Black Canyon Creek. Despite the tall cut bank on the left side of the photo, this riparian area is beginning to recover.

Photo: Van Clothier
Here's the latest installment in the ongoing saga of the attempt to divert the Gila River. The last issue of Carapace discussed the formation of the NM CAP Entity; the following two paragraphs are a CAP recap.

If a diversion, or NM “Unit,” is built, it will become part of the CAP, or Central Arizona Project, the network of diversions and concrete canals taking water from the Colorado River (of which the Gila is a tributary) and delivering it to Southwestern municipalities. The NM CAP Entity is a group made up of south western NM counties (Grant, Catron, Luna and Hidalgo), municipalities (Deming, Lordsburg, Santa Clara), irrigation associations (Upper Gila, Fort West, Gila Farm, Gila Hot springs), and the Hidalgo and San Francisco Soil & Water Conservation Districts. They are working to develop Gila River water under the Arizona Water Settlements Act (AWSA).

Fortunately for us, and for the Gila River, the CAP Entity does not have the final say in deciding whether to build a diversion on the Gila. That power rests with the Department of the Interior, which is legally required to comply with numerous environmental laws, including the Endangered Species Act and the National Historic Preservation Act, before it can proceed with a diversion. These substantial obstacles will be difficult, if not impossible, to overcome. When you factor in the enormous cost of a diversion, and the very low water yield, it becomes more unlikely that a diversion will be built.

But it’s definitely not time to celebrate yet. The Gila Conservation Coalition (of which UGWA is a partner), recently learned about seven components of a NM Unit under consideration by the NM CAP Entity and the Interstate Stream Commission (ISC). These options may be studied for feasibility by the consultants recently hired by the Interstate Stream Commission and the CAP Entity. (More on that later in this article.)

The Laundry List

The components on the list include:

- the direct diversion of AWSA water through six existing irrigation ditches;
- using the existing Freeport McMoRan diversion (on the Gila River near Bill Evans Lake) to divert water and send it to Deming;
- diverting and pumping Mogollon Creek and/or Gila River water to off-stream reservoirs ranging in size from 8,000 acre-feet to 46,000 acre-feet in Spar, Winn, Miller and/or Doyle Canyons to supply agricultural and ecologic demand;
- conveying 2,000–5,000 acre-feet of water from Cliff/Gila Valley reservoirs downstream to support ecologic and agricultural demand in Virden and Redrock;
- aquifer storage of up to 2,000 acre-feet of water in the Gila Valley;
- creating small on-farm storage ponds in the Gila Valley, each capable of holding 100–1,000 acre-feet;
- creating 50-megawatt alternative energy facilities near the City of Deming, the income from which would be used to fund power requirements of a diversion.

The Gila Conservation Coalition’s take on the list was in the vein of “a day late, and a dollar short,” although we’re talking years and billions of dollars in the case of the diversion. “The ISC and diversion proponents have been working for more than 10 years and have spent millions of dollars trying to develop a viable Gila River diversion project. To date, they continue to be unsuccessful. Here we are at the 11th hour and the best they can come up with is another laundry list of unworkable or unaffordable ideas,” stated Allyson Siwik, GCC’s Executive Director.

Former ISC director and outspoken Gila diversion critic Norm Gaume explained: “It’s clear that the ISC and CAP Entity have made little progress in developing an operable configuration for the NM Unit. It’s impossible or financially infeasible to develop AWSA water with any remaining option. Pumping AWSA wa-
This opinion piece from Senator Martin Heinrich was also published in the Silver City Daily Press and other newspapers. We are grateful for Senator Heinrich’s support of a free-flowing Gila River.

In the Southwest, water is the life-blood of our economy and culture. Access to adequate clean and affordable water means that our cities can bustle with activity, our farmers can grow local food, and our rivers can sustain the cottonwoods and wildlife we all know and love.

In exchange for developing water downstream in the Colorado River watershed, the Arizona Water Settlements Act of 2004 (AWSA) gave the State of New Mexico money to fund water supply improvement projects. This money could either partially fund a major dam, reservoir, and delivery project on the upper Gila River or instead pay for other types of water projects in the State’s Southwest Planning Region—Catron, Luna, Hidalgo, and Grant Counties.
Upper Gila Watershed Alliance

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Mission Statement
The Upper Gila Watershed Alliance is a non-profit watershed protection and conservation organization working to promote the long-term health of the Upper Gila Watershed and its communities of life. Through advocacy, education, research and restoration projects, we are striving to build communities of stewards in more locally based economies.

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Smart Water Development (continued from p. 3)

The U.S. Department of the Interior and the State of New Mexico recently signed an agreement that set out a framework for a multi-year environmental and cost evaluation of a Gila River diversion project and alternative proposals for water development on the upper region of the Gila. The question on the table is whether a diversion project should even be in the cards.

Proponents of a diversion project have argued that New Mexico needs to take any chance that comes its way to develop water, regardless of context, costs, or value.

Based on analysis to date, however, it is hard to imagine a dam or diversion of the Gila River that is not irresponsibly expensive as well as destructive to other economic and resource values.

Initial cost estimates put the price tag for a full diversion project on the Gila between $800 million and $1.18 billion. And with only around 8–13 percent of the total cost coming from the federal AWSA funding, some of which has already been spent just to study the proposal, New Mexico taxpayers would be on the hook for covering the rest.

On top of that, water users in Southwest New Mexico—residents of Silver City, Deming, and other communities, and farmers and ranchers in the four counties—would likely see their water bills go up drastically in order to pay for expensive water coming from the diversion project.

We must also carefully consider what could be lost. The upper Gila is the last free flowing river in the American Southwest. It is home to many species of fish and birds that rely on its natural hydrology. It is dominated by an amazing gallery forest of native cottonwoods and white trunked Arizona Sycamores towering over riparian willows because of the river’s natural flooding regime.

Recreation tourism, which brings significant dollars to local businesses in the region, depends on a healthy Gila River. And local communities, farmers, and ranchers all depend on the greater Gila-San Francisco watershed to recharge their aquifers and groundwater supplies.

I believe that there are smarter and more respon-
sible ways to spend taxpayer dollars than to dewater the Gila River. We should use the AWSA money to fund proven water efficiency and infrastructure measures. In recent years, State Senator Howie Morales, who represents Grant and Catron Counties, has introduced legislation that would direct AWSA funds toward thirteen high priority water projects in all four counties. Each of these projects has broad support and would yield real results for a fraction of the cost of a billion dollar dam.

Watershed restoration, regional water supply projects, and improvements to irrigation infrastructure will do far more to sustain future water needs in southwest New Mexico than a Gila diversion project ever could.

At a time when reduced revenue streams from low oil and gas prices are forcing our state into difficult budget decisions, we need to be deliberate in our assessment of whether dewatering the Gila River is a wise use of taxpayer dollars. And when better, data-driven alternatives exist, it’s wasteful to throw millions of dollars studying a diversion project when we could be spending those millions on real projects that will yield real water at an affordable price.

New Mexico’s taxpayers deserve responsible, cost effective, science-based solutions if we are to manage both our limited water supplies and constrained budgets. Damming or diverting the Gila River simply does not meet that standard.

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**Thirty Years Old**

*by Donna Stevens*

1986 was a momentous year. Young adults sported Big Hair as they grooved to Lionel Richie and Madonna. Kids wore She-Ra costumes as they played with their Chuck Norris action figures. Crocodile Dundee introduced the phrase “No worries!” to America—appropriate during the feel-good Reagan era.

Behind the façade of frivolity, of course, many serious, and even tragic, events took place in 1986. The Iran-Contra scandal. The Space Shuttle Challenger explosion. The Chernobyl disaster. Closer to home, a significant historic event of 1986 was the release of the Gila National Forest’s Land and Resource Management Plan. This document, commonly called the Forest Plan, is important because it guides all of the Gila National Forest’s management decisions. Before actions or projects can be undertaken, the Forest Service must ensure that they align with the Forest Plan.

Just as the cultural landscape of the 1980s is obsolete, the Forest Plan is similarly outdated. The most obvious omission is any reference to climate disruption, a topic few knew about in 1986, when it was underrated as mere “global warming.” To this end, the

Continued page 6
Thirty Years Old (continued from p. 5)

Forest Service is undertaking a major overhaul of the Forest Plan to reflect current ecological, social, and economic conditions.

Local, regional, and national environmental groups will be engaging in Forest Plan Revisions during the life of this process, expected to last at least four years. UGWA has received grant funding from the New Venture Fund for this important work. Our goals are to ensure robust protections for the forest’s streams, watersheds, wildlife habitats, and native flora, as well as for quiet-recreation areas. At the appropriate time in the years-long process, we will submit to the Forest Service data on areas that should be recommended as additions to the wilderness system, stretches of rivers that qualify for Wild & Scenic River designation, and other special management designations, such as outstanding botanical areas or unique wetlands. Wilderness Areas and Wild & Scenic River designations must be approved by Congress, and the Forest Service is required by law to conduct a comprehensive survey of areas that qualify.

In mid-year, the Forest Service’s Plan Revision team expects to release their draft assessment report describing current forest conditions on the Gila. They will use the information they compiled to inform the policies, goals, and desired conditions to be included in the revised Forest Plan. When they release the draft assessment report, they will host a series of meetings to solicit public input. At this time, they will also make public their draft inventory of Species of Conservation Concern. These species, both plant and animal, are those that are not currently federally listed under the Endangered Species Act, but that could become imperiled if not protected in time.

Thirty years from now, when people look back at the revised Forest Plan, it’s our hope that the policies adopted by the Forest Service, with substantial input from the conservation community, will appear thoughtful, well researched, and perhaps even visionary. Conservationists of today intend for future generations to exclaim, with no trace of irony, “No worries!”

