

Volunteer Appreciation

We had a wonderful volunteer dinner on May 18th. Bob Cowen spoke with us about he and Su Sponaugle's research in the Plankton Ecology lab. This was followed by a fabulous dinner catered by La Maison. It was great to see everyone together smiling and connecting.

There are not enough words to express the appreciation of your contributions to our program. We are so lucky to work with such an amazing group of volunteers. Truly.



Otolith Research: A Big Picture in a Small Bone

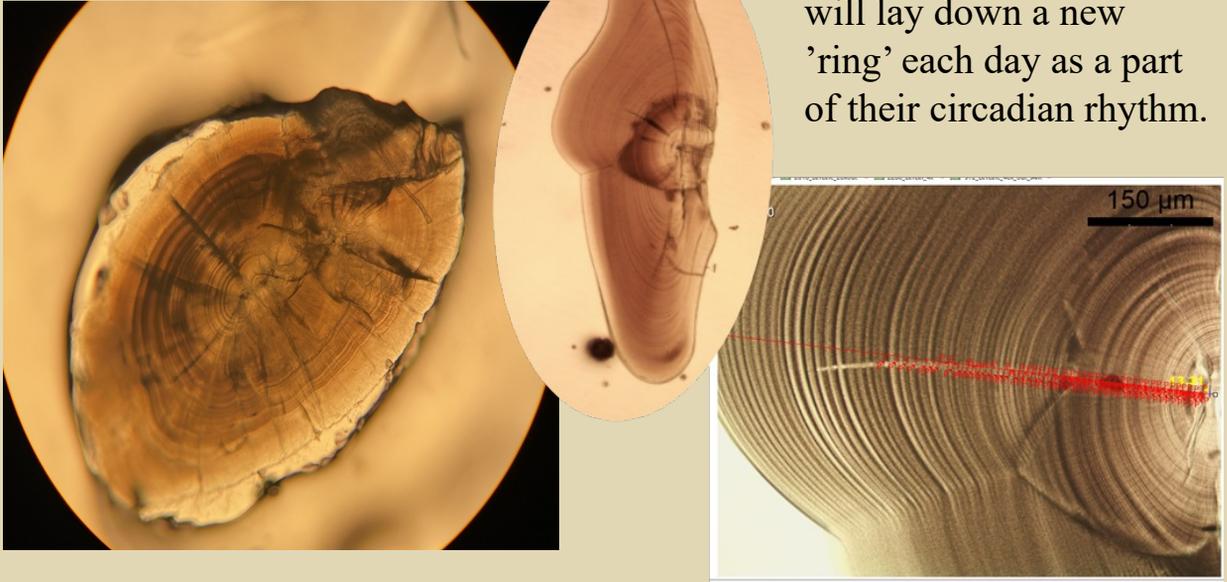
Research Write Up by Taylor Brooks

I recently started working in the Marine and Anadromous Fisheries Ecology Lab here on the Hatfield campus. While I have worked with anadromous fish species before, I have learned so much more about the ecology of these fish, particularly salmon, through our work. We are currently primarily focusing on Chinook salmon and Pacific Cod studies. We have been studying the movement of these fish through various stages, and how that affects their growth and survival.

We are particularly interested in the effects of changing environmental conditions on these fish populations. To gather information about each fish, we examine their otoliths.

Every fish has an otolith, a calcium carbonate structure in the inner ear, with unique shapes for different species. These little ear bones grow as the fish matures, and a polished cross-section will reveal a tree-ring like pattern.

As young fish grow, they will lay down a new 'ring' each day as a part of their circadian rhythm.



As the fish get older, the rings only appear annually. By counting these rings under a microscope, we are able to determine the age of the fish.

However, otoliths can reveal even more than age! Through elemental analysis using laser ablation, we are able to detect difference concentrations of elements present in the water that show us exactly when that fish travelled between fresh and saltwater. Sometimes we are even able to determine the natal streams for salmon populations or the hatchery of origin based on patterns in the otolith. We can also estimate the size of the fish at different life stages based on the widths of growth rings (see sample measurements pictured on the right). Understanding their migratory history helps to give us a picture of salmon life history. By comparing genetic information gathered on our fish samples with our otolith data, we are able to learn about differences between different subpopulations as well. We hope to use this information paired with environmental data to help management organizations make informed decisions to help us conserve and sustain our local fisheries in response to climate change.

Animal Husbandry Spotlight

We have recently introduced 5 new Sea Lemon nudibranchs into the Pacific Spiny Lumpsucker Exhibit! These scavengers feed primarily on sponges. More specifically they feed on Bread Crumb Sponges. So, they can be quite the picky eater! Thankfully, the trenches below the Visitor Center, and through the Hatfield marine science center house a healthy colony of bread crumb sponges we can collect for our sea lemons to keep them fed.



A sea lemon, like all nudibranchs, can produce both sperm and eggs. Females lay circular, elaborate ribbons containing as many as 2,000,000 eggs of which very few larvae typically survive. The ribbon is attached in a coil by one edge to a hard substrate. Eggs hatch in 20-25 days.

Not much is known or confirmed about their life-span, and most resources will say they live about a year or less. The last sea lemon we had on display was over two years old before it reached its end of life. Like most things concerning ocean creatures, we are always learning new things daily and there are always expectations to the "norm".

Updates

The Visitor Center is now open daily from 10:00 a.m. – 5:00 p.m.
Volunteer shifts are 10:00 a.m. - 1:30 p.m. and 1:30 p.m. – 5:00 p.m.
Thank you for supporting the Visitor Center through the busy summer!