

Stream Team News

FREE

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FALL EDITION
Sept–Oct–Nov 2017

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ON THE COVER: Members of Team Red, White, & Blue serving at Woodland Creek Community Park for MLK Day. **ABOVE:** Spawning Chum. Photos by Michele Burton Photographer.

STREAM TEAM MISSION

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

Stream 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.

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.

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Share the Thrill of *Live Salmon Spawning* in McLane Creek!

Seeing chum salmon spawning in McLane Creek never gets old—whether it's your first time or your one hundredth time! The magnificent and colorful chum salmon return to Thurston County every fall to spawn in McLane Creek.

The McLane Creek Nature Trail, located off of Delphi Road, offers excellent viewing of this spawning wonder. With their dark, purplish-black tiger-like stripes, they are truly a sight to see as the females dig their nests and males vie for optimal spawning.

Thousands of people trek to the nature trail every year to see this annual spawning display. Each fall, Stream Team trains

Salmon Steward volunteers to greet people at salmon viewing locations along the nature trail and answer questions they may have while viewing the chum.

If you are interested in being a Salmon Steward at the McLane Creek Nature Trail, please join Stream Team for a three-part training in late October and early November. No prior experience is necessary!

All volunteers will receive a Salmon Stewards binder and hat to keep, plus useful materials, handouts and a Salmon Stewards vest to use during the stewarding season.

Chum Salmon Stewards Training Dates

Wednesday, October 25	6:00 p.m. – 8:00 p.m.	Part 1: Salmon Stewards Orientation*
Wednesday, November 1	6:00 p.m. – 8:00 p.m.	Part 2: Chum Overview with Washington State Department of Fish and Wildlife Biologist
Saturday, November 4	10:00 a.m. – 12:30 p.m.	Part 3: Field Session at McLane Creek Nature Trail**

To register for the training go to streamteam.info (click on "Register").

For more information, contact Ann Marie at StormwaterUtility@co.thurston.wa.us or 360-754-3355 ext. 6857.

**The Salmon Stewards Orientation is intended for those who did not already complete Part 1 in late July or mid-August, or for anyone who would like a refresher on the salmon life cycle, the 5 H's (habitat, harvest, hatcheries, hydro & humans) or docent skills.*



CHUM SALMON & CIDER CELEBRATION AT MCLANE CREEK

- Sunday, November 12
- 11:30 a.m. – 2:00 p.m.
- McLane Creek Nature Trail**

Celebrate the return of chum salmon to McLane Creek and enjoy free hot spiced cider and snacks. Salmon Stewards will be on hand to answer your questions about the wild chum salmon run at McLane Creek Nature Trail.

See the Salmon at McLane Creek this November! **

Can't make it on the 12th? No worries! Salmon Stewards will be out at the McLane Creek Nature Trail on the weekends in November and over the Thanksgiving Day holiday. Look for Salmon Stewards between 10:00 a.m. and 2:00 p.m. on Saturdays, Sundays, Thanksgiving Day and the day after.

For more information about McLane Creek Nature Trail, including directions, go to WA State Department of Natural Resources (DNR) website at dnr.wa.gov/Capitol#mclane.

***Note: The McLane Creek Nature Trail is part of the Capitol State Forest and is a Washington State Department of Natural Resources Recreation Site. A Discover Pass is required for each vehicle when visiting state recreation lands managed by the Washington State Department of Natural Resources and Department of Fish and Wildlife. For information about how to purchase a \$10 day pass or \$30 annual pass, visit discoverpass.wa.gov (Salmon Stewards are granted temporary parking passes).*

Featured Creature

Pacific Salmon



THE RETURN OF THE CHINOOK CELEBRATION

- Sunday, October 1
- Noon – 4:00 p.m.
- Tumwater Falls Park

The Return of the Chinook Celebration

Stream Team will be celebrating the return of the Chinook with a family-friendly event featuring salmon-themed arts and crafts activities. Salmon Stewards will be on hand to answer questions about the Deschutes Chinook salmon run. To volunteer in the Stream Team booth, please see the event listing in the calendar on page 15.

For more information on the Chinook salmon run at Tumwater Falls Park or the Return of the Chinook event, contact Debbie Smith at dmsmith@ci.tumwater.wa.us or 360-754-4148.



Chinook/King

Size: Typically 20–25 lbs

Life Cycle: 3–7 years

Spawns: August – November

Diet: Small fish



Chum

Size: Typically 9–11 lbs

Life Cycle: 3–5 years

Spawns: September – December

Diet: Soft-bodied organisms like jellies and zooplankton

Perhaps no animal has been such an iconic part of the Pacific Northwest's ecosystem, economy, and culture as the salmon. Many Pacific tribes have honored and celebrated salmon for centuries. In addition to bringing food to local peoples, Pacific salmon also inspired legends and connected the people with the earth. To this day salmon remain an important part of Northwest culture—they continue to play special roles in our recreation, food, and stories of the past.

