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Did You Know? Articles marked with a damselfly icon, like the one on the left, will be posted on our website in the Reference Library.

Share Your Connection to Puget Sound this September

Susan McCleary, Contributor

Did you know that September is Puget Sound Starts Here Month? What does that mean you ask? For me, it's a time to celebrate my connection to the Salish Sea with others. To acknowledge the link between the health of our beloved estuary (aka Puget Sound) and our collective wellbeing as a community and a region living in a shared watershed.

In 2009 the Puget Sound Starts Here campaign was born, connecting hundreds of organizations across Puget Sound. These groups were all dedicated to the same goal—building a sense of place and raising awareness about harmful impacts of stormwater pollution, and the many threats facing Puget Sound.

"Here" is where each of us live, work and play. It's our backyards, driveways, neighborhoods, homes and businesses. The campaign is a call-to-action, highlighting simple things we can all do to better steward our shared watershed.

September is a time to reflect on and acknowledge environmental harms of the past and present. And...With hope and determination, renew and strengthen our commitment to protecting this place that we cherish and this beautiful estuary that we call Puget Sound.

When it comes to stormwater pollution prevention, we all play a role. Small actions do make a difference. Together, we have the power to make orca, salmon, kelp forest, Olympia oyster and Salish Sea recovery efforts a success! Learn more at **pugetsoundstartshere.org**.



Join the Virtual Discussion

So...what will you do this September? We would love to hear from you! Send us a short video or note and we will post it for all to see on our Stream Team social media. We look forward to hearing about your relationship to Puget Sound!

Thurston Stream Team

thurston_stream_team

Oysters... Nature's Water **Filter**

For 18 years Dan Mazur and a group of dedicated local volunteers have been planting oyster seeds in South Puget Sound. But they are not doing this for personal consumption of culinary delights. They are planting oysters to help clean-up our beautiful estuary!

Oysters play an important ecological role in Puget Sound by acting as natural water purifiers. That's because they are filter-feeders. As they pump water through their gills, they trap particles of food as well as nutrients and suspended particles in the water. Oysters remove nutrients from the water by consuming and incorporating the nitrogen and phosphorus into their tissue and shells.

The Olympia Oyster Seed Planting Project has worked with private shoreline property owners in Eld, Totten, Budd and Henderson inlets to help restore the number of oysters in our region. This year they will plant between 25,000-50,000 seeds with the help of roughly 25 volunteers.

Neighbors along East Bay have come together in support of this project, and many neighbors have allowed the project to plant along their beaches. The project currently focuses on about 10 Puget Sound neighborhoods. It is so inspiring what can happen when the community works together!

Just one oyster can filter up to 50 gallons of water a day!

Nitrogen and sediment from human activities can cause big problems for Puget Sound. Sediments that enter storm drains carry pollutants like oil, metals and excess nitrogen from fertilizers. Pet waste left on the ground as well as unmaintained on-site septic systems leach nutrients and bacteria that end up in the Sound. This results in algae blooms and reduced oxygen levels in the water. It can even lead to dead zones, and aquatic wildlife like salmon need adequate dissolved oxygen levels to survive!

In September, join Stream Team and the Olympia Oyster Seed Planting Project on the beach! Help build oyster bags and reseed oysters at low tide while you learn about the oyster life cycle, the important role they play in our estuary's ecosystem and how they help clean the waters of South Puget Sound. Multiple dates available. Register online at streamteam.info/events.



For more information on oyster seed planting and to connect with the Olympia Oyster Seed Planting Project, visit: facebook.com/ OlympiaOysterSeedPlantingProject.



McLane Creek Salmon Viewing

November–Early December

Visit McLane Creek* this fall to see the chum salmon returning home to spawn.
Viewing begins in November and goes through the beginning of December. Visit on a weekend and you will likely meet a Stream Team Salmon Steward who can answer your questions!

