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NOOKSACK SALMON ENHANCEMENT ASSOCIATION

Striving to recover salmon by engaging our community in restoration, education and stewardship.

# FISH TALES

Volume 25, Issue 1 • Spring 2017

THE NEWSLETTER OF THE NOOKSACK SALMON ENHANCEMENT ASSOCIATION

## Goodwin Creek Tributary: A Tale of Three Landowners



BEFORE



Goodwin Creek fish passage barriers before project work



AFTER



Wide-spanning bridges allowing fish passage and many other ecological benefits for Goodwin Creek after project work

### By Darrell Gray, Project Manager

Back in May 2016, *Fish Tales* featured an article regarding a proposed summer fish passage project on a tributary of Goodwin Creek in the Sumas River watershed.

The project involved the removal of three fish passage barriers allowing salmon access to more than a mile of upstream habitat for the first time in over 30 years.

One of the great aspects about working on streams in Whatcom County is the opportunity to get to know a diverse

variety of landowners. A project begins with a conversation about salmon, and grows over time to a variety of topics. Throughout the years, I have had the great pleasure of getting to know some amazing landowners.

Each quarter, NSEA chooses to honor a project partner who was particularly great to work with. This quarter, we chose three: Grant and Shelly Beld, Rose Anne Featherston and Satnam Parmar, who all own land in the Sumas River watershed.

Grant and Shelly own a 30-acre farm where they operate a small business and raise horses and cows. Rose Anne owns a 5-acre farm with a horse, goat and chickens. Satnam owns an 80-acre farm where he raises blueberries.

An unnamed tributary of Goodwin Creek runs through their contiguous properties roughly south to north. After surveying the stream to develop project designs, it became apparent that all of the barriers should be removed at the same time to allow stored sediments behind each culvert to move downstream and establish a new stream gradient.

Appropriate crossing structures were selected for each site and NSEA was able to secure funding from the Washington Salmon Recovery Funding Board and the Natural Resources Conservation Service for construction in 2016.

As the properties were all neighboring, NSEA was able to move equipment from one site to the next with the removal of a few fences. This also allowed us to regrade the channel between sites to the anticipated new stream gradient.

The construction caused quite a

disruption to daily farm activities, not to mention the mess large equipment can make in a short period of time. Construction started in early September just in time for the rain and lasted more than three weeks. However, through the entire project, none of the landowners complained and they always showed a keen interest in the activities.

NSEA is required by permit to revegetate areas disturbed during an instream project, and all three landowners are allowing additional planting to buffer the creek from adjacent agricultural activities. The landowners also agreed to allow NSEA to conduct spawner and vegetation surveys over the next few years to assure the project's success.

NSEA has already documented over 100 adult salmon migrating upstream, many of which spawned in the project reach.

We have great appreciation for landowners like Grant and Shelly, Rose Anne, and Satnam that are curious, patient, and accommodating participants, and we hope they enjoy the returning salmon for years to come.



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## FISH TALES

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**Print date:** April 2017



## From the Executive Director:

# New 3-Year Strategic Plan Emphasizes Impacts



Rachel Vasak and son Fenton Vasak during a community work party along Squalicum Creek.

### What an exciting year 2016 was!

With tremendous thanks to our amazing community, NSEA's capital campaign is completed. This major step allows NSEA to finish renovations to the permanent facility that will serve as a strong foundation for our current, and more importantly, future operations.

To guide our future operations, NSEA's board of directors worked hard to come up with a new strategic plan that will hone our focus for the next three years. First and foremost, we are excited to utilize this new property to increase our efficiency and effectiveness as we strive to recover salmon by engaging our community in restoration, education and stewardship.

Under our new plan, we will continue our core commitment to restoration projects. We'll also grow our monitoring program so we can do a better job of measuring the effectiveness of these restoration projects.

Additionally, we are planning to work with ERM to develop a tool to quantify the

carbon offset provided by different types of plants used in riparian restoration. That way, we can better report on our accomplishments not just for salmon, but also for the environment.

Our education program has a bold challenge ahead. Over the next three years, we will strive to meet the demand from teachers and grow our Students for Salmon program to ensure that every fourth-grade student in Whatcom County becomes a "student for salmon." In order to do this, we are refining our education program and working to secure funding to meet the need.

We are also prioritizing the development of a defined internship program. Currently, we work with college-level interns each year to implement our education and stewardship programs. In order to create lasting results and ensure sustainability, we will grow and add structure to our internship program over the next three years.

**- Rachel Vasak  
Executive Director**

## NSEA Staff Update:

### Like Salmon, Newest Staffers Find Their Way Back



Kendra Krantz

Growing up in the concrete jungle of northeast Texas, I hardly knew anything about water – let alone what a salmon was.

This may lead one to wonder why I decided to go to college in arguably the wettest and most salmon-influenced region in the Lower 48. Trust me, I asked myself the same question during my first few Washington winters, but Bellingham grew on me quickly.

I studied environmental education at Western Washington University's Huxley College of the Environment and fell in love with the Bellingham community. Seeking to get more involved, I obtained an internship with NSEA.

Though I was an education intern, I found it hard to stay away from NSEA's other programs and wound up at work parties, outreach events and community celebrations.

