



## Exploring the Food Chain at Marshall Lake by Sabrina Carlson

On April 18, 2016, 26 students from Mr. Doerfler's 5th grade class at Kinsey School raveled to test the water quality of Marshall Lake, and to take a short hike along the Arizona Trail.

In Arizona the 5th grade science curriculum covers pond ecosystems and ecology. What better way to explore this topic than a visit to Marshall Lake to see it all up close for ourselves! To better understand, we prepared ourselves by discussing the various ways an aquatic ecosystem can be healthy or unhealthy. How could an otherwise healthy ecosystem become damaged? Examples like fertilizer run-off, dumping hot factory water into a cool pond, and overfishing were all consideration as we learned more about what scientist's value when they have to look at assessing the health of an ecosystem. Today, we decided we would look at water temperature, pH, nitrate, and inspect the macro invertebrate population to see what creatures make up the base of the trophic pyramid in Marshall Lake.



Careful Chemistry

To do this, we gathered water samples, inserted the appropriate testing chemicals and timed each test carefully. In our first group, the pH and nitrite came back in optimal levels, but the water temperature was reading a bit too warm for a healthy ecosystem. The second group found the same values for the pH and nitrite, but adjusted the temperature reading method and came back with a more favorable value. This allowed us a great opportunity to discuss the importance of data sets being extensive enough to better control for errors, and why tests need to be repeated for accuracy.



Look what I found!

After testing the water chemistry, we tried to catch and identify macro invertebrates in the water. Mayfly nymphs were abundant, as were water pennies and water mites. We found a few stonefly nymphs and several spiders. Over all, the type and number of macro invertebrates pointed to an extremely healthy ecosystem indeed.

After a lunch break we hiked along the Arizona Trail Passage 31 (Walnut Canyon). As we walked our way up a short incline to the top of Anderson Mesa, we passed through a healthy grove of gambel oak that housed a plethora of melodic songbirds. We supposed that part of the reason such a vast volume of birds could live there was because of the healthy pond nearby. We hiked along the top of Anderson Mesa for a short while in the shadow of the towering San

Francisco Peaks. During our hike we were treated to an encounter with an Arizona Trail thru-hiker going by the trail name Gizmo. The students were amazed and impressed that this woman was hiking the whole 800 miles!

We returned to the trailhead just in time to catch the bus back to school. We had learned a great deal about ponds and the ecosystems they support in a hands-on, meaningful way that will not soon be forgotten.



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