



MCDOWELL
SONORAN
CONSERVANCY

Mountain Lines

MAGAZINE OF THE MCDOWELL SONORAN CONSERVANCY SPRING 2020



Explore the new Pima
Dynamite trails on a bike

Our dogs enjoy
hiking too!

Instagram Hotspots



Justin Owen, CNAP

Spring in the Sonoran Desert brings with it the opportunity to introduce the places we love so dearly to new audiences, and to re-acquaint ourselves with the vibrant and blossoming world in which we live.

The McDowell Sonoran Conservancy takes time in this season to honor our supporters and partners, bring students to our natural desert for education, and invite the public to experience some of the unique and special

features we offer. Our stewards are especially active with assisting users and advancing our scientific and educational programs both in our natural desert and in classrooms across the Valley of the Sun.

From the Crested Saguaro to the Ringtail, the Conservancy and our stewards work tirelessly to assure access to and appreciation of natural open spaces. Whether that be through enjoying the over 225 miles of trails in the McDowell Sonoran Preserve or through our science and education programs, we invite you join us to walk, hike, bike and learn about our world.

Your support is the only way we can continue to advance natural open space through science, education, and stewardship. Our partners, stewards, community and the public assure that we can continue to educate desert dwellers and visitors alike about preservation, sustainable use and ensuring our open spaces thrive into the future.

Thank you for your continued support and I look forward to seeing you out on the trails! ▲▲

About Us

Our goal is to empower awareness and actualize global preservation through science, research, learning and teaching. Through the work of our scientific team and the dedication of more than 650 tireless volunteer outdoor advocates, we care for and study the McDowell Sonoran Preserve.

Connect with us:



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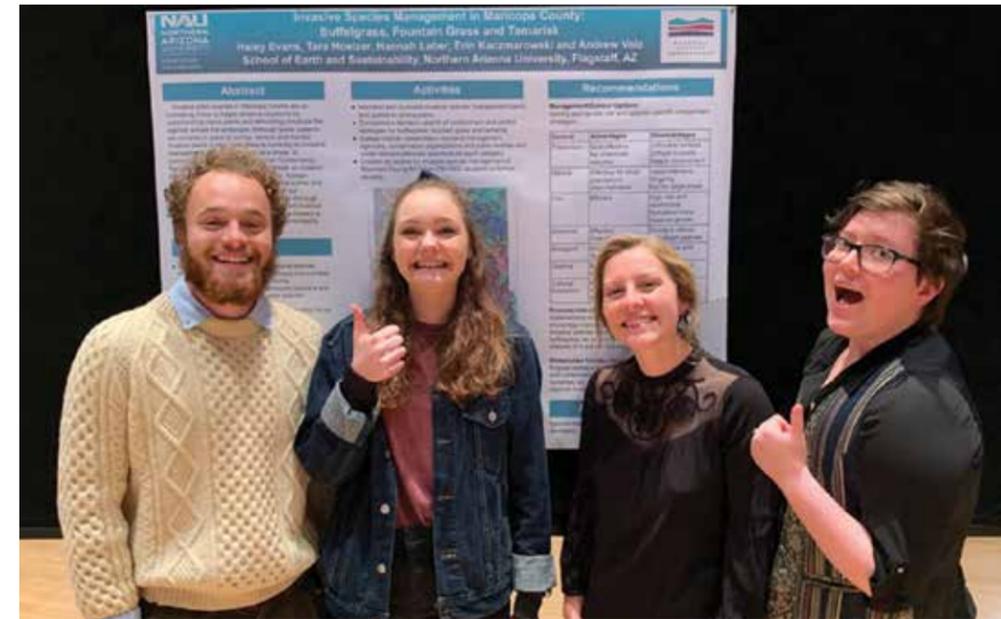
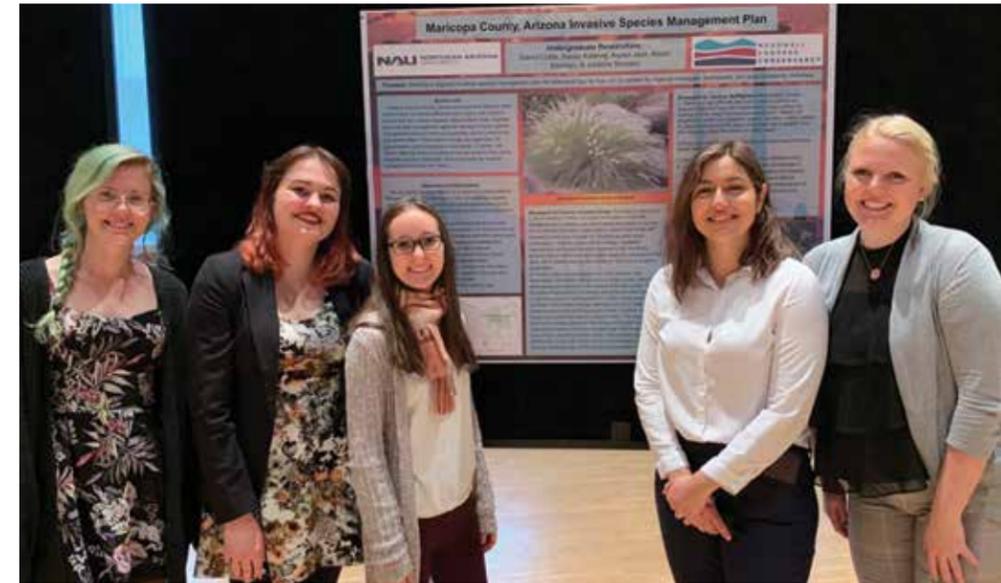
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Northern Arizona University and The McDowell Sonoran Conservancy Partnership