After I graduated, NSEA directed me to a job opportunity with another Regional Fisheries Enhancement Group based on the Olympic Peninsula, the North Olympic Salmon Coalition (NOSC). I was the Washington Conservation Corps Education and Outreach Assistant at NOSC for a year.

My work with NOSC solidified my passion for salmon education, citizen science and community stewardship. It is rather fitting I have recently found my way back to Bellingham and NSEA just

*Please continue on page 8*



Amy Johnson

### Describe your new position at NSEA

My new title is Advancement and Communications Coordinator. I have a great job. I get to meet people, build community, learn about our neighbors and hear their stories, create volunteer opportunities to make our community stronger, plan parties, get dirty, plant trees, teach people how connected we are to salmon and rivers in our everyday lives, and have fun!

### How do you like to spend your time when you aren't working?

At this stage of my game I feel like my free time and my work overlap. Not in an unhealthy way, in a way that I intentionally choose to spend my limited resource of time doing things that make our community a place I am proud to be a part of. That includes work, family, and recreation. So you might find me walking around the Birchwood neighborhood with my dog Daisy or son Giles, in my yard gardening (or staring at the garden daydreaming), at Cornwall park playing disc golf with my husband Jacen and the aforementioned son and dog, building cairns on a beach or river side somewhere, or in a tide pool looking for a stranded red octopus.

*Please continue on page 8*

## Spring 2017 Community Saturday Work Party Schedule

Landingstrip Creek	April 1st	9am-12pm	Acme Elementary School
Terrell Creek	April 8th	9am-12pm	Jackson Road, Birch Bay
Whatcom Creek	April 15th	9am-12pm	Maritime Heritage Park, Bellingham
Earth Day Celebration!	April 22nd	9am-12pm	NSEA Native Plant Garden, Bellingham

For specific information, especially driving directions, please visit NSEA's website: [www.n-sea.org/work-parties](http://www.n-sea.org/work-parties).

# Salmon Science



## Captive Rearing/Broodstock Programs and the South Fork Nooksack Chinook Recovery Program

By Dave Beatty  
Emeritus Board Member

Captive rearing/broodstock programs use an evolving technology to restore a stock of Pacific salmon or steelhead at risk of extinction.

It is a form of artificial propagation whereby anadromous fish of both sexes are held in captivity throughout their life cycle to maturity for spawning and never experience the freedom of the marine phase of their life cycle.

The principal reason for these programs is to increase survival in protective custody through to spawning with the intent to markedly increase the size of future natural breeding populations, thereby accelerating a stock's recovery.

Captive breeding programs are used to enhance anadromous salmonids listed under the federal Endangered Species Act (ESA). These programs may be one of the few, if not the only, method to prevent extinction of a salmonid stock. Similar programs are well known for species of mammals, birds and other fishes whose populations are also at risk of extirpation.

Examples of applying captive rearing/broodstock technology are for the recovery of Chinook stocks in Washington's White River, Oregon's Grande Ronde River, Idaho's Salmon River and California's Sacramento River; for coho in California's Russian River; for Snake River sockeye in Idaho's Salmon River and Redfish Lake; and for steelhead in Washington's Elwha River. All such stocks are listed as either threatened or endangered under ESA or considered as critically depressed.

### Producing Juveniles

There are two stages in a salmon or steelhead's life cycle where captive rearing can begin.

For one stage, wild adults returning to the stream of origin are captured for spawning to produce juveniles that are reared entirely in a closed containment freshwater facility to sexual maturity, or the juveniles, after a growth period in freshwater, are transferred to rear to sexual maturity in a closed containment marine facility. The mature adults can then be released into the stock's stream of origin to spawn and supplement natural (wild) production. Alternatively, captive reared adults are spawned to produce juveniles that are reared for release into the stock's stream of origin. Under certain conditions, juveniles from captive reared adults can be used for the next set of captive rearing of adults.

For the second stage, wild (naturally produced) juveniles are collected in a stream and reared to adulthood using the captive breeding process described above. Captive rearing for supplementation differs from typical hatchery salmon and steelhead production because the former uses either wild adults or wild juveniles, whereas hatchery production spawns adults that as juveniles were released from a hatchery, went to the ocean and then returned (homing instinct) to that hatchery for spawning and the rearing of juveniles for release in repeat cycles.

A hatchery program depends upon a sufficiently large population of returning adults to produce very large numbers of juveniles for releasing, whereas a captive breeding program involves the rearing of much smaller numbers of juveniles through to maturity in closed containment.

### South Fork Chinook

In March 1999, the Puget Sound Chinook Evolutionarily Significant Unit (ESU) was listed as threatened under the ESA. The Nooksack River's South Fork (SF) spring (early run) Chinook (SFsC) are included in this threatened ESU. Of the 22 Chinook populations in the ESU, the SF population is considered as having the highest risk for near-term extinction. For the Puget Sound Chinook ESU to be delisted from threatened, the SFsC must be on a trajectory toward recovery and meet the federal criteria for a viable salmonid population (VSP).

