

Mountain Lines

MAGAZINE OF THE MCDOWELL SONORAN CONSERVANCY

Winter 2019



Time to Saddle Up!
Horse trails aren't all equal

The Ringtail Trail
This loop is worth a visit

Animals on Creosotes
Discover the world of galls



McDowell Sonoran
Conservancy



Justin Owen

Winter in the traditional meaning is a bit of a paradox here in the Valley of the Sun. But the days do get shorter, it does cool down, and we feel the collective joy of holidays and celebrations leading up to the festivities of welcoming a new year full of hope and possibility.

For me, this winter is particularly comforting, because it represents a personal milestone: the end of my first year as your executive director, and my first

opportunity to look ahead into a new year as a part of this amazing organization.

Over the past 12 months, the McDowell Sonoran Conservancy has become my home, and I owe that to all of you who have welcomed me so warmly into this incredible family. The Conservancy is truly a community within a community—not just geographically, but even more so on the human level.

I am very proud of what we have been able to accomplish together this past year. From expanding our science and education programs to welcoming the generous support of the Parsons Foundation, and from adding new members to our professional leadership team to continuing to grow our incredible family of stewards and board members. It has truly been remarkable.

I thank you for a wonderful first year and look forward to seeing you as we leave 2018 to the horizon and welcome the desert sunrise of a new year. Wishing you and yours a warm and comforting winter and all the best in the year to come. ▲▲

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The Preserve, especially the northern region, is a popular place for equestrians to get some exercise and have fun. The large variety of trails there provide multiple choices that are suitable for all levels of riding. Photo by Sue McLain

About Us

The McDowell Sonoran Conservancy champions the sustainability of the McDowell Sonoran Preserve for the benefit of this and future generations. As stewards, we connect the community to the Preserve through education, research, advocacy, partnerships and safe, respectful access.



Cover photo: These standing slabs of foliated metarhyolite formed over one billion years ago when the rocks were in a malleable state. This view looks toward the northeast from Lost Dog Overview. Ringtail Trail takes you alongside and over more foliated rock in this area. Photo by Richard Buchbinder

Table of Contents

On the Back of a Horse 3

Don't Be One of "Them"!..... 5

ROSS Restoration Efforts Get Started..... 8

Sharing our Knowledge and Practices..... 10

I Naturalist, You Naturalist..... 12

A Great Hike: Ringtail Trail..... 14

Journeys into the Past 18

Exploring Creosote Bush and Its Many Galls 20

Festival Provides Kids with Fun-filled Desert Learning Opportunities..... 24

On the Back of a Horse

By Sue McLain, McDowell Sonoran Conservancy steward

Horses—Our Heritage

Imagine a world where the power of your feet is the only method of travel. With that thought in mind, it's easy to appreciate how the horse opened up vast expanses, allowing people to travel further and faster. The vestige of this history and the chronicle of these lands provide the bond between trail and rider.

E.O. Brown and his wife, Mary Jane Coldwell Brown, established Brown's Ranch in the early 1900's. They shipped

their first load of cattle in 1910. The ranch eventually become an important cornerstone of Scottsdale's McDowell Sonoran Preserve. Horses provided a means for moving cattle to grazing lands and market. The cowhand's horse was his closest ally and cowboys likely influenced today's recreational trail rider.

The human-horse connection also impacts nonriders. My horse is regularly photographed and petted by adult and child alike when we ride in the Preserve. He represents a living icon to them,

signifying an attachment to the history of the Preserve.

Trail Etiquette and Safety

Interacting with a horse is very different than interacting with a dog. Horses are prey animals and their survival has always depended on a good flight response. Their natural tendency is to assume something unfamiliar is targeting them to be tonight's dinner—a difficult concept for people to grasp



Exploring the Preserve on horseback enables riders to find beautiful spots that would be difficult to reach when hiking. Photo by Dennis Eckel

when encountering such a huge, powerful creature! The horse's sense of security comes from being part of a herd and taking subtle direction from others. As such, a competent, trusted rider is key to convincing the horse a perceived predator—horse-eating bicycle, backpack, or umbrella—is not a threat.

Trail etiquette obliges hikers and cyclists to yield to horses. A runner may need to slow his pace, or a cyclist may need to stop, giving the equestrian time to guide the horse to an area for safe passing. But yielding doesn't mean that others should not be allowed to pass a horse. The goal is to make the act of passing safe for all. Additional details on sharing trails with equines can be found at <http://bit.ly/equestrianAZ>

Like other trail users, a first aid kit for human and horse is a must and is easily carried in a saddle bag. A critical tool to have is the cactus remover—a comb. It removes cholla segments and other prickly objects attached to horse, dog, or human.

Exploring the Northern Region

A trip in the Preserve with a horse can be as diverse as one pleases. Equestrians should consider not only their own skill and fitness levels, but also those of the horse when choosing which trails and routes to take. With trail entrances along the eastern boundary, and equestrian staging areas at Brown's Ranch, Granite Mountain, and Fraesfield Trailheads, riders have numerous options for length, elevation, footing, and scenery. Keep in mind that water for horses is available only at Brown's Ranch Trailhead.

Trails around various mountains offer expansive vistas and tougher elevation gains, but narrower rocky trails, closer proximity to cactus, tighter corners, and less line-of-sight to other trail users. Trails such as Cone Mountain, Upper Ranch, Brown's Mountain, Cholla Mountain Loop, Granite Mountain Loop, portions of Whiskey Bottle,

Coyote, and Branding Iron Trails, fit this bill, but may not be good choices for a young or inexperienced horse.

Several Preserve trails are abandoned dirt roads or sand washes with significantly less change in elevation. They offer a wider trail and more direct line-of-sight to approaching trail users. These trails, such as Black Hill, Dixileta, Yucca, portions of Corral, and Old Camp, are better for exposing a young or inexperienced horse to trail riding as they have softer footing. Be aware that the deep sand washes on Dove Valley and Old Paint Wash Trails can be taxing on a horse's ligaments and tendons. Route planning should take into consideration the fitness level and abilities of both horse and rider.

With hundreds of miles of trail in the Preserve, and most open to equestrians, an abundance of adventure awaits. So, giddyap! ▲▲



The Preserve draws trail riders who enjoy the comradery of riding with friends. With plenty of miles of trail, crowding is not a problem. Photo by Dennis Eckel

Don't Be One of "Them"!

By Art Ranz,
McDowell Sonoran Conservancy lead steward



Rescue crews come to the aid of someone in an emergency. In this case it was fortunate that the injured party was with companions who were able to call 911 for help and provide appropriate location information where help was needed. Photo by Dennis Eckel

Getting a free ride out of Scottsdale's McDowell Sonoran Preserve may sound like a good idea, and the Scottsdale firemen are a very nice bunch, but it's really not all that much fun. You don't need Navy Seal survival training to stay safe. Being prepared is probably the best way to avoid needing to call 911 while hiking.

For safety and enjoyment on the trail, these are essentials that you should bring on every hike, with a few more specific to the desert environment:

Appropriate Footwear. The old saying in the Grand Canyon is that your hike out is almost over when you see flip-flops and high heel shoes on the people coming down! Closed toe shoes are a bare minimum, but a sturdy hiking or trail running shoe is suggested.

Map and Compass. Using the



Hiking is always more fun and much safer with the proper equipment and preparation. Photo by Dennis Eckel

phone application *Maprika* is an excellent way to navigate the Preserve. It provides the exact Preserve maps and a little blue dot that tells you exactly where you are. A paper map is still a must. Get one at the trailhead.

Water. Bring lots of water! A liter per hour is not too much in the warmer weather in Scottsdale. If you get delayed or injured, you will need more. Bring it in more than one container in case one leaks.

Extra Food. A salty snack is great to replace some electrolytes that have been lost from perspiration. Leave the gooey chocolates at home, and bring some nuts, fruits, and complex carbohydrates. Protein is less important on shorter day hikes.

Safety Items. A phone with a full charge is the number one safety item these days. It can dial 911, be a



Being prepared and starting out with the proper equipment will make your day more enjoyable and safe. Photo by Dennis Eckel

flashlight, tell your GPS location, be a moving map, and even identify an odd plant. A small multi-tool with a knife and other little tools come in handy for fixing hiking poles and packs. Hiking poles are very helpful in preventing injuries, especially on some of the steeper trails in the Preserve. Leave the Bowie knife at home; fighting off snakes and wild animals is unlikely!

First Aid Kit. In the desert, tweezers and a hair comb are vital for getting out the cactus balls and thorns. A few bandages are nice, and I love self-adherent gauze wraps. Most cuts and thorn injuries are better treated at home where there is plenty of water and soap to clean them. There is no rush for definitive wound care in the Preserve.

Sun Protection and Clothing. A good hat every day keeps the dermatologist

away! The sun is intense in Arizona. Hats keep you cool, too. Sunglasses are a must. Sunscreen protects the skin from both short-term and long-term damage. Loose fitting, long sleeve shirts, and long pants are even better than sunscreen. It can get cold in the winter, and rain during 40 degree temperatures can be deadly. A light jacket can literally be a lifesaver in the cooler months.

Trash Bag. Even things you think are biodegradable are not appropriate to leave in the desert. The dryness prevents decomposition. Don't leave orange peels or dog poop. Pack everything out!

911. If in doubt, call 911. Do it even just to get advice. The rescue crews train rigorously to be ready to help people and they enjoy doing their job. Use them. Giving 911 the address of the nearest trailhead found on your Preserve map is

the best way to get 911 to understand in which Preserve you are located within the Valley. This is one of the reasons you picked up that map at the trailhead!

Cameras, binoculars, bird books, and plant books all make the hike more interesting. Stay on the trails where you can see and avoid the snakes, and avoid damaging the desert. Go out, have fun, and do just a little preparation to make your day more enjoyable! ▲▲



If you ever are unfortunate enough to get entangled with a cactus, it's good to have a comb and a friend with you. Photo by Chris Rutz



In the desert, a comb is useful for more than untangling windblown hair. It is a tool for removing cactus balls from humans, dogs, and horses unlucky enough to have a close encounter with a spiny tagalong. Pick combs work very well. Photo by Marianne Skov Jensen



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ROSS Restoration Efforts Get Started

By Debbie Langenfeld,
McDowell Sonoran Conservancy lead steward

The Parsons Field Institute at the McDowell Sonoran Conservancy has been an active member of the Central Arizona Conservation Alliance (CAZCA) since its inception in 2012. The alliance includes more than 60 organizations with a goal of conserving, restoring, and raising awareness for open space in central Arizona. Since 2015, the Parsons Field Institute has contributed as a member of the steering committee to begin the process of developing a Regional Open Space Strategy (ROSS). The ROSS centers around four of the region's biggest land conservation challenges:

- Protect and Connect,
- Sustain and Restore,
- Love and Support, and
- Coordinate and Elevate.

Throughout the process of developing the ROSS, Dr. Helen Rowe, Parsons Field Institute director, provided leadership for the goal group focused on restoration and invasive species, Sustain and Restore. Now that the ROSS has been completed, one of the first offerings in the implementation phase is new learning labs. Dr. Rowe is leading the CAZCA Restoration Lab @ the Conservancy. Dr. Rowe explained that the goal of the lab is to “foster collective learning and resource sharing on Sonoran Desert restoration.” The lab will feature four events through the fall of 2018 and spring of 2019, including field trips and workshops that showcase the spectrum of restoration practices from beginning stages to completion, plus speakers on related subjects.

The first in the series of four restoration labs was held in October at Lake Pleasant Regional Park, a major outdoor recreation hub for the north-west Phoenix metropolitan area that is visited by hundreds of thousands of people per year. Its mountainous desert landscape and beautiful lake provide opportunities for recreational activities including boating, mountain biking, camping, and hiking. The combination of a high volume of visitors, multiple use access, and varying perceptions of how land should be used has generated challenges for the park's management team. How do they provide a great user experience while also preserving the biodiversity of the park?

The lab's field trip focused on discussing visitor management tactics and

exploring various restoration treatments during a tour of disturbed sites. Jennifer Waller, the park's operation manager, presented a number of issues occurring

in the park, including illegal routes or roads being made, destruction of vegetation and wildlife habitat, cutting of trees, camping outside of designated areas, illegal dumping, and overuse of recreation, all of which are expanding park destruction, especially in the area north of Lake Pleasant. Participants saw firsthand the destruction created by unauthorized vehicular off-road usage, even though signage clearly states no off-road travel. Waller indicated that Maricopa County is seeking creative ways to mitigate these activities by applying barriers, fencing, and signs; revegetating damaged areas; and providing public education.

Following the field trip, Taylor Riske, Arizona State University master's degree student and City of Phoenix South Mountain Park and Preserve ranger, gave a presentation on his graduate thesis that focuses on trail management practices for social trails—unofficial trails created by hikers

deviating from official trails. Riske researched several techniques to determine the most effective deterrent to discourage visitors from using a social trail. He disguised the trail by adding vegetation and rocks, and installed signs with educational and reasoning messages created to reach the visitor on an emotional level. His thesis abstract reveals that “both treatments reduced observed off-trail hiking from 75.4 percent to zero percent, though traces of footsteps and attempts to reopen the trail revealed the existence of unobserved, entrenched users.

A website clearinghouse created to post information presented in the series, including Riske's presentation, can be accessed at <http://mymountainparks.org/research/learning-labs/>. A website forum will also be created to share information essential to this series, such as identifying and filling information gaps for best practice restoration management. ▲▲



Participants in the workshop at Lake Pleasant Regional Park listen to a description of the deterrents the Lake Pleasant Park operations department is using to discourage unauthorized off-road vehicle use. Photo by Debbie Langenfeld



An aerial photo gives an overview of the damage caused by unauthorized off-road vehicles at Lake Pleasant Regional Park. Photo by Debbie Langenfeld



A ground photo at Lake Pleasant Regional Park shows a close up of the damage some drivers of off-road vehicles cause to the desert. Photo by Debbie Langenfeld



Signs forbidding unauthorized off-road vehicle use are posted at Lake Pleasant Regional Park. Photo by Debbie Langenfeld



The buffelgrass study contains 32 study plots, each 25 square meters. Botanists identify the amount of cover and species of plants within the plots. The white squares are PVC pipes used to mark the edges of the plots. Photo by Debbie Langenfeld

Sharing our Knowledge and Practices

By Paul Staker,
McDowell Conservancy master steward

One of the major strategic initiatives of the Parsons Field Institute at McDowell Sonoran Conservancy involves developing and implementing a plan aimed at the removal of invasive, nonnative plants, particularly fountain grass (*Pennisetum setaceum*) and buffelgrass (*Pennisetum ciliare*), in Scottsdale's McDowell Sonoran Preserve. Actions include mapping

their distribution in the Preserve, executing experiments to determine best removal techniques, and actual removals. So far, we have mapped approximately 30 percent of the acreage in the Preserve to pinpoint locations of the grasses, and we continue with this effort. In 2018, we began field studies aimed at determining the relative efficiency,

effectiveness, cost, and impact to the native plant community of various treatments for eliminating these grasses. Finally, we initiated a removal and follow-up monitoring effort to begin the process of eliminating some of the grass populations. Conservancy stewards from the Citizen Science and Construction and Maintenance programs have been key contributors

to these research and management activities.

Another key strategic focus of the Conservancy is to spread our knowledge to help land management agencies and other conservation focused nonprofit organizations in the region. Using the expertise we acquired in our work with the nonnative grasses in the Preserve, the Parsons Field Institute recently secured a two-year grant from the Arizona Department of Forestry and Fire Management (ADFFM) to work with two neighboring organizations. These are McDowell Mountain Regional Park and Friends of Tonto National Forest. The Central Arizona Conservation Alliance (CAZCA) also contributed to this work as part of the initial implementation of the Regional Open Space Strategy (ROSS) for Maricopa County. The Parsons Field Institute has been a significant participant in CAZCA as a member of the steering committee and lead for the group that developed the invasive species management section. The ROSS¹ is a first iteration road map



Nonnative plants, such as fountain grass, are a fire hazard. After a fire, they germinate more quickly than native species, crowding out the native species and using scarce resources. Photo by Paul Staker



Fountain grass is often intentionally planted in landscaped areas. But its airborne seeds are easily distributed into natural desert spaces. There, the grass becomes a threat to native plants and animals, and to the people in neighboring communities due to increased wildfire risk. Photo by Paul Staker

and action agenda for regional open space conservation.

This effort will build on our capabilities in both scientific management and in the utilization of volunteers. Regional Park management is interested in mobilizing volunteers to expand the amount of work beyond what can be accomplished by their paid staff. Thus, the Parsons Field Institute has begun to share our model for mobilizing and training volunteers as well as the protocols to identify, map, remove, and monitor invasive plants. Training will include a leadership workshop, plant identification and mapping classes, and field training during actual mapping and removal projects.

An integrated approach of removal practices appropriate for the species and season will be used, including pulling, cutting and herbicide treatment, and herbicide only treatment. All populations will be mapped using Global Positioning System (GPS) technology, and each site will be visited annually to monitor and

perform follow-up treatment.

Another component of the ADFFM grant will be to work with the Scottsdale Community College Center for Native and Urban Wildlife (CNUW) to develop outreach materials to educate Preserve users and local homeowner associations about the problems associated with nonnative grasses. In addition, a program is being developed to encourage these groups to replace fountain grass plants in landscaping with native plants grown for this purpose at the Community College.

Together with our partners, we hope to be able to effectively control these harmful invasive species throughout the region. We believe that this pilot initiative will lead to even greater opportunities to expand the impact of our work by partnering with other similar organizations in the region through CAZCA. If you are interested in helping with any of these efforts, please let us know! Contact Paul Staker at paul@mcdowellsonoran.org.

1. You can read more about ROSS on page 8 in this publication. ▲▲



The germination of the nonnative plant, buffelgrass, requires very little water. But after its emergence, it hogs water and light resources, quickly displacing native species. Photo by Paul Staker

iNaturalist, You Naturalist

By Tiffany Sprague,
McDowell Sonoran Conservancy Parsons Field Institute manager



The Sonoran Desert tortoise (*Gopherus morafkai*) might empty its bladder if handled or disturbed. This sudden dehydration may endanger its life, so please do not disturb wildlife. Photo by Marianne Skov Jensen

We've all been there, enjoying a gorgeous day in nature with stunning scenery, beautiful weather, and relaxing sounds. Then something catches your eye and makes you stop to wonder. Perhaps it's a butterfly that lands on a flower or a lizard that crosses your path. You snap a few photographs of it, but your mind has been dragged away from the surrounding beauty as you puzzle about that plant or creature. What is it? Who can you ask to identify it? Shouldn't there be an app for that?

Allow me to introduce you to *iNaturalist*, a community for naturalists that allows you to deepen your connection with nature. *iNaturalist* enables everyone, even those with only a minute connection with nature, to identify plants and animals

iNaturalist



The lichen (*Caloplaca microphyllina*) growing on this dead tree trunk in the Preserve turns the tree into a work of art. Photo by Marianne Skov Jensen

while sharing observations with the world. With a couple of quick clicks, we can all be instant naturalists!

iNaturalist began in 2008 as a master's degree project of students at the University of California, Berkeley. The project is now a joint initiative between the National Geographic Society and the California Academy of Sciences. From its modest beginning, *iNaturalist* has now acquired a community of more than 750,000 people, including scientists, naturalists, students, and members of the general public.

So, what does it do? Oh, it does so much! Remember the photograph you took of the butterfly, lizard, plant, or some other living thing? All you



The hairs on the back of the desert blond tarantula (*Aphonopelma chalcodes*) can be released to cause irritation to the nose and eyes of an attacker. Photo by Linda Kalbach

need to do is load that image into *iNaturalist* using your mobile device or computer. Not only will you have a permanent reference as to when and where you saw that species, but you will also receive help identifying it and contribute to scientific research.

The first step is to set up an account at www.iNaturalist.org or with their mobile app. Then make an observation by uploading your photograph, recording the location, and making a guess about what you saw. (The location is automatically filled in if the photograph was taken with your phone or a geolocation-enabled camera.) Try to be as specific as possible with your guess, but it's fine to state "butterfly" or even "unknown." Then let that community of naturalists work its magic.

One of the most useful aspects of *iNaturalist* is the ability to get help on



The iridescent blue on the male pipevine swallowtail (*Battus philenor*) is believed to be used by males to attract females for mating. Photo by Linda Kalbach



The small red gland spurge (*Chamaesyce melanadenia*) grows in mounds in the rocky soil of the Preserve. Photo by Steve Jones

species identification. Even if you don't know what you saw, other users can suggest identifications. Typically, this happens within days. If you don't want to wait that long, *iNaturalist* recently implemented an algorithm that suggests an identification from your photograph. Oftentimes, it's correct or can at least get you close, but be careful. I once had it suggest that a flower was a sea slug. However wrong that initial identification might be, the amazing *iNaturalist* users will help set the record straight. You can even upload photographs from years ago, but be sure to enter the correct date and location of the observation.

My favorite aspect of *iNaturalist* is its use in science. Millions of observations have been made across the planet, and those observations can be used to better understand our world and to answer research questions. We can discover what species occur in an area, get information about the distribution of a particular species, and much more. Anyone can contribute to this important data set.

Here in Scottsdale's McDowell Sonoran Preserve, we are encouraging our stewards and the public to contribute to our data set. Imagine how much we could learn if even a tenth of Preserve users uploaded an



Purple owl's clover (*Castilleja exserta*) steals some of its nutrients directly from other plants. Photo by Steve Jones

observation! These data could add to our existing studies about the Preserve, help us monitor changes over time, and contribute to a better understanding of the resources we are all working to protect. Plus, Preserve users can deepen their connection to this amazing place.



This is one instance of a white lined sphinx moth (*Hyles lineata*) caterpillar. Coloration varies in the caterpillars of this species, although the adult moths have consistent coloration. Photo by Paul Staker

Try it out. Download *iNaturalist* today! It's self-explanatory, and plenty of resources are available to help you learn more. You can contact me with questions at tiffany@mcdowell-sonoran.org. And thank you!

Enjoy the photographs with this article. They were all taken in the Preserve and downloaded from *iNaturalist*. To see more Preserve species, go to iNaturalist.org and search for "Scottsdale's McDowell Sonoran Preserve". ▲▲

The view from Ringtail Trail near its intersection with Sunset Trail contains a diverse sample of desert fauna and rocks. Photo by Richard Buchbinder

A Great Hike: Ringtail Trail

By Doug Jabour,
McDowell Sonoran Conservancy master steward





The Kovach Family Nature Trail is an accessible trail at the Lost Dog Wash Trailhead. It has beautiful views plus signs about nature's families in the desert. Photo by Richard Buchbinder

Ringtail Trail in the southern area of Scottsdale's McDowell Sonoran Preserve is a short, fairly easy hike through an area with interesting folklore and archaic history. Lost Dog Wash was apparently named for a lost dog long before the trailhead opened, but we know nothing of that dog or its owner. However, the name does serve as a reminder of the dangers of failing to obey the City of Scottsdale ordinance requiring all dogs within the Preserve to be on a leash. Lost dogs in the Preserve are not only easy prey for coyotes, but can be severely injured by a myriad of cholla and other cacti, and dehydration.

The starting point for this hike is Lost Dog Wash Trailhead at 124th Street, which opened in 2007. Another starting point is at the 128th Street Trailhead, which has parking but no restrooms, water, or shelter. The hike is a little less than three miles, but there are many options along the way to increase the distance.

Let's Go Hiking!