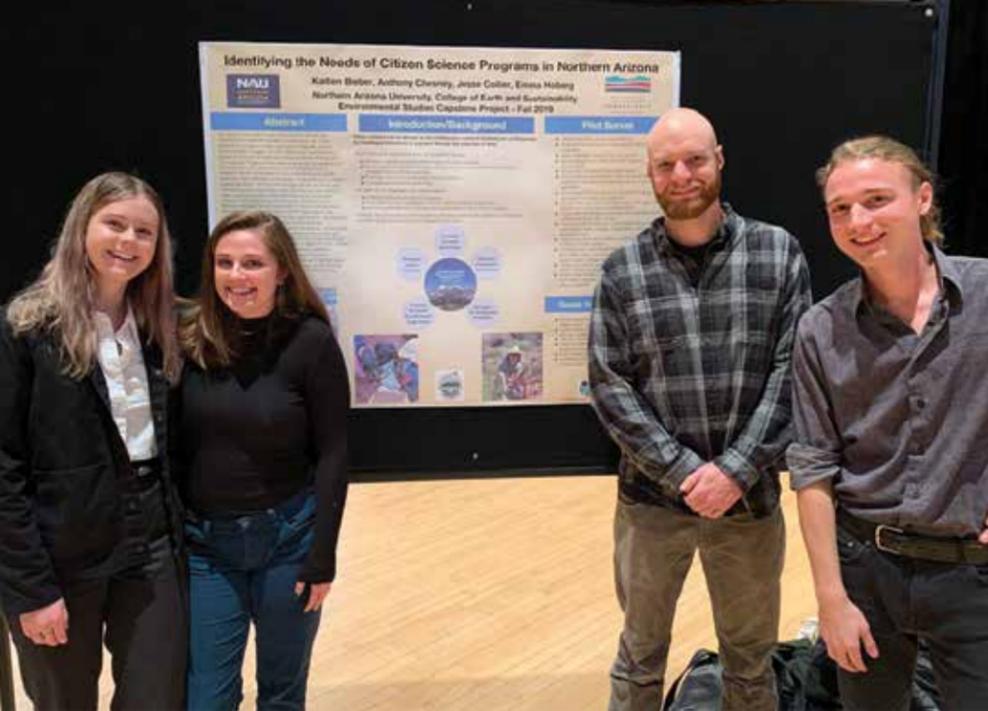
By Helen Rowe,
McDowell Sonoran Conservancy Parsons Field Institute Associate Director

The McDowell Sonoran Conservancy and the School of Earth and Sustainability (SES) at Northern Arizona University (NAU) are partnering on a new conservation practice research program. In this program, students at SES work on projects with the Conservancy's Parsons Field Institute through internships and group capstone projects. In this win-win partnership, the Parsons Field Institute is expanding its breadth and scope by leveraging the work of university students and creating new research partnerships. Likewise, students access unique opportunities to bridge science and natural resource management. "Many of our students want to become conservation professionals and make a real difference in the world. This partnership represents a commitment to place students with meaningful conservation projects and internships so they can gain the experience they need," explained Nancy Johnson, Regents Professor and Director of SES, NAU.

In support of this partnership, Parsons Field Institute Associate Director Dr. Helen Rowe began as an associate research professor at NAU in Fall 2019 as a split appointment with her position at the Conservancy. She says, "This is a great opportunity both in terms of expanding our research partnerships and training the next generation in research



Two NAU student groups focus on each Conservancy "pod," one from each section of the course. At the end of the course, students present their work. Here, the two groups focused on developing an Invasive Species Management Plan for Maricopa County share what they learned during a student poster session. Photos by Scott Anderson.



Above and below: The Conservancy knows the importance of citizen science and is grateful for the opportunity to help others build citizen science programs. These NAU students helped identify citizen science needs in the Flagstaff area. Photos by Scott Anderson.

and conservation practice.” Dr. Rowe teaches two required courses within SES: an internship experience course and the Capstone course.

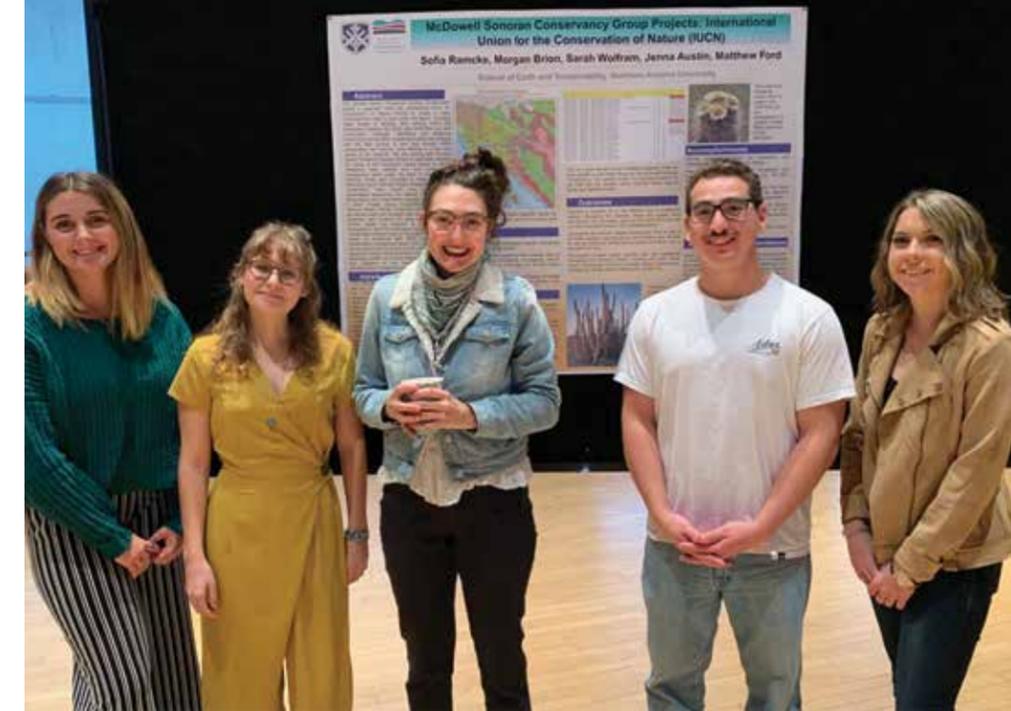
The internship course provides students with experience to help prepare them for careers in their field.

