

FISH TALES

Volume 23, Issue 2 • Spring 2015

THE NEWSLETTER OF THE NOOKSACK SALMON ENHANCEMENT ASSOCIATION

Please Welcome the Newest NSEA Board Members

Nicole Barrett, MBA

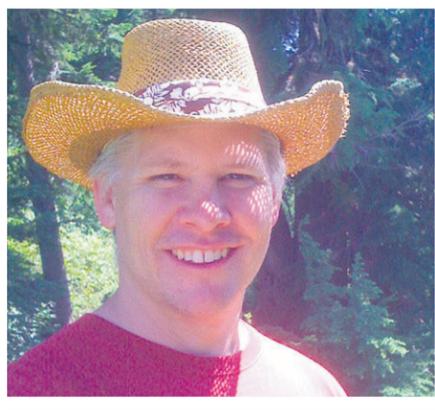
Accountant, Metcalf Hodges



Favorite cheese? Camembert
Favorite creek or river? Chilliwack River, tributary of the Fraser River after rolling down from Hannegan Pass in the North Cascades
Why NSEA? NSEA represents to me an opportunity to learn, to give back, to make lasting friendships and to help improve the environment for the future.
What fin are you? Dorsal Fin

Matthew Clark, MBA

Contract Administrator, Bellingham Marine Industries, Inc.



Favorite cheese? Smoked Gouda
Favorite creek or river? Canyon Creek, tributary of the North Fork of the Nooksack River
Why NSEA? Beyond our mission, NSEA is a product of and for our community; one that gives so much more than it asks; all of which is a reflection of the dedicated staff, volunteers and benefactors that bring it to life.
What fin are you? Dorsal Fin

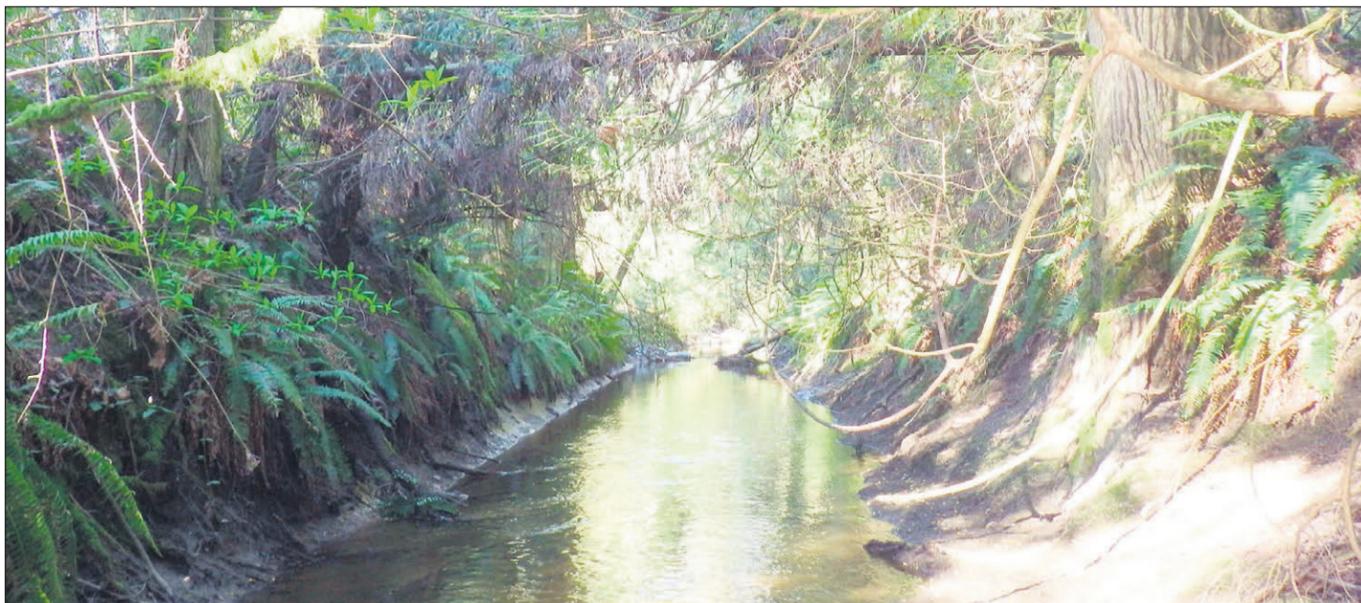
Paula L. McCandlis, JD

Co-managing Partner, Brett McCandlis Brown, PLLC



Favorite cheese? Too difficult! Too many to choose from!
Favorite creek or river? Whatcom Creek – near the mouth
Why NSEA? I joined NSEA to be a caretaker for the extraordinary place that is Whatcom County.
What fin are you? I'm a Caudal Fin, in that I am strong and necessary. I create the thrust and movement to propel forward.

Partners Enhance Salmon Habitat on Upper Terrell Creek



NSEA and other partners are proposing to restore key ecological functions to the ditched and bermed channel along the section of Terrell Creek shown above.