This newsletter will continue to provide updates in future issues, and we will send email alerts about public meetings. For more info and to get on the Forest Service’s mailing list, you can go to the Gila National Forest’s home webpage and click Forest Plan Revision under Quick Links on the right side. Or email gilaplan@fs.fed.us.
The Upper Gila Watershed Alliance recently completed a multi-year project in Black Canyon in the Aldo Leopold Wilderness Area of the Gila National Forest. The creek in this beautiful, wild canyon is listed as temperature-impaired by the New Mexico Environment Department (NMED). The purpose of the project, funded by NMED, was to determine why the creek is too warm to support a thriving population of Gila trout, federally listed as threatened. The 15-mile project reach encompasses Black Canyon from the Continental Divide downstream to the North Star Road, which bisects the Aldo Leopold and Gila Wilderness Areas. Black Canyon Creek flows into the East Fork of the Gila River in the Gila Wilderness.

To ascertain where the creek became too warm, we installed data loggers at nine sites along the creek. These data loggers, the size of a thick Sharpie, recorded the temperature of Black Canyon Creek every hour for three and a half years, from May 2012 until November 2015. For comparison, we also installed two data loggers that recorded air temperatures.

Although we did our best to place the data loggers in deep pools, a few of them became exposed to the air when the pools dried up, and may later have been resubmerged. Unfortunately, some of the temperature data were lost due to heavy floods that washed the data loggers downstream.

Fortunately, extensive stream assessments and surveys told the story of the degradation of Black Canyon Creek, and also provided clues to its restoration.

**Colorful Grazing History**
The canyon was previously a part of the Diamond Bar grazing allotment, which has a very colorful history, worthy of inclusion in the annals of the Wild West, and briefly recounted here because of its relevance to the impairment of Black Canyon Creek.

In 1996, the Diamond Bar’s grazing permit expired and was not renewed, due to unresolved disputes over grazing management between the Forest Service and permittees Kit Laney and Sherry Farr. Federal court rulings in 1996 and 1997 ordered them to remove their 863 head of cattle. Laney and Farr asserted that they had grazing rights tied to water rights, and continued to graze their cattle without a permit. In late 2003, a federal judge ruled the couple was in contempt of earlier court orders and ordered the Forest Service to impound their cattle and sell the herd to cover the cost of the round-up.

Prior to being rounded up and impounded by the Forest Service, large numbers of Laney’s cattle trespassed on the Diamond Bar allotment, creating headcuts and stream gullying, and causing considerable ongoing damage to the stream banks, riparian vegetation, and water quality in the Black Canyon watershed. The Gila National Forest ceased livestock grazing on this allotment in 2006, and has no plans to allow re-introduction of livestock until 2017 at the earliest.

**Watershed-Based Plan**
In the last decade, NMED began to require Watershed-Based Plans (WBP) to address causes and potential solutions for the state’s impaired waterways. Last year, UGWA wrote a WBP for Mogollon Creek, which was listed as impaired due to excess aluminum.

The WBP recently completed for Black Canyon includes the following recommendations, developed by UGWA’s contractor Van Clothier of Stream Dynamics:

- Permanent retirement of this grazing allotment.
- In one area, there are several springs that flow onto the high river terraces and flow too soon into the creek. This creates an opportunity to guide the water into tiny ponds and preferable flow paths us-
**Black Is Beautiful** (continued from p. 7)

ing only a hand shovel, causing the water to sink into the ground, raise the water table, and stabilize the riparian vegetation growth on the creek bank where the water will eventually seep out.

- Plant willows in strategic locations on the streambanks to keep the stream in its bed to prevent erosion.
- In small tributaries in the upper watershed, initiate bank storage of water by constructing one-rock dams.
- At select sites, dig small ponds to raise the water table and create more wet meadow habitat.

Because cattle have been absent from Black Canyon for 10 years, regeneration of riparian vegetation has begun without human intervention. Beavers have moved back into the area, and have created a very large beaver pond, about 50 feet wide, which backs up water for 250 feet and creates very productive wetland habitat.

This so-called passive restoration is very encouraging, and could be enhanced by implementing some or all of the above-listed proposals. As soon as the WBP is accepted by NMED and EPA, UGWA will write a proposal to implement the recommendations identified in the plan. If our grant application is accepted and funded by NMED, we’ll do our part to keep Black Canyon beautiful by helping to restore the stream.

Silver City is blessed by numerous nonprofit organizations that provide invaluable services and make our community a great place to live.

On **May 14**, more than 35 nonprofits hope to raise significant funds to continue their efforts. **Join us at 7th and Bullard from 8:30 a.m.–2:30 p.m.** to donate and/or learn about Silver City’s terrific nonprofits! Please consider making a donation to the Upper Gila Watershed Alliance. Free food samples, music, and plenty of smiles will be supplied!

**Give Grandly! Give Local Day** will grow the spirit of giving and raise funds for the nonprofits in the Silver City area to continue their important work.

If you’re unable to attend in person, you can give online at [www.givegrandly.org](http://www.givegrandly.org).
Continued page 10

At its November 24, 2014, public meeting, the Interstate Stream Commission (ISC) approved allocating $1,250,000 for the construction of permanent irrigation diversion structures to replace earthen irrigation diversions in the Cliff-Gila Valley, as proposed by the Gila Basin Irrigation Commission (GBIC) in 2010. The funding comes from funding associated with the Arizona Water Settlements Act (AWSA). Part of GBIC’s funding allocation ($150,000–250,000) from the ISC is intended for design and engineering for the permanent irrigation diversion project. For the design and engineering phase, GBIC requested that the Grant Soil and Water Conservation District (SWCD) act as its fiscal agent. The funding agreement between ISC, GBIC, and Grant SWCD is nearly finalized. Once the agreement is finalized, the entities will prepare a scope of work and solicit proposals to select a firm to complete the design and engineering phase.

