



## Meditations on Microclimates by Sabrina Carlson

On April 20, 2016, 47 students from Mrs. Chapman and Mr. Ross's 5th and 6th grade classes from Flagstaff Junior Academy traveled along Old Walnut Canyon Road for a 4-mile round trip hike on a section of the Arizona Trail Passage 31 (Walnut Canyon). Today they would study the way elevation and aspect impact the flora and fauna of an area.

After unloading the vans, the students were given an overview of their assignment for the day. They would each receive an inventory page with columns to collect data on air temperature, soil temperature, elevation, average tree height, names of plants observed, any signs of animal life (scat, tracks, holes, sounds), geology (types of rock), fossils, evidence of prehistoric human dwellings, and evidence of water.



Our first sign of animal life

We took our first reading together at the trailhead. We found a mostly ponderosa pine forest with no visible geology or evidence of prehistoric human habitation. But we were all able to practice looking through our plant and animal identification books and using the thermometers properly.



Making observations.

After getting the hang of our equipment, we divided the students into smaller groups to hike and collect data while minimizing the stampede effect on the trail.

At our next data collection point, little had changed in terms of altitude, tree height, temperature, or geology, but we were beginning to find more lupine flowers. Also, some quiet observation revealed an assortment of animal signs. There were ground holes, food caches in nearby snags, scat, and pinecones and sticks that had clearly been munched on by squirrels.

Near the top of the ascent into the side arm of Walnut Canyon, we noticed the sudden exposure of sedimentary rock, and clear evidence of water rushing downhill. Part of the hillside had sustained damage from a recent storm and had removed a great deal of plant matter and soil, revealing the sandy dirt and rocks below. We also observed the large water bar built on the trail in a human effort to control the flow of water and protect the integrity of the trail.

As we descended further into the canyon, we began to see a startling example of microclimates at work. Walking along the south facing aspect of the canyon, we could feel the warmth radiating off the rocks on an otherwise cool day. The lizard population exploded as we watched them hopping around all over the rocks. Ponderosas and lupine gave way to agave, yucca and sumac, while the more exposed rocks showed fossils of ancient sea creatures. The wall across the canyon yielded views of what appeared to be a human built grainary.

Descending all the way to the bottom of the canyon gave us our biggest surprise of the day. The north facing aspect was blanketed with Douglas fir trees! This isn't a tree you expect to see at 6,500 ft. elevation (they're usually found MUCH higher)! But the microclimate of that part of the canyon created the perfect habitat for them, and the many animals that call these trees home.



**A huge fossilized brachiopod!**



**Geology is a lot of fun when you find crystals hidden inside stones!**

While we were paused for lunch several students discovered that the limestone around us had produced a number of geodes. Cracking open rounded rocks to look for quartz inside quickly became a popular activity.

We finished our hike feeling more in tune with the subtle and grand ways nature can change, even within a few feet of elevation change. We were more observant and aware than we had ever been before.

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