Along with being a cultural symbol of the Pacific Northwest, salmon are also incredibly important to our diverse ecosystem. Salmon are *anadromous*, which means they are born in freshwater, migrate to saltwater, and return to freshwater to *spawn* (reproduce). Healthy creeks and streams are essential for successful spawning. Estuaries, the place along the shoreline where freshwater mixes with saltwater, provide a perfect nursery for juvenile salmon before they head to the ocean. The ocean provides plenty of food to help the salmon mature before heading back to their natal streams to spawn. Their unique life cycle makes salmon an important part of the food web throughout their lives.

Salmon are a “keystone species” in the Pacific Northwest. This means that without salmon, ecosystems drastically change. At least 137 species of animals depend on Pacific salmon for their survival, including mammals such as orcas, bears, and otters, as well as fish, birds, reptiles, and amphibians. Pacific salmon's contributions span beyond the animals that feed directly on them to plants that benefit from nutrients released as their carcasses decompose—

bears and other animals carry salmon carcasses into the forest where they decompose, adding essential, ocean-derived nutrients to the forest soils.

From studying tree rings, scientists know that trees gain significant amounts of ocean-derived nitrogen in years of large salmon runs. Trees and plants along salmon bearing rivers and streams can receive 25–80% of their nitrogen directly from decomposing salmon, depending on the location and size of the salmon run.

A study by Robert Naiman at the University of Washington found that Sitka spruce trees on the banks of rivers where salmon spawn grow as much as three times faster than on banks of rivers without salmon runs.

In return, these trees shade the creeks and streams that salmon spawn in, which protects baby salmon by keeping the water cool and providing cover from predators, such as birds. The trees and plants growing alongside streams also reduce soil erosion from stream banks, give homes to the insects that salmon eat, and create pockets of slow-flowing water in which young salmon can rest from the strong river currents.

Salmon begin life in what is called their natal stream. The developing eggs and young salmon depend on their natal streams for food, shade, dissolved oxygen and so much more in order to survive. Salmon spend anywhere from three months to two years in fresh water, depending on the species. After their



Coho/Silver

Size: Typically 5–12 lbs

Life Cycle: 2–3 years

Spawns: September – March

Diet: Insects, invertebrates, crustaceans, fish, and squid



Pink

Size: 3–5 lbs

Life Cycle: 2 years

Spawns: June – September

Diet: Zooplankton, amphipods, fish



Sockeye

Size: 4–11 lbs

Life Cycle: 3–5 years

Spawns: September – December

Diet: Crustaceans, squid, fish, and plankton

journey downstream, young salmon spend time feeding in estuaries, where freshwater mixes with salt water, allowing their bodies to adjust to salt water. They then journey to sea where they spend the next one to eight years, before swimming back to their natal stream to spawn.

During the spawning journey, the salmon stop eating and their bodies begin to change. The males grow hooked mouths to prepare to fight other males for spawning "rights" with a female. Males and females will change from their silver ocean color to more colorful spawning colors.

Once in spawning grounds, the female salmon will dig a series of nests, called a "redd," in the gravel by moving gravel and sand with her tail. As she digs each nest, she lays a portion of her eggs in each one. One or more male salmon will release milt to fertilize her eggs and she will gently cover them over with cleaned gravel to protect them. The female will stay with her redd to defend it from other females looking to dig their nests, for a few days to weeks, until she dies. The males will continue to look for opportunities to spawn with other females until they are too weak and die.

Human Impacts on Salmon

Humans affect salmon, their habitat, and the species that rely on them. Many typical activities in our daily lives can contribute to stormwater pollution—the largest source of pollution in salmon-bearing streams and in Puget Sound. Toxins in our stormwater are consumed by salmon and passed along to other animals in the food web, such as the

Tips for Viewing Salmon

► **Know where to go!** Here are a few places to view salmon locally:

Species	When	Stream	Viewing Location
Chinook	late-Aug. – Sept.	Deschutes River	5th Avenue Bridge, downtown Olympia**
Chinook	mid-Sept. – mid-Oct.	Deschutes River	Tumwater Falls Park**
Chum	November	Kennedy Creek	Kennedy Creek Trail*
Chum	November	McLane Creek	McLane Creek Nature Trail**

**For more information about salmon viewing at Kennedy Creek, go to spsseg.org/education-outreach/kcst/*

► **Learn from the experts.**** Stream Team's Salmon Stewards will be at the 5th Ave. Bridge, Tumwater Falls and McLane Creek Nature Trail during the salmon spawning seasons listed above.

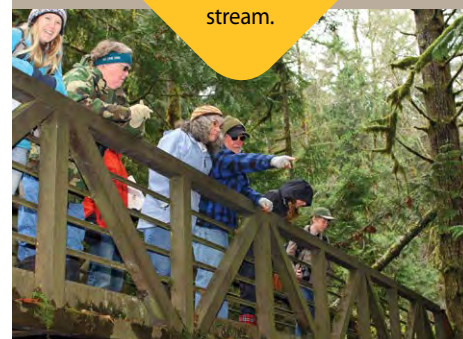
► **Leave your dogs at home or keep on a leash.** Dogs can scare the salmon and will disrupt eggs if allowed to run into creeks.

Warning!

