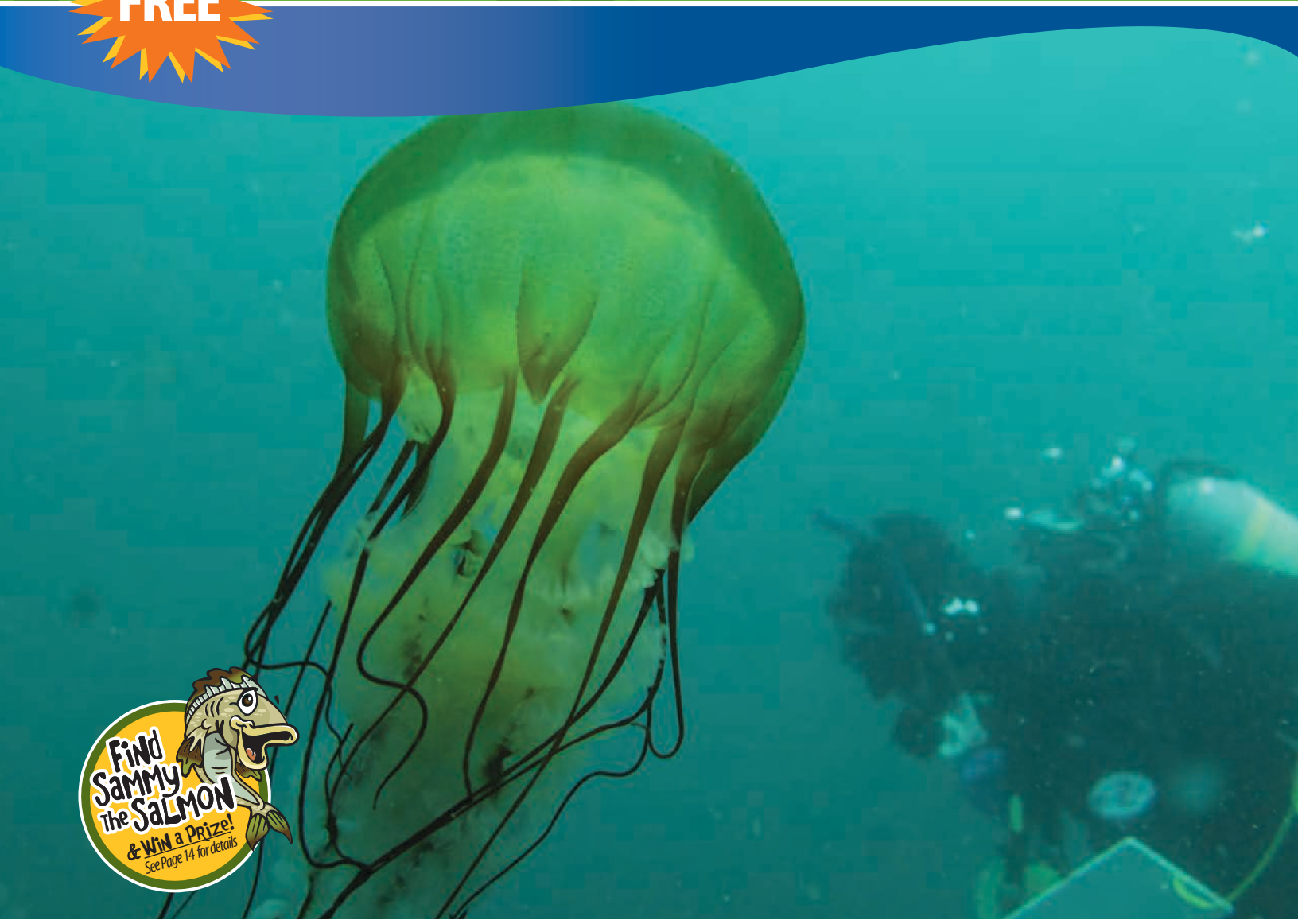
# Stream Team NEWSLETTER

Olympia • Lacey • Tumwater • Thurston County

FREE




**WINTER EDITION**
Dec 2012–Jan–Feb 2013

## Inside...

**ON THE COVER:** Local diver, and underwater photographer, David Jennings, snapped this photo of one of the many amazing Puget Sound creatures, the Sea Nettle (Jellyfish). See more of David's beautiful photographs and learn about marine creatures at his presentation, "Creatures of the Deep", on February 26. See page 9 for details!

# Live Holiday Tree Rentals for Restoration!

This season, Stream Team is offering you an opportunity to "rent" a live, potted tree that will later be "re-used" for restoration along Thurston County area streams.

**How does it work?** You "rent" (purchase) a live tree (with pot) from Puget Sound Plants for the holiday season. You pick up the tree from Puget Sound Plants and use the tree indoors or outside for your holiday festivities. After the holidays, drop it off at a designated location by January 4, 2013. Trees will be kept in a nursery and cared for until they are planted by Stream Team volunteers later this winter or spring. Replanting trees next to streams provides shade that keeps streams cool for salmon and other species of fish and wildlife. You can help plant the trees, also.

**Want to participate?** If you live in Tumwater, Olympia or unincorporated Thurston County (Lacey resident see below), call Puget Sound Plants in Olympia, at 866-816-5080, Monday-Friday, 8 a.m. – 4:30 p.m. Let them know your purchase will be part of the Stream Team Holiday Tree Rental Program. They will give you directions to the nursery and let you know when you can pick up your tree.