Historically, upwards of 13,000 spring Chinook spawned in the South Fork. The Washington Department of Fish & Wildlife estimated the escapement of natural origin SFsC ranged, between 1999 and 2008, from a low of 19 adult spawners to a high of 159 fish. These estimates could be low due to unfavorable conditions for counting during spawner surveys.

Nonetheless, the abundance of SFsC has been in a downward direction for much of the past 100 years. The stock's decline has been mainly attributed to lost and degraded habitat (lack of deep pools with complex cover, low habitat diversity, stable stream bed gravel and high water temperatures).

### Recovery Efforts

To preserve the genetic character and to increase abundance (VSP criteria) of SFsC, the South Fork Nooksack Chinook Recovery Program (SFNCRP) using captive rearing/broodstock technology for juvenile supplementation was initiated.

The SFsC supplementation program is part of the recovery actions in the Puget Sound Chinook Recovery Plan approved by NOAA Fisheries. The SFNCRP has been conducted through cooperative efforts of the Lummi Nation, Nooksack Tribe and Washington Department of Fish & Wildlife (the co-managers) and the Northwest Indian Fisheries Commission and NOAA Fisheries.

The SFsC are of great cultural significance to the Lummi Nation's First Salmon Ceremony because spring Chinook are the first adult salmon to enter the Nooksack River during a year. Moreover, ESA delisting could allow for tribal and non-tribal harvest beyond that allowed for tribal ceremony purposes.

To start the SFNCRP using the captive rearing/broodstock technology, collection of wild SFsC adults returning to the SF was attempted, beginning in 2006 and continuing in 2007 and 2008, but there were too few adults collected and, after 2008, this approach was abandoned. In 2007, natural origin juvenile Chinook were beach seined, most effectively in March through August when juveniles are out-migrating, from the SF.

Because there is a North Fork spring Chinook stock and a Nooksack fall Chinook stock whose juveniles could occur in the SF, each juvenile was genetically tested (DNA profile) and assigned to one of the three stocks at Lummi Nation's Skookum Creek Hatchery (SCH). Those juveniles whose genetic identity was clearly of SFsC stock were transferred to WDFW's Kendall Creek Hatchery (KCH) to start a captive broodstock of wild origin SFsC.

Once these juveniles at KCH were reared to a size and age for appropriate smolt development (sub yearling or yearling), half were transferred to NOAA's Manchester Research Station (MRS) for rearing to adulthood in closed containment seawater (filtered and UV treated to avoid diseases).

The juveniles in the other half remained at KCH and reared to maturity entirely in freshwater.

### Released into South Fork

Collection of juveniles in the SF continued in 2008 and again each juvenile identified genetically as the SFsC stock continued the SFsC captive rearing/broodstock program. All other collected juveniles (not SFsC stock) were released away from the SF.

When adults held at MRS were sexually mature (three to five years of age), they were transferred to the SCH or KCH for spawning. The eggs incubating at KCH were held to the eyed stage and then transferred to SCH for hatching, juvenile rearing, and release in the SF.

Complications do arise in this type of program and changes in the program's protocol at certain steps did occur without affecting the validity.

By 2015, the MRS contributed over 500 spawning adults and KCH produced nearly as many. The progeny from the captive reared adults are reared in freshwater until they become smolts for release into the SF to complete their anadromous life cycle.

In 2011, 1,954 smolts from the captive broodstock were released into the SF. The releases increased to 677,504 smolts in 2014. In 2016, even more smolts were released from SCH.

If a conservative survival rate occurs for the latter release, the numbers of SFsC returning to spawn in the SF in 2019 could be substantial and demonstrate recovery is beginning. So much depends on their survival in the ocean phase of their life cycle – a survival for which there is no way to control other than managing harvest on the international stage with Canada, also the harvest of PS Chinook in southeast Alaska.

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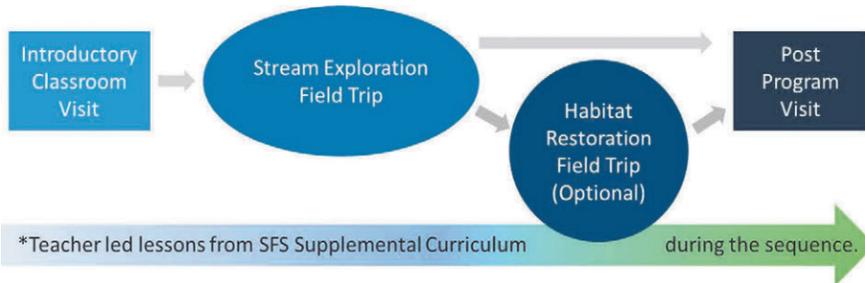
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# Education and Stewardship

## Simple Program Redesign Greatly Increases Education Reach

By Jessica Stanley and Joan Hong, Education Coordinators

NSEA's new strategic plan aims to bring outdoor streamside science to every fourth-grade classroom in Whatcom County. Working toward this goal, the Students for Salmon program was streamlined for efficiency, therefore building NSEA's capacity to reach more students.



Old format

The old format of the program had students participating in two field trips: one for streamside science and one for active habitat restoration. As the Students for Salmon program has continued to grow, this became a problem for two reasons.

