



The Cactus Wren·dition



Volume LXIV, No. 1

Spring - 2017



Great Horned Owl

Photo by Vicki Hire

Programs

programs

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, 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.

March 7, 2017

Dano Grayson

Where Science and Art Collide

Discover the Arizona wilderness, the Andes mountains, the Amazon rainforest and Manu National Park, Peru (one of the most bird diverse places on the planet) through the amazing photographs of scientific researcher and photojournalist Dano Grayson, including a few rare, never before filmed or photographed birds from the deep jungle.

Committees/Support

Arizona Audubon Council Rep
Position Open

Bookstore
Mel Bramley
480 969-9893

Hospitality
David Chorlton
602 253-5055

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

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

"To me a lush carpet of pine needles or spongy grass is more welcome than the most luxurious Persian rug."

Helen Keller

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.



Ocelot. Photo by Dano Grayson

Since graduating from university, Daniel (Dano) Grayson has been chasing incredible wildlife and weather phenomena. Working as a Field Researcher has allowed him access to some of the most pristine and biodiverse places in the world. The photographs he presents are a catalog of incredible adventures with inspiring wildlife encounters.

April 4, 2017

Richard "Rick" Simpson

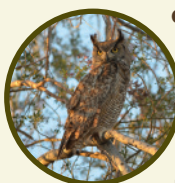
The Evolution of Hummingbird Coloration and Courtship Displays

Rick Simpson studies the interactions between coloration, behavioral displays, and the environment in North American hummingbirds to understand better why hummingbirds have such a diversity of colorful plumage and display behaviors. Rick's amazing footage of courting hummingbirds demonstrates how different species vary the size of their flight display and orientation to the sun in relation to the size of their plumage patches.

An Animal Behavior doctoral student at Arizona State University in Kevin McGraw's lab, Rick Simpson has always been interested in the incredible diversity in animal coloration and ornamentation, especially in birds. He has studied this topic across the southwestern US and Panama. He is an avid outdoorsman who loves to get away from the crowds and explore the wild areas of Arizona.



Costa's Hummingbird. Photo by Rick Simpson



On the Cover: Great Horned Owl

Focal length 270 mm, 1/250 sec, f/5.6, Nikon D5100, by Vicki Hire, Queen Creek, May 2016.

Vicki says: Early one morning as I was getting ready for work, I heard hooting. This was the first time I had heard an owl from my home in the desert on the outskirts of Queen Creek. I grabbed my camera and walked slowly around to the back of my property where I was surprised and excited to see this Great Horned Owl in a huge ironwood tree. I watched it quietly for about half an hour, just as the sun was rising.

May 2, 2017

63rd Annual MAS Banquet and Meeting

Location: Franciscan Renewal Center, 5802 East Lincoln Drive, Scottsdale, AZ 85252-4124

6:00 pm BYOB social hour, raffle, and silent auction.

7:00 pm Buffet Dinner (includes vegetarian option).

Cost: \$28.00 per person (\$25.00 for "Friends of Maricopa Audubon." To become a Friend, please see back page of this issue). Reservations required. No-shows will be billed. You may pay at the door (cash or check) or mail checks payable to Maricopa Audubon Society to MAS Banquet, c/o Vicki Hire, PO Box 603, Chandler, AZ 85244. Our agenda will include induction of our new Board and presentation of the Eighth Annual Herb Fibel Memorial Award for Distinguished Service to Maricopa Audubon Society.



Nathaniel Smalley, Iceland

Banquet Guest Speaker: Nathaniel Smalley, Somewhere Over the Rainbow: Inspiration and Experiences from Far Away Lands

Nathaniel Smalley, a professional nature photographer based in Scottsdale, leads photography tours and safaris to international destinations. Through his images he strives to foster a real love and respect for the natural world by touching the heart of the viewer with nature's beauty. A passionate conservationist, he has worked extensively with conservation and rehabilitation organizations over the last three decades, filling every role from a volunteer assisting injured birds and mammals, to board member. Nathaniel adheres to the highest standards of ethics in nature photography and avoids cheap shortcuts that could in any way harm his subjects or the environment.

President's Message



Mark W. Larson

As I write this message in January I have just returned from the Wings over Willcox Festival where I again led a trip to the storied Chiricahua Mountains southeast of town. This was special for me because I first visited these mountains and Cave Creek Canyon in January of 1977—forty years ago!— as a new graduate student at the University of Arizona. A cold rain pelted us all night, but the next morning was magical: the high mountains were a dazzling white against the deep azure sky, an image that has never left my mind.

The Maricopa Audubon Society is dedicated to ensuring that future generations of Arizonans and visitors will have similarly profound experiences in the natural world and, in so doing, deepen their connections to it. This commitment drives us to seek remedies in court, if necessary, to prevent the forces of greed and ignorance from destroying Arizona's irreplaceable natural wealth and beauty.

Again, I want to encourage you to sign up at Fry's grocery stores for their community sharing program. When the cashier scans your VIP shopper card at checkout, your purchases will increase Maricopa Audubon's share of their program. It costs you nothing and we're already starting to see a trickle of funds! We plan to use any money we receive from this program to print more *Cactus Wren•ditions* and then distribute them to schools in our area. Teachers will appreciate our new Green Scene environmental education section for kids in the center pages of each issue.

This spring there will be numerous free MAS field trips to take you into nature with knowledgeable guides to build your own connection to the natural world, a connection that can enhance and improve your life and the lives of those you love.

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

Letter from the Editor

by Gillian Rice



Gillian Rice

Unlike our *Wren•dition* poets, David Chorlton and Jasper Younger-Howard, I do not have lyrical skills. Yet, I have my own version of Robert Browning's famous lines. My poem would begin: Oh, I love to be in Arizona, now that spring is here....

I thrill when the first golden poppies bloom in my yard, then again when the Desert Bluebells waken. As I weed among them (as I do have a few "undesirable" blooms too!), I listen to the bees. I welcome native bees in particular, which the globemallow attracts, and always lay out a few old logs drilled with holes, hoping to provide the bees cozy homes for their larvae. Hummingbirds feed at the penstemons and Curve-billed Thrashers, lizards, and doves forage among the plants.

Spring brings delightful scents too. The Whortleberry Cactus blooms are my favorite but I also stoop down to enjoy the Tufted Evening Primrose at dusk – if I'm lucky, I also watch those blooms

unfurl. And I don't forget to look upwards, waiting for the first nighthawks and bats of the year.

I'm very protective of my wildflower patch and am pleased my home is not part of a homeowners' association. I learned that these sometimes do not permit wildflower planting. My wildflower patch is admired by many neighbors strolling by with their dogs and provides both food and protection to desert creatures.

Urban environments can be outstanding birding locations and can provide inspiration for young people to follow careers in natural history. For this issue, Tom Gatz has written about his experience, which in turn encouraged his nephew, Hans Otto, to become a mammalogist. Read Hans's Science Corner article on bats. Gail Cochrane highlights the new facility for Liberty Wildlife, a prominent rehabilitation center in Phoenix. Liberty Wildlife also teaches about the importance of protecting wildlife. Our featured artist Mona Houle has spent many hours volunteering in injured bird rehabilitation.

Arizona's fauna, of course, do much to protect themselves. In Margarethe Brummermann's article, learn how insects use coloration for protection and other purposes. This issue's Green Scene teaches about nests, built by birds to protect their young.

