



THE CREEKSIDE ALMANAC

Prescott Creeks • Fall 2010 • Volume 16 Issue 2



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Rambling River

Prescott Creeks is proud to announce our newest watershed education tool – the Rambling River. Education is one of the most effective ways to protect and improve water quality and making it dynamic and interactive is more fun for everyone.

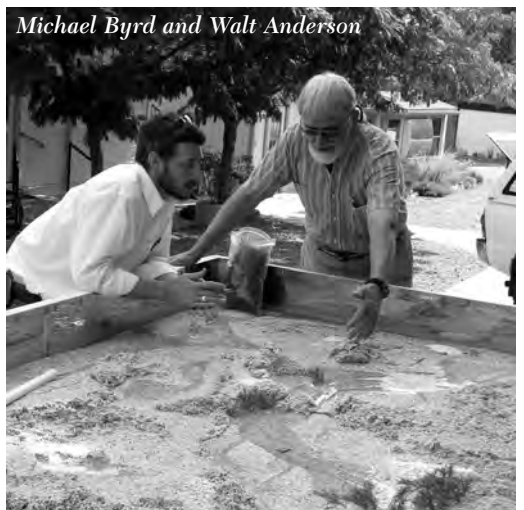
educational tool will soon be available for groups in the area to explore watershed issues from floodplains to flow dynamics.

More information on the Rambling River can be found on Prescott Creeks' website www.PrescottCreeks.org.



Rambling River demo to Prescott College wetlands class. Photo by Walt Anderson.

The Rambling River is a three-dimensional, hands-on, interactive representation of section of a watershed. It has the ability to model creeks, lakes, mountains, towns, forests, erosion, and runoff. It can demonstrate how pollutants are carried to water bodies, and how human behavior effects water quality. As an entertaining and interactive model, people are able to manipulate factors in the watershed and see the results. The model will be designed to not only be a demonstration model, but also one in which audiences can actively participate in running various scenarios. Mounted on a 8' x 12' trailer, the Rambling River will travel to various schools, presentations, events, and workshops. This



Michael Byrd and Walt Anderson

Prescott Creeks is a 501(c)(3) nonprofit organization with the mission to promote, protect and celebrate the ecological integrity of riparian systems and associated wetlands in the central Arizona watersheds through conservation, restoration and education.

From the Executive Director



If you've ever received an email from me, you might have noticed the quote at end by Aristotle which simply reads: "Boundaries don't protect rivers; people do."

For twenty years now Prescott Creeks has made a concerted effort to approach our work

with this perspective. Whether it is monitoring water quality to understand our local pollution issues or studying the critters associated with the creeks – it's really about the people who are involved and why they do what they do.

Two new interactive tools, made possible largely by volunteers, are available to watershed residents, visitors, or anyone who wants to learn more. The Rambling River and the new Prescott Creeks website each provide interactive experiences.

The Watershed Improvement Council is made up of a diverse group of community members who each bring unique skills to the project. In addition to local residents, restoration work at Watson Woods Riparian Preserve has involved talented people from throughout Arizona as well as several groups from around the world. Ben Grumbles, Director of the Arizona Department of Environmental Quality, visited us in August and saw first-hand the efforts of those who have invested in the mission of Prescott Creeks.

Not only are people providing direct service, they also are inspired to run in support of our creeks. Over 200 runners competed in four different races as part of the Run for the Creeks 2010 event.

After you've read this issue of The Creekside Almanac, please pass this newsletter on to a friend or colleague, and consider joining Prescott Creeks as a member. With continued awareness, appreciation and individual action by those people directly involved, as well as those yet to be involved, we can all look forward to a healthier, more functional watershed over the next twenty years.

Website



Prescott Creeks' new website will debut this winter. Nathaniel Hoag, Website Manager and VISTA has brought his skills into planning and developing a site will foster more efficient and effective communication. Specials features include:

- Event registration capabilities were built into the new website to enable Prescott Creeks' constituents to more easily register for participation in upcoming events.
- A volunteer application webform was built to simplify the application process for Prescott Creeks' volunteer positions.
- A volunteer timesheet was built into the new website to enable Prescott Creeks' volunteers to more easily document and track their contributions.