First, the habitat restoration field trip was optional, meaning not all classrooms chose to participate. Without a restoration project, students did not experience the connection between what they had learned about being active stewards by improving habitat and working with local partners.

Second, for classrooms that did participate in the restoration field trip, the time that naturally elapsed between the two field trips made it difficult for students to draw connections between streamside science and habitat restoration.

With the updated program format, all participating classrooms receive one full day field trip that combines field inquiry with active restoration, helping students gain important stewardship ethics while relating this to their habitat studies in the field.

"We are really excited about offering this new format to classrooms," said Annitra Peck, NSEA's Program Director. "Students really get the chance to connect with a place when they spend all day studying the habitat, break for a field lunch and some free time for games and activities, then have the opportunity to work as a team actively improving conditions for the health of the stream."

### Saving Resources

Behind the scenes, this new format saves NSEA a tremendous amount of crucial funding and staff time. Two field trips required two separate bus reserva-

tions and NSEA often covers bussing costs for schools. One trip lowers costs, allowing NSEA to reach more classrooms.

Combining the two field trips also saves staff time. NSEA staff work hard to recruit and train volunteer interns to help execute programs on the ground. Two field trips required two teams of interns, while one full-day trip reduces the stress of securing volunteer help. Additionally, a fair amount of time is saved scheduling classrooms for one field trip as opposed to two.

Now, we are able to enroll more classrooms with fewer resources, empowering more students to be knowledgeable and active stewards for the health of Whatcom County salmon.

[See chart below for % increase]

### More Staff Support

Another change for the education program this year was the addition of a second education coordinator position. Each year, NSEA staff applies for AmeriCorps Individual Placements. Upon approval, we have typically secured and funded one position.

However, for the 2016-17 school year, we applied for two positions for education and were successful. Naturally, with two people dedicated to the Students for Salmon program, we can reach more classrooms, often being in two places at once!

Under this revised structure, NSEA staff hopes to come closer to the goal of reaching every fourth-grade classroom in Whatcom County. While in the past a single coordinator was able to manage the field program, having two education coordinators doubles the classroom capacity while also freeing up time for curriculum development and enhancement.



New format

### Teacher Feature: Kerry Thomas, Assumption School 4th grade

Q: How many years have you been with the Students for Salmon Program?

A: At least 10+ years.

Q: Why have you continued to participate in our program?

A: First of all, it is good to teach our kids how to care for the environment and everything that lives in it. Secondly, SFS has a great program and my students love all the stations they participate in. It is a well-rounded hands on program.

Q: How does the SFS program align with your school's standards for student learning?

A: It is a well thought out program and meets many of the state Science areas for the 4th grade requirements.

Q: This year, we changed the format of the SFS program to combine both field trips into a single outing. When compared with the old format of the program, what do you like/dislike about the new format?

A: I think it makes for a long day, and it is nice to get everything completed in that single day. It is a lot easier for the teacher because you don't have to have two separate field trip permission slips, and two set of chaperones.

Q: What were the students' reactions to the field trip?

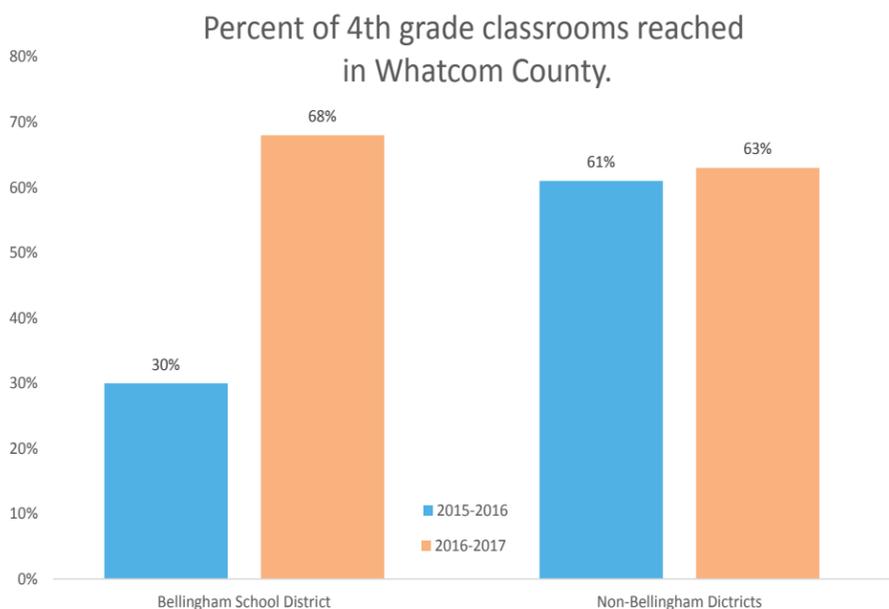
A: As always, they love everything involved with the field trip. The students get to be outside doing hands on lab work. They get to be teachers learning and telling about native plants. My kids always want to go back.

Q: What part of the program do you feel is the most impactful for the students? Why?

