

Happy Spring!

It is officially two years since the Fish Lab was first conceptualized, and I have been spending a lot of time reflecting on the program. Over the past two years we have grown from three original volunteers, to approximately 60 volunteers who participated last year. This year we have hosted 82 volunteers, so far! We have not only grown in numbers, we have grown in the variety of experiences and opportunities as well. Our first volunteers put their heads together to try and restore the John Smith Aquaculture Building, and this took nearly all of our focus. The current group is not only raising both coho and chum, we are also doing more trail maintenance, invasive species removals, stream clean-ups, dissections, surplus, fish moves, and tree planting.

It has been the greatest privilege of my career to continue learning every day. When I think of the past two years, I can't help but notice the changes in my perception of the world. The first time I drove into the Harbor, I looked around and saw trees. Now, when I go for a drive I see areas that are potentially recovering from mudslides or logging, as evidenced by the concentration of alders relative to coniferous trees. Should I pass over a culvert, I note whether or not it is an acceptable fish passage. I don't just see trees, anymore, I see the ivy that should be removed. I notice the holly. I count the layers of canopy. I know their names.

My world has become so much larger for everything I have learned with the Fish Lab. There is no greater joy each day than learning something new, and then applying it in the real world. Although I have spent a significant portion of my life training to be a scientist, there is still so much left to learn!

This serves as an ever-present reminder that there is no end to learning. No matter who you are, you can make your own world larger and more fascinating by learning something new. Here are some of our recent discoveries at the Fish Lab:



- **How are things going with our Alder Creek ecosystem?**

Despite the cold, and the various types of frozen precipitation, we have been working on a pet project of mine: resurfacing the wooden walkway on the lower trail system. On my very first trail walk after joining the GHC team, I slipped on this walkway in a move typically reserved for cartoon characters. This month, we finally finished working on it, and I proudly announce that it has been covered in no-slip surfaces.

Another slow but steady project is erosion control on the model watershed. Did you know that a high demand tree can absorb over a hundred gallons of water per day? When we get large amounts of rainfall, and the ground becomes saturated, mudslides and erosion can occur. One way to

soak up more water is to plant more trees! While we are working on putting together a tree planting event for our campus day of service, for now the timing is right for harvesting and replanting willow stakes.

As we ventured out to harvest willow stakes, we discovered something we hadn't expected to see this year: several coho fry in the stream. I mentioned, above, the absolute joy of being able to apply what you have learned. When a volunteer saw fish in the stream, everybody stopped. Although there have been rumors of one coho return last Fall, we did not witness it. However, two weeks ago we saw the evidence of a live-spawn in our stream in the form of orange-ish tails, parr marks, and a white leading edge on the dorsal fin. These are all characteristics that have become increasingly obvious to us after comparing and contrasting our own coho and chum fry in the Fish Lab.



- **How are our salmon fry doing?**



Over the past month, both the coho and chum fry were moved out of incubation and into their troughs. Since then, we have stepped up our water quality game to ensure their health and safety. Every morning the troughs are swept down and the water partially changed. Three times per week we briefly open the bypass valve to clear the pipes leading to the hatchery, and subsequently take our water quality measurements.

Another routine task is to check the fry bellies to determine whether they have buttoned up, and to measure the fish per pound (FPP). Both of these assessments are crucial to determining when to feed the fry, and how much feed they get. Interestingly, while our coho have buttoned up and begun feeding, the chum are still a few days out. To determine the FPP, we weigh a small aliquot of fish and then count them. After that it is all algebra. Convert grams to pounds, then divide the fish by the weight. Both the coho and the fry are right around 900 FPP right now, but they will begin to grow quickly as they start taking feed.



How do we know how much feed to give them? The coho are currently on 2.5% bodyweight. This means we take total number of fish and divide by the FPP to determine the pounds of fish in each trough. The next step is to determine 2.5% and convert back to grams. For every student who ever asked if they will ever really use algebra, there you have it.

While the chum will only take feed for a short period of time before smolting up, the coho will be with us throughout Spring quarter. In fact, they will continue to call Alder Creek their home for a significant amount of time after we release them. We saw one from last year's program just the other day!