It's late winter in McLane Creek, and water temperatures are beginning to warm. A baby salmon fry pushes up out of the gravel nursery where her mother laid her to incubate as an Alevin, sheltered and oxygenated, for several months in the bed of the stream. Her yolk sac has dissolved, and she has developed vertical markings and the tell-tale shape of a salmon. The open ocean calls her deepest instinct and is her destiny. As she heads downstream, under the cover of night to protect her from predators, her nutrient-filled yolk sac dissolves and stream bug larvae nourish her rapidly maturing body. For protection, she groups up with other young chum, all of them sensing their way toward Eld Inlet at the southernmost reach of Puget Sound.

After about 8 weeks, her body begins to prepare for life in saltwater in a process called smoltification; her dark scales turn silver, her gills and kidneys adapt to regulate the salt, her muscles grow rapidly, and her immune system becomes more robust to protect herself from the additional stressors in a marine environment. She enters Eld Inlet as a smolt, first spending several weeks near the shore before venturing further out into the estuary that is Puget Sound.

Small fish, plankton, and other marine organisms nourish her and give her the strength she needs to prepare for ocean life. The 6-20 pounds of muscle she gains will keep her going. The first leg of her migration is complete; she will now spend the next 2-5 years of adult life in the "marine phase" of her journey. For this brave juvenile salmon, this means swimming north, the entire length of Puget Sound, past Tacoma, up around Seattle, all the way to the Straight of Juan De Fuca, where she will head west toward the great expanse of the Pacific Ocean and end up in the Gulf of Alaska. She must avoid many threats, including predators, nets, pollution, and marine traffic before successfully returning home to spawn. By the time she reaches sexual maturity and starts the long swim back to her natal grounds, she will likely have traveled over 1,000 miles!

Sexually mature and now full of eggs, our hero feels the pull to return home to spawn. Her remarkable homing instinct guides the way. If she is lucky enough to survive the journey home... the most challenging leg is still ahead. The upstream obstacle course will require every bit of energy and willpower she has. She will face strong currents, hungry predators, low or highwater flows, floods, droughts, fisher-people and other threats to her dwindling life.

She undergoes her final and most significant transformation as she reenters freshwater. Her kidneys and gills readjust to the lack of salt; her silver scales turn dark again and a vibrant purple or red stripe develops on both sides of her body. This color will rapidly fade as she deteriorates. Her male counterparts develop hooked jaws. She stops eating and must rely solely on fat stored during the marine phase. Her instinct is now 100% focused on reproducing.

Looking a little worse for wear, and still fighting for her life, she reaches her spawning grounds where she had been an egg many years ago! Surrounded by 1 or several males (often aggressively competing for an opportunity to fertilize her eggs), she uses her tail to create a gravelly nest called a redd by digging a depression in the riverbed. She swims over the redd and releases several hundred to several thousand eggs while simultaneously using her body movements to distribute the eggs evenly. The dominant male moves in quickly and releases his sperm, or milt, into the water column, where it drifts down and covers the eggs. Her eggs are now fertilized, and our hero uses what tail strength she has remaining to cover the eggs with gravel. She has protected her babies from predators in one of her final acts.

She can now rest after fulfilling her reproductive purpose and her final sacrifice. She will die near her birth location, providing invaluable nutrients to the ecosystem as her body decomposes.

^{*}McLane Creek Nature Trail is an easily walkable 1.1 mile trail. Visitors must have a Discover Pass. Located in the Capitol State Forest at 5044 Delphi Rd. SW, Olympia 98512.

Salmon & Cider

- Sunday, November 12
- 11:30 a.m. 2 p.m.
- McLane Creek Nature

*McLane Creek Nature Trail is part of the Capitol State Forest and is a WA State DNR Recreation Site. A Discover Pass parking pass is required when visiting state recreation lands managed by the WA State DNR and WA Department of Fish and Wildlife. For information about how to purchase a \$10 day pass or \$30 annual pass, visit www.discoverpasss. wa.gov (Salmon Stewards are granted temporary parking passes.) Parking is limited at the nature trail. We recommend carpooling if possible.

Celebrate Salmon as They Near the Finish Line

The return of wild chum salmon to McLane Creek is always cause for a celebration, especially knowing how hard they've worked to get there!

To commemorate this exciting occasion, join Stream Team for local hot apple cider, donuts, and a fun craft. Our knowledgeable Salmon Stewards will be on site, ready to answer all your burning questions about salmon, their habitat, and what you can do to help protect them.