At present, three earthen diversion structures in the Cliff-Gila Valley provide irrigation water to the Upper Gila, Fort West, and Gila Farms ditches. Maintaining these diversions requires frequent use of heavy machinery in the river channel, resulting in increased bed/bank disturbance and sedimentation downstream. Water is diverted year-round and sometimes the diversions completely dewater the river in two reaches during dry spring months. All three diversions are located on Nature Conservancy land, and both of the dewatered reaches are within federally designated critical habitat for threatened and endangered species, including two fish species, spikedace and loach minnow.

The characteristics of the Gila River in New Mexico provide distinct challenges for constructing permanent diversions. The Gila River has highly variable flows (ranging from 7 to 35,000 cfs), carries a lot of sediment and debris during elevated and high flows, and river channel movement has required changing the location of diversion dams many times over the past 100 years. Moreover, the floodplain is broad, spanning nearly 1,000 feet at the upper end of the valley. In order to support irrigators’ needs and river function, a diversion needs to accommodate these factors, as well as fish passage. Distinct populations of spikedace and loach minnow occur in the Cliff-Gila Valley as well as in the Forks area (where the West, Middle, and East Forks of the Gila River join together). Dr. Tom Turner’s lab at University of New Mexico has shown that genetic exchange occurs between the populations, which is important to maintain.

From the perspective of irrigators, improved diversions could increase water supply reliability (as water is often unavailable during low flows and after floods), require less maintenance and reduce seepage through earthen dams. From the perspective of conservation and wildlife interests, improved irrigation diversions, if properly designed, could better control river diversions, facilitate on-demand delivery of irrigation water, and help restore river flows. Stakeholders have struggled to decide what diversion designs could work on the Gila—and at what cost economically and ecologically. Two main designs have been considered: low-head concrete diversions and cross-vane weirs.

Bill Evans Lake is supplied water from a low-head concrete diversion. This was the design proposed by GBIC in 2010 to the ISC. In their 2014 Appraisal Level Report for Tier-2 Projects, the U.S. Bureau of Reclamation also recommended concrete weirs for the two upper agricultural diversions in the Cliff-Gila Valley. Six hundred feet of the diversion would be structural concrete, with a seven-foot-tall crest in order to impound water to a depth needed for diversion to the ditch, which would be controlled with gates. The remaining 350 feet of the structure would extend to the canyon walls and would be constructed of sheet piling driven 25 feet into the river bed. Eleven feet of additional sheet piling would extend above the ground. The
Gila Basin Irrigation Commission (continued from p. 9) cost to construct this diversion downstream of Mogollon Creek is estimated at over $9 million. Due to an even broader floodplain at the Gila Farm ditch diversion location, its cost is even greater, so the Bureau of Reclamation recommends providing water to this ditch from the upstream diversion. With only $1.25 million available from the ISC, it is unclear how irrigators can afford to build a low-head concrete diversion. In addition, fish passage will need to be considered, as well as maintenance costs. Reclamation engineer Jeff Riley points out that massive amounts of sediment will likely back up behind the structure and would need to be periodically removed. The cost of sediment removal from behind a concrete diversion could be even greater than the present cost associated with the repair of the current earthen diversions after a flood. Based on information discussed at the NM CAP Entity meeting on April 5, it seems possible that constructing permanent irrigation diversions in the Cliff-Gila Valley could be folded into the larger AWSA project to divert Central Arizona Project (CAP) exchange water.

In its 2014 engineering report, engineering firm Bohannan Huston recommended rock cross-vane weirs, or grouted boulder weirs, for replacing the earthen irrigation diversion structures. These structures require some channel alignment and stabilization work to be done upstream of the diversion. Rock or boulder weirs create adequate head for diversion, maintain fish passage even at low flows, and function at high flows. The benefit of these structures is that they emulate the natural river system, working with river processes, and also minimize construction costs. Several engineering firms have extensive experience in designing and constructing these rock weirs. Cost estimates for using rock weirs are in the range of $500,000 and include the cost of stabilizing the channel. The most significant concerns about using weirs are the maintenance needs, specifically how they could withstand high flows.

Earthen diversion dams have provided water for irrigators in the Cliff-Gila Valley since the 1800s. They have their own set of costs and benefits. As stakeholders consider upgrading to more permanent diversions, all the economic and ecological costs and benefits need to be considered in order to ensure affordable and reliable water for irrigators and to maintain river function and conservation values.

In Search of the Exotic

by Kevin Keith

In the spring of 2011, UGWA was awarded the first of two grants to conduct surveys for exotic plants in the Aldo Leopold Wilderness (ALW). The purpose of the surveys was to qualitatively assess the composition, density and distribution of exotics within the boundaries of the wilderness and provide the Forest Service with the information.