In pursuit of Maricopa Audubon's educational emphasis, Green Scene Extra includes butterfly artwork by students. MAS also provides scholarships for young people interested in field ornithology to attend the annual meeting of the Arizona Field Ornithologists (AZFO). Tales from the Field showcases two essays by scholarship recipients describing their experiences at the AZFO 2016 meeting in Yuma. I hope that reading about their experiences will encourage you to donate to the MAS Education Fund to support such scholarships.

As always, a huge thank you to our *Wren•dition* contributors. I love to hear from our members; do keep in touch. Meanwhile, enjoy the pleasures of the Sonoran Desert spring! 🌻



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president's message

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!



**Be Social!
Find MAS on
Facebook**

facebook.com/MaricopaAudubonSociety

Maricopa Audubon Society Field Trips

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>

Sunday, March 5

Superstition Wilderness Foothills Survey

Participate in a conservation challenge to document the flora and fauna of the upland desert located just outside the Superstition Wilderness north of Boyce Thompson Arboretum. This beautiful portion of the Tonto National Forest is threatened by Resolution Copper's proposed toxic 4400 acre tailings dump from their mine at Oak Flat. The more species we can document utilizing this area, the better chance we will have of preserving it. Help expand our knowledge of native biota while exploring the Arizona Trail, desert habitats, and remote canyons. Past spring sightings here include Zone-tailed Hawk, Wilson's Snipe, Vesper Sparrow, Pyrrhuloxia, Hooded Oriole, and Texan Crescent (butterfly). Meet 6:15 am. Return late afternoon. Bring lunch, snacks, water, hat, and binoculars. Difficulty 2. This trip requires 4WD over rugged back roads. We will spend half the time traveling, half the time surveying. Limit 12.

Leaders: Lisa Fitzner and Laurie Nessel.
Reservations 480 968-5614,
laurienessel@gmail.com

Saturdays, March 11, April 8, and May 13

Tempe Town Lake

New! Monthly Bird Walks at 8:00 am on second Saturdays

Do you enjoy walking around Tempe Town Lake, yet are not sure of what birds you are seeing? Join Bobbe Taber on a bird watching trip at the far east side of Tempe Town Lake, where a variety of ducks, herons, and cormorants are often seen, with a likely chance of spotting Osprey, Bald Eagle, Brown Pelican, Great Egret, Snowy Egret and a variety of waterfowl, shorebirds, and songbirds. Each month the bird sightings will change as we progress through spring migration into summer.

Plan to walk slowly for two hours mostly along a paved or gravel trail. Participants should have good mobility and balance. Bring water, sunscreen, and, if you have them, binoculars and a bird book. Limit 8. Leader: Bobbe Taber, taberbobbe@gmail.com

Saturday, March 18

Flagstaff Area Lakes

Meet at 8:00 am near the intersection of I-40 and I-17. Bring a lunch and warm clothing. Look for waterfowl on the lakes. Possible species include Bald Eagle, Red Crossbill, and Pinyon Jay. Minimum of 6 people required.

Leader: Charles Babbitt, 602 840-1772 or cjbabbitt@cox.net

Sunday, April 2

Oak Flat and Devil's Canyon

Explore the secluded, underbirded, riparian habitat, desert uplands, and chaparral scrub of Devil's Canyon (Ga'an Canyon) south of Oak Flat Campground. This area, sacred to the San Carlos Apache, is threatened by what could be the largest copper mine in North America. If time allows, also visit Oak Flat Campground for resident species. Possible species include Black-chinned Sparrow and Crissal Thrasher. Meet at 6:15 am in Mesa. Return by 7:00 pm. (Those who cannot stay may leave at various stages of the trip). Bring lunch, hat, and water. Difficulty 3 (387' elevation drop in 0.38 miles). A walking stick might be helpful. Limit 8.

Leader: Laurie Nessel, laurienessel@gmail.com, 480 968-5614

Sunday, April 9

Aravaipa Canyon Wilderness area

This is a true wilderness area with no facilities once you get into the canyon. The hike is along the side of (and quite often in) Aravaipa Creek so participants should be in good physical shape and able to walk on rugged terrain both in and out of the creek. The day involves a three hour drive each way to and from the canyon and approximately four to five hours of hiking in the canyon. In order to be at the canyon as early as possible we will leave at about 5:00 am. Bring enough water for this length of time, lunch, snacks, head coverage, sunscreen, closed-toed shoes for the hike, and a second pair of shoes to wear for the drive to and from the canyon. This is prime migration time; birds that can be seen are migrants and some of the winter birds that have not yet left us. Expect several types of sparrows, tanagers, raptors, flycatchers, and usually Purple Martins and Gray Hawks. Other fauna include butterflies, dragonflies, lizards, snakes, and coatis. Because this is an area that requires passes and is a new hike for MAS, only three spaces are available. Difficulty 3.

Leader: Veronica Heron, v.heron@yahoo.com

Tuesday-Wednesday, April 11-12

Slaughter Ranch, near Douglas

Leave about 5:00 am on Tuesday and take in a couple of regular and productive spots on the way to Douglas (Sweetwater Wetlands and Las Cienegas National Conservation Area), stay overnight in Douglas, then leave early to enjoy the drive into Slaughter Ranch and the various habitats there for a full morning of birding. Picnic at the Ranch, then head out about 12:30 pm to stop at the Saint David Monastery to see if we get lucky with the Mississippi Kites that have been fairly reliable in the past. Look for migrants on their journey north at this early time in the season: warblers, vireos, tanagers, grosbeaks, and flycatchers, plus the common species that inhabit the wetlands, riparian areas, grasslands, and higher desert included in this trip. Return to Phoenix about 7:00 pm. Limit 8.

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

Saturday, April 29

Sunflower-Mt. Ord

Among the species we should see are Gray Vireo, Scott's Oriole, Black and Zone-tailed Hawks, and Black-chinned Sparrow. On Mt. Ord, look for the Arizona warblers as well as migrating Hermit and Townsend's Warblers. Bring lunch. Difficulty 2-3. Limit 8.

Leader: Charles Babbitt, 602 840-1772, cjbabbitt@cox.net

Saturday, May 20

Pinal Mountain

The Pinal Mountain area could yield more than 100 species in a day of birding. The last of the spring passage migrants and almost all the nesting species will be active. Cover four main habitats up the slope, each one with its own community of birds. Summer Tanager, Lucy's Warbler and Vermilion Flycatcher will be in the mesquite (3500'); Scott's Oriole, Gray Vireo, and Black-chinned Sparrow will be in the chaparral; Virginia's Warbler, Dusky-capped Flycatcher, and Hepatic Tanager will be in the Ponderosa Pines; and Mountain Chickadee, Olive Warbler, and Yellow-eyed Junco are found in the Douglas Fir-Aspen near the peak (7890'). Sunrise is at 5:25 am, and the temperatures will be 10 to 20 degrees cooler at the top than in Phoenix. Bring water and lunch. This trip includes two or three short walks into the mesquite and Ponderosa Pine habitats, but they are level and easy trails. Bring a walking stick if you feel more comfortable using one. Most birding, however, will be from the road and near the cars. You will receive a checklist for the area two weeks before the trip. Leave Tempe at 4:00 am. The drive to Globe will take about one hour and 20 minutes. Return about 3:00 pm. Limit 11 with three drivers in three cars.