## Rental Costs (includes pot):

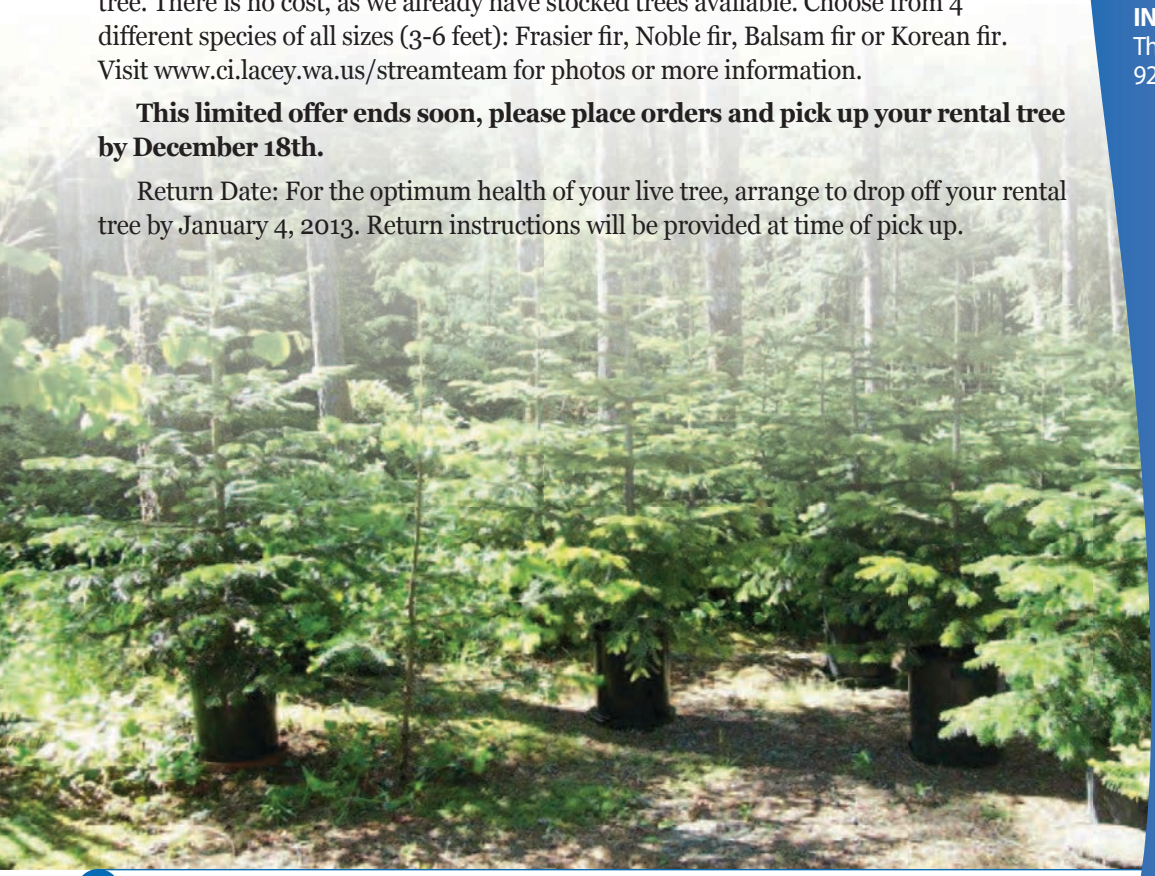
- **3-4 foot young (not filled out) Douglas-fir: $15**
- **4-5 foot Douglas fir: $30**
- **5-6 foot Douglas fir: $38**

***Note: Trees weigh between 60-80 pounds. Care instructions will be included.***

If you live in Lacey city limits, call Katie at 360-438-2672 to reserve your potted tree. There is no cost, as we already have stocked trees available. Choose from 4 different species of all sizes (3-6 feet): Frasier fir, Noble fir, Balsam fir or Korean fir. Visit www.ci.lacey.wa.us/streamteam for photos or more information.

**This limited offer ends soon, please place orders and pick up your rental tree by December 18th.**

Return Date: For the optimum health of your live tree, arrange to drop off your rental tree by January 4, 2013. Return instructions will be provided at time of pick up.



## STREAM TEAM MISSION

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

*Steam Team is funded and jointly managed by the stormwater utilities of the Cities of Lacey, Olympia and Tumwater and Thurston County. Stream Team programs meet the requirements for the National Pollutant Discharge Elimination System (NPDES) permit for stormwater.*

### STREAM TEAM INQUIRIES

360-438-2672 or streamteam@ci.lacey.wa.us

**IN LACEY:**
City of Lacey Water Resources Program
420 College St SE, Lacey, WA 98503

**Attn: Erin Keith**
Tel: 360-438-2687 TDD: 1-800-833-6388
ekeith@ci.lacey.wa.us

**IN OLYMPIA:**
City of Olympia Water Resources Program
P.O. Box 1967, Olympia, WA 98507-1967

**Attn: Patricia Pyle**
Tel: 360-570-5841 TDD: 360-753-8270
ppyle@ci.olympia.wa.us

**IN TUMWATER:**
City of Tumwater Water Resources Program
555 Israel Road SW, Tumwater, WA 98501

**Attn: Debbie Smith**
Tel: 360-754-4148 TDD: 1-800-833-6388
dmsmith@ci.tumwater.wa.us

**IN THURSTON COUNTY:**
Thurston County Water Resources Program
929 Lakeridge Dr. SW, Olympia, WA 98502

**Attn: Chris Maun or Ann Marie Pearce**
Tel: 360-754-3355 EXT 6377
TDD: 360-754-2933
maunc@co.thurston.wa.us

**NEWSLETTER CONTRIBUTORS:**

Erin Keith (Editor), Ann Marie Pearce, Chris Maun, Patricia Pyle, Michelle Stevie, Debbie Smith, Anne Schuster and Katie Schmitz

**DESIGN & LAYOUT:**

Azure Summers Graphic Design
design@azuresgd.com

**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.

**FIND US ON FACEBOOK:**

ThurstonStreamTeam

## Get Involved with Stream Team…

# It's Easy!

What does it mean to "join" Stream Team? "Joining" Stream Team allows you access to free events such as workshops, field trips and classes, invitations to volunteer projects and carries no specific time commitment.

When you "join", you will start receiving emails from us, about twice a month, which will include the many exciting event opportunities we offer. The email list is confidential and exists solely to send information to Stream Team members about Stream Team events. As a Stream Team member, you may choose to participate in any of the events or workshops that interest you.