Know before you go!

- Please consider carpooling parking is limited.
- A Discover Pass is required.
- The viewing platform is wheelchair accessible, but boardwalks can get slippery. Wear sturdy shoes.
- Dogs welcome but don't let them eat the salmon. They can make them sick. Keep dogs out of the creek and...Please bag and trash your pet's waste!

Have you checked on your neighborhood storm drains, ponds and swales lately?

If you live in a neighborhood, the odds are that you are a part owner of a stormwater system that helps protect your neighborhood from flooding.

Across most of Thurston County stormwater system pipes, ditches, ponds, and storm drains are totally separate from sewer, and therefore stormwater does not go to a water treatment facility. Because stormwater flows directly to our lakes and streams, it is SO important that only rain goes down the storm drain. When doing work around your

home, keep this in mind—and always protect the storm drain from sudsy wash water, oil leaks and anything you would not want to drink or swim in.

We've created an online workshop to help you navigate all this! Visit tinyurl.com/ StormwaterEdu to



learn how your stormwater systems work and how to keep them working—protecting your property, remaining in compliance and keeping water clean! It's 100% online, go-atyour-own-pace and it's totally free. Sign up today!

Rake a Drain

Fall is a time for hot cider, your favorite sweater and brilliantly colored leaves. It's also a time to rake those leaves off your neighborhood storm drains to help reduce street flooding and keep storm systems functioning!



For more information, visit olympiawa.gov/blog_detail_T40_R12.php.

The Clean Water Act: Then and Now

Fires burning on rivers. Communities built on top of toxic waste sites. Massive oil spills along our coasts.

These were all events of the mid-1900s that led to the creation of the Clean Water Act in 1972.

The Clean Water Act regulates types and quantities of pollutants that can be put into our waters and how clean our lakes, rivers, creeks and other surface water should be in order to ensure human health. The Clean Water Act makes it illegal to dump pollutants from pipes and man-made ditches into the surface water without a specific permit. This permit is the Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES) permit which also regulates local municipal stormwater programs.

County and city governments have some requirements under the NPDES permit. Some of these include:

- Develop policies and strategies to manage water quality.
- Maintain publicly owned facilities that manage polluted stormwater runoff.
- Monitor water quality in lakes, rivers and streams.
- Find and correct areas where pollution is illegally going into surface water.
- Control runoff from construction sites.
- Remain under Total Maximum Daily Loads (TMDLs), the allowed pollutant limits that can go into surface water.
- Engage the community in stewardship activities, demonstrating ways to reduce polluted stormwater runoff.

(Stream Team is a large part of how Thurston County and the cities of Lacey, Olympia, and Tumwater meet their education and public engagement requirements in the NPDES permit.)

Sackett vs EPA Explained

The Clean Water Act was passed to protect "waters of the United States". Since then, there have been several court rulings to further define "waters of the United States".

The most recent Supreme Court ruling, Sackett vs EPA, reduced the reach of the Clean Water Act by further narrowing that definition. The Sacketts wanted to build their house on wetlands and the EPA would not allow it. The Sacketts sued the EPA so the courts could decide if their property was wetlands.

The Supreme Court ruled in their favor, stating the Clean Water Act only applied to wetlands that have a "continuous surface water connection" to larger bodies of water, such as streams, lakes, or rivers. This means that wetland and water systems connected underground may not have the same level of protection under the Clean Water Act today.

Timeline of the Clean Water Act



Cuyahoga River Fire & Santa Barbara Oil Spill

Two major environmental disasters occurred, contributing to tougher environmental regulations.



The Federal Water Pollution Control Act

The first major U.S. law addressing water pollution was passed.



Environmental Protection Agency

The Environmental Protection Agency (EPA) was created.



Clean Water Act

The Clean Water Act was passed to protect and restore the quality of the nation's waters.



Pollution & Stormwater

The EPA focused on reducing pollution from industrial sources and developed programs to control stormwater runoff.



Clean Water Act Expanded

The Clean Water Act was expanded to include protection for wetlands, extremely important ecosystems that filter pollutants and provide biodiversity and habitat for native wildlife.



