

Verde Watershed Currents

Spring 2014

Del Rio Springs Is
Historically Unique

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Otters Live in the Verde
River

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How Dry Was the Last
Winter?

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Historic Del Rio Springs

Many unique and interesting springs can be found throughout the Verde River Watershed. What is a spring? It is any naturally occurring situation where groundwater flows to the surface of the earth from underground.

Springs are often important sources for surface water bodies, such as creeks, rivers, or lakes. In the Verde River Watershed, many surface waters are spring-fed, including Sycamore Creek, Oak Creek, Fossil Creek, and the Verde River itself, among others.

The Verde River flows an impressive 192 miles and for about 137 miles of its length, the Verde flows nearly freely. The headwaters of the Verde River emerge from the ground as a group of springs near the community of Paulden, Arizona - north of Prescott - creating a rich green riparian habitat in stark contrast to the often-dry landscape that surrounds it. Although today, we see this as the beginning of the Verde River, historically the Verde had its beginning in a different location.

Approximately six miles upstream of the current Verde River headwaters, is Del Rio Springs - one of the most historically important springs in Arizona. Del Rio was once known as the headwaters of the Verde. The first Euro-American area residents described a stream flowing north - now called the Little Chino Creek - from the springs to the Upper Verde River.

Why isn't Del Rio still the Verde River's headwaters? The answer lies mostly in the human use of the springs and the surrounding area. Archeological evidence shows that Native Americans lived by Del Rio Springs for thousands of years prior to the arrival of Euro-American settlers. In 1863, the



Del Rio Springs, Photo by Gary Beverly
Title Photo by Lorraine Voss

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Fossil Creek, Photo by Valerie Millet

Historic Del Rio Springs (continued from page 1)

settlement by Euro-Americans began with the establishment of the first Arizona Territorial Capital at the springs. Although in the following year the capital was moved to nearby Prescott, it marked the beginning of Del Rio Springs' direct contribution to the economic development of Northern Arizona and the Grand Canyon.

Between 1901 and 1910, the springs served as the main water supply for the City of Prescott. In the following decades, Del Rio continued its importance in sustaining the local area and many regional communities. The Santa Fe Railroad hauled Del Rio water to numerous communities in Northern Arizona and the Grand Canyon. Del Rio hay, grain, and dairy products were important commodities for the region.

Over the years, more people moved to the area around Del Rio, and that meant an increased demand for water. Subsequently, the number of wells throughout the area increased. Since then, the flow of Del Rio Springs has been steadily in decline. In fact, the current flow is approximately 1/10 of the originally recorded flow.

But how did this decline happen? Groundwater and surface water are connected in the water cycle - meaning one can directly affect the other. For instance, pumping water out of wells can remove water out of the ground that was en route to springs and streams.

Pumping can also deplete groundwater beneath a riverbed - even if pumping is distant from the wells - causing water to flow away from the river into the groundwater. The movement of groundwater is much slower than the movement of water flowing on the earth's surface. Thus, the effect on spring or stream flow from the pumping of groundwater doesn't show up immediately. Eventually, the quantity of groundwater that contributes to spring or stream flow is reduced by an amount nearly equal to the amount of water pumped from wells.

Because Del Rio Springs is of such historical importance to the region and the state, people have witnessed the steady decline of flow here over the years. This spurs some questions... How many other springs throughout the watershed have declining flow? What does it mean for the plants, wildlife, and people that these springs, creeks, and rivers sustain? These are all important questions to be asked since we have the power to affect these natural systems, both to their detriment and to their benefit.



Photo by Gary Beverly

Based on "150th Anniversary of Del Rio Springs", Gary Beverly, 2013
Additional contributions by Ed Wolfe and Marianne Davis

When you put your hand in a flowing stream, you touch the last that has gone before and the first of what is still to come." - *Leonardo da Vinci*



Verde River Otters

In 1981, Louisiana river otters were introduced to the Verde River by Arizona Game and Fish and are now thriving along the river's edge. It has been speculated that Sonoran river otters, which were native to the Verde River, had been annihilated from the Verde Valley area by trappers sometime in the late 1890s.

The North American river otter, a member of the weasel family, is equally versatile in the water and on land. They are found in a wide variety of aquatic habitats, both freshwater and coastal marine, including lakes, rivers, inland wetlands, coastal shorelines and marshes, and estuaries. They can tolerate a great range of temperature and elevations.

A river otter's main requirements are a steady food supply and easy access to a body of water. However, they are sensitive to pollution, and will disappear from tainted areas.

The river otters that make their home in the Verde River are an indicator of good river health. Protecting the Verde River will allow the otters to continue to thrive in this area. This entails taking proactive measures in protecting riparian areas, keeping water clean and free flowing, and monitoring fish populations to ensure good health and abundance.