A: Seeing what fish go through in their life cycle made an impact on the students. You can show pictures of fish struggling to get upstream to spawn, but my 4th graders saw them in real life... They felt sorry for the fish being caught by seals and the many fishermen. We saw a lot of the garbage... in the upper part of the creek as we were walking to Maritime Heritage Park. The kids noticed right away that it would add to the problems the fish already have.

Q: What part of the program is the most valuable to you as a teacher? Why?

A: It is good for others to teach our students. Students need to know that many people are involved in protecting our environment and everything in it.



Northern Heights students on a Students for Salmon field trip

## Volunteer and Stewardship

# Wild Whatcom Joins NSEA for Community Work Party

By Khavan Tran,  
Previous Restoration Coordinator

Wild Whatcom Explorers Club is all about connections – to place, self, community and the landscape. Whether you are hiking on one of the many trails off Chuckanut Drive or exploring the beautiful wilderness in the North Cascades National Park, keep an eye out for groups of kids from Wild Whatcom's Explorers Club readily immersing themselves in the outdoors.

What began as one mother regularly guiding her children and their friends in nature walks throughout Whatcom County has since evolved into a 501 (c)(3) non-profit organization with an inspiring mission. Wild Whatcom aims to connect kids to nature in lasting and meaningful ways while developing engaged youth who care about the earth and know how to lead collaboratively towards positive change.

Now more than ever our planet needs a new generation of stewards committed to restoring nature. Wild Whatcom serves as a vehicle to fulfill this need by promoting stewardship through their outdoor education program, Explorers Club. Separated into Boys Explorers Club and Girls Explorers club, both programs are driven by similar missions: Explore, Serve, Connect. Participants in the program partake in a variety of outings to discover Whatcom County, building deep connections with the places they explore and serve.

"We have many mottos at Wild Whatcom, but one that describes this orga-



Girls Explorers Club Mentor Laura Jackson and her mentees Hailey Gutierrez and Ellie Cairns take a moment to smile for the camera.

nizational value of service is 'Connect to Protect,'" explains Hannah Thomas, Girls Explorers Club Program Coordinator. "Once people have connected to a place, we feel that they are more likely to advocate for it." The Girls Explorers Club (GEC) spends 3-4 outings per year doing service in the community, in addition to 4 exploration-based outings.

One of those service projects this year included teaming up with NSEA to restore the riparian zone of Terrell Creek

on October 29th. A group of enthusiastic girls from the Red Foxes cohort dedicated their morning with other community volunteers for salmon habitat restoration. After three hours of digging, planting and dragging sleds of mulch, we tallied a total of 400 native trees and shrubs were put in the ground that day by volunteers. Field Mentor, Laura Jackson, had positive words to share about the experience, "One thing that really stuck with me that day was that as we were leaving the site, one of the girls said, 'I can't wait to come back here next year, and in five years to see this place grow into a forest.' When we hear the girls getting excited to return to service sites, or forming plans to raise money to donate to organizations we collaborate with, it really brings our motto 'Connect to Protect' full circle."

This year alone, the Girls Explorers Club have partnered with Bellingham Parks and Recreation, Washington Trails Association, Ocean Conservancy, Woodstock Farm and NSEA.

When venturing outdoors, the Explorers Club embodies a culture of exciting one's curiosity to discover deep connections with the place. The approach is no different with service projects in regards to community.

When asked about how Wild Whatcom chooses partnerships for their service projects Thomas explains, "Our service projects are vast and diverse. In many ways, we like for the girls involved in Girls Explorers Club to get to know what is out there in Bellingham, and find service that engages them and builds a major connection to their community."

Whether it is skipping in the woods, building castles in the dirt or planting native shrubs along a creek, the Explorers Club's philosophy can be seen resonating in all of their outings. It comes back to connection – connection to self, to our community, to our planet.



400 native trees and shrubs were planted along Terrell Creek.

## Air Force-Bound Volunteer Touches Down at NSEA

By Elaine McRory, Longtime Volunteer, Donor and Co-founder of NSEA's Education Program

NSEA's newest volunteer, Mark McCauley, plans to volunteer for NSEA as much as he can until he joins the U.S. Air Force as an officer next year. What is it about



Mark McCauley scrubs out the mud from the Kubota bucket after making drainage improvements to the well-head at NSEA's new home.

NSEA that attracts amazing volunteers like Mark who have given us so much over the years?

Mark grew up in Missoula, Mont., in a family that valued achieving goals through hard work and persistence. His parents, both great role models, went back to school in their 40s to further their educations. His mother earned a degree in medicine and his father a Ph.D. in applied mathematics.

Mark followed his parents' example by exploring physics, but ending up with a bachelor's degree in chemistry and a minor in economics from Western Washington University. Mark attended the University of Montana where he met his wife, Kyla, while playing in the UM marching band. They have been married about nine years and are almost exactly the same age (31) to the day. She was born four days ahead of him, but he figures since she is a triplet and not "full term" it's at least a tie. Kyla has degrees in culinary arts and a Master of Business Administration.

They both are lovers of learning. One of their favorite pastimes is to search Google for the most obscure animal they can find and learn as much as they can about it. Mark's favorite thing to do is to make Kyla laugh.

Having a very curious and nimble mind, Mark loves learning new skills and concepts and perfecting what he already knows. Most importantly, he understands the value of organization and doing tasks right the first time – both fundamentals of efficiency.

Mark thrives on this, sorting, organizing, labeling, septic tank ditch digging, gravel spreading and doing the carpentry, electrical and plumbing work that NSEA would otherwise have to pay someone to do.

Now, to answer the question of why amazing volunteers are attracted to NSEA, here are Mark's observations. He values NSEA's mission to bring back salmon by restoring their habitat through a positive, non-confrontational approach. He respects the inclusive way NSEA works with every part of our community to achieve a common benefit.

Mark cares about achieving something worthwhile and thanks NSEA for giving him the opportunity to do just that. At NSEA, we are just as grateful for our amazing volunteers, donors and property owners whose cooperation is key to achieving our goal.

Thank you, Mark, for all your work and your invaluable perspective on NSEA's success.

## CREW CORNER

# New WCC Crew Brings Passion for Community

By James van der Voort,  
WCC Crew Supervisor

Another AmeriCorps year kicked off in early October, and brought with it five new Washington Conservation Corps (WCC) members to the NSEA team.

As an AmeriCorps program, WCC creates future leaders through community involvement and mentorship. For nearly two decades NSEA has sponsored one of WCC's 55 field crews across the state to restore critical habitat, build trails and respond to local and national disasters.

Our WCC crew is ready for action, helping to restore salmon habitat along a Goodwin Creek tributary in Everson, Terrell Creek in Birch Bay and Squalicum Creek in Bellingham, just to name a few. The crew is excited to help NSEA work hard to improve salmon habitat.

## Lani Asman

I grew up in Livingston, Mont., alongside the Yellowstone River and came to Bellingham five years ago to attend Western Washington University. After graduating last year with a bachelor's degree in mathematics and interdisciplinary concentration from Fairhaven College, I wanted to explore the greater Bellingham area, get my hands dirty and make a positive impact on the area I have grown to love and now call home.

## Josh Assink

I hail from Yakima, Wash., home of hops, fruit and sunshine. I was eager to see trees and rain, so I journeyed to Bellingham to study at Western Washington University, where I graduated with a bachelor's degree in biology and a minor in environmental science. As a returning WCC crew member, I find this job rewarding in many ways, from learning science to beefing up with all the heavy lifting. I am here to protect our wonderful salmon. I like birds, clouds, puppies and shredding gnar on the mountain.



WCC Crew members (left to right) Chris Cabello, Joelle Blais, Hailey Reese, Lani Asman, and Josh Assink.

## Joelle Blais

Originally from Monroe, Wash., then moving to Seattle to obtain a degree in fisheries at the University of Washington, I am excited to start this new chapter of my life in Bellingham. In my first WCC term, I am looking forward to the variety of opportunities available, such as trainings, job shadowing and crew exchanges. I enjoy being outside every day and making

a difference, one project at a time. I hope to see the salmon runs return and to see the newly planted trees become thriving forests in the future.

## Chris Cabello

Born and raised in Whatcom County, I think small plants are cuter than small animals and have a growing fascination with salmon (shout out to NSEA!). I'm looking forward to broadening my knowl-

edge of native flora and fauna and gaining the skills and tools needed to further my career in environmental science through this amazing opportunity.

## Hailey Reese

I am from Olympia, Wash., and studied ecology at Central Washington University. I'm looking forward to being old and bragging about how tough I was at 21. Also, I think fungi are cute.

## NATIVE PLANT CORNER

# On Your Bark, Get Set, Grow!

By Melissa Habenicht,  
Spawner Survey Intern

Pacific Ninebark (*Physocarpus capitatus*) is an ideal species for riparian restoration.

This long-living, deciduous shrub is native to the west coast of North America. It primarily occurs west of the Cascade and Sierra Nevada mountains, ranging from southern Alaska to central California.

Pacific Ninebark can grow up to 15 feet tall and is distinguished by dome-shaped clusters of white flowers and maple-like leaves that turn rosy brown in autumn. The name "Ninebark" comes from its shaggy, multi-layered bark, which is mildly toxic and used in traditional indigenous medicine as an emetic and laxative.

Beneficial to restoration projects, Pacific Ninebark grows rapidly and can tolerate a wide range of environmental conditions, though it most commonly occurs in

moist soils along streambanks, lake margins and boggy areas.

Its dense, fibrous root system improves salmon habitat by stabilizing soil and reducing streambank erosion. Leaf litter from Pacific Ninebark plays a role in the salmon food web by feeding macroinvertebrates, which are consumed by juvenile salmon rearing in creeks.

Aside from benefiting salmon, Pacific Ninebark also attracts pollinators with its showy flowers in late spring to early summer, while its large, red fruits serve as forage for birds in autumn. Additionally, its woody stems provide suitable nesting areas for birds and small mammals but have low palatability to browsing mammals, such as deer and elk.



Pacific Ninebark, shown in bloom, is a go to riparian plant in many of NSEA's restoration projects.

Another advantage of Pacific Ninebark is the ease of propagation through live cuttings, which is economical and produces useable plants faster than growing from seed. Autumn is the best time to transplant Pacific Ninebark due to high moisture levels in the soil.

Accordingly, this fall, NSEA planted Pacific Ninebark along Landingstrip Creek in Acme. Once a poplar plantation, this site has become an open field. Because Pacific Ninebark can tolerate full sun, it works well for restoring such areas that do not have canopy cover to provide shade.

Overall, the versatility, cost-effectiveness and ecological benefits of Pacific Ninebark make it an "ex-stream-ly" qualified addition to NSEA's riparian restoration efforts.



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# NSEA Quarterly Awards

## Intern of the Quarter: Alexa Brandt

### Tell us about yourself and how you got involved with NSEA:

I was lucky enough to grow up in the beautiful state of Washington with a family that values the outdoors and instilled in me a strong passion and respect for the environment. Over the years, this curiosity and excitement for learning about the environment has only strengthened. I spent four years at Western Washington University and graduated with a B.S. in Environmental Science in March 2016. During my time at WWU, I enjoyed learning about all the different aspects of environmental science, but upon graduation, and looking forward at the possibility of graduate school, I knew I needed to narrow my focus and dive deeper into a specific field. I researched many different organizations in the area, and was greatly impressed by the mission and vision of NSEA. The environ-

about macro-invertebrates, native plants, or water quality, I absolutely love it when I can see the excitement in the students' eyes, as they learn about their neighboring ecosystems.

For the monitoring internship, I have just really enjoyed being out in the field and seeing salmon up close. I love learning hands-on and have found things like harvesting otoliths to be so fun (despite the smell).

It has been an incredible opportunity to experience the education side of things as well as the field monitoring. I have really enjoyed the balance between the two—working with students and also having the opportunity to experience the behind-the-scenes field science. This has been a great way to fuel my own quest for knowledge.

Overall, I have really enjoyed getting to know the NSEA and AmeriCorps staff



Alexa Brandt has had a love for fish since she was a young girl.

mental education and habitat monitoring internships caught my eye and I decided to apply and see what would happen. As luck would have it, they both worked out.

### You are currently participating in both a monitoring and education internship. How have you balanced both of these internships?

In making the move back to Bellingham, I decided that I would make the internships I received, my main priority. I moved back to this area so that I could have the opportunity to gain experience and expand my environmental science and education knowledge. I waited until I secured a consistent schedule with the monitoring and education internships before finding a part time job in the area. Whenever I make a commitment to something, I follow through. Time management and prioritizing the different things going on in my life has been essential in balancing two internships and a job.

### What has been your favorite moment during your internships?

For the education internship, my favorite moments have been when I notice students that just "get it"—when you can see that they understand WHY what we are learning about is important AND they are excited about it. Whether I'm teaching

as well as my fellow interns/volunteers—everyone is so friendly and awesome!

### Tell us about your life outside of NSEA.

My life has been pretty busy between two internships and a job, but in my free time I love spending quality time with friends and family. My sister is a student at WWU and my parents moved to Bremerton, WA (from Kent) a couple years back. When I can, I try to get outside and go hiking, and at least once a year my family and I go on a backpacking trip to Lake Ozette on the Washington Coast (I have gone almost every year since I was 2 years old!). I also enjoy a good board game or two, especially Settlers of Catan.



## Volunteer of the Quarter: Jennifer Hansen



Jennifer Hansen has scanned over 10,000 historic NSEA photos as a volunteer so that our restoration work is preserved.

Jennifer Hansen is a dedicated volunteer who has spent each Thursday for the last several years scanning historic photos that document 400-plus habitat restoration projects in Whatcom County. She estimates she's scanned more than 10,000 photos! Her work is critical for preserving NSEA's history. We are so thankful for her commitment.

### Tell us about yourself?

I grew up in Bellevue and moved across the country for 10 years following my husband's career before settling in Bellingham 29 years ago. I have three daughters all living within driving distance of Bellingham and four grandchildren. Also, I have two golden retrievers who keep me busy walking them and throwing lots of balls.

Once we were settled in Bellingham, I went back to college and received a degree in philosophy from Western Washington University. I worked for WWU for six-and-a-half years and then for the state of Washington for one year before I became

disabled with Parkinson's disease.

### Why NSEA? What about NSEA compelled you to make the choice to volunteer?

I came to NSEA as a result of a friend's recommendation. He works for WWU and knew about the old building where NSEA operated. I chose NSEA because I loved to fish for salmon on the Nooksack River.

### Do you have a favorite archived photo that you've scanned into NSEA's records? Why did it capture your attention?

Probably my favorite photos I've scanned have been the ones with creeks meandering through deep woods, bubbling little creeks finding their way back to Bellingham Bay and welcoming the salmon on the way to their spawning beds.

### How did you come to love fish?

I love fish because I grew up fishing with my dad and grandfather. Those are precious memories.



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# Salmon Science Continued from page 3

## Genetic Diversity

An important feature of any captive rearing/broodstock program is making appropriate crosses between the adults reared in captivity. Consequently, each SFsC juvenile used in the SFNCRP has its genetic (DNA) profile determined and is implanted with a positive integrated transponder (PIT tag) to identify each fish by a unique code that can be read without sacrificing the fish when it is ready to spawn.

