



MCDOWELL
SONORAN
CONSERVANCY

Mountain Lines

MAGAZINE OF THE MCDOWELL SONORAN CONSERVANCY WINTER 2022





Justin Owen, CNAP

As we start the New Year, we all wonder what 2022 has lined up for us! Let's start the year with some New Year's resolutions, some that focus on protecting and appreciating our Sonoran Desert. We are fortunate in this region to have access to many open spaces so maybe our resolution is to visit one we have not yet been to. Maybe it is to spend time in nature to give

ourselves the gift of physical and mental health relief. Maybe is it taking someone special to a place that we enjoy. Maybe it is to be more aware of our environment and identify one thing we can change that would help. We all have a role to play so let's support each other and work together to protect and preserve natural open spaces for the next generation.

Many of us got to see family over the holiday period so we wanted to start this edition with some happy experiences we have recently captured within the Preserve. We also get to share an outline of our strategic plan which lays out our direction for the next 5 years. Exciting times are ahead, and we are excited for you to join us on the journey.

Stay safe, and I look forward to seeing you out on the trails. ▲▲

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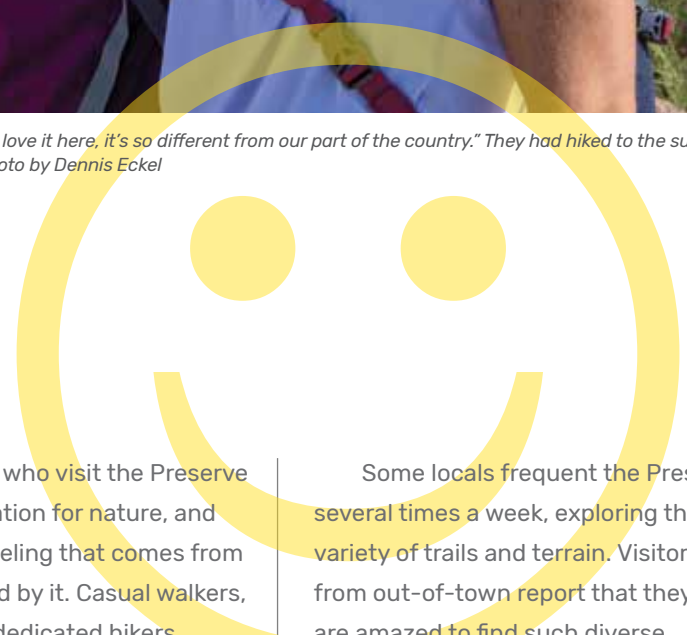
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A group of women from North Carolina were hiking here for the first time. "We just love it here, it's so different from our part of the country." They had hiked to the summit of Brown's Mountain, and were planning a mountain bike ride for the next day. Photo by Dennis Eckel



About Us

The McDowell Sonoran Conservancy preserves and advances natural open space through science, education, and stewardship. We create a culture that ensures, preserves, and values natural open spaces for all to enjoy.

Connect with us:



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Preserving Smiles

By Dennis Eckel, McDowell Sonoran Conservancy Steward

Maybe it's the fresh air or perhaps it's the scenery. It could be the freedom of being outdoors, exercising, and appreciating some quiet time connecting with nature. Whatever it is, it results in lots of happy, smiling faces in Scottsdale's McDowell Sonoran Preserve!

Most people who visit the Preserve have an appreciation for nature, and the refreshing feeling that comes from being surrounded by it. Casual walkers, ardent runners, dedicated hikers, enthusiastic mountain bikers and those on horseback all seem to have one thing in common - the appearance of true contentment.

Some locals frequent the Preserve several times a week, exploring the variety of trails and terrain. Visitors from out-of-town report that they are amazed to find such diverse recreational opportunities in an urban area. They also report being impressed with the care and guidance provided by Conservancy stewards in helping

them select the right route to meet their needs and interests. With seven major trailheads leading to more than 230 miles of maintained trails across 30,580 acres, who wouldn't be motivated to explore?

Last October we asked some Preserve guests about their experiences. Here is just a sample of their responses and of the photos we took of their smiling faces.



"The trails are so well maintained. The city of Scottsdale and the volunteers with the Conservancy do a wonderful job. We are so fortunate."



"I live close by, and come here at least four times a week for an early morning workout. Each trail offers something a little different."



A little girl was proudly displaying her exploration hand-book, exclaiming, "I didn't see any animals, but I saw a bunch of foot prints, and lots of different cactus."



Our informal survey clearly shows that people of different ages and backgrounds are happy spending time in the Preserve's open spaces. It is noteworthy that our observations are consistent with formal research findings. For example, a recently published article co-authored by 26 researchers in the natural, social and health sciences at prestigious universities concluded that experiences in nature are associated with psychological well-being – happi-

ness, optimism, social engagement, a sense of meaning and purpose in life, and decreases in mental stress (www.science.org/doi/10.1126/sciadv.aax0903).

We invite you to come spend some time in the Preserve and experience for yourself the joy and contentment of being in nature! ▲▲



Even the horse is smiling!



"We used to ride these trails years before the city obtained the property. The trails were pretty rough back in those days, but they have been greatly improved and expanded."



A group of women from Fountain Hills explored Granite Mountain and Balanced Rock for the first time. They were also very impressed with Cathedral Rock. Photo by Dennis Eckel

"We lead a hiking group, and were looking for new areas for our group to experience. We're so glad to have discovered this area."

"With the way the area is developing with new homes and neighborhoods, we are blessed to have this area set aside to be kept in its natural state."

Four 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 Conservancy" from its list of approved charities.



Now you can support the Conservancy when you shop at Fry's by joining its 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 the list of eligible organizations.



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 on "Nonprofit" and then search for "McDowell Sonoran Conservancy." from the dropdown list under "Nonprofit." Share your fundraiser with friends and family and let them know why you support our mission.



The McDowell Sonoran Conservancy is proud to announce that it's now a part of the Target Community Giving Program known as Target Circle. List the Conservancy as your non-profit partner and Target will direct a charitable donation each time you shop and use the Target Circle app.

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Over 30,500 acres of Sonoran Desert waiting to be explored.

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Sam Campana chose a name for the interpretive trail that reflects her whole family, many of who were at the grand opening. Here she enjoys the entrance to the trail with two of her grandchildren. Photo by Lynne Janney Russell

Camino Campana Grand Opening!