Dogs are susceptible to salmon poisoning caused from bacteria in decaying salmon. Salmon carcasses can be drug by bears and other animals far away from a creek or stream. If you bring your dog, keep it on a leash, close to your side, and away from live and dead salmon. Be sure to pick up, bag and trash all dog poop to prevent bacteria from entering the stream.

resident South Puget Sound orca pods. These orcas have a diet composed of 97% Pacific salmon and 3% other fish. Because of the toxins that salmon are exposed to the resident South Puget Sound orcas are the most contaminated orca pods in the world.

Salmon continue to be an important part of our ecosystems, economy, and culture. Some of the most effective actions that protect salmon and their habitat can come directly from you, in your own home. To learn more about stormwater runoff and ways that you can help reduce water pollution, read our article on pages 8–9. Working together to clean up our waterways will help keep the salmon coming back year after year.



The "King of Salmon" Returns

One sure sign of fall approaching in South Sound is the return of the "king" of salmon, Chinook, to lower Puget Sound. The Chinook that return to Budd Bay and migrate back up into the Deschutes River are the offspring of the adult Chinook salmon that returned from the ocean three to five years ago to spawn.

The Chinook salmon start to gather in Budd Bay in August where they begin to adapt from saltwater to freshwater conditions. They stop eating, lose their bright silver ocean color and adopt their olive-brown spawning colors.

When the fall rains return, the Chinook begin their upstream migration in earnest. They swim upstream to look for suitable spawning habitat in the Deschutes River. Some naturally spawn in the gravel below Lower Tumwater Falls. Most continue upstream where they swim up through the fish ladder into the Washington Department of Fish and

Wildlife (WDFW) fish facility in Tumwater Falls Park.

WDFW staff collect the Chinook salmon as they come up the ladder into the pens. The eggs from the females and the milt from the males are collected, and the fish are artificially spawned. The juvenile fish that result have their top rear fin, called the adipose fin, clipped before they're released back into the river. The fin is clipped so that people catching those fish know they are hatchery fish and not wild fish. In most cases, hatchery fish may be kept when fishing, but wild salmon must be released. (Check WDFW's website at wdfw.wa.gov/fishing/salmon/regulations.html for salmon fishing regulations.)

With their large body size (some can weigh over 100 pounds) Chinook salmon are the largest of all salmon species. They truly are the "king" of the salmon. Come see these magnificent creatures before they're gone for another year!

Viewing Location

5th Avenue Dam, downtown Olympia

Tumwater Falls Park, Tumwater

When

late August until mid-September

mid-September to mid-October

Stream Team Salmon Stewards will be at the locations listed above on weekdays from 4:00 p.m. to 6:00 p.m. and on weekends from 10:00 a.m. to 6:00 p.m. to answer questions about the salmon. Salmon Stewards can also answer questions about people's impact on salmon and suggest actions individuals can take to protect water quality and salmon.

In addition, Salmon Stewards will also be present at Tumwater Falls on Monday, Wednesday and Friday mornings from late September to mid-October. Visit during these times to see the "egg-taking" operation where eggs and milt are removed from the salmon and then transferred to a hatchery. (Be forewarned that the salmon are killed with a blow to the head before the eggs and milt are extracted.) The carcasses are sold to a vendor, sorted by quality, and used for food bank donations, pet food or fertilizer.

Don't Drip & Drive—Up to \$50 Off Leak Repairs!

Fluid leaks from cars and trucks are one of the largest contributors to Puget Sound's biggest pollution problem: stormwater runoff. Stormwater runoff is the water from rain or melting snow that flows over roads, roofs, and other hard surfaces (even lawns) and runs off into stormdrains, rivers, lakes and streams. When cars and trucks leak oil, gas, transmission fluid, and other liquids, stormwater runoff can pick up and carry these pollutants into lakes, rivers, streams, and Puget Sound. Together, all of the vehicles in the region leak an estimated 7 million quarts of oil into Puget Sound every year—the equivalent of one tanker truck per day! Not only do vehicle leaks pollute our water, they also shorten the lifespan of cars and trucks and can cause more costly repairs in the future.

Stream Team has partnered with the Don't Drip & Drive campaign and local mechanics to provide free leak checks to motorists in Thurston County. If a vehicle leak is found, participants can receive a 10% discount for leak repairs, up to \$50.

This program will only be available until the end of 2017, so don't wait to get your car checked! To find a participating repair shop, visit fixcarleaks.org.



Amphibian Road Monitoring

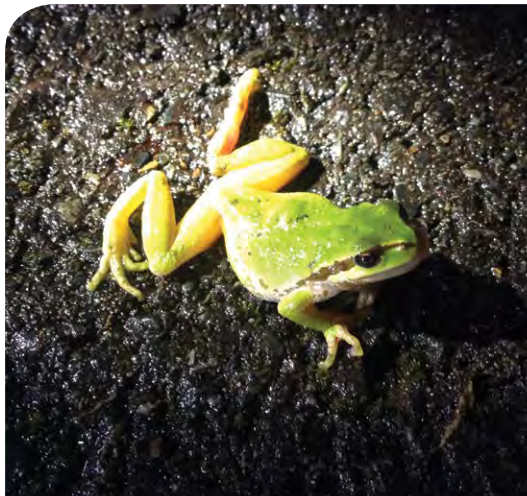
Traffic and animal migrations: A perilous combination

Vehicle traffic affects many wildlife species, such as migrating frogs and salamanders. In areas where traffic is heavy, amphibian populations can be decimated as they cross busy roadways that have been built within their existing migration pathways.

