Hello Salmon Enthusiasts,

We have had a very busy month, with a lot of great events and collaborations!

Most importantly, our salmon are maturing and we are rapidly approaching the day that they will graduate from incubation. Over the past month, we have been able to observe the differences in our chum and coho alevin. The chum are a little more developed, and are already turning silver as they button up. The coho are a little darker in color, are developing parr marks, and need a little longer to incubate. We expect to move both stocks at some point in March, and within the next month you will be able to come visit them and help us with feeds.



As always, we will **meet at the GHC Aquaculture building on Mondays and Wednesdays at 3pm, and Saturdays at 8am** during the regular academic year. Here are a few special events we have coming up:

**March 18<sup>th</sup> – Fry Creek Clean Up** with the City of Aberdeen, Grays Harbor Stream Team, and Clean Streams and Memes. This is another one of our large scale clean-ups, and a great opportunity to do something good while meeting new people.

**End of March** – Department of Fish and Wildlife and the Chehalis Basin Fisheries Task Force will be doing fish moves as they prepare for the Spring fishing derbies. We will be keeping in touch, and helping them plant the lakes with trout when possible.

**April 22<sup>nd</sup> – TBD** – We are working with our collaborators to put together a positive, earth friendly event. Stay tuned for more details.

**May 27<sup>th</sup> – The Chehalis Basin Land Trust presents Learnings from the Chehalis**, and the Fish Lab will be attending the May 27<sup>th</sup> event on Native Plants of the Coastal Lowlands from 1-3pm. This is part of a greater series with a focus on generating a better understanding of our home river. Check out the offerings at the link below:

http://www.chehalislandtrust.org/LfromtheC/

## 1. Water Quality Results

One of the first things our volunteers learn is how to work with water quality equipment. We monitor our water quality very closely, especially when we have fish on board. The most important aspect of our water at this stage is the dissolved oxygen (DO). Even as recently hatched alevin, the fish require oxygen for their survival.



One of the most anxiety inducing aspects of starting up the fish lab was when we took our very first water quality measurement over the summer of 2015, and found our oxygen levels to be below 3 ppm. Notably, salmon prefer levels closer to 8-9 ppm. With lower oxygen, the water flow rate needs to be adjusted, and there is no possible way to run water at 3 ppm fast enough to maintain the desired oxygen exchange without rupturing the eggs! For those of you who have been following us since the beginning, you may remember that we put our brains together and engineered an aeration tank to oxygenate the water last year.



This gave us the boost we needed to get started.

Since then, we have focused more on creating a healthy aquatic habitat in both Alder Creek and Lake Swano. A lot of this particular newsletter will focus on our efforts to better understand the entire ecosystem. Why does it matter? A stable and healthy aquatic habitat creates a better environment for our fish. Although we were able to pull it off last year, this year our numbers are acting more closely to what we would expect. On the graph below, you see the blue bars from 2015/2016 jumping around as we created man-made adjustments to keep the water in the appropriate zones. The red bars indicate data from the same months this year. As the temperature decreases, the oxygen levels increase, and we did not need to interfere with the system. We will continue to focus our efforts on both our fish AND their habitat, and hope to see continued improvement in our flow through system.



If you are interested in learning more about dissolved oxygen in aquatic habitats, check out this link from USGS:

https://water.usgs.gov/edu/dissolvedoxygen.html

## 2. MLK Day of Service

The Fish Lab participated in the MLK Day of Service put on by the wonderful people at GHC Student Life. I will admit here that I have grown somewhat addicted to removing English Ivy from trees. It is incredibly satisfying to free a tree from these invasive vines.



We started out identifying holly and ivy on our lower trail system, then got strait to work with the removal process. I can honestly say that Todd Bates, Forestry Instructor, is an absolute machine with a chainsaw! He brought the holly down, and was followed by volunteers who used weed wrenches to pull up what was left. We then moved onto the ivy. Here are some interesting ivy facts:



• Ivy does not typically strangle a tree, but provides a canopy that can act as a sail, blowing trees over in windy conditions.

- Ivy is actually a woody plant, and the stems can be over six inches in diameter, requiring a chain saw to cut through.
- You do not need to remove the entire ivy plant. If you take out the section on the ground, and leave at least six inches of ivy-free space around the tree, the top portion will die off.