The surveys, all within the Black Range, spanned the 2011–2014 field seasons and were a collective effort of over 20 people: the field surveyors, who located and collected plants and data; the shuttle drivers, horse packers and porters who supported them; the botanists who determined and verified the plant identifications; and the herbarium staff at WNMU who processed the collections into herbarium specimens.

Wikipedia gives a concise definition of an exotic species: “An introduced, alien, exotic, non-indigenous, or non-native species, or simply an introduction, is a species living outside its native distributional range, which has arrived there by human activity, either deliberate or accidental.”

There is good reason to be concerned about exotics. Some introduced plants, in the absence of the insects and diseases with which they evolved, can thrive in the new environment and outcompete the natives. In the worst-case scenarios, the habitat diversity is reduced to a monoculture, which compromises the function of the ecosystem.
Our strategy was to target the areas of the wilderness most affected by human activity. Our surveys covered approximately 100 miles of maintained trails and the streams they followed, 18 miles off-trail, 10 stock tanks (dirt and metal), 8 corrals, 6 named springs and numerous unnamed ones.

The methodology was simple: walk the trails and streams and look for exotics; when these are encountered, take a collection, a photograph, a GPS coordinate and elevation, and record the number of plants (or a reasonable estimate of the population), a brief habitat description, associated plants and any other pertinent information to aid with later identification.

We began our survey with guidance from the Gila National Forest for some “major invasive plants known to occur in the analysis area”: Ailanthus altissima (tree of heaven), Bromus tectorum (cheatgrass), Carduus nutans (musk thistle), Centaurea solstitialis (yellow star thistle), C. stoebe (spotted knapweed), Cirsium vulgare (bull thistle), Elaeagnus angustifolia (Russian olive), Lythrum salicaria (purple loosestrife), Tamarix chinensis (tamarisk) and Ulmus pumila (Siberian elm). Fortunately, only two on the list were found in the ALW: one weak Siberian elm and a single population of bull thistle, both in Black Canyon. We did, however, find plenty of exotics that were not on the list, about 35 species, many of them commonly known and easily recognizable—dandelion, mullein, horehound, tumbleweed, filaree, sheep sorrel, yellow dock, watercress, nettle and goathead—edible, medicinal and forage plants. There were also some plants native to the Americas but considered exotic in the Gila Region: pigweed, horseweed, purslane and the seemingly ubiquitous gallant soldier (Galinsoga parviflora). The highly invasive species of African lovegrasses, infamous for wreaking havoc by carrying fire in the non-fire-adapted Sonoran Desert, were mostly absent from the wilderness. Only a small population of weeping lovegrass (Eragrostis curvula) was found; however, large populations flourish just outside the wilderness boundary.

The course of our work took us through both the main thoroughfares and the seldom-seen backcountry of the Black Range: the west-slope creeks of Diamond, South Diamond and its upper tributaries, Black Canyon and the Mimbres River; the east-slope creeks—Morgan, North Seco, Marshall, Spud Patch, Cave, Circle Seven, North Fork Palomas and the upper parts of Water and Pretty Canyon; and the mesas and ridges that form their divides, including the Continental Divide.

The shade and moisture of the canyon bottoms support the highest number and diversity of exotic species, with Black Canyon and Diamond Creek at the top of the list. The drier uplands—the slopes, mesas and ridges—support less, with large areas that seem relatively pristine. Many of the exotics have naturalized, with seemingly little impact. By some measures, some may even be considered beneficial. Other exotic species may become problematic if they are able to extend their distribution through natural (but human-enhanced) disturbances like flash floods, prolonged drought and catastrophic fire. Given that we found none of the notoriously aggressive exotics, those game changers that are the bane of southwestern streams and wetlands—e.g., tamarisk and purple loosestrife—the ALW native flora appears to be relatively intact. But vigilance is in order.

I would like to extend my gratitude to UGWA and all who participated in bringing this project to fruition. It was a meaningful and educational experience that hopefully sheds some light on the status of introduced plant species in the ALW. I think Aldo would approve. And more studies are needed!
I have always been humbled when, as I’m hiking, I unexpectedly come upon an owl and find myself staring into the depths of its intense eyes. It’s an exceptional experience to observe an owl or other raptor up close and personal.

The Upper Gila Watershed Alliance sponsored two raptor-education events in Silver City this past winter. Hawks Aloft, a non-profit organization based in Albuquerque, secured a grant from PNM to offer raptor-education programs in the Silver City School District. UGWA took advantage of Hawks Aloft’s presence in the area to sponsor a program at the Silver City Library. This program drew over 75 attendees; only fire-code regulations prevented a larger audience. Hawks Aloft has an assortment of live birds they use for educational purposes. All of these birds have permanent injuries that prevent them from being released into the wild. They are cared for by Hawks Aloft volunteers in Albuquerque, who house them in large, covered enclosures in their backyards.

Species that were brought to Silver City included Prairie Falcon, American Kestrel, Merlin, Red-tailed Hawk, Long-eared Owl, Western Screech Owl and my favorite, Barn Owl. Children can ask such extraordinary questions. Two of my favorite questions came from kindergarten students in response to a Barn Owl. One little girl asked, “Do they eat roses?” And another child asked, “Do they eat sharks?” Needless to say, we set them straight.