By Jakki Casey, McDowell Sonoran Conservancy Chief Operating Officer and Master Steward

On October 31, 2021, Camino Campana formally opened! This interpretive trail at Fraesfield Trailhead in Scottsdale's McDowell Sonoran Preserve includes 13 interpretive stops along a roughly one-mile easily accessible trail. The trail is eight feet wide with minimal slopes and is constructed of stabilized decomposed granite, which provides a firm and stable surface for access by all users. The interpretive signage was developed through a collaboration between the McDowell Sonoran Conservancy, the City of Scottsdale, and the Cattle Track

artists community who created unique pieces for this trail. The focus of the trail is to encourage visitors to "See the Unseen." In other words, to look beyond what they immediately see and think about who lives here now, how they have adapted, who used to live here, how the land was shaped, and much more. Have you ever wondered who created those holes in the desert? Who builds those various shaped nests? Do you want to capture the iconic Arizona image reflected on our license plates with a saguaro and Four Peaks in the back-

ground? These topics and many more are covered along Camino Campana. The trail is named for Kathryn "Sam" Campana, who has been instrumental in protection of the Preserve. In summarizing Sam Campana's role for the 25th anniversary of the Preserve, Joan Fudala, Scottsdale historian, noted that Sam's commitment to environmental issues and land preservation was instrumental in the creation of the Preserve and its on-going development. Fudala went on to enumerate many of the ways Sam has supported the Preserve.



The artists from Cattle Track painted water colors of Desert Wildlife, which were recreated on the signage along Camino Campana.

"Sam Campana served on the Scottsdale City Council from 1986 to 1994, when Scottsdale and its residents began discussing the possibility of creating a McDowell Mountain Preserve. As Scottsdale's Mayor from 1996 to 2000, she provided visionary leadership which secured the first McDowell Sonoran Preserve land acquisitions funded by the 1995 voter-approved sales tax and the 1996 voter-approved bonding capability. She and her City Council advocated expansion of the Preserve boundary to include over 19,000 acres of Sonoran Desert north of the McDowell range, which voters approved in 1998. Mayor Campana worked with state officials on the Arizona Preserve Initiative with the Town of Fountain Hills and with developers like DMB to further expand the Preserve through key land acquisitions. During these significant public policy actions, she was also honored to officiate at the ribbon-cuttings for the first public access trails into the McDowell Sonoran Preserve."

The interpretive trails in the Preserve are all unique in their focus and signage—from the Kovach Family Nature Trail at Lost Dog Wash Trailhead to the Bajada Trail at Gateway Trailhead to the Jane Rau Trail at Brown's Ranch Trailhead. An early step in creating these trails was for a small group to walk the planned routes looking for inspiration for a theme that fit that particular location. During the first

walk along Camino Campana, Legacy Steward Sue Handke devised the concept of "see the unseen." This idea sprang to life in discussions among fellow Legacy Stewards Dan Gruber, Franco Farina, and Len Marcisz along with the staff team of Nicole Kallman, Tiffany Sprague, and Jakki Casey. From there, signs at each stop were crafted with this concept in mind.

Many thanks to our steward and staff team, the City of Scottsdale, and the artists from Cattle Track for turning this concept into reality for us all to enjoy. Thanks, also, to Sam Campana, who joined us for many of the field visits to watch this amazing trail take shape. We hope you enjoy this interpretive trail as much as we did creating it! ▲▲



David Ortega, Mayor of Scottsdale, and Sam Campana helped release 4 Harris's Hawks during the official opening ceremonies. The orphaned hawks had been rescued and rehabilitated by Liberty Wildlife so that they could successfully return to the wild. Photo by Lynne Janney Russell



The trail's signage helps us to "see the unseen" by showing us what is beneath the holes we see in the desert floor.

Butterflies, Butterflies, and More Butterflies

By Lynne Janney Russell,
McDowell Sonoran Conservancy Master Steward



Cloudless sulphur caterpillars remain green if they only eat desert senna (host plant, *Senna covesii*) leaves but will turn yellow if they begin to eat the flowers. Adults are a brilliant yellow. Photo by Lynne Janney Russell

Last summer will be remembered as the summer of butterflies. Butterfly populations soared after our abundant monsoon rains increased vegetation, providing ample food for their caterpillars. This led to the kaleidoscopes of color we saw as masses of butterflies fluttered above flower tops, dipping in to sip sweet nectar from their favorite blooms.

One of the prevalent species was the American snout (*Libytheana carinenta*) with elongated mouth parts (labial palps) that appear like long noses. In flight, their wings are



Male American snout butterflies will loiter close to a chrysalis containing a soon-to-be eclosing (emerging) female. This was love at first sight! Photo by Lynne Janney Russell

patterned in shades of brown and gold with white dots. At rest, they keep their wings tightly closed, showing only their drabber greyish or brownish wing edges. Thus, they appear like dead leaves and are easily missed. Their host plant is desert hackberry (*Celtis ehrenbergiana*).

In contrast, bright red pipevine swallowtail (*Battus philenor*) caterpillars were easy to spot against the more subdued colors of their host southwestern pipevine (*Aristolochia watsonii*) and whatever desert plant or cactus the vine had wrapped around.



The brilliant black, blue, and orange colors of the large pipevine swallowtail provide a stark warning to potential predators: "Don't eat me!" Photo by Lynne Janney Russell

The pipevine swallowtail contains poisonous alkaloids that make its caterpillars toxic to most predators. The toxicity carries over to the large adult butterflies, which are also brightly colored.

Many other butterfly species were prevalent last summer, including queen (*Danaus gilippus*), empress leilia (*Asterocampa leilia*), painted lady (*Vanessa cardui*), variegated fritillary (*Euptoieta claudia*), cloudless sulphur (*Phoebis sennae*), and sleepy orange (*Eurema nicippe*) butterflies. Because many look similar to each other, the best way to identify a butterfly is to photograph it with a zoom lens as it pauses for nourishment, mating, or laying an egg. Comparing the photo to the butterflies in a field guide will greatly assist with identification. Once identified, it is fun to learn a few facts about each species.

Butterflies are an important part of the ecosystem. They are a food source, assist with pollination, and are bioindicators of climatic changes. Butterflies are closely linked to their

environment. Seventy-five percent of butterfly species worldwide are declining in abundance due to factors including chronic drought, fluctuations in climate, and habitat loss.

The McDowell Sonoran Conservancy recognizes the importance of understanding natural and human factors affecting the butterfly populations. It participates in the annual North American Butterfly Association butterfly counts in the fall and spring, surveying six study sites in Scottsdale's McDowell Sonoran Preserve, which have different plant types and varied butterfly populations. Participants learn which butterflies they might expect to find and how to identify them.

