach. Sometimes the challenge is the sheer volume or weight of the garbage that needs to be carried back to the trailhead. Other times it is the crummy weather; sideways wind and rain make walking the beach difficult, much less picking up items from the driftwood and rocks. Sometimes working on the issue of marine debris is challenging emotionally, too.

Despite these challenges, it's not uncommon for groups to participate in Washington CoastSavers' cleanups year after year, including church groups, Lions Clubs, Surfrider Chapters, families that have made the event a tradition and scout troops to name a few. Many positive stories come out of the beach cleanups and I'm happy to share one that illustrates the dedication that many CoastSavers feel about this work.

For the last couple of years, Boy Scout Troop 1498, out of Sequim, has helped clean the beach on the Hoh Reservation with assistance from the Tribe and others. This past April, they found a massive tangle of nets and rope near the base of one of the Kalaloch Beach access



Boy Scout Troop 1498 from Sequim removed this tangle of rope and net from the beach near Kalaloch Campground during the Washington Coast Cleanup. From left to right: Devin Rynearson, Pascual Starcivich, Zay Jones, Ozzy Krammer, Ben Wright, Douglass Peecher, Alec Shingelton, Mathew Craig. Photo: Peter Craig



Beach Cleanups draw voluntourists to the North Coast and to Forks including these Mountaineers members from Seattle. Photo: Roy Morris

trails while they were staying at the campground ahead of the Saturday cleanup.

About a dozen boys and some adult leaders began cutting the tangle apart at 4 pm on Friday afternoon. They didn't quit until after 10:30 pm, using headlamps to move the material as high on the beach as possible. Their hope was that other volunteers who had registered to clean that particular beach would remove the mess in the morning. They woke up early on Saturday and drove to Hoh Beach where they removed approximately a ton of debris from that stretch of the coast.

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Beach Cleanups from page 5

At the post-cleanup barbecue hosted by Kalaloch Lodge, one of the group noticed that the rope and nets still remained on the beach. They rallied the kids who hadn't left for home yet and hauled loads and loads of it up the stairs to the parking area where it was transferred to a dumpster. Simply put, these boys were driven. I had the pleasure of working with them on Hoh Beach and it was such an uplifting experience to see their desire and motivation. And you can be sure they went home and looked at the plastic in their lives a little differently.

Certainly there was a lot of debris removed on April 23rd during the 2016 Washington Coast Cleanup. At least 1,400 volunteers cleaned over fifty beaches along the entire outer coast and into the Strait of Juan de Fuca. Approximately twenty tons (40,000 pounds) of garbage was collected, making it one of the largest hauls in recent years, if not ever, for a beach cleanup within Washington State. Generally, the reports were similar up and down the coast. Although some debris looked like it had traveled for a long time, most of it appeared to be locally sourced. We found lots of crab buoys, fishing tackle, plastic bottles and snack bags. This is, of course, another lesson to be learned during beach cleanups. We are often the cause or source of much of the trash we find. Not the tsunami, not the Californians or container ships, but us. The common estimate is that seventy percent of marine debris originates from onshore activities. This should give us some hope – it means we are the problem and therefore we can be part of the solution.

There are many “rock star” volunteers who stand out as being extraordinary in their efforts to remove debris from remote beaches on the Olympic Coast. Kelsie Donleycott is one of them. She and her crew, sometimes her friends and father, regularly clean the beaches around Sand Point, near Ozette. This is one of the most remote stretches of coast that Washington CoastSaver volunteers clean. Kelsie's images have been used to promote CoastSavers efforts multiple times over the last few years, on posters and the website. Not daunted by the loads of debris that continue to wash up, she keeps coming back, year after year. She explained to me recently, “My years of volunteering with Washington CoastSavers have been enjoyable and highly rewarding. Participating in cleanup events at my favorite beaches not only allows me the opportunity to give back to the places I love, but it also gives me hope that together we can make a difference in the fight against marine debris.” She's right; we can only tackle the challenge of marine debris together.

Allen's Marsh Improvements

By Theresa Powell

In 1993, a WDFW inventory identified Allen's Marsh near Milepost 176 on Hwy 101 as an ideal location for an off-channel rearing habitat enhancement project to serve Hoh River salmonids: juvenile coho, steelhead and cutthroat. This is a large marsh fed by numerous springs and two small streams. The WDFW Fish Passage Program determined that 16,300 square meters of fish rearing area were potentially available if issues of fish access could be addressed.



A new Phase I stream channel. Photo: Theresa Powell

Implementation of this project has been mutually discussed by WDFW, the Hoh Tribe, WSDOT and DNR since 2005. In 2015, Steve Thompson, a DNR engineer, lined out the various phases of the Allen's Marsh/Old Joe's Slough passage enhancement. He designed and supervised the low impact construction of a 1,000-foot-long channel to redirect wetland flow away from the Highway 101 ditch and into Allen's Creek, the primary outlet of Allen's Marsh.

The second phase of this endeavor, replacement of fish-blocking culverts on the St. Regis Road, will occur during the summer of 2016. Installation of a 20-ft. pre-cast slab bridge and a 128"x 83" pipe arch culvert will be accomplished with

Pacific Coast Salmon Recovery (PCSR) pass-through funds from the Hoh Tribe and DNR funding, respectively. Several constructed berms will eliminate wetland flow into the highway ditches and concentrate more volume into Allen's Creek, enhancing fish passage into the forested wetland.



The lower portion of Allen's Marsh. Photo: Theresa Powell

Downstream of all this work is a WSDOT box culvert with limited fish passage. Replacement of this culvert is not in the next WSDOT work plan, so DNR engineers are working in consultation with WSDOT and WDFW Fish Passage Program staff are considering the short-term option of placing wood weirs downstream of the culvert to help improve its passability. Funding for Phase II is being provided by the DNR and the Pacific Coastal Salmon Recovery Fund through the Hoh Tribe.



Failed culvert following the big January storm of 2015. Photo courtesy of Pacific County Emergency Management

Climate Resilient Stream Crossing Structures – Building a Win/Win Infrastructure

By Jessica Helsley

Stream crossing structures, such as culverts and bridges, are an essential part of our transportation networks, allowing roads to pass over rivers and streams, providing corridors that our communities and to a large extent our economy depend upon. We also depend on healthy rivers and streams themselves – for clean water, recreation, and a host of other benefits.

Road crossing locations are not always mutually beneficial. Undersized and poorly designed crossings fragment streams and disrupt the natural movement of water, sediment, and aquatic organisms. Most importantly for communities in the Pacific Northwest, ill-designed stream crossing structures block access for the salmon populations that depend upon unobstructed passage to get to and from the various habitats that they need to survive and reproduce.

Undersized crossings that limit salmon passage are also more likely to fail under increased precipitation or flood conditions. Climate change models project significant increases in stream flows for much of Washington State. Until recently, climate change information was rarely incorporated into the design of stream crossing structures. New collaborative efforts among conservation practitioners, policy makers, and scientists however, have led to an increased emphasis on the need to incorporate the impacts, both present and future, of climate change into planning and management efforts.

WDFW oversees the permitting of stream crossing structures throughout Washington State. The agency has recognized the urgent need for crossing structures to be designed in a climate-informed fashion. In a recent collaborative research project with the Climate Impacts Group at the University of Washington, WDFW staff were able to integrate projected future changes in regional climate data into existing design procedures, advancing the ability for decision makers to design projects that withstand our changing environmental conditions.

These recent research efforts will increase the likelihood that continued habitat connectivity investments (a win for salmon) are robust in light of a changing climate (a win for us). Restoring connectivity and ensuring a clear flow of water, organic materials, and salmon from headwaters to sea continues to be a priority for the Washington Coast Sustainable Salmon Partnership. Now because of these collaborative efforts, our salmon restoration work can increase the resiliency of our transportation networks which results in more resilient communities, a more resilient economy, and more resilient coast salmon populations.

Contact Director Jessica Helsley (jess@wcssp.org) at the Washington Coast Sustainable Salmon Partnership for more information on how your next stream crossing project can be more climate resilient.

RAINFOREST RIVERS OF THE OUTER OLYMPIC COAST

*A Visual History
of Channel Migration*



Q u i n a u l t R i v e r

Q u e e t s R i v e r

1

2

Flow Direction

Flow Direction

Excerpt from DNR poster available for download at: http://file.dnr.wa.gov/publications/ger_presentations_coe_olympic_coast_rivers.pdf

Rainforest Rivers of the Outer Olympic Coast

New LiDAR imagery gathered by the DNR shows floodplain details from five West End rivers—the Quinault, Queets, Hoh, Bogachiel/Quillayute, and Sol Duc. The headwaters of these rivers begin in melting snowfields and glaciers of the Olympic Mountains. They then flow through a region of dense temperate rainforest and westward to the Pacific Ocean.

