



The Cactus Wren·dition

Volume LXXII, No. 2

Summer - 2016



Neon Skimmer

Photo by Pierre Deviche



**New Children's
Pages Inside!**

Notes & Announcements

Meetings are held at: Papago Buttes Church of the Brethren (northwest of 64th Street and Oak Street, which is between Thomas Road and McDowell Road). You may enter from either 64th Street, just north of Oak Street (if coming from the south you will have to make a "U" turn), or Oak Street just west of 64th Street, by the Elks Lodge. Turn right into the gravel parking lot. Come and join us and bring a friend! MAS holds a monthly meeting on the first Tuesday of the month from September through April. The fall issue of *The Cactus Wren•dition* (published in August) will include details of our program presentations.

Committees/Support

Arizona Audubon Council Rep
Emerson Stiles
estiles2@hotmail.com

Bookstore
Mel Bramley
480 969-9893

Hospitality
David Chorton
602 253-5055

Web Page
Michell Peppers
480 968-5141
burge@burgenv.com

Maricopa Audubon Website
<http://www.maricopaaudubon.org>

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

Edward Abbey

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.



Prairie Falcon. Photo by Matt VanWallene

Erratum

On page 15 of the Spring 2016 issue of the *Wren•dition*, the hawk depicted in the photograph labeled Ferruginous Hawk is a Prairie Falcon. Matt VanWallene photographed this Prairie Falcon at Veterans Oasis Park. My apologies, Matt – Ed.

Watch the Downtown Peregrine Falcons

You can enjoy watching the progress of our very own downtown Peregrine Falcons as they nest on the Maricopa County Administration Building. Arizona Game and Fish Department provided the falcons with a nest box, in which, as of April 6, the female had laid four eggs. The webcam is at: <https://www.azgfd.com/wildlife/viewing/webcamlist/peregrine/peregrinecam/>

This is a fantastic opportunity to watch a raptor up close and learn about its behavior.



Peregrine Falcon. Photo by Matt VanWallene

Celebrate Pollinator Week by Discovering Arizona's Bees

Saturday, June 20, 10 am – noon. White Mountain Nature Center, 425 S. Woodland Road, Pinetop-Lakeside, (928) 358-3069. Following a cowboy breakfast, scientist and author Stephen Buchmann will present an illustrated talk on the diversity of Arizona's bees from its southern deserts to the ponderosa pine forests of the White Mountains. Learn how to identify your local bees. Steve will also give a hands-on demonstration of how easy it is to use scrap lumber to make a "Bee Hotel" for leaf cutter and mason bees. Following his talk, Steve will lead a short nature walk in search of bees and flowers outside the White Mountain Nature Center. Free event for the whole family.



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!



On the Cover: Neon Skimmer
Focal length 215 mm, 1/500 sec, f6.5, ISO 80, Canon PowerShot SX50 HS, September 7, 2013 by Pierre Deviche.

Pierre says: Arizona is famous for its diversity of birds, and also insects including dragonflies. Arizona dragonflies come in a great variety of sizes and colors, and their popularity among outdoor enthusiasts and photographers is rapidly increasing. A particularly attractive species is the aptly named Neon Skimmer, *Libellula croceipennis*. This large and brilliantly colored dragonfly favors shady areas along small streams and rivers in a large portion of our state. Males, as shown here, aggressively defend small breeding territories against intruders of their own and even other species. Finding a Neon Skimmer any time during summer and fall, when the species preferentially flies, never fails to startle me and brighten my day.

President's Message



Mark W. Larson

It is almost time to say goodbye to those of you who will be spending the summer in cooler climes than what we will experience here in the Phoenix area. Not only are our summers unspeakably hot, but they stay that way far longer than they have a right to. Regardless of the discomfort of our summer swelter, your Board of Directors will be here working for you, the members whom we serve. For those of you who will be here all summer, there will be some field trips, most of which will venture to cooler locales not far from home.

And that's one of the great things about living in Arizona—a different climate is within a few hours' drive at all times! Just knowing that an escape is within reach helps me cope with the summer's heat. This summer we will be traveling to Shadow Rim Ranch north of Payson to train some camp counselors in methods of guiding field trips for the scouts. These will be mostly birding field trips, of course, but there may be other natural history field trips as well. Early in the summer we will complete the field checklist to birds that can be found in and around the camp which is located at an elevation of just under 6,000 feet near the base of the Mogollon Rim. These efforts are part of our environmental education mission.

As you are no doubt aware, the Maricopa Audubon Society is actively involved in conservation efforts. We are now providing comments on the Scope of Work for the Environmental Impact Statement that will evaluate Resolution Copper Company's proposal to place an enormous mine beneath Oak Flat and cover some prime Sonoran Desert habitat with mine tailings and other wastes. The MAS Conservation Committee, headed by Mark Horlings, will be commenting on other proposed projects in our region, too.

Wherever you go this summer, keep in mind that the Maricopa Audubon Society's work in environmental conservation and environmental education is continuing—to make Arizona an even better place to live now and far into the future. 🐦

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



Gillian Rice

Letter from the Editor

by Gillian Rice

Nature is full of surprises. You just never know what you might see. Yesterday, under a stand of cottonwoods, my friend and I stared and searched, as birdwatchers do, and hoped for something special. Lesser Goldfinches whistled as they foraged high in the trees. Dried leaves crackled and popped as a tiger whiptail flung them aside. A hummingbird darted in front of us. Our surprise: on a low branch perched a diminutive fledgling. The female fed it and we watched her fly up to a hidden nest and feed her remaining

nestling. It exercised its wings. It would soon be joining its sibling on the branch.

I anticipate a new summer season of more pleasant surprises. I yearn for positive news about our natural environment. As editor, I try to gather information to help us enjoy and protect nature. In this issue are features to provoke us into action.

Gail Cochrane reminds us to start with our own backyards and plant native species. Mary O'Brien teaches us about the impact of large ungulates on our riversides. Artist Heidi Snyder presents art that depicts species negatively affected or threatened by improper grazing management. Jessica Alvarez Guevara shares her research about urbanization and small herbivorous rodents.