For the past two years, Stream Team volunteers have been surveying three locations in Thurston County, which are known migration routes for amphibians leaving or returning to the wetlands where they breed and lay eggs. Following strict safety precautions, volunteers conduct surveys to count migrating amphibians and remove them from the road. Road surveys inform resource managers about local amphibian populations and road mortality in high-traffic areas.

Interested in helping collect this valuable information? Is there a frog crossing location you are interested in surveying?

Join us! No prior experience necessary as training is provided during survey events. Contact Michelle at mstevie@ci.olympia.wa.us for more information or register at streamteam.info (click on "Register").



KAISER ROAD AMPHIBIAN ROAD MONITORING

- Saturdays, Oct. 14 & 28, Nov. 4 & 18, Dec. 2, Jan. 27, Feb. 10 & 24
- 7:15 a.m.
- Meet at WSU Extension Office, 5033 Harrison Ave. NW, Olympia

CHAMPION ROAD

- First & Third Wednesday evening each month beginning Oct. 18
- 7:30 p.m.
- Meet at the Chevron Station, 11315 Scott Creek Drive, Olympia (corner of Case Ext. SW and 113 Ave. SW)

Surveys will be canceled if temperatures are 40°F or below.

Citizens wanted for Shellfish Protection District Committees

The Henderson-Nisqually Shellfish Protection District Stakeholders Committee is looking for residents of the two shellfish protection districts to join their committee. The committee makes recommendations to protect water quality in Henderson Inlet and Nisqually Reach. Volunteers must live in either of the two shellfish protection districts and be willing to attend a two hour meeting every other month. If you are interested in joining the committee please contact Allison Osterberg, at osterba@co.thurston.wa.us or 360-754-3355 ext. 7011. Unsure if you live in the shellfish protection district? View a map of the district at tinyurl.com/spdmap.

What's Really *Polluting* Puget Sound?

We've all heard it... Puget Sound is in trouble! But why is it in trouble and what's really polluting Puget Sound? Sadly, the answer is us!

Puget Sound is the second largest estuary in the United States. Fed by over 10,000 rivers and streams and home to 4.4 million people, the Puget Sound region is truly a unique and wonderful place to live. Over the last 60 years, the region has grown considerably as millions of people have moved from all over the world to make their home in communities throughout our region. In 1960 a modest 1.8 million people called the region home. Growth continues today, and experts project over 5 million people will live in the region by 2040.

Because Puget Sound is such a popular place to live, about 12% of the land in the 12 counties surrounding Puget Sound is used for homes. Commercial and industrial buildings take up less than 1% of the land in our region. With so much residential land in our region, neighborhood pollution from residents is the biggest source of pollution in Puget Sound. That's right—you and me, our children, our pets, and the neighborhoods we live in are the largest source of pollution in our local rivers, lakes, streams, groundwater, and ultimately Puget Sound. Stormwater pollution from an acre of commercial or industrial land often generates higher pollutant levels than residential lands. However, since there is so much more residential land, it generates a much larger amount of pollution overall.

Every time it rains, rainwater falls on our roofs, driveways, parking lots, lawns, gardens, and cul-de-sacs, picking up everything we've left behind and leaching pollutants from the structures and surfaces we've built. Fertilizers and pesticides we used in our yard and garden, dog poop we haven't picked up yet, zinc and copper from our roofs, oil and grease from our cars, and pollutants generated from many other daily activities are the greatest source of pollution to both our waterways and Puget Sound.

The largest pollutant is oil and grease from our cars and other motorized vehicles like RVs and boats. Small (or even large) amounts of oil, gas, and grease leak from motorized equipment during normal use or when needing repair. The 1.7 million cars in our region leak a tanker truck's worth of oil every day. Read our Don't Drip & Drive article on page 6 to learn more about how you can make sure your vehicles are not contributing to that tanker truck of oil.

The fantastic news is you have the power to reduce pollutants flowing into Puget Sound! Here are seven simple and easy things you can do every day to help protect our water and Puget Sound.

Choose alternate forms of transportation whenever possible.

#1

Walk, ride your bike, carpool or take public transportation. Fewer vehicles on our roads means fewer chances for leaks.

Always pick up your dog's poop and dispose of it in the garbage.

#4

Dog and other pet poop is raw sewage. Dog poop in your backyard must be picked up at least once a week, even in the dark and wet fall and winter months. To avoid searching your back yard for piles during the dark months, consider putting a small light on your pet's collar so you can easily see where your dog does its business and pick it up without having to search. See page 11 to learn how you can receive a free pet waste dispenser for your leash or a neighborhood pet waste dispenser and sign.

Sweep sidewalks and driveways instead of pressure washing them.

#6

Always collect debris and dispose of it in the trash, never sweep it into the street or a storm drain.

Always wash your vehicle at a commercial carwash.

#2

Commercial car washes send dirty wash water to the sewage treatment plant for thorough treatment. Dirty wash water from driveways or parking lot car washes flow to the stormwater system where it does not receive adequate treatment before flowing to local waterways or groundwater.

#3

If your vehicle leaks, get it fixed as soon as possible.