Students must develop a proposal, complete 150 hours on their project, and provide a summary report at the end to receive credit. These internships not only help the students but also fill Conservancy needs. For example, the Parsons Field Institute has been

leading a regional program to survey distributions and gather other key information on non-native plant species. In Summer 2019, two students surveyed non-native plants in some regional parks, helping fill in large areas missing from our dataset. A second key need was from our acoustic ecology project, which aims to better understand how noise propagates across the landscape and if urban noise levels may be affecting wildlife. From September 2018 to September 2019, we had 12 acoustic recorders in Scottsdale’s McDowell Sonoran Preserve, which generated thousands of hours of recordings, all of which need to be reviewed and tagged. Quite a task! Our stewards and research partners have been making progress, but students greatly aided this process. During the Fall 2019 semester, four students listened to and tagged more than 250 recordings. As another example, Dr. Rowe will be working with a class of 11 students over the current semester to initiate work on our International Union for Conservation of Nature (IUCN) project. As the host institution for the IUCN Sonoran Desert Plant Species Specialist Group, the Conservancy is responsible for assessing 250–500 plant species per year, ultimately determining the global conservation status of the almost 4,000 plant species found in the Sonoran Desert. Students will receive official training and produce draft assessments of a set of plant species, which will then be reviewed by experts. Their work will be critical to launching this globally important and regionally relevant work.

The Capstone course is designed to culminate the knowledge and experiences of students’ undergraduate careers. They learn important skills in presentation and the job application process and also complete a group project that harnesses what they’ve learned through their SES courses. In past years, each group would need to identify and work on the project all in the same semester. Given the short duration of a semester (15 weeks), this was a tall order and often fell short of providing meaningful products to project partners. In Fall 2019, Dr. Rowe teamed up with other instructors to provide meaningful project ideas that could be developed over two years. With this new approach, students divide into the five group project ideas (three Conservancy projects, two City of Flagstaff projects) each semester. Each group (“pod”) works toward the larger goal, making progress by meeting milestones manageable within the 15-week semester. The three pod projects led by the Conservancy include IUCN conservation, creating an invasive species management plan for Maricopa County, and developing citizen science programs in Flagstaff.

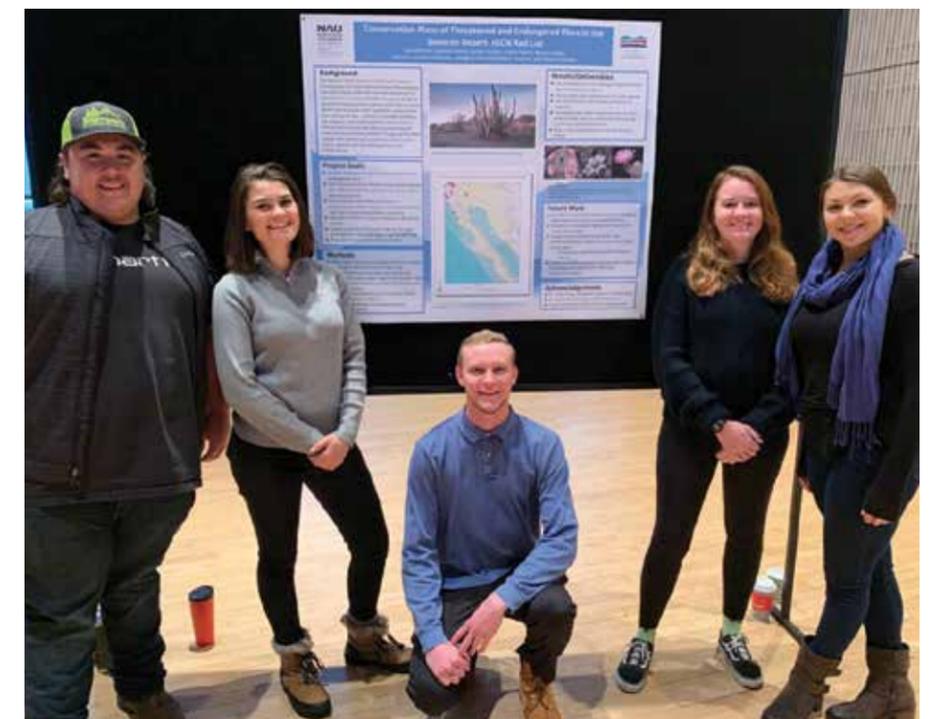
For IUCN, the Capstone students build on the species assessments by assisting with conservation planning and implementation for identified threatened species. Although the plant assessments are only just beginning, conservation planning can start with species already identified through the Endangered Species Act or other IUCN species specialist groups. Capstone students in the IUCN group are working



Above and below: The IUCN is the global authority on species status, helping to protect both common and rare species. These NAU students aided the Conservancy’s work to determine the status of the nearly 4,000 species of plants in the Sonoran Desert. Photos by Scott Anderson.

with a previously compiled list of threatened Sonoran Desert plants and are working to organize information found in existing conservation plans for these species. The overall goal of this project is to evaluate needs and provide tools and recommendations for

future conservation planning. The invasive species group aids our regional efforts to manage buffelgrass, fountain grass, and other target non-native plants. The Conservancy and our partners train stewards and volunteers across Maricopa County





Through internships and capstone projects, Drs. Helen Rowe and Scott Anderson help guide NAU students in learning about natural resource management, learning professional skills, and discovering careers. During this NAU poster session in December 2019, they provided feedback to students about their projects, evaluated the posters, and awarded the winning group with a prize. Photo by Scott Anderson.

to survey, remove, and monitor these species. Although many agencies have developed invasive species plans for their jurisdictions, there is currently no invasive management plan for the county. To fill this need, this student group will develop a regional invasive species management plan. Last semester, students working on this plan developed an outline based on scientific literature. They also wrote survey questions that students next semester can use to ensure that stakeholders provide input for an effective management plan. As an overall goal, students will write a regional non-native species plan and help identify tangible steps for implementing the plan.