When captive reared adults are spawned at KCH or SCH, the PIT tag identifies the fish and its DNA profile is known. Therefore, crosses can be made between a male and a female having the least genetic relatedness within the pool of adults to maintain genetic diversity within the pool of progeny from these matings. The SFNCRP is slowly moving from the matings of only captive reared adults to matings between returning SFsC adults and captive reared adults

## Habitat Restoration

A captive rearing/broodstock program has its challenges, but the technology, if appropriately applied, has the potential to move the SFsC on a trajectory toward the recovery required within the Puget Sound Chinook ESU. Habitat restoration and protection directed toward limiting factors – and being concomitant with the captive rearing/broodstock program for juvenile supplementation – is essential to move a stock toward recovery.

The Lummi Nation, Nooksack Tribe, Whatcom Land Trust, NSEA, Washington Department of Fish and Wildlife and others have undertaken considerable habitat restoration and protection in the South Fork. Providing the the SFsC with the necessary deep pool, cool water refuges for resting to become reproductively mature,

and the required amount of properly functioning habitat for spawning, incubating and for juvenile survival and rearing before they leave for the ocean. For example, when a river is constrained to avoid flooding during high rates of flow, the flows energy is not dispersed and the gravel containing incubating eggs and alevins is scoured out, causing high mortality.

## Pricey Program

As with hatchery programs, the costs for the SFNCRP have been substantial, including the initial attempts to capture wild adults; the collecting of wild juveniles to establish the broodstock for captive rearing of adults; DNA testing and PIT tagging of juveniles for captive rearing and for making appropriate crosses of these adults for genetic diversity in their progeny released for supplementation; tracking growth rates, over several years for rearing juveniles to mature adults (may require disease prevention or control) in closed containment; transporting juveniles and adults between facilities and any required hatchery modifications, especially the special large tanks for rearing to adulthood, finally rearing juveniles at SCH until their release in the SF for outmigration.

To accommodate the rearing of the progeny from captive reared SFsC adults at SCH for release as sub-yearlings into the SF, the KCH accepts about one-half of the coho eggs from the SCH's coho program and incubates and rears these coho juveniles for eventual release back into the SF. Yes, it is complicated by necessity. Beyond the material costs, there are the requirements for specialized staffing to plan and execute the program at specific times.

For additional information, visit <https://afs.confex.com/afs/2015/webprogram/Session3518.html>.

## Please Join Us for Salmon Viewing Events This Summer through Our Nooksack River Stewards Program

Check our website for more info!  
[www.n-sea.org/river-steward-events-2017](http://www.n-sea.org/river-steward-events-2017)

## Like Salmon, Newest Staffers Find Their Way Back (continued from page 8)

### Kendra Krantz (continued)

as salmon find their way back. Luckily, I am not planning on spawning and dying anytime soon.

My new position as NSEA's Program Coordinator is more rewarding each day as I continuously see the impacts we are making ripple across Whatcom County. I am also happy to report that despite my southern upbringing, I have found the rain and salmon of the Pacific Northwest to be part of who I am today.

When I am not meeting volunteers on rainy Saturday mornings to plant trees, doing science experiments with fourth-graders or devising new approaches so that we can reach more students, one can find me reading, backpacking, watching football (a triple fan of the Minnesota Vikings, Denver Broncos and, of course, the Seattle Seahawks!), crafting or fishing.

### Amy Johnson (continued)

#### What inspires you?

Oh my. So much. Rushing rivers, trees, quiet spaces, big skies full of stars, clouds, rainy days, black holes, my son, my mom, my grandma, my husband, birds, my garden, my home, our community, food, the Salish Sea, rockfish, octopus, salmon, mountains, music, my friends, art, education, restoration, the list goes on and on.

#### Who is your role model/who is someone who highly impacted who you are today?

I can't pick just one. Iris Apfel, fashion icon, interior designer, collector, artist and so much more. She is unique, never boring, a

force to be reckoned with, a true creative. My grandma, Florence, 100 years young this August, for sharing her positive attitude, the art of forgiveness, and the importance of always having something to do. My mom, Averill, who is the most accepting person on earth.

#### If you were a salmon, what salmon would you be and why?

I think I would be a coho. They tend to stay close the their birth river so we have homeboddiness in common. Some travel thousands of miles, since I grew up in WI there is another thing we have in common. I love silver, they are called silvers.

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### Become a Member of NSEA

By joining NSEA, you will be supporting an excellent organization that works within our community to help wild salmon populations. Your contribution will sponsor the hard work of volunteers, students and community supporters who are participating in restoration work, educational programs, community outreach and service learning.

There are many benefits to becoming a member, including a year subscription to Fish Tales and Fish Bytes, personal invitations to NSEA events and an NSEA sticker. Business members will also receive a discounted rate for advertising in Fish Tales and be included in our Annual Report. Your membership donation is 100 percent tax deductible: Student/Senior-\$15; Individual-\$25; Family-\$30; Business-\$100.

For more information, call us at 360-715-0283 or e-mail [info@n-sea.org](mailto:info@n-sea.org).

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**Our brand new Mission Statement:**  
*NSEA strives to recover salmon by engaging our community in restoration, education and stewardship.*