UGWA sponsored another program at the Gila Community Center. This program brought in a diverse group of folks of all ages, who enjoyed the program so much they almost held the Hawks Aloft presenters hostage!

UGWA is grateful to be a partner in bringing intriguing, educational programs to our community.
New Mexico had plenty of time to develop a water-use plan for the 14,000 acre-feet of Gila River water awarded by the Arizona Water Settlements Act. Despite the 10-year lead time, the NM Interstate Stream Commission raced to finalize and sign the NM Unit Agreement at the 11th hour, literally days before it was due in Washington, DC. The Unit Agreement recommended a controversial water-diversion mega-project that is estimated to cost up to 10 times the available funds and was still insufficiently detailed for anyone to know which of five or more alternatives were actually being proposed. Nevertheless, Sally Jewell, Secretary of the Interior, gave NM the benefit of the doubt and approved us to continue developing our plan. Now, six months more into the two years until environmental and archeological assessments are due, the NM people in charge say they’re “just starting to look at this” (Antony Gutierrez, Director, NM Central Arizona Project Entity). Since I’m against the mega-project, this delay, born of a desire to avoid public input and sheer incompetence, is welcome—but dispiriting. Come on, guys, we got to the moon in 10 years!


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**What a Difference a Year Makes . . . If You Know What You’re Doing**

by Merritt Helfferich

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**NASA**

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<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1961</td>
<td>President John F. Kennedy commits to landing a man on the moon and returning him safely to earth.</td>
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<tr>
<td>1962</td>
<td>John Glenn circles the Earth, making three orbits in his spacecraft.</td>
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<td>1963</td>
<td>The manned Project Mercury flight circles the Earth 22 times.</td>
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<tr>
<td>1964</td>
<td>The United States places the first Apollo Command Module (CM) in orbit.</td>
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<tr>
<td>1966</td>
<td>American astronauts Neil A. Armstrong and David Scott perform the first orbital docking to a target vehicle.</td>
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<tr>
<td>1968</td>
<td>The first piloted flight of the Apollo spacecraft, Apollo 7, and Saturn IB launch vehicle.</td>
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**Interstate Stream Commission**

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<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
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<td>2005</td>
<td>NM Interstate Stream Commission accepts the Southwest NM Regional Water Plan.</td>
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<tr>
<td>2006</td>
<td>Nothing happens.</td>
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<tr>
<td>2007</td>
<td>No developments.</td>
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<tr>
<td>2008</td>
<td>No news.</td>
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<tr>
<td>2009</td>
<td>Nope.</td>
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<tr>
<td>2010</td>
<td>Nothing.</td>
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<tr>
<td>2011</td>
<td>No progress.</td>
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<tr>
<td>2012</td>
<td>Nada.</td>
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<tr>
<td>2013</td>
<td>Nothing still happening.</td>
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<tr>
<td>2014</td>
<td>Mission not accomplished.</td>
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<tr>
<td>2015</td>
<td>Vague proposal for pursuing one among several undeveloped projects (not clear which one).</td>
</tr>
<tr>
<td>2016</td>
<td>The NM Central Arizona Project (CAP) Entity says it’s “just beginning to look at this.”</td>
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The 12th Annual Gila River Festival takes place September 22–25. This year’s theme, “Honoring Our Heritage: The Natural and Cultural History of the Gila,” honors the centennial of the National Park system. The national parks, as well as other public lands, are refugia of both nature and culture; festival events will honor this protective force.

Since the painter George Catlin proposed the idea of a “nation’s park” in 1832 in response to western expansion and the loss of wild places and their indigenous peoples, the national parks have evolved along with a uniquely American land ethic. Kim Heacox explained in his book *The Making of the National Parks*:

> Only by vanquishing wild places did we begin to awaken to what they offered us. Only when we came to bury them did we listen to what they had to say. Now we realize that national parks are important remnants of an America that used to be. They represent not just beauty, but memory, our oldest home, a kinship with the Earth that nurtured us and every other living thing down through the ages. They made us what we are. Lose them and we lose an important part of ourselves.

The Gila region is a beneficiary of this preservation movement in American history. Southwest New Mexico has the nation’s first wilderness area, the Gila Wilderness, established in 1924. The Gila Cliff Dwellings National Monument, part of the National Park Service, was created in 1907 to protect Mogollon-culture cliff dwellings in the Gila National Forest.

Gila River Festival keynote speaker Audrey Peterman is the author of *Legacy on the Land: A Black Couple Discovers Our National Inheritance and Tells Why Every American Should Care* and *Our True Nature: Finding a Zest for Life in the National Park System*. She will speak about the philosophy behind and the need for preservation of public lands. Peterman will also highlight the contributions of the unsung heroes of the conservation movement: women and people of color.

During his third appearance at the festival, activist and author Dave Foreman will share his extensive knowledge of the Gila’s conservation history, and speak about its unique ecology and the importance of continuing to protect it, especially in the face of recent threats to public lands.