While you ponder the words of our contributors, please consider how you can improve our natural environment, both urban and rural. In the meantime, I wish you an abundance of joyful surprises as you experience nature this summer. 🐦

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Forest Speech by David Chorlton

*The croak across the space between
sycamores from trogon
to trogon's mate
goes back and forth
in sun and shade.
It's not a pretty
sound, but it defines location
during the flight up canyon
and back down, effectively
as language goes.
A male alone
can call a spring day long
in hope a mate will answer
with that lonely syllable repeating
until it fades
into oncoming night
that speaks as it deepens
in whispers and trills: the sound
of moonlight passing
through the trees.*

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/tonito/passes-permits>

Saturday June 4

San Francisco Peaks Specialties

A day of birding in the shadow of Arizona's tallest peaks: Hart Prairie, Little Spring, Arizona Snowbowl, and other exciting locations. Search for Three-toed Woodpecker, Williamson's Sapsucker, Clark's Nutcracker, Red Crossbill, Pinyon Jay, and other coniferous and pinyon/juniper species. Meet at 7:30 am just north of Flagstaff. Bring lunch. Difficulty: fairly easy hiking under high altitude conditions. Minimum 8. Leader: Charles Babbitt, cjbabbitt@cox.net, 602 840-1772

Friday, June 10

Kachina Wetlands

A beautiful destination, just south of Flagstaff. Start at 5:00 am from Scottsdale, to arrive on site a little before 8:00 am. Explore the wetlands for Western Bluebird, swallows, high elevation species such as nuthatches and Steller's Jay, waterfowl and raptors. In the past, we've seen ibis, Sora, Virginia Rail, truly ruddy Ruddy Ducks, phalaropes, Osprey, and kestrels. Bring lunch. Return to Scottsdale around 2:00 pm. Difficulty 1-2. Limit 8. Leader: Kathe Anderson, kathe.coot@cox.net

Sundays: June 19, July 17, August 28, September 18, October 16

Beginning Butterflies and Dragonflies at Gilbert Water Ranch

This area is outstanding for beautiful butterflies, dragonflies, and damselflies. Learn to identify local butterflies including Painted Lady, Queen, and Fiery Skipper as well as common dragonflies and damselflies such as Western Pondhawk, Flame Skimmer, Blue-ringed Dancer, and Familiar Bluet. Suggested \$5.00 donation to support the Gilbert Riparian Preserve. Bring binoculars (close-focus preferred), water, and hat. *Common Dragonflies of the Southwest* by Kathy Biggs on sale for \$10.00. No reservations. Easy. Meet 7:00 am June-September, 7:30 am October at the Dragonfly Ramada just south of the parking lot, east of Greenfield Rd., off

Guadalupe Rd., just east of the Gilbert Public Library in Gilbert.

Leaders: Janet Witzeman and Laurie Nessel

Friday, July 22

Payson area

Leave Fountain Hills no later than 5:00 am for Payson to explore reliable areas good for winter birding—and see what shows up in the summer! One area is south of Payson: a big lot, semi-ranch housing area that could be good for flycatchers and bluebirds. We'll head through town and bird around the East Verde River in primarily juniper/pine woodlands. Back in Payson, we might visit a pond or two before ending with a visit to Rumsey Park for a picnic lunch. We should see the usual collection of titmice, woodpeckers, thrushes, nuthatches, and other woodland species, plus we could be lucky with summering warblers, vireos and tanagers. Arrive back in Fountain Hills about 2:30 pm. Easy. Limit 8.

Leader: Kathe Anderson, kathe.coot@cox.net

Wednesday-Friday, August 24-26

Flagstaff/Williams

Meet about 5:00 am to travel north, with overnight stays at moderately-priced hotels in Flagstaff and Williams (about \$120-145). Spend the first part of Wednesday at Kachina Wetlands, then head towards The Arboretum at Flagstaff, where we'll eat a picnic lunch. Kachina Wetlands can be full of surprises, but some waterfowl, raptors, and lots of bluebirds and swallows are predictable. At The Arboretum, we could add robins, hummingbirds, and higher elevation warblers (Red-faced Warbler?) to our list. Back in town to visit a couple of close-in sites before happy hour, dinner, and a well-deserved night's rest. On Thursday, we'll go to the Lamar Haines Wildlife Area on the way up to Snowbowl and pick up a picnic lunch in Flagstaff, before heading to Williams. Visit the Sunflower Flat Wildlife Area, an ephemeral wetland on the way. Friday morning, we'll drive the Coleman Lake loop slowly to see if we can find any other high-elevation warblers, vireos, and flycatchers. A trip in this area a few years back yielded a Common Nighthawk. A Peregrine Falcon tried to pick off prey at the lake area. We'll grab some lunch in Williams and leave about 2:00 pm to arrive in the Valley about 6:00 pm. Feel free to check out this website <http://www.azwatchwildlife.com/> and make recommendations. Cost, including about \$30 per person to the drivers for gas, about \$350. Difficulty: 2, moderate hiking. Limit 8. Leader: Kathe Anderson, kathe.coot@cox.net

July, August, September, 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. For this reason, we are not setting an exact date for this trip near Saguaro Lake until the monsoon has begun and 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.

Friday, September 2

Aravaipa Canyon Road

This trip will focus on the road into Aravaipa Canyon, without actually entering the canyon. The road offers a variety of habitats: fields, cottonwoods, streamside vistas, and dense shrubbery. In the past, these areas hosted a Great Blue Heron rookery, Gray, Black and Zone-tailed Hawks, roadrunners, and several species of summer songbirds—tanagers, warblers, and vireos. Depending on timing and temperature, we may make a quick stop at Kearny Lake. Start before dawn to catch the early activity—about 4:45 am from Scottsdale. Probably catch lunch at a Mexican spot in Superior on our way back. Return about 3:00 pm. Easy. Limit 8.

Leader: Kathe Anderson, kathe.coot@cox.net

Saturday, September 24

Roper Lake State Park for Dragonflies and Damselflies

Spend the day with ASU's School of Life Sciences professor, Dr. Pierre Deviche, this year's MAS Banquet Guest Speaker, searching for and identifying odonates (dragonflies and damselflies) at Roper Lake State Park. Also, as time permits, visit and view odonates at nearby locations that may include Dankworth Pond, Cluff Ranch Ponds, and sites located along the road to Mt. Graham. The trip will offer plenty of opportunities not only for observation, but also for photography. With a total of 101 species recorded to date, Graham County, where all the above sites are located, is the Arizona county with the highest diversity of odonates. In September, most species, several of which are normally found only in the eastern regions of our state, will still be flying. Rare species have been found among the expected good variety of interesting dragonflies at Roper Lake so a surprise or two is possible.

Difficulty: 2 (easy walking in warm, humid conditions). Be sure to bring: hat, sunscreen, long sleeves and pants, hiking shoes, insect repellent, and food and drinks for the day. Participant limit will be about 10 to allow for good viewing and photography. Entrance fee for Roper Lake and Dankworth Pond is \$7.00 (cash) per car. Departure time from Phoenix will be no later than 8:30 am. Close-focus binoculars are helpful for this trip, especially for the small species, so if you attend and have a pair, be sure to bring them along. For folks deciding to get there the day before or to stay overnight after the trip, there is plenty of accommodation in nearby Safford, and in fact, also at Roper Lake State Park itself (they've got some nice cabins for rent).

Leader: Pierre Deviche.

For reservations: Larry Langstaff, larrylangstaff1@gmail.com or call or text 480 710-0431

A Trash Pile or a Fortress?

By Gillian Rice



White-throated woodrat. Photo by Gillian Rice

Hiking in the mountain preserve or strolling in the Desert Botanical Garden, I enjoy looking for evidence of creatures often hidden.

I notice piles of cholla cactus segments, mesquite twigs, and other plant litter. I once discovered an enormous pile of twigs beneath a prickly pear cactus. For what purpose? And what made this?