- An incident report webform was built into the new website to provide community members with a means to transparently communicate and document acute and critical environmental incidents within the Granite Creek Watershed that may impact Watson Woods Riparian Preserve. The Incident Report webform is intended to help Prescott Creeks stay more in the loop on acute environmental issues, to provide third-party documentation of environmental incidents, and to ensure that the proper agencies are contacted for the different types of incidents that may occur.



Prescott Creeks can also be found on Facebook and Twitter.

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Volunteer Profile – George Shriver



George Shriver started volunteering with Prescott Creeks in 2002 working on the Creeks Observation Guide project and continues volunteering with us because he likes working outdoors and, he says, he appreciates how well-organized our volunteer projects are.

When George was a student at the University of New Mexico he worked for the Bureau of Land Management in soil conservation which he says

may have presaged his current volunteer work. After he earned his degree in Mechanical Engineering he worked for the 3M Company in St. Paul, MN as a manufacturing engineer for 37 years.

He and his wife Kaye left Minnesota and came to Prescott in 2000 because they “fell in love” with the downtown area. So they bought a lot, built a house and started their retirement here.

Besides his work at Prescott Creeks, George also volunteers with the Coalition for Compassion and Justice, Open Door, and the State Park System where he monitors Indian ruins.

George and Kaye, who also volunteers with several organizations, spend their free time hiking. They also enjoy the summer concerts in the Courthouse Plaza.

Aquatic Macroinvertebrates as Water Quality Indicators

By Patti Spindler, Aquatic Ecologist
ADEQ Surface Water Section, Monitoring Unit



Macroinvertebrate

Have you ever seen a dragonfly patrolling over Granite Creek in Watson Woods? Or a water boatman swimming in backwater ponds of Watson Lake? Or found critters sprawled on the underside of a rock in Miller Creek near

Thumb Butte? These creatures are aquatic macroinvertebrates, animals without backbones (invertebrates) that live in aquatic environments and are large enough to be seen without a microscope or other magnification (macro).



Patti teaches macroinvertebrates to Prescott College students

The Arizona Department of Environmental Quality (ADEQ) collects macroinvertebrates from streams to conduct bioassessments. These provide an evaluation of stream health or biological integrity, which is a Clean Water Act goal, using in-stream organisms. Conducting macroinvertebrate bioassessments is part of ADEQ’s water quality monitoring program to ensure that standards for streams and lakes and wetlands are met to protect human

health (like swimming) and fisheries (aquatic life). An Index of Biological Integrity (IBI) is the scientific tool used to evaluate the macroinvertebrate data. The IBI uses attributes of the macroinvertebrate community such as number of species present, composition of sensitive and tolerant bugs, and presence of bugs with different feeding strategies which represent a diverse habitat. A healthy stream will have a large number of species present, a variety of sensitive species, a low overall community pollution tolerance score, and a diverse group of insects with different feeding strategies, such as algae scrapers and predators, comparable to a reference stream in the region.

Macroinvertebrates help us detect stream health, but they are also an important part of the food web. Fish, frogs, birds, and other animals feed on aquatic macroinvertebrates; larger animals in turn feed upon them. Healthy macroinvertebrate populations are necessary to support an overall healthy food web in riparian forests like at Watson Woods.

There is a lot of life on stream bottoms. Do what you can to help keep our streams clean to protect our fish and wildlife and the food webs dependent upon stream insects. Explore the aquatic environments around you! Poke around on stream bottoms, and you’ll be amazed at what you find!