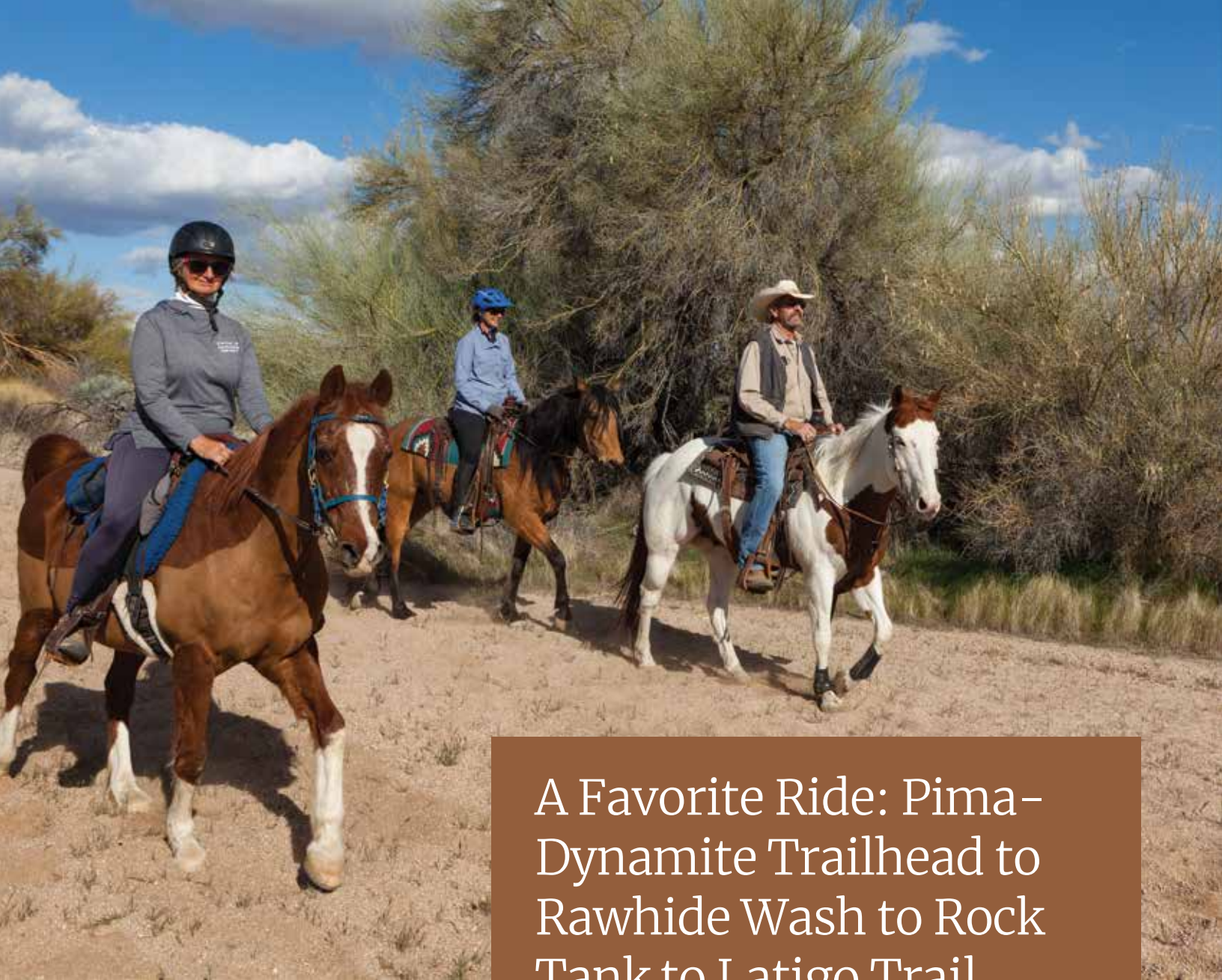
The Conservancy has identified a total of 58 butterfly species in the Preserve, including three new butterfly species documented during the Fall 2021 count. In drier years, there are lower numbers and fewer species. By monitoring these populations over many years, the Conservancy can discover reasons for the fluctuations, document any declines, and make conservation recommendations, such as protection and restoration of butterfly host plants.

You can help by acquiring a butterfly guide book, planting a butterfly friendly garden, reporting your butterfly sightings in *iNaturalist*, and supporting the good work of the Conservancy. The public is welcome

to participate in the Conservancy's butterfly surveys. To find out more, email butterfly@mcowellsonoran.org. Also, visit our long-term butterfly monitoring webpage <https://bit.ly/Conservancybutterfly>. For a list of documented butterflies in the Preserve go to <https://bit.ly/MSPbutterflies>. Butterflies, butterflies, and more butterflies, please. Dance with the butterflies. Enjoy the butterflies. ▲▲



Similar in size and hue, a queen may be mistaken for a monarch (*Danaus plexippus*). Look for the queen's white spots outside of the white-spotted black border. Photo by Lynne Janney Russell



A Favorite Ride: Pima-Dynamite Trailhead to Rawhide Wash to Rock Tank to Latigo Trail

By Jenny Powers,
McDowell Sonoran Conservancy Lead Steward, Equestrian Patrol

Rawhide Wash's sandy conditions encourage a slow, steady pace, allowing riders and horses to enjoy the scenery. Photo by Dennis Eckel

The Pima-Dynamite Trailhead has been designed with the equestrian user in mind. The horse trailer parking area is separated from the busy parking lot and main building, offering a safe space to unload horses. The surface of the lot is decomposed granite, so horses don't slip when stepping off the trailers, and there is ample parking with 12 spaces. The staging area includes a small

shaded ramada with concrete table and benches and a water trough. A short path connects the horse parking lot to the main building for access to restrooms, and there are hitching rails adjacent to the building safely away from other users.

There is a dedicated trail leaving the horse staging area connecting with the Rawhide Wash to bypass the congestion that can occur at the main

building. Signs warn that Rawhide Wash has deep sand and is generally an unattractive option for hikers and bikers but is popular with equestrians.

The trail winds over gently rolling hills with numerous large saguaros (*Carnegiea gigantea*), ocotillos (*Fouquieria splendens*), and palo verde (*Parkinsonia sp.*) trees before sloping down into Rawhide Wash. The vegetation along the wash is abundant

with thick groves of mesquite trees (*Prosopis velutina*) that provide shade on the trail and portions of the wash.

Once in Rawhide Wash, the space opens, providing long sight lines so that other users crossing the wash on trails are visible well in advance. Although the openness invites speed, equestrians should be aware of their horses' level of conditioning for deep footing. Horses expend about twice as much effort in deep sand as on a firm surface. Additionally, shod horses' hooves act as scoops, lifting sand with each step and adding weight to the stride. Walking or trotting in sand stresses all four legs equally and are the safest gaits in deep footing. Well-conditioned horses can handle a canter in sand, but riders should be aware that, in this three-beat gait, all the weight of the horse and rider will

be on the leading front leg at one point in the stride. Shifting sand beneath the weight could result in injuries to tendons or ligaments in a tired horse or one unused to working in deep footing.