By Darrell Gray, Project Manager

Terrell Creek is an independent drainage in Whatcom County that flows northwest from Lake Terrell, a state Wildlife Area, into Birch Bay just north of Birch Bay

State Park near Blaine Wash. The Terrell Creek Watershed currently supports coho and chum salmon and endangered steelhead, though in low numbers. Terrell Creek has great potential for

restoring salmon runs because a large amount of the watershed is held in conservation by Birch Bay State Park, Washington Department of Fish & Wildlife Terrell Lake Reserve and the BP Cherry Point Refinery. All of the major fish passage barriers have been removed and much of the riparian buffer is well forested.

Low Quality Habitat

Since 1998, NSEA has worked with landowners to implement salmon habitat enhancement projects within the more negatively impacted reaches of Terrell Creek downstream of Grandview Road.

In 2011, the Washington State Department of Transportation removed a fish passage barrier along Grandview Road. Since then, NSEA has completed extensive habitat assessment and topographical surveys of Terrell Creek from Lake Terrell downstream to Grandview Road.

During the 1930s, from the lake downstream to Brown Road, the channel was ditched, straightened and given berms. The existing channel is greatly oversized, scoured to hardpan in most locations, and has no connection with the flood plain (see photo).

While the riparian vegetation consists of healthy second-growth forest, little large woody debris is present within the channel to scour pools and store and sort stream sediments. Salmon habitat is of very low quality with few pools and no spawning habitat.

Multi-Partner Project

NSEA is presently working with the Whatcom Conservation District, WDFW, Whatcom County, Whatcom Public Utility District and several private landowners to restore salmon habitat within this reach of Terrell Creek.

The project goals are to increase 1) the number and depth of pools with cover, 2) the amount of available spawning habitat and 3) flood plain connectivity. The project will involve expanding the streambed width as much as 5 feet throughout the upper project reach, removing the existing berms where possible, placing LWD and re-vegetating areas of disturbance.

These activities will also necessitate the replacement of a county culvert on Aldergrove Road. Because there is a large PUD water line over the culvert that provides water to the BP Cherry Point Refinery, the expense of replacing the culvert will be substantial.

While NSEA is pursuing funding sources for the culvert replacement, it has begun restoration activities downstream near Brown Road. In 2013 and 2014, NSEA worked on the Louveau and Kostanowski

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FISH TALES

Fish Tales is the quarterly newsletter of the Nooksack Salmon Enhancement Association (NSEA).

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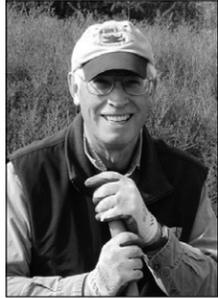
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Dave Beatty

From the Board President:

A Look Back at a Successful Year

By Dr. Dave Beatty, NSEA Board President

I recently received a hard copy of the Regional Fisheries Enhancement Group Program's Annual Report for July 1, 2013, to June 30, 2014 (the program's fiscal year). The report includes the annual report for each of the 14 groups in the statewide RFEG program. Additionally, the Nooksack Salmon Enhancement Association produced an annual report for 2014. A review of each report reveals the extensive accomplishments of NSEA with respect to its mission.

Our Structure

Eighteen dedicated volunteers serve on NSEA's board of directors. Three positions are reserved for high school and college students. Board members attend monthly board meetings, serve on committees and use NSEA's Strategic Plan to direct policies for its salmon habitat projects, education and community outreach programs, organization advancement and other goals. This is a cooperative effort between the board and NSEA's staff.

In addition, the board has fiduciary responsibilities and, together with NSEA staff, ensures the management of grants, contracts and the annual budget. Supported by more than 50 grants and contracts, plus donations, NSEA's annual budget for many years has exceeded \$1 million.

For the daily operations, NSEA has an organizational structure of an executive director who oversees the work of a project manager, program director, education manager, finance manager, development manager, restoration technician and CATS coordinator. The executive director and other staff members do the heavy lifting in securing grant funds, developing community events and managing programs.

Our Partners

Since its establishment in 1990, NSEA has always followed a policy of working to pursue its mission cooperatively with landowners; local, state and federal agencies; tribes; businesses and industry; other organizations; students, teachers and schools from elementary to post-secondary; and community volunteers.

In 2014, 1,845 volunteers attended work parties to plant native shrubs and trees and remove invasive species in the riparian zone of eight county creeks. They also helped maintain NSEA's native plant nursery. Work parties are organized by a volunteer coordinator, who holds a Washington Service Corps position.

Last year, NSEA's volunteers contributed 22,612 hours, an impressive number and highly valued contribution in a very successful year of accomplishments.

Our Programs

NSEA's education programs, currently in their 17th year, are an important and highly successful component of its Strategic Plan. In 2014, students participated in NSEA programs by spending 13,828 hours in either Students for Salmon at an elementary school (1,101 students in 47 classrooms), middle school service learning (133 students) or Swimming Upstream at a high school (148 students).

Scientific monitoring has become an important component of NSEA's Strategic Plan. Under the direction of a monitoring coordinator, who holds a Washington Service Corps position, spawning surveys of fall Chinook, coho and chum salmon are conducted on 16 creeks in Whatcom County. These surveys, under the direction of the Washington Department Fish & Wildlife, can indicate the effectiveness of NSEA's habitat projects. Together with the City of Ferndale and Windward High School, water quality in Schell Creek has

been monitored since 2007. Beginning in 2012, water quality and stream flow has been monitored in Terrell Creek.

