Spring 2020
Newsletter

SalmonGRAM

Committed to Protecting and Restoring South Puget Sound Habitat

This Issue:

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Cover: Little Fish Trap

Back Cover: Bull Trout in Clear Creek

SalmonGram is published by the South Puget Sound Salmon Enhancement Group (SPSSEG), a 501(c)(3) non-profit, volunteer-based organization.

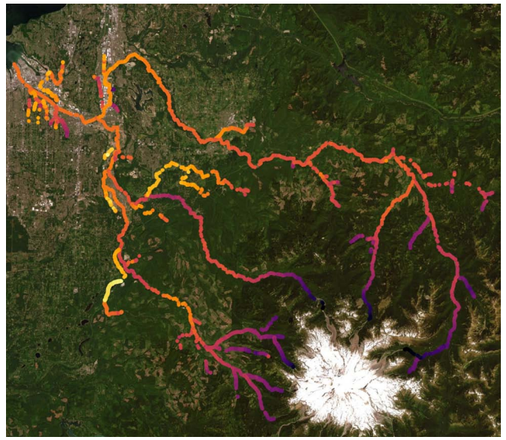
Message from the Executive Director

LANCE WINECKA

Unfortunately we weren't able to host our 29th annual meeting this year. We were very excited to hear from David Montgomery and his book King of Fish. If you haven't had a chance to read it yet, now might be a great time! It's a wonderful book showcasing the history of salmon across the world, and highlights the northwest. We also wanted to provide an organizational overview. Hopefully this edition of the Salmon Gram will help catch you up with some of our recent successes. Staff is still working hard to keep projects moving and to prepare for the summer fish construction window and beyond. We do have several great projects coming up for the following year too. It takes years from identifying a project to completion and luckily many projects are already fully funded from earlier grant rounds. Staff has been busy this spring writing grants since much of our fieldwork has been postponed. Like many people across the county we are also working remotely and learning how to use Zoom meetings! So far so good, and I sincerely hope that you are also feeling healthy and making progress on your priorities at home and work. Thanks so much for all of your support over the years. And if you aren't a SPSSEG member yet, please consider joining our wonderful organization and help us help fish.

The SPSSEG is one of fourteen Regional Fisheries Enhancement Groups created in 1989 by the Washington State Legislature. Base funding for the RFEG program comes from a grant from the U.S. Fish & Wildlife Service's Partners for Fish and Wildlife Program, a portion of state commercial and recreational fishing license fees, and excess egg and carcass sales administered by the Washington Department of Fish & Wildlife.

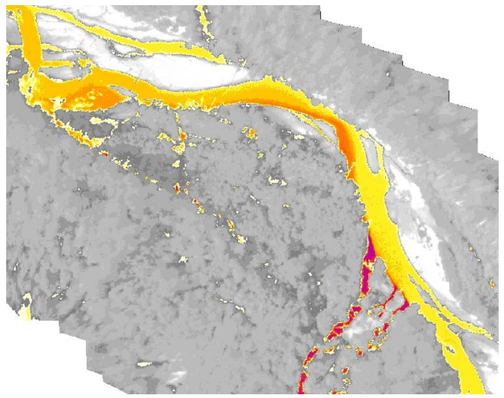
The Puyallup Watershed - Visualizing the Thermal Landscape to Transform Conventional Project Identification and Design Methods in the Face of Climate Change



Click map to view 3D online interactive data.

Among the many climate change impacts affecting salmon and trout populations, increasing instream temperatures are at the top of the list. Salmon recovery practitioners are wrestling with how to implement strategies to protect and restore thermal diversity, to support the ability of salmon and trout to continue to survive and thrive in our watersheds most at risk for future changing conditions. The lower portions of the Puyallup Watershed are highly urbanized, hosting the metropolitan area of Tacoma, the state's third largest City, while the upper watershed encompasses 60% of Mount Rainier including 12 primary, named glaciers, and many tributary basins draining the narrow elevation band in the zone likely to transition from snow-dominated to rain-dominated systems with climate change. Watersheds in this zone are at high-risk and likely to experience the most change under future climate predictions. In the absence of major intervening actions, these anthropogenic and topographic factors make the Puyallup Watershed fish populations vulnerable to the effects of changing climate.