The architect is the white-throated woodrat (*Neotoma albigula*). A solitary species, it carries each twig or cholla segment, one by one to add to the pile. Sometimes I've been lucky enough to see one at work, as it sped along its well-honed little path – always the same route – zipping back and forth with a new “building block.” Why such an enormous nest for a diminutive creature? The woodrat has two ways of adapting to the desert. One set of adaptations is physiological: to prevent it from overheating, it has a reduced pelage (coat), especially in summer, and an efficient vascular system. The second set of adaptations is behavioral: it is nocturnal, it eats certain foods, and it has that special, large “fortress.”

The woodrat chooses a food source that provides it with water. It relishes juicy prickly pear (*Opuntia* spp.). Cacti can form 90 percent of this creature's diet in the driest months, although it eats other plants. It has another physiological adaptation: it tolerates a high intake of oxalic acid, which is a toxin found in cacti (jackrabbits and javelina share this adaptation).

How does the woodrat tolerate the cactus spines? Young woodrats start learning how to extract cactus spines from their flesh when they are between 17 to 55 days old. They quickly become adept at handling, climbing, and carrying cactus without injury.

Back to that large house: a woodrat creates its own stable, cool microclimate within its den. The house, usually looking like a little trash heap, can be up to three feet high and eight feet across. At the bottom a series of tunnels leads to a nest of soft plant fibers, where the woodrat stays during the day, well-insulated from summer air

temperatures that are only a few degrees below lethal limits. Its spiny fortress protects it from predators like coyotes and owls but gopher snakes and rattlesnakes are undeterred, and might take up residency after consuming the rat. Successive generations of woodrats might use the house, which they share with lizards, rabbits, and various arthropods. 🐭



Woodrat nest. Photo by Gillian Rice

Reference:

Carlisle, Michelle. 2004. The Ecology of the White-throated Woodrat: Reviewing Theories and Exploring Possible Adaptive Strategies. Virginia Polytechnic Institute and State University. Accessed online at: <https://theses.lib.vt.edu/theses/available/etd-03152004-160413/unrestricted/N.albigula16.pdf>

Broad-billed Hummingbird

By Duane Morse

I've gotten used to seeing Anna's and Costa's Hummingbirds at my feeder, so I did a double-take when I saw something completely different at my feeder at the end of January: a Broad-billed Hummingbird. I had seen these at other places in Arizona, particularly at Boyce Thompson Arboretum, and I believe there's a breeding colony



Broad-billed Hummingbird. Photo by Duane Morse

near the Agua Fria River in Black Canyon City, but I hadn't heard of any winter sightings in Phoenix.

This particular bird periodically visited the feeder for two days. In December, 2014, a White-eared Hummingbird hung around my feeder for 10 days, the first time this species was documented in the county. I expect the White-eared Hummingbird passed my location on to his hummingbird pals, perhaps through Facebook. 🐦

Pip Squeak

By Melinda Louise



I enjoy watching birds, and I enjoy having them come into my garden. I lived in a beautiful little mobile home park right up against one of the Phoenix Mountain Preserves. Being able to walk on that Preserve was one of my greatest joys—and the main reason for buying that sweet little house. Unfortunately, because I was so close to that Preserve, the rabbits made themselves at home eating my garden!

One day while out walking on the Preserve with my dog this charming young cat came right up to us. He wasn't afraid of either one of us. And he was the cutest, friendliest little thing. Then he proceeded to follow us home, right into our hearts. Well, if he was going to stay with us—which clearly was his intention—he was going to have to stay inside. I wanted to keep having my birds, lizards, and other critters (excluding those pesky rabbits!) visit my yard. Well, Pip Squeak—that's what I ended up naming him—wasn't going to have any part of becoming a stay-inside cat. For weeks I tried everything I could think of to keep that cat inside. He absolutely wasn't going

He'd eat my lizards and little snakes, and (to add insult to injury) would throw them up on my picnic table!

along with The Plan. The guy was tearing my little house apart. He destroyed almost every window covering and would howl the entire time once he was intent on getting out. The problem was he'd already had the opportunity to learn how much more fun it was for him to chase and catch things outside. He was already very much part feral when he'd followed us home. And once his curiosity about us and our environment was satisfied he wanted to be able to explore outside too. Well, by this time he already been fixed, had his shots, and been chipped. Finally, seeing it wasn't going to do any good trying to turn this

guy into a house-only cat (I couldn't bring myself to have him euthanized), I reluctantly decided to give up. So he'd usually come and go. He sometimes stayed in the house with me for quite a while. I know there are many who would have come up with other solutions, but I'd been unable to come up with any.

He'd eat my lizards and little snakes, and (to add insult to injury) would throw them up on my picnic table! Fortunately, I never found any dead birds in my yard, but he was a good hunter and I was certain he was capable of catching and killing my birds.

Then one day he just never returned. I was sad. He was a lovable little guy. Fun too. The only cat I've ever known that was good at playing catch. He'd watch me playing with the dog and would retrieve what I'd throw. He was something, that cat.

But one morning while out in my garden enjoying my coffee and thinking of that crazy cat, wondering if he'd finally met the wrong coyote, I noticed on the branch right above me this little hummingbird just carrying on chattering away. I looked up at him and he seemed to just stop everything and look down directly at me. I could almost hear him cheerfully say to me, "That's ok. Now you'll have lots more birds in your yard!" And, with that, immediately went on about his chattering. But, you know, he was right! There were lots and lots more birds over the years, and lots more lizards and other visitors—like butterflies and bees. But I never did have any more trouble with those pesky rabbits. Funny that. So, if I were ever to have another cat, I'd make sure first it was a cat that was only accustomed to living indoors! 🐦

Melinda is a Docent at the Desert Botanical Garden and will be spending her summer giving tours in Yellowstone National Park. Follow her adventures on her blog at: GallopHorseBlog.com

Conservation Update

By Mark Horlings

conservation

In March, I attended the 34th Public Interest Environmental Law Conference at the University of Oregon Law School.

The Conference joins environmental lawyers and activists for legal training, speeches, movies, and chances to mingle around thirty or so tables devoted to causes small and large. Lawyers number about half of attendees.

The competing causes could be quite specific: Oak Flat, aerial herbicides, and a proposed LNG pipeline through Southern Oregon. Solutions, however, often appeal to larger imaginations - ending capitalism, ending people (The Voluntary Human Extinction Movement), and the Maitreya Buddha. The non-lawyers staffing the tables are, to plagiarize Isabelle Allende, white, middle class, and diverse only as "between freethinkers, spiritual searchers, social and ecological activists, nihilists and some of the few hippies still alive." In short, attending can be fun even if it wasn't informative.

Of interest to MAS members:

Interstate River Compacts

The organization, WildEarth Guardians, has also litigated to preserve habitat for the Southwestern Willow Flycatcher. They have also relied on the Rio Grande Interstate River Compact to preserve wetlands, including Bosque Del Apache, a frequent destination for MAS field trips.

Sonoran Desert National Monument

Last summer, MAS met with the Bureau of Land Management and commented on BLM plans to reopen roads in the Sonoran Desert National Monument west of Phoenix and to build or expand campgrounds. The Sierra Club recently won a lawsuit challenging BLM's grazing permits in the Monument north of Interstate 8. (The Presidential Order creating the Monument prohibited grazing south of Interstate 8.) The judge sent the dispute back to BLM for resolution, and new rulings are expected shortly.

Oak Flat and the Resolution Copper Mine

The Arizona Mining Reform Coalition, which includes MAS, offered pamphlets and other materials at a table staffed by the Center for Biological Diversity. A spokesman for the San Carlos Apaches made the closing keynote speech. Overall, however, Oak Flat received less attention than last year.

Meanwhile, MAS and the Arizona Mining Reform Coalition recently filed objections to the Forest Service's approval of drilling in the Tonto National Forest to assess the location for the proposed tailings pile. (At the February MAS meeting, we

learned that the tailings pile visible from Highway 60 would contain more waste than all the earth moved to build the Panama Canal.) Drilling proposals for other deposits near Superior are also under Forest Service consideration. One of these, Red Top, would authorize borings immediately adjacent to a wilderness area.

Cattle Grazing

MAS regularly comments on proposals to renew grazing permits, and to repair fencing and water catchments in National Forests. Three panels addressed public lands grazing; one focused on taxpayer costs and the corresponding subsidy to ranchers and another on special problems of the Great Basin. A third described compacts among ranchers, environmentalists, and public agencies under which ranchers voluntarily retire their grazing permits in return for cash. Grazing permit holders are, on average, more than 70 years old, and may seek quiet pastures for themselves as well as their cattle. To encourage these agreements, Congress has passed legislation covering some BLM tracts guaranteeing that the canceled permits will not be reissued. This approach resolved several cases in the Pacific Northwest, though the lawyers noted the stick of litigation challenging BLM permits always preceded the cash carrot that resolved the case. 🐾



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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.

Bird-Friendly Backyards Benefit All

By Gail Cochrane

Attracting birds to your yard can be as simple as putting out a seed-filled feeder. Yet wildlife habitat disappears every day, overrun by humanity's march across the planet. Tidy suburban communities



Wildlife welcome. Photo by Gail Cochrane

of similar homes surrounded by familiar palettes of landscaping represent security and success to humans. But this comfortable image is a homogenizing force that reduces diversity in wildlife. Repeated patterns of built and open land encourage the same limited set of adaptable species. John Marzluff, ornithologist and author of *Welcome to Subirdia*, calls these easy adapters "the fab five:" House Sparrows, European Starlings, Canada Geese, Mallards and pigeons flourish in developed areas. Instead of simply hanging feeders, we can do more to make the spaces around our dwellings suitable habitat for

the wildlife that was here before us.

Using native plants in our landscapes promotes a wide diversity of native birds because the animals and the plants have evolved through reciprocal arrangements developed over eons. Planting even a single native tree in a yard will attract native birds. Take honey mesquite for example. This handsome keystone species provides for an entire community of critters. It also offers shade, and if planted in the proper location, a decrease in cooling costs for the human types as well.

The spreading branches of the mesquite provide shelter and nesting sites for Mourning Doves and many others. Yellow-rumped Warblers, winter visitors to our area, forage on mesquite trees. The insects that live on



Tiger whiptail. Photo by Gillian Rice



Verdin feeding on nectar from ocotillo flower. Photo by Gillian Rice

and around this tree are an important source of protein for other insectivores like Verdins and Black-tailed Gnatcatchers. Even most seed eating birds switch over to insects in summer and raise their young on this protein-rich food.

Pods and spent blooms carpet the ground beneath the trees and create shelter for whiptail lizards and ornate tree lizards, drawn to the insect feast provided within the canopy. The tree is a legume, and offers the additional advantage of sequestering nitrogen in the soil. Other beneficial desert native trees, also legumes, such as the palo verde and ironwood are familiar in both wild and developed landscapes.

We can do more than plant a single tree. Bird species reduce competition for food and nesting sites through specialization. When a variety of trees, shrubs, and ground covers is planted, more species may find food and shelter in backyards. Providing habitat at different heights



and including plants that bloom at different times of the year offer the greatest gain to wildlife.

Many of us have arrived in the Southwest from wetter, cooler climates, and plant nurseries and landscapers happily provide exotics that are more familiar and less thorny. Although pollinators may visit these plants to harvest nectar, the vast numbers of anthropods native to the Southwest do not have relationships with these plants. Non-natives require more water and more care to survive the heat and alkalinity of our soils.

Many plants native to the Southwest will flourish in a home garden setting. The Arizona Game and Fish Department website offers excellent suggestions for planting wildlife friendly habitats in an easy to read format: <http://www.azgfd.gov/wc/landscapingdesertwildlife.shtml>

Native plants in suburban and urban settings concentrate populations of birds where people can enjoy them. Children and adults exposed to the wonders of nature carry a better appreciation of the need to preserve native habitat. Because of the diversity of vegetation, shelter, and micro-habitats I provide in my backyard, I see more critters here than I do out hiking in the mountain preserves.

Native plants can take on a weedy aspect at the end of the season. Before you get too eager to tidy up, remember the seeds are food for quail, finches, and sparrows. When the rains come or spring rolls around, native perennials revitalize with buds and flowers. Take time to notice these hardy plants and their relationships



Curve-billed Thrashers often nest in cholla cactus. Photo by Gillian Rice

with birds, butterflies, lizards, and native bees throughout the seasons.

Complete your backyard native habitat by providing water. A water feature such as a fountain or pond is best, as moving water will stay fresher and discourage mosquitoes. If nothing else, a saucer with a few pebbles on the bottom and fresh water daily will be appreciated by thirsty birds. Dead snags and a brush pile or two adds even



A Cactus Wren finds nesting material on barrel cactus. Photo by Gillian Rice

more habitat for desert denizens. A repurposed agave stalk in our backyard is a popular lookout for Northern Mockingbirds, hummers and Curve-billed Thrashers. Watching the interaction of plants and animals connects us to the seasons and the natural world. 🐦

Gail Cochrane advises buying native plants in one gallon pots as digging in our rocky ground is no treat.



Native bee foraging on globemallow. Photo by Gillian Rice

Down by the Riverside: Big Ungulate Challenges

By Mary O'Brien

ungulates

What do the following have in common?

- **Bison** (native to the Great Plains, introduced in Grand Canyon National Park)? They're wreaking havoc at Grand Canyon's springs.
- **Mountain Goats** in the alpine area of La Sal Mountains in southeastern Utah (exotic, helicoptered in)? They're tearing through sensitive alpine cushion plants, lichens, and mosses.
- **Elk** in Yellowstone National Park (native, but without predators)? Lamar Valley's cottonwoods, aspen, willow, and beaver didn't have a chance with the elk until wolves were reintroduced.
- **Feral horses** in western North America? Lacking predators, their burgeoning populations are damaging riparian areas and overgrazing uplands.
- **Cattle and sheep** (domesticated and clocking in at 37 times the number of horses and burros on Forest Service and BLM lands)? Protected from predators, their large populations are damaging riparian areas and overgrazing uplands.