College students and recent graduates work as interns in a variety of roles: administration, monitoring, environmental education, community events and habitat restoration. During 2014, 44 interns participated with NSEA.

In its 10th year in 2014, the Nooksack River Stewards is a program conducted in partnership with the U.S. Forest Service. Five interns provided salmon-focused education to 2,002 summer visitors of the Nooksack River near Glacier, Wash.

Riparian Restoration

Salmon habitat restoration is another major focus of NSEA's strategic plan. During 2014, 12 restoration projects were completed on nine creeks and the Middle Fork of the Nooksack River. The planting of 17,343 native trees and shrubs along the streams covered thousands of feet. Each of seven fish passage barriers was replaced with a bridge, thereby providing better access to more than 10 miles of upstream salmon habitat.

Another major project in 2014 was the installation of 26 large woody debris structures and the placement of spawning gravel in Terrell Creek. In 2009, a fish passage barrier on Landingstrip Creek (a South Fork tributary) was removed. Each year since the culvert's removal, 12 or more coho redds have been seen above this former barrier, a test of effectiveness. A project manager directs the habitat projects and is ably assisted by the Washington Conservation Corps crew.

Please refer to the sidebar to the left for names of NSEA's board of directors, staff, Washington Service Corps and Washington Conservation Corps crew.

- David Beatty
NSEA Board President

NSEA's 2015 Annual Community Celebration

Thank you for making this year's Annual Community Celebration a wonderful event.

With standing room only at The Leopold we enjoyed a festive evening recounting NSEA's 2014 accomplishments and sharing our plans for 2015 and beyond!

Congratulations 2014 Award Winners

Volunteer: Kyle Renninger, Amethyst Interactive

Educator: Harlan Kredit, Lynden Christian High School

Landowner: Stan and Phyllis Kostanoski

Community Partner: Whatcom Community Foundation

Thank you to each of our event sponsors!



LOST RIVER WINERY



NSEA Calendar of Events April through July 2015

Work Party - Whatcom Creek	April 25	9am - Noon	Maritime Heritage Park
Work Party - NSEA Native Plant Nursery	May 2	9am - Noon	NSEA
Plant Sale - Master Gardeners of Whatcom County	May 9	9am - 2pm	Hovander Homestead Park
Work Party - Little Squalicum Creek	May 30	9am - Noon	Little Squalicum Park
Blaine Water Fest	June 7	11am - 3pm	Blaine Harbor Gate 2
Event - 13th Annual Salmon at the Bay	July 11	5pm - 8:30pm	Boundary Bay Brewery



Salmon Science

Shedding New Light on Eelgrass Recovery

Encyclopedia of PUGET SOUND This article is reprinted with minor adaptations with permission from Salish Sea Currents, an online magazine produced as part of the Encyclopedia of Puget Sound, a comprehensive source for the latest in Puget Sound science, natural history and species status and trends. Check it out at www.eopugetsound.org.



Puget Sound Eelgrass - Photo credit Ingrid Taylor, Creative Commons

It harbors as much life as an old growth or tropical forest, and it hides in the waters just off shore. Without it, scientists say, there would be precious few salmon or herring, and little prey for orcas. It means hundreds of millions—perhaps billions—to the local economy, and chances are, most Puget Sound residents have never heard of it. It is eelgrass, and there may be no plant more central to Puget Sound's environmental wellbeing.

ity. Studies show that some eelgrass beds are increasing while others are in decline.

If eelgrass is declining, why not just plant more of it? That's one of the ideas under consideration by state and federal agencies. Last summer, divers planted nine experimental plots at five sites in Puget Sound, including sites of unexplained eelgrass loss.

As part of the process, Thom, along with his colleagues at the Washington

Sound, including light availability, salinity, temperature, and depth. When the right measurements align, the model suggests a planting site.

Light in particular is key, says Thom. It turns out that getting enough of that precious resource can be a challenge. Eelgrass evolved as a shade-adapted plant, able to thrive in the region's relatively low light. But other, human-caused factors appear to be changing conditions beyond the plant's tolerance.

The pollution factor

One of those factors is increased nitrogen. While eelgrass needs nitrogen to survive, too much of it sends phytoplankton, the plant's algal neighbors into a frenzied growth that blocks sunlight. Without the light, eelgrass can't harvest energy through photosynthesis. Fred Short of Washington's Department of Natural Resources, has been studying this phenomenon, and says it is localized in certain areas of Puget Sound with higher pollution.

"It's an issue in parts of Puget Sound, not all of Puget Sound," he says, but where it occurs the evidence is fairly obvious. "Stick your camera under the water and take a picture and it's just green [with phytoplankton]," says Short.

Related: nitrogen as an eelgrass stressor in Puget Sound

Short first noticed the problem of decreasing light for eelgrass on the East Coast and has been testing whether the same situation exists in Puget Sound. As on the East Coast, eelgrass is "not growing as deep as it used to grow," he says, "which

is a good indicator of decreasing water clarity." Potential causes include stormwater runoff, failing septic tanks and sewage treatment discharge. Runoff from dairy and meat production also boost nitrogen.