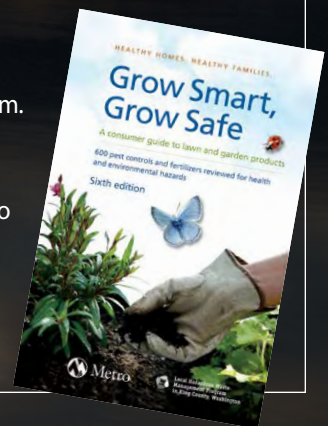
See page 6 to learn about free vehicle leak checks and discounts for fixing your leaky vehicle.

#5

Follow natural yard and lawn care practices and avoid using weed and feed products.

To learn more, visit streamteam.info/actions/lawncafe/

To find the least toxic options for fertilizers and pesticides go to GrowSmartGrowSafe.org



Build a rain garden.

#7

If your home does not connect to a neighborhood storm pond (typically houses built before 1990), build a rain garden to collect stormwater from your own property and help the water slowly soak into the ground. For more information about building a rain garden, visit streamteam.info/actions/raingardens/.

Always remember, small actions add up to make a big difference!

For more information about small actions you can take to help keep pollutants out of our local waterways visit our website at streamteam.info/actions/



Featured Watershed

McLane Creek



McLane Creek is named after an early Thurston County pioneer, William McLane. William and his wife, Martha McLeod McLane, pioneered a homestead in the Delphi Valley near Mud Bay. In addition to being a farmer, William was also an active leader in his community. He served in the Territorial Legislature before Washington officially became a state, and donated lands and funds for local schools, churches and a cemetery.¹

The McLane Creek basin is located in northwestern Thurston County where it eventually flows into Eld Inlet (visible from U.S. Highway 101). McLane Creek starts in the Capitol State Forest, then drains water from 7,000 acres and merges with four major tributaries (Beatty Creek, Cedar Flats Creek, Perkins Creek and Swift Creek) before finally draining into the Puget Sound.

The Washington Department of Natural Resources manages Capitol State Forest, located in the upper part of the basin, including the popular McLane Creek Nature Trail. The water continues downstream, across land that supports

both wildlife and people who live, work, and play in our community. It flows through forests we harvest for wood, valleys we farm for food, natural trails and streams we use for recreation, and rural and suburban neighborhoods where 1,300 people live.

This beautiful basin is one of the most ecologically intact watersheds within Thurston County that drains to Puget Sound. A variety of fish species also call McLane Creek or its tributaries home—including cutthroat trout, winter steelhead, coho salmon, Chinook salmon, and chum salmon. Eld Inlet, the estuary where freshwater from McLane Creek mixes with salt water from Puget Sound, supports geoduck, littleneck clam and other types of harvestable shellfish. Big brown bats are found near the mouth of McLane Creek and pileated woodpeckers breed near Beatty Creek. Shorebirds forage in Mud Bay (the “muddy” southern part of Eld Inlet) and a variety of migratory birds flock to the beaver pond located along the McLane Creek Nature Trail. Many other wildlife species

call this area home throughout the year, including a majestic herd of elk.

These creatures are certainly awe-inspiring, but they also serve as an early warning system for the health of our watershed, which provides food and water to all the plants, animals, and people who live here. According to Thurston County Environmental Health, the overall water quality for McLane Creek is ranked as “fair” and both McLane Creek and Swift Creek have exceeded federal standards for fecal coliform (bacteria). Pet waste, livestock waste and leaking septic systems located in the watershed contribute to high bacteria levels in Eld Inlet.

It’s not all bad news though—the basin’s smaller streams are still shady and cool enough for salmon to spawn and survive.

Most of the McLane Creek basin remains undeveloped, with natural landscape covering 97% of the area. However, our region’s population is expected to grow by about 30% over



Fast Facts

• about •

Chum Salmon

McLane Creek

Scientific name: *Oncorhynchus keta*

Common name: Keta salmon, dog salmon, calico salmon

Mature salmon return from the ocean to spawn at 3–5 years of age.

The average adult chum is 25 inches long & weighs 8–9 pounds.

Some adult chum can weigh 40–50 pounds & reach over 40 inches in length!

Adult males have a prominently hooked nose, sharp “dog-like” teeth & dark purple to black tiger-like stripes.

Spawning takes place in November through early December.

Females lay 2,000–4,000 eggs.

Eggs hatch between December & February, depending on stream temperatures.

Juveniles feed on insect larvae in the creek.

Chum salmon juveniles feed on insects, small fish & crustaceans in estuaries from January through July before heading out into the ocean.

Over 1,900 chum returned to spawn in McLane Creek last year.

the next 20 years—likely bringing more houses, agriculture and forest practices. Large areas that are currently undeveloped and forested are privately owned and zoned for residential development. As new houses are built, forestland and tree cover will decrease, which could further impact water quality and water temperatures throughout the basin and in Eld Inlet.

The good news is there are things that we can all do right now to help protect this basin, as well as other basins throughout Thurston County. No matter where we live, if we pick up our dog’s poop,, use slow-release or organic fertilizers, maintain septic systems, and plant native trees and shrubs, we can help keep our water clean. These actions are especially helpful near our water sources, including along McLane Creek and its tributaries. We can all do our part to keep our communities and ecosystems healthy!