Leader: Dave Pearson. For reservations, contact Larry Langstaff, larrylangstaff1@gmail.com or text 480 710-0431

Monday-Wednesday, May 22-24

Patagonia

A perfect time to catch the rainbow of summer birds in southeast Arizona, including a variety of migrating and nesting flycatchers, warblers, tanagers, grosbeaks, and orioles, as well as Gray and Black Hawks. If the trip fills early and folks are willing, we'll stay at the Duquesne House B&B, a lovely retreat in town with a fabulous backyard for attracting birds to its feeders (with a special rate for mid-week, although we'll have to plan potluck breakfasts to give us maximum flexibility for early morning birding). Birding locations will likely include Sweetwater Wetlands, Las Cienegas National Conservation Area, the famous Roadside Rest, Patagonia-Sonoita Creek Preserve, The Paton Center for Hummingbirds, and the Harshaw Loop. Back about 5:00 pm in Phoenix. Limit 8.

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

Monday, June 5

Verde River and Rio Verde Ranch

Start about 5:15 am in Fountain Hills and explore a few sites along the Verde River, ending at Box Bar Ranch for an early packed lunch. In addition to desert birds, hope to see the influx of summer visitors along the river, including Yellow Warblers, Bell's Vireos, Summer Tanagers, and Blue Grosbeaks. Finish by noon in Fountain Hills. Limit 8.

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

Field Trip Favorites



field trips

We welcome help. The leader can't possibly know everything, so it's wonderful if others pitch in to help identify birds, plants, lizards, butterflies and whatever other creature or feature catches the eye.

We've all been on great field trips – and we want to make them even better! Look for Field Trip Favorites in *The Cactus Wren•dition*, and please, whether you're a leader or a participant, send your comments and suggestions for your favorite tip to Kathe Anderson at kathe.coot@cox.net. Thank you! 🐦



On Tuesday, November 15, a Groove-billed Ani was spotted at Veterans Oasis Park. The last time this species was reported in Maricopa County (according to eBird) was in 2005. The appearance explains why I didn't see any the week before at the Rio Grande Valley Bird Festival in Texas – the bird was obviously flying here! Photo by Duane Morse



This male Long-tailed Duck (in transitional plumage) showed up at Glendale Recharge Ponds on December 11. You need a lot of patience to photograph this bird because it spends about 5 seconds topside and then submerges for 30-40 seconds, so just when you get the bird in the camera and adjust the focus, he dives. Photo by Duane Morse

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.

Notes & Announcements

Bird Journaling Workshops

The Environmental Education Center (EEC) at Veterans Oasis Park is excited to collaborate with award-winning artist, Neil Rizos. This spring, Neil holds several Bird Journaling Workshops at the EEC through the City of Chandler's recreation class catalogue titled, Break Time. Neil has dedicated his life to researching and documenting subjects in nature throughout various areas of the world ranging from rainforests to the Arctic. This workshop will be offered both indoors and outdoors, with a focus on recording and observing birds. The EEC at Veterans



American Coot by Neil Rizos

Oasis Park is an ideal place to hold this workshop because of the taxidermed specimens on display as well as the variety of avian species found within 113 acres of riparian habitat. Classes begin in March and run through May. Visit: www.chandleraz.gov/registration for information on fees and pre-registration. Type "bird journaling workshop" into the search field. Information about the artist can be found at www.rizosart.com

For full details on the Environmental Education Center, please call 480 782-2890, email EEC@chandleraz.gov, or visit www.chandleraz.gov/eec

Nominating Committee Formed

By Mark Larson

The Bylaws require me to appoint a Nominating Committee prior to election of the Board of Directors. This year the elections will take place at the General Membership Meeting on Tuesday, April 4, 2017. Any adult member in good standing seeking nomination will have his or her name placed in nomination by the Nominating Committee. If you are interested in serving, call any member of the Nominating Committee to express your interest in running for a particular position on the Board. Your name will be placed on the slate as a candidate for that position, and the Nominating Committee will announce your candidacy.

All Board positions, except the *Wren•dition* Editor, are elected by the membership. Our Bylaws also require that nominations be open from the floor at our annual elections. As a courtesy, please let the Nominating Committee know in advance of your interest. Please do not nominate someone unless you have his or her consent and know that he or she is a member in good standing of this Chapter. To learn more about the job description for any particular Board position, please feel free to contact the Board member who currently holds that position. Contact information for current Board members may be found on the back cover of this issue. The Nominating Committee is: Mel Bramley, chairman, 480 969-9893, Barbara Danielsen, 602 943-4661 and Marceline VandeWater, 602 689-4356.

Dave Pearson highlights watchable wildlife in Pinal Mountains

Go to <http://www.globemiamitimes.com/fall-winter-hotspots-bird-wildlife-viewing-pinal-mountains> for information compiled by MAS member and field trip leader Dave Pearson on wildlife opportunities in the Pinal Mountain area.

Support MAS when you shop at Fry's Food Stores

Grocery shopping? Support Maricopa Audubon. MAS is part of Fry's Community Rewards Program. Please register your Fry's VIP card and select Maricopa Audubon #89166 as your non-profit organization. There is no cost to you. Go to <https://www.frysfood.com/topic/new-community-rewards-program>

Erratum

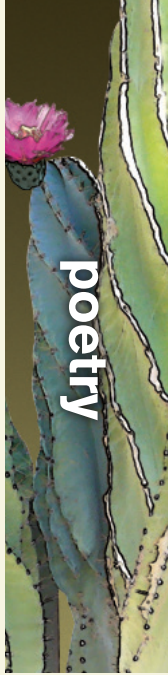
On page 15 of the Winter 2016 issue of *The Cactus Wren•dition* the bird captioned, Gila Woodpecker, is a Gilded Flicker. Thank you to Anne Orth Epple for drawing my attention to this. – Ed.

In Memoriam: Tillie Chew

By Janet Witzeman

Tillie Chew passed away October 7, 2016. She was 85. After moving to Scottsdale from Cleveland, Ohio in 1961, she became an avid birder, and passed this interest on to her son, Matt. The two of them took part in many of the Christmas Bird Counts over the years. Tillie was one of the founders of the weekly bird walks at the Desert Botanical Garden. She continued leading these walks for 30 years. The walks continue today with new leaders. Before Maricopa Audubon Society arranged to have the printer of *The Cactus Wren•dition* (and before that *The Roadrunner*) take care of the mailing of the newsletter, we had "mailing parties" at different members' homes, where volunteers affixed address labels to each issue. The issues were then bundled by zip code according to post office rules for non-profit mailing. This usually took a whole morning. Tillie hosted these mailing parties at her home for five years. It was always a fun get-together with delicious homemade refreshments.

Maricopa Audubon Society appreciates all of Tillie's pursuits on behalf of the birds of our area. Donations may be made in Tillie's name to the Desert Botanical Garden, Attention: Tribute Program, 1201 N. Galvin Parkway, Phoenix, AZ 85008. Donations will support the weekly bird walk program.



