



Mountain Lines

MAGAZINE OF THE MCDOWELL SONORAN CONSERVANCY WINTER 2020



Preserve Pioneers
Celebrate the visionaries

Spectacular Saguaro
Our first STEAM program

Dog vs Rattlesnake
Keeping your pets safe on the trails



Justin Owen, CNAP

Happy New Year to all of our amazing partners and supporters!

New beginnings are often informed by our past endeavors. As the Conservancy continues its strategic growth we are making strong commitments to develop our partnerships throughout the Sonoran Desert and beyond.

In conjunction with Arizona State University's Global Drylands Center, we visited the Chihuahuan Desert in New Mexico, where we learned about the synergy between the Jornada Experimental Range, New Mexico State University, and the Asombro Institute. This

experience is informing development of our future educational programming. Our partnership with the School of Earth and Sustainability at Northern Arizona University establishes opportunities for undergraduate research through the McDowell Sonoran Conservancy's Parsons Field Institute within the Preserve. This commitment broadens our impact to facilitate a global reach for the Conservancy.

We look toward the New Year, and the opportunity it presents. Our natural open spaces in the Sonoran Desert are the potential of a spring bloom. Our commitments to our health lead us out into the Sonoran Desert with a fresh step toward our future. By developing lasting relationships, deepening our commitments to conservation and preservation, and building strong ties across our stakeholders, we continue to fulfill our mission.

As we take stock of where we have been over the last year, we are excited to create and foster opportunities within the Conservancy and the Sonoran Desert. Our experiences will continue to help inform ways to establish and maintain our partnership with Universities, Foundations, and Research Centers with both a local and global impact. ▲▲

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Bobcats (*Lynx rufus*) are highly adaptable and may be found in suburban and urban areas, although they are more robust in unfragmented landscapes. This bobcat was enjoying early morning light in the Preserve. Photo by Jacques Giard

A Sense of Place: Protecting the Preserve

By Tiffany Sprague,
McDowell Sonoran Conservancy Parsons Field Institute Manager

Scottsdale's McDowell Sonoran Preserve is a place of beauty and wonder. People from all over the world are drawn to explore its mysteries. Whether it's the stunning scenery, unique geology, outstanding recreation opportunities, fascinating cultural history, diverse plant and animal life, or interesting people, the Preserve has something for everyone.

What first drew me to the Preserve is its abundant wildlife. From mule deer (*Odocoileus hemionus*) to desert tortoises (*Gopherus morafkai*) to white-winged doves (*Zenaida asiatica*) and more, the Preserve is teeming with life. In fact, the McDowell Sonoran Conservancy has identified nearly 1,000 species within the Preserve, including 415 species of plants and 578

species of animals. Included among these are four amphibians, 175 birds, 30 mammals, 32 reptiles, and 336 invertebrates. We know that hundreds of additional invertebrate species are out there—we just haven't identified them yet! We continue to find new species every year. In 2019 alone, we identified 14 new species for the Preserve,

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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First observed in the Preserve in November 2018, this white-nosed coati (*Nasua narica*), or coatiundi, is searching out a varied diet of nuts, fruits, insects, and lizards. Related to the raccoon, it has a long tail that it uses for balance while on the ground or climbing in trees. Photo by David Wilson

including four plants, six butterflies, and four birds. The latest species to join the Preserve's elite wildlife group is the Arizona sister butterfly (*Adelpha eulalia*), found during our Fall 2019 butterfly surveys. More discoveries are right around the corner, and we can't wait to find them!



Although a widespread and common species in the western United States, the alfalfa looper moth (*Autographa californica*) was first observed in the Preserve in January 2019. Larvae feed on a wide variety of plants while adults sip nectar from wildflowers. Photo by Rich Cochran

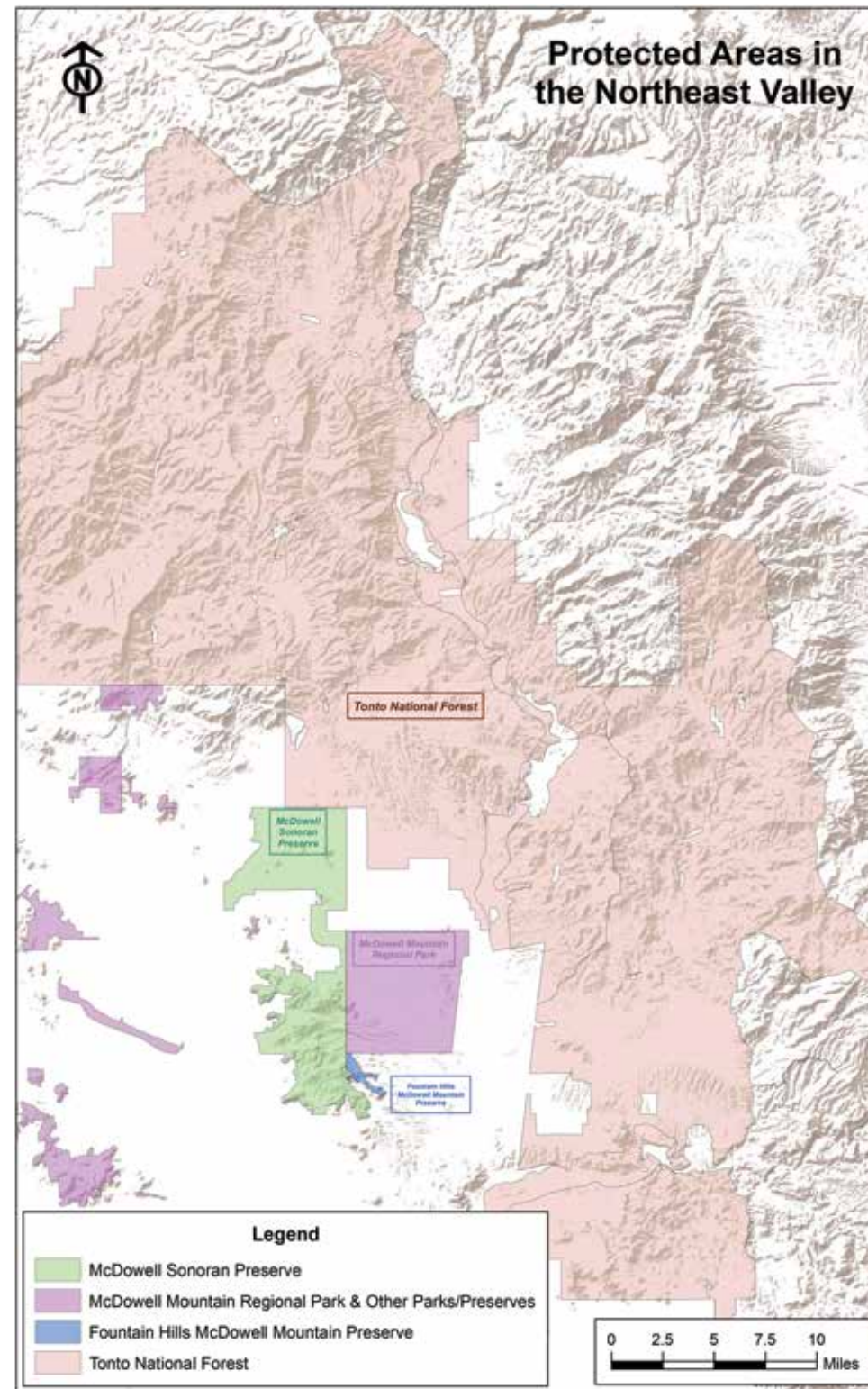
So what makes the Preserve such an important place for wildlife? Location, location, location! The Preserve itself offers a complex ecosystem and abundant habitat—tall mountains, deep canyons, rolling foothills, perennial and ephemeral waters, and more. Combine this with the Preserve's unique location, and it offers an ideal place for wildlife to thrive. The Preserve is nestled between Tonto National Forest, McDowell Mountain Regional Park, and Fountain Hills Preserve, forming nearly three million acres of protected lands. This large, contiguous landscape is essential for wildlife. The larger a landscape is, the more species it can generally support. As that land gets chopped into smaller pieces, the number of species able to use it decreases. Species with large home ranges, such as mountain lions