Rawhide Wash continues northeast with several options to make loops back to the staging area. Rock Tank Trail is an extraordinarily scenic single-track path that winds through the trees and then through piles of boulders adjacent to a popular technical biking area. The terrain lends itself to cautious speeds, so encounters with bicycles are generally comfortable with the only challenge being finding a suitable space to allow passing. The trail has some technical spots stepping around boulder outcroppings but no significant drop-offs to negotiate. The gradual increase in elevation affords sweeping views of Phoenix and the Estrella and

White Tank mountains in the West Valley.

Latigo Trail offers a lovely return ride avoiding the Power Line Road, which can be busy with bikes traveling at high speed. Latigo is bordered with typical Sonoran Desert vegetation and is beautiful with great footing. Rather than taking Latigo all the way back to the main building, equestrians can use a connector trail to the north that bypasses the building and accesses the horse staging area, thereby avoiding congestion.

The Rawhide Wash/Rock Tank/Latigo loop is about four miles long and is an easy trail. It is perfect for experiencing the Pima-Dynamite Trailhead for the first time and learning options to increase the distance if desired. ▲▲



Rawhide Wash Trail offers a peaceful ride, with the McDowell Mountains and Pinnacle Peak in the background. Photo by Dennis Eckel

Rawhide Wash offers impressive views of Cone, Brown's, and Cholla mountains to the northeast. Photo by Dennis Eckel



Climbing Rocks in the McDowells!

By Erik Filsinger, Ph.D.



Above Photo: What goes up must come down. Rappelling allows a climber to safely lower themselves down the rockface without assistance from another person, as shown by the author in the Rock Knob area near Tom's Thumb Trailhead. Photo by Cheryl Beaver

Inset Photo: The climbing map at Tom's Thumb Trailhead identifies climbing areas and access routes along with climbing safety information and City of Scottsdale climbing policies. Photo by Jim Tillinghast

Scottsdale's extensive granite crags (high, steep, rough rock faces) have attracted rock climbers for decades. Climbers began ascending rock formations in Scottsdale in the 1940s. The McDowell Mountains were a focal point for these

early explorers, and many of the early roads and trails were laid out by them. When the McDowell Sonoran Preserve movement became active, climbers were among the organizers and supporters who helped achieve what we see today.

I became active in the Preserve movement in the 1990s and served six years on the McDowell Sonoran Preserve Commission and six years on the Board of Directors for the McDowell Sonoran Conservancy. I worked with City of Scottsdale staff to identify the climbing crags and access trails and helped develop climbing policies and maps.

Today, many recreational climbers seek out the stellar granite in Scottsdale's McDowell Sonoran Preserve. Local, state, national, and international visitors come to climb here. There are nearly 40 climbing crags in the Preserve and more than 500 climbing routes. Two of the climbing crags very popular with beginning climbers are Girlie Man, accessible from Tom's Thumb Trailhead, and Pasta Slab, accessible from Granite Mountain Trailhead.

To access climbing areas in the Preserve, climbers hike or bike the official trails from the trailheads to signed climber routes leading to the crags. Specific rock formations are designated as open to climbing and, on those crags, specific routes are identified. A climbing map is available at Tom's Thumb Trailhead.

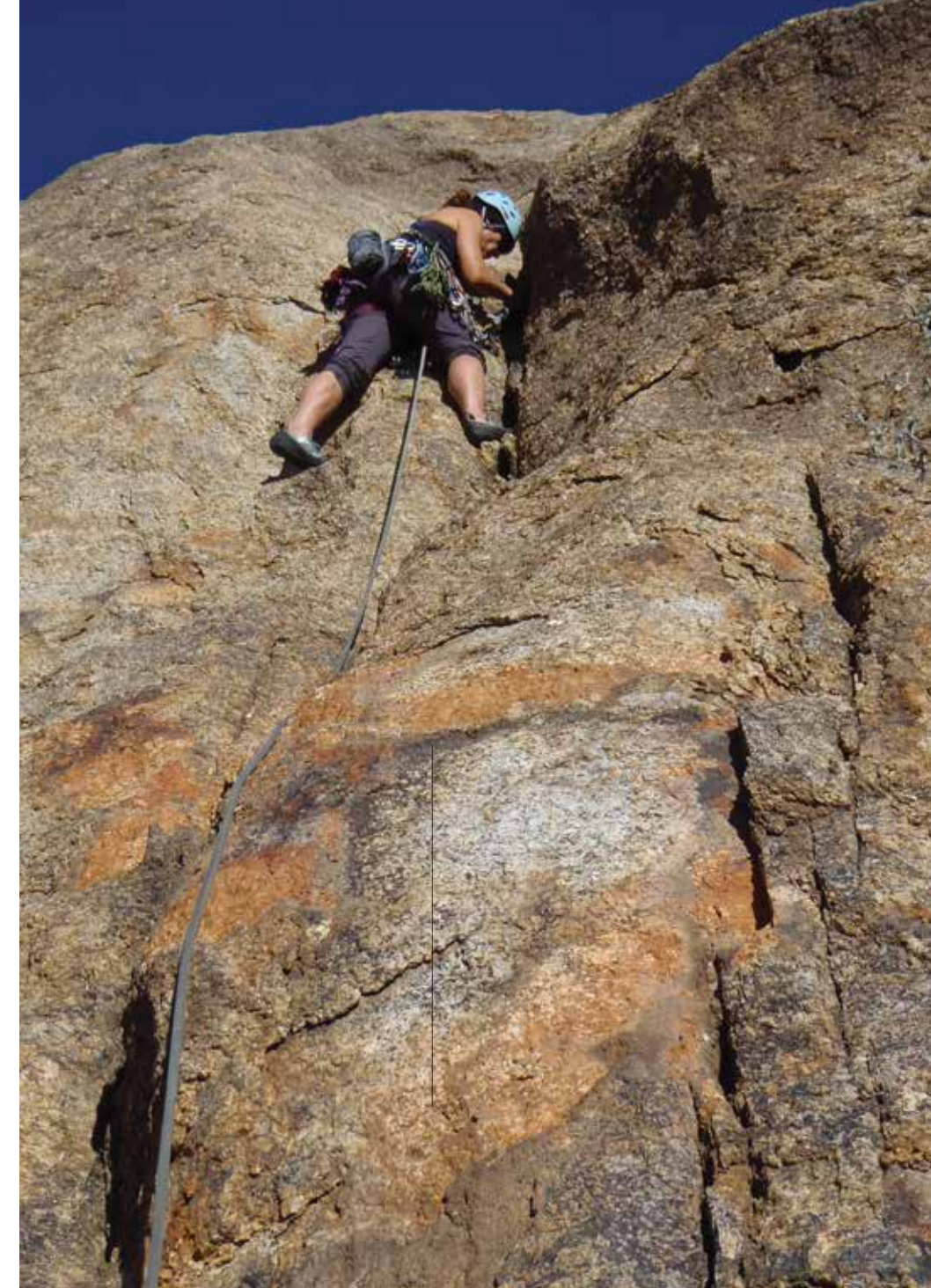
Rock climbing requires the proper equipment, which includes harnesses, shoes, ropes, and helmets. Generally, a "lead" climber ascends the climb first, either clipping into existing bolts with runners and carabiners or placing removable protection for the same purpose. This allows the climber to



Granite Mountain offers a different climbing experience from the Tom's Thumb area, as these climbers experienced. Photo by Jim Tillinghast

ascend in the relative safety of limiting potential falls to no more than the distance they are above the last point of protection. Once at the top of the climb, the leader sets up on anchor, often into fixed protection consisting of bolts and hangers. The "second," or follower, is then brought up to the top by the leader belaying them (taking in the rope as they climb). Once the party is at the top, the climbers fix the rope through the anchor and rappel back down to the bottom. Rappelling involves the use of a friction braking device that allows the climber to control their rate of descent to a slow walk backwards down the climb.