The Days

By David Chorlton

*Everybody's busy. There's hardly time
to wait while the lights change.
So much depends
on catching the bus now stalled
a quarter mile away where a train rolls
slowly through the crossing.
Someone has to cook, someone
else must pick up garlic on the way back home,
and someone with no home
is ripping paper into shreds
just to have something to do.
Everything's important, from cutting
the lawn to repairing
Madam's shiny car in which
she plans to drive to her book club. The cats
need their kibble, and that new
apartment block close by is waiting
for someone to install windows and paint it
in whatever color makes it
worth its price. No end to it: the sweeping,
digging, polishing and bargaining
continues while the hummingbirds
come and go and let's not forget them.
Four parts water to one
of sugar; boil for two minutes and fill
up a feeder. Finally,
something worth stopping for, something
to watch while the spirit
cleaves to bone.*



Rufous Hummingbird. Photo by Mick Thompson

Mating Ritual of the Burrowing Owl

By Jasper Younger-Howard

*His yellow eyes shine so resplendently
Looking for the one who will share his den
Preparing it surreptitiously
Lining dung and soft feathers within
Upon her arrival he starts preening
And soon they are found preening each other
Head, face, wings, each of them they are cleaning
Each takes such good care of their dear lovers
Soon he bows and calls out sweetly to his love
Presenting her the best food he can find
After some time, eggs are laid... each emmove
Each of their fates have now been intertwined
Burrowing owls are monogamous
And their young stay with them for several months*



Burrowing Owl. Photo by Jasper Younger-Howard



Teodelina Martelli



Mountain Plover. Photo by Henry Detwiler

AZFO Annual Meeting 2016: A Young Birder's Perspective

By Teodelina Martelli

I have been interested in birds for as long as I can remember, but my appreciation bloomed into a passion when I was twelve. Reading the book *Birding* by Terence Lindsey, Rich Stallcup, Steve Howell and Joseph Forshaw, I became fascinated in a world of birds I had not known. Since then, I have participated in my local Audubon Society and other groups, meeting other birders, and learning about birds.

I met Lauren Harter at the 2014 Western Field Ornithologists Conference in San Diego. She suggested I apply for a scholarship to an annual meeting of the Arizona Field Ornithologists (AZFO). Two years later, I gathered up the information and applied. Two weeks later, Lauren informed me that I was a fortunate recipient!

Amid celebration and anticipation, I packed up and left with my mother for Yuma, driving several hours from Ventura County in California. The Imperial Dunes welcomed us as we crossed into Arizona. Throughout the meeting, my mother and I had some time to tour the local spots in Yuma. We birded Martha's Gardens Date Farm while enjoying the famous date smoothies – the scent of dates pervaded the hot air as I watched a Greater Roadrunner sample fermented fruit. My mother found a Northern Cardinal that regularly appears in West Wetlands Park.

I was one of five lucky scholarship recipients in 2016. Surprisingly, four out of the five of us were homeschooled.



Our field trip group. Photo by Ryan P. O'Donnell

Lauren organized a "Young Birder" dinner that Friday at a restaurant, creating a great opportunity for us to meet with each other, Lauren, and some influential people of the AZFO board. This allowed us to get familiar with each other and become more comfortable in the setting of the AZFO meeting, with a few friendly faces to know. I spoke a lot with each of the recipients, especially Josh, Caleb, and Ruby, not only getting to know each other but also talking about birds and places

we recommended to each other. Josh and Caleb were both into owls. Ruby liked owls and was interested in the California Scrub-Jay. Sierra was an advocate for conservation work. The range of interests among us varied so much, and yet we had lots to share. I loved the people at the meeting. It's wonderful when all these people with birds in common get together, because everybody has something to share and new ideas are always present. I cannot overstate the importance of making connections in the world of birding. So many marvelous people to know and share birds with!

On the first day, we met as a group outside the Best Western Hotel where many of us were staying. We introduced ourselves around the circle and organized ourselves to carpool. I went with the leader, Henry Detwiler. Henry was a very knowledgeable man, and the fact that he was well acquainted with the local birding spots made the trip great for all of us. The group of birders was overall very pleasant (birders tend to be!),



Adult Lesser Black-backed Gull. Photo by Ryan P. O'Donnell

and I enjoyed discussing varied subjects, including botany, music, birds, Argentinean politics, and butterflies with Henry, Nancy, and Carl Tomoff, a Professor Emeritus at Prescott College. Henry drove us around Yuma, walking us through West Wetlands Park, where I saw my first Common Ground-Dove, and made various stops through desert and agricultural areas for raptors and Mountain Plover. The Mexican flag waved distantly at us from over the border, and we used it as a landmark to direct people's binoculars to birds, underscoring our proximity to the border. The trip brought me several new birds, and better, I enjoyed making new friends in the setting of the field trip.

On the second day, the grand meeting began! All the birders, ornithologists, and biologists sat down together to listen to scientific presentations. A favorite of mine was one studying the flight displays of several western hummingbirds. The videos of displaying hummingbirds astounded me. Gorgetts flared, the tiny fierce creatures buzzed around the interested females in an unnatural blaze of neon and sound. The stark strangeness of the flared metal feathers making the hummingbird's head an alien shape neared a visceral quality, reminding me that although we share many traits with birds, there are sides to them that are inevitably strange to us. All the presentations were interesting and enlightening in some way; a particularly interesting (not just in the way you think) presentation about Gray Hawks was given – virtually. Ariana LaPorte recorded her

presentation and sent it to us, so that we could learn about Gray Hawk density dependence even though she couldn't be there! I introduced myself to the president of AZFO, Kurt Rademaker. It was fortunate that I would later go on a field trip led by him. We also did a bird audio and ID quiz contest, where I learned many calls and surprised myself with a few correct answers. That night, we had the keynote presentation and banquet. We all sat in groups at spaced tables, ate, and talked together. We then turned our attention to Osvel Hinojosa-Huerta, who gave a presentation on his efforts to restore the Colorado River Delta, using a "pulse" of water every four years to keep riparian areas flourishing along the river. I was very impressed with the cooperation of many water districts and entities to keep the delta blue, and felt that there was great hope for the river and for other diminishing resources with teamwork such as that done by Raise the River.

On the last day, we rose early to go birding at the Salton Sea. I rode with Ryan O'Donnell and Carl, discussing Ryan's work with reptiles in the US Fish and Wildlife Service and the funny coincidence that each of us had Argentinean connections. We arrived at the well-known Sonny Bono Wildlife Refuge and started birding. An interesting find by Caleb was a leucistic White-Crowned Sparrow. Through a few stops on the shores of the Salton Sea, we picked up Lesser Black-Backed



Yellow-footed Gull. Photo by Teodelina Martelli

and Yellow-Footed Gulls. The other birders again demonstrated their kindness by letting me look in their scopes, sometimes before even they themselves had had a look. About halfway through the trip, we said a fond goodbye to the group and left for home. I am grateful to the AZFO and the Maricopa Audubon Society for their generosity – attending the meeting taught me more about birds, I had great fun, and best of all, I met lots of wonderful people! I hope many others can have the chance I was so fortunate to have and attend an AZFO annual meeting. 🐦

Teodelina Martelli is a 15-year old birder, pianist, and artist. She attended the AZFO Annual Meeting in October 2016 through an AZFO Youth Scholarship awarded by the Maricopa Audubon Society.



My AZFO Meeting Experience

By Ruby Parker

I really enjoyed the 2016 annual Arizona Field Ornithologists meeting in Yuma. It was a lot of fun and I'm glad I went. It was nice to meet up with other kids interested in birds. The presentations were stupendous and I thought it was super exciting to go on a mini-field expedition.

It was cool to talk to kids who liked birds, the same as me. They all had a lot more experience. I liked hearing about some of the different things they had done: where they have gone birding, what kinds of birding camps they have gone to, etc.