Photo by Evelyn Simak
Article by Lorraine Voss

The State of the Watershed

By the end of the 2014 winter, it became clear that the term "dry" characterizes the cold months of the year. During the December-February, period an average of 1.72 inches of precipitation fell over the Verde Watershed, which places the winter of 2014 as one of the driest on record. In fact, the Verde watershed went a total of 41 consecutive days without any measurable precipitation. For the limited precipitation that did fall this season, most occurred in the form of rain leaving little in the way of a meaningful snowpack at the highest elevations of the Mogollon Rim.

As one would expect, the lack of precipitation has resulted in lackluster flows on the Verde River. For the Dec-Feb time period the Verde has only produced 46,000 acre-feet of runoff, which is roughly 25% of normal. The Verde River did see increased flows from one specific storm event where peak flows through Camp Verde were around 2,500 cubic feet per second (cfs) on the 2nd and 3rd of March. However, the lack of overall snow on the watershed produced little, if any, snow-melt signature in the Verde River hydrograph indicating the snow that did melt went either to the atmosphere or the soil.

There are some glimmers of hope for a reversal of the dry hydrologic conditions over the Verde watershed. First, the summer monsoon is only months away and is always less variable than winter precipitation (last year was one of the wettest monsoons on record). Second, is the potential development of El Niño. The Climate Prediction Center has recently published an El Niño watch with a 50% chance of El Niño conditions by fall. If current climate models continue to move in this direction, chances of next winter's precipitation being normal/above normal will increase.

Article by James Walter, Salt River Project

Water Conservation at Home

National Average *Indoor* Water Use:

In Homes: Conserving = 45.2 gallons (gal) per person daily

Non-Conserving (high water use fixtures) = 69.3 gal

In Apartments: Conserving = 33.3 gal, Non-Conserving = 55.7 gal

The Bathroom: where 75% of your in-home water use occurs!

Toilets: Per day per person, the average low flow toilet use is 8.2 gal and average high flow toilet use is 18.5 gal.

To determine how much water your toilet flushes, check its manufacture date inside the tank or lid, or there may be a number on the bowl or tank followed by "gpf" or "lpf", which signifies gallons per flush (gpf) or liters per flush (lpf). Standard toilets manufactured before 1980 flush 5-7 gal; between 1980-1993 flush 3.5 gal; and after 1994 flush 1.6 gal.

Here's How You Can Make a Difference:

- ✓ **If you have a toilet older than 1994, it is time to replace it!** Consider dual flush toilets that use less for liquid waste flushes.
- ✓ **If you can't replace an older toilet,** place a weighted quart bottle in the tank.
- ✓ **Don't use the toilet as a trash basket** for facial tissues, etc. This can save you 5 gallons or more daily.
- ✓ **Check your toilet for leaks.** Toilet leaks can waste 100 gallons of water a day! Put a little food coloring in your toilet tank. Wait at least 15 minutes. If without flushing, the coloring begins to appear in the bowl, you have a leak.

Adapted from University of Arizona Cochise County Cooperative Extension

The Verde River Basin Partnership

◆ Informing the community about our water ◆

The Verde River Basin Partnership is a non-profit organization comprised of both individual members and entity partner members (public and private organizations) who share a common goal. This goal is to support and preserve the long-term health of the Verde River and its watershed.

Our Mission:

The Partnership is a scientific and educational resource raising awareness among citizens and community leaders about the workings and limitations of Verde River Basin's interconnected groundwater and surface water systems, and the life they support.

Our Vision:

The Partnership aims to secure the long-term health of Verde River Basin's groundwater and surface waters, by assisting citizens and community leaders in exploring strategies and management practices that will sustain the Verde River system for all future generations.

Learn more about us and get involved:

- Visit our website
- Find us on Facebook
- Read our Guiding Principles
- Become a volunteer
- Make a donation
- Email us at info@vrbp.org

The Verde River Basin Partnership provides educational outreach using credible science to engage people and empower them to protect this important resource.

Did you know?

The National Wild and Scenic River law was signed on October 2, 1968, to protect rivers from development that would substantially change their wild or scenic nature. Rivers are preserved for possessing outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values. Rivers or sections of rivers so designated are preserved in their free-flowing condition and are not dammed or otherwise impeded. There are two designations in Arizona.

In 1984, Congress designated 40.5 miles of the Verde River as Wild and Scenic. The Scenic portion starts at Beasley Flat and extends downstream about 19 miles to the northern boundary of the Mazatzal Wilderness. The Wild portion covers from there to the mouth of Red Creek, about 22 miles farther downstream.

Then in 2009, Congress designated Fossil Creek as a National Wild and Scenic River. The Coconino and Tonto National Forests are working together to maintain and protect the Wild and Scenic special values.



Photo: Fossil Creek, Arizona Jones

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