

Marshall Lake: A Close-Up Look at an Aquatic Ecosystem & Vital Water Source

by Sabrina Carlson



As the testing month of April gave way to the spring fever of May, students and teachers were itching to get up and out of their desks and to do some learning outside. On May 18th, 2015, 65 students and three teachers from Mount Elden Middle School headed out to Marshall Lake near Passage 30 of the Arizona Trail. Marshall Lake is



an intermittent water source. Some years it is a muddy puddle at best. This year, thanks to late season snow and early rainfall, Marshall Lake was full and teeming with life! We unloaded at the boat ramp where the group split into three to rotate through activities. One group went with a teacher to work on a pacing and distance estimation activity. A second group headed out with another teacher to hone their observation skills with a sound map. The last group stayed with me to gather data to assess the health of the water ecosystem.

Sixty-five students from Mount Elden Middle School enjoyed an afternoon of outdoor learning at Marshall Lake.

We began by taking in a high level visual of the lake. We discussed how Marshall Lake is an important water source for thru-hikers

traveling the AZT. This garnered the requisite gasps of horror and pronouncements that they would NEVER drink that water! Ew! Gross! No way! This created a wonderful opportunity to explain the importance of water treatment and filtration for backcountry adventures and discuss the risks and benefits of drinking untreated water in a survival situation. The students then were asked to make a prediction about how healthy or “clean” they thought the water was for the animals that live in it. Many students proclaimed that the water was clearly very polluted because it looked so “dirty” and a few predicted the water was clean, because they couldn’t see the rainbow colored oil slicks on the surface.



Students learn hands-on how macroinvertebrates are an indicator of water quality and ecosystem health.

I showed them a Benthic Bug chart and explained the concept of water canaries (which involved explaining the saying “canary in a coal mine” as most hadn’t heard of that before). I showed them the tools we would be using to collect specimens of macroinvertebrates to use the benthic bug chart to assess the health of the pond. Once they were turned loose to wander out into the mud and swish nets around in the water, the kids were all-hands-on-deck! We found thread worms, beetles, boatmen, mayfly nymphs, a stonefly nymph, and...a dragonfly nymph! The kids were so excited to use their dichotomous key to figure out what they were looking at. The best part was that we not only found examples of the highest levels of “water canaries” we found lots and lots of them.

Just as we were finishing up at the water’s edge an Arizona Game & Fish Department truck with a huge water tank on the back pulled up. The ranger was very gracious and excited that a group of school kids was there to watch her stock the lake with fingerling trout. It was the perfect way to end our lesson, seeing the larger vertebrate creatures that would depend on the macro invertebrates for food. Our original plan included a short hike on the AZT south towards Potato Lake, but a sudden cloud burst necessitated a quick reloading of the bus to head back to campus. It was a fun day of learning for us all!



An AZGFD Ranger releases tiny trout into Marshall Lake.

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