The presentations were very interesting. I learned so much from them. My two favorites were *The Evolution of Hummingbird Coloration and Courtship* by Richard Simpson and *A Recovery Effort: California Condor Distribution, Breeding, and Challenges in the Southwest Population* by Tim Hauck. I thought the work put into filming the little hummingbirds was amazing. It was eye opening to see the differences between each of

the different courting shows. Regarding the condors, it is surprising how significantly the population of the condors has grown since 1996. I am so glad they are trying to educate hunters on how much lead bullets affect California Condors.

I loved the Mini-Expeditions! I went on the East Yuma Wetlands mini-field expedition. I saw so many interesting

new birds! A lot of the birds were water birds that I don't get to see. Even though it is a fairly common bird there, my favorite was the Great Egret. It is just so beautiful and regal.

I am so glad that I received the scholarship to participate in this meeting. I felt that it was a great opportunity to learn about birds, along with lots of other things too! Thank you to AZFO and the Maricopa Audubon Society for the great experience. I hope I can attend a future annual meeting. I'm looking forward to it! 🦢

Ruby Parker is an 8th grader in Arizona. She started birding in 7th grade and has been a birding fanatic ever since. Ruby is interested in all animals and loves to hike.



Ruby Parker

Conservation Update ...

By Mark Horlings

Fossil Creek

Fossil Creek runs in the Coconino National Forest near Strawberry. A perennial stream, waterfalls, ten native fish species, and a birder's checklist containing more 100 species attract crowds, particularly in the summer. Public use has increased dramatically.

The number of visitors grew from 20,000 in 2006 to more than 100,000 in 2015, with another 40,000 plus turned away. Cattle grazing has also degraded the stream and nearby riparian habitat.

In 2016 the Forest Service restricted access through a lottery. The number of visitors dropped, and the amount of trash dropped dramatically, by over half.

Late last year, the Forest Service published a Wild and Scenic Rivers recreation plan, outlining five alternative strategies to allow access but limit damage. The Forest Service's preferred plan would allow additional hiking trails, restrict the number of visitors, and prohibit water play where cultural or safety issues dictate. However, that plan also allows cattle continued access to Fossil Creek and would authorize a four-mile ORV road from Strawberry to Fossil Creek. MAS Vice President Robin Silver reviewed the Forest Service plan and commented on behalf of MAS.

Greater Grand Canyon Heritage National Monument

Days before leaving office, President Obama announced that he would not create a national monument from National Forest lands bordering Grand Canyon National Park. Concern for these lands results not only from their proximity to Grand Canyon National Park but also from a history of uranium mining in the area and the fact that new uranium mines were foreseen.

Legislation to create a new national monument covering 1.7 million acres had stalled in Congress; conservationists then sought to persuade the Obama administration to designate a National Monument under the Antiquities Act of 1906. A twenty-year ban on new uranium mines in the area, imposed in 2012, and still in effect, may explain President Obama's refusal to act.



Oak Flat And The Resolution Copper Company (RCC)

MAS and friends sued the Forest Service last September to contest approval of test drilling in Tonto National Forest. Given Forest Service approval, RCC will drill to test the geology and hydrology of land underneath its proposed mine tailings area. The Forest Service approved the drilling on the basis of a simple Environmental Assessment; the suit contends that a comprehensive Environmental Impact Statement is required. A trial date in June 2017 has been set.

The Arizona Department of Environmental Quality recently renewed RCC's 2012 permit to discharge into Queen Creek. The renewed permit removed conditions imposed on RCC by the original permit. MAS and other groups have appealed the new permit. A hearing is expected this summer.

Southwestern Willow Flycatcher

Last May, the court ruled in favor of VP Robin Silver, MAS, and the other plaintiffs. The court found that the federal agency, which introduced the tamarisk beetle, violated its duty to protect endangered species. Mitigation plans and new data showing the beetle's range have been submitted to the court. A ruling ordering the precise steps the government must take to remedy its mistake is anticipated.

Housing Development In Benson (Vigneto)

The Vigneto developer proposes to build 27,000 homes on 12,000 acres near Benson, using a permit from the Corps of Engineers for a prior proposal to develop 8,000 acres. Congratulations to Tucson Audubon Society and MAS VP Robin Silver for a recent ruling that requires the Corps of Engineers to consult with the US Fish and Wildlife Service to evaluate harm to the Yellow-billed Cuckoo and other endangered species. In addition, Corps of Engineers officers have recommended that the Corps require the developer to apply for a new permit addressing problems with the enlarged scope of the project.

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

compiled by Gillian Rice



Gila Woodpecker Pair. Photo by Matt vanWallene

Green Scene Go Take a Hike

Enjoy a morning hike around the lake with the huge fountain at Fountain Park in the Town of Fountain Hills. The lake attracts numerous species of birds, both water birds and land birds. Look across the lake and on the islands. Check out the water's edge and see what might be on the grass or in the trees. Species you might see include herons, cormorants, grebes, ducks, American Coots, Say's Phoebes, and Red-winged Blackbirds. Watch carefully how each species behaves and try to identify what it is doing and why. Compare the behavior of the water birds and the land birds. Take a picnic to enjoy after your hike.



Saguaro Boot. Photo by Matt vanWallene

Green Scene True or False?

- T F 1. Cactus Wrens use only dried grass when building nests.
- T F 2. A hummingbird tries to make her nest invisible by decorating it with lichens or leaves.
- T F 3. The Common Black-Hawk builds a new nest each year.
- T F 4. Burrowing Owls watch for danger by sitting on perches by their burrows.
- T F 5. Gila Woodpeckers prefer to build their nests in Palo Verde trees.

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 Younger-Howard at yellowbirdphilosophe@gmail.com

Send us your photos! Did you take a hike or a field trip? If so, we'd like to hear about it! Send us your 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 or other creature is – just say so and we'll help you identify it

Guess this Bird



Photo by Gillian Rice

Clue: Well adapted to living in urban environments, this noisy bird prefers to build its bulky stick nest in the middle of a cholla cactus.

Answers on page 19



Cliff Swallow



Common Black-Hawk



Black-necked Stilt

Photos by Matt vanWallene

The Bird's Nest – Home Sweet Home

Birds use nests to protect their eggs and nestlings from adverse weather and keep them safe from predators such as coyotes, foxes, snakes, and other birds. Try to build a nest yourself. Gather some twigs, grass, lichens, and other types of plant material and have a go. Is it difficult? Remember, birds use only their beaks!

Did you know different species choose different materials when constructing their nests? The materials, along with the nest shape, can help you identify the nest builder. Cliff Swallows build nests made of mud, plastered to overhanging surfaces such as bridges. Some birds, like Cactus Wrens, will use almost anything they can carry to make a nest: house insulation material, candy wrappers, string, cellophane, or ribbons. A hummingbird builds a tiny nest cup using delicate plant material bound and tied together with strands of spiders' webs. The nest stretches as the baby birds grow. The hummingbird might use lichens or small leaves on the outside of her nest for camouflage.

Did you know that like their owners, nests come in many shapes and sizes? A Common Black-Hawk's nest is usually well-shaded. The hawks assemble their nest from a pile of twigs on a high platform in the crotch of a large tree. A high nest means that parents can see danger from far away. The Common Black-Hawk will frequently use the same nest and build a new surface layer on it each year.