Occasionally on shorter climbs, the lead climber may set up a sling-shot belay system by leading to the top, placing the rope through the anchor, and then lowering back down to the bottom. This results in both ends of the rope being at the bottom, and the



A climber, in the role of lead, ascends the rock face before others in the climbing group and periodically connects the rope to protection equipment like expansion bolts and pitons as a safety precaution in case of a fall. Photo by Erik Filsinger

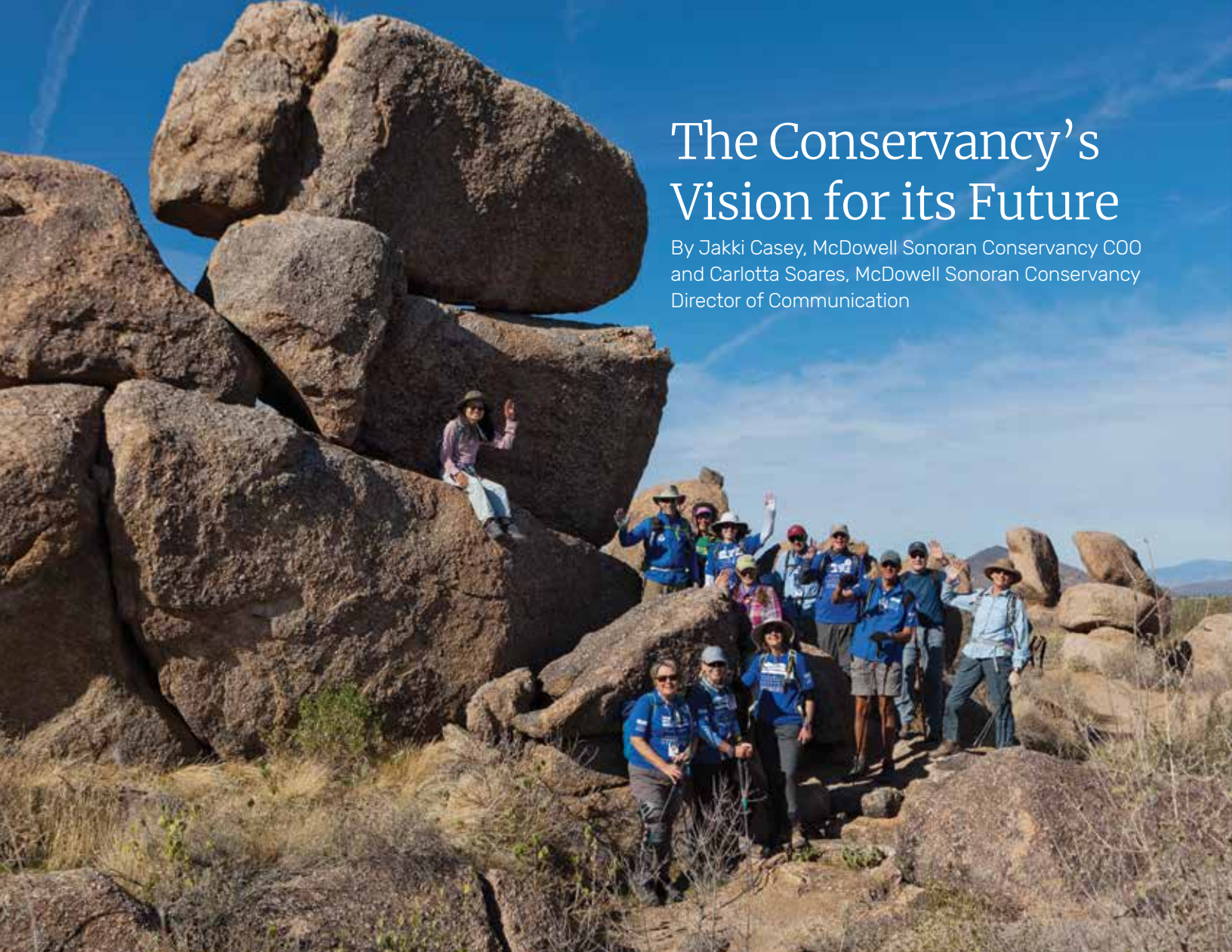
"second" can simply climb up to the anchor and then be lowered back down by a belayer on the other end of the rope.

Rock climbing has become a popular sport, and beginners often start at the indoor rock gyms around the Valley before going outside. Many also go with guide services or

clubs to learn to climb in the outdoors right away. An internet search easily produces a fruitful list of options. For more information see the climbing guide that Cheryl Beaver and I co-authored entitled "McDowell Rock, A Climber's Guide," which is available from online and local retailers. ▲▲

The Conservancy's Vision for its Future

By Jakki Casey, McDowell Sonoran Conservancy COO and Carlotta Soares, McDowell Sonoran Conservancy Director of Communication



The responsibility for sustaining the Sonoran Desert for future generations is shared by all of us who frequent the McDowell Sonoran Preserve. We are all stewards of the land. Photo by Dennis Eckel

Success in most endeavors is largely dependent upon the structure and viability of a well-defined plan. Over the past 30 years, the McDowell Sonoran Conservancy has worked hard to progress to where it is today by overcoming obstacles that, for some, may have seemed impossible. This accomplishment didn't happen overnight. It required careful planning and persistence in designing and implementing plans over the years. The inspiration for the next 30 years depends on the Conservancy's

ability to keep protecting natural open spaces, empowering the next generation of environmental stewards, engaging a wide range of communities, and creating impactful education.

Over the past year, the Conservancy's Board of Directors, stewards, and staff took a holistic look at where the Conservancy is now and where they would like the organization to progress over the next five years and beyond. The group embraced the Conservancy's mission, vision, and foundational pillars of science, education, and stewardship

and developed a strategic plan that sets the Conservancy's direction and focus for the future.