Sackett vs EPA

The Supreme Court made a decision that narrowed the scope of the Clean Water Act's jurisdiction over certain wetlands.

Beavers in the Urban Landscape Part 3

Now that we've talked about the biology and behaviors of beavers in part 1 and 2, it's time to look at how we manage beavers within the urban landscape.

Who manages beavers in the urban landscape? Staff from local government agencies are working to understand how beavers interact with wetlands, streams and human infrastructure. Everyone's jobs differ depending on their role within their respected workplace. But one thing is certain, when working with beavers, adaptive management techniques apply to all. This means management efforts change depending on the specific situation between the land and the beavers.

When we think of beavers, it's easy to assume we know them. But due to overhunting and near extermination during the early 19th and 20th centuries, very little is known about them. Today, we are just now learning about the benefits they provide within the urban landscape. For example, beavers have been reintroduced into the wild to help restore rural areas prone to drought, fire and flooding. Land management experts have had great success reducing fire risk and increasing flood storage. We are now witnessing and documenting increased biodiversity in these areas, all because of our beaver friends.

Until recently, general practices involved trapping and relocation. When done properly, beaver relocation can be a successful way to address conflicts between beavers and human land use. Yet, it is important to note that



relocation is not always the best solution. Keeping beavers in place is now becoming the best management practice. Successful techniques used to manage beavers living close to human infrastructure include:

- Flow devices: Pond levelers or beaver deceivers, help control the flow of water through beaver dams and prevent flooding or erosion along roads, ponds, ditches and on private property.
- **Protective fencing**: Protective barriers around trees and other vegetation can prevent beavers from damaging them. This can also encourage beavers to build their dams in other areas of the watershed.
- **Tree wrapping**: Wire mesh wraps or other protective material around tree trunks help prevent beavers from damaging them. This is a particularly effective strategy for more vulnerable young trees.
- Beaver dam analogs: These are human-made structures that mimic the function of natural beaver dams. They can help slow down and retain water in a stream, which can improve water quality and increase habitat for fish and other aquatic species.

The key to managing beavers in the urban landscape is to maintain balance. An approach that accommodates the needs for both humans and beavers is best.

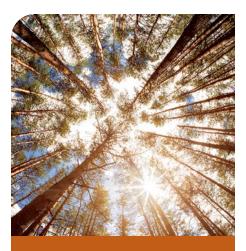
Trees and Stormwater: A Perfect Match

Did you ever stop and think "Oooof! It's REALLY rainy here!?" Of course, you did! We experience this thought 8 months out of the year here in the PNW. Most of us embrace this fact, keeping a hoodie or an umbrella close by at any given time. Based on the 20 weather stations placed throughout Thurston County, we receive roughly 650 billion gallons of rainfall annually (or 2 million acre feet). We live in one of the rainiest places in the world. Because of this wet temperate maritime climate, we also have some of the most incredible trees and vegetation... As visitors often remark "it's so lush and green here!"

Pre development, this equation was much simpler. Regular rains fed the forests, and the forest drew more rain—a perfect feedback loop. 40+ percent of this rainfall was intercepted by the forests in a process called evapotranspiration. Today, however, much of this rain doesn't fall on trees, but instead on hard surfaces like roads, buildings and parking lots. To complicate matters further, this stormwater is then transported away from where it falls via ditches, swales, ponds and storm drains, to the nearest stream, lake and ultimately Puget Sound. The thing is, we really need this rain to soak slowly into the ground where it falls, receiving natural filtration provided by the trees, plants, soil layers and microbiota, recharging the underground aquifer. On top of providing 90+ percent of our drinking water in Thurston County, the aquifer is connected to our streams, ensuring they have enough cool water flowing year-round to support important biological events like salmon spawning and migrations in the fall.

The Carbon Capture Foundation (TCCF) has this very dream, recognizing the endless benefits of healthy trees and forested landscapes. Norm Dicks and his family have been strategically giving away native trees since 2020, with the goal of increasing carbon sequestration and habitat restoration. Beauty, habitat, cooling shade, shoreline protection and helping to restore our water cycle are a few bonus benefits! TCCF has distributed nearly 37,000 trees for planting! Learn more and get involved at thecarboncapturefoundation.org/.