The planting model seems to support that idea. It predicts less success for eelgrass near places like southern Puget Sound, where higher nitrogen levels occur. Most of the experimental plantings followed the model's predictions, while a few struggled for unknown reasons. Last summer's work was a first step in what researchers expect to be an ongoing process.

Adapting to unknowns

If nitrogen pollution is a significant barrier to eelgrass recovery, then scientists are not without hope. Water quality can get better, they say.

"We can enhance the [eelgrass] productivity of the Sound and prevent it from degrading further," says Short, who points to solutions like improving sewage treatment plants and filtering stormwater and agricultural runoff.

Even so, scientists acknowledge that many other threats to eelgrass remain, from heavy metals to shoreline development, damage from boat propellers and dredging and even emerging concerns like eelgrass wasting disease. They also point to the specter of climate change. Paradoxically, ocean acidification, the result of increased carbon dioxide absorption from the atmosphere into Puget Sound waters, could actually benefit eelgrass because it would increase carbon dioxide used by the plant; but as the oceans warm and sea levels rise, climate change also threatens fragile habitat.

Please continue on page 8



Selecting plants from donor cultures - Photo credit Ron Thom

"Eelgrass is critical to what we know and love about Puget Sound," says Ron Thom, a biologist working on eelgrass restoration at the Pacific Northwest National Laboratory.

Like most scientists who study the plant, Thom is something of an eelgrass evangelist. He ticks off just a few of the plant's benefits: Eelgrass protects young salmon and shellfish such as Dungeness crabs. It stymies coastline erosion with its root and shoot system, and is central to the food web. Its narrow, olive-colored leaves house millions of tiny organisms that will in turn feed larger invertebrates, and eventually, the fish we catch and the birds and whales we watch.

In short, healthy eelgrass (*Zostera marina*) indicates a healthier Puget Sound, which is why Thom and a group of scientists were out on the water last summer planting some unusual garden plots. Studies show that eelgrass is in decline in significant areas of Puget Sound, and scientists are looking for ways to bring it back to its historical levels. In a very literal way, they hope to plant the seeds of Puget Sound recovery.

Why not just plant more?

One of the goals set by the state's Puget Sound Action Agenda is to add 20 percent more eelgrass to the region by 2020. But three years into the effort, there's been little or no progress, and growing perplex-

State Department of Natural Resources and the Environmental Protection Agency, unveiled a computer model that identifies areas in Puget Sound where eelgrass could potentially thrive. The model compiles instrument readings from across the

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Education and Stewardship

CATS Engages 125-Plus Citizens in Salmon Recovery

By Rachel Benbrook, Citizen Action Training School Coordinator

As spring blossoms around Whatcom County, we here at NSEA are feeling renewed appreciation and inspiration as we celebrate the accomplishments of the first two years of the Citizen Action Training School (CATS).

The CATS program is a Puget Sound-wide collaboration with six fellow Regional Fisheries Enhancement Groups (RFEs). The RFEs have been working together since 2013 to plan and implement a comprehensive, three-month-long training program about coastal and watershed ecology and the role of citizens in the Puget Sound recovery effort.

CATS provides valuable training in program planning, which participants immediately put into practice as they plan and implement the service project component of the class with support from RFE staff.

Diverse Presenters

To date, more than 125 citizens from 11 counties and 56 communities learned about critical environmental and regulatory issues from experts and heard about opportunities to be engaged in local efforts to protect and restore the watersheds and shorelines of Puget Sound.

Through five sessions around the region, presenters from state and federal agencies, local governments, tribes and nonprofit organizations delivered the CATS curriculum. All told, CATS participants had the opportunity to hear from an impressive group of 139 presenters repre-



CATS Everett students at Tulip Tribe's Qwuloolt restoration site in the Snohomish Estuary.

senting 92 different stakeholder groups involved in the Puget Sound recovery effort.

In the words of one participant from the Olympic Peninsula session, "There was a good balance between information about history, ecology, the future and also the reality of being an activist and the channels necessary to act regardless of what it is one would like to accomplish."

Partnerships

The CATS program has been both a

success in its own right and a perfect catalyst for enhanced collaboration between NSEA and fellow RFEs. Together, the seven RFEs collectively reach all 2,400 miles of shoreline, 12 counties and 14 major river systems in Puget Sound.

In working collaboratively to implement the CATS program, the RFEs have developed a road map that allows them to maximize their collective impact on local and regional recovery efforts. CATS has been a great success, and all are excited to do more projects together in the future!

The staff and board at NSEA send a sincere thank you to the six RFE partners: Skagit Fisheries Enhancement Group, Sound Salmon Solutions, Mid Sound Fisheries Enhancement Group, South Puget Sound Salmon Enhancement Group, North Olympic Salmon Coalition and Hood Canal Salmon Enhancement Group.

To learn more about these great organizations, see the Regional Fisheries Enhancement Groups Coalition website at www.rfeg.org.