Among those goals are advancing research and conservation work with stakeholders to protect the Sonoran Desert and other arid and semi-arid environments. In order to achieve this goal, we will make research understandable and accessible to different communities. We will insert personal calls to action in our communications to help everyone realize they have a role to play. Collaboration

and cooperation are essential as our ecological challenges, such as invasive non-native plants, are not limited to one area—they span Scottsdale, Arizona, the Sonoran Desert, and beyond. Prioritizing and tackling these challenges in conjunction with other organizations and groups will increase our joint chances of success.

From our beginnings, education and outreach have played critical roles in inspiring future generations about the significance of natural open space. We will create immersive education opportunities while designing a flexible learning program with multiple entry points. We will continue to engage with multiple communities and endeavor to provide an opportunity for everyone to engage in environmental stewardship. Our formal youth programming will embed Arizona science standards throughout all programming and enhance collaboration with school districts to support school districts, teachers, and students. Our outreach efforts will increase, and we will provide greater opportunities for more people to get involved in numerous ways.

Our steward program has long been at the core of who we are and what we do. This unique, talented, and special group enables us to achieve so much. Leveraging our exemplary steward program and utilizing Scottsdale's McDowell Sonoran Preserve as our foundation for where we learn, advance, and teach will enable us to continue to have a significant impact on Scottsdale and beyond.

We have been very fortunate to have received ongoing and increasing



Stewards associated with the Conservancy's Parsons Field Institute working on Brown's Mountain researching cost-effective treatment options for invasive buffelgrass. The Field Institute also monitors the health of the ecosystem, identifying appropriate management actions and educating the community. Photo by Tiffany Sprague

support from The Bob & Renee Parsons Foundation. This provides us with some of the necessary resources to achieve our goals, enhance programs for youth in underserved communities, and expand and share our scientific research with those in similar environments around the world.

The Conservancy has transformed

from a land conservation organization into a leading science, education, and stewardship institution. The strategic plan will further our mission to preserve natural open space through science, education, and stewardship and to create a culture that ensures preservation of natural open space for all to enjoy into the future. ▲▲



Children attending 2020 Expedition Days learn about watersheds and how rainwater drains or "sheds" into desert washes and streams. Photo by Lynne Janney Russell

Monsoons Get Things Hopping!

By Rob Hallagan, McDowell Sonoran Conservancy Steward and Amphibian Field Lead and Sue Handke, McDowell Sonoran Conservancy Legacy Steward and Amphibian Project Lead



Although many of us have heard toads like this Great Plains toad call, few get to see it happen. By expanding its vocal sac, a toad not only puts on an impressive show but is also able to create an incredibly loud call that can be heard up to a mile away. Photo by Randall D. Babb

Yes, there are amphibians in Scottsdale's McDowell Sonoran Preserve—hidden, buried in the earth, waiting for the rain! For the first time in three years, heavy monsoon rains last August filled up depressions, washes, and ephemeral pools, providing perfect conditions for the toads to emerge and breed. Toads depend on a water source to lay eggs and complete their lifecycles. Desert toads, faced with extremely arid conditions, have uniquely adapted. Because water sources dry up quickly, they must complete the metamorphosis from eggs to tadpoles to toadlets more

quickly, before the evaporating water disappears. In 2016, stewards working under the Citizen Scientist Program with the McDowell Sonoran Conservancy's Parsons Field Institute began annual amphibian surveys at an ephemeral water catchment in the Preserve. This area is monitored during the summer monsoons to document species presence, lifecycles, and relative abundance. In 2019, prior to construction increasing in the surrounding area, these efforts increased to include weekly monitoring from July through September to assess species

phenology (timing of emergence, reproduction, metamorphosis, and retreat into hibernation) in relation to water availability. Monitoring is essential to protect these species and their environment and to be proactive in management decisions. These toad surveys are one of the rare nighttime events authorized in the Preserve. Because they are conducted after closing hours and in sensitive habitats, the Conservancy obtains special permits from the City of Scottsdale and the Arizona Game and Fish Department to conduct this research.



Not all red-spotted toads have red spots. The best way to identify this species is by the round parotoid glands behind their eyes. In toads, these raised bumps contain toxins that are used to deter predators. Photo by Randall D. Babb



Adult Sonoran Desert toads can be easily identified by their large size, relatively smooth skin, and white warts behind their jaw and on their hind legs. These toads can be highly toxic to pets, so please keep an eye on your pets when outdoors. Photo by Debbie Langenfeld



Woodhouse's and Great Plains toads can be tricky to tell apart. Woodhouse's toads have a white stripe running down their back, whereas Great Plains toads typically have paired blotches on the back of their neck. Both have sausage-shaped parotoid glands behind their eyes. Photo by Randall D. Babb

Toads live most of their lives underground and can go several seasons without emerging if the conditions aren't suitable. During the previous two dry summers, few toads emerged from the dry, cracked soil to forage for food, only to retreat back into the soil without breeding. Late last summer and early fall, with the heavy rains filling up the washes and depressions, toads emerged and began the process of calling to their mates, breeding, and laying strings of eggs in the water. Within the next 24 to 48 hours, the eggs hatched and tadpoles by the hundreds were seen. The metamorphosis process varies among our five documented species:

Couch's spadefoot (*Scaphiopus couchii*) is a 3.5-inch toad. Their call sounds like the bleating of sheep. They mate and lay small clutches of eggs that same day. Eggs hatch within 36 hours, and the metamorphosis from tadpole to toadlet occurs in less than nine days.

The red-spotted toad (*Anaxyrus punctatus*) is three inches, and their call is a high trill lasting four to ten seconds. Eggs are laid singly, hatch in a few days, and metamorphosis occurs in one to two months.

The Sonoran Desert toad (*Incilius alvarius*) is the largest toad in Arizona. Adults can reach eight inches in length, and their call is a low shriek. Eggs are laid in long strands of up to 8,000 eggs, and metamorphosis occurs in about a month.

Great Plains toads (*Anaxyrus cognatus*) are between three and four inches in length, and their call is a long metallic trill that can last up to a minute. Eggs are laid by the thousands in long strings and hatch in a few days; metamorphosis occurs in 18–45 days.

Last summer, we discovered a fifth toad species in the Preserve, the Woodhouse's toad (*Anaxyrus woodhousii*). This large toad can reach up to five inches. Their call is loud and sounds like a high-pitched scream. They can lay up to 20,000 eggs in long strings, and tadpoles metamorphose in five to eight weeks.