Winter is a perfect time to join because we offer wonderful educational talks. This season's line-up includes Rain Gardens, Naturescaping for Water and Wildlife, the Amazing Life of Lichens, Creatures of the Deep, Amphibians of the Pacific Northwest and Eyes Over Puget Sound. More information about each of these free talks can be found inside!


**Join Stream Team Today!**

**Visit www.streamteam.info and click on "Join Us".**

## Already a Stream Team Member or Volunteer?

### *BIG changes happening...your action is needed today!*

We have upgraded our volunteer management approach to improve your experience as a Stream Team member or volunteer. We will now be using an interactive online tool that you can access without ever leaving our Stream Team website.

**Bonus features:**

- **Easy, secure online access to your Stream Team profile**
- **Option to login using your existing Facebook account (not required)**
- **Families can set up separate profiles, using a shared login/email address**
- **Customize your profile to tell us which activities YOU want to hear about**
- **Update your contact information at the click of a button**
- **Register for events and notify us of cancellations online, 24 hours a day**
- **Receive email reminders for events you are registered for**
- **Earning Stream Team kudo items is easier; we can track your hours for you**

**Important Next Steps:** If you currently receive notifications from Stream Team and want to continue to do so, or plan to attend a future Stream Team event or workshop, you will need to set up your new Stream Team profile online:

**1. Visit www.streamteam.info** **2. Click on the "JOIN US" button at the top of the page** **3. Complete your profile**

*We appreciate your patience as we transition to a more efficient way to interact with you, our volunteers!*

If you need assistance, or do not have access to a computer, we are here to help. Please contact Katie at 360-438-2672 for assistance.

# Salmon and Copper

What do copper and salmon have in common? Though the Copper River salmon is considered one of the tastiest salmon, there is another relationship that salmon have with copper, which is not positive. Copper, the metal, is commonly found in brake pads. Every time drivers push their brake pedals, tiny amounts of copper fall onto streets and parking lots. Stormwater runoff eventually carries these tiny particles into streams and Puget Sound, where salmon become exposed.

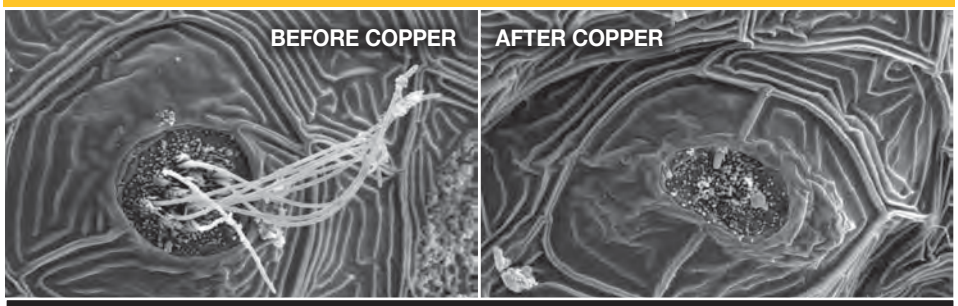
Numerous studies conducted in the Pacific Northwest have shown that dissolved copper from brake pads can confuse salmon returning to spawn. Dissolved copper impairs a salmon's sense of smell, which they rely on to find their natal streams, form social dominance hierarchies, find the best spawning mate, and even to find food. Even small, sub-lethal amounts of copper can impact a salmon's olfactory system, which it relies on to send chemical information from its nose to its brain.

Until recently, researchers did not realize copper can also impact a young salmon's ability to avoid predators. This finding is supported by an Oregon State University/ NOAA Fisheries study, which showed that juvenile coho exposed to concentrations of copper within the lower range of urban runoff, failed to initiate predator avoidance. Juvenile salmonids typically avoid predators by slowing their swimming speed so they appear to be still in the water. The exposed juvenile salmonids continued to swim, which made them more susceptible to predation.

The Washington Department of Ecology estimates at least 70,000 pounds of copper is carried by stormwater into Puget Sound each year.

The Washington Department of Ecology estimates at least 70,000 pounds of copper is carried by stormwater into Puget Sound each year (DOE Pub. No. 08-10-084, Addendum 2). The good news is that, in 2010, Washington passed Senate Bill 6557 mandating a reduction in the amount of copper used in automotive brake pads. The bill bans the sale of brake pads with more than 5% copper beginning in 2021. In addition, beginning in 2014, the bill bans the sale of brake pads that contain more than trace amounts of lead, chromium, cadmium, asbestos and mercury.

**SALMON NEUROMAST**




T.L Linbo et al. Dissolved Copper Triggers Cell Death in the Peripheral Mechanosensory System of Larval Fish. Environmental Toxicology and Chemistry, Vol 25, 2006"

A unique partnership was formed to initially study this issue in the San Francisco Bay Area in 1996. Known as the *Brake Pad Partnership*, it consisted of brake manufacturers, stormwater agencies and environmental groups. The study concluded that copper from automotive brake pads was indeed the *"single greatest contributor to elevated copper levels in urban creeks."* The *Brake Pad Partnership* concluded that mandating the phased reduction of copper for use in brakes would be the fairest and most cost-effective action.

The auto industry and brake pad manufacturers are on board with reducing the amount of copper in brake pads, but it will be nine more years before the ban begins. If we continue our driving habits of today, another 630,000 pounds of copper could wash into Puget Sound before the ban begins. In addition, the bill allows for the sale of already manufactured brake pads with copper levels higher than 5% through 2031.

Every time you apply the brakes on your car or truck, copper is falling to the ground, then is carried to our creeks and streams, impacting salmon habitat across Puget Sound.


How can you help reduce the amount of copper washing into Puget Sound? The best way is to drive less. This could mean carpooling, walking, riding a bike or taking the bus. Remember, every time you push the brakes on your car or truck, copper is falling to the ground, so the less you drive the less copper that drops from your brake pads. Who knows, years down the road the salmon you see swimming by you may have avoided being eaten by a predator because you and others like you decided to carpool or take the bus.