NSEA also extends a deep appreciation to the many presenters. Every one of them donated his or her time and knowledge, a huge contribution to the success of CATS.

NSEA also sends a big HUGE thank you to the CATS participants who gave so generously of their time and energy to learn more about this amazing place we all call home. Their dedication and thirst for knowledge has been an inspiration to all the RFE staff that worked to implement the Citizen Action Training School.

Sharon Leishman, a Seattle CATS student, said, "The power of this program is fostering long-term citizen engagement." We are excited to see where you go from here!

For information and to see examples of student service projects, go to www.pugetsoundcats.org.

NSEA Program a Great Option for Students

Education programs generously supported by BP Cherry Point, Captain Planet Foundation, NOAA, WDFW's Aquatic Lands Enhancement Account and the Whatcom Conservation District

By Sean Wu, Education Intern

Options mean possibilities and choices, which is exactly what Options High School provides to its students.

Recently, students at the high school had the option of taking an environmental science class and participating in NSEA's Swimming Upstream program, where they learned about stream ecology and gained experience collecting and analyzing data to determine the health of a local stream.

The program also gave the students the opportunity to work outside and get their boots dirty. Once a week last February, a class of Options students, led by their teacher Joel Carter, met NSEA's education team at a restoration along Squaticum Creek.

Immersive Learning

During the program, Options students learned about water quality. They tested Squaticum Creek for turbidity, temperature, pH and dissolved oxygen, using actual field-testing equipment. They even performed an in-field titration to test for dissolved oxygen concentrations.

Students had the chance

to get into the creek with a net and study macroinvertebrates. Collecting and identifying macroinvertebrates presented them with a unique and captivating experience.

While getting into the 13°C water at 10 a.m. in the morning wasn't for all the students, the following lesson about ripar-

ian vegetation and invasive species quickly turned into a fast-paced, competitive trivia game.

On the final week, students took all of this new knowledge and participated in restoration work, planting trees and removing invasive species. Through Swimming Upstream, Options students not only enjoyed hands-on learning; they made a tangible difference in their community.

About Options

Options High School offers an alternative learning environment, which tends to be more hands on, personalized and catered to each individual student.

"Teachers are more personal, more like peers," said Kyle Coy, an Options student. "They treat us like equals, and not like they are above us."

Students who attend the school are generally there by choice, which promotes a positive and engaging learning environment. Without alternative educational programs such as Options High School, many bright young students might fall behind. Through Options, students can take on extra or online classes to help them get caught up.



Hmmm, is there enough dissolved oxygen (DO) in the creek?



Seattle CATS student Chirstina Hersum sampling for forage fish as part of her service project.

Please continue on page 8

Volunteer and Stewardship

Mayor, Congressman Attend MLK Day Work Party



Volunteers spent the morning during the MLK Day of Service planting and mulching this hillside near Whatcom Creek.



Snow sleds serve as inexpensive and effective "Mulch Delivery Systems" to the hillside beyond.



Congressman Rick Larsen (WA's 2nd District) spent his morning volunteering with NSEA for the MLK Day of Service.



Bellingham Mayor Kelli Linville with Washington Service Corps AmeriCorps members at the start of MLK Day of Service.

**By Tracy Pennell
Monitoring Coordinator**

To celebrate Martin Luther King's legacy of service this year, NSEA AmeriCorps members Claire Woodward, Kelley James and Tracy Pennell hosted a habitat restoration work party at Maritime Heritage Park in Bellingham, Wash., on Jan. 19.

In total, 152 community volunteers attended to remove invasive ivy, spread mulch and plant 265 native trees and shrubs adjacent to Whatcom Creek.

NSEA collaborated with Anna Dudley, the AmeriCorps placement with the City of Bellingham Parks Department, to plan this event.

Coming together in the park that day reminded the work party planners of the great power that service can have within a community.

"Martin Luther King Jr. Day isn't just a day off. It's a day on, where people of all ages and backgrounds come together to help improve the world we all live

in," reflected Kelley James. "This day of service builds on the legacy of civil rights leader Martin Luther King Jr. and aims to recognize the power that service has to strengthen communities to achieve common goals."

It was inspiring to serve alongside parents and their children, retirees, students and community members from various walks of life. In addition, a handful of AmeriCorps members came from other service sites to spend the day volunteering at the park.

Everyone got the chance to meet City of Bellingham Mayor Kelli Linville and to talk with her about why they serve in Whatcom County. She shared with them

how much she appreciates their efforts, and how excited she is about the service they're all doing in our communities.

Work party volunteers also had the chance to meet Congressman Rick Larsen. He came out to the event and helped to plant native trees on the hillside. AmeriCorps members enjoyed talking with him about the different projects they're leading and thanked him for his continued support of AmeriCorps. It was a treat for everyone to share his or her own story of service.

NSEA work parties are generously supported by grants from: American Forests, ALCOA, World Trout Initiative - Patagonia, ERM and WDFW's Aquatic Lands Enhancement Account.



Sweet and savory snacks are always a big deal at NSEA work parties. These two volunteers consider just how many they might eat.



Shore pines and other plants await a tremendous life of service by preventing soil erosion above Whatcom Creek.