For more information please visit the ADEQ website at: <http://www.azdeq.gov/environ/water/assessment/riverandstream.html#bio> or <http://www.azdeq.gov/environ/water/standards/index.html> or Contact Patti Spindler at psh@azdeq.gov or 602-771-4543



Volunteer macroinvertebrate sampling

Water Quality Monitoring

By Diana Marsh

Prescott Creeks volunteer with a background in water quality assessment



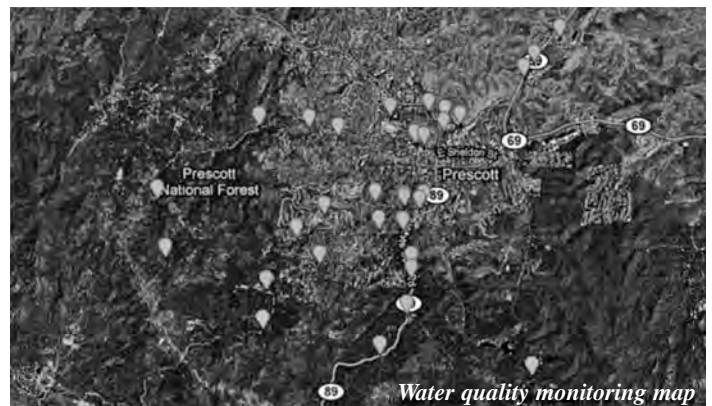
During the summer season, we are drawn to the calm, verdant sanctuaries that are our creeks and lakes. What do we see? The creeks are dry but for a few pools of foul stagnant water from a recent rain. When it does rain, the creeks start flowing, but the water seems brown and murky. Downstream, Watson Lake is a spectacular sight— if you like algae.

Local volunteers have been helping Prescott

Creeks and the Watershed Improvement Council collect water quality samples from our local creeks. Sampling was initiated because both Granite Creek and Watson Lake are “impaired” by excessive nutrients. What have we learned so far?

1. Samples for nitrogen and phosphorus (nutrients) and *Escherichia coli* (a microbial indicator of fecal contamination) exceed state water quality standards during higher flows and precipitation runoff events. Exceedances are rare during lower flows or as the creeks dry out in the spring.
2. Low dissolved oxygen levels in Granite Creek (originally believed to indicate nutrient loading) occur only during lower flows, not when nutrients or bacteria exceeded standards. These low dissolved oxygen concentrations are likely due to ground water up-welling because ground water is naturally low in dissolved oxygen.
3. Any further monitoring should be conducted during “critical conditions” – conditions or activities in the watershed when past exceedances occurred. The data indicates that critical conditions occur during higher flows and precipitation runoff events.
4. Monitoring the “first flush,” which is the first few hours of precipitation that washes over surfaces (streets and rooftops), should be avoided. The first flush consists of highly turbid, contaminated flood waters; these samples will normally exceed standards and are not helpful in identifying sources. Therefore, large storm fronts such as Prescott’s winter rains are better for monitoring to identify sources.
5. *E. coli* bacteria exceeded the testing equipment range at every site tested in the watershed when the “first flush” was sampled. This means that people (our kids and grandkids) should stay out of the water during such storm flows.
6. Exceedances during higher flows indicate that the nutrients and bacteria are the result of non-point source pollution. These pollutants are washed into the stream by way of runoff from sources such as: roofs, streets, parking areas, dog droppings, horse corrals, gardens, yard trimmings dumped
7. Exceedances during these runoff events may indicate that the riparian area is not functioning properly, because it should be able to intercept surface flow and filter out pollutants. This may be due to degraded riparian condition or because hard (impervious) surfaces and engineering have routed storm water directly into the stream, thereby avoiding the natural riparian filter.
8. *E. coli* exceedances have occurred during at least one storm water runoff event when aging wastewater sewer lines became inundated with floodwater.
9. If exceedances were occurring during lower flows rather than higher flows, failing septic systems and other point source discharges would be the primary candidate sources of these pollutants. Although septic systems are likely not a primary source, further monitoring upstream and downstream of areas served by septic systems is needed to determine whether they are contributing a significant nitrogen loading that accumulates in lower reaches of the watershed, nourishing those notorious summer algal blooms.