The final group will help develop citizen science programs in Flagstaff. Although there are several citizen science initiatives, no centralized

hub or overall program exists. To better understand the need for better coordination or new programming, one pod group has the goal to identify what citizen science projects exist in Flagstaff as well as unmet needs (e.g., long-term monitoring on public lands). They will then develop a proposal for augmenting citizen science projects in the area. Students have made progress in enumerating the existing programs and developing survey questions for existing programs.

This latest partnership with NAU has built on existing relationships, including our soil crust cultivation work with Dr. Anita Antoninka and our regional restoration project (RestoreNet) with the U.S. Geological Survey, and has opened new doors for the Conservancy. For several years, we have been searching for a partner that can help analyze our long-term

arthropod data to understand how arthropod communities may be changing and what this may mean ecologically. At NAU, Dr. Rowe was excited to meet the new entomology partner, Dr. Richard Hofstetter, Professor of Forest Entomology, and his graduate student. They will join us in the field to better understand the field sites then analyze our existing data with the goal of publishing a paper so that we can share the results broadly.

This partnership promises to further our mission to preserve and advance natural open space through science, education, and stewardship while helping to craft the next generation of conservation stewards. This program not only gives students experience and knowledge but also offers students a bridge to conservation careers. ▲▲

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You call Arizona home and so do we. For nearly 135 years, we've worked with our families, friends and neighbors to help make the state shine.





The granite of Tom's Thumb creates a great backdrop for a photo, making the hike worthwhile.

Tom's Thumb

Why you should go:

Tom's Thumb is a great workout with a steady elevation gain incorporated into switchbacks. In the end, the trail opens up to panoramic views, perfect for snapping a photo in front of. Tom's Thumb is a classic in Scottsdale's McDowell Sonoran Preserve and is well known amongst nature lovers. This is a great trail to showcase your love for the outdoors. In addition to views, take a photo in front of Tom's Thumb elevation sign directly in front of Tom's Thumb! Take the opportunity to show off your accomplishment.

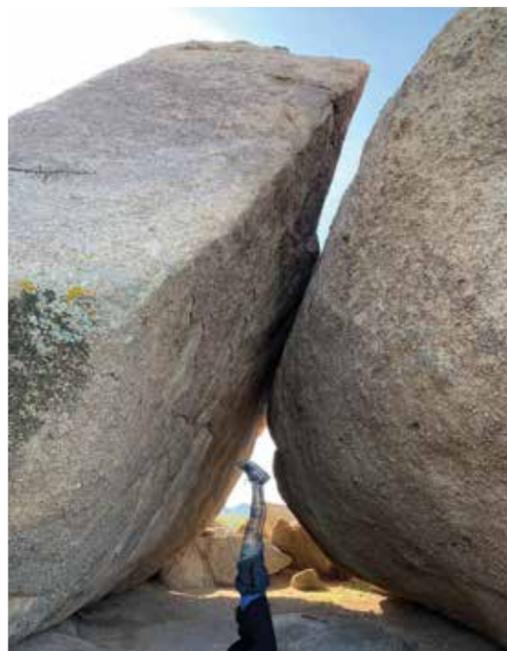
Starting point:
Tom's Thumb Trailhead.

Cathedral Rock along the Cholla Mountain Loop

Why you should go:

Cathedral Rock is a collection of tilted monoliths and grottoes. While the area may not seem like much upon arrival, give Cathedral Rock the opportunity to shine. When you're up close, there are "windows" to the scenic opening behind the formations. The area has crags as well as metates that were used by ancient inhabitants of the area.

Starting point:
Brown's Ranch Trailhead.



Even on the hottest of days, the shade under Cathedral Rock is welcoming.



Become an explorer at balanced rock

Balanced Rock near Granite Mountain

Why you should go:

Balanced Rock is a large boulder that somehow defies what we know about physics. This mushroom-shaped rock somehow stands upright on bare stone. Geologists could explain this one away... but the wonder of the formation is what makes this area a perfect place to take in a view and snap a great photo. Surrounded by cacti and desert views, Balanced Rock is the perfect place to stop on your Instagram worthy tour.

Starting point:
Granite Mountain Trailhead.



The entrance bridge to Gateway is guarded by a regal saguaro

Gateway Loop

Why you should go:

Gateway Loop has perfect scenic views to show off the desert landscape. There isn't one specific "wow" spot. Instead, the entire trail offers beautiful views

of the Sonoran Desert. Gateway offers very rocky terrain, ideal for showing off that out of the city feeling. Due to the popularity of Gateway, the location is instantly recognizable, perfect to demonstrate the connectedness of all of us using the Preserve.

Starting point:
Gateway Trailhead.



Taking a rest at the amphitheater before deciding where to head next

Amphitheater

Why you should go:

Off of the Cholla Mountain Loop Trail is the Amphitheater, which boasts breathtaking views of the granite rocks and cacti of the Sonoran Desert. Accessing the boulders that give way to the scenery the amphitheater offers is as simple as following the trail to the rocks. While this view is perfect to include in your feed, please proceed with caution and only attempt rock scrambling if your skill level, shoes, and comfort aren't exceeded.

Starting point:
Brown's Ranch Trailhead

Trails in the McDowell Sonoran Preserve are well marked; many of these landmarks are simple to find by following appropriate signage. Always remember to grab a map before heading out, bring plenty of water, comfortable shoes, and a charged phone! Of course... tag the Conservancy in your Preserve photos @mcdowellsonoranconservancy ▲▲

McDowell Sonoran Conservancy Service Enterprise Initiative Certified

By Katherine Challis,
McDowell Sonoran Conservancy Administrative Manager

The McDowell Sonoran Conservancy is delighted to announce that it has been certified as a Service Enterprise by Points of Light, the world's largest organization dedicated to volunteer service!

Achieving Service Enterprise certification is a prestigious accomplishment for an organization. This puts us in the top 10% of nonprofits

internal planning, process changes to better integrate volunteers into our human capital strategy, and, finally, an extensive assessment completed by the Governor's office. Many thanks to the team of stewards, staff, and board members who went through this process and helped lead the Conservancy to further success. Through the work completed to achieve this certification, the Conservancy is now better equipped to leverage the time and talent of our amazing volunteers and better meet our mission.