Grazing cattle, Oak Flat area, near Hackberry Creek.
Photo by Lisa Fitzner

You're right: they're all **ungulates** (mammals that are mostly hooved, mostly large). Ungulates are a dazzling, diverse, worldwide group – for instance, whales and dolphins are a branch within that group, having evolved from the even-toed ungulates

that include cattle. That makes cattle closer in the evolutionary tree to dolphins than to horses! (Shimamura, et al. 1997).

But such wonders aside, the animals on the bulleted list above also have a common stomping ground all around us in the Southwest: western national public lands (Beschta, et al. 2013). Their numbers aren't being controlled by predators. And they have an appetite for plants (though yes, I've seen a trail camera video of a cow coming upon and eating bird's eggs in a ground nest). And they need to drink water – some more than others.

Another shared feature: Certain people want lots of them. Hunters generally advocate for lots of bison, mountain goats, elk, and deer. Many ranchers want lots of cattle and sheep. And a whole lot of people believe they want lots of horses running loose.

However, the combination of large body size, large populations, relative lack of predators, heavy hooves, need for ever more plants and water amid rising temperatures, and enthusiastic and determined advocates doesn't necessarily spell good times for some other important features of our shared American lands—like fish, birds, toads, butterflies, bumblebees, and beaver - or a diversity of native plants; or cool, clean, season-long water; or adaptation to global warming. It's a tragedy of the commons.



Grazing feral horses, Oak Flat area, near Hackberry Creek.
Photo by Lisa Fitzner

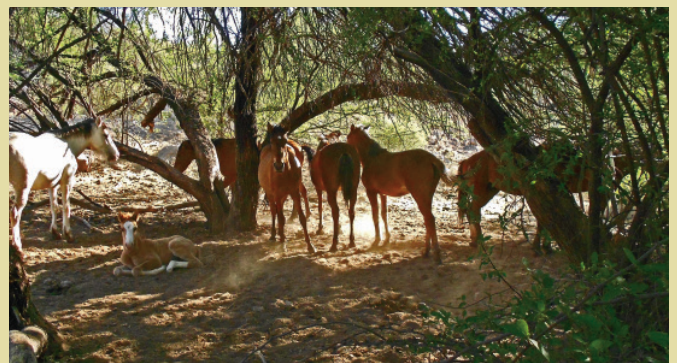
Let's focus on cattle and horses for the moment. That both cattle and horses drink a lot of water is evident in their ample-sized scat. One cow-calf pair will drink, on average about 15 gallons water a day; a horse drinks about 10 (Filley 2005). Hotter temperatures and/or less moist vegetation can drive up their water consumption. (We can empathize with that, right?)

So, thirsty cattle and horses congregate in the riparian areas that comprise about two percent of our national public lands in the West. In addition to water, riparian areas can provide shade, moist and abundant vegetation, and cooler temperatures. The precious water sources – creeks, ponds, springs – can be small in the West, and too many cows or horses (or other ungulates) hanging out by the water too long can quickly pull a riparian area apart.

Cows and Fish, a Canadian NGO that works with communities and landowners on these kinds of problems, helpfully lists obvious signs of problems in riparian areas associated with, as they put it, "too long, too much, and too often" grazing – whether by horses or cows or any other ungulate (Fitch, et al. 2003, slightly adapted):

- declining production of riparian vegetation
- change in plant species to drier, upland forms
- willows have mushroom appearance
- trees and shrubs are hedged, severely browsed
- all trees and tall shrubs are old

continued in the left column of the next page.



Butcher Jones Recreation Area, at an inlet of Saguaro Lake, April 3, 2016. Feral horses resting in the shade of a mesquite grove and trampling vegetation. "This is the first time I have seen horses at this location," says photographer MAS President Mark Larson, "and they are damaging the natural system."



East Fork Beaver Creek, Nevada, 1985. Photo by Carol Evans, Elko District BLM. Carol needed to restore the riparian area on behalf of the native Lahontan cutthroat trout, one of three subspecies of cutthroat trout listed as federally threatened.



East Fork Beaver Creek, 1998. Cattle-grazed riparian areas have improved greatly in Elko, Nevada with better grazing management. See the stunning changes in this BLM PowerPoint presentation at: http://www.grandcanyontrust.org/sites/default/files/ut_forests_Evans_NV_powerpoint.pdf

- no young woody plants growing above six feet
- no trees or shrubs (where they would be expected)
- reduction in bank or shoreline vegetation
- many bare soil spots
- increased sediment on stream bottom
- undesirable or noxious weed invasion
- poor plant vigor, little or no litter carryover one season to the next, few desirable (native) plants
- streambank shear damage by hoof action
- active bank erosion from exposed soils
- bank caving
- water quality problems, algae blooms
- changes in water quantity, lower water tables, intermittent flow

It's not difficult to understand the implications for long-term health of a riparian area if a combination of these signs are present. It's also not difficult to reword each of the elements in the list to indicate the signs of healthy riparian areas. And it's not difficult for you to photograph and report these signs of degradation (or health) on our shared public lands.

The real challenge, of course, comes in reducing excessive ungulate use. Relatively few options exist for avoiding too long, too much, and too often. Options are (1) fewer animals, (2) managing the animals for less time in riparian areas, and (3) fencing. Horses roam unmanaged year-round, so managing for

less time in the riparian areas isn't much of an option. Drawing water away from riparian areas to troughs may move excessive numbers of cattle to upland areas...and the cattle may head to the riparian areas anyway for the shade, coolness, and more abundant, moist vegetation – unless they're fenced. Riders can help with cattle, but not with horses. Fencing can be effective, but can we ultimately fence our way out of this problem on thousands of creeks, springs, ponds, and streams? Getting to riparian-friendly numbers of cattle or horses is like keeping fossil fuels in the ground in light of global warming: It's essential. But to bring cattle and horse numbers down, we have to engage with the federal land managers, the public, and the ungulate advocates. No way around it. 🐾

Riparian areas are the lands adjacent to streams, rivers, lakes and wetlands, where the vegetation and soils are strongly influenced by the presence of water. Although they make up only a small fraction of the land, they are among the most productive and valuable of all landscape types and have been the focus of conflicts between resource users. (Fitch, et al. 2003)

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Mary O'Brien, PhD, is Utah Forests Program Director with Grand Canyon Trust, a Colorado Plateau conservation organization. Ungulates loom large in her work with national forests and BLM monuments.

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

Compiled by Vicki Hise



Veterans Oasis Park. Photo by Vicki Hise

Green Scene Beginner Birding Tips

- Walk slowly and keep pausing to look around for birds. You can often see more birds by sitting still in one location for a while.
- Speak in low tones and be as quiet as possible. Loud noises and sudden movements can startle birds.
- Listen carefully. Find a bird by hearing it calling or singing, and then spotting it on a bush or tree.
- If you find a nest, don't go too close. Stay away from the nest so you don't frighten the parent birds and cause them to abandon it.

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 Carol Langdon at clangdon2@cox.net

Send us your photos! Did you take a hike or field trip? If so, we'd like to hear about it! Send us your bird or nature photo and a brief description of where and when you took the photo. It's ok if you aren't sure what species the bird is – just say so and we will help you to identify it!