At a Saturday night street party, Hakim Bellamy, the inaugural poet laureate of Albuquerque, will perform his spoken word piece, “Everywhere Is a Gila,” accompanied by musician Colin Diles Hazelbaker. Last year, these two collaborated on a video of the same title, which went viral, generating thousands of views. Local spoken word performers will join Bellamy at an outdoor film projection/spoken word event. Also at this event, artist and filmmaker Peter Bill will project films, images, and animations on the Murray Hotel.


Phil Connors, renowned author of *Fire Season: Field Notes from a Wilderness Outlook*, will survey the importance of the Gila as both symbol and tangible enactment of the conservation impulse. His talk will also scan the future for a glimpse of how the “world’s first wilderness” will continue to accrue and evolve meaning in a changing climate on a crowded planet.

Cynthia Bettison, archaeologist and director of Western New Mexico University’s museum, will speak about the people who formerly populated the Gila region, what we know of them, how they lived, and why they left. She’ll also speak about how the National Historic Preservation Act, 50 years old this year, has been instrumental in the preservation of our cultural history.

Alex Mares, an archaeologist of Diné ancestry, and a very popular Gila River Festival field trip leader, will again lead a hike to a petroglyph site. There will be several other expert-led field trips, such as birding, native plants, and more.

Look for more information about the Gila River Festival in early June, at gilaconservation.org.
The Gila River debris clean-up effort after the flood of September 2013 has been continuing for some time now. Rafts and horses carried thousands of pounds of man-made debris out of the river over the past couple of years. Items such as a water heater, insulation, wire, a refrigerator, roofing and entire sides of cabins have been removed.

However, debris still remains at random points below the Grapevine Campground area. Fortunately, a federal Secure Rural Schools grant awarded funds for UGWA to continue this noble work. Several trips are planned this summer when the water level is low to pack out trash on horses or mules. The work is time consuming, grueling and very rewarding. We strive on for a clean river!
On Accepting the John Burroughs Award

by Sharman Apt Russell

Editor's Note: This spring, longtime UGWA board member Sharman Apt Russell won the coveted John Burroughs Award for nature writing for her 2014 book Diary of a Citizen Scientist: Chasing Tiger Beetles and Other New Ways of Engaging the World. She joins an illustrious group of writers: Aldo Leopold, Rachel Carson, Joseph Wood Krutch, Loren Eiseley, Ellen Meloy, Peter Matthiessen, Barry Lopez, and Ann Zwinger, to name just a few. What follows is Sharman's acceptance speech, delivered April 4 at the Yale Club in New York City.

Thank you so much. Like some of you in this room, I am one of those people who started writing and wanted to be a writer when I was eight years old. Later, I realized that I also had to make a living, and so I became a teacher of writing and writing skills—and I have been doing that ever since. And I often tell my students that they should avoid the adjective “indecipherable” or phrases like “words fail me.” Go ahead and try to describe it, I say kindly, secretly rolling my eyes. Find the words, I say. That’s why you are a writer. To describe things.

But here, this afternoon, words do fail me. I am so pleased and honored to receive this award and to be associated with these great nature writers, to be part of this long and important cultural conversation—so much so that words fail me. I am speechless. I can say to my students now: I feel your pain! This moment, here, today, is indescribable.

I quote John Burroughs twice in Diary of a Citizen Scientist. And I would like to read those brief quotes now. The first is at the end of this paragraph and contains, in many ways, the impetus to writing this book:

I have always wanted to be a field biologist. I imagine Zen-like moments watching a leaf, hours and days that pass like a dream, sun-kissed, plant-besotted. I imagine, like so many others before me, a kind of rapture in nature and loss of ego. John Burroughs, an early American naturalist, wrote that he went to the woods “to be soothed and healed, and to have my senses put in tune.” In my own walks through the rural West, this echoes my experience exactly. I enlarge in nature. I calm down. The beauty of the world is a tangible solace—that such harmony exists, such elegance, the changing colors of sky, the lift and roll of land, a riverbank, and now a tiger beetle flashing in the sun, an entrance into its perfect world. I am soothed, I am thrilled, and at the same time, eventually I get bored. Eventually I go home because my work (my writing, my students, my laundry) is elsewhere. But what if that employment, my engagement with the world, was right there, in the largeness and calm of nature itself? “Blessed is the man,” Burroughs continued, “who has some congenial occupation in which he can put his whole heart, and which affords a complete outlet to all the forces there are in him.”

I think this is one of the great gifts of citizen science, giving people a new congenial occupation into which they can put their whole heart. At the same time—and this is a well-studied and proven aspect of happiness—citizen scientists become part of something larger than themselves. They become part of some larger effort to better understand the natural world, and often they become part of some larger effort to preserve and protect the natural world from the impact of so many humans now living on this Earth. They become citizens not of a country, but of a community, of a place, of the world. And we do this, we become this, no matter our age or our education or our economic class or our social status. And this, for me, is another admirable, wonderful aspect of citizen science—this is what drew me to this subject—its inherent democracy. Its potential for diversity. Because citizen science is all about leaping over boundaries. It’s about being inclusive. It’s about a discovery and an engagement that is available to everyone.