The mission of the Conservancy is to preserve and advance natural open space through science, education, and stewardship. Without the 650+ stewards who contribute 64,000 hours of service annually, we would not be able to accomplish all we do:

- educate 13,000+ youth annually through interactive activities and school visits
- enlighten 4,000+ adults each year through hikes, walks, lectures, and activities
- safeguard 950+ different species of desert plants and animals
- maintain 225+ miles of trails

Research conducted by the TCC Group, a national program and eval-



uation firm, found that organizations operating as Service Enterprises outperform peer organizations on all aspects of organizational effectiveness. They are also more adaptable, sustainable, and capable of scaling their work.

The Service Enterprise program is a national change management program that helps organizations gain a greater return on volunteer investment to better achieve their mission. We are so grateful for all of our stewards and look forward to accomplishing even more with this certification. For more information regarding volunteer opportunities with the Conservancy, please visit <https://www.mcdowell-sonoran.org>. For further information regarding Service Enterprise, please contact the Arizona Service Enterprise Hub at <https://getinvolved.az.gov/service-and-volunteerism/service-enterprise>. ▲▲



nationwide in terms of volunteer management and organizational performance. Certification signifies that we have the capability and management expertise to strategically use volunteers to improve the performance of our organization.

The Conservancy completed a year-long certification process that included training and coaching,



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NEW WEBSITE!



Don't Stop Retrievin'

We love to see humans and their furry friends out enjoying the beautiful Sonoran Desert. We thought we would take the opportunity to get to know some of the four-legged visitors that we all love to see out there. Sophie and Beau were gracious enough to stop and give a brief interview during their busy day.



Sophie:

Q: What is your favorite trail?

A: Gateway Loop

Q: What is your favorite thing about the Preserve?

A: It's beautiful and fun!

Q: What is the most embarrassing thing about your human?

A: So many things.... I guess she doesn't understand that I need to stop and smell everything. She's in more of a hurry than I am!



Beau:

Q: What is your favorite trail?

A: This is my first time here. We just moved here!

Q: What is your favorite thing about the Preserve?

A: This is new, and I'm excited. This is my first time hiking!

Q: What is the most embarrassing thing about your human?

A: Oh gosh, I don't know! Probably that she talks to me in public like I'm a human.

Just like Sophie and Beau, you and your dog can enjoy Scottsdale's McDowell Sonoran Preserve in a safe way. Sophie and Beau provided the following tips:

You carry a first aid kit for you, so add a little extra for me! Hiking booties, toddler socks, tweezers, and gauze are all good to have on hand in case I get an owie.

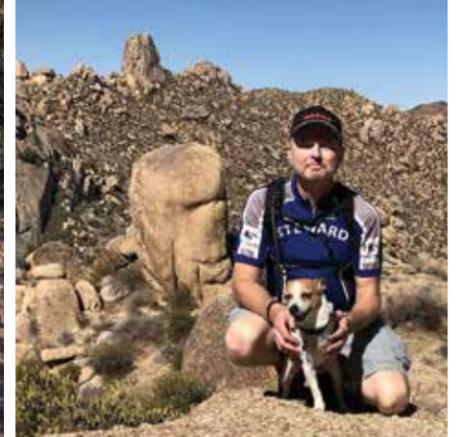
When it's over 90 degrees, I'd rather play inside. If you see a furry friend in trouble, please call 911! We want all dogs in the desert to be safe.

Remember, I'm a messy drinker! Always bring more water than you think I'll need and offer me a drink often. If my nose is dry, I'm dehydrated.

Just like my human, rocks hurt my bare feet. I might need to work up to hiking on rockier trails, such as Gateway. Bring me some booties in case I cut my paws out there!

Hiking is fun and exciting but please remember that, just like you, I need to work my way up to strenuous exercise. I'll need plenty of breaks to eat and take a drink of water. If you're in a hurry, I might need to stay home.

We want to sing praises for our unsung heroes: the canine companions of our stewards. Some of these furballs are in the Preserve just as often as our stewards! ▲▲



Snake Eyes, Tarantula, Scorpion!

By Art Ranz,
McDowell Sonoran Conservancy Master Steward

Snake Eyes, Tarantula, Scorpion! No, it's not a casino, and it's not Halloween. We are riding the new trails in the northern section of Scottsdale's McDowell Sonoran Preserve. The Brown's Ranch area has become known as a not-to-be-missed mountain bike ride in the West. With smooth trail beds, sustainable trail designs, and up-to-the-minute trail maintenance by our stewards, bike riders now come from far and wide and can easily outnumber hikers on any given day. The recently constructed trails stemming from the Pima Dynamite Trailhead offer excellent new options!

The new trails are indicated by dotted lines on the official map of the Preserve. After traveling less than two miles from the trailhead, we encounter the familiar black diamond warning signs indicating we have arrived at the new trails, which have been designed with biking in mind. Before this area became part of the Preserve, it was a well-used motor bike tromping ground, and the trails tended to be long and straight, going directly up and down hills. These characteristics made them unsustainable because of severe erosion during rains.

(Continued on page 16)





The trails pass through scenic boulder outcroppings.



Staying alert, and anticipating the next challenge. Photos by Dennis Eckel



Some of the trails offer a 'More Difficult' option, which require more technical skill and nerve. Photo by Dennis Eckel