Trees are the answer to so many of our world's problems, and they are quickly re-emerging as the true stormwater best management practice. As is true for humans, an individual can be incredibly powerful, and yet the critical mass, or the forest, is where the magic happens. Think of how many trees we could plant together!



Arbor Day 2023

- Saturday, Sept. 30
- 10 a.m.–2 p.m
- Squaxin Park, Rose Garden shelter

Join in the community celebration!

- Ask an arborist booth
- Native plant giveaway
- Kids activities
- Ceremonial tree planting
- And more!



Fall Into a **Nature Sleuths Adventure**

Looking for something to do? Spend a crisp fall day at one of Thurston County's natural parks or recreation areas. Whether you're looking for a quiet getaway to explore the flora and fauna or searching for something more adventurous like local wildlife, we have plenty of Nature Sleuths adventures to choose from.

Featuring more than 30 local parks, you can sleuth your way through these all-ages, familyfriendly treasure hunts. You'll discover old-growth forests, hidden urban gems, beaver ponds, marine beaches and much more!

You can participate as a solo explorer or as a family adventurer. Simply download the Goosechase app on your mobile device, search for game code MQV16P and let the games begin. Once you start sleuthing, you'll receive park-specific stickers and be added to our grand prize drawing in December! Learn more at streamteam.info/nature-sleuths.

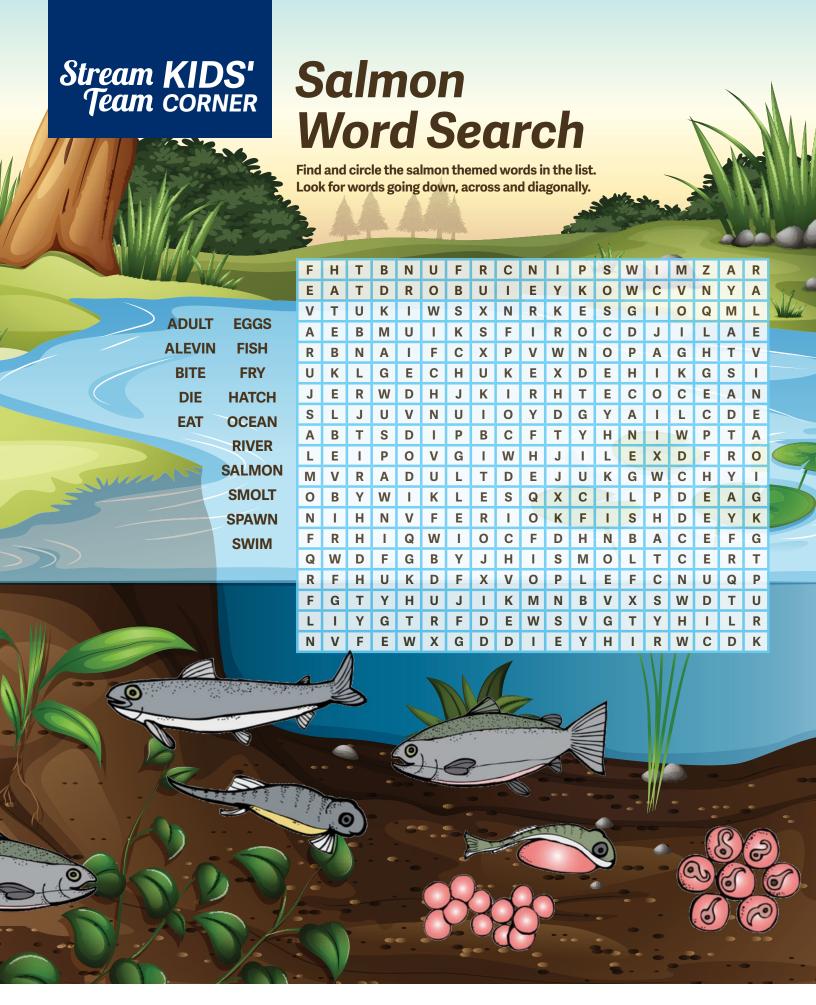
Do you need sleuthing supplies?