**RESOURCES:**

- www.copper.org/environment/copper-brake.html
- www.kitsapsun.com/news/2012/jul/11/copper-can-make-salmon-vulnerable-to-predators/
- www.esajournals.org/doi/abs/10.1890/11-2001.1?prevSearch=salmon+copper&searchHistoryKey
- www.suscon.org/bpp/index.php
- www.ncel.net/newsmanager/news_article.cgi?news_id=217
- www.ecy.wa.gov/programs/wq/stormwater/industrial/iswgpdraftpubcom/2007/pugetattach2.pdf
- www.ncbi.nlm.nih.gov/pubmed/16519324

16 foot high tide at East Bay, Budd Inlet 2010

# Our Shifting Climate What will Winter Hold in Store?

Over the past five years, Thurston County has watched a steady shift in rainfall and weather patterns that may be associated with a shifting climate.

During this time, there has been a delayed wet season beginning in mid to late November and lasting into May. This shift has not brought any more rain to our region but rather, has spread it out well into the spring months. This developing pattern has increased groundwater elevation and stream flow to a greater degree than individual rain events, which were more common in the past 10 to 15 years. Although we are not getting more than the 54 inches of annual average rain than we typically get, this delay of rainfall into the spring and accompanying cooler spring weather has had a dramatic effect on water levels. Over the past two years, groundwater, lake levels and stream flow have been running 50 percent above normal, well into summer. This is the cause of some of the high lake levels that have been reported in the County this summer, such as Lake St. Claire. Groundwater and stream flows returned to normal levels only in late September.

On the other side of this shifting pattern, periods of dry winter weather and very dry summer weather occur. December 2011 was one of the driest Decembers on record and August and September 2012 were the driest ever recorded in the Northwest. There is increasing evidence that shifting weather patterns associated with climate fluctuations are changing the fundamental patterns of the West Coast's weather. The problem is that we have not collected enough data to see if this is truly a fundamental and permanent shift or if it is a 'bump" in the road of our dynamic West Coast weather patterns.

Other news is that the National Weather Service forecasts a transition from a La Nina to a weak-to-moderate El Nino cycle, which should bring a warmer and drier fall and winter, but it remains to be seen what will happen in the 2013 water year, so stand by!

Complete data will be collected and analyzed, usually by the end of each October. Details from Thurston County Water Resources Monitoring program can be viewed at www.co.thurston.wa.us/monitoring/

NEW!

# Hands-on Components to Winter Workshops!

"Naturescaping" and "Beyond Landscaping" workshops will now be two-part classes! Take advantage of the winter months to advance your landscaping or revegetation project planning. In part 1, you'll get the overview you need to put together a draft plan. In part 2, come back to have your plan reviewed by experts!

"Naturescaping for Water & Wildlife" will help you learn how to landscape to protect water resources, attract more birds and butterflies, plan for four-seasons of interest, and deal with tricky spots in your landscape. Part 1: February 5, 6-9 p.m. Part 2: March 14, 6-9 p.m.

"Beyond Landscaping" is for people who need to restore an area to more natural conditions. Especially important for those along marine and freshwater shorelines, but useful to anyone who wants to get rid of invasive species and make a habitat planting, while also protecting slopes, enhancing privacy and maintaining views. Part 1: February 21, 6:30-9 p.m. Part 2 (includes plan review & field trip): March 2, 10 a.m.–2:30 p.m.

For details & registration, visit www.streamteam.info and click on the calendar or call 360-867-2166.

# Slow the Flow: 5 Easy Steps

Winter is upon us, and so, too, are the winter rains. Many years ago, much of present day Thurston County was forestland. Nearly half of the fallen rain was intercepted by branches and leaves. The rest would slowly soak into spongy soils where the roots of trees and shrubs held the soil together and drank up much of the water.

Today the rain that falls on our roofs, driveways, compacted lawns and other hard surfaces quickly runs off into ditches and pipes that empty into streams, lakes and Puget Sound. This stormwater runoff picks up pollutants along the way, such as dirt, oil, metals, pet waste and chemicals from lawns and gardens. Also, stormwater runoff increases stream flow, causing flooding, and scouring and eroding of the stream banks and bottom.

On your own property, try to "slow the flow" by infiltrating the rain that falls on house and yard back into the ground. By following these 5 easy steps, you can mimic the natural forest water cycle right in your own yard!

Puget Sound Starts Here.org

## 5 THINGS YOU CAN DO

### 1. Plant Trees

Trees and shrubs catch rainfall on their leaves and needles, transpiring much of the rain back into the atmosphere. Their roots loosen the soil, thereby improving infiltration, or the soil's ability to soak up rain water.

**A single mature tree with a 30 foot crown can intercept over 700 gallons of rainfall each year.**

### 2. Improve Soil with Compost and Mulch

Improve Soil with Compost and Mulch – Improving the health of your soil by mixing in compost or mulch will also help more rainwater soak into the ground. It can also help you save money by reducing your summer irrigation needs because grass and other plants will grow deeper roots and the soil will hold more water.

To amend existing lawns, aerate in the spring or fall, and then rake in ¼ to ½ inch fine compost and/or mulch mow. When you mulch mow (leave clippings on your lawn), you encourage your lawn to grow deeper roots, which improves your lawn's resistance to drought and improves soil health.

### 3. Disconnect Your Downspout*

If your downspout currently flows to the stormwater system (drainage ditch or stormdrain), then you may be able to redirect the runoff into a landscaped area, rain garden or rock-filled trench.

### 4. Install a Rain Garden

Rain gardens are shallow depressions that can hold and infiltrate runoff from your roof, driveway and other hard surfaces. They have compost-amended soils and are landscaped with plants that beautify your yard while soaking up and filtering runoff.

Thurston County and the City of Olympia are both offering $200 reimbursements for installing rain gardens. For more information turn to page 7.