Did you know that Burrowing Owls often use abandoned burrows dug by other creatures such as tortoises or ground squirrels? However, the owls also readily use artificial burrows. Zanjero Park in Gilbert features a human-constructed Burrowing Owl habitat. Burrow nests hide eggs and young and also maintain a suitable microclimate. The Burrowing Owl sits on a low perch near its burrow to watch for predators.

Did you know that a bird takes care of its nest just as we look after our homes? For example, birds keep their nests clean by removing fecal sacs, which contain the waste products of the baby birds. The Black-necked Stilt, which is found near shallow artificial ponds and lakes, uses a scrape nest – often, a shallow depression in the ground. It might also nest on top of partially submerged debris and might place a few grass stems around its nest. If rising water levels threaten the nest, the stilt parents quickly add material to raise the level of the nest.

Did you know that the Gila Woodpecker prefers to build its home in a Saguaro cactus? The woodpecker must do all the excavation work outside the nesting season. This is because a Saguaro's tissue, which is primarily for water storage, is soft and gooey. When the woodpecker makes its cavity nest, the plant reacts by forming a scab over the damaged tissue. This eventually hardens into a shell that lines the nest. Then the nest can be used as a home by the woodpecker's brood. The shell often outlives the cactus and a nest cavity remaining after the cactus has decayed is known as a Saguaro boot because of its shape.

Did you know that not all birds build their own nests? For example, Ash-throated Flycatchers, American Kestrels, and Elf Owls use woodpecker holes. Brown-headed Cowbirds lay their eggs in the nests of other birds.

Did you know that egg shapes vary depending on a bird's lifestyle? For example, seabirds that nest on cliff ledges lay pyriform (pear-shaped) eggs. These are tapered and pointed at one end, which causes the eggs to roll in a tight circle instead of rolling off the ledge. Killdeer, which nest on the ground, also lay pyriform eggs so they stay in the nest scrape instead of rolling across the gravel or stones where they might break.

The Bird's Nest-Home Sweet Home Crossword Puzzle



Anna's Hummingbird
Photo by Gillian Rice

Across

3. These birds incorporate spider silk into their nests
4. Nest material used by Common Black-Hawks
5. Type of nest used by Black-necked Stilt
9. Lays eggs in other birds' nests
10. Nickname for Gila Woodpecker nest
11. Former occupant of Burrowing Owl's burrow

Down

1. Shape of Killdeer egg
2. Uses mud to build its nest
6. A place to see Burrowing Owls
7. Nest predator
8. Birds remove these from nests
12. Does not build its own nest

Answers on page 19



Butterfly Brilliance

By Iana Binde-Pereira, Veritas Preparatory Academy

The first time that I entered Ms. Bassi's art class was as a fifth grader on shadow day. For as long as I can remember, I have always loved everything about art. When I walked into that room and saw all of the stunning colored pencil drawings, I was intimidated. All the projects I saw consisted of bursts of color that filled beautifully complex images. Everywhere I looked, kids were discussing and helping other classmates with their projects.

The next time I showed up in that classroom was as a bright-eyed sixth grader. On the first day, Ms. Bassi told us we could accomplish the feats of the students before us. The first thought in all of our minds was a unanimous "that is impossible, I could never do that."

We were wrong. She helped to prepare us by starting with smaller projects that progressively grew more complex. For the colored pencil projects, we started with a grid, and then traced the important details. Later, we added



Butterfly art by Iana Binde-Pereira. Photo by Gillian Rice

color, which was the most difficult. Ms. Bassi taught us to look for what was really there, and she was able to get the most out of every student no matter their background or interests.

After we set out foundations in sixth grade, we moved on to seventh grade. The next big color pencil project was the butterflies. Butterflies were very complex because they are symmetrical creatures, so if they were not sketched with expert skill, they looked off. The butterfly that I picked was clinging to a flower in the rain, looking helpless, yet strong enough to survive. Its structure had so many strong colors, but still demanded a delicate touch. With the help of Ms. Bassi and my tablemates, I managed to finish early, and with the extra time I finished four more colored pencil drawings that year.

Even after talking with some fellow classmates, some admitted they did not usually like art, but after being in Ms. Bassi's class they had so much fun and achieved way beyond their wildest dreams. 🐦

A Wildlife Resource

By Gail Cochrane

All photos by Terry Stevens

We are lucky to have a well-regarded wildlife rehabilitation foundation working here in the Valley. For three decades the skilled rehabilitators at Liberty Wildlife have saved the lives of wild animals and provided continued care until the lucky ones could be released back to the wild.

From the beginning, Liberty Wildlife has fostered a robust education outreach program. Dedicated volunteer handlers teach about the non-releasable wildlife in classrooms and civic programs across the region. Hundreds of thousands of children and adults have met Liberty's charismatic wildlife ambassadors and learned about their natural histories.

This winter, thanks to years of perseverance and some impressive donations, the new Rob and Melani Walton Campus of Liberty Wildlife opened on the banks of the Rio Salado. The facility is a model of sustainability, boasting solar energy, rainwater collection, xeriscape landscaping, and pollinator gardens. Large-scale natural



A Northern (Red-shafted) Flicker gets an exam.

nature and educational activities as the setting exemplifies all three of our natural biomes: upper Sonoran Desert, riparian, and wetlands.”

During orphan care season, cameras in foster care enclosures will allow the public to watch non-releasable raptors caring for the orphaned babies of their species. Cameras mounted in restricted access rehabilitation cages provide glimpses of the rehab process. Special windows allow visitors a view into triage and surgery.

The entire Liberty Wildlife mission provides a window into the damaging effects urban civilization can have on the wild animals that share our space. The visible success of the organization is a tribute to the solutions through education and conservation that the non-profit embodies. 🦅

The new Liberty Wildlife campus, 2600 E. Elwood St, Phoenix, is open to the public on Wednesdays, Saturdays, and Sundays from 10:00 am-1:00 pm. A raptor presentation is held at 11:15 am. Tickets are \$6.00 for adults, \$5.00 for seniors and veterans, and \$4.00 for students.

More information at www.facebook.com/liberty.wildlife



Teaching youngsters is a Liberty Wildlife specialty

history displays on the campus include a walk-through aviary and a living laboratory that houses reptile, amphibian, and insect collections.

Injured animals arriving at the new surgical hospital are given an initial exam and if digital x-rays are required, the sparkling new radiology room is just across the hall. The Intensive Care Unit may be the animal's next stop. If a blood test or other microscopy is required, an onsite lab provides testing, leading to quicker diagnoses and treatment. If surgery is indicated, the surgical suite is ready. State of the art OR lighting illuminates surgical tables where veterinarians have access to oxygen from a central system and a real-time display of digital x-ray images.

Education remains a crucial aspect of the Liberty Wildlife mission and the new Education Center is designed to host presentations, films, speakers, and inter-classroom activities. Executive Director Megan Mosby says, “Our beautiful amphitheater will be the scene of many wildlife presentations and events. The grounds themselves provide



Joe and Aurora show off at a Grand Opening event



urban birding

Urban Birding

By Tom Gatz

These warbler gems were photographed by birding pal Neil Ellis on our recent spring trip to Magee Marsh near Toledo, Ohio.