Puyallup Watershed Spring and Fall Chinook spawning adults enter the rivers between April and June, to migrate and hold in the mainstem or tributary systems until they spawn in the fall; a life history strategy that subjects them to thermal stress during low flow periods in July-September. For upstream migrating fish, energy expenditure increases with temperature and with finite energy reserves held by spawning adults, reproductive performance can decrease with elevated stream temperature and thermal stress can increase susceptibility to infection and disease. Planning for restoration and protection of thermal diversity, both spatially and seasonally, across the Puyallup Watershed will provide aquatic organisms (fish and their food) with opportunities to maximize growth and survival and to adapt to more frequent, extreme conditions brought forth by climate change.



Tributary confluence of Huckleberry Creek with the Upper White River at River Mile 53, on the Mount Baker Snoqualmie National Forest. Thermal Infrared Imagery reveals Huckleberry Creek is 3 C cooler than the mainstem White River and has a downstream cooling effect on the White River. Telemetry data from the Puyallup Tribe and USFWS confirms that Bull Trout key in on this thermal diversity and spend days to weeks holding in this location during the summer months.

In response to these many risks imposed by climate change, partners within the Puyallup Watershed came together to plan and fund a watershed-wide acquisition of fine scale thermal data in 2019. In partnership with the Puyallup Tribe and the Pierce County hosted Floodplains for the Future initiative, SPSSEG commissioned a flight to collect thermal infrared (TIR) data of 335 miles of the Puyallup, Carbon, and White Rivers, including all major tributaries. The data was acquired between July 26 and August 1 of 2019 under contract with Quantum Spatial Inc (QSI). QSI leads the industry in data acquisitions of this type and has reported the Puyallup River project as one of their largest projects to date.

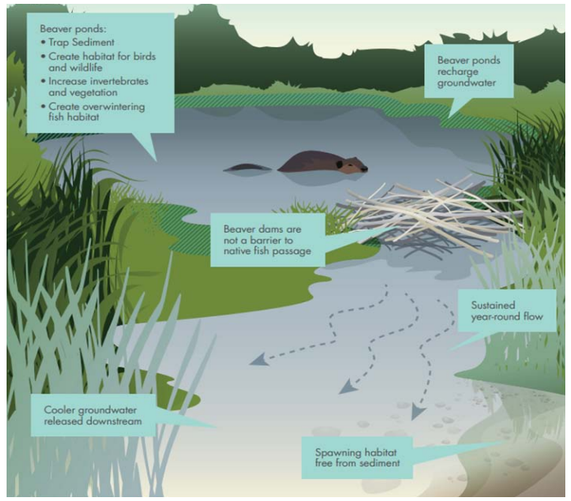
Puyallup Watershed partners received the data results from QSI in mid-January, 2020. SPSSEG and watershed partners are now hard at work formulating plans surrounding how to use these data to form strategies and inform priorities for restoration actions within the watershed. We hope to pair this new data set with existing LiDAR to visual the Puyallup Watershed with a new lens that helps us to not only better understand the challenges fish are facing year-round in the watershed, but also to better prioritize and design projects that maximize benefits to fish and allow our salmon and trout populations to survive and thrive into future, for generation to come.

A Fin and Fur Relationship

In recent years, restoration techniques including large wood installations and barrier removal have taken the forefront of the conservation community, and for good reason, but one technique you may not be as familiar with could hold all the answers to salmonid recovery. This restoration technique comes in the form of North Americas largest rodent, the beaver.

The beaver and the salmon have been linked throughout the pacific northwest since the start of time. Native American legends consisted of both beavers and salmon. Lewis and Clark accounted plentiful salmon through rivers forged by beaver colonies. These two species are known among the scientific community as keystone species; a species within an ecosystem in which other species largely depend on their presence, and if removed, would cause drastic change. This was the case for the American beaver in the late 1880s, as their numbers dwindled on the verge of extirpation from their previously estimated 60-400 million pre-settlement populations. These rodents were hunted for their pelts, oils, and nuisance reputation. By the mid-19th century the salmonid populations began to follow a similar, yet more gradual downward trend.