After leaving Lost Dog Wash Trailhead, take the Lost Dog Wash Trail. The mountain slope to the left is nearly devoid of trees and cacti due to the Ancala or TP (toilet paper) fire, which burned for two days in 1992. The fire was started by a member of a party surveying the wash for construction

of a catchment basin. The individual set fire to toilet paper he had used and the fire was quickly spread by the wind. You'll see that the hills are now covered with brittlebush, a pioneer plant that helps to control erosion and provides nursing cover for other plants to regenerate.

You will reach the Ringtail Trail



Ringtail Trail contains views as well as lush desert landscape. Photo by Richard Buchbinder

junction in 0.6 miles. But if you were to continue on the Lost Dog Wash Trail, you would reach the Taliesin Overlook in about 1.5 additional miles. This overlook has expansive views to the west and northwest. You will also see some of the buildings on Frank Lloyd Wright's estate, Taliesin West. The hike to the overlook has an elevation gain of 337 feet.

If you are skipping the side trip to Taliesin Overlook, turn right at the Ringtail Trail junction and continue on the Ringtail Trail loop. You will begin a steady climb to the Lost Dog Overlook. On the way to the overlook, you will pass a variety of vegetation including teddy bear cholla, barrel cactus, and ocotillo. While teddy bear cholla looks furry, do not pet it as their fishhook spines will become embedded in your skin. It will require tweezers or pliers to

remove them.

When you reach the overlook, you'll be treated to a 360-degree view of the expansive Lost Dog and Ringtail area. Note that it is drained by several washes that are natural game avenues. You will also see some bluffs where archaic hunters could hide in ambush waiting for game using the washes. The overlook was probably an ancient tool quarry. Scattered on the ground are two types of quartzite that do not have ideal fracture properties for the production of projectile points but have sharp enough edges for game processing.

After leaving the overlook, you will intersect Old Jeep Trail, which is an alternate and slightly longer trail to the Taliesin Overlook. Turn right to stay on Old Jeep Trail. You will then hike into and out of a wash and soon cross

the Sunrise Trail that leads to Sunrise Peak. The hike to Sunrise Peak is quite difficult but the panoramic views at the top are breathtaking. The rest of the Ringtail Trail is fairly flat and leads back to the trailhead. When you get back to the trailhead, you will have hiked a little under three miles.

After this easy hike, take some time to wander along the Kovach Family Nature Trail. It also starts at the Lost Dog Wash Trailhead and is a 0.5 mile accessible nature trail. This educational trail provides 13 plaques describing the relationship of the desert to its human and other inhabitants and is well worth the short side trip.

Go to <https://www.scottsdaleaz.gov/preserve> to view a map of the area and to learn more about what's happening in the Preserve. ▲▲



This view found while hiking along Ringtail Trail is at the intersection of Sunrise Trail. Photo by Richard Buchbinder

Journeys into the Past

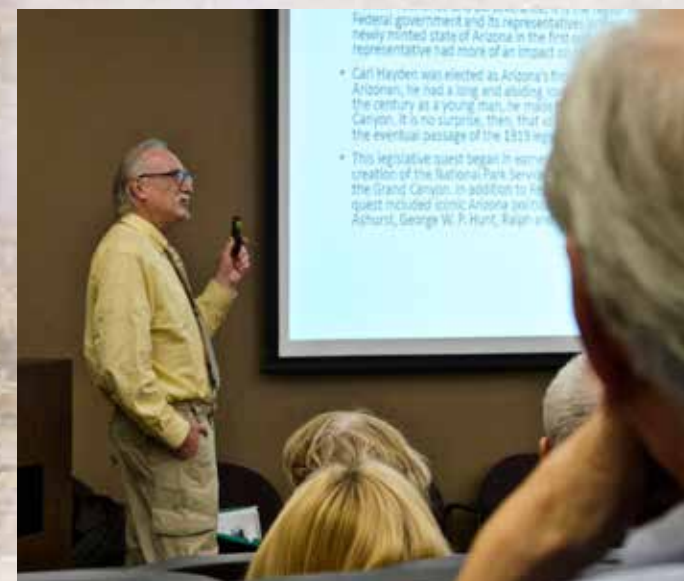
By Len Marcisz,
McDowell Sonoran Conservancy legacy steward



The speaker for the Pastfinders' discovery hike in the Brown's Ranch area relates the history of the Native Americans in the Southwest and their interactions with the settlers. Photo by Franco Farina

The Pastfinders host a table at educational events where children can dig in a bin for an archeological treasure and experience a bit of field archeology. Photo by Dennis Eckel

Travel back in time to the days before Scottsdale's McDowell Sonoran Preserve and the City of Scottsdale existed. Such a journey is possible through the exciting presentations of the Pastfinders Program of the McDowell Sonoran Conservancy. The Pastfinders Program originated in 2009 when a group of stewards interested in researching and preserving the history of the McDowell Mountains began organizing monthly gatherings to explore topics related to the Preserve. These monthly gatherings eventually drew public participation and were scheduled at local libraries to be more accessible to the general public. Now the gatherings have evolved into a formal monthly program of presentations featuring award-winning speakers on subjects related to the McDowell Mountains, as well as the territorial and early statehood periods of Arizona.



Topics for the Pastfinders lecture series cover a wide variety of Arizona-related historical subjects and feature speakers who are experts in the topics. See the table on page 19 for the time and place of upcoming lectures. Photo by Jacques Giard

In addition to offering a speaker's program, the Pastfinders perform a research and public advocacy program intended to preserve the human history of the McDowell Mountains. Pastfinders projects in this program include the following:

- **The Stoneman Road:** This research project uncovered the physical location, historical maps, and recorded history of the Stoneman Military Trail created by the Army in 1870. The vestiges of the trail run through the Brown's Ranch area of the Preserve. The research, both on-site and archival, resulted in the creation of the *Stoneman Road Compendium*, the first extensive digital documentation of the road and its history in the United States. The compendium is available to students of Arizona history at several local libraries and museums.
- **Brown's Ranch:** A recent archaeological mapping project revealed physical structures and other remnants of Brown's Ranch within the Preserve. This project, undertaken in 2015, in cooperation with the City of Scottsdale and a local archaeological firm, updated and increased the detailed documentation of Brown's Ranch from two previous studies.
- **The Indian Wars:** A monograph, written by Doug Watson, McDowell Sonoran Conservancy master steward, describes the military mapping of central Arizona during the American Indian Wars. The monograph received the prestigious Don Bufkin Award from the Arizona Historical Society for best paper presented at the Arizona Historical Convention in 2016.
- **The DC Brand:** New findings revealed the real story of the origin of the DC cattle brand, for which DC Ranch is named, and William Dorr Crosby, military surgeon and the brand's originator. The DC brand research corrected an error in attribution that had been repeated by local historians for decades.