Our local libraries have you covered! Visit trl.org/library-things available to check out with environmental education, explore your forest, birding and more!

Download GooseChase:









Calendar of Events Fall 2023

Salmon Viewing* | **Through Mid-September** | 5th Avenue Bridge, near fish ladder

Salmon Viewing* | Mid-September through Mid-October | Tumwater Falls Park

Olympia Oyster Seed Planting Project

Wednesday, Sept. 13, 9 a.m. – 2 p.m. | East Bay Drive

Tuesday, Sept. 26, 8 a.m. – 1 p.m. | East Bay Drive

Thursday, Sept. 28, 8:30 a.m. – 1:30 p.m. | East Bay Drive

Arbor Day 2023 Saturday, Sept. 30, 10 a.m. - 2 p.m. | Squaxin Park, Rose Garden shelter

Harvest Festival | Saturday, Oct. 7, 10 a.m. - 3 p.m. | South Union Grange

Salmon and Cider* | Sunday, Nov. 12, 11:30 a.m.-2 p.m. | McLane Creek Nature Trail

Salmon Viewing* | Mid-November through Mid-December | McLane Creek Nature Trail

Salmon Viewing | November, Weekends Only | Kennedy Creek Salmon Trail

*Stream Team Salmon Stewards will be on hand at these locations on weekends, some weekdays, and during the morning spawning operation at Tumwater Falls Park. Salmon Stewards share information, viewing tips, visual aids, and polarized glasses for better viewing!

Scan for complete event info & registration!





Visit StreamTeam.info and click Register

Stream Team Mission

To protect and enhance the water resources and associated habitats and wildlife in Thurston County through citizen action and education.

Special Needs

Citizens requiring special accommodations can call one of the coordinators listed at least one week prior to an event to make special arrangements.

Follow Us

🚺 Thurston Stream Team

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Thurston County Stream Team

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An Autumn of Natural Yard Care and Going Green





South Union Grange

The changing season can often feel bittersweet. Summer is just too short. But oh!!! The fabulous colors and crisp sunny days of fall. And then comes the dark chilly months of winter...At least it's cozy right?

There are lots of exciting things to do and plant in your yard this fall that can make the transition from fall to winter feel less dreary.

Let's talk about native plants. Native plants have adapted to our region over thousands of years—providing habitat and supporting local pollinators. They naturally flourish in our climate and soil conditions, so they don't need extra fertilizers and are drought tolerant, making them the super smart option for Pacific Northwest yards! There are several native plants that provide a nice burst of life during the grey winter months, including the witch hazel and silk tassel bush featured here. Through Sept. 15, pre-order native bulbs, seeds and plants through Thruston Conservation District at **store.thurstoncd.com**.

Fall is also the most important time of year to apply organic, slow-release fertilizer (if you maintain a lawn). The reason for this is simple. You are preparing your grass to enter dormancy and a long winter. Feeding your lawn with a good slow-release fertilizer at this pivotal time ensures that once spring returns, it will have the energy reserves needed to green up and thrive once again.

If there are bare spots throughout your lawn, fall is a good time to reseed and top with compost—allowing grass roots to develop over the rainy season. The same is true for many trees and shrubs. With the abundance of rain on the way, why not take advantage of free irrigation and plant some of those native plants you've had your eye on this fall!

Let's talk about the falling leaves that have begun to cover your yard. Instead of bagging those organic powerhouses or sending them off as "waste", use them as a mulch, providing a layer of insulation to plants and helping your soil to store more water.

Alternatively, consider adding fallen leaves to your compost pile as a wonderful "brown" carbon source. By the time winter passes (~6 months), they should be ready to apply to your spring garden.

Set your yard up for a successful overwintering and a bountiful spring by taking action this fall. Come learn tips and tricks and see if going green with your yard care is something you'd like to explore at **Harvest Festival**, October 7, at the South Union Grange Hall. Along with many awesome educational organizations and exhibitors, there will be a pie baking contest, apple cider pressing, workshops, soil test drop-off and info booth, live music and community to enjoy. We hope to see you there!