Beavers have two characteristics other species do not; a diet consisting primarily of trees, and a lifestyle that must alter its surroundings for survival. Beavers have well developed front teeth equipped to gnaw through trees for food and to fell to make their homes. They use tree branches and sticks to build lodges that house their entire family. They use precisely dropped trees and branches to build dams in order the surround their lodge with constant water and provide winter food storage. These means for survival have started to emerge as important to an ecosystem as the salmon, but before we dive into those life changing benefits, we need to recognize one thing. Beaver dams have long been seen as a barrier to fish movement and simply that. While that can be a factor during low water events in this changing climate, or when built around human infrastructure, the benefits of beaver dams greatly outweigh those occasional instances.



images courtesy Beavers Northwest

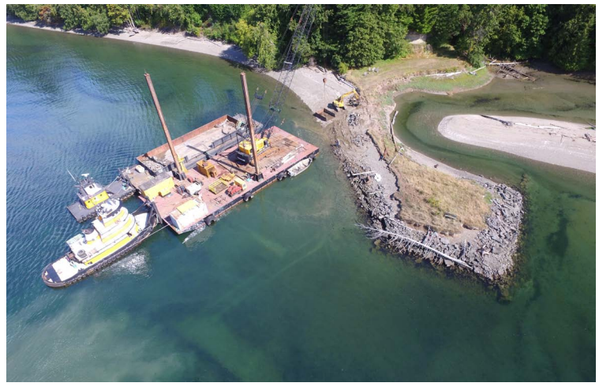
Beaver dams trap and slow water behind their arches and in-turn trap sediments. This natural sediment sorting creates optimal lanes of gravel runs for salmon spawning below the dam. Behind its walls, these ponds act as a nursery for juvenile salmonids full of entanglements of sticks and vegetation offering them cover, and keeping them safe from a plethora of predators. These dams also keep water in the system longer, reducing smolt stranding and recharging groundwater, releasing that cool water downstream. The further up in a watershed these colonies reside, the greater the water storage benefit, and when salmon have access to cool water for longer periods of time, good things happen. To add, these ponds promote an increased biodiversity and biomass that feeds the salmon. For a watershed, these dam complexes beavers call home can take an incised stream, deeply eroded and unconnected to its floodplain, and bring it back in-touch with its vital floodplain network, recovering some of the natural complexity of our native steams.

SPSSEG is emerging as a key player in beaver management for the good of all species, especially the salmon. At sites like Sequalitchew Creek in DuPont, SPSSEG and partners are implementing watershed-scale beaver management techniques to restore seasonal flow to this stagnant watershed. This effort aims to recover salmon runs that have not been seen for over

continued on next page.

Little Fish Trap

Just east of Boston Harbor is a small estuary called Little Fish Trap. In the 1940s the spit at the mouth of the estuary was changed by the homeowners on both sides of the spit. The spit historically swept from west to east, with a small opening for the creak to enter the Sound. The residents split the spit in half, allowing boats to enter, and built a fishing pier on the east side. As the spit tried to return to its natural position, the owner on the east side hardened the new configuration with a wooden bulkhead and lots of large and small rocks. On the beach sat asphalt, old engine blocks, random pieces of concrete. The homeowner's granddaughter recalls taking a rowboat around the area and collecting rocks till the rowboat was barely afloat, rowing back and depositing the rocks with the others.



The armoring reduced the ability of gravel to move down the beach, and instead pushed the small rocks to deeper water. These pebbles are important habitat for sand lance, a forage fish native to Puget Sound, which spawn in the fine pebbles on the beach. Small estuaries are also important nurseries for juvenile salmon, including Chinook, Coho, Chum, steelhead and Coastal Cutthroat.

This past summer, SPSSEG and Quigg Brother's Construction removed 1400 tons of the debris, and 200' of concrete block bulkhead on the west side of the spit. The project was designed to minimally disrupt the spit and allow natural recovery. It will be interesting to watch as the spit transforms itself over the coming years. The project was funded with Salmon Recovery Funding Board and private funds.