**Stream Team will be co-sponsoring a free Rain Garden Workshop along with WSU Native Plant Salvage Project in April 2013.** For more information, visit www.streamteam.info and click on the calendar or call 360-867-2167. To download a FREE copy of the Rain Garden Handbook for Western Washington Homeowners or to view a rain garden installation video go to www.olympiawa.gov/raingarden.

### 5. Rock-Filled Trench*

Install a Rock-Filled Trench* – Rock-filled trenches can hold and slowly infiltrate runoff in areas that are too narrow for a rain garden.

For more information about ways to slow the flow of stormwater runoff from your home, go to: **www.rainwise.seattle.gov/city/seattle/rainwise_solutions** or request a free Stormwater Stewards site assessment (see page 7).

*The Seattle Rainwise Solutions website covers some of the technical things to consider before disconnecting downspouts or installing a rock-filled trench.

# Free Residential Site Visits

**Do you have questions about installing a rain garden, or would you like to learn more about what you can do to manage stormwater on your property?** You can request a FREE site assessment from a trained Stormwater Steward. Thurston County Stormwater Stewards are volunteers who have received classroom and field training on residential low impact development (LID) techniques. These LID techniques allow runoff from roofs, yards and paved areas to soak back into the ground. These highly capable volunteers have received training in:

- Designing and constructing **rain gardens**
- Sustainable **landscaping** techniques
- Ways to avoid the use of **products** that harm groundwater
- Permeable **pavers**
- **Vegetative roofs** and other rooftop management systems

Photo courtesy of Stormwater Steward, Nan Leah

To request a FREE Stormwater Stewards site visit, contact Erica Guttman at 360-867-2164 or nativeplantsalvage@gmail.com

# Install a Rain Garden and Get $200 Back

Both the City of Olympia and Thurston County are offering rain garden reimbursements up to $200 for plants and/or compost used to construct rain gardens. When strategically placed, designed and constructed, rain gardens can be beautiful and effective solutions for managing stormwater on-site. Rain gardens, which can be designed in varying sizes and shapes, are shallow depressions that are filled with compost-amended soils, and are landscaped with appropriate plants that help to capture, filter and infiltrate stormwater runoff.

Ten applicants will be selected for each jurisdiction to receive the reimbursement in 2013. If you live in the City of Olympia and would like program details, go to: www.olympiawa.gov/raingardens or contact Patricia Pyle at 360-570-5841 or ppyle@ci.olympia.wa.us . If you live in unincorporated Thurston County and would like more information, go to: www.co.thurston.wa.us/stormwater or contact Ann Marie Pearce at 360-754-3355 ext. 6857 or pearcea@co.thurston.wa.us.

# A Look Back at STREAM TEAM 2012

# Free Presentation: Eyes Over Puget Sound

**Feb. 6, 2013 • 7–8 p.m.**
**Olympia City Hall, Council Chambers**
**8 – 8:30 p.m.** *Questions and answers and opportunity to view the equipment*

*Patches of jellyfish and red-brown algae bloom.* Location: Budd Inlet (South Sound), 4:43 PM

Four times per month, scientists from the Department of Ecology's Marine Monitoring Unit take to the sky in a float plane to take aerial photographs and collect water samples from 37 stations throughout Puget Sound and the coast. One of these flights becomes "Eyes Over Puget Sound" (EOPS) and results of the flight, satellite images and en route ferry data are posted to the web within two days of observation.

This year-round data has been collected since 1989, but it wasn't until EOPS launched in 2010 (www.ecy.wa.gov/programs/eap/mar_wat/surface.html) that the public could easily see the photos and data and see what is presently going on in our waters. This popular web site is now getting over 72,000 hits per month.

On the website, you will find that EOPS provides news on current surface conditions of Puget Sound, including:

1. A condition summary
2. Personal flight observations
3. High resolution aerial photographs of water conditions from Seattle to Olympia
4. En route ferry data from Seattle to Victoria BC
5. Satellite images
6. Mooring data from 5 stations

You can also join the free email listserv and automatically receive this information about once a month: http://listserv.wa.gov/cgi-bin/wa?A0=ECOLOGY-EYES-OVER-PUGET-SOUND

In the meantime, come meet some of the scientists, see some of the gear, and learn about how the monitoring is done and what the results and trends are revealing.

# Free Presentation: Creatures of the Deep

## Explore the Wonders of Puget Sound

**Tues., Feb. 26 8 • 7 p.m. – 8 p.m.**
**LOTT WET Science Center, 500 Adams St NE, Olympia**

Back by popular demand, Stream Team invites you to an evening with David Jennings, scuba diver and photographer, to enjoy the beauty of his amazing underwater photographs capturing the wonders or Puget Sound from Budd Inlet to the Straits of Juan de Fuca. David will also talk about issues threatening Puget Sound and what we can do to help. As a member of Reef Environmental Education Foundation's (REEF) Northwest Advanced Assessment Team, David volunteers his time conducting diversity surveys from the Salish Sea to Monterey Bay. David's previous presentation in 2011, was standing room only, so arrive early to get a seat.

For more information visit www.streamteam.info and click on the calendar.


**Photo by David Jennings**

# Featured Stream

## Yelm Creek: The Disappearing Stream

As a tributary to the Nisqually River, Yelm Creek is a small, generally low gradient creek that flows nine miles, from its spring-fed source directly south of Yelm, to its confluence with the Nisqually River. A modest stream, about a foot wide near its beginning in rural farm and pasture land, then flows through the more urban area of town where it disappears during much of the year, lost to a low groundwater table and other factors. Eventually, it emerges again - above ground – where closer to the river it becomes a robust, bountiful stream flowing over boulders, cobbles and gravels, supporting a healthy run of late run winter chum salmon in its final half mile.