And while citizen science is about bringing the discoveries and engagement, the power and gifts of science to citizens, it is also about bringing the discoveries and engagements, the power and gifts of citizens to science. And I don’t mean just our research or the data gotten from crowdsourcing—although that is
valuable. As citizens, we also bring other things to the table that scientists can’t or don’t. We bring, for example, our expectations that our data and our research are important and that they will be used and considered in social and public policy. We dare as well to bring our emotions—our feelings. We bring our love of tiger beetles and salamanders and bears, and we bring our love for the human world, too, for our children and for their children. We bring our fears. We bring our sense of wonder. We bring our religious beliefs, our deepest relationship to existence and the mysteries of existence. Citizen science is a way to deepen the world of science and to expand the role of science in our decisions and in our society.

The second quote by John Burroughs is from near the end of the book and speaks again, quite clearly, to this and to what I was hoping to attain in my year-long pursuit as a citizen scientist of the Western red-bellied tiger beetle. This is from *The Gospel of Nature*:

To enjoy understandingly, that, I fancy, is the great thing to be desired. When I see the large ichneumon fly, *Thalessa*, making a loop over her back with her long ovipositor and drilling a hole in the trunk of a tree, I do not fully appreciate the spectacle till I know she is feeling for the burrow of a tree-borer, *Tremex*, upon the larvae of which her own young feed. . . .

The nature-lover is not looking for mere facts, but for meanings, for something he can translate into the terms of his own life. He wants facts, but significant facts—luminous facts that throw light upon the ways of animate and inanimate nature.

Luminous facts. That is a wonderfully cogent description for something I have always been seeking in my personal life and in my life as a science and nature writer. Luminous facts that throw light on our lives.

Sometimes those facts have a kind of spiritual radiance. The fact that plants convert sunlight to energy and we convert plants and the animals that eat plants to everything in this room, to this extraordinary city outside this room, to our own thoughts, to art and history and love . . . everything here made of sunlight. I believe that the fact of photosynthesis is something we could talk about in church as easily as in school.

Sometimes the facts are bright and jazzy—butterflies taste with their feet, tiger beetles have ears on their stomachs. This arty, Picasso, surreal world. And, of course, I am someone particularly seduced by that kind of flashiness. I am like a raven looking for facts that sparkle, facts that make me laugh, facts that make me happy, facts that I want to take home and use to adorn my nest and my sense of the world.

Sometimes the facts throw off a light that is harsh and incandescent—facts about climate change, facts about chemistry and breast cancer, facts about our own deaths.

Luminous facts that remind me that I live in a luminous world. That’s really what I think science is all about, what citizen science is all about, the discovery and the celebration that we live in a luminous world. Coming to all this as an environmentalist, I also want to emphasize that this celebration, for me, doesn’t preclude feelings of grief or anger or fear or remorse. This celebration doesn’t preclude environmental activism or social engagement or political struggle. I believe that all our complex feelings and our complex relationships with each other and with other species are all part of that luminosity.

I’d like to end on a recent conversation I had with a friend named Mike Fugagli, a good nature writer in his own right:

“Once,” my friend said, “I believed the Earth was my mother.”

Yes, I thought, I remember that. Earth Day. The 1960s! We are shaped in our mother’s womb. We drink from her. We eat from her. Every day she nurtures us with so many gifts. She loves us. She loves me.

Then, later in his life, my friend replaced the image of the mother with that of the lover—what he called “matedness.” Yes, I nodded. We have covered the Earth. It would be too easy now to joke about infidelity, estrangement, divorce. Instead I give the metaphor its due: we are the bride of the world, and we are the groom. Our human consciousness, interpenetrated, mated with the Earth.

Next my friend said, “And now I think of the future as our child.”

And this caught at my heart. This made me feel something new. The future is our child.
Thank You!

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UGWA Membership Application

Your membership and additional financial support sustain UGWA and are critical to the organization’s ongoing health. Share in the protection and conservation of our watershed and become an UGWA member today.

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Membership Categories—Annual Dues:

- Chiricahua Leopard Frog $ 1,020
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Make your check payable to UGWA and send to PO Box 383, Gila NM 88038

I don’t wish to join at this time, but please notify me of upcoming events:

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UGWA’s Statement of Philosophy

The members of the UGWA recognize a vital and necessary connection between our individual and collective rights and responsibilities as landowners and community members and the long-term stewardship of the Upper Gila River Valley and Watershed.

The members of the UGWA share a love and concern for our community which is an integral part of our lives and, therefore, seek to harmonize our presence and activities within the watershed for the health and integrity of the entire “community,” which includes the soil, the air, the water, the people, the plants, and animals.

The members of the UGWA share the conviction that men and women work best together in a spirit of cooperation, conflict resolution, and consensual agreement that builds upon a common ground that benefits from the views and concerns of each individual acting as uncoerced free agents.

To realize our vision for the common benefit of the entire community served by the Upper Gila Watershed, and for the sake of future generations, the UGWA seeks ways and means to bring people and organizations together in constructive dialogue and activities aimed at clear communication, education, land restoration, research, and local economic health.

UGWA Meeting Schedule
Monthly board meetings are usually the second Monday of the month, from 9–11 a.m. All are welcome to attend.
For meeting location, please e-mail director@ugwa.org or call 575-590-5698.