¹ “Guide to ‘William McLane: Early Thurston County Pioneer,’” Grace Austin 2014. Cage 5067

YOU TOO CAN HELP MCLANE CREEK!

Thurston County Stormwater Utility has partnered with the Thurston Conservation District and landowners in the McLane Creek watershed to remove invasive plants along McLane Creek and replant with native trees and shrubs. To participate or learn more, contact Ann Marie at StormwaterUtility@co.thurston.wa.us.



WANT TO HELP CLEAN UP YOUR NEIGHBORHOOD?

To request a free pet waste station for your neighborhood or to request a free mobile bag dispenser to attach to your dog leash, go to streamteam.info/actions/petwaste



Fall is the Time to *Renovate Your Lawn!*

Lawn aeration is key to renovating your lawn

Did you know fall is the perfect time to help your lawn grow stronger and healthier? One of the best ways to give your lawn what it needs is by aerating it. But what exactly is aerating and how can you do it?

Aeration is the process of punching holes in the soil to optimize nutrient, air, and water flow. Often times the soil beneath your lawn is compacted, not allowing these key components to circulate well. Compacted soils lead to shallow and weak roots and poor lawn appearance.

Aeration can improve the physical properties of soil resulting in a healthier, more resilient lawn. Lawn aeration helps:

- Improve soil texture, structure, density and porosity
- Increase microbial activity in soil
- Increase nutrient uptake by grass roots
- Decrease stormwater runoff by increasing stormwater infiltration

Now that you've decided to aerate, here are some easy tips to follow:

#1

Choose your aerator rental

- Opt for a "core" type aerator that pulls 2–3 inch plugs.
- Team up with your neighbors to rent a lawn aerator and aerate a few lawns in one day.
- Use a company that maintains their equipment and takes the time to go over safe and proper operation with you.

If you live within **Olympia city limits**, visit olympiawa.gov/stormwater and learn how to rent an aerator for free!

#4

Aerate carefully

- Walk the aerator back and forth, overlapping runs 25–50 percent.
- Overlap 2–3 times, in opposite directions, around high traffic areas and at edge of lawn.
- Leave your plugs on the ground to decompose and release nutrients.

#2

Remove any obstacles from your yard


- Hand pull weeds when ground is moist and before they develop deep roots.
- Mow your lawn so your aerator has less layers to go through.
- Rake and compost leaves, sticks, and grass clippings.
- Flag sprinkler heads, valves, and meters to help you steer clear.

#5

Give your lawn some TLC

- Overseed your lawn in early fall once rains begin to keep seeds moist during germination. A thick healthy lawn is your best defense against weeds.
- Choose a Pacific Northwest seed mix that is blended to suit the amount of sunlight your lawn receives.
- Apply a "prilled type" lime if your soil pH is below 6.0 (no more than 35 lbs. per 1,000 sq. ft. per application).
- If you are going to fertilize, select a fertilizer containing >50% "slow-release" nitrogen (natural organic fertilizers are usually slow-release), and carefully follow the application instructions on the bag.





Choosing the right fertilizer matters. Avoid lawn fertilizer products such as weed and feed, which usually contain 2,4-D herbicides, that have been linked to cancer in dogs (tinyurl.com/HerbDogCancer). For a list of safer lawn products, visit GrowSmartGrowSafe.org

#3

Check soil moisture

- It's best to aerate when the soil is moist, not too soggy or too dry.
- If the soil is too wet, you may damage the lawn and it may be difficult to operate the aerator.
- If the soil is dehydrated and hard, it can be difficult to pull a good core.

For more information on aerating, how to have a beautiful lawn using natural lawn care methods and to see our lawn care video series, visit streamteam.info/actions/lawncafe/.

Rake those Leaves!

Fall Lawn Care Tip: Rake fallen leaves off lawn to avoid lawn dieback. Alternatively, mulch mow light layers of leaves into lawn.



Rake-A-Drain

In heavy rain and snow events, storm drains are essential to preventing localized flooding and keeping homes and roads safe. In one square mile, one inch of rain is equivalent to 17,378,560 gallons of water (**that is equal to approximately 1,498 large tanker trucks!**).

Because stormwater runoff cannot soak through hard surfaces like streets, sidewalks, and roofs, our communities rely on storm drains to carry that water safely away from neighborhoods and streets to prevent localized flooding. This water travels down storm drains and into creeks, lakes, storm ponds, or other bodies of water. Storm drains must be kept clear for the system to work. Although city and county crews regularly clean our storm drains and streets, leaves and other debris can gather quickly between cleanings and clog the drain, flooding our neighborhood streets.

When the leaves start to fall, before the heavy rains start, check to see if there is anything blocking the storm drains around your neighborhood. Organic material like leaves and dirt can go into the yard waste bin or a compost pile, and anything else should be disposed of in the garbage. After heavy snowfall, remove snow and ice from around the storm drain to allow snowmelt to flow down the drain. Checking your storm drain throughout the fall and winter can ensure that water will drain properly, protecting your property and neighborhood from flooding. You can help by keeping sidewalks clear of yard debris and remember to never blow, rake or pressure wash debris into the street.