Yelm Creek was part of the traditional territory of the Nisqually Indian Tribe. Yelm is a Native American name translated to loosely mean "shimmering heat waves". Parts of the Yelm Creek watershed were utilized extensively by the Nisqually people for foraging. The central run of Yelm Creek was formerly a prairie habitat, similar to the vestigial prairies still extant on parts of Ft. Lewis. Here, deer and other large game were hunted and snared. Camas grew abundantly in this habitat and was an important starch staple. Camas bulbs were harvested in spring and early summer and steam-baked in pits before drying during winter. Other commodities harvested in the Yelm prairie area included a variety of berries and acorns from native Garry oak. The value of the prairie habitat was such that it was maintained by a practice of occasional burning in order to favor native oaks, keep invasive fir trees from colonizing and to maintain prairie grazing habitat for deer and elk.

The Yelm Creek area also played an important role in early territorial history. During a period of peculiar political limbo in the 1800's, when this area was disputed by both the British and their proxy- Hudson's Bay Company - and the United States, early pioneer families traveling the Oregon Trail began to arrive in South Sound, finding Oregon's Willamette area already overcrowded. In 1845, James Longmire, as part of the first wagon train party to cross to turn north at Walla Walla, traveling up the Yakima River and crossing the Naches River, was the first Euro-American to settle in the Yelm Creek watershed. In his memoir, Longmire explained his decision to homestead on the Yelm Prairie area in a most bucolic way;

"Having received due notice from the Hudson Bay company not to settle on any lands north of the Nisqually River, we crossed the river and went to Yelm prairie, a beautiful spot. I thought as it lay before us covered with tall waving grass, a pretty stream bordered with shrubs and tall trees, flowing through it, and the majestic mountain standing guard over all, in its snowy coat, **it was a scene fit for an artist**. Herds of deer wandered at leisure through the tall grass."

Upper Yelm Creek at 103rd Street

Lower Yelm Creek, Courtesy Wild Fish Conservancy

## "...an essential habitat for a variety of salmon...

Several decades later, an intrepid homesteader named J.C. Conine chose land just beyond the southeastern border of the Yelm prairie area that included a large wooded wetlands complex in the upper Yelm Creek area. Conine described a habitat rife with beaver, elk and deer. He described a beaver dam on Yelm Creek to be, *"...eight hundred feet long and taller than a man standing"* and was responsible for the creation of much of this wetland...*"it took six long years to dismantle the beaver dam."*

To Conine and others, the dam was an impediment to raising livestock such as sheep, cattle and hogs. While beaver dams and the off-channel ponds they create provided ideal coho salmon habitat, storing winter rainfall during dry summer months, Conine and other settlers of the time did not fully understand the value of the beaver dam in creating habitat for healthy salmon runs, especially when salmon were so bountiful.

Yelm Creek's once rich salmon runs, which historically included steelhead, Chinook, coho and pink salmon, as well as cutthroat trout, saw diminishing returns as the land was altered. Nevertheless, salmon continued to make their way up from lower Yelm Creek and into the prairie reach of the stream until the early 1960's. According to popular recollection, the odor of decomposing, spawned-out salmon would waft right through downtown Yelm!

Today, the lower half mile of Yelm Creek, still flowing abundantly year round, is essential habitat for a variety of salmon, especially for Nisqually winter chum, a genetically distinct run of chum that is the very last run of salmon that returns to the South Sound, beginning in December and lasting into January.

Thurston County has several water quality monitoring stations on Yelm Creek. Stream Team volunteers monitor two sites for benthic macroinvertebrates (primarily aquatic insects), which are good indicators of the health of the stream: one site is in the upper reach near Morris Rd. where the creek is very small but with a nice riparian zone. The other monitoring site is just above the creek's confluence with the Nisqually River.

This lower reach supports multiple species of salmon where females dig redds and lay their eggs in cool, tree-shaded beds of gravel. The BIBI (Benthic Index of Biological Integrity) score for the upper site was in the lower range of moderate biological integrity in both 2009 and 2010. Not surprisingly, the lower Yelm Creek site has consistently been the highest scoring site that Stream Team monitors, anywhere throughout the entire county!

## ...historically included steelhead, Chinook, coho and pink salmon, as well as cutthroat trout...

**RESOURCES:**

- http://www.co.thurston.wa.us/monitoring/special/special-yelm-thomp.html
- http://www.co.thurston.wa.us/health/ehrp/annualreport.html#10-11

# Beat the Winter Blues

## Free Workshop: Amphibians of the Pacific Northwest

**Sat., Jan. 19 • 10 a.m. – 3 p.m.**

**LOTT WET Science Center, 500 Adams St NE, Olympia**

If you have an interest in our local Pacific Northwest species of amphibians and would like to learn more about them, including how to identify amphibian egg masses, then you will love this free workshop.

Workshop instructor, Dr. Marc P. Hayes is a herpetological ecologist and senior research scientist with the Washington Department of Fish and Wildlife. He has 39 years of experience working with amphibians and reptiles in locations in Washington, Oregon, California, Arizona, Costa Rica, Florida and Mexico.

### Workshop Agenda

**Amphibian life history: 10 a.m. – Noon**

Explore the ecology, habitat requirements and unique characteristics of each species in context of the Pacific Northwest landscape and the potential changes anticipated because of climate change. A brief synopsis on the global picture of amphibians will also be provided.

**Egg mass identification: 1 – 3 p.m.**

Learn how to identify different life stages of Pacific Northwest amphibians with an emphasis on egg mass identification. Sign up to volunteer for our second year of Stream Team amphibian egg mass surveys.

To register for this workshop, or if you are interested in conducting amphibian egg mass surveys, contact Michelle Stevie at mstevie@ci.olympia.wa.us or 360-753-8336.

# New Developments at Tumwater Falls Fish Facility and Deschutes River

For many years, the Washington State Department of Fish and Wildlife (WDFW) fish facility at Tumwater Falls has been an important location for the Stream Team Salmon Stewards program. Each fall, this highly public site located in Tumwater Falls Park, attracts thousands of curious visitors including many school groups. Here, wide-eyed adults and children alike can view egg harvesting operations as adult Chinook are stripped of their eggs and milt for incubation and eventually released back into the Deschutes River. On average, around 4 million eggs are harvested each year and provide the basis of a robust run of Chinook at the very southern terminus of Puget Sound, benefitting both the sport fishery and the tribal fishery.