Thank you to our volunteers: Dr. Jim Minkler, Chance Stewart, Todd Bates, Patricia Bates, Alex Islas, and Joe Kalisch. Special thanks to GHC Student Life for hosting this event:

https://www.ghc.edu/studentlife

## 3. Amphibian Egg Mass Identification Workshop

No salmon is an island, and it takes a vast number of species to create a healthy ecosystem, so



the Fish Labbers packed into carpools and headed out to learn more about our amphibian friends. When we drove up to Olympia for an egg mass identification workshop, none of us were expecting to realize how much we hadn't been seeing back home. Hosted by the Thurston County Stream Team and the Department of Fish and Wildlife, this workshop included a lecture and overview of common amphibian species in western WA, followed by practice in the field.

I am proud to say that each of our Fish Lab volunteers contributed toward identifying an egg mass in the field. I am amused to say we each squealed with excitement when we found one! Nearly invisible unless you are looking for them, these tiny masses of eggs are grouped together in formations that indicate the species that left them behind. The egg masses are most commonly found within six to eight inches of water, and are typically attached to foliage although not always. Following the training, I am seeing our own model watershed in an entirely different way. There is so much potential habitat! We are working on creating the sophisticated monitoring tools: yogurt lids attached to meter sticks, and will be out hunting amphibian egg masses on campus in the near future.

If you are interested in attending an official training, more information can be found here:

http://www.streamteam.info/getinvolved/monitor/amphibians/





I would like to send e-high fives out to all our newly trained amphibian monitors: Alex Islas, Joe Kalisch, Alysia Day, Julie Nelson, Tim Plagge, and Anita Plagge.

## 4. McDonald Creek Clean Up

Relative to many of the environmentally focused groups on the Harbor, the Fish Lab is at the early stages of development. Our priorities lie with the salmon, and often we expand our scope to include the environment that supports our fisheries. Just as the Fish Lab has resurrected the immense work done at the college by Don Samuelson, Lou Mesmer, Gene Schermer, and John Smith, the recently refocused Grays Harbor Stream Team has been breathing new life into a once popular volunteer program.



We joined GHST for a debris clean-up and invasive species removal at McDonald Creek in Elma. This creek is such an amazing example of what a little love can do for salmon habitat. In

2009 Jarred Figlar-Barnes, just an 8<sup>th</sup> grader at the time, began working to restore McDonald Creek. In 2010, with the help of the Department of Fish and Wildlife, he planted just 40 salmon to try and restore the run. Hundreds of coho now call this creek home base. It is absolutely amazing what environmental stewardship can accomplish! You can read more about it here:

http://www.graysharbortalk.com/2016/04/27/jarred-figlarbarnes-coho-restoration-elma/



Last month, volunteers came together to celebrate McDonald Creek and help sustain all the positive improvements that have been made. Three cheers for the volunteers: Kim Figlar-Barnes, Rachel Bigby, Mack Bigby, Adrienne Roush, Clara Roush, Helen Roush, Jan Robinson, Erik Sandgren, Dean Anderson, Jan Strong, Robin Anderson, Zach Deditius, Christie Barchenger, Joe Kalisch and special thanks to Jarred Figlar-Barnes for giving us an introduction at the beginning of the event, and Summit Pacific Medical Center for lending us space in their parking lot!



5. CBFTF Tree Planting.

We were incredibly excited when a collaboration came together between the Fish Lab, Grays Harbor Stream Team, and Chehalis Basin Fisheries Task Force for a tree planting event. For this event, over 500 spruce and willow trees were planted in the terrestrial habitat adjacent to construction sites that have opened up miles of salmon habitat on Johns River and Big Creek. It is so important for the students and community members who volunteer with the Fish Lab to see the bigger picture.



While so much of our work focuses on understanding the rearing and development of salmon, this was a fantastic opportunity to focus on the next step in their life cycle. Juvenile and spawning habitat restoration is crucial to promoting future returns, and this project was a beautiful example of how we can interact with that concept. There is something to be said about planting trees as a positive way to take responsibility for your environment. Each volunteer was



able to participate in planting trees, some taking note of which trees were theirs and promising to come back and check on them. During this event we didn't just plant trees, we planted environmental stewardship within our volunteers.

As always, gratitude and respect goes to our volunteers: Mikayla Lavender, Jon Harper, Anna Lavender, Adalyn Fribers, Adrienne Roush, Russ Roush, Clara Roush, Helen Roush, Rachel Bigby, Robin Anderson, Janel Bistrika, Alex Islas, Dean Anderson, Christie Barchenger, Zach Deditius, Abigail Stenback, Brittain Daniels, Craig Zora, Kylea Johnson, Ziya Arrand, Maria Holden, Alysia Day, Brady Dier, Erik Sandgren, Tim Plagge, Joe Kalisch, and special thanks goes to Lonnie Crumley for all his work re-engineering these fish passages and providing us with this opportunity.

See you at the Fish Lab!