100-years. On restoration sites like the Deschutes River Ranch, we are seeing beavers move into off-channel habitat and work in tandem with our log weirs to create juvenile rearing habitat.

This may or may not be the first time you've heard of beavers being used to recover salmon, but it sure won't be the last. We must shift the stereotypical view of beavers being nuisance animals and embrace the role they play in our ecosystem. To learn more about salmon-friendly ways to manage beavers in your backyard visit: www.beaversnw.org.

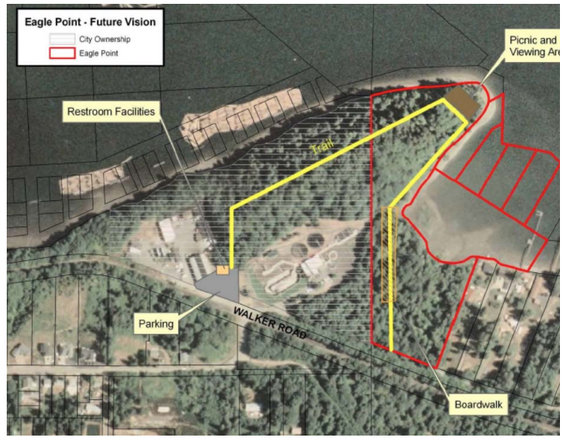
West Oakland Bay

Restoration Initiative Reaches Milestone, Benefits Salmon and Shelton Waterfront

After more than a decade of planning, several components of the West Oakland Bay Restoration initiative are finally completed and several habitat restoration milestones have been achieved for Oakland Bay, the Goldsborough Creek estuary, and the City of Shelton's waterfront. The large-scale habitat restoration project is aimed at restoring salt marsh wetlands and estuary habitat for salmon and wildlife, improving climate resiliency, re-greening the Shelton waterfront, and providing long-term conservation of shorelines in West Oakland Bay and the City of Shelton.

An early accomplishment of the project was the purchase and protection of Eagle Point, an 11-acre, undeveloped shoreline property with wetlands, beach frontage, and woodlands. Eagle Point sits along the south shoreline of Oakland Bay and Hammersley inlet, where migrating salmon from multiple stream systems migrate and feed annually. With conservation funding from the Recreation and Conservation Office, the acquisition and conservation of the property was implemented by the Capitol Land Trust. The property has been deeded to the City of Shelton and will become a low-impact city park with shoreline access.

Habitat restoration achievements for the project have included the completion of the "West Lobe" salt marsh, partial completion of the "South Lobe", and the placement of a series of log sediment retention structures that will boost alluvial processes at the mouth of Goldsborough Creek. A 10-acre area of tidal



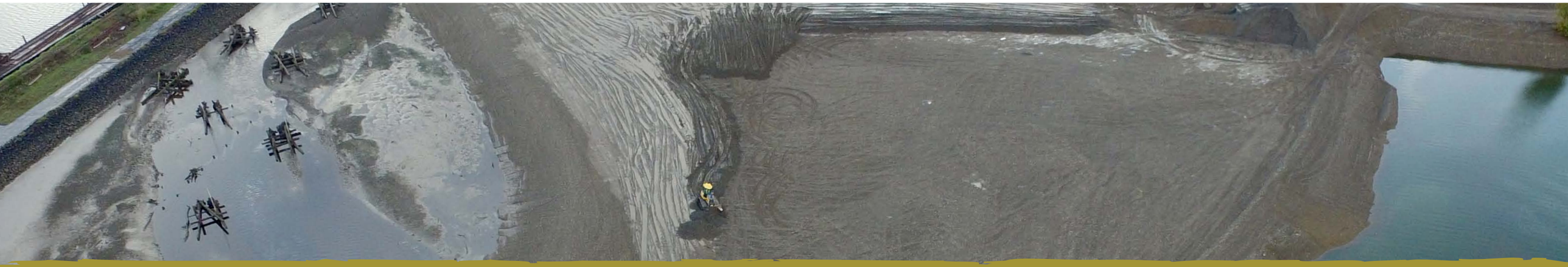
Aerial map shows the proposed design of the city's future park at Eagle Point. City of Shelton