Recently, pending state budget cuts, WDFW was poised to cut production by up to 75 percent at Tumwater Falls. Facing this cut, in September, the Squaxin Island Indian Tribe announced that they would provide $72,000 in order to preserve Chinook production. Without this support, only 1 million Chinook fry would be released at Tumwater Falls, but with the tribe's help, the historical average of around 4 million will be maintained.

In another development in the Deschutes River system, the Squaxin Island Tribe, again in partnership with the Department of Fish and Wildlife, has undertaken a study to better understand where juvenile coho salmon rear within the watershed. The tribe released 103,000 coho salmon fry in the upper Deschutes and in the Huckleberry Creek tributary in May of 2012. Being hatchery stock, all of these fish had clipped adipose fins for easy identification as hatchery fish.

Cataloging key locations where these fish find suitable habitat to feed and grow in preparation for their return to Budd Bay and Puget Sound, fisheries managers will be able to prioritize habitat acquisition targets and possible restoration enhancement project sites. Using helicopters equipped with infrared scanning technology, thirty-three cold water refugia sites were indentified in the mainstem of the river. Subsequently, in August, fifteen sites were surveyed by tribal divers who snorkeled the river.

These surveys revealed plenty of cutthroat trout using these mainstem sites, but surprisingly, no coho. Instead, coho were found to be using tributary streams in the upper and middle reaches of the Deschutes river system to feed and rear.

Coming up this spring, WDFW and the Tribe will monitor coho survival at the fish trap located at Tumwater Falls. In addition, another round of plantings will be conducted, followed in the summer by more snorkel surveys to document coho use of both mainstem sites and various tributaries. Stay tuned to learn more about this fascinating on-going research project in the Deschutes river system.

# Featured Creature

## What do you get when you cross fungus with algae? LICHENS!

Well, lichens are not creatures, per se, but they are certainly unusual organisms. Unlike mosses or liverworts, lichens are not true plants. They are not a single organism like other living things but a combination of two organisms living symbiotically together. Most of the lichen is composed of fungal filaments living among alga cells, usually green algae or cyanobacterium (previously called blue-green algae). Since fungi does not contain chlorophyll or have any other means of producing their own food, they rely on other organisms, such as algae, for nutrition. The algae uses sunlight to make sugars (food) that feed both the fungus and the algae. The fungus then creates a distinctive lichen body called a thallus that houses both organisms. Each fungi-algae combination creates a unique thallus that is identifiable from others.

There are approximately 3,600 known species of lichen in North America! Approximately a quarter of all known fungi world-wide are "lichenized". Most lichens appear different from other fungi, like mushrooms, and have a texture that is usually more fibrous and stiff, compared to non-lichenized fungi, which are usually soft, fleshy and delicate to the touch. Also non-lichenized fungi lack algae and do not appear green in color.

**Why are lichens so important to life?** Lichens are ecologically important as they convert carbon dioxide in the atmosphere through photosynthesis into oxygen. They provide an important role in survival in harsh environments, as food and shelter. Many birds and small mammals, such as squirrels, use lichen for shelter and nesting material. They are also an essential winter food for many ungulates such as black tail deer, mountain goats and caribou, making up 90% of caribou's winter diet. Other uses for lichens are as a human food source (beware some are poisonous), manufacturing of antibiotics and for dying wool. Lichens are very slow growing and many do not recover well from collecting or disturbance.

Cladonia cristatella. Photo by Charles Peirce. (Courtesy of USFS)

Flavocetraria cucullata. Photo by Ralph Pope. (Courtesy USFS)

Lichens have evolved to live in a variety of climates and ecosystems, and have the ability to absorb everything in their atmosphere, especially pollutants. Pollutants such as heavy metals, nitric and sulfuric acids (acid rain) and carbon are absorbed into the thallus of the lichen. Toxins can be extracted to determine the levels of pollutants that are present in our atmosphere. When there is an excess of pollutants in the air, lichens are unable to survive. Utilizing this sensitivity to air quality makes them a dependable air quality indicator species. Throughout the world, lichens are being used to detect specific air quality changes, monitor for pollutants and track climatic changes. Scientists use this information to evaluate air quality and climatic trends and to assess ecological impacts to our air.

For more information about lichens visit www.fs.fed.us/wildflowers/interesting/lichens

## Free Workshop: The Amazing Life of Lichens

**LECTURE:** **Sat., Feb. 9 • 10 a.m. – Noon • LOTT WET Science Center, 500 Adams St NE, Olympia**

**FIELD TRIP:** **Noon – 1 p.m. • Priest Point Park Rose Garden, 2600 East Bay Drive NE, Olympia**

Certified Arborist, Micki McNaughton will share her fascination with lichens and the importance of these unique symbiotic organisms and their relationship to the health of our environment. Micki has a degree in Ecology and Horticulture and is currently working on an advance degree in Restoration of Natural Systems, as well as working as the Urban Forestry Special Project Coordinator for the Washington State Dept. of Natural Resources.

For more information, or to register for this free workshop and field trip, visit www.streamteam.info and click on the calendar or call 360-753-8336.

***Citizen science opportunity:*** *Volunteers interested in citizen monitoring opportunities will learn how to record your observations and how your observations can help track air quality and climate change trends in Puget Sound.*

# Kids' CORNER

## What is different?

Can you find the 10 differences between these two pictures?

## Find Sammy the Salmon

### hiding 5 times in this newsletter

**and be entered into a drawing for a free Stream Team stainless steel water bottle!**

To be entered into the drawing, send an email with your name and mailing address to info@streamteam.info with the page numbers where you found Sammy.