- **The White Homestead Burning:** Researchers discovered details surrounding the burning of the Annie White homestead in 1890 that explain why officers of the United States Army were never held accountable for the destruction.
- **The McDowell Mountains:** Research uncovered the following related to the history of the McDowells:
 - The first person to comprehensively map the McDowell Mountains, Sidney Blout, became known as "The Man Who Measured the McDowells".
 - The first citizen scientist who did research in the McDowells was J. B. Girard, military surgeon. He recorded descriptions of the McDowell's flora and fauna.
 - Lieutenant Charles Parker created an Army report about the first military patrol to circumnavigate the McDowells in 1874.

The Pastfinders Program shares its research findings through a series of eight themed hikes that are offered to the public at no charge and to private institutions as a means of raising funds for the Conservancy. Additionally, there are sixteen themed visual presentations that are given by Pastfinders as fundraising offerings. Pastfinders also partner with the City of Scottsdale, local museums, and the Arizona Historical Society on joint efforts to preserve and propagate the history of the McDowell Mountains.

Participation in the Pastfinders Program is open to any Conservancy steward or member of the public interested in history, intrigued by the detective work of historical research, and enthusiastic about sharing information with the public. The Pastfinders only have two rules: enjoy history, and never utter the words "history buff." ▲▲

Pastfinders Mustang Library Events 2019 5:30 P.M. to 7:00 P.M.

Date	Event Title	Description
1/23/19	The Arizona Four Peaks Amethyst	Doug Hill and Stephenie Bjorkman talk about the amethyst mine in the Four Peaks Mountain Range, the only commercially run amethyst mine in the United States.
2/26/19	The Apache War in the Chiricahuas	Doug Hocking describes the incident in 1861 that historians believe sparked the Apache War in the Chiricahuas.
3/21/19	The Earliest Apaches in Arizona	Deni Seymour talks about how the arrival of Apaches in the Southwest impacted prehistoric peoples already living here.
4/23/19	Fort McDowell Transitions from Sabers to Slot Machines	Len Marcisz relates how Fort McDowell changed from the largest military post in central Arizona to today's popular casino.
6/25/19	Arizona Goes to the Moon	Kevin Schindler discusses the key role played by Arizona in preparing to send humans to the moon.
7/23/19	The United States Cadet Nurses in Arizona	Elsie Szczy presents the United States Cadet Nurse Corps using images and videos from WW II.

Exploring Creosote Bush and Its Many Galls

By Steve Jones,
botanist



Creosote bush flowers from February through August, but it blooms most profusely during the spring. This photo shows an almost exclusive community of creosote bush. Photo by Steve Jones

Creosote bush (*Larrea tridentata*) is the most widespread shrub in the three warm temperate deserts of North America: the Chihuahuan, Sonoran, and Mojave. It is undoubtedly the most drought-tolerant shrub in these deserts. Its small, twin-lobed leaves are coated with a resinous material that protects them from drying, and which incidentally emits a pleasant aroma when wetted. Its extensive root system, with both shallow roots and deeper, spreading



The katydid sitting on this creosote bush is well camouflaged. It remains quite still until it is frightened, then quickly flies away. Notice the fuzzy ball, a creosote fruit, below the insect. Photo by Steve Jones

roots, gives it greater access to water than other shrubs. As drying conditions worsen, it will drop leaves and even branches, preserving water and nutrients in its ground-level crown waiting for rain to return.

Though the plants found in the three deserts are the same species, they do differ in one aspect—chromosome number. Chihuahuan Desert plants have two sets of chromosomes (*diploid*), while Sonoran Desert plants have four sets (*tetraploid*), and



The fresh flower of creosote bush on the left is ready to receive pollinators. After being visited by a pollinator, its petals twist 90 degree at their base. The twisted configuration seen on the right signals other pollinators to seek nectar at another flower. Photos by Steve Jones



A. auripila, a stem gall, has up to a dozen larvae inside it and is the largest creosote bush gall. Photo by Steve Jones

Mojave Desert plants have six sets (*hexaploid*).

The Sonoran Desert is divided into seven subdivisions, two of which occur in Arizona. Creosote bush is the dominant plant in the Lower Colorado River Subdivision, which extends from Phoenix westward across the Colorado River, well into Sonora and down the eastern coast of Baja California. It often forms pure stands.

In the higher elevation Arizona Upland Subdivision to the north and

east, in which Scottsdale's entire McDowell Sonoran Preserve falls, creosote bush is part of the mix of trees and other shrubs. However, in areas where soil carbonate levels are high, discouraging other plants, it can form nearly exclusive communities within the Arizona Upland. Crucifixion thorn (*Canotia holacantha*) is sometimes associated with these areas as well.

Creosote bush flowers in the spring and will occasionally respond to monsoon rains with a second sparse set. Flowers have five yellow

petals. After a visit by a pollinator, each petal twists 90 degrees at the base to present a lower profile to other pollinators, signaling them to seek fresher flowers. The fruit is pea-sized and fuzzy and breaks into five segments. Each segment contains a single black banana-shaped seed.

