

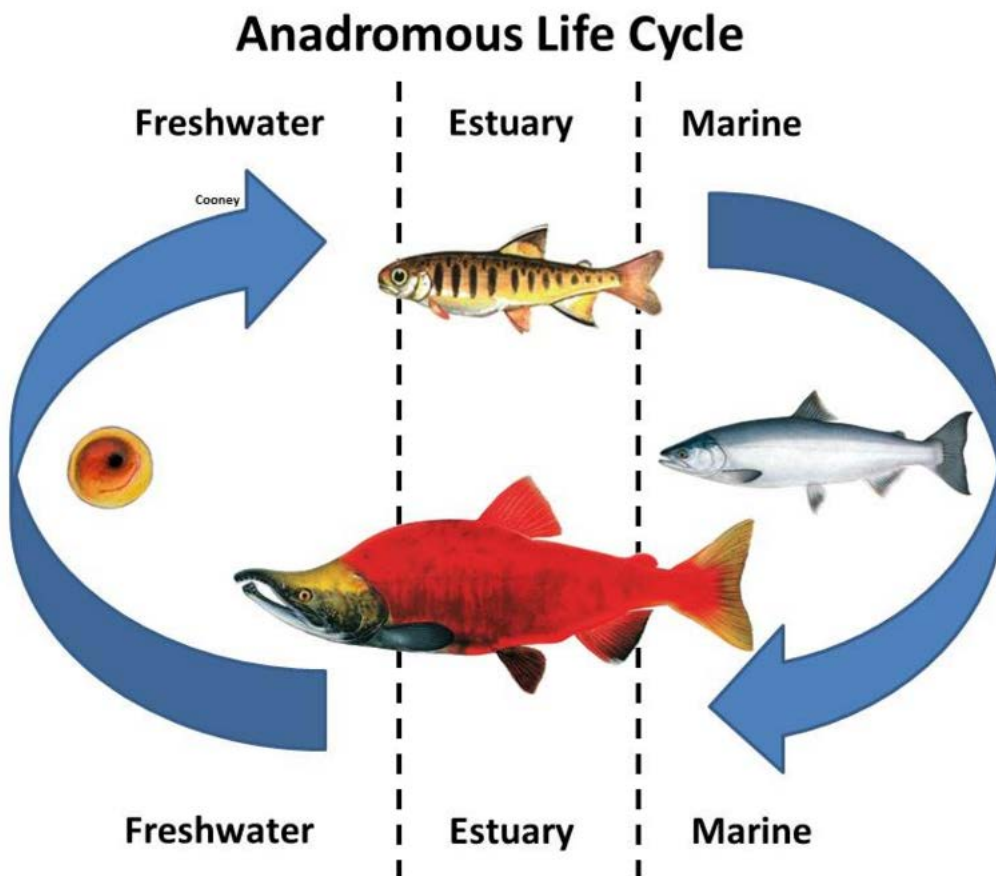
From: Gunn, Amanda
Sent: Monday, January 11, 2016 8:28 AM
To: Gunn, Amanda
Subject: GHC Fish Lab Newsletter 1-11-15

Happy 2016 Everybody!

As the Students, Faculty, and Staff arrive back on campus, rested and ready to get back to work, we at the GHC Fish Lab are also ready to dive into Winter quarter. With the arrival of our eyed eggs, the volunteers have been busy learning new procedures and applying last quarter's concepts. Here's quick look at what we have going on:

- 1. The eggs have arrived! Now what?**
- 2. Low water emergency training. Thank you to our first responders. ☺**
- 3. Water quality analysis, and regular work continues Mondays/Wednesdays at 3pm, and Saturdays at 8am.**
- 4. Open House and New Volunteer Orientation to be held Wednesday, January 13th, 2016.**

The eggs have arrived! During the Fall quarter, Aberdeen Lake Hatchery spawned their returning fish, including our future fish. As an anadromous species, *Oncorhynchus kisutch* (Coho salmon, our eggs) are born in fresh water, migrate into the ocean after about a year of development, and return to their birthplace to spawn the next generation after approximately three years. Although the closely related *Oncorhynchus mykiss* (Steelhead trout) can return to spawn several times during their lifespan, *O. kisutch* will die after their first spawning. Thus, when we say that the Aberdeen Hatchery spawned their returns, we are talking about the process of harvesting the sperm and eggs from their returning fish and fertilizing the eggs *in vitro*. After fertilization, the eggs are moved into incubation trays and the waiting begins.



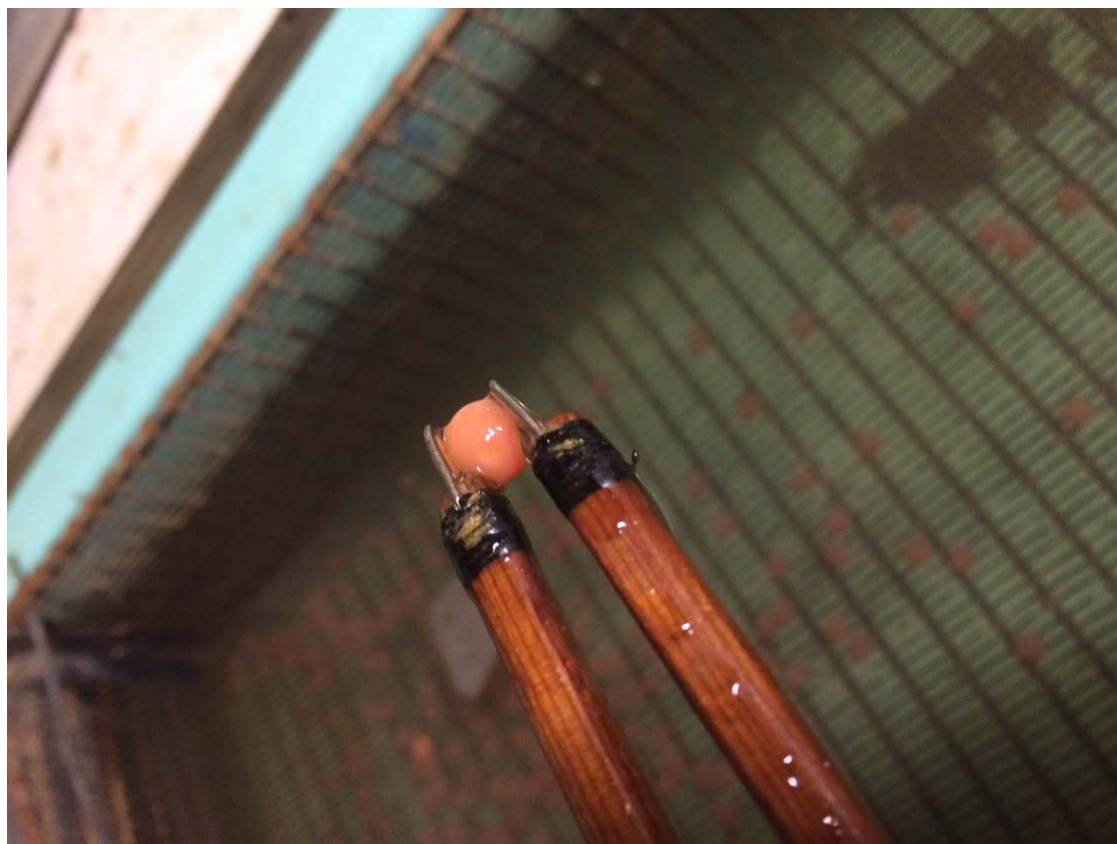
What are we waiting for? An empirically determined formula to calculate Temperature Units (TU's) is used to track the development of the eggs so that hatchery workers know when to take the next steps. To calculate TU's, you take the average daily temperature and subtract 32. This is additive, such that every day you add your TU to the total.

Sample TU Table:

Average Temperature (F)	TU's	TU Total
42	10	10
42	10	20
40	8	28

For example, if on the first day after fertilization, the average daily temperature were 42F you would have 10 TU's. If the second day was also 42F, your total TU's would be 10 (day 1) + 10 (day 2) = 20 TU's, and it would continue like that. When you get to approximately 550 TU's, the eggs have started developing and are called "eyed eggs". It is time to mechanically shock the eggs.

To do this, you drop the eggs into a basin and the small force of their weight hitting the basin is enough to turn the unfertilized and/or diseased eggs into bullets, or dead eggs. At this point, you begin the often-tedious task of picking eggs, which entails separating the bullets from the healthy eggs. GHC volunteers spent Fall quarter working with the Aberdeen Hatchery on egg picking. Below you can see a bullet (upper), and an eyed egg (lower), along with the chopstick like utensils used to do the separation. Note the black spot at the bottom of the eyed egg, that is literally the eye of the developing fish, and how this developmental stage got its nickname.





[Photos: Amanda Lyn Gunn]

Last week, GHC volunteers picked up our 5,000 eyed Coho eggs from the Aberdeen Lake Hatchery, and they are now sitting in our incubation trays. We are at approximately 700 TU's, which means the eggs could begin hatching any day! The eggs will remain in the trays until they reach around 1750 TU's, when we will move them to the indoor fish troughs and begin regular feeding schedules. For now, they will live off the nutrients in their yolk sacs while they continue to develop.



[Photo: Joseph Kalisch]

Low Water Emergency Training. Although the eggs do not require a lot of additional work at this time, we do need to be prepared for anything and that includes a low water emergency. Because our water is gravity fed from an intake at the bottom of Lake Swano, there is always the possibility that debris may clog the pipes somewhere within our system. Despite being unlikely during the rainy season, it is important to know what to do if we should lose water to the eggs/fish. When we developed the aeration system for potential future oxygen emergencies, we realized that this recirculation could also provide a safety net in the event of an emergency.

In short, if the low water alarm goes off, the first responders can move our trays onto stands in the indoor troughs and recirculate the water to ensure we have time to identify and address the problem. This week, we ran drills with our first response team and several of our regular student volunteers to ensure everybody knows what to do in this situation.

Thank you to the Campus Operations, Grounds Management, Campus Safety, and Faculty members who have trained and agreed to be on our first response team!

Regular Volunteer Hours Resuming. With the start of a new quarter, we would like to invite back our old volunteers and bring in new volunteers to learn more about what we are doing. One of the most common questions I am asked is whether somebody has to be a science major or fisheries major to participate, and the answer is a resounding, “No.” Anybody on campus can come down and learn more. You do not need to have any experience, or know anything about salmon to join in.

In fact, even though we are actually at the hatchery every day at some time or another, we specifically set aside the volunteer hours so that you know when you can show up and find work. If you aren’t ready to dive in, you can watch or hang out, ask questions, and decide if it is something that interests you. There will be both Faculty and Peer Mentors available to give you a tour and walk you through the daily activities during any of our volunteer times. Feel free to just show up and see what it is all about: Monday/Wednesday at 3pm, and Saturday at 8am.

New Volunteer Orientation/Open House. This Wednesday, January 13 , we will be setting aside our volunteer hour specifically to give tours and talk to potential volunteers about what we will be doing this quarter. If you have any interest in volunteering, or even if you just want to drop by and see what all the fuss is about, you are welcome to join us at 3pm. Fingers crossed, we might even have some new hatchlings to show off. ☺

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