My deepest gratitude and respect goes out to all our volunteers this month. We have had a steady group of regulars lately, and it is wonderful to be a part of such a hard working crew. Thank you Alysia, Matthew, Will, Ryan, Alex I., Alex S., Collin, Ted, Travis, Kasia, Helen, Clara, Janet, Joe, Tim, Zach, Colleen, Scott, and Echo! Each of you makes the Fish Lab a fun adventure. :)

- **When are applications due for the Summer Research Program, and what are this year's projects?**



Applications have started coming in for the Fish Lab Summer Research Program, but there is still time to apply! The due date is not until April 3rd, and we have a lot of exciting projects available this year. In fact, we are making an effort to broaden the accessibility of the program by offering two cross-over projects with the humanities. Here is a brief description of this year's projects:

Ms. Christie Barchenger will be mentoring a participant with an interest in a career in education. This project will help develop educational materials to help K12 educators use our model watershed to

teach basic science and ecology about the Chehalis River Basin.

Mr. Todd Bates has been working on his spruce tree project for several years. The participants working on this project will have the opportunity to contribute to an early phase of a long-term project. Skills practiced will include field measurements and observations, along with ecological data analysis.

Mr. Jamie Glasgow will be mentoring a project in stream typing and characterization. This project will use GIS and field skills to determine stream paths, and aquatic species composition.

Dr. Amanda Lyn Gunn will be continuing both the project in salmon genetics, and the Alder Creek microbiome project. Although there will be some field and lab work, the majority of our time will be computer-based this year as we do bioinformatics, microbial characterization, and mutation analysis.

Ms. Lorena Maurer will be mentoring our second cross-over project. She will be working with a student to research indigenous peoples and their relationship to the Chehalis River ecosystem. This project will look



into both the rich cultural and scientific history of the Chehalis.

Mr. Anthony Odell will be continuing his phytoplankton study. Participants in this project will have a mix of field work and microscopy, and specific skills will include taxonomic identification of harmful algae at the interface of the Chehalis and the Pacific ocean.

If any of these projects peak your interest, you can find the application and more information about the program here:

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

On an exciting note, two of last year's participants have been accepted to present at a national conference this June! Two abstracts have also been submitted to the UW Undergraduate Research Symposium, and we will hear back soon. I have no doubt that our Fish Labbers will make us proud, representing on both the state and national level!



Speaking of exciting presentations, I want to give a quick shout out to the GHC Carpentry program. Below is an excerpt from the press release about their recent trip to present to the legislature. Our carpentry department is no stranger to community service, and we look forward to collaborating with them in the future!

Grays Harbor College Carpentry students recently presented their Camp Bishop Canoe House project at the annual Legislative Open House hosted by the State's Community and Technical Colleges. GHC's Carpentry instructor Adam Pratt and students were among 7 programs representing the state's 34 community and technical colleges chosen to explain projects to lawmakers during the Open House.

The students prepared a display of digital and still images, plus three-dimensional models of the Canoe House, which is being built as a cooperative project with the YMCA of Grays Harbor. Designed by architect Will Foster, the canoe-shaped building will house a 1947 Old Town canoe which was refurbished by Vern Heikkila of Westport. Heikkila once was a camper at Camp Bishop and fondly remembered paddling the canoe on wood craft. After much searching he located the canoe, a 25 footer, behind the Aberdeen History Museum and then spent two years restoring it. After that, he hauled it back and forth to Camp Bishop for three summers to teach children canoeing and water safety, before deciding a permanent storage facility was needed.

The Canoe House will not only shelter canoes, but is also designed to store paddles, life preservers and other instructional equipment. Foster used curved sidewalls and a heavy timber frame to reflect the Harbor's heritage of wooden boats, timber construction and Native American canoes.

One more time, here are the events to close out the month:

March 18th – Fry Creek Clean Up. This will be another larger collaborative clean up with Aberdeen Stream Team, Clean Streams and Memes, GHC Fish Lab, and Grays Harbor Stream Team. Kris Koski, City Engineer for the City of Aberdeen, will kick off this event with a brief talk on plans for the restoration of Fry Creek. It all starts at 9am, we will be meeting at the Dollar Tree, dress for the weather!

March 25th – Fish Moves with Satsop Springs. It is nearly time for the Harbor to come alive with fishing derbies, and we will be heading out to the Satsop Springs Fish Rearing Facility to help move the trout to the lakes. It is a fun way to get some experience with adult fish, just make sure you bring your waterproof footwear! We will meet at 8am at the Fish Lab to work out carpools, and will leave at 8:15am so please be prompt.

