



Learning Lessons About Life in Sonoita Creek

by Rebecca Patterson-Markowitz



On September 26 a small but enthusiastic group from the Patagonia Youth Enrichment Center ventured out into Sonoita Creek on their first outing of the academic school year. Because we work with the Youth Center to coordinate outings with residents of the Mountain Empire Region these students willingly woke up early on a Saturday morning to participate on this outing. Damien, Chloe and Jose are all middle school students who grew up in Patagonia and spend many of their days after school at the Center. Two of them

had never been to Patagonia Nature Conservancy Bird Sanctuary, and only one had visited once during the summer with our program.

Each student received a Leave No Trace information card before we hit the trail, and we talked about what an important code it is for anyone who hikes or spends time in the outdoors. We likened it to a Boy Scout/Girl Scout Code of Honor, which they were undertaking as participants in the hike and the Seeds of Stewardship program. The bird sanctuary has hummingbird feeders that were buzzing with activity when we arrived, and hummingbird identifiers as well. We spotted at least four different species fueling up on the sweet nectar.

Jose helped with navigation, remembering his previous visit, as we made our way along the trail toward the creek. We were on a mission to get to the water and shade of the enormous cottonwoods. The students got a short lesson on desert plant leaf adaptations as we compared the vibrant and large surfaced leaves to other desert trees and cactus we had seen on the drive.

Once down by the water everyone's feet got wet as we waded in Sonoita Creek to cool off. We had a water testing kit with us, and the plan was to test for nitrate levels.

Nitrates are an important nutrient for all aquatic plants and animals. Often they are deposited by the decomposition of these same things in the water. Before we tested for nitrates, we did a lesson on ecosystems. Using some yarn we made a web that stretched between all of us, and because it was a smaller group the youth suggested that we pass the yarn back and forth more than once between us to create a



Testing water quality in Sonoita Creek, an important watershed near the students' homes.

better looking web. This perfectly expanded the metaphor for different kinds of direct and indirect connections and relationships between species in nature. The youth were asked to tug on the rope and notice what happened. Jose described what was happening perfectly, "We're all connected!" We moved from the personal to the global, first with students describing their unique attributes and the roles they play in their communities. They then named some desert animals, "Hares! Coyotes! Rattlesnakes!" We tried to think of all the possible ways that these species could be interconnected. When it seemed like everyone had absorbed the idea, we talked about Sonoita Creek.



Modeling an ecosystem

The students hypothesized about the levels of nitrates that we would find in the water based on the observable characteristics of the environment. Chloe and Damien guessed that there would be a high nitrate level in the creek because of all the life in the water. Jose hypothesized that all the nitrates would be flowing down stream to Patagonia Lake.

We took a lunch break and did some wandering up and down stream to find our sampling areas. These students have been

doing water quality testing as part of another project with the youth center for a local park and were really excited to be conducting their own monitoring. They noticed erosion damage from the heavy summer rains and also found little stretches of water that looked different from the rest, extending under the muddy bank, supporting families of fish.

They scooped up samples diligently, following the kit's instructions. We dissolved capsules and timed the samples. Chloe and Damien were surprised when the nitrate level showed up as less than 5 parts per million. Jose was excited that he had guessed right about the lower levels. The samples were stashed back in the kit to be disposed of properly back in town.

When it was time to hike out we stumbled upon a family of deer wading and drinking from the creek. We gave them plenty of space, respecting their afternoon peace. Someone asked why the deer wouldn't get sick from drinking the water that humans would get sick from. We collectively developed some hypotheses and shared as much knowledge as we could. Many more question were generated as we stopped at the visitor center to read about invasive species and their impact on the Sonoita Creek ecosystem. It was in the spirit of inquiry and with the sense that there was much more to learn that we left the park and headed back to town.

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