The brightest white areas represent the river elevation (set to 0 feet), and as elevations increase in the floodplains, the white progressively changes from light green to dark green. This type of model shows where river channels have migrated in the past by vividly displaying floodplain features such as terraces, meander scars, and oxbow lakes.

Channel migration can be affected by a number of factors including topography, geology, land use, and land cover, such as forest. Large woody debris from the western Olym-

pic Peninsula's mature rainforest stabilizes floodplains and reduces channel migration by restricting flow and keeping sediment in place. Historic removal of large trees from riparian zones in the lower reaches of these rivers has increased sediment transport and channel movement.

Join Us for Natural Resources Tuesdays

UW Olympic Natural Resources Center in Forks, WA
(Most 3rd Tuesdays)

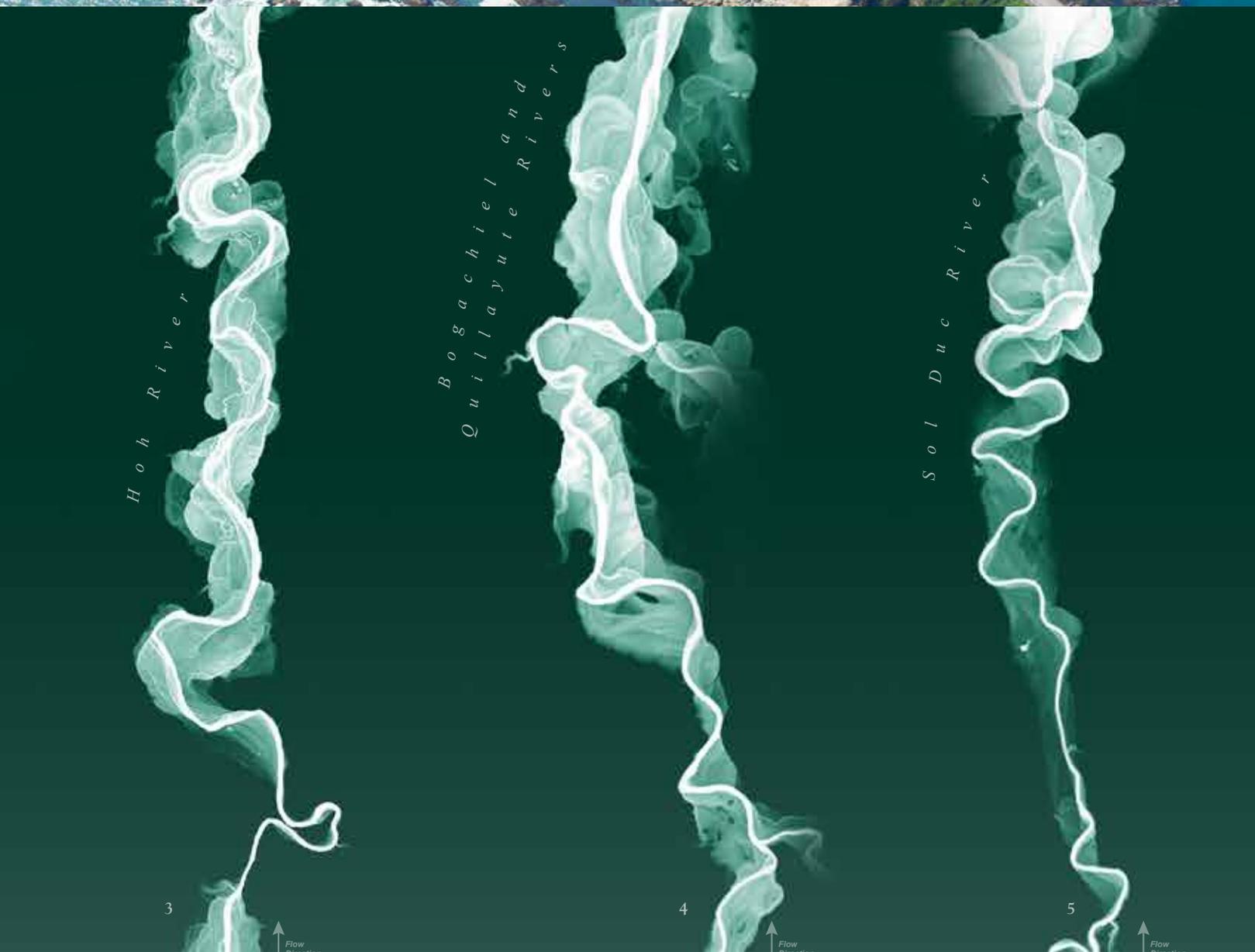
North Pacific Coast Lead Entity for Salmon Recovery
1pm - 3:30pm

North Pacific Coast Marine Resources Committee
4pm - 6:30pm

For more information call: 360/379-4498



WASHINGTON STATE
Natural Resources



Salmon Feed - Poetry Read

Finale for the International Coast Cleanup

Coast enthusiasts from near and far were invited to help remove debris from Olympic Peninsula beaches on September 19, 2015 as part of the International Coastal Cleanup (ICC) organized by CoastSavers (www.coastsavers.org). That evening, cleanup participants were welcomed to Tillicum Park for the first annual Salmon Feed – Poetry Read. Vince Penn, Quileute Tribal Council, welcomed the volunteers, voluntourists and well wishers. He shared stories and songs that celebrated working together. Margaret Sallstrom of the Piedmont told stories, John Hunter of Forks High School and the NPC MRC as well as others read poems, and the Schmidt Family Singers lead the assembled group of 30 or more in song. Dinner included salmon grilled to perfection by Steve Allison. Forks Outfitters provided potato salad, Sunny Farms donated watermelons and cabbage and Clallam Bay-Sekiui Lions prepared the feast. The event was hosted by the Lions

in partnership with the NPC MRC, City of Forks, Surfrider Foundation and others.

The 2016 ICC, to be followed by the 2nd Annual Salmon Feed – Poetry Read, is scheduled for Saturday, September 17th.



Mike Webb, an active member of Surfrider Foundation's South Sound Chapter, reads a poem at the 2015 Salmon Feed – Poetry Read.

2015 Coast MRC Summit held in La Push

Thanks to the generosity and hard work of the Surfrider Foundation, The Nature Conservancy, and the North Pacific Coast MRC, members of the four coastal MRCs came together for their annual summit at the Akalat Center in La Push on October 15-17, 2015. The event began with cultural songs, dances, and the story of the Hoh and Quileute people. It continued the following day with presentations about



RD Grunbaum encourages MRCs to provide comments on proposed crude-by-rail terminals in Grays Harbor. Photo: Katie Krueger

harmful algal bloom monitoring, the Washington State Shellfish Initiative and the state-of-the-art ocean observation systems deployed off the coast of Washington and Oregon. The afternoon was filled by a series of presentations regarding oil spills and response plans, threats to sensitive marine species, natural resource damage assessments, and lessons learned from the Exxon Valdez catastrophe.

The final day began with a discussion about how to fund future MRC summits followed by a detailed presentation on sea lion and sea otter populations and management. Participants of the Surfrider Leadership Development pilot program ran a workshop-style session where they presented new marine debris project concepts. A discussion followed about the proposed crude oil terminals in Grays Harbor and the need for public comments on environmental reports and oil-by-rail generally. To conclude the event, a series of presentations about Sea Level Rise (SLR) were given, including SLR trends and scenarios on the coast as well as vulnerability assessments that demonstrate the value of different habitat types and how restoration efforts can improve coastal resiliency.

The 2016 Summit will be hosted by Pacific County in October.

The 2015 Summit Agenda and links to all presentations can be found here: <http://surfriderwashingtoncoast.blogspot.com/p/2015-mrc-summit.html>.



MRC members from coastal communities gathered for the 2015 Coast MRC Program Summit in La Push. Photo: Tami Pokorny



Jodie Toft of The Nature Conservancy explains how habitat restoration can improve coastal resiliency. Photo: Katie Krueger