Do not attempt to unclog a storm drain if the street is flooded and unsafe—call your local stormwater utility instead! If you believe you can safely unclog the drain, remember to use extreme caution around traffic.

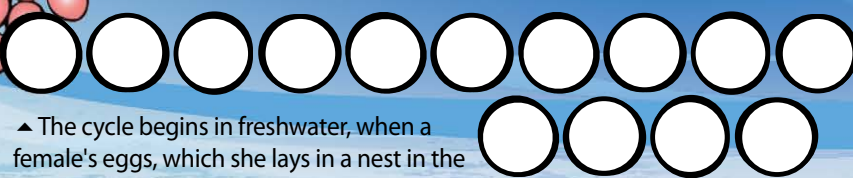
Always remember here in Thurston County, storm drains almost always lead directly to a body of water like a creek, lake, storm pond, or Puget Sound. Most stormwater runoff from our neighborhoods does not flow to a water treatment plant to clean it. That's why it's so important that only rain and snowmelt are allowed to flow into the storm drains. It's illegal to allow paint, soap, oil, or any other liquid to enter storm drains. Help keep our water clean by making sure that "only rain goes down the drain!" Contact your Stream Team Coordinator (see bottom of page 2) for more information on raking a drain or preventing stormwater pollution.

Kids' CORNER

SALMON LIFE CYCLE WORD SCRAMBLE

Fall means the return of salmon. Let's find out how much you know about these local celebrities! Can you unscramble all these words?

LFRTIEIDZE GSEG



▲ The cycle begins in freshwater, when a female's eggs, which she lays in a nest in the gravel, are fertilized. Females deposit their eggs in a series of nests called a redd.

YEED GESG



▲ These eggs remain in the gravel throughout the winter, and the embryos develop into eyed eggs.

NIAEVL



▲ In the spring, the eggs hatch and alevins emerge. These are tiny fish with the yolk sac of the egg attached to their bellies.

YFR



▲ When these fish emerge from the gravel they are considered fry. Eventually, fry begin their migration downstream toward the ocean.

MSOTL

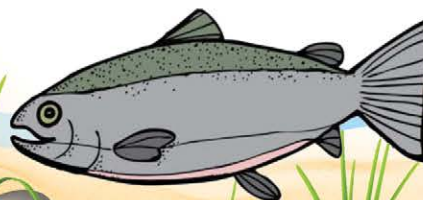


▲ At this time, scales grow and salmon turn a silvery color. Smolt salmon then spend one to seven years in the ocean before migrating back to their natal streams to spawn.

DLATU



◀ Upon reaching their natal stream, salmon spawn. Eventually, both the males and females die, supplying the stream and nearby forest animals with nutrients.





Stream Team *Events*

For additional events, event details or to register, please visit our website and click on "Calendar" or "Register": streamteam.info



For maps and directions to any of these events, go to: streamteam.info/getinvolved/directions/

SEPTEMBER

What's Blooming in Budd?

Thurs., Sept. 7, 14, 21 • 1 – 2:00 p.m.
Port Plaza dock

701 Columbia Street NW, Olympia

Thurs., Sept. 7, 14, 21 • 2:10 – 3 p.m.
LOTT Wet Science Center classroom

Join us down on the dock and see what wonders we net as we tow for plankton! For more info., contact Michelle at mstevie@ci.olympia.wa.us No registration necessary!

Salmon Steward Field Training

Part 1: Deschutes Hatchery Chinook
Sat., Sept. 23 • 10 a.m. – 11:30 a.m.

Part 2: Tumwater Falls Historical Walk
Sat., Sept. 23 • 11:30 a.m. – 1 p.m.

Tumwater Falls Park
110 Deschutes Way SW, Tumwater

Field training open to the public. Attend one or both parts. Meet at fish pens in park. For more info., contact Debbie at 360-754-4148 or dmsmith@ci.tumwater.wa.us See page 3. No registration necessary.

How to Register for Events

Visit: streamteam.info and click on "Register"

Select the event for which you plan to register

Click on the register button near the bottom of the "Event Detail"

Follow the instructions to log in as an existing volunteer or create a new secure profile

OCTOBER

Return of the Chinook Celebration

Sun., Oct. 1 • Noon – 4 p.m.

Tumwater Falls Park
110 Deschutes Way SW, Tumwater

Register to volunteer for a shift in the Stream Team booth. (No registration necessary to attend the event.) See page 4. For more info., contact Debbie at 360-754-4148 or dmsmith@ci.tumwater.wa.us Register online.

Forage Fish Surveys

Thurs., Oct. 5 • 9 a.m. – 3 p.m.

The Evergreen State College Beach

Survey beaches for sand lance and surf smelt eggs. Surveys are tide dependent so survey times will be variable. No training necessary! For more info., contact Michelle at mstevie@ci.olympia.wa.us Register online.

Chum Salmon Stewards Training

Classroom Session Part 1: Basic Salmon
Wed., Oct. 25 • 6 – 8 p.m.

Thurston County Bldg. 4
929 Lakeridge Drive SW, Olympia

See page 3 for details. Register online.