Green Scene Go Take a Hike

Take your friends, family, binoculars, and a fishing pole to the Veterans Oasis Park located at 4050 E. Chandler Heights Road, Chandler, Arizona. This is a wonderful experience for families of all ages, with easy walking trails, plenty of picnic areas, a great fishing pond, and a riparian area with wildlife. Check out the park's Environmental Center while you're there.

Green Scene True or False?

- T F 1. Egrets were hunted nearly to extinction for their feathers in the late nineteenth century.
- T F 2. The Snowy Egret is smaller than the Great Egret.
- T F 3. A group of egrets is called a wedge of egrets.
- T F 4. The Great Egret feeds on fish and frogs.
- T F 5. A male Great Egret is larger than a female Great Egret.

Guess this Bird!



Clue: This bird has a keen sense of smell, which allows it to find dead animals.



Great Egret. Photo by Vicki Hire



Snowy Egret. Photo by Vicki Hire



Cattle Egret. Photo by Ray Spencer

The Elegant Egret

Did you know The Great Egret is the symbol of the National Audubon Society. The US population of Great Egrets was almost eliminated in the late 1800s because it was hunted for its beautiful plumes (feathers), which were used in ladies' hats and clothing. Conservationists fought to enact laws to protect the egrets, which helped the population recover and stabilize.

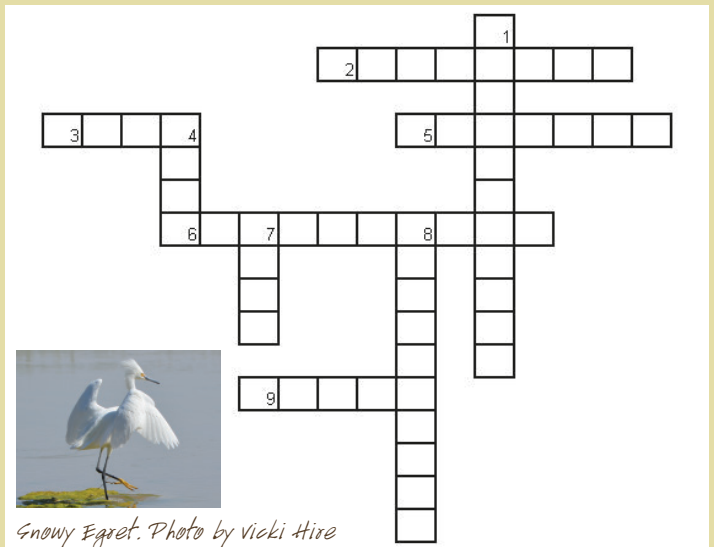
Did you know Great Egrets belong to the heron family and can be found in both freshwater and saltwater habitats. They hunt for prey (food) in wetlands, streams, and ponds by standing still for long periods of time or by walking very slowly. When a fish or animal comes within range, an egret uses its long neck and sharp bill to spear the prey and swallow it whole.

Did you know The Snowy Egret has black legs and bright yellow feet sometimes referred to as "slippers." It uses those feet to stir up aquatic animals from the mud beneath the water.

Did you know The Cattle Egret spends most of its time looking for insects and small animals in fields of grazing cattle, instead of in wetlands and ponds. Cattle Egrets sometimes ride on the backs of cattle to pick at ticks.

Did you know The male Great Egret selects the nest site but both the male and female Great Egret build the nest together. Great Egret eggs hatch in 24-26 days, and the baby egrets are able to fly when they are between 6-7 weeks old. The oldest known Great Egret was 22 years 10 months old, and was banded in Ohio.¹

¹ https://www.allaboutbirds.org/guide/Great_Egret/lifehistory



Across

- 2 Egrets can be found in these locations with shallow water or very soggy soil at least part of the time
- 3 Great Egrets feed on these, in addition to insect, snakes, and crayfish
- 5 When a species has no living members, it no longer exists
- 6 Has black legs and bright yellow feet that are often referred to as "slippers"
- 9 A long, soft feather

Down

- 1 Sometimes rides on the backs of cattle to pick at ticks
- 4 Plumes from egrets were used in the 1800s to decorate these
- 7 The oldest known Great Egret (22 years 10 months old) was banded in this state
- 8 The symbol of the National Audubon Society

Answers to The Elegant Egret crossword puzzle on page 15

Bird Banding on the Prairies of Missouri

by Gail Walton

You know those little brown jobs that pop up and then disappear down into the grass again, so fast you can't possibly identify them? How about getting a close-up handheld look at them? Wow! That's what I thought too, when I had a chance to volunteer with the Missouri River Bird Observatory (MRBO).

As a Master Naturalist in Missouri, I am required to volunteer 40 hours per year. I chose to volunteer for the MRBO Grassland Bird Monitoring initiative and assisted with bird banding on the prairies. Master Naturalists in Missouri can choose to volunteer for a variety of projects, such as working on stream surveys in creeks examining vertebrates to determine the health of the waterways; assisting with frog surveys; building bird boxes for Barn Owls, kestrels, or bluebirds; placing metal flags on prairie fences to prevent birds from flying into or getting tangled in wire; and even picking up trash on the prairies.

My chosen volunteer job with MRBO meant rising at 4:00 am to do farm chores (I have 13 horses, 50 chickens, two goats, two dogs and one cat) and getting on the road to be on the prairie at sunrise. I worked under the supervision of Veronica Mecko, MRBO's Special Projects Coordinator. Veronica is certified to perform bird banding, including hummingbird banding.

Some birds I encountered at the banding station were: Dickcissel, Yellow-breasted Chat, Bell's Vireo, Common Yellowthroat, Gray Catbird, Eastern Meadowlark, and American Goldfinch, along with Henslow's, Le Conte's, Savannah, Swamp, Field, Song, and Lincoln's Sparrows. Somehow we also caught a Tennessee Warbler (a woodland bird), and a Northern Waterthrush. Also seen but not caught were Indigo Bunting, Cedar Waxwing, Northern Cardinal, Brown Thrasher, Blue Grosbeak, Northern Bobwhite, Wild Turkey, and overhead, Red-tailed Hawk, Northern Harrier, and Canada Geese.

A day of banding begins at dawn with opening mist nets, which are about ten feet high and forty feet long. At each site we set up about eight to ten mist nets. One of my jobs was to help open them.

The next step is to sit and wait for the birds to fly into the nets. And surprisingly, that is exactly what they do.

Once a bird was caught in the net, Veronica or one of her interns carefully extracted the bird. As a volunteer, I was not allowed to remove the birds, which can be extremely tricky. Once the bird is freed, it is placed into a cloth bag with a drawstring.

One at a time, the bander removes the bird from its cloth bag. The bander carefully holds the bird while it is banded and measured. An aluminum band with a unique 9-digit number stamped into it is placed on the bird's leg. I was able to hold the captured birds. I felt thrilled but scared I would hurt the birds. I could feel their little hearts beating. I noticed that the banders do not wear gloves when handling the birds, but clean their hands with hand sanitizer after each catch or release.