Like many kids, I loved animals. In the fourth grade I decided to become a naturalist when I grew up. Unfortunately, growing up in a working class neighborhood on the north side of Chicago, the only wildlife to see year-round were the flocks of pigeons on the rooftops, introduced European Starlings on the telephone wires, and the occasional rabbit inhabiting the weedy growth along the railroad



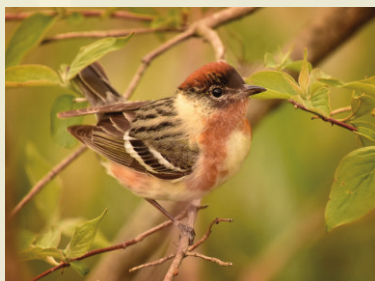
Black-throated Green Warbler

tracks a few blocks from our house. But something almost miraculous happened twice each year – bird migration.

Each spring and fall, colorful birds of every description on their way to and from Canada and South America appeared literally overnight on the lawns and in the trees of our inner city neighborhood. For a budding naturalist trapped in a big city, it was like manna falling from heaven. However, as a teenage boy in Chicago, walking around with a bird book in hand and

a pair of binoculars around my neck seemed to bring out the worst in Dennis and Larry, the neighborhood bullies. So I hid my binoculars in a jacket pocket and tucked my bird book in my jeans as I silently slipped past their houses in the pre-dawn hours to head east to one of the birding hotspots of Chicago – The Bird Sanctuary in Lincoln Park. Lincoln Park hugs the shore of Lake Michigan two miles from our neighborhood. It was a long walk but a quick trip on my bike or by bus. This huge body of water is a barrier to migrating warblers and other songbirds causing them to bunch up in flocks in the trees and bushes in the park, hungry from their journey and often oblivious to the curious eyes of an adolescent Audubon “wannabe.”

Obstacles to my birding passion



Bay Breasted Warbler

included attending school and, later, going to work, so during the migration season I resorted to birding the neighborhood backyards from the alley on my way to high school and trying to arrange my college classes to allow some free time for birding in



Cape May Warbler

the morning. While working my way through college, several of my co-workers on the loading dock outside of the chain factory even got pretty good at identifying the Common Nighthawks migrating overhead.

Birding is a portable hobby, one you can pursue any place in the world, and it probably kept me off the wayward path followed by several neighborhood kids, including Dennis and Larry. I eventually did become a wildlife biologist and still sometimes plan my vacations around bird species not yet seen. My wife Barb and I have been fortunate to have visited bird habitat on every continent, but as I enter my golden years, adding new species to my life list has lost some of its allure. Still, nothing (except Barb, of course) quickens my pulse like spotting a migrating warbler in bright spring plumage.

A great place to see lots of water birds in the Valley is the Riparian Preserve at the Gilbert Water Ranch just south of the 202 and southeast of Greenfield and Guadalupe roads. For desert birds and migrating species, the Desert Botanical Garden and the Boyce Thompson Arboretum east of town are



Magee Marsh boardwalk, May 2016

At Magee Marsh you'll meet all sorts of people, from local farmers and Amish folks to businessmen and college professors, cowboys, hillbillies, and bikers. People come from all over the United States, and all over the world. Love of birds and nature transcends all boundaries.

local favorites. Frequent field trips to good birding spots around the state are led by local chapters of the Audubon Society. To find out what unusual birds have made their way to Arizona recently and where you can go to see them, go to: <http://birdingonthe.net/maillinglists/AZNM.html>. Many states have similar websites. The field guide considered by many to be the birding ‘bible’ (and almost the size of one) is by David Sibley. I prefer the smaller Ken Kaufman field guide, perhaps because I can conceal it in my pocket, subconsciously safe from the prying eyes of now imaginary neighborhood bullies.

I retired ten years ago from a 31-year career with the Federal Government as a wildlife biologist where I tried (occasionally successfully) to protect and restore populations of endangered plants and animals. Now I enjoy volunteering as a horticultural aide and as a docent at the Desert Botanical Garden several mornings each week. Join me on a Sunday morning tour. When not at the Garden, I am tending my own little backyard urban bird habitat where I recently spotted a migrating Hermit Warbler foraging around my backyard pond. 🐦

Tom Gatz has been a MAS member since 1981.



The amazing colors of the Rainbow Grasshopper

Meanings of Color in Invertebrates

By Margarethe Brummermann

Everybody appreciates butterflies and dragonflies because they are colorful and pretty. Last year I set out to compose several posters of other, more often disliked, feared, or simply less known arthropod orders, in part to change that reputation. One thing I selected for was bright color. I found that even among those 'drabber' groups, choices were innumerable. Set against a white background, most 'bugs' appeared intricately or boldly patterned and colored. Consequently I began to think about the different aspects of color in arthropods.

What is color? Light creates color. White sunlight is the sum of the all colors of the rainbow: it is comprised of all wavelengths that are visible to the human eye and then some.

Objects are visually defined by the light that they bounce back to our eyes. The color we see depends on which fraction of the light is absorbed and which part is reflected by the object. Semi-transparent surfaces filter light and change its color. The reflected part may also be further modified by refractive surfaces like prisms, that separate different wavelengths.

All those factors contribute to the incredible variety of colors of insects. Their exoskeletons can be transparent, so their inner organs, hemolymph (a liquid analogous to blood), or even the food they ingested determines their color.

But sunlight is destructive, so most insects are protected

by pigments or structural elements in their exoskeletons that absorb or deflect the rays before they reach the inner tissues. Absorption also traps energy in form of heat. Insects are mostly ectotherms, meaning they do not generate their own body heat but rely on heat from the environment. Dark surfaces absorb most heat; light surfaces reflect most. Many butterflies position their colorful wings

to regulate absorption or reflection as needed. Thermoregulation and protection against radiation are probably the most basic functions of color in most organisms.

Beyond those, communication can probably be considered the driving factor to develop bold coloration. Intra-species insect communication seems to be dominated by chemical signals (hence those well-developed antennae) and acoustical signals. Tactile signals like stroking and tapping are employed at close range. Partner recognition of mating insects often even involves a lock-and-key system of their genitalia. But insects

can see a great range of colors and there is no doubt that big-eyed colorful species often recognize potential competitors or partners visually by shape, pattern, and colors.

However, most color schemes seem to have developed to either attract or avoid the attention of prey or predators.

Orchid Mantis and ambush bugs closely resemble the



A well camouflaged ambush bug has caught a Honey Bee

Meanings of Color in Invertebrates cont.



Eye spots of the Eyed Click Beetle, the Eyed Sphinx (Moth), and a swallow-tailed caterpillar

leaves) or Creosote Bush (shiny little leaves) have white or silvery markings all over their otherwise green bodies.

Many cryptic moths or grasshoppers, when a predator discovers them, have bright colored underwings to flash at the predator. Eye spots are often part of this last resort scare tactic. Very convincing eyespots can be found on butterfly and moth wings, on the thorax of caterpillars, and on the pronotum of click beetles. Disproportionally big eyes seem to signal danger to the predator. The imitation does not have to be perfect. In the dangerous world of eat or be eaten, a short hesitation on the side of the attacker may be life-saving.

To keep its prey from escaping, an experienced bird will target and attack vital parts like the head or thorax of its prey. Some insects sport confusing patterns and structures to redirect the attack to less vulnerable body parts. White spots on the dark background of the hind wings plus constantly quivering antenna-like extensions simulate a head-thorax at the hind end. If a predator rips away a beak-full of hind wing, the butterfly will escape damaged but keep

flowers (or parts thereof) where they lurk with open raptorial arms until a deceived pollinator mistakenly comes too close.