(*Puma concolor*) and mule deer, cannot survive if their home becomes fragmented. Did you know that mule deer have been extirpated from the Phoenix Mountains Preserve for this exact reason? Similarly, species that rely on dispersal or migration may dwindle if they cannot reach new areas.

The Preserve provides a vital connection for wildlife in the region. Look at the map, and you will notice a narrow strip of land that connects the northern and southern areas of the Preserve—what we call the “gooseneck corridor.” This narrow corridor not only connects the Preserve, but it also serves as the only linkage between Tonto National Forest and McDowell Mountain Regional Park. Without this critical corridor, the effective wildlife habitat of the Preserve would be divided in half, and the regional connection would be lost. As reported in the Fall 2019 issue of *Mountain Lines*, species such as mule deer could be lost from the southern area of the Preserve if we are not able to maintain this connection.



Cedar waxwings (*Bombycilla cedrorum*) were first observed in the Preserve in January 2019. A showy bird that loves fruit, its name comes from the red wax-like drops on its wingtips. Photo by Scott Sprague



Planners had wildlife connectivity in mind when establishing the Preserve. It forms a contiguous landscape of nearly 3 million acres and creates a vital wildlife linkage, allowing species to move between Tonto National Forest and McDowell Mountain Regional Park. Map courtesy of McDowell Sonoran Conservancy

The area around the Preserve is rapidly being developed, constricting available habitat and influencing the ability of animals to move across the landscape. Roads also cut through the corridor, including Rio Verde Drive and 128th Street. These roads not only result in direct mortality to animals through roadkill, but they also dissuade some species from crossing and restrict their ability to move freely through the area.

The McDowell Sonoran Conservancy is working to proactively mitigate any potential impacts to wildlife and the Preserve. We do this through a variety of means, including through research and monitoring, coordination with partners and developers, and, most importantly, by inspiring people to care about these sensitive lands!

Our research and monitoring projects are as diverse as the species that call the Preserve home. All of our current projects focus on better understanding the natural resources within the Preserve, determining how human and environmental pressures affect these resources, and maintaining and restoring habitat. We have long-term monitoring projects for nearly every taxa that occurs in the Preserve: amphibians, arthropods, bats, birds, butterflies, mammals, and reptiles. We also monitor the phenology—or life cycle—of plants at the three nature trails. These projects are not only a lot of fun, but they also help us determine trends of species occurrence and distribution and how those trends change over time. If we note substantial shifts, we can work



Gila monsters (Heloderma suspectum) are the only venomous lizard species native to the United States. It chews its venom into its prey, although it most often selects to swallow food such as eggs whole. Gila monsters spend most of their lives underground and can live for months off fat stored in their tails. Photo by Scott Sprague

with City of Scottsdale and our other partners to mitigate any negative effects.

We also have projects specifically focused on the gooseneck corridor. Using a combination of wildlife cameras, acoustic monitoring, and telemetry, we can determine how wildlife are using the corridor and surrounding areas. We have discovered that some species, such as mule deer and javelina, rarely use the corridor, whereas species such as coyotes and cottontails frequently use it. As development continues to fill in around the Preserve, the wildlife cameras will help us determine how species occurrence changes. Plus, they provide some really amazing photos of really amazing critters! Acoustic monitoring helps us understand how sound propagates across the landscape and how urban noises might affect wildlife. Telemetry data is vital for understanding how wildlife move across the land and ways we can

minimize barriers to that movement. You can read an example of this in the Fall 2019 issue of *Mountain Lines*.

Our final research projects focus on protecting and restoring habitat, including controlling non-native plants and restoring degraded lands. You’ve hopefully seen a lot of information about these projects in recent issues of *Mountain Lines*.

Beyond research, much of what the Conservancy does focuses on educating and inspiring people. All of the Conservancy’s programs play an important part. Construction and Maintenance, Pathfinders, and Patrol enable people to safely recreate in the Preserve, discovering its wonders and thus forming a connection to its magic. Education, Guided Hike and Bike, Nature Guides, and Pastfinders open the doors for people to learn more about specific resources within the Preserve and the larger Sonoran Desert, as well as help them



The tarantula hawk’s (Pepsis thisbe) sting is said to be one of the most painful in the world. This wasp uses its sting to paralyze a tarantula, such as this one, which it then drags to a burrow and lays an egg on. When the egg hatches, the larva feasts on the still-living tarantula. Despite their carnivorous young, adult tarantula hawks are nectarivorous. Photo by Brian Blais



Amphibians such as this Couch’s spadefoot (Scaphiopus couchii) rely on summer rains for survival. This small toad spends most of its life buried underground and emerges when the rains come. Their breeding call sounds like a bleating sheep. It takes less than two weeks for eggs to hatch and for tadpoles to metamorphose into toadlets. Photo by Debbie Langenfeld

understand the important role they play in protection of these resources. Citizen Science not only conducts our research projects but also allows people to form a personal connection to the wildlife and habitat.

So what can you do? Oh, so much! Join our team—become involved in some of our programs and support the important work we do. You can also share your observations while exploring nature—document what you see in *iNaturalist* or *eBird*. Provide a wildlife-friendly yard and work with your homeowners’ association to provide wildlife-friendly spaces. Most importantly, talk to people about the importance of the Preserve and other natural areas. Keep learning. And keep inspiring!

“In the end, we will conserve only what we love; we will love only what we understand and we will understand only what we are taught.” —Baba Dioum ▲▲

Thank you, Peggy!

For nearly three years, Peggy McNamara has served as Editor for *Mountain Lines*. We are grateful to Peggy for her amazing work over the last three years. Her dedication and service has helped us achieve an award-winning publication. Peggy remains an advisor to the new editing team and will continue as an active Master Steward.

Peggy joined McDowell Sonoran Conservancy in October 2011 and became involved with *Mountain Lines* soon after. She wrote numerous articles since the Fall 2012 issue, often the feature piece. When Barb Pringle stepped down as Editor in late 2016, Peggy graciously moved into that

role. Together with graphic designer Dennis Eckel and an amazing team of stewards, staff and partners, she has created an award-winning publication. The first issue for which she was Editor—Spring 2017—was selected from more than 6,000 entries to receive the Graphic Design USA American Inhouse Design Award.

Peggy, herself, is an award-winning steward. She achieved Master Steward in 2016 and was given the Conservancy’s Behind the Scenes and Sustainer Awards in 2018. She has engaged with many Conservancy programs, including Citizen Science, Education, Steward Development, and Community Relations. She is currently

very active within the Citizen Science Program in the soil crust and arthropod projects.

When asked about Peggy, staff and stewards commonly used the words “conscientious,” “organized,” and “exceptional.” As Dennis Eckel noted, “Managing the editorial content, writer and photo assignments, time lines, and overall magazine accuracy is a huge responsibility. The job requires exceptional organizational skills and attention to detail. Peggy has managed to control all aspects with amazing efficiency. She has created systems and check points for an orderly progression to the final design stage. I appreciate and respect Peggy’s dedication, experience and skill. Peggy has handled this project like a true professional, and I will dearly miss her.”

We couldn’t agree more. Thank you, Peggy! We will miss you as Editor, but we look forward to continuing to work with you in other Conservancy roles. ▲▲



The soil crust project doesn’t just involve harvesting. There is also preparation work that Peggy helps out with. These crusts will be used to help restore degraded lands in the Preserve. Photo by Debbie Langenfeld



Collecting soil crust around the site of the new Pima Dynamite Trailhead is a great teambuilding activity in addition to being a core part of a great project that has the opportunity to have a global impact. Photo by Debbie Langenfeld



Our arthropod collection and identification process allows us to identify new arthropods within the Preserve. We are currently at 350 identified with many more to come! Photo by Debbie Langenfeld



We were delighted that many of the Preserve Pioneers were able to attend the event, during which they were recognized by the City of Scottsdale, McDowell Sonoran Conservancy, City Council, as well as the public who joined for this great event. We are all rewarded now by their vision. Photo courtesy of City of Scottsdale

Celebrating Our Preserve Pioneers

By Lori Calhoun,
McDowell Sonoran Conservancy Events and Marketing Coordinator

On October 1st, the City of Scottsdale and McDowell Sonoran Conservancy celebrated Scottsdale's McDowell Sonoran Preserve Pioneers with a special presentation at the Scottsdale Center for Performing Arts. Remarks by Mayor Jim Lane were followed by a touching video produced by the City of Scottsdale celebrating those pioneers. You can see that video in its entirety at bit.ly/25thpreserve. A subsequent reception included exhibits that highlighted grassroots efforts of the

early pioneers, the planning and land acquisition phases, and the steward program from inception to current day, including recreation and scientific research that happens in the Preserve today.

Exhibit One—Preserve Pioneers. This featured bios and the roles of the Preserve Pioneers and many of the key players who supported the Preserve, including landowners, the Conservancy (formerly known as the McDowell Sonoran Land Trust), Scottsdale's tourism industry, citizen task forces,

elected officials, and other user groups.

Exhibit Two—The Conservancy and the Stewards. This explored the steward program from the early days to the present. Created by Chet Andrews and Carla in 1998, the steward program currently graduates more than 100 new stewards every year to work in partnership with the City of Scottsdale to help ensure an enjoyable and safe visit for the greater than 750,000 annual Preserve visitors.

Exhibit Three—Planning and Land Acquisition. This showcased the



The five exhibits were outside the Virginia G. Piper theater, in which a 25th-anniversary film was screened. The pioneers and public were able to wander through the exhibits and understand more about the amazing history of the Preserve. Photo courtesy of City of Scottsdale

citizen-driven, grassroots preservation movement that defined Scottsdale in the 1990s. From passionate environmentalists to student groups, homeowners' associations, news media, tourism industry, chamber of commerce, equestrians, hikers, mountain bikers, civic groups, city officials, and neighboring communities, all came together to "Save Our McDowell's."

Exhibit Four—Recreation. This depicted many activities enjoyed by Preserve visitors, including mountain biking, hiking, equestrian, and much more. Visitors could record their favorite memories of the Preserve and collect beautiful stickers produced for



The City of Scottsdale included a memory board so visitors of all ages could share their favorite things about the Preserve. Photo courtesy of City of Scottsdale

the 25th anniversary celebration by the City of Scottsdale.

Exhibit Five—Science in the Preserve. This provided insight into the work done by citizen scientists in conjunction with the McDowell Sonoran Conservancy Parsons Field Institute.

The exhibits, presentation, and video commemorating the 25th anniversary of the Preserve created a joyous celebration for those who worked tirelessly to preserve the Sonoran Desert they know and love. There was reminiscing, learning, and commemoration. Thank you to the City of Scottsdale and the many stewards and pioneers who worked to make the event a success.

We owe special thanks to those Preserve Pioneers who envisioned a place where everyone who lived and visited Scottsdale could enjoy the beauty of the Sonoran Desert. This event gave us an opportunity to express our significant gratitude to the Preserve Pioneers for their foresight and dedication and their belief in the unbelievable. These pioneers include

the Honorable Carolyn Allen, Chet Andrews, Bob Cafarella, former Mayor Sam Campana, Carla, Dr. Art DeCabo, former Mayor Herb Drinkwater, Bill Ensign, Councilmember Virginia Korte, Christine Kovach, former Mayor Mary Manross, and Jane Rau.

This special event helped remind us of the hard work, dedication, and perseverance of these pioneers in establishing the Preserve. Their efforts created the largest urban Preserve in North America—25 years later, the City of Scottsdale and the Conservancy continue their partnership to protect the wonder of the Preserve for future generations. ▲▲



Many of the original newspaper articles and signs were included in the planning and acquisition exhibit. Three of the Preserve Pioneers and Scott Hamilton spent many hours reminiscing while collating material for this exhibit. Photo by Lori Calhoun

Spectacular Saguaro

By Nicole Kallman,
McDowell Sonoran Conservancy Education Coordinator

The majestic saguaro, the quintessential cactus wren, the elusive Gila monster—these and more than 1,500 animal and 3,500 plant species call the Sonoran Desert home. Despite living in the Sonoran Desert, many students have never actually experienced this unique ecosystem. At the McDowell Sonoran Conservancy, we are using the Sonoran Desert as the foundation for exciting standards-based STEAM education that engages and inspires students in the Valley.

The majestic saguaro plays a key role in the desert ecosystem and in the Conservancy’s Spectacular Saguaro lessons for third graders. Photo by Lynne Janney Russell

In the early 2000s, STEM (Science, Technology, Engineering, and Math) became a staple in K-12 vernacular. Educators introduced STEM-based learning into curriculum to expose students to and prepare them for the growing number of careers in these fields. STEAM followed, integrating art into traditional STEM education. Art provides a creative, visceral pathway for students’ investigation and understanding of the world around them. Students exercise critical problem-solving and design skills

when incorporating art into the STEM disciplines. Responding to the growing need for hands-on, applied STEAM offerings, the Conservancy has developed STEAM Adventures, one of our education initiatives that promotes exploration and inquiry for K-12 students both in the classroom and outdoors. This season, the Conservancy is rolling out its Spectacular Saguaro curriculum to third graders, which uses the saguaro as the basis for discovering the interconnectedness of nature,

environments, and people. Thanks to generous grants from Act One, Arizona Community Foundation, and the Pisces Foundation, in conjunction with involvement of our stewards, Spectacular Saguaro will reach 240 Title I students in the Valley this school year. Schools designated as Title I have large concentrations of low-income students, many of whom have never been outside their urbanized cities. Trained stewards lead interactive activities both in the classroom and



Students have fun learning while immersed in Sonoran Desert habitat during one of the Conservancy’s STEAM events. Photo by Lynne Janney Russell

at Scottsdale’s McDowell Sonoran Preserve that teach students about the saguaro and its place within the desert. Classroom lessons focus on the anatomy and life cycle of saguaros. Students use models to explore what one looks like, inside and out. They discover a unique skeleton hidden under pulpy flesh that allows this amazing cactus to grow 60 feet tall and weigh up to 4,800 pounds without collapsing. Students begin to understand the interdependency between the saguaro and other desert life after thinking about the incredibly slow growth of a cactus from seedling to adult.

Students dive deeper into their exploration during a field trip at the Preserve, 30,580 acres of beautiful Sonoran Desert habitat. They gain

perspective on how all desert species, including the saguaro, play an integral role in the ecosystem—and how the disappearance of just one species can have devastating effects. Students synthesize their new knowledge by creating original artwork representing their understanding of the Sonoran Desert ecosystem through the lens of the saguaro.

The Conservancy aims to instill students with a sense of curiosity and wonder about the world through Spectacular Saguaro and future STEAM Adventures curriculum. Students who go through

one of our STEAM Adventures will get to experience applied hands-on, investigative learning that gets them excited about considering STEAM careers in the future. We hope these kinds of opportunities open students’ eyes to the real-world science that surrounds them every day and their ability to be a part it.

In the future, the Conservancy plans to roll out a wide variety of STEAM-based curricula that target multiple grades. We envision students having unique and engaging experiences through the Conservancy at all grade levels, fostering excitement about learning throughout their educational careers. Education isn’t just doing equations in a classroom or memorizing facts from a textbook—science at its best helps us make sense of the world and leave a positive mark on it. ▲▲

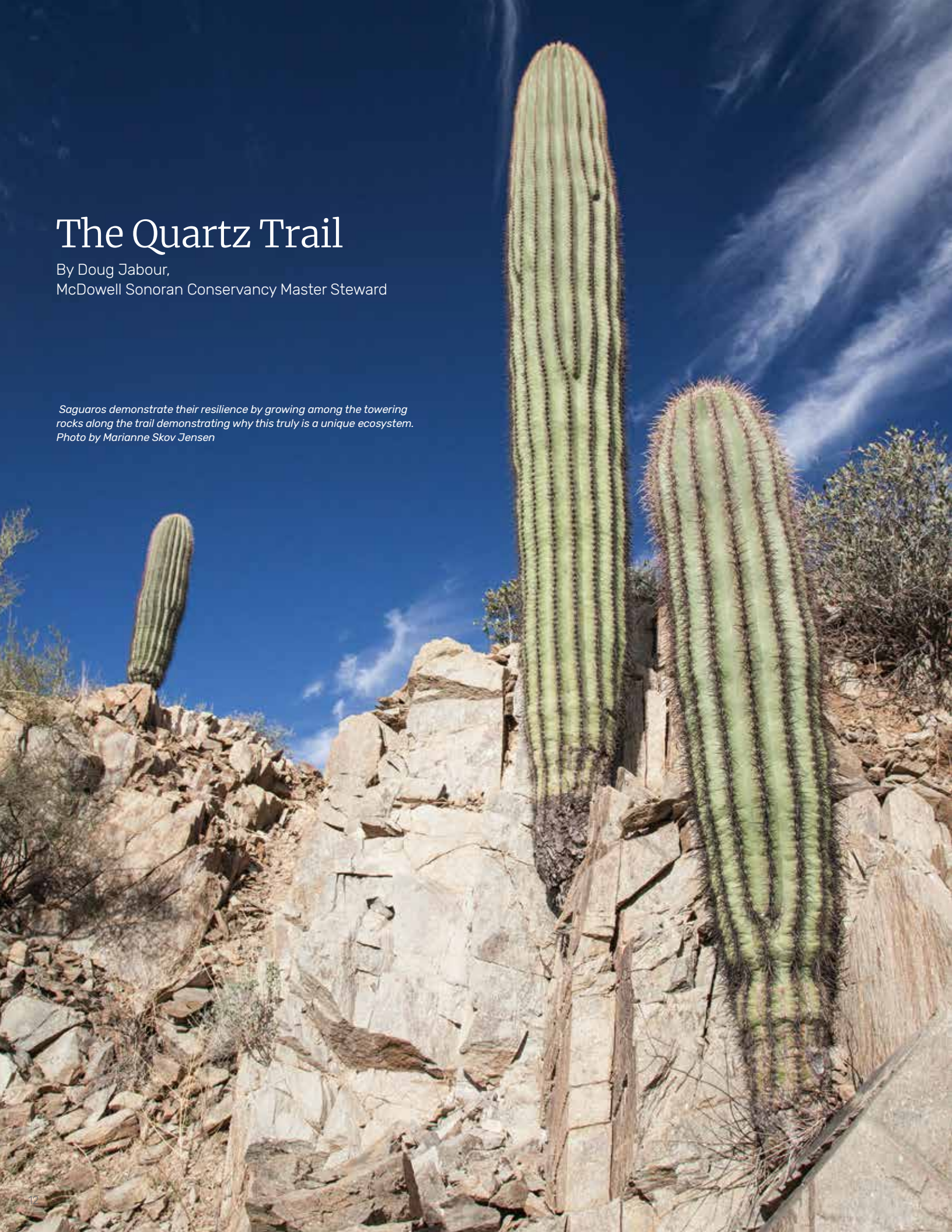


Stewards attend a two-hour training, learning to facilitate the interactive in-class and field trip lessons for Spectacular Saguaro. Photo by Nicole Kallman

The Quartz Trail

By Doug Jabour,
McDowell Sonoran Conservancy Master Steward

Saguaros demonstrate their resilience by growing among the towering rocks along the trail demonstrating why this truly is a unique ecosystem. Photo by Marianne Skov Jensen



If you are looking for a hike that is close to the city but feels remote, then Quartz Trail is the one for you. The hike begins in a wash that has houses on both sides and ends in a canyon on a part of the trail that is seldom used. The hike is about 8.4 miles with an elevation gain of greater than 700 feet. The canyon can also be reached from the Lost Dog Wash Trailhead, which would be around nine miles.

You may have noticed a large rock outcropping in the McDowell Mountains visible from many areas in north-central Scottsdale. This outcropping is comprised of quartz and can be reached by using a side trail off the Quartz Trail. The side trail is very steep and slippery but is worth the effort. There are similar quartz deposits throughout Scottsdale’s McDowell Sonoran Preserve and in some of the other mountains in the Valley.

Quartz Trailhead, the starting point for this hike, is near the corner of North 104th Street and McDowell Mountain Ranch Road. There is a large parking lot but no washrooms or water available, so you should ensure that you bring enough water for your hike.

The hike starts on 104th Street, across from the parking lot, where you will descend into a wash. You immediately arrive at a junction where you will take the trail to the left. After passing under North 105th Street, on your right side you will see the McDowell Mountain Recreation Center, which is for local residents only. The first 0.8 miles of the hike is also part of the Maricopa Trail, a 315-mile trail that



This has been a special place for many generations as evidenced by petroglyphs of native peoples on the rocks. Photo by Marianne Skov Jensen

circles the Valley.

You will soon reach Paradise Trail on the left, which is where Maricopa Trail heads north to the Gateway Loop Trail. Continue on the Quartz Trail, and you will soon reach the entrance to the Preserve. In another 0.9 miles, the trail takes a sharp left turn and follows an old jeep trail around the back of the mountain. The quartz outcropping access is about 0.5 miles farther on the right.

The trail soon descends into a wash and remains there for the rest of the hike. The trail through the wash is not well marked, and there are several other washes branching off from the main trail. You should take the left wash at each junction. Thompson Peak at 3,969 feet looms over the trail, and it can be reached from the Preserve’s Gateway Trailhead or from Dixie Mine Trailhead in Fountain Hills. The hike to the peak is very steep and difficult, but there are great 360-degree views of the Valley.

As you head deeper into the wash, you will begin to see fields of fountain grass, which is a non-native grass. Fountain grass is an ornamental plant that has spread into many washes in the Preserve, competing with native plants and creating a fire hazard. The Parsons Field Institute at McDowell Sonoran Conservancy is studying methods to control fountain grass and other non-native plants in the Sonoran Desert. On your hike, you might see some of the orange rebar marking our experimental plots.

As you get closer to the end of the trail, it becomes much narrower until it ends at a steep wall. This is a great place to take a snack or lunch break and enjoy the solitude and remoteness of the area. Take a look around, and you will notice that there are many cacti that appear to be growing out of the metamorphic rocks. After a break, you will return to the trailhead via the same route ▲▲



Above: The diversity of the geology spans Bajada lowlands, mountain peaks and ecologically diverse transitions. Photo by Marianne Skov Jensen

Hiking poles are very helpful while traversing different terrains on the Quartz trail. Photo by Marianne Skov Jensen



Celebrating New Trailheads and 25 Years of Progress towards the Community’s Vision for Scottsdale’s McDowell Sonoran Preserve

By Scott Hamilton,
City of Scottsdale Preserve Manager



The view deck at Fraesfield provides an amazing sense of peace for hikers, bikers, or equestrians taking a rest or any visitor who just wants to spend some time sensing the desert and enjoying the amazing views. Photo courtesy of Scott Hamilton

On October 3, 1994, the Scottsdale City Council approved Resolution 4103, officially creating Scottsdale’s McDowell Sonoran Preserve and designating the first parcels of land, totaling 2,869 acres. This decisive action by the City Council embodied the open-space preservation goals of the community and served as a crucial step towards forming today’s Preserve. We owe a great debt of gratitude to the citizens of Scottsdale and elected officials who were instrumental at that time.

Great strides have been made since those early years, with expansion of the Preserve’s land area to greater than 30,000 acres and the estab-



On the Fraesfield view deck, there is an impressive sign identifying each of the mountains in the distance. A great way to orientate yourself! Photo courtesy of Scott Hamilton

lishment of a system of recreational trails and trailhead facilities. The acquisition of land and implementation of the trail and trailhead plans would not have been possible if not for the tax revenue provided by the citizens. The crucial role of the citizens of Scottsdale cannot be overstated, and we thank them for their foresight and wherewithal to approve the funding sources for the Preserve. Over the last 25 years, the Preserve’s trail system has grown into an interconnected network of more than 225 miles of



These new trailheads include some great signage for visitors, reminding us all of how to maximize our enjoyment while in the Preserve—Enjoy, Embrace, Feel, Join. Photo courtesy of Scott Hamilton

multiple-use trails, entered through a series of award-winning trailhead access facilities. These trails and trailheads provide access for the citizens of Scottsdale—the people who voted to tax themselves to create the Preserve—and visitors from around the Valley of the Sun, the State of Arizona, the United States, and the world. The Preserve has truly become a great source of pride for our community and one of Scottsdale’s gems.

Two of our newest trailhead facilities are the Fraesfield and Granite Mountain trailheads, located in the northern region of the Preserve. On a crisp Sonoran Desert morning in mid-October, the community gathered at Fraesfield Trailhead to celebrate the completion of these facilities. The event was a wonderful opportunity for people to memorialize this momentous accomplishment. The attendees heard inspiring words from dignitaries including Vice Mayor Kathy Littlefield, Maricopa County Supervisor Steve Chucuri, McDowell Sonoran Preserve Commission Chairman Steve Dodd, McDowell Sonoran Conservancy Executive Director Justin Owen, and City of Scottsdale Preserve Director

Kroy Ekblaw. Also present were a few of our original Preserve Pioneers, individuals who were stalwarts during the formation of the Preserve, including former Mayor Sam Campana, Councilmember Virginia Korte, Carla, and Christine Kovach.

The new trailheads access the northern region of the Preserve, much of which was previously State Trust Land owned by the Arizona State Land Department. The land was acquired by matching City of Scottsdale Preserve sales tax dollars with \$86 million in grants from the Arizona State Parks Growing Smarter grant program.

Each trailhead provides restrooms with flush toilets, passenger vehicle parking, equestrian trailer parking and staging areas, shaded seating areas, and interpretive, orientation, and regulatory signs. In the future, the Fraesfield Trailhead will have drinking water for people, dogs, and horses, but



Interpretive signage at Granite Mountain explains the life cycle of a saguaro for all visitors to appreciate our towering giants. Photo courtesy of Scott Hamilton

the Granite Mountain Trailhead will not. So plan ahead and bring an appropriate amount of water with you when you hike from these trailheads. For trail maps and more information about the Fraesfield and Granite Mountain trailheads, please visit the City of Scottsdale website at www.scottsdaleaz.gov. You can also contact me directly at 480-312-7722 or Shamilton@scottsdaleAZ.gov. I hope to see you out on the trail! ▲▲



We thank the City of Scottsdale for building such unique stunning trailheads. As more visitors see the new trailhead designs, they, too, appreciate the way the structures fit into the landscape while providing essential facilities. Photo courtesy of Scott Hamilton



Sssstay Safe With Your Four-Legged Trail Companion

By Deandra J. Owen,
Doctor of Veterinary Medicine and Diplomate, American College of Veterinary Surgeons—Small Animal, VetMED Emergency and Specialty Hospital

I have to admit, I think a dog who has been bitten by a rattlesnake is adorable. Their face is puffy, their little eyelids are swollen, and they look like a funny, bloated caricature of themselves. This is because I get to see these poor creatures after the amazing doctors in the emergency room have administered a lot of pain medication and a dose of antivenin. I don't see them when they first arrive at the hospital, extremely uncomfortable

and sometimes in shock, and for that I am grateful.

Although rattlesnake encounters are most common during the late spring, summer, and early fall months, rattlesnakes can be found on the trails in the Scottsdale area all year long. The best treatment for a rattlesnake bite is to prevent the bite altogether, but thousands of animals a year end up at the emergency room to be treated for snake bites. Here are tips on how to

Dog leashes are required in the Preserve, and may help you keep your dog from becoming too inquisitive about things in the bushes. Photo by Dennis Eckel

protect your four-legged hiking buddy and also what to expect in the unfortunate event they stick their noses into "somebody else's business."

We are lucky to have incredible dog-friendly hiking trails in the Scottsdale area. The vast majority of these trails require dogs to be leashed, and for good reason. Keeping your dog leashed while hiking is one of the best ways to prevent a rattlesnake incident. If you encounter a snake on the trail, do



The diamondback rattlesnake is so perfectly camouflaged that he blends into the background. Photo by Dennis Eckel

not panic. Restrain your dog without jeopardizing your own safety. Slowly back away with your dog to give the snake plenty of space, as striking distance for most snakes is at least half of the snake's length. Do NOT approach, relocate, or try to kill the snake. If there are other hikers on the trail, be sure to notify them of the potential dangers ahead.

Rattlesnake bites can be life threatening and extremely painful and require treatment. The venom travels quickly throughout the bloodstream and inhibits the ability of blood to clot. This can cause uncontrolled bleeding, shock, and eventually death. Even with treatment, permanent tissue damage can occur. If your dog sustains a bite, seek veterinary care immediately. Do not try to suck the venom from a wound or apply a tourniquet. Tourniquets do not prevent the venom from entering the bloodstream and only act

to decrease blood flow to the wound, leading to further tissue damage.

Not every bite is witnessed. Signs your dog may have sustained a snake bite include puncture wounds, bleeding, swelling, significant pain, and bruising. These signs may be followed by lethargy, collapse, weakness, stupor, muscle tremors, and slowed respiration hours later.

Treatment for rattlesnake bites includes pain medication and antivenin. Antivenin is most effective if given within 24 hours of exposure to venom, so prompt evaluation is strongly advised. Blood work is usually performed to monitor clotting times. If the wound appears infected, antibiotics may be administered. Treatment for rattlesnake bites can be expensive and involve multiple days in the hospital, but, fortunately, most dogs make a full recovery with appropriate care.

Proactive measures against

rattlesnake bites include avoidance training and the rattlesnake vaccine, but these are controversial. Most bites happen after unintentionally disturbing a snake, and training is not effective against accidents. Avoidance training may give dog owners a false sense of security, and there is no empirical data to support the efficacy of this training. The rattlesnake vaccine was formulated to protect against the venom of the western diamondback rattlesnake (*Crotalus atrox*), the most common rattlesnake in the Scottsdale area. Inoculation must occur at least 30 days prior to any snake encounter, and boosters are advised every six months. Vaccines may decrease the effects of venom, but treatment with antivenin is still strongly advised.

Snake bites are rare, but you should be prepared. Happy trails to you and your pup! ▲▲



The male phainopepla (left) has glossy black feathers and, in flight, prominent white patches on its wings. Female phainopeplas (right) are gray and lack the white wing patches. They are the same size as males and share the red eyes and prominent crest. Photos by Steve Jones

Teaming Up: Phainopepla and Desert Mistletoe

By Steve Jones, botanist

An individual species does not live in isolation. It exists within an ecosystem and interacts with other species in that system. Studying an entire ecosystem can be the work of a lifetime and still leave many questions open. But a lot can be learned from studying the interactions of pairs of species. Their interactions, if any, can be evaluated and categorized. Some interactions are beneficial to both species (mutualism). Others

benefit one species to the detriment of the other (parasitism). The relationship between the bird phainopepla (*Phainopepla nitens*) and the plant desert mistletoe (*Phoradendron californicum*) provides an interesting local example of mutualism.

Phainopepla is a very recognizable native bird, slender and medium-sized. Males are a glossy black, females dark gray and dull by comparison. Both have red eyes, a narrow bill, and a tall

feathered crest resembling that of the cardinal. Males are bold and are often seen atop trees and shrubs, where they frequently emit a brief, rising call of "hweet!" They are territorial and can often be seen chasing each other at their territorial boundaries. Males are also recognizable in flight by white wing patches. Those patches give rise to a Native American name that translates as window-wing bird.

The phainopepla's range includes



Desert mistletoe plants are either male or female. Can you tell which is which in this foothill palo verde tree? (Answer: The male plant is above and female plant [with reddish fruit] below.) Photo by Steve Jones

the southwestern United States and central and northwestern Mexico. Locally, they have a short migration route, spending their winters in the Sonoran Desert and their summers at higher elevations to the north and east.

Phainopeplas breed in the spring in the Sonoran Desert and breed a second time in their summer range.

During the spring breeding season, adults subsist primarily on the fruit of desert mistletoe, which is ripe and

abundant in that season. Parents feed their chicks on protein-rich insects they catch either on the wing or by foraging. Their aerobic exploits in pursuit of flying insects, often including dramatic loops and



Desert mistletoe flowers have no petals, just three greenish bracts. Female flowers (left) are small and have a visible red stigma. Male flowers (right) are larger and can be recognized by the yellow pollen in the center. Photos by Steve Jones



After pollination in the spring, fruit remain dormant through the summer, beginning to ripen in the fall. When ripe, they usually have some color as shown here, but shade-grown fruit can be white. Photo by Steve Jones



Sprouted desert mistletoe seeds are very sticky. This seed stuck to the branch of a palo verde tree. Its root is seeking an opening into the bark. Photo by Steve Jones

turns, are reflected in the family name for phainopeplas and three related species: the silky-flycatcher family (*Ptiliogonatidae*). They are not true flycatchers (family Tyrannidae in the New World) but share the habit of chasing insects in flight.

In the summer breeding season at higher elevations, adult phainopeplas also feed their chicks on insects while subsisting on a variety of fruit (elderberry, boxthorn, juniper, etc.).

Back in the Sonoran Desert, their fruit of choice is desert mistletoe. Desert mistletoe is parasitic on trees and shrubs in the bean family (Fabaceae), such as palos verdes (*Parkinsonia* spp.), mesquites (*Prosopis* spp.), ironwood (*Olneya tesota*) and catclaw acacia (*Senegalia greggii*). Depauperate specimens are occasionally found in the unrelated creosote bush (*Larrea tridentata*). The author has also found singular specimens in

jojoba (*Simmondsia chinensis*) and tamarisk (*Tamarix* sp.)

The plant appears as a dense cluster of abnormal growth within the canopy of its host. In fact, it is a separate plant, rooted into the host's branches. The specialized roots are called haustoria; these spread through the host plant just underneath the bark, occasionally giving rise to a new plant by pushing through a crack in the bark. From its base near the stem, desert mistletoe branches profusely into an intertwined, drooping tangle.

This tangle of branches makes a good, secluded location in which to build a nest. That is but one more benefit desert mistletoe provides to the phainopepla.

Technically, desert mistletoe is a hemiparasite. It takes water and other materials from its host but has green tissue that performs photosynthesis; mistletoe makes its own food.

Although the plant looks leafless, there are pairs of tiny, thick leaves at the nodes. But it is in the stem that most photosynthesis takes place.