The next step is to evaluate and integrate the other watershed information with the water quality data: the field survey, the riparian area condition evaluation, and the University of Arizona DNA and virus sourcing. This evaluation should be completed in the next couple of months.



Further sampling may not be necessary to complete a watershed plan and identify priority water quality improvement projects. However, additional monitoring to bracket potential sources (upstream/downstream monitoring) may be conducted to provide further supporting evidence.

Erika Nowak and the Lizards of Watson Woods

Doris Cellarius



Dr. Erica Nowak

I had always wanted to observe firsthand how Prescott Creeks monitors the impacts of the restoration of the Watson Woods Preserve on the animals who live there. A measure of the success of a restoration is the number of species that are found or return during and after restoration. Our grant for the restoration requires documentation of effects on the ecosystem and has enabled us to hire

herpetologist Dr. Erika Nowak to conduct this monitoring. This September I was invited to visit some of her study sites in the Preserve. She has been monitoring snakes, lizards, amphibians and other small animals there for over 10 years. Monitoring began in 1998, even before restoration work began. Erika has designed very effective, unique and humane systems for examine the animals. We found Plateau and whiptail lizards as well as a baby gophersnake. Each animal she finds is measured, weighed and marked.

Erika grew up in Upstate New York has a PhD and an MS in Biology from Northern Arizona University. She teaches now at NAU and engages some of her students in the Watson Woods work. A very busy scientist, Erika has studied snake populations and other animals at National Parks and other sites throughout

the United States and published numerous papers on her work. A high priority project for her is the Arizona Gartersnake Working Group. They are studying the declines of the narrow-headed and Mexican gartersnakes, and trying to save both species through captive breeding partnerships with zoos and other breeding facilities. Narrow-headed gartersnakes are a small, very aquatic snake formerly found across the Mogollon Rim (including the Verde River and streams in higher elevations in central Arizona) and into New Mexico and Mexico. They are declining in all areas where they are found due to threats including introduced crayfish, bullfrogs, and non-native sportfish. Another favorite project is in Montezuma Castle National Monument where she has studied rattlesnake relocation and management since 1994. She learned that rattlesnakes do not like to be relocated long distances; they travel back to their original homes and many will ultimately die as a result of stress or trying to cross a road. Though some visitors wish the snakes were not there, she is helping to educate them that relocating them does not work well and the rattlesnake do not typically strike unless surprised or provoked.

This passion for helping people understand how to respect the animals that make wild places special is an important aspect of Erika's approach. During the Watson Woods restoration the rocky area sheltering many hibernating common kingsnakes was destroyed. At her suggestion, Prescott Creeks included rebuilding this shelter for their hibernation, something she says few land managers would have done. The only disturbance she mentioned that is hard to mitigate is the traffic noise from the highways, something hard to reduce. Overall, as Watson Woods is restored, wildlife, especially native species, are recovering well.



2nd Annual Run for the Creeks

With 240 participants, the 2nd Annual Run for the Creeks on Saturday, August 28th was a great success. Runners

competed in 10k, 5k, and 1k runs, as well as a 2 mile invitational for elite runners.

The Willow Lake trail was a beautiful backdrop to the day. Sixteen runners competed in the two mile invitational over steep hills. Zach Thomas came in first with a time of 10:17 and was followed closely by Hayden Palmer at 10:46 and Chris Bray at 11:02. Zach went on to win the men's 10k in 35:21. The women's 10k was won by Emily Streeter at 47:46. Top finishers in the 5k were Dorshanna Collie for the women at 26:31 and Criston Matthew Hyett for the men at 19:47. The 1k kids run was a special event for children 10 years old and under. Twenty-three children ran with 10 year old Crozier McCrae coming in first for the big kids group (7 - 10 year olds) at 4:23 and Sam Woods placing first in the littler kids (6 and under) category at 5:04. All runners had the opportunity to enjoy end of run nutrition by Muscle Milk and finish line stretching by Carr Chiropractic.

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