Some of the old trails have been preserved, such as West Express, with modifications to prevent erosion and to make them viable over the long term. We use these trails as access to our real destination today, the winding, technical, rock-hopping trails in the central area of the north western Preserve. Heading north on Dare A Sarah, one of the improved original trails, the riding becomes more interesting, but not crazy. It makes you wonder how Sarah fared on this trail in the old days! Her trail is flowing, and the views in all directions are so impressive that we occasionally stop to gawk. Caution is advised in admiring the view and riding at the same time around here. We ride up to Snake Eyes and start to "roll the dice" on the trail choices. Along the way,

we encounter "Most Difficult" directional signs that indicate upcoming exciting rock formations to ride over. Alternate loop trails take us around these short challenging areas and make the rides enjoyable for an intermediate mountain biker. Even on these bypasses, our intermediate skill level makes us swallow our pride and occasionally walk our bikes. We learn there is no shame in walking a bike, and the beauty of the area gives us a chance to again admire the scenery in the short time out of the saddle. As we wander deeper into this maze of winding, rolling, up-and-down trails to the heart of the area, we rest at Scorpion Point with views of mountain ranges in all directions. The extent of the Troon Fire of 1992 becomes obvious with the scarcity of saguaros nearby

compared to the sudden explosion in their numbers west of Rawhide Wash. Finally, it is time to head home. The return trip to the trailhead is relaxing with a steady downhill run. Decompressing there, we decide we should return to hike the area. These are truly multiuse trails, and they make for reasonably easy hiking. There is little elevation change, the rock formations are easy to walk over, and the scenery is outstanding. The black diamond difficulty rating of these trails refer to biking, but these trails are not just for bikers. We encourage you to take a hike here. The McDowell Sonoran Conservancy offers more than 100 guided hikes and bike rides across the Preserve. Please see the calendar at mcdowellsonoran.org to join us. ▲▲



A New Approach to Youth Education!

By Nicole Kallman,
McDowell Sonoran Conservancy Education Coordinator

With a new decade comes exciting growth at the McDowell Sonoran Conservancy. In order to reach more Arizona students, the Conservancy is expanding its youth education, building on past success and finding new ways to support teachers and students.

In October 2018, the Arizona Department of Education passed new state science standards for the first time in more than a decade. These

new standards are based on the Next Generation Science Standards (NGSS), which have been adopted across the United States. Twenty states have fully adopted NGSS, and 24 states, including Arizona, have developed their own standards based on NGSS. But what does that mean and why does it matter for Arizona teachers, students, and even the Conservancy?

The new Arizona science standards are very different from what teachers

have been using for the past 14 years. The original standards, adopted in 1990 and revised in 2005, focused strongly on concept memorization (e.g., “Describe the major factors that could impact a human population”). The new standards, however, are inquiry-based, meaning students drive their own learning by asking questions about what they observe and then experimenting to construct a scientific explanation. For example, students

Engaging in inquiry-based lessons, students use their critical thinking skills to answer questions and construct explanations. Photo by Lynne Russell



Students are ready for a day of interactive, place-based learning at Expedition Days. Photo by Lynne Russell



By learning about other Sonoran Desert organisms, students broaden their understanding of their connection to the ecosystem. Photo by Lynne Russell

might observe that water forms on the outside of a cold glass. That one observation can lead to discoveries about the properties of water, heat, and energy and even spark an investigation into how the water cycle works.

These new standards provide a huge opportunity for informal educational programs to support teachers and inspire students. This past fall, the Conservancy rolled out our new Science, Technology, Engineering, Art, and Math (STEAM) program—Spectacular Saguaro—which reached 240 Title I students. This exciting new program integrated the new standards into other student-focused events in innovative, engaging ways.

Expedition Days 2020, held in February, helped students broaden their understanding of their place in the Sonoran Desert and assisted teachers in meeting a third grade Arizona state science standard. Over the course of two days, 650 students from three different school districts experienced Expedition Days, journeying through the desert and discovering their

connection to it. Back in the classroom, the Conservancy provided teachers with additional lesson resources to help them deepen and solidify students’ understanding of the interconnectedness of all organisms in the Sonoran Desert.

During Expedition Days, held at Lost Dog Wash Trailhead, third and fourth grade students went through five standards-based stations and one live animal station, all tied to the event’s central theme: “Urban Ecosystems: Your Place in the Sonoran Desert.” The lessons, created by Conservancy staff and stewards, engaged students in critical thinking and problem solving while still having fun. Students modeled the effect of non-native plants on native plant populations, investigated characteristics of the natural Sonoran Desert to help them identify the hidden desert in their own urban backyard, and more.

If you tell a student they should conserve water or that their trash impacts the environment, they may remember until the end of the day.

But if you ask a student to investigate why Arizona water is so important or how their waste affects the desert ecosystem, not only will students remember what they learned, but they will also feel empowered to make a difference.

Expedition Days is part of a larger vision in the Conservancy’s education program to integrate science standards into all youth educational offerings. Inquiry-based learning lends itself to education in informal settings, allowing students to engage with the world around them from a place of curiosity and wonder. This type of standards-based curricula provides real-world focus, enabling students to build new connections and understanding both in the classroom and in their everyday lives. With the incredible Sonoran Desert as a backdrop, the Conservancy looks forward to continuing to create educational opportunities that make nature accessible, educational, and exciting.





The Latin root of the word “fasciation” means “band” or “stripe.” That striping is evident in this saguaro along the Powerline Road #2, which shows a classic, balanced crest. Photo by Steve Jones

Crested Saguaro

By Steve Jones, botanist

Every now and then, a defect occurs in a main stem or arm of a saguaro (*Carnegiea gigantea*) that causes its growth point to become a growth line. The result of the defect is an undulating or fan-shaped stem with two flat sides. Saguaros with this defect are called crested saguaros. The condition, if it persists, can result in some truly amazing forms. Usually, the crest will break into numerous smaller crests or even revert to a number of new growth points, resulting in some elaborate display.

There is no firm explanation of what

induces the defect, although there have been numerous suggestions, including insect damage, radioactive particles, freezing, hormonal imbalance, lightning strikes, fungi, bacteria, viruses, and even bird poop.

Cresting is known in other cactus species besides saguaros. In Scottsdale’s McDowell Sonoran Preserve, there was a single barrel cactus (*Ferocactus cylindraceus*) with a well-developed crest. This plant was seen in 2009 along Quartz Trail but has since disappeared. In addition, a pair of crested Engelmann’s hedgehog

cacti (*Echinocereus engelmannii* var. *engelmannii*) were found in 2013 during the course of the Preserve’s baseline flora study. Saguaros, barrel, and hedgehog cacti are all columnar cacti, but creusting can happen in jointed cacti (prickly pears and chollas) as well. One chain fruit cholla (*Cylindropuntia fulgida*) in the Preserve has several crested joints.

