Phenology in the Forest

by Sabrina Carlson

On July 7, 2016, I had the unique opportunity to present to a group of five 6th and 7th graders at the Museum of Northern Arizona. These students had spent the week studying climate change science with Anne Hamlin, Regional Coordinator for the PLATEAU project of the Four Corners School of Outdoor Education. I had been invited to teach the class about phenology, the science of observing the seasonal changes in nature, and how that relates to climate change.

We started our lesson by learning what phenology is, and why it's important. It was clear these students had really been thinking about the interconnectedness of nature as they all had great suggestions for why the timing of seasonal events mattered. If leaves come out too early, the caterpillars that depend on them for food won't find what they need to survive. If the hummingbirds migrate too soon, there won't be any flowers blooming yet for them to drink nectar from. If the timing of phenology is changed, it can really cause a ripple effect through the entire ecosystem.

Collecting phenology data on a gambel oak.

After talking about phenology in the classroom, we grabbed our backpacks and our clipboards and headed out for a hike to look for signs of phenology in the outdoors. Being perfectly located near beautiful trails, we walked right out to the Schultz Creek Trail from the back of the museum property. This is part of the Arizona National Scenic Trail Passage 33 (Flagstaff). A half-mile up the trail, we began our activities by finding out a little more about each other and ourselves by taking a phenology inventory. We each had a sheet with a grid on it with the phrase "have you ever?" at the top. Each box on the grid contained a phenology question like "smelled the pine trees after the rain?" or "had seasonal allergies?" We made our way around the group, quizzing each other about our own examples of certain phenology experiences. It was fun to learn about each other, and the unexpected examples of seasonal rhythms we had never thought of before.

After completing our activity, we headed up the trail a little further until we came to a place where the trail intersected with the intermittent stream. Here we began by looking for examples of phenophases. We searched for flowers and leaf buds, plants with a seedpod, or things we thought could be food for animals.

Now that we had a good sense of how to discover and identify phenophases, and had evidence of them, we made a phenological observation. We decided to focus on the gambel oak and the western

columbine. For the oak, we wrote down our observations of bud burst, growing leaves, and percentage of canopy that had emerged. For the columbine, we recorded the percentage of emerging plants, matured plants, flower buds and open flowers. I showed them how we could enter our data into the National Phenology Network Website, where it would go into a database with thousands of other citizen scientists around the country who are working to gather data on the timing of phenology. We talked about how this type of science requires HUGE amounts of data to get a good picture of change over time. With a good picture of what is happening across the US, scientists can help figure out solutions to the challenges of a changing climate.

Having Fun!

It was fun and exciting to collaborate with another wonderful program and to share science with such an enthusiastic group of learners!

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