wetlands and estuary has been re-created, restoring the nearly complete loss of tidal wetlands that occurred over a century ago when the industrial waterfront was built. The project is taking a unique approach to estuary restoration and has major implications for the future health of Oakland Bay and the Shelton waterfront. This is one of the only projects of its kind in Puget Sound in which large areas of salt marsh were created in open water, an approach that has been used in the Gulf States and in estuaries in New York State. Now that the marsh prisms for the West Lobe and South Lobe are in place, salt marsh vegetation is expected to colonize the marsh surface over the next two years via seed propagules from other marshes in Oakland Bay.

Having a functioning estuary couldn't come sooner for Shelton and Goldsborough Creek. A recent study utilizing the Elevation-Based Estuary Extent Model (EBEEM), illustrates the loss of 85% of historical vegetated tidal wetlands along the west coast (Brophy et al., 2019). Tidal wetlands not only provide the 'nurseries' of life so vital to salmon and other species, they provide vital buffers that protect cities and shorelines from storm surges and flooding. This resiliency function has long been known in places like coastal Louisiana which are frequently affected by strong storms. With the impending changes across Puget Sound resulting from climate change, our local shorelines are vulnerable as well.

As for specific salmon benefit, the restoration of the Goldsborough Creek estuary will provide a missing link that has been lost for so many decades and which affects multiple salmon stocks. A Squaxin Island Tribe fish migration study demonstrated that multiple stocks of Chinook Salmon come from many river systems to feed and grow in South Sound estuaries, including Oakland Bay. This echoes the findings of a similar study by the Nisqually Indian Tribe which showed multiple stocks from more northerly rivers coming to the Nisqually estuary for feeding and rearing. Another relevant study by Jones et al. (2019) documented multiple life-history strategies for Coho Salmon in the Salmon River of Oregon. That study documented the importance of the estuary-rearing strategy for Coho Salmon and called into question the long-held theory that Coho mostly rear in freshwater. Since Goldsborough Creek is a major Coho stream in our region which has lost its estuary, the comprehensive restoration of the salt marsh at the mouth of the creek will provide an ecological lift for multiple stocks and species of salmon.

Future work for this project will include the completion of the South Lobe, followed by the restoration of the north shoreline and the completion of the North Lobe. Additionally, all of the tidal lands within the project area will be brought under a conservation easement which will conserve and protect the estuary in perpetuity. The West Oakland Bay Restoration initiative goes beyond salmon recovery, it also provides open space, coastal resiliency, and community benefits for the community of Shelton and the South Sound.



KCST

Kennedy Creek Salmon Trail is South Puget Sound's premier Chum Salmon viewing trail. This half mile community gem includes 11 viewing stations with interpretive signs to assist visitors in watching thousands of wild chum salmon in their natural environment.

Kennedy Creek Salmon Trail had another successful season last November. While the water levels were the lowest we have ever seen, the viewing of fish was very good. In the 2019 season, 77 classes with almost 3,000 students toured the Trail lead by our trained Docents. The weekends were equally as busy with 1,900 people coming to the Trail.

Our annual Salmon Celebration saw over 500 people! We served up chili and Taylor Shellfish Clam Chowder. The event raised $1500 to support the Trail. The Trail is also supported by the Dawkins Foundation, the Squaxin Island Tribe and individual donations.

Exciting thing are happening with the Trail as Department of Natural Resources (DNR) is in the process of purchasing the property from Taylor Shellfish. Last year, DNR purchased the riparian buffer from Green Diamond Resource Company. DNR is in the planning stages of building a trail to the falls, two miles up the river.