Cactus crests are but one example of a condition known to occur in many other plant families. The condition is called fasciation, defined as “abnormal



Fasciation typically occurs along the growing tip of a plant, known as the apical meristem. Occasionally, the fasciated area reverts to normal growth. On this saguaro crest, three of its five segments appear to have reverted to single growth points. Photo by Steve Jones



Fasciation can affect any growing part of a plant. The elaborate cresting on this saguaro arm is impressive. Photo by Steve Jones



The fascinating patterns that fasciation causes in plants can, unfortunately, lead to illegal removal of those plants from the wild. This now-missing barrel cactus along Quartz Trail had a well-balanced crest. Photo by Steve Jones



Fasciation has been documented in a wide variety of plant species, including trees, ferns, and common fruits and vegetables. One of two crested hedgehog cacti known in the Preserve. Photo by Steve Jones



Regardless of species, fasciation can lead to intriguing patterns. The stem below this desert marigold flower is flattened as well. Photo by Steve Jones



“Marge,” a barrel cactus demonstrating monstrose growth, in which random, multiple growing points push the body of a plant outward in a disorderly fashion. Photo by Steve Jones



This crested chain fruit cholla joint clearly shows that the growth point has become a line. Photo by Steve Jones



The ring of arms on this now-deceased barrel cactus continued around the perimeter of the cactus. Photo by Steve Jones



These odd barrel cactus growths are the same color as its fruit. Note the one at center has green tissue and rudimentary spines as well. Photo by Steve Jones

fusion of parts or organs resulting in a flattened structure.”

A second, separate type of growth defect produces monstrose growth, which also occurs in cacti and has an unknown cause. Monstrose growth appears more disorganized than fasciation. Monstrose barrel cacti are quite common in the Preserve and surrounding area. An extreme example, known as “Marge” due to its resemblance

to a certain blue-haired animated character, can be seen in the landscaping at the entrance to Gateway Trailhead.

Although not an example of either fasciation or monstrose growth, one unique barrel cactus near the Jane Rau Trail had a ring of branches encircling it and also had some small, yellow growths that looked like crosses between a branch and a fruit. Unfortunately, the plant is now deceased.

Although the causes of fasciation and monstrose growth are not known, fasciation is heritable in a few species, such as the cockscomb flower (*Celosia* spp.), so genetics play a role. Heritability has not been a factor with cacti. However, quite a few species of crested and monstrose cacti can be found in the nursery trade. These curiosities are reproduced by cloning and are popular among cactus aficionados. ▲▲



Often, when people hear “ringtail,” they think of ringtail lemurs. But you can’t confuse this charismatic critter with a lemur! They look more similar to their cousins, coati mundi and raccoons. Photo by Scott Sprague, Arizona Game and Fish Department.

The Original Rock Climber and Pest Control Agent

By April L. Howard,
Arizona Game and Fish Department predator, furbearer, and large carnivore biologist

It was 3:30 on a warm Ajo morning. I was driving through a poorly lit neighborhood on my way to pick up a co-worker for another early day out in the field monitoring endangered Sonoran pronghorn in southwestern Arizona. As I turned a corner and

passed a wash, a slender cat with a long, bushy tail appeared in the beams of light in front of me. Wait a second. As my eyes slowly adjusted to the details outlining the small, cat-sized mammal in my headlights, I slowed down to watch the animal move across the

road. Something about its gait, slightly hunched body, and tail struck me as odd. It looked like no cat I had ever seen before. There were wide, dark bands around the tail, white rings around its eyes, and narrow, elongated ears. With mounting excitement, I realized that

this was no cat at all!

Although ringtails (*Bassariscus astutus*) are often referred to as ringtail cats, civet cats, or miner’s cats, they are actually members of the raccoon and coati family, Procyonidae. Mostly nocturnal and solitary, these agile climbers can rotate their hind feet 180 degrees, permitting them to rapidly ascend and descend steep rocks, vertical cliffs, and tree trunks—an adaptation to the rocky habitats they prefer. Native to arid regions of the United States and Mexico, ringtails are omnivores that feed on insects, small mammals, fruit, reptiles, and birds. As such, they may be found near human habitation. In fact, that’s how they received the nickname miner’s cat. In the 1800s, they were often found in and around mining camps in search of the many rodents commonly found around the miners and their food. It is said that ringtails were easily tamed by the miners, often sleeping in small boxes placed near a stove to keep warm during the day and ridding the miner’s cabin of mice at night. Although they are reclusive and not seen as regularly today, they are



Check out those eyes! As a primarily nocturnal animal, ringtails rely on their excellent eyesight. As with other nocturnal predators, their eyes shine when light hits them, thanks to a reflective layer at the back of the eye called a tapetum lucidum. Photo by George Andrejko, Arizona Game and Fish Department.



My, what a long tail you have! Ringtails rely on their long tail for balance when climbing. The alternating stripes can also help distract predators, allowing the ringtail to safely escape. Photo by George Andrejko, Arizona Game and Fish Department.

still known to feed from fruit trees in backyards, den in occupied buildings, and raid poultry coops on occasion.

Ringtails produce accumulations of food remains and scat in their dens known as ringtail refuse deposits. One such deposit was discovered in Grand Canyon, and some of the remains date back to around 2,000 years ago. Similar to packrat middens, these remnants can help us reconstruct previous plant and animal communities and evaluate changes in their distributions over time. However, refuse deposits can be difficult to locate because they are often in rock crevices that are inaccessible by humans. This is because ringtails have other adaptive climbing techniques that allow them to climb in small crevices and ascend narrow passages by stemming pressing all four feet on one wall and their back against the other, or pressing both right feet on one wall and both left feet on the other.

They can also navigate wider cracks or openings by ricocheting between the walls.