Ocean Robot Monitors Algal Blooms

By Hannah Hickey, *UW Today*

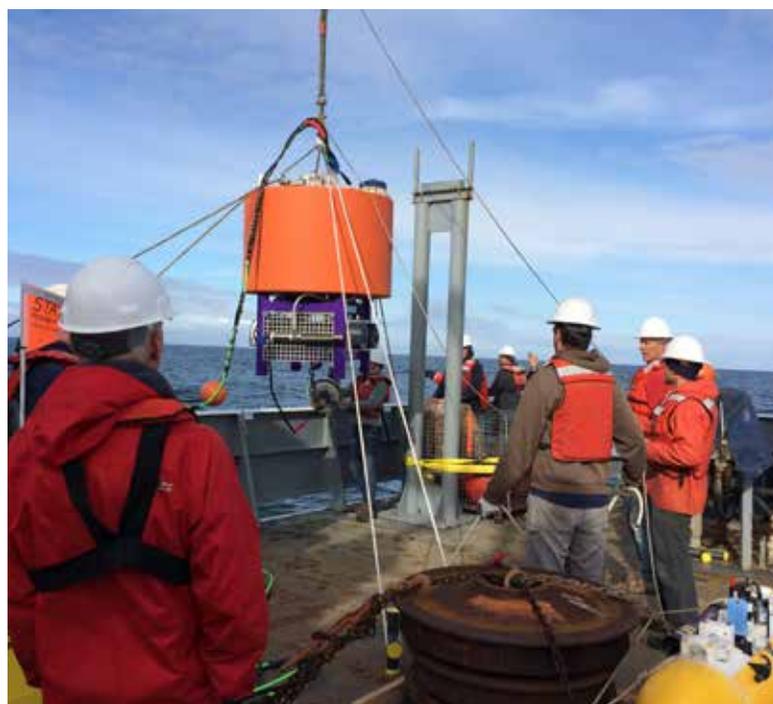
Scientists with the University of Washington and the National Oceanic and Atmospheric Administration have deployed a new tool that will constantly be on the lookout for harmful algal blooms and their toxins off the coast of La Push, Washington. The Environmental Sample Processor, or ESP, was deployed May 23 for the first time off the North Coast with sensors to monitor specific algal species and a harmful toxin they emit, domoic acid. The tool will provide autonomous, near-real-time measurements of the amount of toxin and the concentrations of six potentially harmful algal species.

The instrument was placed 13 miles offshore in the Olympic Coast National Marine Sanctuary. It is near the Juan de Fuca eddy, and in a known transport path for phytoplankton where offshore *Pseudo-nitzschia* blooms – a common Pacific harmful algal species – travel to coastal beaches where they can contaminate shellfish. The tool sits about fifty feet below the surface near the Chá bã buoy, first deployed by researchers from NOAA and the UW Applied Physics Laboratory in 2010 to measure other variables such as temperature, salinity, dissolved oxygen, currents and acidity.

John Mickett, an oceanographer at the UW Applied Physics Laboratory, led the deployment of the new instrument with Stephanie Moore, a scientist at NOAA's Northwest Fisheries Science Center, as part of a larger collaborative project. The robot was developed at the Monterey Bay Aquarium Research Institute (MBARI) to automate water-testing that normally requires a boat trip to sea and lab analyses. MBARI scientists helped install the instrument that beamed results back to shore three times a week for six weeks. The research team will collect the robot in July, and then deploy another to monitor during the late summer season.

This link will take you directly to the near-real time data from the ocean robot on the NANOOS Data Visualization System: http://nvs.nanoos.org/Explorer?action=oiw:fixed_platform:APL_Nemo:observations:

Reprinted with permission.



The box surround by purple contains an automated laboratory that will analyze seawater for algal species and toxin. Researchers deployed it May 23, 2016 about 13 miles off Washington's coast. Photo: Stephanie Moore / NOAA



An identical instrument, at NOAA's Seattle lab, shows the robotic arm, valves, levers and reagents it uses to do testing at sea. Photos: NOAA



A Plan for the Pacific Coast

By Jennifer Hennessey,
Washington Dept. of Ecology Ocean Policy Lead

How do we make sure that the way humans use the ocean now can coexist in harmony with new uses that may be proposed in the future like renewable energy and with the needs of the ecosystem? The simple answer is planning, or marine spatial planning.

Over the past few years, the state has collected a wealth of important data on the natural resources, human activities, and proposed new uses to plan for and guide new ocean uses. A website and mapping tool allows the public to review data, reports and studies on the ecological, economic and social aspects of the Pacific Coast and ocean resources. Over the past year, examples of completed projects include: ecological modeling of at-sea distribution of several species of seabirds and marine mammals; a coast-wide economic analysis; a seafloor atlas and mapping priorities; and a viewshed assessment.

The aim of planning is to minimize conflicts and protect important resources and uses, while allowing for and guiding new opportunities. A plan also helps different levels of government have the same information and analyses available to inform their decisions without adding regulations.