The resinous material coating creosote bush leaves contains a complex blend of phenolics, saponins, terpenoids, and wax esters that amount to about 30 percent of the leaf's dry weight. It has been studied



In the photo on the left, *A. resinosa* appears as a globular ball of resin. But with age it can develop into a ball-shaped gall with bracts covered in resin as seen on the right. Photos by Steve Jones



The gall of *A. clavata* stands on the leaf of a creosote bush. Photo by Steve Jones

extensively for useful compounds, with some showing promise as antifungal and antiparasitic agents and others with antioxidant properties.

There are myriad insects associated with creosote bush. Several insects have common names beginning with the words creosote bush—grasshopper, walking stick, katydid, stinkbug, inchworm, and moth (the adult phase of the inchworm) among them. Many other insects can be found on the plant, some having developed camouflage to look like a part of the plant. Weevils and other beetles, leafhoppers, aphids, and most of the above listed insects feed on the plant despite its resinous leaf coating. Several species of native bee exclusively

use its flowers for nectar and pollen, especially in areas where it is just about the only flowering plant around.

One group of insects uses creosote bush in a fascinating way. This group hijacks the plant's resources to help in reproduction. Female midge



These very hairy *A. villosa* galls are found in clusters and can sometimes be found in the hundreds on a single creosote bush. They can be mistaken for the hairy fruit. Photo by Steve Jones



Several *A. fabalis* galls are on one leaf. They are found on the undersides of leaves, singly or in groups as seen here. Photo by Steve Jones

flies in the genus *Asphondylia* will lay eggs in the tissue of the plant, in either the stem, leaf, or in the case of one species, the flower. The presence of the egg and developing larva induce the plant to produce abnormal tissue. This tissue, called a gall, is fed upon by the larva. The larva, once fully fed, will develop into a pupa within the gall, and will later emerge from the gall as a winged adult and fly off to mate and continue the cycle.

Many people are familiar with the large, round growths on creosote bush stems, and some know that they are the result of a midge fly laying eggs in the stem of the plant. Few know that the fly is just one of 15 species of midge flies that produce galls on creosote bush.

These galls are known by the species name of the fly that induces them and are distinguished by the shape of the gall. Thus, the large gall mentioned earlier is called *Asphondylia auripila* after the fly that induces it. This one differs from the others in that the large gall hosts a dozen or so individual larvae. The other *Asphondylia* galls each host a solitary larva and are smaller. So, they don't stand out like *A. auripila*.

Aside from *A. auripila*, the other stem galls include *A. bullata*, *A. foliosa*, *A. resinosa*, and *A. rosetta*. *A. bullata* hasn't been found locally yet, but the others have all been found in or near the Preserve. *A. resinosa* is easily identified because, as its name suggests, it is coated with resin. *A. foliosa* and *A. rosetta* are identifiable as clusters of narrow, tapered, green bracts (a modified or specialized leaf) similar to those of *A. auripila*. With age these stem galls turn brown and remain on the plant for some years after the adult flies have emerged.

Leaf galls are smaller, but often



The narrow, pointed *A. silicula* is the smallest of the galls and is suspended from the center or the margin of the leaf. Photo by Steve Jones

quite numerous. The flies that produce leaf galls are also smaller than the stem gall flies. Among those that have been found in or near the Preserve are *A. apicata*, *A. clavata*, *A. discalis*, *A. fabalis*, *A. pila*, *A. silicula*, and *A. villosa*. The latter was particularly common

in the Fraesfield Mountain area this summer. *A. florea* is a similarly small species that lays its egg in the flower. *A. barbata* and *A. digitata* are leaf galls that have not been found locally yet.

The three species mentioned as not having been found locally yet likely will be, as all species are widespread and occur throughout the range of creosote bush.

Galls are by no means limited to creosote bush. There are thousands



A younger *A. foliosa* gall grows below an older one. Photo by Steve Jones

of such parasitic pairings between a plant and another organism. Galls are not only produced by midge flies. Many cynipid wasps produce galls on oaks and other plants. Tiny eriophyid mites produce numerous small, fuzzy bumps on the leaves of canyon bursage (*Ambrosia ambrosioides*) and other bursages. A local fungus induces "witch's brooms" on catclaw acacia (*Senegalia greggii*). ▲▲



Following flowering, creosote bush produces numerous, small, fuzzy fruit. Harvester ants carry the fruit segments to their nest where they consume the small, black seeds, leaving the fuzzy hull on the trash pile near the nest. Photo by Steve Jones



EEEE! Don't touch the spiny plants. Children learn about different degrees of prickliness on cactus. Photo by Carlos Castañeda



Children examine some of the arthropods of the Sonoran Desert. Photo by Sue McLain



The Children's Learning and Play Festival provided entertainment for the whole family. Photo by Carlos Castañeda

Festival Provides Kids with Fun-filled Desert Learning Opportunities

By Carlos Castañeda,
McDowell Sonoran Conservancy development manager

Discovering new creatures, plants, and animals through the eyes of a child reminds us all of the magnificence of the natural world. These encounters feed children's curiosity, expand their minds, and expose them to sights and sounds never before experienced. Just watch the face of a child as he or she runs a finger across the back of a California kingsnake or gazes awestruck at the perfect stillness of a great horned owl.

More than 13,000 inquisitive attendees from around the Phoenix Valley had this opportunity at the third annual Children's Learning and Play



A girl listens to a recording of a Gambel's quail call and looks at a stuffed red-tailed hawk. Both birds are found in the Sonoran Desert. Photo by Carlos Castañeda



The cactus wren is a common bird in the Sonoran Desert and is the state bird of Arizona. A Festival exhibit displays a cactus wren nest built from twigs. Photo by Carlos Castañeda

Festival. It took place in September at WestWorld of Scottsdale.