Although rarely seen because of their elusive nature, the ringtail has a long and legendary history in Arizona. In some Apache stories, Ringtail, called *Gló’shcho Tsélkizh*, meaning “big nester with a striped tail,” helped Na’iye’nezgani kill the monster Tsidikatis. Tsidikatis was an alien god responsible for many human deaths. Additionally, in 1986, the ringtail was voted by more than 120,000 school children to be named the state mammal. And just last year, the nation watched as a ringtail ate a lone egg in the very first live-streaming feed of a bald eagle nest at Lake Pleasant, contributing to the breeding failure of that nest. So as much as ringtails prefer to remain secretive and rarely seen by the human eye, they are never far from thought in many Arizonans’ minds. ▲▲



Rick and Judy Cooper

By Wendy Anderton,
McDowell Sonoran Conservancy Marketing and Communications Manager

Upon moving to Arizona in 2010 to be closer to their children and grandchildren, Rick and Judy Cooper found themselves near Scottsdale's McDowell Sonoran Preserve and soon fell in love with the area. Rick and Judy joined a botany hike on the suggestion of others, having some interest in the plants that

surrounded them. This led to a legacy of service and support that continues today.

Rick's long career at Shell Oil instilled an ethos of volunteering. After retiring, they both longed to continue this tradition and were delighted to find an avenue to do so with the McDowell Sonoran Conservancy. Not only could

they be stewards of the land they had come to love, but they could use diverse skills from their corporate backgrounds to further the Conservancy's mission in many meaningful ways.

Rick is currently Treasurer on the Board of Directors for the Conservancy, a natural fit for this experienced man, who has a background of governance

as the chair of a credit union board. Judy, a volunteer tax preparer, enjoys pathfinding at the trailheads and keeping meticulous records for this program. She says that pathfinding provides her with the opportunity to meet visitors and share a comprehensive picture of the Preserve. When visitors inevitably approach the map at the trailhead and furrow their brow, obviously needing help, Judy uses that moment as an opportunity for interaction. Not only does she give advice on some of her favorite trails, but she can also provide safety tips, discuss the importance of the Preserve, and give information on the Conservancy's work. These interactions help ensure that visitors remember the Preserve long into the future, thus impacting the sustainability of this landscape and furthering the Conservancy's goals.

The couple knows that the Conservancy is important to protect and restore the land, while allowing people to enjoy the Preserve and fully appreciate the local wonder they have in their backyard. Rick and Judy believe that education about our arid lands, water, and conservation of flora and fauna in the area is vital to keep the Conservancy relevant. They emphasize that preservation of open space and fresh air and appreciation

for the diverse ecosystem of plants and animals is important, especially to children who may never experience the Sonoran Desert in such a pristine state.

Avid birders, Rick and Judy travel frequently around the world, and one of the things they enjoy most about giving their time and talent to the Conservancy is the ability to quickly and easily adjust their volunteer schedules to suit their availability. They also appreciate that anyone can volunteer at the Conservancy at any level and can even serve on the Board. Depending on the individual, the level of service and support is easily adapted to the person's ability to give—be it time, talent, treasure, or all three.

Both remain committed to continuing their service and financial

support to the Conservancy. Rick says, "If you believe in the Conservancy's mission and vision, then support naturally follows. If you want to assure that this organization continues to exist, it takes more than volunteering; it requires talent and, most importantly, resources." This philosophy drives many of the supporters who donate through either annual donations or planned giving, including legacy gifts.

Rick and Judy urge their fellow citizens to contribute as they are able, either through volunteerism or by pledging their resources to the Conservancy. You can make a donation, volunteer your time, or buy Conservancy merchandise at mcdowellsonoran.org. ▲▲



The Coopers were among 120 stewards who attended the annual steward education event in January where presentations included geology of the McDowells, architecture in the desert, Expedition Days, RestoreNet and much more.



A hike guided by Conservancy stewards explores some of the new trails west of Brown's Mountain. Photo by Dennis Eckel

Uniquely Scottsdale

By Luke Challis,
McDowell Sonoran Conservancy Program Manager

The McDowell Sonoran Conservancy was delighted to team with Experience Scottsdale's showcase video series, Uniquely Scottsdale, which showcases the one-of-a-kind gems you'll find only in Scottsdale.

A group of 15 stewards and staff members participated in the filming. The group ran the gamut of our activities from leading hikes and bike rides, patrolling the trails, maintaining the trails, conducting scientific research, being trailhead visitor advisors, and

more! All of the activities demonstrated the unique way we serve as ambassadors and engage with both locals and visitors.

The Conservancy's Executive Director, Justin Owen, narrates some of the key facts of the "largest urban land preserve in North America, spanning more than 49 square miles, larger than Washington,



Conservancy pathfinders help visitors find the perfect trails for their interests and skill level. Photo by Lynne Russell

D.C., larger than San Francisco." While these are impressive fast-facts, it takes a village to monitor, manage, and maintain!

The Conservancy boasts more than 650 volunteer stewards who can be found in their iconic blue shirts seven days a week, in all places and at all times of the day throughout Scottsdale's McDowell Sonoran Preserve and the larger region. The stewards provided 64,000 volunteer hours last year along with thousands of interactions with visitors to the Preserve.

Our reach doesn't stop at the edge of the Preserve. We take our programs to community partners through our youth education program – Sonoran Discovery Academy. This



Conservancy Construction and Maintenance crews work on improving drainage on one of the trails.

program ensures that the students from within the greater Valley schools have opportunities to share our passion for the outdoors and potentially become future conservation leaders. Additionally, our extensive research projects span across the region, focusing on local priorities that will also have a global impact.

The Conservancy certainly provides an experience that is Uniquely Scottsdale! To watch the video, go to <http://bit.ly/MSPUniquelyScottsdale>



Bikers politely give the right of way to equestrians on the trail. Photo by Lynne Russell

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.

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 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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Be a **HERO** to the Conservancy Today!

Our desert is alive with more than just saguaros. Do your part to protect the life within!

As stewards of the largest urban preserve in North America, the Conservancy

- Patrols over 225 miles of trail
- Helps maintain more than 30,500 acres of protected land
- Provides fun family activities, STEM education programs, and science initiatives that safeguard the land

But the Conservancy needs you. Become a Hero and safeguard our natural open spaces for all to enjoy!

Visit www.mcdowellsonoran.org to learn more!



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