

Hello Everybody, and welcome to Fall Quarter!

It is a new academic year, and many of our Fish Labbers are beginning exciting new journeys. Whether it is a new course schedule, new program, new school, or new job, there is excitement mingling with the fresh morning chill. While we all do our brain calisthenics, and attempt to stretch and revitalize our academic-year-selves, the salmon populations are beginning to migrate back to their birthplace to begin spawning.



... And, of course, it is an excellent time for a Fish Lab update. Here is what we have in store for this month:

1. **Fish Lab Kick Off Event!** An active open house has been scheduled for **September 24th at 8am**, read on for details.
2. **Recapping our first GHC Fish Lab Summer Research Program.** How did it go? What happens next? How can you get involved next year?
3. **What do we have in store for our volunteers this Fall?**

Fish Lab Kick Off! On Saturday, September 24th, we will be meeting at the Fish Lab at 8am for our very first volunteer day this year. After spending last week on campus, it seemed what most people want is a day to tour the Fish Lab, see the facility and trails, and get a better idea of what we are doing down there.



You speak, and we listen. This Saturday's kick off event will begin with tours of the recently reinforced facility, thanks to the hard work of Campus Ops, at 8am. Some of our senior volunteers will be on hand to help show you around and talk about the salmon rearing process. After the tours and time for questions, we will be hosting a guided walk of the trails along with a tour of the on-campus portion of Alder Creek. During this time we will talk about some of the outdoor projects we completed last

year, along with ideas for what we might accomplish in the year to come.

If you plan on joining us for these excursions, please dress for the weather. We suggest all our volunteers bring their raincoats and rain gear, if they have it, to all volunteer days. Hatchery work does not wait for a sunny day! With regards to footwear, your best bet is rubber-soled shoes such as running shoes or hiking boots if possible. Although we do not always go wandering around in the rain and mud, as a rule of thumb we do show up prepared for it.



Summer Research Program Recap. It seems like just yesterday when we announced our new Summer Research Program, yet here we are with our first summer behind us! As described in our last newsletter, we had a pilot program where a number of our Fish Labbers gained hands-on research experience under the mentorship of several of our faculty and partners. At the end of the program, each participant presented a scientific poster to disseminate what they had learned.



If you are interested in learning more about the program, or if you would like to view the posters, we now have a webpage for that! I would like to thank Valerie Busch for giving me the idea, and Rich Wenke for fixing the page every time I messed it up again. If you see either of those two, please give them a high five for me! To check out the page, here is the link:

<http://www.ghc.edu/content/ghc-fish-lab-summer-research-program>

So what happens after you complete a research program? Well, we all keep moving forward. Here are some things that are moving forward as we speak:

The Stream Microbiome Project. Although we already had plenty of data from Samantha Richardson's project this summer, we have since received our 16S sequencing data. This turned into an absolute gold mine, with over 10,000 hits from the eight Alder Creek locations surveyed. Sam and I are working to identify each of these hits with the type of bacteria, common food source, ideal ecosystem, and potential pathogenicity. This will take some time. We are absolutely going to be continuing the project with additional student volunteers/research assistants over the next few years to establish trends.



Why is this work important? By analyzing the microbes, we can learn more about the characteristics of the stream. For example, by looking at the data I can see that there is pollution entering the system at Site 7, and there is a homeless camp at Site 8. I can also see that our recently released salmon fry/fingerlings will continue to be comfortable in their healthy juvenile habitat in Sites 1-3, with no increased risk for disease.

Sam will continue to take the lead on this project throughout the academic year, and will also be joining us as the work-study in our Biology Prep Lab. She intends to begin her applications for transfer to a Microbiology Lab Technology program for next year.

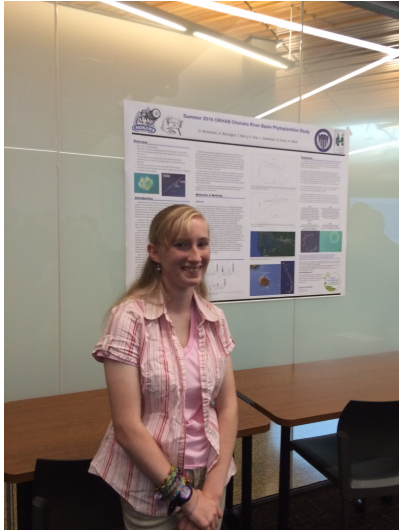
Innate Immunity vs. Bacterial Pathogens. This project, lead by Joe Kalisch, will also be fleshed out further in the future. One exciting product of the project was a bacterial pathogen identification guide for common salmon diseases. Throughout the next year students in BIO100 and BIO260 will have the opportunity to put this guide to the test and compare it to the official results from local fish rearing facilities.

Although Joe will continue to join us as a volunteer, he is beginning his first year at The Evergreen State College where he will finish up his Bachelors of Science. He has also been hired as the Grays Harbor Stream Team Coordinator. We are very excited to see this collaborative project up and running again, and will be joining the Grays Harbor Stream Team for several of their upcoming stream clean-up and riparian restoration events.



Aquatic Organisms Stream Survey. Although not currently up on our research page, another project, lead by Jeff Richardson with contributions made by Tim Plagge and our entire team, was the creation of a stream survey guide. This trifold pamphlet allows citizens to easily document what they see in a stream when they are out on

clean-ups, hiking, fishing, walking their dog, etc. We will continue to develop this project with our volunteers this Fall, and hope to have a copy for download on the website in the future. It is nearly impossible for one group to keep track of the 180 streams in the Chehalis River Basin, however this citizen science project can help us compile long-term data that encompasses a larger portion of the watershed.

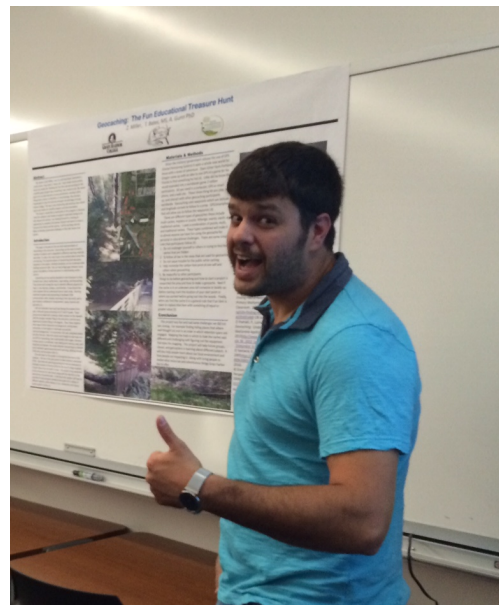


2016 Chehalis River Basin Phytoplankton Study. I would like to give a special shout out to Anthony Odell who took on two of our interns (April Bacongco and Olivia Nicholson), along with three additional GHC volunteers this summer (Alex Islas, Lynne Scamman, and Tracy Barry). Trust me, that is a lot of work!

Because I am less familiar with algae, I hit the literature at the beginning of the program to help the group identify articles related to the project, and found that this is one of very few taxonomic surveys of harmful algal blooms at the intersection between a bay and a river basin. With global climate change, and rising sea levels, it will be particularly important

to monitor these species as they are given more opportunity to affect our anadromous and freshwater species. Anthony will be continuing this project, in addition to his regular work monitoring the coastal algal blooms for UW ORHAB. As for his team, Alex and Olivia will be continuing on with the Fish Lab this year, while Lynne and Tracy begin the transition to their four-year programs at UW and Evergreen, respectively.

Geocache. Last, but certainly not least, is the geocache created by Zach Miller under the mentorship of Todd Bates. The first round of development for this project has been completed, and we will work on revising it as we as we work through the bugs during our volunteer hours this Fall. We expect it to be ready for public participation in the winter or spring. Next year, it will be used as the basis for educational materials developed by a new participant in the program, under the mentorship of Christie Barchenger. Todd will be forging ahead with Forestry, as he works toward finalizing the BAS program, and we hope he will have time to share his knowledge with us again this year. Zach will be completing his Nursing prerequisites, and we hope to see him on the trails again this year for Fish Lab.



We learned a lot this year, and next year's program has even more potential. There will be 10 paid research assistantships available next year, with a call for applications during the winter quarter. In the event that we run out of paid positions, we will do our best to take on interested volunteers where space is available. If you, or somebody you know, might be interested in the program please drop by our regular Fish Lab volunteer hours to check things out. Remember, we meet on **Mondays and Wednesdays at 3pm, and Saturdays at 8am beginning September 24th.**



Plans for the Fall. If you followed along last year, you are aware of what is in store for regular hatchery work this Fall. For the Fish Lab, in addition to regular building maintenance, we will turn on the water and clean the system regularly, along with taking extensive water quality analysis to get ready for our eggs.

We will also be scheduling several volunteer field trips, and will hopefully have opportunities for volunteers to participate in spawning/surplusing, egg picking, hatchery tours, stream clean-ups, and riparian restoration. These opportunities are made possible by our partners, and we would like to give thanks in advance to the Lake

Aberdeen Hatchery (DFW), Satsop Springs fish rearing facility (CBFTF/DFW), and Grays Harbor Stream Team (CBP/HS/PUD/CSaM).

Meanwhile, Erik Sandgren's students will begin work on the stencils they will use to create a mural on the John Smith Aquaculture Building. I am definitely looking forward to seeing this project develop!

It is going to be an exciting quarter! If any of this interests you, or if you have ideas for future activities, drop by our kick off event this **Saturday, September 24th, at 8am.**