**Prize drawings will be held monthly.**



Different: 1) seedling in center, 2) dirt pile extends left bottom, 3) top boy has fifth pinkie finger, 4) salamander by top boy's knee, 5) tool top left, 6) blue shirt green, 7) green shirt blue, 8) writing on center glove, 9) Stream Team on right boy's knee pocket, 10) shadow under right boy's arm




# Stream Team Events

*For additional events this winter, go to* **www.streamteam.info and click on the calendar.**

## DECEMBER

### 2nd Annual Bald Eagle Kayak Tour in Mud Bay

**Sat., Dec. 8 • 10 a.m. – 1 p.m.**

Special Stream Team cost: $25

See back cover for details.

Register online with Olympia Parks, Arts, and Recreation at www.olympiawa.gov/experienceit, or call 360-753-8380. Enter Program # 16478.

### Holiday tree rentals until December 18.

Want to participate? See page 2 for details

### See the Chum Salmon at the McLane Creek Nature Trail

**Early to mid-December**

Trained Salmon Stewards will be at the viewing platform at the McLane Creek Nature Trail on the weekends from 11 a.m. – 3 p.m. to answer any questions you and your family might have while you watch the chum salmon.

For more info., contact Ann Marie @ pearcea@co.thurston.wa or 360-754-3355 ext. 6857.

## JANUARY

### Amphibians of the Pacific Northwest Workshop

**with Herpetological Ecologist Dr. Marc P. Hayes**

**Sat., Jan. 19 • 10 a.m. – 3 p.m.**

LOTT WET Science Center, 500 Adams St. NE, Olympia

**Amphibian life history: 10 a.m. – Noon**
**Egg mass identification: 1 – 3 p.m.**

See page 12 for details. Register online at www.streamteam.info and click on the calendar, or call 360-753-8336.

## FEBRUARY

### Naturescaping for Water & Wildlife Workshop

**PART 1: Tues., Feb. 5 • 6 – 9 p.m.**
**PART 2: Thurs., Mar. 14 • 6 - 9 p.m.**

Olympia

See page 5 for details. Registration is required, and space is limited. Register online at www.streamteam.info and click on the calendar or call 360-867-2166.

### Eyes Over Puget Sound

**Wed., Feb 6 • 7 – 8 p.m.**

Olympia City Hall, Council Chambers 601 4th Ave E, Olympia

Opportunities to ask questions and view the equipment used following the presentation. See page 9 for details, visit www.streamteam.info and click on the calendar, or call 360-570-5841.

### The Amazing Life of Lichens

**Lecture: Sat., Feb. 9 • 10 a.m. – Noon**

LOTT WET Science Center, 500 Adams St NE, Olympia

**Field Trip: Noon – 1 p.m.**

Priest Point Park Rose Garden, 2600 East Bay Drive NE, Olympia

See page 13 for details. Register online at www.streamteam.info and click on the calendar or call 360-753-8336.

***EARN YOUR FREE "P.S. I LOVE YOU" BAG***
**by participating in four types of Stream Team events:**

**Wildlife or Habitat Monitoring**
**Salmon or Sound Stewarding**
**Tree Planting • Educational Workshop**

Earn your own tote bag and show everyone that Puget Sound is in your heart! Look for the "P.S. I Love You" stamp next to the events in our calendar for qualifying events.

### Beyond Landscaping Workshop

**Thurs., Feb. 21 • 6:30 p.m. – 9 p.m.**

See page 5 for details. Registration is required and space is limited. Register online at www.streamteam.info and click on the calendar or call 360-867-2166.

### Creatures of the Deep: Explore the Wonders of Puget Sound

**with Diver/Photographer David Jennings**

**Tues., Feb. 26 • 7 – 8 p.m.**

LOTT WET Science Center, 500 Adams St. NE, Olympia

See page 9 for details. Register online at www.streamteam.info and click on the calendar or call 360-570-5841.

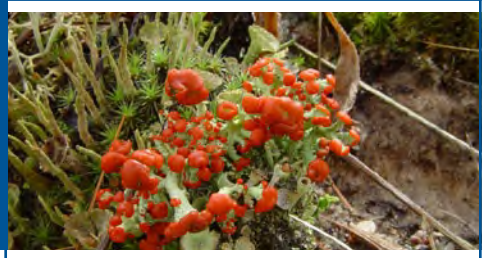
## COMMUNITY EVENTS

### Winter Twig ID Field Class

**with WSU Native Plant Salvage Project**

**Sun., Jan. 27**
**10 a.m. – 12:30 p.m.**
**OR 1 p.m. – 3:30 p.m.**

Join WSU Native Plant Salvage Project at the McLane Creek Nature Trail to learn how to identify native trees and shrubs in their winter splendor. $5 fee for the field class. To register, or for more information, contact nativeplantsalvage@gmail.com or 360-867-2166.



Stream Team
EDUCATE • PROTECT • RESTORE
Olympia • Lacey • Tumwater • Thurston County

929 Lakeridge Dr SW
Olympia, WA 98502
www.streamteam.info

# Sponsored Field Trip: Kayak Bald Eagle Feeding Grounds

**Sat., Dec. 8 • 10 a.m. – 1 p.m.**
**Special Stream Team Cost: $25 per person**

Join Stream Team, City of Olympia Parks, Arts, and Recreation and special guest Lindsy Wright, a US Fish and Wildlife Service biologist, for the 2nd Annual Kayak Trip at Mud Bay to see bald eagles feasting on McLane Creek chum salmon carcasses. In 2011, over 25 eagles were seen, and the weather was sunny and 50 degrees. We can't guarantee a warm day, but you will see eagles!

Space is limited to 15 participants. Youth ages 12 -15 may attend with an adult, ages 16-17 with signed permission. Moderate walking on uneven ground will be required. Kayaks and safety equipment provided.

To register, call 360-753-8380 or visit www.olympiawa.gov/experienceit online, and enter program #16478. For additional information, contact Michelle Stevie at mstevie@ci.olympia.wa.us or 360-753-8336.