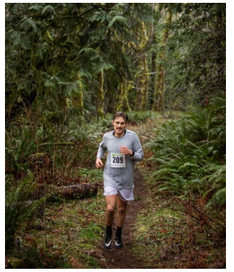
KENNEDY CREEK
CHUM RUN

The First Annual Kennedy Creek Chum Run occurred on March 7, 2020 and it was a huge success!!! SPSSEG teamed up with Northwest Trail Runs to host the Chum Rum including 5K, 10K, and Half Marathon race distances, all of which featured a run through the Kennedy Creek Salmon Trail as the start and finish to each race. The Kennedy Creek Salmon Trail is SPSSEG's most successful and longest running education program and staff love spending the month of November at the trail with thousands of school-aged kids and members of our community to welcome the chum back to the creek from their ocean journey to spawn. The Chum Run was an opportunity to invite hundreds of friends, old and new, out to the trail in the spring to send the young chum emerging from the gravel out to the ocean to begin the cycle again.

As many of you know, the Kennedy Creek Salmon Trail turned 20 last year and needs some loving updates. With the help of the Dawkins Foundation, SPSSEG has been working with our many partners on a capital campaign to raise funds for the trail, and the Chum Run was one of many fundraising events.

Thanks to our generous Chum Run sponsors, and over 180 runners who came out to participate in the event, we were able to raise over $9,000 for the Kennedy Creek Salmon Trail!! Many thanks to our event sponsors who collectively gave $4,500 to support the event and the Kennedy Creek Salmon Trail. Chum Run sponsors included: Herrera Environmental Associates, Natural Systems Design, RV Associates, Waterfall Engineering, Qwg Applied Geology, and Badger Geotechnics. Thanks also to Northwest Trail Runs for managing the event and charting a beautiful and challenging course for this first ever organized run on these trails. Thank also to our many friends and partners who participated in the event as a runner or as a volunteer. Former SPSSEG staff member and coordinator of the Kennedy Creek Salmon Trail in 2011, Katie Fulkerson, came back to trail as a runner and was the first woman in to win the Chum Run half marathon; strong work Katie!

To see results and photos from the Chum Run visit: http://nwtrailruns.com/events/kennedy-creek-chum-run/. To learn more about the Kennedy Creek Salmon Trail visit: https://spsseg.org/education-outreach/kcst/.



Photos courtesy of Ryan Thrower

SPSSEG by the Numbers

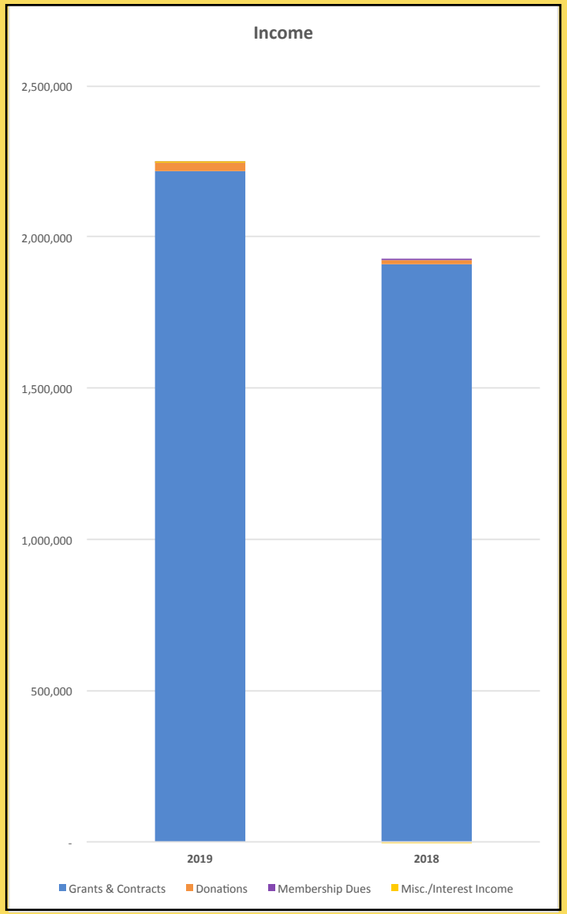
Below is a brief look at SPSSEG's financials for the 2018-2019 Fiscal Year. For a full copy of this year's finanical audit, please contact Lance Winecka at Lance@spsseg.org.

