

Exploring Phenology Trails with Mansfeld Middle School by Rebecca Patterson-Markowitz



On October 24th seven 7th graders from Mansfeld Middle School joined the Arizona Trail Association and the National Phenology Network in a unique collaborative day of citizen science, history and hiking. The first part of our morning was spent making our way up Tumamoc Hill. We were on the lookout for different plant specimens tagged on the Tumamoc Hill Phenology Trail by the National Phenology Network's *Nature's Notebook* project. It wasn't more than five minutes up the path when a student spotted a silvery tag dangling up high on the arm of an ocotillo. We gathered close to the edge of the road to make our first set of observations.



Kimberly finds a plant marker!



Jordan checks out a plant

Phenology is the study of key changes in lifecycles of plants and animals as they relate to weather and climate. The students were making observations about the presences of leaves, flowers, buds, or fruits, and whether they were on the plant, or visibly had been shed on the ground.

As we climbed the ever steepening slopes we took breaks to read about the difference species found nearby. Tumamoc is the Tohono O'odham word for horned lizard. As we walked we came across this lizard's favorite food source, black ants, which we learned are threatened by the invasive fire ants and pesticides. Our conversation moved from phenology to invasive species, to the students' experience of hiking up the hill and back.

We stopped at the halfway point to investigate the research library and art exposition housed in the original Tumamoc structure, constructed in 1903. The students were very amused by pictures of the first botanists to work collecting data on the hill, dressed in their finest early 20th century apparel. Art installations offered us a glimpse of Tumamoc's long history of life. Hohokam artifacts could be found near art made by local Tucson artists who hike the hill to enjoy a practice of deep observation of nature through drawing and painting.

We left the cool and historic interior to continue working our way up to the top. We had great luck on the second half of the climb, finding and collecting data for velvet mequite, yellow paloverde, barrel cactus, brittlebush, catclaw acacia, and Coues' cassia. We stopped for an early lunch at the top, enjoying the view of Tucson and snapping a photo with the students pointing to their school building in the distance.



I can see my school from here

Returning to Mansfeld, LoriAnne Barnett from the National Phenology Network joined our group. It was time for the students to set up a phenology trail of their own on Mansfeld's campus.

The students headed out to the PE court which exists on a block just south east of the school's main building. Along the perimeter in the easement grow many of the species *Nature's Notebook* prefers to monitor. Students took turns in pairs selecting two of each species and marking them with temporary tape tags, to be used until NPN provides them with their own metal markers. They then collected the same preliminary data looking for leaves, fruit, buds, and deciduous qualities. It was slow going making our way around, but by the end the students had marked and collected data for 19 different plants. Once they have the opportunity to input their information into the database this Mansfeld phenology trail will be monitored by students at the school as well as other local phenologists who wish to contribute to an important body of research about our plants and how they're interacting with changing climates.



Odalys and Ian having fun with phenology

At the end of the day LoriAnne thanked the students for their contribution, and we all said our farewells. The students had a sense of accomplishment as well as the to be expected exhaustion that comes with hard work and play in the sun. They will continue to engage with their phenology trail over the course of their studies at Mansfeld, and their fellow students from other science classes will also use the trail as part of their curriculum. Hopefully over time they will get a sense of the longevity of their contribution and its importance on the plants and people that call this place home.

This Seeds of Stewardship outing made possible by a grant of funds from:

