MARICOPA AUDUBON SOCIETY

The Cactus Wren•dition

Volume LXVIII No. 2 Summer - 2018

Curve-billed Thrasher
Photo by Matt VanWallene

Programs

Meetings are held in Scottsdale: Papago Buttes Church of the Brethren (northwest of 64th Street and Oak Street, which is between Thomas Road and McDowell Road). Southbound, you may enter from 64th Street, just north of Oak Street. If coming from the south, turn left (west) at Oak Street and then right at the Elks Lodge. Continue north along the eastern edge of their parking lot and turn right into the church parking lot. Look for signs that say "Audubon." Come and join us and bring a friend! MAS holds a monthly meeting on the first Tuesday of the month from September through April.

Committees/Support

Arizona Audubon Council Rep
Position Open

Bookstore
Mel Bramley
480 969-9893

Hospitality
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Maricopa Audubon Website
http://www.maricopaaudubon.org

"Green is the prime color of the world, and that from which its loveliness arises."

Pedro Calderon de la Barca (1600-1681)

An Investment in the Future

Bequests are an important source of support for the Maricopa Audubon Society. Your chapter has dedicated itself to the protection of the natural world through public education and advocacy for the wiser use and preservation of our land, water, air and other irreplaceable natural resources.

You can invest in the future of our natural world by making a bequest in your will to the Maricopa Audubon Society. Talk to your attorney for more information on how this can be accomplished.

Caleb Strand

September 4, 2018

Joe Ford on Caleb's Birds

Enjoy the bird photography of Caleb Strand, taken from the age of 15 when he began both birding and photography. A resident of rural Buckeye, Caleb is considered one of the top ten birders in Arizona. Caleb is now 18 and leads bird walks and participates in field expeditions with Arizona Field Ornithologists (AZFO). Joe Strand will showcase Caleb's images with fascinating information on each local bird species. For more on Caleb Strand, see birdingwithcaleb.blogspot.com

Missouri native Joe Ford retired from a teaching career to Sun City. An active volunteer for numerous organizations, he leads bird walks at Maricopa County Parks and presents programs on bird life, environmental concerns, plants, and geology. Joe is a member of AZFO and Sonoran Audubon Society.

Are you a Friend?

Do you enjoy reading *The Cactus Wren•dition*? Are you a "Friend of Maricopa Audubon?" Or have you renewed your membership this year? Please support Maricopa Audubon by becoming a Friend. Please see the back page of *The Cactus Wren•dition* for full details. Your contribution will help fund the publication of the *Wren•dition*. Thank you for your support!

The Flying Desert

By David Chorlton

A trail bound to the earth
winds to houses long
abandoned: walls
with a slow circling hawk
framed in the square
where a roof used to be.
In a thorny arroyo

two Cactus Wrens sand
the dry air with their calls
as the day warms
to noon and the ground
breaks open for a lizard
who clings to the shade
while a shrike in flight

chalks a white trajectory
between two Palo Verdes.
The desert surrenders
a mesquite to a winter
with little rain, and
a Say's Phoebe spins
above it, before

a Phainopepla scorches
a beam of desert
sunlight black.

Phainopepla. Photo by Gillian Rice

On the Cover: Curve-billed Thrasher
Focal Length: 300mm, 1/1250 sec, f/5.6, ISO 400, Nikon D90, sitting on a pecan feeder at home, November 23, 2012, by Matt Van Wallene.

Matt says: Curve-billed Thrashers have been my neighbors since I moved to Arizona. They eat seeds, citrus, pomegranates, and pecans, but the bulk of their diet is insects. It is the most common of our six thrashers. (For more on thrashers, see page 10).

President's Message

Mark W. Larson

I'm writing this on April Fool's Day but it is no joke that the long and brutally hot summer is almost here, so it must be time for the summer edition of *The Cactus Wren•dition*! It seems like just yesterday that it was New Year's Day and time to start my 2018 Bird List.

Another indication that summer is coming: some of the first sounds I hear when I wake up in the morning are singing White-winged Doves. Suddenly, they are all over the place! Correspondingly, many of our winter resident birds have departed for their nesting grounds farther north or high in the mountains. I visited the Salt River this morning above Granite Reef Dam and the only waterfowl on the river were newly arrived Cinnamon Teal, at least 20 pairs. There were also a few Ring-necked Ducks which were probably stopping only briefly on their way north.

Being aware of these and other changes as the seasons change enhances my connection to the natural world. And, that's part of the mission of the Maricopa Audubon Society, to introduce members to aspects of nature they may not be noticing. Fittingly, I also found an adult Bald Eagle perched on its nest on the far bank of the river–a site that would have been underwater had it not been for the untiring efforts of Bob Witzeman, many other MAS members, and the Fort McDowell Yavapai Nation!

So, my message to you is to get out there and make your own connections with our natural world. Many studies have shown that doing this can improve your health and well-being. I know that connecting with nature has been a restoring tonic for me throughout my life, and it can be for you, too.

Mark W. Larson
President
MARICOPA AUDUBON SOCIETY
Phoenix, Scottsdale, and Tempe, Arizona

Letter from the Editor

by Gillian Rice

Gillian Rice

I love summer. Many desert creatures are active. Lizards in my backyard are a constant source of delight. My art desk (as close to a studio as I can get) and my study both look out over my vegetable garden, which gets to be very overgrown in summer. And full of pleasant distractions.

Cucumber and melon vines intertwine. Sunflowers reach for the sky. The mint tries to take over (I didn't know when I planted it that I should have contained it in a bucket). But: a perfect place for many insects that provide meals for birds and lizards. Native bees pollinate eggplant flowers. Lesser Goldfinches forage among basil bushes. Quail chatter as they lead their families along the top of the wall and sometimes drop down to forage. I have discovered an assassin bug that had captured a bee and a Flower Crab Spider lying in wait in a basil flower. Occasionally I am lucky enough to come across a Ground Snake. I am less happy about Raccoons, which seem to like digging holes – for grubs, perhaps?

This issue of the *Wren•dition* owes much to a myriad of contributors and I am grateful to them all. Everyone puts up with the pesky editor who sends far too many deadline reminders.

We have a cornucopia from the tiniest termite to large mammals. We learn about Saguaros, cranes, thrashers, and cowbirds close to home. Far away, we discover the incredible birds that nest in Manu National Park, Peru. This issue includes an Education Update from Jasper Younger-Howard as well as Mark Horling's regular Conservation Update. And don't miss the imaginative poetry and stunning art.

Enjoy the *Wren•dition* and savor your summer, wherever you spend it.

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Cedar Waxwing

By Jasper Younger-Howard

Perching in a myrtle tree
Chattering quite merrily
Waxy wing tips in the leaves
They are gregarious
Feasting on fruit red as cherries
Ash and oft Winter-Berries
Caught amongst the garden fairies
Keeping to their small groups
Trilling, buzzing, as they go
Seen amongst rain, sun, and snow
Flitting, faces all aglow
Such a merry sight

Cedar Waxwing. Photo by Jasper Younger-Howard

Maricopa Audubon Society Field Trips

Car Pooling: Please make every effort to organize your own car pool, consolidate vehicles at meeting places and/or contact leaders for car pooling assistance. Be courteous to the trip leaders and help cover their gas costs. We recommend that passengers reimburse drivers 10 cents per mile each.

Reminders:

- Avoid wearing bright colors. Wear neutral-colored clothing and sturdy walking shoes.
- Bring sunscreen, sunglasses, head protection, and water.
- Always bring your binoculars. Bring a scope if recommended.
- Submit trip and leader suggestions to the Field Trip Chair, Larry Langstaff.
- Unless stated otherwise, reservations are required.

Day Passes: Many locations in the National Forests require Day Use Passes. For details, see http://www.fs.usda.gov/main/tonto/passes-permits

July-October, date TBA

Stewart Mountain Desert Tortoise Quest
Have you ever seen a Sonoran Desert Tortoise in the wild? Increase your chances of stumbling upon one of these iconic desert creatures by searching in their preferred habitat after a summer monsoon. We are not setting an exact date for this trip near Saguaro Lake until the conditions are right. We will collect email addresses and phone numbers and contact you one day before or possibly the morning of the walk. It could be a weekend or weekday. Learn about the behavior, life cycle, and status of this keystone species. Difficulty: 4 (steep, rocky terrain, and hot, humid weather). Bring snacks, sun protection, hat, sturdy hiking shoes, and plenty of water. Start near daybreak and return by noon. Limit: 10.
Leader: Laurie Nessel, laurienessel@gmail.com or 480 968-5614 to get on the call list.

Saturdays, June-October (June 23, July 28, August 18, September 22, October 20)

Family Walks in Papago Park: Dragonflies and Butterflies
Learn to identify local butterflies including Painted Lady, Queen, and Fiery Skipper as well as common dragonflies and damselflies such as Blue Dasher, Flame Skimmer, Blue-ringed Dancer, and Familiar Bluet. Easy, one to one and a half hour strolls around the lakes. Children welcome. Bring binoculars (close-focus preferred), water, and hat. *Common Dragonflies of the Southwest* by Kathy Biggs on sale for $10.00. Meet 7:00 am May-September, 8:00 am October at Lake 2. No reservations needed.
Leaders: Janet Witzeman and Laurie Nessel, laurienessel@gmail.com

Monday, July 2

Pinal Mountain near Globe
Diverse habitats up the mountain can produce up to 90 species of birds! Breeding species will be here for the monsoon season. Leave Tempe at 4:00 am to be on the mountain at sunrise (5:23 am). Return around 3:00 pm. Bring water and a bag lunch. Short easy hikes along forest roads, but the majority of birding near the vehicles. Limit 11 (plus leader) in three vehicles.
Leader: Dave Pearson.
Reservations: Larry Langstaff, larrylangstaff1@gmail. com

Monday, July 23

Christopher Creek
Leave Scottsdale 5:00 am to explore the Christopher Creek area, starting at the lovely subdivision Wooden Nickel, where folks have been very welcoming in the past. Expect the usual higher elevation birds, including residents and summer visitors such as Steller's Jays, White-breasted Nuthatches, robins, Western Bluebirds, a variety of flycatchers, Western Tanagers and Broad-tailed Hummingbirds. This site has included a Great Blue Heron rookery and a surprise Rose-breasted Grosbeak before. Continue to the Christopher Creek community for a picnic lunch. Return about 3:00 pm. Difficulty: 1. Limit 8.
Leader: Kathe Anderson, kathe.coot@cox.net

Monday, August 6

Mingus Mountain
Start 5:00 am from Scottsdale, possibly break up the trip with quick stops on the way, and once on the mountain, explore several stops through the pine forest. See nuthatches, forest-dwelling woodpeckers and flycatchers, plus summer warblers, tanagers and vireos. Wrap up with a picnic lunch and return around 3:00 pm. Difficulty 1. Limit 8.
Leader: Kathe Anderson, kathe.coot@cox.net

Wednesday, August 15

Prescott, Willow Lake, and Watson Woods
Carpool from the Scottsdale area at 5:30 am and head to the Prescott area. Summer resident tanagers and warblers will be joined by early migrant shorebirds and possibly gulls and terns. Bring binoculars and scope, hat, water, sunscreen and snacks. Lunch in the Prescott area before returning to Scottsdale mid-afternoon. Difficulty 2. Limit 7.
Leader: Cindy Marple, clmarple@cox.net

Monday, August 20

Santa Cruz Flats near Eloy
Along with summer species, look for surprises like early shorebirds. Bring water and a bag lunch. Leave Tempe at 5:00 am to reach the Flats by sunrise (5:54 am). Return early to mid-afternoon, depending on bird activity. Difficulty 1. Limit 11 (plus leader) in three vehicles.
Leader: Dave Pearson.
Reservations: Larry Langstaff, larrylangstaff1@gmail.com

Saturday, September 1

Birding by Ear at Gilbert Water Ranch
Meet early at Gilbert Water Ranch for a couple of hours of birding by ear. We'll focus on techniques to identify birds by sounds. This will be a good time to catch the summer residents and early fall migrants starting to come through. Bring binoculars, hat, water, and sunscreen. Difficulty 1. Limit 4.
Leader: Cindy Marple, clmarple@cox.net

Saturday, September 15

Glendale Recharge Ponds
Can we find 15 species of shorebirds at the height of shorebird migration? Leave Tempe at 5:30 am to arrive at Recharge Basin at sunrise (6:12 am). Bring water and a bag lunch. If you have a spotting scope bring it too. Return early afternoon, depending on bird activity. Limit 11 (plus leader) in three vehicles.
Leader: Dave Pearson.
Reservations: Larry Langstaff, larrylangstaff1@gmail.com

Sunday-Tuesday, September 16-18

Grand Canyon Hawk Watch
Meet about 5:00 am to travel north, staying overnight in Flagstaff both nights (about $120-$145 per night). Spend the first part of Sunday at Kachina Wetlands, then head towards the Arboretum at Flagstaff, to bird and eat a picnic lunch. Kachina Wetlands can be full of surprises, but waterfowl, raptors, bluebirds, and swallows are predictable. At the Arboretum, we could add robins, hummingbirds and higher elevation warblers to our list. Back in town to visit a couple of nearby sites before dinner and a well-deserved night's rest. The next day, visit the Grand Canyon to participate in the Hawk Watch and perhaps find a few other spots to bird, heading back to Flagstaff in the late afternoon. The last day, go to Lamar Haines Wildlife Area on the way up to Snowbowl for a few hours of birding in a beautiful spot at a higher elevation. Lunch in Flagstaff, and head south about 1:00 pm. Expenses include moderate hotel, some meals at restaurants, some entrance fees, and a gas donation to your driver. Difficulty 2. Limit 8.
Leader: Kathe Anderson, kathe.coot@cox.net

Saturday, September 29

Pinal County Dragonflies
Pierre Deviche, ASU's School of Life Sciences professor and odonate expert, will guide this dragonfly field trip to nearby Pinal County. This is normally a good month to find many species and as the monsoon should be over or almost so, the weather should be great. A day trip visiting (tentatively) Oak Flat, then the Gila River at Kelvin Bridge, Kearny Lake, and/or the Dudleyville fishing ponds. All locations are easily accessible. Bring a lunch and sun-protecting gear, binoculars, camera, and light walking shoes. Leave from Gilbert at 8:30 am and return mid-afternoon. Difficulty: 2. Limit 8.
Reservations: Larry Langstaff, larrylangstaff1@gmail.com

Be Social! Find MAS on Facebook

facebook.com/MaricopaAudubonSociety

Education Chair Update

by Jasper Younger-Howard

Since January 2016, I have offered a variety of STEM (science, technology, engineering, and math) classes for children in my neighborhood.

This started when I assisted Mileece L'Anson, a conservationist who designed a program that would convert the frequencies plants emit into music. She believes that creating green spaces for children at school is one of the best ways to not only get children interested in nature but to provide a safe environment for them to de-stress and ground

MAS Education Chair Jasper Younger-Howard with children holding their moss terrariums made in a STEM class from recycled materials.

themselves. As I assisted her with her efforts to create green spaces for children throughout the US, I realized that it is hard to get children interested in ecology and nature without first getting them interested in science and the ways you can blend technology with science.

My first two classes were for children ages 4-12 and I taught these children each of the STEM principles with hands-on activities. They created their own nature/science journals, learned how to observe and create a journal of observations much like Leonardo da Vinci did, made moss terrariums, blew bubbles using honeysuckle flowers, solved math using visual principles, extracted the DNA from strawberries, and experimented with mentos mints and sodas to predict which ones would explode the farthest. The children loved it. They went home and immediately began using their journals to ask questions and observe the world around them.

I then taught a birdwatching class for a group of girls 12-18 seeking to become certified to go to girls' camp. They needed to be able to demonstrate the ability to identify at least three birds in their environment. I brought my books, birdsong identifier, binoculars, pictures I had taken, as well as other supplies such as my nature journal. We met at a park and I taught them how to listen to, watch, and use visual cues (color, size, beak shape, location, etc.) to identify each species. By the end of our time at the park, each girl had successfully identified six species of birds.

I have led bird walks at the Gilbert Riparian Preserve for local scout groups, such as Venturing Crew 2070, as well as taught about birds to groups of homeschoolers. It is extremely gratifying when children come up to me after one of my classes and excitedly report birds they have seen and identified throughout the week.

A child blowing a bubble with a honeysuckle flower.

One of my favorite experiences was when I was in charge of creating and implementing a STEM curriculum for middle school children at the J.O. Combs Middle School in San Tan Valley. I created a program based entirely on hydroponics, which is growing plants without the use of soil. Each student went on field trips such as to Barney Farm where they learned how farmers water their crops, and to the aquaponics farm in Phoenix where they learned about aquaponics systems.

They then used what they had learned in a summer school program (engineering principles such as design, chemistry principles such as pH, math principles such as ratios and proportions, and science principles such as the biology of plants) to design and create their own

Middle School children learning about aquaponics at the Southwest Aquaponics and Tilapia Farm

hydroponics systems. Students were required to present their ideas to a forum of adults who judged each design.

All students were able to grow their plants from seeds, and they used recycled materials such as soda bottles and paper plates in order to create an effective design. My middle school students were excited to learn how to feed themselves and how to use their knowledge to "save the world."

Throughout this year I am planning to host a variety of other STEM and nature-based classes to get children as excited about nature as possible. I always have copies of *The Cactus Wren•dition* available and I also explain about MAS and what we do.

I truly believe that millennials have a desire to conserve, and we need to give them opportunities to exercise their knowledge about ecology and brainstorm ways to help preserve nature. I have learned so much from each child who has participated in my classes and activities. These children are the future!

SOUTHEAST ARIZONA WINTER SPECTACLE

by Melinda Louise

Sunset over Cochise Lake, Willcox. Photo by Melinda Louise

Seeing photographs or videos of the Sandhill Cranes of southeast Arizona doesn't begin to portray the spectacle of seeing them in person. After many years of dreaming of going, we finally visited there this past January.

After arriving in Willcox, we visited the nearby Cochise Lake birding area that first afternoon and evening. We found waterbirds (Gadwalls, Ring-necked Ducks, Northern Shovelers), Red-winged and Yellow-headed Blackbirds, and raptors.

Then we noticed a bunch of big boulders and a few Sandhill Cranes. We decided to continue on around the pond and back to a raised platform viewing area. From that higher perspective we realized there were many more birds and ducks than we thought. After enjoying the antics of the many Red-winged and Yellow-headed Blackbirds, and spotting what we thought was a small juvenile raptor, we walked down the road toward the direction of the cranes.

Sandhill Cranes and Snow Geese at Whitewater Draw. Photo by Melinda Louise

It was then that we realized those weren't boulders we had seen earlier but Sandhill Cranes bedded down! What an exquisite sunset of beauty and sound with cranes flying in from the far-away areas of afternoon feeding, returning to roost with everyone for the night. Their calls and "talking" with one another was mesmerizing. Their walking and wandering settled down as one by one they took their respective "boulder positions." The light dwindled to darkness. The cold settled into our bones. We decided to call an end to our long first day and headed off for a Mexican dinner.

We returned the next morning as the last of the cranes were leaving for their favorite morning feeding areas, but it was a beautiful cold clear morning of watching the blackbirds, more ducks, shorebirds, and raptors. An exciting, though chilly, start to our first full day in southeast Arizona.

The goal that day was to travel south to Whitewater Draw. Ordinarily perhaps a one-hour straight shot from Willcox, it took at least twice that as we enjoyed watching all the raptors along the way. Such fun!

Whitewater Draw is an ephemeral lake with marshlands and grasslands. Located in Sulphur Springs Valley, these 600 acres of wetland, and two small patches of riparian habitat, were acquired by Arizona Game and Fish Department about 20 years ago. Sandhill Cranes arrive from both the Rocky Mountain and the Mid-Continental populations.

We finally pulled into Whitewater Draw about 11:00 am as the cranes were starting to arrive from their various morning feeding areas. We had brought a lunch, water, folding chairs and, of course, binoculars, spotting scope, and camera. We sat for hours and watched a most amazing sight unfold.

Cranes would begin to show up in our binoculars from far across the valley. They would circle and begin to descend, often right over

us, to eventually land and "hang out" until once again leaving for an afternoon of feeding before returning to settle in for their evening roost.

The many other birds we discovered was another unexpected pleasure: Snow Goose, Northern Shoveler, Northern Pintail, American Wigeon, Gadwall, Ring-necked Duck, and Mallard; along with Killdeer, American Kestrel, Common Yellowthroat,

Coming in for a landing at Whitewater Draw. Photo by Melinda Louise

Vermilion Flycatcher, Black Phoebe, Say's Phoebe, Cooper's Hawk, and a Loggerhead Shrike.

We stayed until mid-afternoon enjoying the antics, the strutting, the little tiffs, and all the many and varied comings and goings. It was especially enjoyable realizing that all around us, not just in front of where we sat, the Sandhill Cranes had gathered into massive flocks along the water's edge.

We finally made our way back to Willcox to visit nearby Cochise Lake again before dinner and another beautiful sunset.

Heading back home to Tempe on our last day, we decided to make a side trip to the San Pedro River and to visit the San Pedro House where a non-profit organization, Friends of the San Pedro River, works to conserve and interpret the San Pedro Riparian National Conservation area. An added benefit is that their bookstore is well stocked with excellent birding books.

This riparian area along the river is a critical habitat for not only migrating birds but many mammals, reptiles, and amphibians. A wonderful hiking and birding area, we enjoyed not only all the birds around the House but walked down along the river for a couple of hours before continuing to make our way back home.

It was a wonderful way to spend our last day in southeast Arizona, as it had been seven years since we last visited the San Pedro River area. We were happy to see that the massive old Fremont Cottonwood had not been lost, although it is no longer possible to stand right next to the tree because of the potential danger of falling branches. The picture of me in front of the tree was taken on that last visit.

Before our circuitous route back to Tucson, and eventual arrival home, I had decided it would be fun to record how many raptors we saw on our journey. After only counting those I was certain were raptors, my final count was 28! Most of them were Red-tailed Hawks sitting on telephone poles or flying close enough to count.

What will remain for me as the best part of our trip was the unfolding scene of those massive prehistoric-looking Sandhill Cranes arriving from far down the valley on their way to Whitewater Draw. Transfixed by cranes nearby, but then realizing huge groups had been making their way down all around us: so much better than any movie!

Melinda Louise is a Sunday Docent at the Desert Botanical Garden and has been fascinated with birds since the early 70s.

If you plan to go and see the cranes next winter, see for more information:
https://www.azgfd.com/wildlife/viewing/wheretogo/whitewater/
http://www.wingsoverwillcox.com

Melinda under the cottonwood at San Pedro House. Photo by Steve Klug

Brood Parasitism Observed

by Gillian Rice

Black-tailed Gnatcatcher and Brown-headed Cowbird. Photo by Gillian Rice

While walking the trails at the Desert Botanical Garden in mid-May, I heard a baby bird begging. I spotted a Black-tailed Gnatcatcher feeding a fledgling Brown-headed Cowbird. It is astonishing how the diminutive gnatcatcher fails to realize the nest intruder is not its own.

I decided to try to find out more using the *The Birds of North America* and *Arizona Breeding Bird Atlas* species accounts for reference. I learned that much remains to be discovered about the complex relationships between cowbirds and their victims.

The cowbird's parasitic behavior evolved because of its nomadic behavior. Cowbirds followed bison making seasonal migrations north and south over the Great Plains. The birds fed on insects stirred up by the bison. Cowbirds adapted to livestock and then moved into regions where bison did not exist. Today cowbirds are common in agricultural and suburban areas.

In southern Arizona, Brown-headed Cowbirds arrive in mid- to late-March. The female selects a host nest and lays her egg between mid-late April and mid-July. She often removes a host egg, often on the day she lays her own egg. She may lay 30 to 40 eggs per season. Her eggs and chicks are cared for by only the host species.

The *Arizona Breeding Bird Atlas* reports 41 cowbird victim species in our state. Some of these, like Crissal Thrasher, eject cowbird eggs from their nests and do not become hosts. Out of 161 parasitism events where the host species was identified, the Black-tailed Gnatcatcher was the most common host. Other common hosts were Yellow Warbler, Bell's Vireo, Black-throated Gray Warbler, and Black-throated Sparrow.

How do cowbirds find nests? The female perches quietly in the tops of shrubs or trees and silently watches for nest building activity in the surrounding open areas. Or, she may walk on the ground, watching movements of other birds. Also, she might fly noisily between vegetation, landing among leaves, all the while flapping her wings perhaps intentionally trying to flush potential hosts from nests.

Ironically, one researcher found in a Song Sparrow population that experienced breeders were more likely to be parasitized than first-time females; he suggested that older females recognize cowbirds as a "threat," respond aggressively to cowbirds, and thus reveal the existence of their nest if not also its location.

Cowbird eggs laid simultaneously with host eggs usually hatch first and so the cowbird nestling outcompetes its nest-mates for food. Feeding rates to cowbird fledglings vary depending on the host species but are always higher than the feeding rate for the hosts' own young. After leaving the nest, a cowbird fledgling is fed by the host parents for two to four weeks. *The Birds of North America* reports that a Blue-Gray Gnatcatcher will feed a cowbird 36 times an hour.

A gnatcatcher weighs about 10 grams (0.35 oz) whereas an adult male cowbird weighs 40-50 grams (about 1.5 to 1.75 oz). When I saw the Black-tailed Gnatcatcher feeding the cowbird fledgling I felt sorry for the small bird, but at the same time I was excited to observe a phenomenon I had only read about.

References

Corman, T. and Wise-Gervais, C. eds. 2005. *Arizona Breeding Bird Atlas*. Alberquerque: University of New Mexico Press.

Lowther, P.E. 1993. Brown-headed Cowbird (*Molothrus ater*), version 2.0. In *The Birds of North America* (A.F. Poole and F.B. Gill, eds). Ithaca, NY: Cornell Lab of Ornithology. https://doi.org/10.2173/bna.47

If You Love The Desert, Thank A Termite

by Tom Gatz

Soon after winged termites alight, they shed their wings by breaking them off at lines of weakness (like perforations in paper) near the point of their attachment to the body. Photo by Jim Kalish, Department of Entomology, University of Nebraska-Lincoln

When I first moved to Arizona, people told me there were two types of homes in Phoenix: those that have termites and those that will have termites. That may have been somewhat of an exaggeration, but many homes here (including ours) eventually have termite issues that require the periodic attention of a reputable pest management company. According to the University of Arizona Cooperative Extension Service, termites are considered Arizona's number one urban pest. Of the 40 or so species of termite in the Sonoran Desert, only a few species can damage our homes. The one responsible for most of the damage to our structures is the Lowland Subterranean Desert Termite. This species, while an important consumer of native woods on the desert floor, also has a taste for pine, which does not grow in the desert but is now abundant here in our homes.

The termite species covering the base of this cactus with thin, sun-baked muddy crusts of soil are only consuming the dead plant material on the surface and are not harmful to the cactus or to our homes and are commonly seen after the summer rains begin.

Most species of termites we encounter in the desert, however, do not pose a threat to our homes and many serve important roles in our ecosystem. For example, we often see wide, thin crusts of plaster-like earthen coatings created by termites covering wooden fence posts, the bottoms of Saguaro cacti, palms, and grass tufts in our backyards. These do not threaten our cactus or our homes. They are the work of the Desert Crust-building Subterranean Termite. According to University of Arizona entomologist, Robert Smith, this species is an ecologically important arid land termite that poses no threat to structures whatsoever. These termites eat only dead grass and dead wood scraped off the exterior of posts and the trunks of trees and cactus. They don't enter structurally sound wood. Unfortunately, disreputable pest control marketers often use the presence of Desert Crust-building Termites in our yards to alarm homeowners and to sell unneeded services.

A great reference book by the Arizona-Sonora Desert Museum, *A Natural History of the Sonoran Desert*, tells us that one species of drywood termite feeds primarily on Saguaro skeletons. Another, the largest termite in the Sonoran Desert, a primitive drywood species, feeds only on standing deadwood branches of the Blue Palo Verde. Neither of them have negative consequences for humans. The Desert Dampwood Termite is the only species in Arizona that feeds on green (living) wood and does sometimes damage young citrus trees and grape vines below the soil line.

The Arizona-Sonora Desert Museum website asks, "What would happen if we didn't have termites in our desert?" Well, because our dry conditions limit the amount of wood-decaying fungi, without termites, we would eventually be neck-deep in undigested cellulose in the form of mesquite and palo verde deadwood, dead grasses, cactus skeletons, and animal dung. Joe McAuliffe, a research scientist at the Desert Botanical Garden adds that, "in addition to a dearth of fungi, the frequently dry soils of the Sonoran Desert also generally lack earthworms that are so important in the decomposition of organic matter in moister environments." Consequently, he often thinks of termites as "the earthworms of the desert." The nutrients in all of this undigested plant material would be unavailable for plants growing in the desert soil and, without plants fixing carbon-producing food, most desert animals would disappear. Research conducted in southwestern deserts and desert grasslands by New Mexico University's Walt Whitford estimates that without the action of termites, cow pies would smother the land, covering 20 percent of the surface in 50 years, blocking sunlight and moisture from reaching new plant growth. So, without termites, the whole desert ecosystem could collapse and we would be in deep "you-know-what" both literally and figuratively.

Swarms of fat, flying termites (called 'alates') with temporary wings establish new colonies during the summer rainy season and also provide an important food source for toads, bats, and birds.

Robert Smith points out the similarities between humans and termites. Both are social creatures vulnerable to heat and desiccation and neither could survive here without our social support systems that enable us to construct complex structures that protect us from climatic extremes. "A difference between us is that termites are essential to Sonoran Desert ecology, while we are not" he adds.

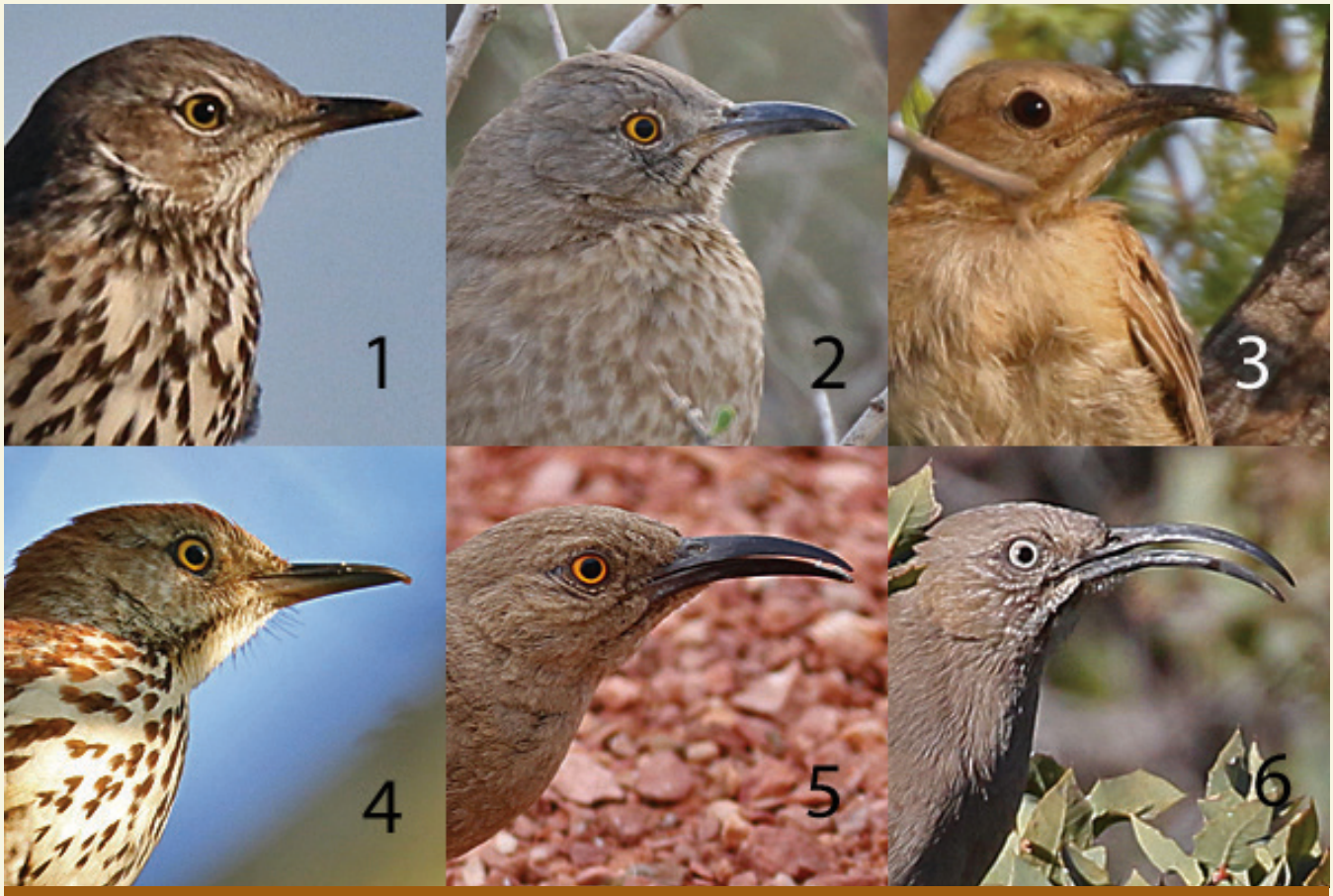
For more information about desert termites, go to https://www.desertmuseum.org/books/nhsd_termites.php

Thanks to Kim Pegram and Joe McAuliffe for reviewing this article and Patrick Evers for inspiring me to write it.

Tom Gatz has been a MAS member since 1981.

Maricopa County Thrashers

by Matt VanWallene



Seen in Maricopa county are six of the eight thrashers resident in the US.

1) Sage Thrasher. Seen each winter, it's the smallest of our thrashers at 8.5" long. Its crown is gray, its throat is white with dark brown streaking, and its eye is lemon yellow to amber brown. This past March, I saw 10 in south Chandler in desert scrub along some agricultural fields. The group was migrating through as they do not nest there and have not been seen there since. My prior sightings were east of Picacho Peak and the Dudleyville CBC. Both of those sightings were in open desert scrub.

2) Bendire's Thrasher. A year-round resident, it is 9.5" long. Its crown is olive-brown, its throat is olive-brown with streaking, and its eye is yellow to orange yellow. This thrasher nests just a few miles from my home in open desert scrub. It is easy to mistake this bird for a Curve-billed Thrasher except that its lower mandible has very little curve to it.

3) LeConte's Thrasher. A year around resident, it is 11" long. Its crown is gray-brown, its throat is white and its eye is brown to chestnut brown. I have seen this bird multiple times at the "thrasher spot" at the intersection of Baseline Rd and Salome Highway (west of 331st Ave). This too is open scrub habitat.

4) Brown Thrasher. A rarely seen winter visitor, it is 11.5" long. Its crown is red-brown, its throat is buff with heavy black streaking and its eye is orange to orange-yellow. My only Arizona experience with this species was at Gilbert Water Ranch. One of our MAS members had one winter at his mother's home here in the county.

5) Curve-billed Thrasher. Our most common thrasher is here all year and is 11" long. Its crown is gray-brown, its throat is white with a gray wash, and its eye is bright red or yellow next to the pupil and with an orange outer ring. Most of the thrashers you see in the county are Curve-billed. It has a variety of calls and its song is very melodic. It is known as the songbird in Mexico. As an omnivore it eats just about anything that I put out, including dog food. Although skittish, it tolerates my presence.

6) Crissal Thrasher. Another year-round resident, it is 11.5" long. Its crown is gray-brown, its throat is white, and its eye is brown to brownish straw. My first encounter with a Crissal was at Boyce Thompson Arboretum. I have also watched them on multiple trips to the area south of Oak Flat. The habitat there is very thick, thus your only hope of seeing them is hearing their call and using field glasses to spot them.

My pride and joy were in capturing this leucistic Curve-billed Thrasher in Kearny, AZ.

Sometimes you have to be very careful with what you see. At first, I thought this bird was a Crissal, but closer inspection showed a beak abnormality.

Curve-billed Thrashers use their beaks to scratch the ground looking for seeds and insects. This one had caught its beak in something but seemed to be doing fine.

The Curve-billed Thrasher is our most abundant thrasher. It has adapted well into our urban environment and is seen by all out-of-state birders visiting the Valley. This bird will nest next to your patio regardless of how busy it is. This nestling grew up to rock and roll.

Connecting with nature makes Arizona a fun and better place to live!

Compiled by Vicki Hire

Photos by Vicki Hire

Saguaro Skeleton

Saguaro Pleats

Saguaro Boots

THE MAJESTIC SAGUARO – A Symbol of the Southwest and other Amazing Cactus Facts

Did you know a cactus is a type of plant that can survive in extremely hot and dry habitats? When there is more than one cactus, they are referred to as "cacti." Approximately 2000 different species of cacti have adapted to conserve water during long dry periods.

Did you know that thanks to its ability to store water, a cactus can live for over a year without rain? A cactus has many small thin roots near the surface of the soil, which it uses to quickly collect rare rainwater to store in its stem and roots. Some cacti have a longer thick root called a taproot, which grows deep into the soil reaching underground water when the top soil is dry or during a drought.

Did you know the spines of a cactus are modified plant leaves? They shade the stem from the hot sun. These sharp spines also help to protect the cactus from plant-eating animals that might try to reach the moisture the cactus stores in its juicy stem. Not only does the cactus stem store water, but also uses photosynthesis to produce food by using sunlight and carbon dioxide.

Did you know Saguaros are a species of cacti found only in the Sonoran Desert.[1] Saguaro is pronounced "suh-wahr-oh" and in Arizona it is against the law to harm a Saguaro cactus. The Saguaro is one of many plants in Arizona protected by the Native Plant Protection Act, and within national park lands, the removal of any plant is illegal.[2] Landowners need a special permit from the Arizona Department of Agriculture for any construction that will affect a living Saguaro cactus. Cutting or removing a Saguaro without a permit is a felony.

Did you know many species of desert animals depend on the Saguaro? Gila Woodpeckers and Gilded Flickers carve deep holes in Saguaros to make their nests. After they've raised their families and leave, other birds such as Elf Owls use the nests for their young. The holes that birds nest in are called Saguaro "boots" and can be seen on dead Saguaros. Native Americans used these boots to carry water before canteens were available.

Did you know Saguaros have beautiful flowers in the spring, providing nectar to moths, butterflies, bees, and bats? Later those flowers mature into red fruit, which can each contain up to 2000 small black seeds. The fruit provides food and moisture for many desert animals such as woodpeckers, finches, doves, and even coyotes.[3] Native Americans like the Tohono O'Odham people have harvested this nutritious fruit for thousands of years.

Did you know Saguaros consist mostly of water? An adult plant can weigh six tons; that's 12,000 pounds or more. This weight is supported by a skeleton consisting of interconnected, woody ribs inside the Saguaro cactus. The number of ribs corresponds to the number of "pleats" on the outside of the Saguaro. The pleats can expand like an accordion, which allows the Saguaro to store a lot of water after a rainstorm. Inside, the Saguaro has a cucumber-like consistency.

Did you know the biggest threat to the Saguaro is our rapidly expanding human population,[4] with the development of new homes causing a tremendous loss of habitat? Other threats to Saguaros are vandalism and fires which are more frequent due to the spread of Buffelgrass, Fountain Grass, and Red Brome. These grasses are changing the desert landscape and putting the ecosystem at risk. Can you imagine a desert without cacti?

1 https://www.desertmuseum.org/kids/oz/long-fact-sheets/Saguaro%20Cactus.php
2 https://www.nps.gov/sagu/learn/nature/saguaro_threats.htm
3 https://www.desertmuseum.org/kids/oz/long-fact-sheets/Flowers%20and%20Fruit.php
4 https://www.nps.gov/sagu/learn/nature/saguaro_threats.htm

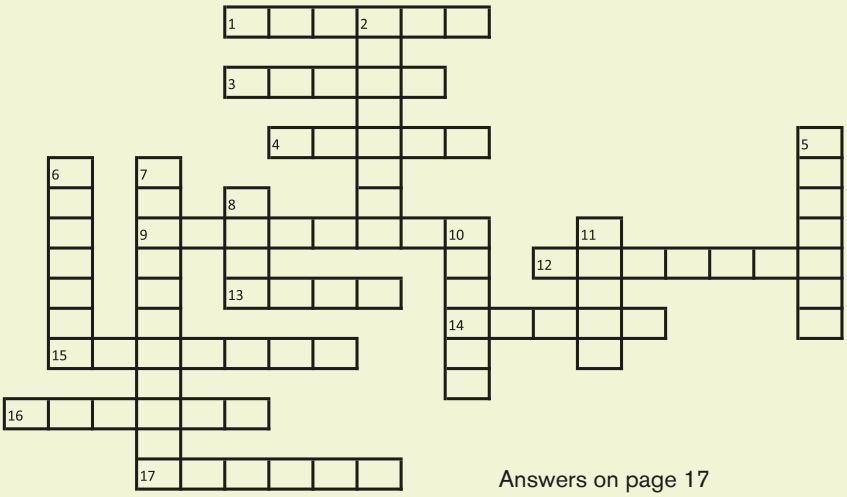
Green Scene Go Take a Hike

You can see many giant Saguaros up close in the McDowell Sonoran Preserve, which covers more than 30,500 acres and over 180 miles of trails. The McDowell Sonoran Conservancy offers special programs for children through Conservancy Kids. Learn more about guided hikes and family activities at https://www.mcdowellsonoran.org. Sometimes, a guided hike will focus on the lifecycle of a Saguaro, from seed to skeleton. The Gateway Trailhead is located near Thompson Peak Road and Bell Road and is the access point to many unique trails. Here, you will love the games and activities along the accessible, barrier-free Bajada Nature Trail. If it's a windy day, stand close to Saguaros and listen to the wind whistling through their many spines.

Guess this Bird

Clue: This migratory bird feeds on nectar, pollen, and fruit of the Saguaro

The Majestic Saguaro Crossword



Answers on page 17

Across

1 An Arizona landowner must have one of these from the Department of Agriculture to remove or cut a Saguaro

3 The _____ of a Saguaro contains up to 2000 small black seeds

4 Saguaros are made mostly of _____ and can weigh 6 tons or 12,000 pounds

9 Gilded _____ carve deep holes into Saguaros to make nests

12 Some cacti have a longer, thick root called a _____, which grows deep into the soil

13 A cactus stores water in its _____

14 The holes excavated by birds in Saguaros are called _____

15 In Arizona it is against the law to harm this cactus

16 These can expand like an accordion and allow a Saguaro to store a lot of water after a rainstorm

17 Modified plant leaves of a cactus are called _____

Down

2 The fruit of a Saguaro provides _____ for many desert animals like woodpeckers, finches, and even coyotes.

5 Approximately 2000 species of cacti in the world have _____ to conserve water during long dry periods

6 Vandalism, fires, and loss of habitat due to human population are _____ to the Saguaro

7 The spread of this grass is changing the desert landscape and increasing the risk of wildfire

8 The skeleton of a Saguaro is made up of woody _____ inside, which correspond to the number of pleats on the outside of a Saguaro.

10 Saguaros are considered a _____of the southwest

11 Plural of "cactus"

Saguaro Flowers

Birds at their Nesting Best

by Dano Grayson

Photos by Dano Grayson

Throughout the wilds of the world, where the animals make their homes, few do so better than the birds. Bird nests captivate even the non-birder's attention. The intricate designs, creative use of their surroundings, and ability to protect and ensure the future of their species strike both wonder and bewilderment in those who come across nests.

Some use their twig and leaf homes to evade detection while some, like bowerbirds, use theirs to stand out in the stern competition for mates in the dense forests of New Guinea. Unlike the bowerbird, unburdened by many native land predators and able to project its presence across the forest, other birds have lived among a diversity of land predators for millennia, forcing change and adaptation to better protect themselves, their offspring and their way of life. A journey to find these birds and their nests takes us to one of the most bird diverse forests in the world, Manu National Park in Peru.

Manu National Park

Deep in the heart of Peru, down the slopes of the eastern Andes mountains, and a few days on a boat navigating jungle waterways you find yourself in a forest unlike any other. The jungles that fill Manu sit at the top of the list of the most bird diverse locations on the planet. With more species in this forest than can be found in Canada and the US combined, this bird haven is truly a wonder of the world. The layering of the rainforest allows all creatures to find a place. Examining these layers (the leaf litter, underbrush, and canopy) reveals a multitude of adaptations utilized by birds to survive in a place filled with snakes, lizards, monkeys, cats, and even other birds that find it hard to pass up the energy-packed delectables birds lay in their nests: their eggs.

The leaf litter forms a habitat extending roughly six inches to a foot above the soil. Arguably the most diverse and dangerous of the sub-habitats of the Amazon, its conditions require a special set of skills to survive and mastery to thrive. Consider the traffic: large mammals, herds of peccary foraging, jungle cats on the prowl, and an assortment of reptiles roaming the forest. The risks of being eaten or trampled are exceptionally high. Add that to environmental dangers like a tree falling or a flood and a life on the ground might not be for you.

However, several birds do make a home there. Nunbirds, motmots, and kingfishers seek shelter underground, whereas the tinamous (grouse-like birds), poorwills, and nightjars have evolved to a life on top of the litter. Most make a small leaf mound to nest, guarding the eggs until they hatch. Once the babies are born, both parents actively move the young every night to prevent smell accumulation allowing a possible predator to locate them. Though it is risky to move newborns across the forest floor, the dangers involved with staying put often lead to a necessity to not stay still.

In contrast to moving every night (one of the few advantages a ground-nesting bird has over its arboreal counterparts), birds nesting in the trees and underbrush have to take a different approach. Moving a nest nightly would be far too energy inefficient.

The greatest diversity of birds in the Amazon nest in the underbrush and mid-layer. This is a section of jungle from about a foot above the leaf litter to about 60 feet above the ground. Horneros make mud nests that resemble old wood-fired ovens.

Thrush-like Antpitta. Myrmothera campanisona

Tapir

Antbirds, manakins, and some tanagers create cup nests. Cavities excavated by woodpeckers could be home to an array of trogons, parrots, tucanettes, and more.

To form a list of unique adaptations used by the tree-nesting birds of Manu would take a lifetime to complete. One example is the Cinereous Mourner. This small drab grey bird with slight orange speckling has evolved an incredible defense method for protecting the nestling while the mother leaves to forage. The nest of the mourner is a small couplet of leaves. The female lays a single egg which she incubates for approximately 20 days before it hatches. Now the real challenge begins. The chick, fresh out of its egg, unable to defend itself or flee, takes on

Amazonian Motmot

the shape and color of a stack of deadly caterpillars. Nesting roughly six feet off the ground the Cinereous Mourner chick is at risk of predation from birds, monkeys, and snakes, but all have a respect for the potency of the "caterpillars." Thus the young grows unscathed, shedding its bright orange infant plumage and inheriting the grey tone of an adult.

Higher up, life can get tougher. In the tree tops, canopy nesters face an array of unique difficulties. Although they may not encounter large mammals like tapir or peccary, birds must worry about monkeys, hawks, eagles, owls, and snakes. Looking up to the canopy you'll see a dense green roof sheltering the forest below, the thin wood of the trees holding the load. The canopy blocks most of the light as well as the wind, so the jungle below remains relatively calm. However, in the canopy, animals are exposed to the harsh sun of the dry season, the rain showers of the wet season, and the strong winds of the friaje (a climatic phenomenon characterized by a sudden and abrupt fall in temperature).

To an adult bird living atop the trees these conditions are normal and expected but to a chick, too long alone in the direct sun or hard rain could be a death sentence. Strong winds could send it plunging hundreds of feet to the forest below. Canopy predators can make a quick meal from an unprotected nestling. All of these risks contribute to a bird adapting in unique ways.

Potoo are nocturnal birds with a wingspan of approximately

Ocelot

two to three feet. A potoo can take on many camouflaged poses, one of which is a broken tree limb. The potoo doesn't build a nest or use a cavity but lays a single egg and balances it on a flat point high in the trees. Seventeen days later the chick emerges with a long way to go before it takes on life alone in the forest. Upon hatching, the youngster has enormous feet, great for gripping the bark of its home/perch. Its camouflaged plumage grows within a few days while both parents take part

Ocellated Poorwill

Birds at their Nesting Best cont.

Is this a stack of deadly caterpillars? Or a Cinereous Mourner nestling?

Cinereous Mourner chick waiting to be fed

in feeding and protecting this single chick until it is ready to take flight alone.

The hardships endured by the birds of Manu may be echoed throughout other habitats, but in the most diverse forest in the world, the challenges faced in the Amazon happen at a much higher rate. Ninety-nine percent of the eggs laid this year in the Amazon will not survive to adulthood, according to a University of Florida study. It is the unique adaptations brought on by a constant battle that has led to these specialized methods of survival. As conditions progress, new avian adaptations will grace the eyes of bird enthusiasts for years to come.

Dano Grayson is an Arizona photographer and owner of a wildlife photography studio in southern Arizona. He spent years in the South American rainforest working as both a field researcher and wildlife photographer. The images and accounts mentioned in this article are from his time exploring the jungle for groups like the Birds of Manu Project, Amazon Aid Foundation, and San Diego Zoo Global researchers. Dano also leads tours through birding hotspots in the Andes and Amazon. For more information, visit www.DanoGrayson.com

Potoo, the ultimate camouflage?

Potoo with chick

Conservation Update

by Mark Horlings

Salt River Horses – Again!

In August 2015, Tonto National Forest announced plans to remove the herd of feral horses along the lower Salt River. Maricopa Audubon Society and others concerned about the damage to riparian habitat had sought removal for years. The horses eat cottonwood and willow shoots, thus preventing the growth of large, overhanging trees which would cool the river for native fish and host nesting birds.

White-winged Dove.
Photo by Matt VanWallene

However, things did not go well. Horse lovers and politicians quickly mobilized, and the Forest Service scrapped its plan within a week. In 2016, the Arizona Legislature made it a crime to injure, harass, or kill horses in the herd and declared that the horses were not subject to laws governing wild or stray animals.

The new law also directed the Arizona Department of Agriculture to reach agreement with the Forest Service on procedures to manage the herd. That process has now begun. Those two agencies have sought assistance from the Institute for Environmental Conflict Resolution. As a first step, the Institute will interview MAS and others in the coming months.

Renewable Energy Initiative

Current Arizona Corporation Commission goals require public utilities to use renewable sources to generate at least 15% of their power by 2025. In February 2018, the Arizona Renewable Energy Standards Initiative filed plans to require that utilities adopt green technologies faster. The Initiative would require utilities to use renewables to generate 12% of the electricity they supply by 2020, increasing to 50% by 2050.

This campaign appears to have substantial sponsors, and reaction among utilities and at the Arizona legislature has been swift. In March, the Legislature passed and Governor Ducey signed a law stating that, if voters adopt these standards, and utilities violate them, any penalty will be capped at $5000.

In addition, Arizona Public Service has drafted bills calling for a ballot initiative to be referred by the Legislature: this initiative would set identical standards, have almost the same name, but include “escape clauses” directing the Corporation Commission to ignore the standards if they affected the cost or reliability of the power supply.

Green Scene Puzzle Answers

Answer to Guess this Bird

White-winged Dove. From about April to September, this bird breeds in the southern half of Arizona. Its range covers the southernmost US and Mexico, Central America, and much of the West Indies. White-winged Doves can fly over 10 miles to find water. In the Sonoran Desert, they are able to obtain enough moisture from Saguaro cactus fruit. They are so dependent on the nectar, pollen, and fruit of the Saguaro that scientists believe the doves time their migration and nesting to match the timing of Saguaro fruiting. In captivity, one dove lived for 25 years. In the wild, they may live 10-15 years.

Reference:

Schwertner, T.W. et al. 2002. White-winged Dove (*Zenaida asiatica*), version 2.0. In The Birds of North America (A.F. Poole and F.B. Gill, eds). https://doi.org/10.2173/bna.710

Answer to The Majestic Saguaro Crossword

Across

1 permit
3 fruit
4 water
9 flickers
12 taproot
13 stem
14 boots
15 saguaro
16 pleats
17 spines

Down

2 moisture
5 adapted
6 threats
7 buffelgrass
8 ribs
10 symbol
11 cacti

Green Scene School Projects

If you would like to apply to the MAS Education committee for funding for a school natural history project or field trip, please contact Jasper at yellowbirdphilosophe@gmail.com

Are Feral Horses Making It Difficult For Other Wildlife To Get A Drink?

by Lucas Hall

All photos taken with research trail cams

Feral horses

Those of us who live in deserts have a good understanding of the importance of water. Water shapes the patterns of life that we see in deserts. The arrival of the rainy season can dramatically change the desert landscape from (seemingly) lifeless to lively as plants begin to flower and animals start their breeding seasons. However, water is often scarce and even limiting for many species that inhabit deserts. Not only is water naturally scarce, there are many competing uses for this resource (e.g., agriculture, livestock, drinking water for people). Many animals that are adapted to desert life are accustomed to limited availability of water. However, these animals are likely ill-prepared to compete for limited water with large, dominant animals such as wild horses.

Luke Hall checking on a trail cam

Domestic horses are not native to North America but were brought here in the late 1400s by the Spanish. Over time, many domestic horses have been released into the wild (hence the term “wild horse”) and have come to inhabit western deserts. We refer to wild horses as “feral” because they live and breed in the wild, but are descendants of domestic stock. Populations of feral horses (and burros) roaming public lands in the West reach new highs each year. Numbers of feral horses have risen from 28,000 to 73,000 over the last decade and are expected to reach 77,000 this year (nearly 3 times the appropriate management level of 26,715 designated for the sustainability of

western rangelands). Despite ongoing efforts to keep populations of horses in check, such as contraception and round-up programs that gather horses for auction, the numbers continue to increase.

Increased numbers of horses are an additional strain on water resources typically available to wildlife. On a hot day, a horse can drink up to nine gallons of water. To put that number in perspective, a mule deer (the next largest herbivore in many areas with horses) only drinks one and a half gallons per day. When we consider the number of feral horses in western deserts and how much water they can drink, we can quickly see how much of an issue they pose on water availability (77,000 horses * 9 gallons/day = 693,000 gallons/day).

Pinyon Jays

Juvenile Golden Eagle

We return to our initial question posed in the title of this article: do horses make it difficult for wildlife to get a drink? In short, yes; there is a growing body of research that supports this notion. For example in Arizona, Desert Bighorn Sheep avoided water sources occupied by a horse 76% of the time (Ostermann-Kelm et al. 2008). In Colorado, horses chased Elk away from water (Perry et al. 2015). In Nevada, Pronghorn were less likely to drink when groups of horses were present (Gooch et al. 2017).

Additionally, since 2010 our research lab has been monitoring wildlife use of water sources throughout the Great Basin Desert of western Utah with trail cameras. In that time, we have noticed that most wildlife (birds and mammals) avoid water sources used by horses. In fact, our cameras only detected half as many species of wildlife at water sources used by horses compared to water sources without horses (Figure 1; Hall et al. 2016). In addition, wildlife spent less time at water sources with horses

Mule Deer

Are Feral Horses Making It Difficult For Other Wildlife To Get A Drink? cont.

than water sources without horses (Figure 2; Hall et al. 2016). We also observed that during the hottest and driest times of summer, horses spent significantly more time at water sources than native wildlife (Figure 3; Hall et al. 2016). In a follow up study, we found that both Pronghorn and Mule Deer (native herbivores that closely compete with horses for resources) visited water more often as temperatures increased (Figure 4; Hall et al. 2018)—which is obvious, but an important observation for the next pattern we observed. On the hottest days and

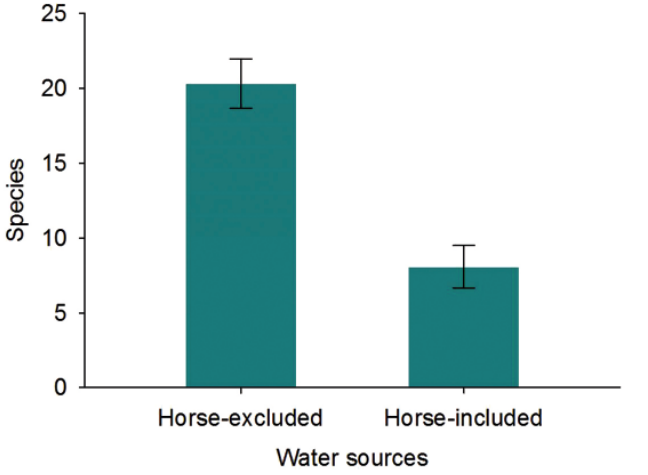


Figure 1. Number of species of wildlife (birds and mammals) photographed at water sources with fencing that excluded horses (horse-excluded) and water sources where horses frequented (horse-included).

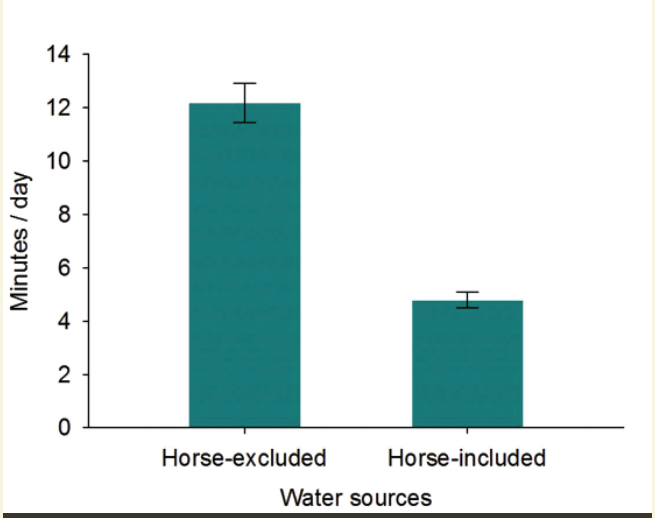


Figure 2. The average time per day that wildlife spent at water sources with and without horses.

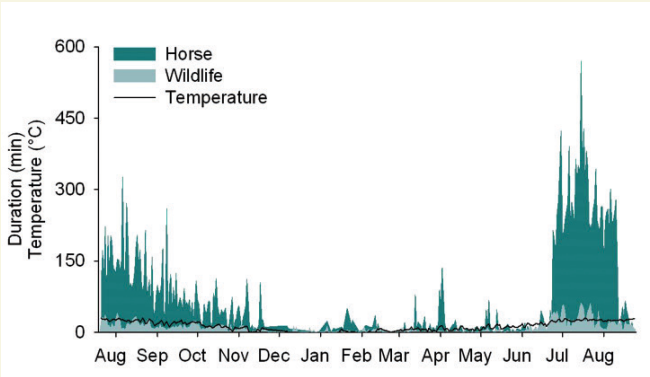


Figure 3. The time spent at water sources by native wildlife (53 total species) and horses over the year and in relation to temperature.

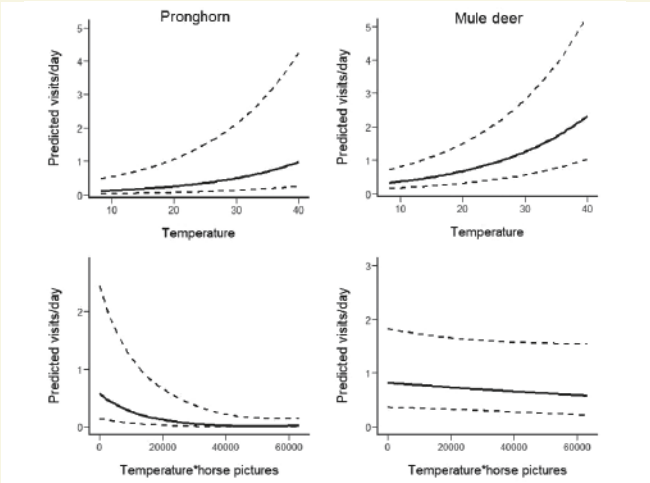


Figure 4. Top graphs: number of daily visits to water by pronghorn (left) and mule deer (right) in response to increased temperatures. Bottom graphs: number of daily visits of pronghorn (left) and mule deer (right) in response to the interactive effect of both increased temperatures and increased horse activity (activity was measured as the number of pictures of horses taken per day by trail cameras). Solid lines represent mean values and dashed lines represent 85% confidence intervals.

when horse activity was highest, daily visitation to water by Pronghorn and Mule Deer decreased (Figure 4; Hall et al. 2018). Pronghorn and Mule Deer avoided water sources used by horses when they likely needed water the most.

Meeting all the needs of wildlife is a challenging, if not impossible, task. However, pursuing issues that have the potential to benefit many species should be a priority. Our findings and those from other researchers have demonstrated that feral horses are negatively affecting multiple species of wildlife. If conservation and management strategies are not enacted in a timely manner, populations of feral horses will continue to grow and further limit an already limited resource for native wildlife.

Pronghorn

American Badger

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Lucas Hall is a Visiting Assistant Professor at the Claremont Colleges.

Help MAS with an Employer Matching Gift

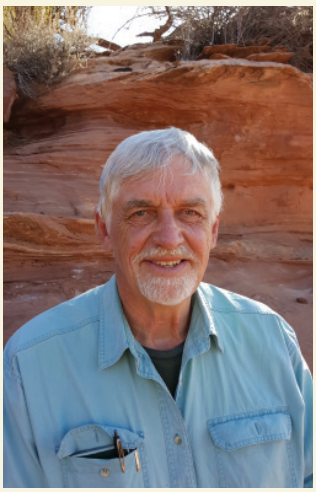
Many Maricopa Audubon members aren't aware that their employers may include a matching gift program in their benefits package. Programs vary from business to business, but they generally offer a dollar-for-dollar match when an employee makes a personal gift to a nonprofit organization like Maricopa Audubon Society.

Please visit your human resources department or charitable giving department to see if this opportunity is available to you. You usually have to fill out and submit a form, which is sometimes done online. If you have already made a donation to MAS in the past year, you may be able to get a matching gift after the fact from your employer for up to 12 months later.

Sign up for the e-newsletter!

To receive updates and supplements to *The Cactus Wren•dition*, sign up for the monthly (September to May) e-newsletter. It includes meeting and field trip reminders, special events, and citizen science projects. To subscribe, contact laurienessel@gmail.com
Note: We do not use the email list for anything other than the described purpose.

Nature through the Artist's Eye: Walt Anderson



Walt Anderson has been referred to as "the naturalist of old cast in modern times, the next generation of a proud and ancient lineage." As a trip leader and one of the pioneers of ecotourism, Walt has field experience spanning the globe: East Africa, Madagascar, Brazil, Ecuador (including Galapagos), Argentina, Australia, Antarctica, Mexico, Alaska, and the American West. A Prescott College Professor of Environmental Studies and Sustainability for 27 years, Walt has taught and advised on natural history, ecology, wildlife management, wetland ecology, interpreting nature through art and photography, animal behavior, and field biology. His artwork and photographs have graced many books and magazines. With graduate degrees in wildlife biology and resource ecology, Walt applies his knowledge and his artistic skills to educate, inspire, and motivate people toward informed activism on behalf of environmental causes.

Like many wildlife artists, Walt starts with the subject's eyes, key to capturing the life and spirit of the animal. Once that essence is realized, the rest of the painting or drawing proceeds as an intense interaction with the subject until, almost as a surprise, the artwork is complete. As a naturalist, Walt cares deeply about depicting the animal with scientific integrity and fidelity. Context is important: plants, rocks, and other environmental complements to the subject must be real and accurate. Similarly, Walt's ecotours are in-depth experiences that combine scientific knowledge with celebration of the incredible beauty of nature. More information is at http://www.geolobo.com

Golden Eagle
A majestic eagle perches on a rock wall built of andesitic rocks in the Sutter Buttes of California. A Western Fence Lizard shares the wall with the alert bird of prey. A good portion of my adult life has been spent interpreting this privately-owned landscape, which was opened to public use with naturalist-guides and is the subject of my book, *Inland Island: The Sutter Buttes*.

Pair of Montezuma Quail
I have a special fondness for quail, partly because I did my MS thesis on Scaled Quail in southern Arizona. The Montezuma Quail manages to elude detection by many an eager birder, freezing in the shadows of the oak grove until nearly stepped upon, then bursting into flight. The challenge here was to use watercolor to capture the textures of feathers, dried leaves, hard rock, and soft moss, using negative space so that the grass stands out.

Vermilion Flycatcher
While many North American Flycatchers are subdued in coloration, the Vermilion Flycatcher is a stunning exception. In this watercolor, I sought to contrast the brilliance of the bird with more subtle variation in color and texture of sycamore roots.

Two-tailed Swallowtail
This was one of the subjects I painted for interpretive panels for the Discovery Trail at the Highlands Center for Natural History in Prescott. The panels featured photographs of each biotic community with typical organisms arranged thereon. The communities featured were Grassland, Chaparral, Woodland, Montane Forest, and Riparian. This swallowtail is the Arizona state butterfly.

House Sparrow
Abandoned by its human occupants, this old house makes fine quarters for the cheeky House Sparrow. This is a study of textures and contrasts.

Abert's Squirrel
Also done for the Highlands Center's interpretive panels, this Kaibab Squirrel was rendered in ink on clayboard so that the fine white hairs could be scratched out with a scalpel. Some light touches of acrylic paint finished off the artwork.

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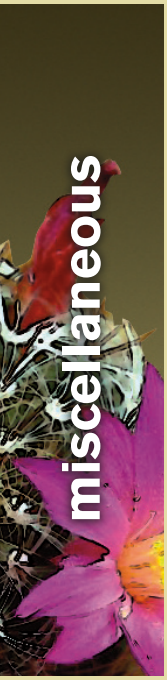

Monthly Meeting

First Tuesday of the month, unless otherwise announced, September through April, 7:30 p.m. Our meeting place is Papago Buttes Church of the Brethren, 2450 N 64th Street, Scottsdale, AZ (northwest of 64th Street and Oak Street, which is between Thomas Road and McDowell).

Please contact a board member if you have any questions, or check out our web site at www.maricopaaudubon.org. Pre-meeting dinners (September through April) are held at Rolling Hills 19th Tee Restaurant, 1405 N. Mill Avenue, starting at 6:00 p.m.

Membership Information and How to Receive *The Cactus Wren•dition*

Two distinct memberships exist: membership of the National Audubon Society (NAS) and membership of the Friends of Maricopa Audubon Society (MAS).

To become a member of the NAS please go to:
www.audubon.org/audubon-near-you

We send *The Cactus Wren•dition* to all current members of NAS if you are assigned to or choose MAS as your local chapter. NAS provides MAS $3.00 per year for each member assigned to us.

To become a Friend of MAS, please pick up a form at the book sales table at our monthly meeting or download the form from our website, http://maricopaaudubon.org

For specific questions please contact our Membership Chair.

Submissions

Copy for *The Cactus Wren•dition* must be received by the editor by e-mail, by January 15, April 1, July 1, and October 1. Articles not received by the deadlines may not appear in the upcoming issue. Email to: *The Cactus Wren•dition* Editor, Gillian Rice: editor.wrendition@yahoo.com

Opinions

The opinions expressed by authors in this newsletter do not necessarily reflect the policy of the National Audubon Society or the Maricopa Audubon Society.

Reprinting of material

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