CREW CORNER

Thank You for 2 Great Years



Brady Lester (with his mom, Sheri) served for over two years on NSEA's Washington's Conservation Corp as an Assistant Crew Supervisor.

**By Brady Lester
WCC Crew Member**

Well, it's official. My time with the Washington Conservation Corps (WCC) and NSEA will be coming to an end.

I have been working on the WCC crew for two years now, the maximum time allowed through AmeriCorps, and time has really flown by. I can't begin to express how grateful I am to have had the opportunity to work with all of the amazing staff and volunteers at NSEA.

My eyes have been opened to what is possible when a group of people is willing to work hard and commit making a difference. With NSEA, I have gained so much respect for the complexity of our environment – and the need for us as humans to preserve and restore as much of it as possible.

NSEA is an incredible organization. Through the trust and patience of "The Fearless Leader," a.k.a. Zach Shirk, and "The Chosen One," a.k.a. Darrell Gray, I was able to participate in many aspects of habitat restoration and all of the associated tasks. From taking charge of the crew to felling trees, I was allowed to develop my

skills. I just want to say thanks.

That is what is so great about WCC and AmeriCorps programs in general; they allow young people with drive and enthusiasm to focus their energy on worthwhile projects while teaching them invaluable career and life skills. The programs get people out of their comfort zone to help them really grow and prepare them for success.

Without turning myself into an official AmeriCorps spokesman, I truly hope anyone out there who knows someone 18-25 years old encourages that person to apply to an AmeriCorps position. I feel confident in saying it changed my life.

I know this newsletter goes out to all NSEA donors and supporters, and to you fine folks I want to say thank you as well. Your passion for enhancing salmon habitat is inspiring. The sheer manpower NSEA can wrangle up for a work party on a cold, rainy Saturday continues to astound me.

I plan on sticking around Bellingham for the time being and hope to see all of you wonderful volunteers and NSEA supporters out at work parties and other events.

Planting a Cedar

By Rob Rich, Stream Restoration Intern

First, study the earth, look for bare spots, where roots are not. Scan for nearby trees, imagining roots where you cannot see. Kick out sticks, leaves, stones. With knuckled fists together at heartcenter, elbows locked, you know the diameter. But it's relative; check to ensure the width is three times the plastic pot. Then point the sharp shovel blade-tip in the earth, drag it round, draw a ring. This is where the trunk could reach. Someday. But

for now, take the tip in the ring and give a little jump. Heave down your weight's worth on the lug, listening to the thrust. You will never hear nothing. There could be sticks, leaves, stones – layers of them. Or the paths of moles, or moles. If you're lucky, earth envelops the metal, sucks down smooth, deepening. It's also luck to scrape a rock (if you don't blunt tip) and know the need to screef it out. You don't need to be strong. You just need leverage. Once you pry it out, study it. Rest, breathe. Big, heavy, awkward rock. Who knew it was down there, in darkness all these days? What human could have made or moved it with hands? None. Now the hole is practically made, the soil (and the rock) heaped up like mountains on the side of a great basin. If the sides are shear walls, roughen them so roots have holds to climb. Thank heavens there is no lattice like the last hole, with roots to cut through like a fool with loppers made for branches.

Look back at the tree, a sapling now. Half my height, a thumb-thick trunk, with brush-hair branches. A cedar, western red, not yet drooped with many years' raindrops. Give the pot a *whap* with hand-heel and turn it. Again, *whap*. Sides loose, shimmy the tree out from the pot squeezed under arm, edging soils out and then the ball comes. Ah yes, a full root ball, belly size, pregnant. It's time. Rootbound too long, rub those roots down, helping free what the pot caged. Place the ball into the uncovered earth, make it flush with the surface. Hold that spindly trunk straight, as if your whole life depends on it. Then take one hand off and help the diggings fall in by thirds. Fill, straighten, tamp down. Touch the earth once more with hands and feet. Then stand back, still and silent with the rock.

Behold a tree, rooting down. Good work.



Rob Rich is an NSEA Stream Restoration Intern, NSEA Student Board Member and a graduate student at WWU.

Plant Corner
Natives

**By Tracy Pennell
Monitoring Coordinator**

On the journey from the truck to the water, my waders often take quite a beating.

Throughout the season, the NSEA spawner survey team cautiously bushwhacks its way through salal and swordfern, around cedar and fir trees, over notorious blackberry and salmonberry to reach survey creeks.

The latter two plants are the real wader-piercing culprits, leaving our waders with hundreds of pinholes and us with soggy socks after an especially entangled step. The thorns of a salmonberry bush are less aggressive than those of blackberry, but their points are sharp nonetheless.

We journey through these mazes of shrubs and trees to get down to our survey reaches during the winter spawning season. Hopping into the creek and heading upstream, we avoid as best we can the masses of thorn-laden bushes on the stream bank while we look for spawning salmon, salmon carcasses and redds.

When it comes time for spring and summer fieldwork, the anxiety of tromping around in hole-filled waders is eased

Salmonberry Offers Beauty ... and Thorns

somewhat by the beauty of salmonberry's flowers come April, and the reward of juicy berries hanging from the branches by July.