By the end of the last monsoon season, adult toads and newly morphed toadlets had eaten a bellyful of food to sustain them for 10 months or more. These amphibians buried themselves deep into the ground, hopefully to emerge next summer when thunder vibrates the ground, moisture is in the air, and there is a promise of rain. ▲▲



A Conservancy steward and member of the Pathfinder Program offers the new Sonoran Desert Explorer Guide to two young Preserve visitors at Fraesfield Trailhead. Photo by Lynne Janney Russell

New Sonoran Desert Explorer Guide Offered at Trailheads

By Gina Clark, McDowell Sonoran Conservancy Lead Steward

Families are drawn to Scottsdale’s McDowell Sonoran Preserve to enjoy time together in nature and to introduce children to the unique characteristics of the Sonoran Desert. Since last fall, along with maps and activity guides, McDowell Sonoran Conservancy Pathfinders have been providing families with a new educational offering, the Sonoran Desert Explorer Guide.

The Guide uses inquiry and exploration to foster a discovery process for children during their time in the Preserve. According to educators,

inquiry and exploration help children remember what they have learned because what is taught is applied to the child’s own experiences.

The Sonoran Desert Explorer Guide was developed last summer by the Conservancy’s education team and a group of expert stewards with many years of hands-on experience in the Preserve. The guide opens with an overview of the Sonoran Desert and the “Desert Explorer’s Code,” which helps children and families understand their responsibilities while hiking in the desert and serves as a reminder to

follow Preserve rules.

The Guide also describes ecosystems that exist in the Sonoran Desert and emphasizes the connections between the geology of the Preserve and the plants and animals that make their homes there. The ecosystems are presented through three themed lenses: geology, adaptations, and water. Several photos illustrate the ecosystems that families may experience on the Preserve trails.

One ecosystem highlights the geology of the Sonoran Desert and the plants that thrive in the rocky terrain,

including the “Mighty Giants,” saguaros (*Carnegiea gigantea*), which grow only in this region. A saguaro forest, called a cohort, illustrates how saguaro growth benefits from monsoon rains. Saguaros also benefit from pollinators such as white-winged doves, bees, and bats.

Another ecosystem highlights plant and animal adaptations by illustrating what happens at night in the Sonoran Desert. Night blooming, white, fragrant flowers attract pollinators that are most active at night. Cacti open their pores at night to take in carbon dioxide, which helps them to conserve water during cooler temperatures. Many animals make appearances mainly at night to search for food and water. During monsoons, water is captured in washes and rock

depressions called tinajas, the Spanish word for little jars.

The third ecosystem describes how desert washes carry water during the monsoon season and provide a natural pathway for animals to follow when the washes are dry. Washes also provide shelter for animals who make their homes along the banks. Mesquite (*Prosopis velutina*) and palo verde (*Parkinsonia sp.*) trees and other plants thrive along washes, providing food for animals. Native Americans used the high banks of washes to hunt deer and other game and used nearby stones to make tools such as arrows and hide scrapers.

Another Guide section titled “Bites, Stings and Oozes. Oh My!” describes plants and animals that children should

be mindful of as they hike in the desert. Rattlesnakes, Gila monsters, and “jumping” teddy bear cholla (*Cylindropuntia bigelovii*) are a few of the plants and animals described. This section helps children become aware of some of the more dangerous aspects of the Sonoran Desert in a positive, educational way, emphasizing that “everything has its place...remember to stay in your space!”

The Sonoran Desert Explorer Guide offers children a fun, inquiry-based format, highlighting things that may be seen on their hikes. Through the new Guide, the Conservancy hopes to inspire families to appreciate the wonders of the Sonoran Desert and to become proactive stewards of natural open spaces. ▲▲



The Desert Explorer’s Code featured in the Guide teaches children how to safely hike on the trails of the McDowell Sonoran Preserve. Photos by Lynne Janney Russell



The Scavenger Hunt helps families identify the flora and fauna they may see on their hike. Ecosystem pages expand learning beyond the hike by highlighting the life that exists in desert washes, saguaros, and the desert at night.



The pincushion shaped head of the New Mexico thistle is comprised of many small flowers (florets). Photo by Lisa Rivera

New Mexico Thistle: A Victim of Mistaken Identity

By Lisa Rivera, McDowell Sonoran Conservancy Lead Steward and Certified Citizen Scientist

“Innocent until proven guilty.” Unfortunately, that is often not the case for one of our most beneficial native wildflowers, the New Mexico thistle (*Cirsium neomexicanum*). Its Spanish name, *cardo santo*, means “holy thistle,” and this plant certainly is worthy of praise.

Standing tall among other wildflowers, this biennial with hairy, prickly, gray-green leaves is capable of reaching upwards of 6 feet. In spring,

it’s topped with one or more lavender, pink, or white pincushion-shaped blooms, which smell divine. Just be sure to check for bees before sniffing!

These fuchsia-flowered beauties are an integral part of ecosystems throughout the Southwest and are vital to local wildlife. The plant’s leaves, stems, nectar, pollen, and seeds are food sources for numerous native species, including herbivores, hummingbirds, songbirds, butterflies,

bees, and other beneficial insects. Painted lady butterflies use it as a host plant.

Despite all these benefits, there seems to be a common misconception that all thistles are bad. In fact, there have been several cases of New Mexico thistle mistakenly being pulled in Scottsdale’s McDowell Sonoran Preserve and other natural areas by well-meaning visitors. Unlike non-native thistles, there is no threat of this native

thistle taking over natural habitats. In contrast to other parts of North America where invasive thistles are a major issue (including northern Arizona), we are fortunate that the Preserve contains only one non-native



The seeds of the New Mexico thistle have long, silky bristles that provide nesting material for native bees and goldfinches. Photo by Lisa Rivera

member of the thistle tribe (*Cardueae*), the Maltese star-thistle (*Centaurea melitensis*). Thankfully, it is very easy to distinguish between the native New Mexico thistle and the weedy Maltese star-thistle when they are in bloom, as the latter has yellow flowers and is a smaller plant overall.

Arizona has at least ten additional native *Cirsium* species with flower colors ranging from yellow (*C. parryi*), white (*C. scariosum* var. *coloradense*), and whitish-pink (*C. mohavense*, *C. rydbergii*, *C. wheeleri*, and *C. wrightii*) to dark pink (*C. arizonicum* and *C. ochrocentrum*) and purple (*C. grahamii* and *C. undulatum*). Our state’s native thistles are adapted to a variety of habitats, including deserts, mountain

forests, grasslands, wetlands, and roadsides. Sadly, Wright’s marsh thistle (*C. wrightii*) is proposed to be listed as an endangered species; therefore, it is imperative that extra care is taken to ensure that it is not misidentified and

targeted for removal like its invasive Eurasian cousins.

New Mexico thistle is the sole native species in the genus *Cirsium* occurring in the Preserve, which is also one of the few places locally where it grows wild. Some locations where you are likely to find this spring-flowering plant are along the Feldspar Trail near Tom’s Thumb, north of Granite Mountain Trailhead beside the Bootlegger Trail and 136th Street Express, east of Brown’s Ranch Road near Jane Rau Trail and

Chuckwagon Trail, and in the far north along The Divide and Coyote Canyon trails.