Planning brings together people – from diverse interests, coastal communities, science, and governments – to understand perspectives, to build data and information, and to inform options. The Washington Marine Advisory Council, a diverse stakeholder advisory group, is currently developing recommendations for the state to consider including in the marine spatial plan. The state is aiming to have a draft plan out for public review and comment later this year.

Your involvement and input is important to help shape the future for the coast – especially this year as the state works to finalize the plan. Stay tuned for meetings, workshops and public comment periods later this year.

To find out more about Marine Spatial Planning, visit

our website at: www.msp.wa.gov. On the website, you can:

Get Involved. Sign up to get updates by email, read news updates, ask a question, and check out the calendar to learn about upcoming events or public comment periods.

View data and interactive maps. Look at information on places that are used for different activities and on locations of natural resources and coastal processes.

Learn more about the planning process. Review recent planning documents and project reports.



The screenshot shows the Washington Marine Spatial Planning website. At the top, there is a green map of Washington and the title "WASHINGTON MARINE SPATIAL PLANNING". Below the title is a navigation bar with links for "About Us", "Calendar", "Mapping Application", "News", and "Resources", along with a search bar. The main content area is divided into three columns: "LEARN", "EXPLORE", and "CONNECT". The "EXPLORE" column contains links for "Data Catalog", "Mapping Application", "MSP Projects", and "Tools/Maps". The "DATA CATALOG" section features a search bar and a list of data layers, including "Energy Suitability". Under "Energy Suitability", there is a list of energy device types: "Tide Energy Devices", "Wave Energy: Deepwater Energy Devices", "Wave Energy: Mid-Depth Energy Devices", "Wave Energy: Nearshore: MJ Energy Devices", "Wave Energy: Nearshore: Energy Devices", "Wind Energy: Turbines Mounted on Monopiles", "Wind Energy: Turbines Mounted on Floating Platforms", and "Wind Energy: Turbines Mounted on Jacket or Tripod Foundation". At the bottom, there are expandable sections for "Viewsheds: Shoreline to Offshore Power Generation Facilities Data Layers" and "Layers".

Explore the Marine Spatial Planning website at: www.msp.wa.gov.

2nd Annual RainFest River & Ocean Film Festival Caps Day on the Beach

A new tradition has arrived with the tide in Forks. After the WA Coast Cleanup held on April 23, 2016, more than 115 beachgoers and beach lovers took their seats in front of the east wall of the Rainforest Arts Center for two hours of amazing films showcasing coastal and freshwater environments, themes and issues. Emceed once again by WA Sea Grant Ian Miller, this year's Audience Favorite was ONP's *The Smell of Cedars Steeped in Rain* by Eliza Good. Beaver-based film maker David Hahn presented *Coho Spawning at Eagle Creek Springs* (see article pg. 1) while *Dance of the Microbeads* was the work of Port Angeles-based artist and film maker Sarah Tucker and her young associates. The audience also enjoyed youngest filmmaker Cache Mcphie's *Hiking Third Beach*.

A complete list of the films and links to trailers and full length presentations is available at <http://wsg.washington.edu/community-outreach/outreach-detail-pages/river-and-ocean-film-festival>



Dave Haun sets a video camera into position.
Photo: Tami Pokorny

RIVER & OCEAN FILM FESTIVAL

Enjoy film explorations of our rivers and oceans at the Third Annual River and Ocean Film Festival at the Rainforest Arts Center in Forks, Washington on April 23. This film festival, held in conjunction with Forks RainFest and the Washington Coast Cleanup, celebrates the freshwater and marine environments of the west end of the Olympic Peninsula.

The event is free and family-friendly. Event details and file line-up at wsg.washington.edu/film-festival.

April 23, 2016

Free admission

Rainforest Arts Center in Forks, Washington

Doors open at 6 p.m. Films start at 7 p.m.



This event brought to you by the North Pacific Coast Marine Resource Committee, Rainforest Council for the Arts, Washington Sea Grant, North Pacific Coast Lead Entity, Pacific Coast Salmon Coalition, West Olympic Council of the Arts, the City of Forks and the Olympic Coast National Marine Sanctuary.



A full house enjoyed the River & Ocean Film Festival at the Rainforest Arts Center in Forks. Photo: Tami Pokorny

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Rich Osborne (Citizen 2, Clallam,
Science)
John Hunter (Citizen 3, Clallam,
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SALMON FEED POETRY READ

IN FORKS

September 17, 2016

In conjunction with
Coastsavers Coastal Cleanup
coastsavers.org

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