Desert mistletoe is one of the earliest plants to flower in the year, flowering in January and early February. Its flowers are tiny and have no petals; instead, it attracts pollinators with a strong spicy-sweet aroma. If you happen to pass by a flowering plant in season, the aroma is delightful and memorable.

Desert mistletoe is dioecious: male and female flowers occur on separate plants. The flowers are pollinated by gnats and other small flying insects. Once pollinated, the nascent fruit on the female plant remain dormant through spring, summer, and fall, only to begin swelling and ripening in late fall and winter.

Although other mistletoe species contain toxic compounds, desert

mistletoe fruit are edible, if a bit insipid. It was a food source for native people wherever the plant grew. Seri people in northern Mexico ate the fruit of desert mistletoe plants growing on mesquite, ironwood, and acacia but avoided plants on palo verde trees, considering the fruit bitter.

Phainopeplas and other birds consume the flesh of the fruit, passing the seed undigested. Each fruit contains a single seed, which includes a mucilaginous outer coating and adheres to whatever surface it lands on. Uneaten seeds will also stick to the bird's feet or bill and be transferred in that manner. The lucky seed lands on the branch of a host plant; most by far are not so lucky.

Given the male phainopepla's habit of sitting in the top of a tall tree watching over his territory, the seeds he expels can build up into an impressive clump. Most of these, again, are

not lucky—they sprout but do not take root.

The lucky seed will sprout and send out a tentative root to try to find purchase in the bark of the host. Sometimes the sap pressure of the host tree is sufficiently high to resist the root and will push it back out. But when the sap pressure is low (drought, old age of the host), the initial root has a higher chance of success.

To analyze the relationship of the phainopepla and desert mistletoe: The plant expends energy making fruit, which the bird utilizes as food. The bird provides a service to the plant by distributing its seeds far and wide. Both species benefit from the exchange; it is a mutually beneficial relationship.

The relationship between desert mistletoe and the bean trees is beneficial only to the desert mistletoe. The bean trees suffer by the loss of resources (water, minerals, nutrients)

extracted by the roots of the mistletoe. It is a parasitic relationship. But the relationship is in a relative balance, both individually and population-wide. Desert mistletoe is not a plague on bean trees. These plants have lived with each other for tens or hundreds of thousands of years, if not more. To be successful, a parasite cannot overwhelm its host. A dead host means a dead parasite, if the parasite cannot move to a new host. If an individual desert mistletoe plant gets too greedy—takes too much material—from its host, the branch in which it is rooted will die, if not the tree itself. End result, dead mistletoe.

What of the relationship between the phainopepla and bean trees? There is no direct relationship. Their relationship to each other is only through the desert mistletoe plant. Without desert mistletoe, there is no relationship.▲▶

Christine Kovach

Preserve Pioneer, Conservancy Champion, Legacy Steward, Class 8

Preserve Pioneer

As a pioneer to Scottsdale’s McDowell Sonoran Preserve, Christine Kovach helped lead the grassroots movement to form the Preserve. Christine was inspired to join the “Save Our McDowell’s” campaign when she recognized that development was slowly consuming the remaining land north of Shea Boulevard and east towards the McDowell Mountains. Her curiosity led to interest, which led to activism in preventing the McDowell’s from suffering the same fate as Camelback Mountain.

As one of only ten individuals at her first community meeting, Christine quickly became a leader in organizing the public and business community. She understood that the key to success was to engage Scottsdale businesses. Scottsdale is a destination location that offers small businesses, residents, winter visitors, and tourists the opportunity to thrive. Christine championed the economic value of Scottsdale’s Sonoran Desert land as



one of the primary reasons to establish the McDowell Sonoran Preserve.

Conservancy Champion

Christine’s passion for the Sonoran Desert extends equally to the work of the McDowell Sonoran Conservancy, which she views as invaluable. Her philanthropic support as a Champion Donor throughout the years has contributed to the creation of many significant Conservancy programs. Christine and her family established the Kovach Family Nature Trail at Lost Dog Wash Trailhead, which provides a half mile of interpretive signs to educate visitors about the local plants, animals, and human history of the Sonoran Desert.

Her passion for education and accessibility of the Preserve, especially for our youngest users, is at the core of why Christine continues to support the Conservancy. In Christine’s words, “The outreach partnerships formed in the community by the Conservancy, the intangible outcomes, and valuable



Christine both supports the Conservancy financially and also enjoys sharing the wonders of the Preserve with some of our younger visitors.



Christine at the 25th anniversary beside her Preserve Pioneer recognition panel. It was amazing to see Christine and so many of the other pioneers at the event. For more information turn to page 8.

services are the reason I continue to support this organization. It’s a multifaceted approach to ensuring that the mission of the Conservancy, above all else, persists for our future.”

Vision of the Future

Moving beyond organization, planning, and advocacy, Christine is dedicating her future work at the Conservancy to guarantee that every student in the Scottsdale Unified School District experiences the power of the Sonoran Desert in person. “We are the people of the Sonoran Desert and part of our Sonoran heritage is to share what we have learned and impart our passion for this land to our future generations,” says Christine. Christine has made it a priority to empower the

Conservancy to establish and maintain Science, Technology, Engineering, and Mathematics (STEM) programs within the context of the Sonoran Desert for youth across all grades and age ranges. Eventually, these programs will extend beyond the borders of Scottsdale so that youth from diverse backgrounds across the Valley are inspired to care for this magnificent land.

Christine’s steadfast support of the Conservancy is rooted in her passion and commitment to the organization’s mission. We proudly recognize her dedication as a community leader, advocate, and Conservancy donor. On behalf of the hundreds of stewards, staff, and community, we thank Christine for her dedication to the Conservancy’s work.

If you would like to support the work of the McDowell Sonoran Conservancy you may do so online at mcdowellsonoran.org/donate or by mail to the address on the back page. ▲▲

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The Arizona Community Foundation supports the McDowell Sonoran Conservancy for the work they do to educate and preserve the McDowell Sonoran Preserve.

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We are proud to partner with State 48 on this fun design! All proceeds go directly to the Conservancy. You can get your tee or tank for \$28 on conservancymerchandise.org

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



Community Rewards Program

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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