Salmonberry (*Rubus spectabilis*) has a wide range of native habitat, extending west of the Cascades from southern California to Alaska. With a high tolerance to disturbance – be it fire, timber harvest or landslide – this shrub is often found in forest openings with moderate shading. It grows abundantly along stream banks and on gravel bars in low to subalpine elevations. Repro-



A rare perspective on a berry that we often only see when it's orangish-red. Photo credit to Phoebe Tyson

ducing at a prolific rate, the shrub, which grows up to 10 feet tall, thrives in saturated, barren soils. The leaves are alternate, with three sharply toothed leaflets.

Magenta flowers bloom in the spring, followed by salmon-colored, yellow and red berries in the summer. The berries are considered quite palatable to some, but not all, as they can be too tart or bland. They are one of the more mushy berries of the summer harvest and are better eaten fresh than dried.

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NSEA Quarterly Awards

Recognizing the community's hard work for our local salmon

Educator of the Quarter: Joel Carter, Options High School



Joel Carter, teacher at Options HS

Options High School is a small, accredited school of choice. The high school provides numerous opportunities for students to engage in learning that is relevant, rigorous and personalized. This is my first year teaching at Options High School, where I lead a biology class and environmental science class. I am committed to preparing our students for success in the global community with a passion for lifelong learning.

What motivates you to teach the next generation of decision makers?

Teachers are in a great position to help young adults develop a passion, contribute to their community and achieve a fulfilling and productive life. As a student myself, I was fortunate to have great teachers who have been a positive influence on my learning and life experiences.

Having access to a quality education directly impacts quality of life and economic growth, but not everyone is provided with equal learning opportuni-

ties. Being in a role where I can give back to the community motivates me to provide equitable education for all of our students.

As a teacher, I have the opportunity to be a part of shaping the community through education and act as a positive influence on today's youth.

Why does Options High School partner with NSEA?

So much learning happens inside the classroom, but not always integrates a transferable skill or contains real-world applications.

Partnering with NSEA helps prepare students at Options High School for 21st century, post-high school opportunities in colleges and high-wage careers. Students enjoy hands-on activities and gain real-world experience outside the classroom, while learning about environmental concerns that impact their communities.

NSEA staff and volunteers have provided fantastic support and materials combined with a well-rounded curriculum surrounding salmon and stream ecology.

Why is wild salmon recovery important to you and your students?

Wild salmon have been essential in providing food, jobs, recreation and a deep cultural heritage to Bellingham and surrounding communities. Students are able to witness and be a part of ongoing restoration efforts. They develop an awareness of human impacts on salmon ecology, molding them into future stewards of the environment.

Landowner of the Quarter: Tony Neal, Calvary Creekside Church

Over the last four years, with the help of the Washington Conservation Corps crew, NSEA has worked to eliminate Himalayan blackberry and plant native trees and shrubs along a stretch of Squaw Creek. Squaw Creek is 3.5 miles long and contributes year-round flow to Johnson Creek in north Whatcom County just south of the border before it feeds the Sumas River, eventually meeting the famous Frazier River. Salmon have been spotted in Squaw Creek behind Calvary Creekside Church. Tony Neal is the pastor of the church and invited NSEA to look at the creek behind the church one summer afternoon in 2011. The story goes from here.

How did you first hear about NSEA?

I first heard of NSEA through a wonderful lady that attends Calvary Creekside Church, Lorelei Bowers. She runs a small but mighty co-op school with children of all ages from the church. Lorelei was just starting to work with NSEA through its education programs. She recommended that we engage NSEA to look at our little creek, to see if there was

a better way to take care of our property to help the creek.

Lorelei herself said her students benefit in a number of ways. They are outside in nature, learning about the diversity of our local environment. NSEA does a fantastic in-class presentation that educates students and prepares them for a field study session. The students also have the chance to meet people who work in natural resources and education, giving them an opportunity to add these to their future career choices. NSEA's education programs are a great way for students to have the chance to make a difference in their local area through action.

What motivated you to work with NSEA?

It was so easy! I called up NSEA staff members, and they came out to take a look. We all have a responsibility for what God has created, not only in our daily lives but how we treat our property and what God has given us. As I learned more about NSEA, I realized our goals are the same no matter what motivates us. Through advice and assistance, NSEA helped us be better

Continued on page 8



Several work parties like this planting focused day have taken place on Cavalry Creekside Church's property.

Intern of the Quarter: Sean Wu



Sean Wu getting a koala hug

Tell us about yourself and how you got involved with NSEA.

Last spring, while attending Huxley College of the Environment at Western Washington University I started working with NSEA on the education team. I helped primarily with the Students for Salmon program, designed to educate 3rd to 5th graders about stream ecology and how to tell if a stream is a good habitat for salmon. When I was in high school, I really enjoyed working with kids and, at NSEA, really enjoy my time helping with this program.

Tell us about your current internship with NSEA. What is your favorite part about it?

My favorite part of interning with NSEA is probably the people here. Everyone is so driven and unified in a common goal. I have had mostly retail jobs, so normally my co-workers' interests vary

greatly. It is nice to start a job and share some common ground with co-workers.