The length of the wing and the tail are measured and the bird's general condition is noted for things such as missing feathers or molting. The bander also examines it for fat deposits by blowing air onto the bird's breast. Fat deposits appear yellow under the bird's thin skin. During nesting season, the birds are also checked for a brood patch, an area with no feathers on the underside of a female: this indicates she is sitting on eggs.

Just before the bird is released back to the prairie, it is placed headfirst and upside down into a white PVC pipe and weighed. The next step is to point the tube towards the prairie and allow the bird to fly out, which they all do amazingly quickly!



Paint Brush Prairie. Photo by Vicki Hire



Yellow-breasted Chat. Photo by Gail Walton

In the field, all data are recorded on paper charts kept in a notebook. This information is transferred at a later date into an electronic database. Typically the only photos taken are to document unusual sightings or findings. Occasionally a bird is caught that already has a band. It is measured, weighed, and logged as a recapture. The MRBO once recorded the same sparrow caught for a third time. I found it quite remarkable that it returned to the same prairie every year.

Depending upon weather conditions, the bird banders stay out an average of four hours. Plans are always cancelled if there is a threat of lightning or thunderstorms, which make it too dangerous to be out on the prairie. The final step of the day is to close the nets to avoid capturing birds when the



Gail Walton on the prairie. Photo by Vicki Hire

banders are not there to release them.

One of my most memorable moments during banding was when a Sora was captured in a net on the Mora Conservation Area in Missouri, a muddy, boggy prairie where we all had to wear waterproof boots.

The thrill of seeing a bird up close is exciting. It's certainly worth putting up with the heat, the insects, and the inconvenience of getting up early! 🐦

In addition to being a Master Naturalist, Gail has a BS in Biology, an MBA, is certified to teach grades 6-12, and is a certified taxidermist.



Green Scene Puzzle Answers

Answers to True or False

1. True. In 1886, the feathers from Snowy Egrets sold for twice the price of gold, which was \$32 per ounce at the time. Some of the first laws to protect birds were the result of Great Egrets becoming almost extinct.¹
2. True. The Snowy Egret weighs just over 16 ounces, while the Great Egret weighs more than 59 ounces (almost 4 pounds!).
3. True. A group of egrets is referred to by different nouns such as "wedge," "heronry," and "congregation."
4. True. In addition to fish, the Great Egret also feeds on insects, snakes, and crayfish.
5. True. The male Great Egret is larger than a female Great Egret. This is unlike Raptors, where the female is often larger than the male.

¹ https://www.allaboutbirds.org/guide/Great_Egret/lifehistory

Answer to Guess this Bird

Turkey Vulture

With a keen sense of smell, a Turkey Vulture can smell a dead animal below a forest canopy. Its immune system protects it from diseases associated with decaying animals.

Answers to The Elegant Egret crossword puzzle

Across

2. Wetlands
3. Fish
5. Extinct
6. Snowy Egret
9. Plume

Down

1. Cattle Egret
4. Hats
7. Ohio
8. Great Egret



Effects of Urbanization on Small Rodent Populations

By Jessica Alvarez Guevara



Volunteers assist with the collection of Sherman and small wire traps while Jessica identifies the small rodents to the species level.



Adult Harris's antelope squirrel within wire trap.

From deer mice to woodrats, the Sonoran Desert is home to many different species of small, herbivorous vertebrate rodents. The diet of these rodents depends on the species, but mainly consists of seeds produced by our native plants, such as buckwheat. Though you may not see these rodents while hiking through one of our many beautiful desert remnant parks, the creatures are definitely present. In fact, their activities may be more important to the health of our ecosystem than you might think.

Generally, these small critters are nocturnal and live within underground burrows, behaviors that help provide relief from the desert heat. When the rodents excavate their burrows and store food inside, they cause natural, small disturbances that lead to microhabitats. These microhabitats take place in the form of nitrogen and phosphate rich patches of soil that can aid in the establishment of certain desert plants, bacteria, and fungi.

We do know that small vertebrate rodents are present within and are important to our recreational parks and preserves. What we don't know is how the rapid urbanization of our desert ecosystem may be affecting these herbivore



communities. This is what my research aimed to understand. With the support of Arizona State University and the help of various volunteers, Becky Ball (my professor) and I conducted research that aimed to learn more about how urbanization alters the abundances, species richness, and community composition of small vertebrate rodents, if at all.

We predicted a higher overall abundance and species diversity of small vertebrate rodents within our urban recreational parks. The Intermediate Disturbance Hypothesis states that certain organisms are expected to be more abundant and biologically diverse within areas that experience moderate levels of disturbance. This is based on the idea that these moderate disturbances can clear previously occupied niches and therefore do not allow any one species in competition for food, shelter, etc. to eliminate another and dominate the area. Generally, when there are moderate levels of urbanization, rodent herbivores should be more abundant and biologically diverse within urban parks because of a concentration of food resources and an anthropogenic reduction of predatory animal populations like coyotes, snakes, and raptors.

During fall 2014 and spring 2015, we tested this hypothesis by conducting small rodent surveys at four urban parks located within, and four rural sites located outside, the core of the city of Phoenix. We used the live capture-release method. We baited Sherman traps and larger wire traps with rolled oats and left them at our study sites overnight. The next morning, we identified to the species level the captured animals and released them. For the most part, the animals within the traps were small, herbivorous rodents, but in a few instances various birds and lizards found their way into the traps. We also released these organisms. So far, our findings imply that certain rodent species may only be found within rural parks, while others may only live within urban parks. For example, Merriam's kangaroo rats and Northern grasshopper mice (a carnivorous rodent species) were only identified within rural sites; in other words, these species may be absent from the urban study sites.

Our results also suggest that the commonly assumed effect of urbanization on herbivore abundances may not apply to small rodent herbivore populations in a desert city. We found overall small rodent abundances within the urban and rural park sites to be statistically similar. We also discovered species diversity to be statistically similar, though we observed that small rodent genera diversity was significantly higher within rural parks. This means that a few of the species identified within the urban parks are classified under the same genus¹, which can indicate that there is a homogenization of the small rodent community within urban parks because species classified under the same genus tend to have similar ecological roles.

This significant difference suggests that small rodent communities differ between urban and rural sites, and



Young Harris's antelope squirrel with characteristic white, lateral stripe visible.



Becky Ball holding Merriam's kangaroo rat.

that certain genera do dominate the urban parks. Further research must be done in order to understand why genera diversity varies across this urbanization gradient, and how the presence or absence of small rodent herbivore species can affect the health of our desert remnant parks.

¹Genus (pl. genera) is a taxonomic (scientific classification) rank between "family" and "species." For example, Merriam's kangaroo rat belongs to the family Heteromyidae and the genus *Dipodomys*. Its species name is *Dipodomys merriami*. The desert kangaroo rat belongs to the same genus but is a different species, with the name, *Dipodomys deserti*. The deer mouse belongs to the genus *Peromyscus*. 🐭

Jessica Alvarez Guevara is an undergraduate student at Arizona State University majoring in Biology. She hopes to become involved in conservation research.

Nature Through the Artist's Eye: Heidrun Annelie Snyder



Heidi in Arches National Park, Utah

After growing up in Germany, I moved to Colorado and quickly developed a great love for the spirit of the West and the Rocky Mountain area. I try to expand upon mere technical skill when rendering my subjects and incorporate whenever possible their cultural, historical, and ecological context. I believe in the interconnectedness of all organisms and attempt to bring this message to the viewer through “drawn stories” which often feature hidden elements or messages and are based on extensive research.

My favorite medium is colored pencil because it lends itself perfectly to precision and complex detail, and it can be used in conjunction with other media, thereby opening up a whole host of artistic possibilities. I view plant details as microcosms of a hidden and fascinating world, marvel at plant structures, and am an admirer of all things wild and “weedy.”

Many years and countless hours of field research have resulted in the book, *Wild in the City*, which I co-authored with Dorothy DePaulo. We use beautiful art as a vehicle to educate the public about nature in all its forms. Our mission is to narrow the gap between our natural surroundings and our knowledge of them. I am also involved in projects such as RARE II, which depicts endangered and imperiled plant species of Colorado, and the illustration of other environmental issues such as overgrazing. For me there is nothing more thrilling than going outside, discovering a plant or animal in its natural habitat, and then meticulously rendering it in all its glory so others may learn about it. I thankfully embrace the ongoing learning process that both art and nature have afforded me.

Contact Heidi at preciselynature@comcast.net

Visit her website: www.natures-portraits.biz

In this selection, all my pencil drawings are done on drafting film, are based on on-site research, and feature species which are negatively impacted or threatened by improper grazing management or overgrazing.



Colorado cutthroat trout

The depicted grassy overhang, often up to a foot deep, is essential for fish such as the western Colorado cutthroat trout because this dense overhang provides cover or protection and regulates (cools) temperatures. Livestock often overgraze riparian areas and trample the banks.



Bunchgrasses

The depicted meadow features many native grasses such as bluebunch wheatgrass, sideoats grama, *Poa secunda*, squirreltail, needle-and-thread, pink-flowering buckwheat, as well as sagebrush, pinyon pine, and more. Also note a tiny “blue” (butterfly) on the ground. Bunchgrasses by definition have open ground between bunches and bluebunch wheatgrass, like most bunchgrasses west of the Rockies, does not tolerate heavy grazing.



Boreal toad

The numbers of this toad native to montane habitats between 7000-12000 feet in the Southern Rockies have experienced a severe decline in the last two decades, in part due to habitat degradation and destruction. It is currently listed as an endangered species by the states of Colorado and New Mexico. The boreal toad is largely associated with beaver ponds and their environment. Frogs, turtles, and toads often need dense emergent vegetation found at pond edges, such as cattail featured here.



Aspen grove

Aspen communities are second only to riparian areas for harboring biodiversity (shrubs, grasses, forbs). The sprouts are attractive to all ungulates (not just livestock, but also deer and elk). A healthy aspen grove will feature adjacent grass, flowers, and litter (downed trees/branches) on the ground and trees in all stages of maturation. A "park-like" look is indicative of overgrazing.



Spring

Springs or seeps attract ungulates and are vulnerable to trampling which destroys the spring edges and their vegetation, muddies the waters, and flattens the water channel causing evaporation and destruction of the spring. Numerous plant and animal species exist only in relation to springs and their very survival depends upon a healthy spring. The depicted spring features spring-dependent species such as Baltic rush, basin wild rye, a monkeyflower, and several insects.



Beaver

The beaver is a large semi-aquatic rodent known for building dams which create a rich, watery habitat for other mammals, fish, turtles, frogs, birds, and ducks. It relies on willows, cottonwoods and/or aspen for dam-building, winter food caches, and some of its summer food.

Maricopa Audubon Society

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miscellaneous

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

There are two ways to become a Maricopa Audubon member and to receive *The Cactus Wren•dition* by mail:

1. By joining the National Audubon Society. If you live in the Phoenix metro area generally east of 43rd Avenue, or in the East Valley other than in Gilbert, Chandler or most of Mesa, when National Audubon Society receives your check made payable to National Audubon Society and your membership application, you will be assigned to Maricopa Audubon Society, or you can send your check payable to National Audubon Society and your National Audubon Society membership application to Scott Burge, membership chair, and he will send it on in to National Audubon for you, or
2. By becoming a "Friend of Maricopa Audubon". In this case you will become a member of Maricopa Audubon Society only, and you will not receive the Audubon magazine or any of the other "benefits" of National Audubon membership, but you will receive a one-year subscription to *The Cactus Wren•dition*. "Friends" contribution categories are: Anna's Hummingbird-\$20; Verdin-\$35-\$99; LeConte's Thrasher-\$100-\$249; Cactus Wren-\$250-\$999; Harris's Hawk-\$1,000-\$9,999 and California Condor-\$10,000+. Mail your Friends membership application and your check made payable to Maricopa Audubon to Scott Burge, membership chair. All "Friends" members receive certain designated discounts. (If you reside outside the above-indicated geographical area, the only way to receive a subscription to *The Cactus Wren•dition* is to become a "Friend".) For National Audubon membership address changes or other questions call (800) 274-4201 or email chadd@audubon.org. For all other membership questions call or email Scott Burge.

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.

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Maricopa Audubon Board

PRESIDENT

Mark Larson

13585 N. 92nd Pl.
Scottsdale, AZ 85260-4333
480 310-3261
larsenwarren@gmail.com

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Robin Silver, MD

P O Box 1178
Flagstaff, AZ 86002-1178
Phone: 602 799-3275
FAX: 928 222-0077
rsilver@biologicaldiversity.org

SECRETARY

Veronica Heron

3043 N. 52nd Place
Phoenix, AZ 85018
602 579-7093
vheron@yahoo.com

TREASURER

Matt VanWallene, CPA

11004 E Villa Park St
Chandler, AZ 85248
480 204-1104
zoutedrop@gmail.com

FIELD TRIPS

Larry Langstaff

416 W. McNair St.
Chandler, AZ 85225
480 710-0431
Larrylangstaff1@gmail.com

PUBLICITY

Vicki Hire

PO Box 603
Chandler, AZ 85244
602 463-9219
vicki.hire@gmail.com

CONSERVATION

Mark Horlings

334 W. Palm Lane
Phoenix, AZ 85003
602 279-2238
mhorlings@cox.net

PROGRAMS

Laurie Nessel

1632 E. Cedar St.
Tempe, AZ 85281
480 968-5614
laurienessel@gmail.com

MEMBERSHIP

Scott Burge

8869 S. Myrtle Ave.
Tempe, AZ 85284
Work: 480 968-5141
Home: 480 897-8608
Cell: 480 227-3965
Fax: 480 345-7633
burge@burgenv.com

EDUCATION

Carol Langdon

2002 E. Ocotillo Rd.
Phoenix, AZ 85016
Home: 602 234-2006
Cell: 602 359-2951
clangdon2@cox.net

EDITOR

Gillian Rice

602 375-8831
editor.wrendition@yahoo.com

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