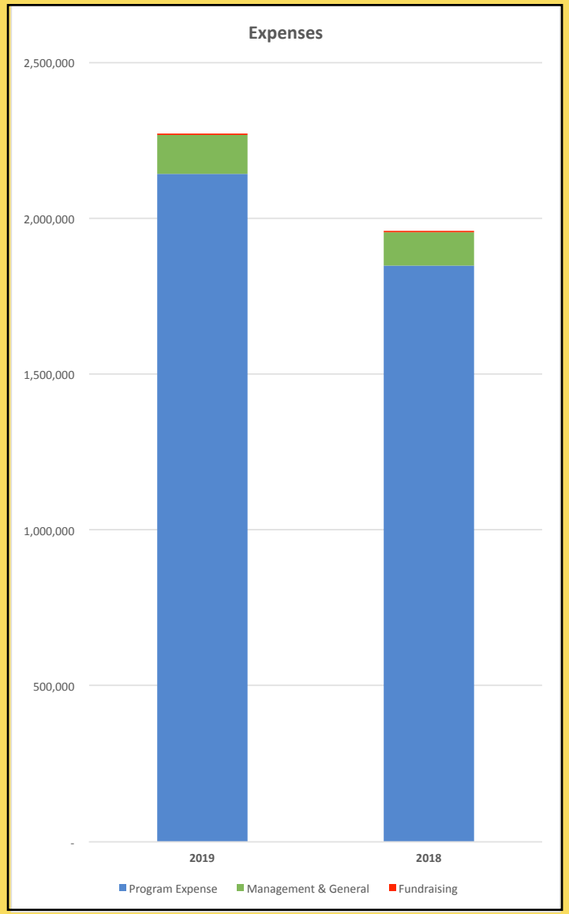
Abbreviated Statement of Financial Position as of 06/30/2019

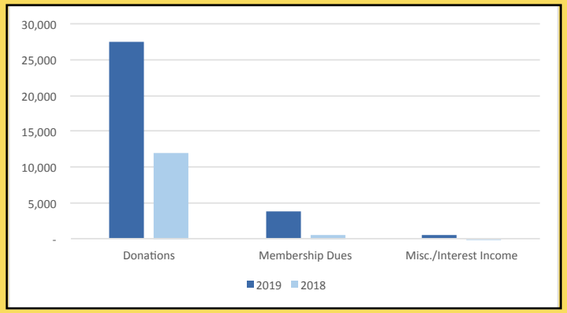
Assets	6/30/19	6/30/18
Cash	25,092	23,300
Receivables	404,909	276,378
Prepaid Expenses	3,239	3,494
Equipment (Less Depreciation)	18,974	12,198
Total assets	452,214	315,370
Liabilities	308,637	149,865
Net Assets	143,577	165,505
Total Liabilities and Net Assets	452,214	315,370

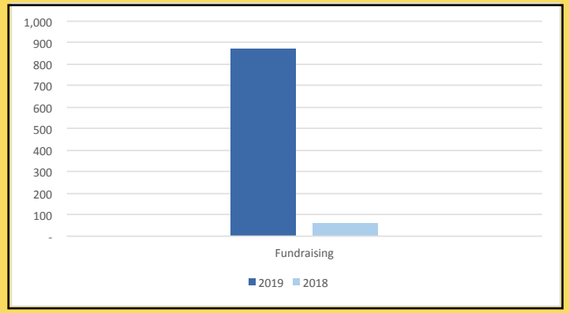
Abbreviated Statement of Activates as of 06/30/2019

Support & Revenue	6/30/19	6/30/18
Grants & Contracts	2,216,252	1,909,704
Donations	27,521	11,873
Membership Dues	3,830	502
Misc./Interest Income	412	(70)
Total Support & Revenue	2,248,015	1,922,009
Expenses		
Program Expense	2,141,258	1,846,491
Management & General	127,816	109,997
Fundraising	869	60
Total Expenses	2,269,943	1,956,548









South Puget Sound Salmon Enhancement Group
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Olympia, WA 98516

Please forward this newsletter on to a friend. Thank you!

Photo: Foraging and overwintering Bull Trout captured in beach seining surveys in Clear Clear on the Lower Puyallup River.

OUR MISSION:

To protect and restore salmon populations and aquatic habitat with an emphasis on ecosystem function through scientifically informed projects, community education, and volunteer involvement.