Why did you select NSEA as a place to volunteer?

I originally selected NSEA as a place to intern because I believe in the cause: bettering natural salmon runs in the community in which I live. When I first started, I was taking a biology class on fish at WWU, and I thought NSEA would be a great place to use what I learned in that class. However, my time at NSEA has taught me so much more about salmon, non-profit organizations and working in a professional environment.

Tell us about your life outside of NSEA.

My time outside of NSEA varies greatly depending on the season. During winter, I will spend most of my time on the slopes skiing at Stevens Pass. During the spring and summer, I spend time running around Lake Padden, downtown or WWU campus. One of my favorite places in Bellingham is the Woods Coffee down at Boulevard Park; I go there about 5-6 times a week!



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Salmon Science Continued from page 3



Eelgrass bed – Photo credit Susannah Anderson, Creative Commons

Scientists say the key for them will be to adapt as conditions change and as new information becomes available.

Next steps

One strategy is to take a so-called portfolio approach. Some argue that responding to every single threat to eelgrass, while desirable in theory, might not be practical and could take huge amounts of resources. A May 2014 article in the journal *Coastal Management* reviewed comments from 19 scientists who study eelgrass in the region, and suggests narrowing efforts to several areas with the most potential for eelgrass restoration.

The article points to overwater structures, nitrogen pollution and shoreline armoring as key focus points, and scientists are looking at how this might apply to local management actions.

In spring 2014, representatives from multiple agencies including the Department of Natural Resources, Puget Sound Partnership, Department of Ecology, the University of Washington's Puget Sound Institute, NOAA, the Samish Tribe, the Washington Association of Counties and other groups, met to launch the Puget Sound Eelgrass Recovery Strategy.

The group will examine why eelgrass recovery has faltered, and will keep an eye on experiments like those by Thom and others searching for new breakthroughs.

"Every time you do a restoration project, it's an experiment," says Thom. "We need to be clear about linking the action to the response in a systematic way and learning from it. If we're seeing an improvement, we can better predict what we need to do in the future to make it work for [eelgrass] to come back."

A billion-dollar plant?

Successful eelgrass recovery efforts would mean a boon for the ecosystem, but also for the Puget Sound economy.

Achieving the state goal of a 20 percent increase in eelgrass by the year 2020 would increase the number of fish available for commercial and recreational fishing in the Sound, according to a 2012 study published in the journal *Ecosystems*

Terrell Creek

Continued from page 1

properties just downstream and upstream of Brown Road to replace a barrier culvert, improving fish access to a mile of upstream habitat. NSEA also improved instream and riparian habitat along 1,300 feet of stream channel through the placement of LWD and spawning gravel, the removal of blackberry and planting of native riparian vegetation.

by researchers at the Northwest Fisheries Science Center. In all, the study looked at 37 different cases where eelgrass provided ecosystem services "of either provisioning or cultural value," from benefits to salmon and commercial geoduck harvests to recreational fishing of rockfish and lingcod.

Take into account eelgrass as an overall anchor for the nearshore ecosystem, and the dollar return is significant. Salmon alone infuse hundreds of millions of dollars per year into the local economy, as do Pacific herring and shellfish, such as Dungeness crabs. Iconic, tourist-friendly wildlife like seabirds and killer whales also depend on eelgrass for their survival, directly or indirectly.

"Killer whales don't eat eelgrass, but they do eat salmon, and salmon grow up in the eelgrass," says biologist Fred Short.

Options

Continued from page 4

"It's a great school for independence," said Options student Angelia Goldtooth. "When I started I was behind, and now I am on track to graduate."

Inspiring Scientists

Through *Swimming Upstream*, NSEA showed Options students what opportunities they might have in the science field after high school.

Options High School student Angelia Goldtooth said science and math are her favorite subjects, and that she plans on attending the Northwest Indian College after high school to further pursue these subjects.

Hopefully, working with NSEA has inspired Angelia and other students to pursue science, be more active in their community and be environmental stewards in their future.

To learn about Options High School, visit options.bellinghamschools.org.



An Options HS student uses new knowledge and leverage to restore salmon habitat.

Calvary Church Continued from page 7

stewards of our property, actively improving the creek that borders the church.

Describe the restoration work that was done on your property.

Squaw Creek runs along the northern border of the church property. It was very straight and full of invasive blackberries; you almost couldn't see the creek! NSEA came in and with the help of volunteers and the church community, we cut back the blackberries and planted native trees and shrubs. It's going to take maintenance, but we are already seeing new growth and change.

What changes have you noticed since the project was completed?

The blue tubes have gotten a lot of attention. The whole church is involved. The project has allowed us to talk about the habitat and next steps. We have a larger

vision to use this project and the creek as an education platform. We would like to install sitting benches and signs, allowing all communities to utilize our property for education purposes. We are really proud of Squaw Creek and how it supports salmon.

Would you recommend working with NSEA to other landowners? Why?

The shared vision for salmon enhancement resounds within our hearts. This is not only a privilege, but an obligation.

Mission Statement

The Nooksack Salmon Enhancement Association is a community-based nonprofit organization dedicated to restoring sustainable wild salmon runs in Whatcom County.

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