We hope you now agree that behind its prickly exterior, there’s a lot to love about New Mexico thistle! If you are inspired to add this native wildflower to your outdoor space, and attract a variety of pollinators in the process, seeds are available from the Maricopa Native Seed Library and Borderlands Nursery & Seed. Fall is the ideal time to sow the seeds because winter rains stimulate germination.



Keep in mind that spiny leaves are not necessarily an indication that a plant is a noxious weed, as demonstrated by the New Mexico thistle. Photo by Lisa Rivera

The plant grows vegetatively the first year, establishes a large taproot, then bolts the following spring with its signature powder puff flowers. So, when there is an especially wet winter, two springs later expect to see an abundance of New Mexico thistle blooms. ▲▲



In addition to their value to wildlife, New Mexico thistles offer gorgeous spots of color while reaching toward the Preserve’s gorgeous blue sky. Photo by Dennis Eckel



The Conservancy commemorates each steward class by taking a group photo. In October 2021, steward class #87 had their opportunity to pose for their group shot after completing Stewardship 101. Photo by Gina Clark

How Do I Get One of those Blue Shirts?

By Art Ranz, McDowell Sonoran Conservancy Master Steward

Out on the trail, I often get asked, “How do I get one of those blue shirts?” I give them a McDowell Sonoran Conservancy card and tell them, “There is a life-changing experience waiting for you!”

The first steward training class of eight volunteers took place over many evenings in people’s homes in 1998. The focus was on advocacy, and stewards learned to maintain and promote Scottsdale’s McDowell Sonoran Preserve. Creating and maintaining trails, advocating for enlargement of the Preserve, and educating the public were key. In subsequent years, training moved to two full days in more formal sessions.

Then, with the large acquisition of land to the north in 2012, the need for stewards grew substantially. New Steward Orientation, as it was then

called, grew to 20 participants per class and was conducted in a single, very full day. Although some compared the training to drinking from a fire hose, it produced many dedicated stewards.

The mission of the Conservancy has evolved as the Preserve stabilized in size and the number of visitors soared. The mission of stewardship remains strong, but the other pillars of science and education moved into sharper focus. We began using science to understand not only the Preserve but also the surrounding desert lands. It is paramount to educate the public and scientific community about our arid lands in order to preserve them. This evolution created the need for a new kind of steward—one who could effectively promote and advance all three pillars of science, education, and stewardship.

As my father says about golf, “Somebody likes every shot, either you or your opponent.” When COVID-19 came to town, we had to shut down training for 18 months. It afforded time to reevaluate the process that had become known as Stewardship 101, or S101. We interviewed Conservancy staff, long-time stewards and those who recently completed S101, program chairs, city staff, S101 presenters, and other stakeholders in the training process. It became obvious that the materials and training were terrific, but the delivery needed to be more efficient and the message needed to be geared more toward the Conservancy’s evolving mission.

As a result, the emphasis in S101 has shifted from the Preserve to the Conservancy. Our dedication to the Preserve has not wavered, but we also



Stewardship 101, the first step in the journey to become a Conservancy steward, provides the opportunity to meet dedicated stewards and staff. Here, McDowell Sonoran Conservancy CEO Justin Owen talks to stewards-in-training during the October 2021 Stewardship 101 class. Photo by Gina Clark

stress our growing education programs for adults and especially children. We discuss our partnerships with other scientific and environmental organizations. We talk about our research being published in highly regarded peer reviewed journals.

Because of the increasing amount of material that must be learned to qualify as a steward, we organized some content as homework before and after class. Class is now less than half a day, with more time devoted to developing connections among participants.

In addition to S101, Stewards-in-Training must complete Desert First Aid, as well as an excellent educational course, Sonoran Desert 101. This new requirement teaches a

basic understanding of the fauna, flora, geology, and history of our arid lands in and around the Preserve. Completing an introductory experience in three different programs assures future stewards gain a broader understanding of the Conservancy. Quizzes and online

training videos round out the process. Plus, we have a crew of wonderful steward mentors who help incoming stewards navigate the steward-in-training journey.

Becoming a steward is a process of personal and social enrichment—all

focused on a terrific mission.

Come join us. Information about how to become a steward can be found at mcdowellsonoran.org/stewardship/volunteering. You can expect to do some good, learn some stuff, get some exercise, share your talents, make some friends, and have lots of fun along the way. Oh, and you’ll get your very own blue shirt! ▲▲



S101 is structured to give participants opportunities to meet and get to know many of their classmates and, thus, begin creating a peer social support network from day 1 as a steward-in-training. Photo by Gina Clark



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Connect with us:



The Scottsdale McDowell Sonoran Preserve is owned by the City of Scottsdale and is managed through a unique partnership between the City of Scottsdale and the McDowell Sonoran Conservancy. Our shared goal for the Preserve is to maintain it in a natural state while providing appropriate recreational and educational opportunities for this and future generations.

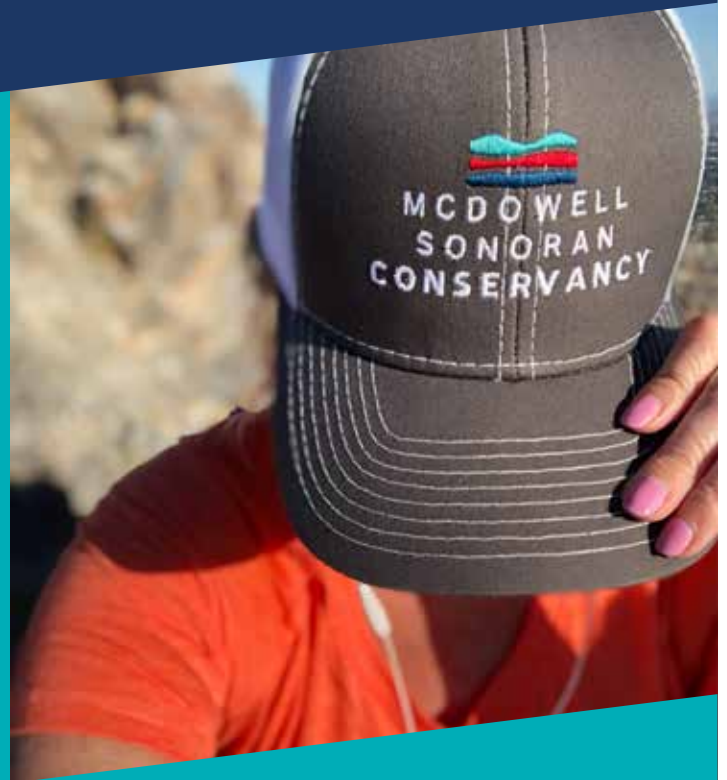
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