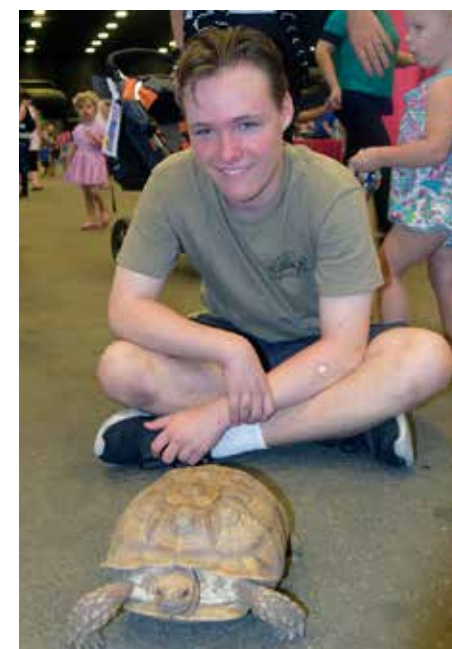
The Children's Learning and Play Festival is free to the public. It features a host of activities for toddlers, children, and young adults. Activities include opportunities to enjoy music and other live performances; hear from and meet children's authors and illustrators; take part in STEM (science, technology, engineering, and mathematics) activities; and visit bounce houses and rides.

At this year's festival, the McDowell Sonoran Conservancy hosted numerous exhibits through



Face painting, live performances, rides, arts and crafts, and other entertainment rounded out the activities at the Children's Learning and Play Festival. Photo by Carlos Castañeda

which children discovered the sights, smells, feel, and sounds of our natural desert habitat. They learned about the exoskeletons and segmented bodies of our desert arthropods. Bird's nests, mammal skeletons, and pelts were on display for careful examination. Even a tortoise roamed from table to table at the Conservancy exhibit, cautiously tucking its head into its shell when a hand or finger came too close. Children also learned about harmful waste that threatens our land, such as Mylar and latex balloons that animals confuse for food. And our partners at Arizona Game and Fish Department's Adobe



A Sonoran Desert tortoise roamed freely throughout the Conservancy exhibits at the festival. This was one of several live desert animals with which festival attendees could have a close encounter. Photo by Carlos Castañeda

Mountain Wildlife Center, Liberty Wildlife, Scottsdale Community College's Center for Native and Urban Wildlife, and Phoenix Herpetological Society joined us to showcase some wildlife species found in Scottsdale's McDowell Sonoran Preserve. ▲▲

Coming in March

McDowell Sonoran Conservancy

Junior Citizen Science Festival

McDowell Sonoran Preserve

Lost Dog Trailhead

SCHOOL DAYS

by reservation only
March 21-22
10:30 a.m. - 12:45 p.m.

PUBLIC DAY

Saturday, March 23
9:30 a.m. - 1:00 p.m.

For more information
or to register, email
JCSFinfo@mcdowellsonoran.org
or call 480-998-7971 x 105



www.mcdowellsonoran.org

“Wilderness is not a luxury but a necessity of the human spirit.”

-Edward Abbey, Desert Solitaire

INTRODUCING THE NEW Conservancy Coalition 2018-2019

Photo by Dennis Eckel.

Mountain Lines magazine presents the diverse natural beauty of Scottsdale's McDowell Sonoran Preserve. It showcases the Conservancy's work in research, education and stewardship of the land. Join the Conservancy Coalition! Your support ensures our legacy and secures our future.

Please make checks payable to: **McDowell Sonoran Conservancy.**

Name: _____

Address: _____

Email: _____ Phone: _____

Credit Card No. _____ Exp _____ / _____ CVC _____

Make my donation anonymous

You can also make your gift online at www.mcdowellsonoran.org. Thank you!

The Circle of Friends has a new name! The “Conservancy Coalition” is our individual giving program.

McDowell Sonoran Conservancy is a non-profit 501 (c)(3): TAX ID# 86-0674350

7729 E Greenway Road, Suite 100 • Scottsdale Arizona 85260
Phone: 480-998-7971 • www.mcdowellsonoran.org



Your Gifts in Action

Scottsdale's McDowell Sonoran Preserve is the largest urban preserve in North America and the fourth largest urban preserve in the world. Building on the legacy of our stewards and their success, we press forward to establish ourselves as global leaders in conservation, STEM education for youth, and ecological research.

We hope you are inspired by our history and our vision for the future.

Joining the Conservancy Coalition directly impacts the following programs:

- Stewardship and best practices in volunteer leadership and management:
 - Conservation and trail maintenance
 - Adult education
 - User safety with daily patrols and guides
 - Guided hike and bike tours with experts
 - Donor recognition
- STEM education for youth and experiential learning:
 - Classroom curriculum
 - Field trips to the Preserve
 - Junior Citizens Science Festival
- Parsons Field Institute research projects:
 - Assessing the impact of urban stressors and climate change on:
 - Animals
 - Birds
 - Bats
 - Plants
 - Water
 - Improving best management practices in ecological restoration including:
 - Native plants planning and development
 - Trail restoration
 - Invasive plant management
 - Assessing viability of the Gooseneck Corridor:
 - Wildlife connectivity (camera traps)
 - Acoustic monitoring
 - Neighborhood mapping

The environment is where we all meet; where all have a mutual interest; it is the one thing we all share.

— Lady Bird Johnson

Three Easy Ways to Support the Conservancy



Shop from the comfort of your home and earn rewards for the McDowell Sonoran Conservancy using AmazonSmile. To link your Amazon purchases to the Conservancy, visit smile.amazon.com and select “McDowell Sonoran Land Conservancy” from their list of approved charities.



Community Rewards Program

Now you can support the Conservancy when you shop at Fry's by joining their Community Rewards Program. Join the program by visiting frysfood.com and selecting “Fry's Community Rewards” under “Community” at the bottom of the page. Select “McDowell Sonoran Conservancy” from their list of eligible organizations.

Facebook Fundraising

You can create a Facebook fundraiser in support of the Conservancy. Just log into Facebook and click “Fundraiser” under “Create” in the left column. Click “Get Started” then choose “McDowell Sonoran Land Conservancy” from the dropdown list under “Nonprofit”. Share your fundraiser with friends and family and let them know why you support our mission.

Thank you for your support!



McDowell Sonoran Conservancy

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Connect with us:



Heading out on Bootlegger Trail from Granite Mountain Trailhead. Photo by Dennis Eckel