Deschutes River Revegetation Project

Sat., Oct. 28 • 10 a.m. – Noon

Capitol Blvd. and E St., Tumwater

Plant native trees and shrubs along the banks of the Deschutes River! For more info., contact Debbie at 360-754-4148 or dmsmith@ci.tumwater.wa.us Register online.

NOVEMBER

Chum Salmon Stewards Training

Classroom Session Part 2: Chum Run
Wed., Nov. 1 • 6 – 8 p.m.

Thurston County Bldg. 4
929 Lakeridge Drive SW, Olympia

See page 3 for details. Register online.

Chum Salmon Stewards Field Training

Sat., Nov. 4 • 10 a.m. – Noon

McLane Creek Nature Trail*
5044 Delphi Rd. SW, Olympia

See page 3 for details. Register online.

Planting Event at Woodland Creek Community Park

Sat., Nov. 11 • 10 a.m. – Noon

6729 Pacific Ave SE, Lacey

Help plant trees and shrubs at Woodland Creek Community Park and remove invasive weeds. Tools, gloves, and light refreshments provided. For more info., contact Kim at kbenedic@ci.lacey.wa.us Register online.

Chum Salmon & Cider Celebration

Sun., Nov. 12 • 11 a.m. – 1 p.m.

McLane Creek Nature Trail*
5044 Delphi Rd. SW, Olympia

Enjoy free hot spiced cider and donuts while learning from trained Salmon Stewards about the wild chum salmon spawning in McLane Creek. No registration required. See page 3.

*A Discover Pass is required to park here. Go to discoverpass.wa.gov for more info.

Forage Fish Surveys

Mon., Nov. 13 • 9 a.m. – 3 p.m.

Priest Point Park
2600 East Bay Drive NE, Olympia

Survey beaches for sand lance and surf smelt eggs. Surveys are tide dependent so survey times will be variable. No training necessary! For more info., contact Michelle at mstevie@ci.olympia.wa.us Register online.

To Register a Group

go to: streamteam.info/getinvolved/calendar/register-steps.php

Amphibian Road Surveys

Kaiser Road: Sat., Oct. 14 & 28, Nov. 4 & 18, Dec. 2, Jan. 27, Feb. 10 & 24 • 7:15 a.m.

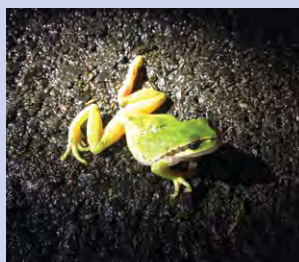
Meet at WSU Extension, 5033 Harrison Ave NW, Olympia

Champion Drive: First and Third Wednesday evening each month beginning Oct. 18 • 7:30 p.m.

Meet at Chevron STN, 11315 Scott Creek Drive, Olympia (corner of Case EXT SW and 113 Ave SW)

Surveys canceled if temperatures are 40°F or below.

For more info., contact Michelle at mstevie@ci.olympia.wa.us See page 7. Register online.





Stream Team

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

2000 Lakeridge Dr SW
Bldg 4 #100
Olympia, WA 98502
streamteam.info



NISQUALLY WATERSHED FESTIVAL •••••

- Saturday, Sept. 30
- 10 a.m. – 4 p.m.
- Billy Frank Jr. Nisqually National Wildlife Refuge

Celebrate with Stream Team at the 28th Annual Nisqually Watershed Festival

There's something for everyone at the annual Nisqually Watershed Festival! Check out the Insect Extravaganza, listen to live music, sample some barbecued salmon and great coffee, take part in walking tours and interactive displays, raptors of the Northwest, make a salmon print t-shirt, view marine creatures, stop at the Stream Team booth and much, much more!

This year's festival will be held on Saturday, September 30 from 10:00 a.m. to 4:00 p.m. at the Billy Frank Jr. Nisqually National Wildlife Refuge. Festival activities include a large variety of educational exhibits and hands-on activities for adults and kids of all ages. The festival main stage will feature live, majestic *Raptors of the Watershed* including peregrine falcons and hawks; a salmon dissection; and music and dancing. Don't forget to stop by and listen to stories in the Red Salmon Tent and dress up to take part in a critter parade! You can also board a free shuttle to the Nisqually Reach Nature Center and take a tour of the Nisqually nearshore.

For those who like to paint, bring a plain t-shirt to create your own fish print t-shirt, or you can purchase a t-shirt to paint at the festival. You can also paint a paper print, too!

Don't forget to bring your appetite; there will be a variety of delicious treats and coffee available. This event is FREE, except for the food, so come out and celebrate the history and culture of the Nisqually Watershed! For more information about the festival, including parking, go to nisquallyriver.org/nisquallywatershedfestival/ or contact Ashley at 360-456-5221 ext. 2145.

Note: Free parking and free shuttle to the festival will be available at River Ridge High School, 350 River Ridge Drive, Lacey.



Do you like talking to people?

Want to help people learn about Stream Team and what they can do to protect local streams and salmon?

Volunteer for a two-hour shift at the Stream Team booth and you'll receive a newly designed Stream Team t-shirt. For more information, contact Ann Marie at StormwaterUtility@co.thurston.wa.us or call 360-754-3355 ext. 6857. Sign up for volunteer shifts at streamteam.info (click on "Register").