More commonly, potential prey insects hide on surfaces that match their own colors and patterns surprisingly well. Often the shape of the insect supports the camouflage: some brown membracids are easily mistaken for thorns of their host plant. Some patterns, like the silvery bands of Jewel Chafers, seem to stand out rather than hide the beetle, but they effectively break down its lumpy shape when the beetle is seen resting in a lacy network of juniper twigs. Similarly, most insects that live on mesquite (fine, lacy



Look for the head on the Great Purple Hairstreak



Longhorn Beetle (*Tragidion sp*) mimics Tarantula Hawk (*Pepsis sp*)

its head and remain functional.

Pursuing a different strategy, other insects seem to purposefully draw attention with bright contrasting bands and flashing colors. Primarily, those are well-armed or toxic insects, as for example stinging wasps or toxic Monarch Butterflies. A naïve bird that tries to eat the colorful wasp learns that pain is connected to the bright color pattern and will stay away from similar looking things. The 'goal' here must be to teach a memorable lesson, not to kill. A predator with good color vision, be it bird or lizard, will remember the bad experience that came with those bright colors (aposematic colors). Many social Hymenopterans like wasps



Green Scene Puzzle Answers

Answers to True or False

1. False. Cactus Wrens use many different kinds of materials when building their nests. If they can carry it, then they will use it. They use manmade materials as well as natural plant material.
2. True. A hummingbird's nest is often so camouflaged that it's hard to find again, even when you have seen it once and know it's there. The camouflage protects the nest's occupants from predators.
3. False. Like many hawks and eagles, the Common Black-Hawk will simply add material to the surface of an existing nest, and use the same nest year after year.
4. True. Burrowing Owls, which are active during the day, sit on low perches and fences to watch for predators.
5. False. Gila Woodpeckers choose Saguaro cacti for their nest cavities wherever possible.

Answer to Guess this Bird

Curve-billed Thrasher. Plant a cholla cactus in your yard and a pair of thrashers is likely to choose it as a home to raise their young. According to Troy Corman writing in the Arizona Breeding Bird Atlas (University of New Mexico Press, 2005) the breeding times of Curve-billed Thrashers in the desert vary based on winter rains. In years with normal or above normal winter precipitation, Curve-billed Thrashers begin nesting in January. If winter rains are below normal, the birds might delay egg-laying until April or even May. However, in urban settings where homeowners irrigate their yards and food is plentiful, extremely dry years have little impact on Curve-billed Thrasher nesting behavior.

Answers to The Bird's Nest – Home Sweet Home Crossword Puzzle

Across

3. hummingbirds
4. twigs
5. scrape
9. Brown headed Cowbird
10. Saguaro boot
11. tortoise

Down

1. pyriform
2. Cliff Swallow
6. Zanjero Park
7. snake
8. fecal sacs
12. Elf Owl

Learn more about nests, nestwatching, and the code of conduct for observing nests at <http://nestwatch.org>



The Clearwing Moth mimics a yellowjacket



The toxic Tortoise Beetle and noxious Convergent Ladybugs share a mimicry pattern

or bees successfully rely on the recognizability of their powerful armies. When several armed species share the same warning signal they may greatly enhance the signal's effectiveness: these species are known as Müellerian mimicry groups.

Powerful aposematic signals are often imitated by harmless, weaponless species. Predators will shy away from a hornet-mimicking moth or a harmless longhorn beetle that flies the colors of a tarantula hawk wasp, a phenomenon known as Batesian mimicry.

The next time you observe an insect, examine its color, and ponder what might be its particular purpose. 🐛

Margarethe Brummermann is a biologist, watercolor painter, and photographer who grew up in Germany. She manages the digital image collection of Arthropods for the University of Arizona. Visit her blog at <http://arizonabeetlesbugsbirdsandmore.blogspot.com> for fascinating tales about the natural world and to see her photo collages of Arizona invertebrates (moths, true bugs, beetles, and arachnids).

Mammalogist Marvels at Arizona's Biological Diversity

By Hans Otto



Agua Caliente: a study site for bats

Being a young mammalogist from the Great Plains of Nebraska, I was in awe of the desert when I recently moved to Tucson, Arizona. I found myself surrounded by a geologic spectacle full of landforms and plant species such as Creosote Bush, Ocotillo, cholla, mesquite and Palo Verde trees, and the iconic Saguaro cactus. Within these plant communities are richly diverse communities of birds, reptiles, amphibians, and innumerable invertebrates. But of all the superb biodiversity in southern Arizona, the mammals that inhabit this region are, to me, the most magnificent.

In North America, southern Arizona harbors the greatest diversity of mammals of any comparably sized region north of Mexico. Throughout the state are more than 140 species of mammals. Southern Arizona is chock-full of mammalian

diversity, from small, ground-dwelling, burrow-digging, seed-eating rodents (some with water conserving kidneys so efficient they produce crystallized urine) to large

opportunistic carnivores, like black bears that eat berries, small mammals, insects, and carrion. However, one of the most diverse groups of mammals, second only to rodents, in Arizona (and the world for that matter) are members of the Order Chiroptera, the bats.

Bats are unique because they fill nearly every feeding style that mammals occupy. Throughout the Order there are frog-eaters, fish-eaters (piscivores), nectar-feeders (nectarivores), blood-feeders (sanguinivores), fruit-feeders (frugivores), and the most diverse of all, the insect-eaters (insectivores). Arizona has 28 species of bats that occupy four families and, of these native species, the three primary modes of feeding are

insectivory, nectivory, and frugivory. One species, the Pallid Bat, also eats ground-dwelling scorpions and centipedes and occasionally consumes lizards, rodents, and even other bats.

In addition to these diverse feeding strategies, bats are unique because they are the only mammalian species to have evolved powered flight as a means of locomotion. Some mammals, such as flying squirrels, have the ability to glide but don't actually fly despite their common name. Gliding uses air currents, drag, and gravity to travel short distances. In contrast, powered flight allows animals to remain aloft with the additional forces of thrust and lift; thus, flight allows some species to travel great distances when necessary. However, flight is a very energetically 'expensive' mode of locomotion. Their modes of feeding are also very energetically expensive and their food resources are often seasonally limited in abundance in Arizona. So, why would bats use an energetically expensive type of locomotion and eat energetically expensive foods? From a big picture perspective the answer seems simple. For the insectivores, bats are exploiting a niche at night that animals such as aerial insect-eating birds (e.g., swifts, swallows, and flycatchers) fill during the day, by catching insects on the wing. Consequently, most insectivorous bats reduce competition from diurnal insectivores by catching insects on the wing or the ground at night.

For the nectar-feeders, it's a much different story. Some nectivorous bats, such as the Mexican Long-tongued Bat, have coevolved with succulent plants that bloom at night, like agave and Saguaro, and feed on the pollen, nectar, and fruit of these plants. An obvious, though, important note to make is that insects, and flowers for some species, are more abundant during wet seasons, especially in temperate regions, so it's no surprise that bats are more abundant during those seasons as well. Therefore, just like for many migratory birds, migration is an extremely important strategy for some species of bats, particularly those living in seasonal environments. Many bat species migrate from areas of low or decreasing resources

“ Insect abundance and flower-blooming cycles are changing significantly from season-to-season in many regions on earth. These seasonal changes are directly associated with climate change.”



Townsend's Big-eared Bat: an example of an Arizona insectivore



California Leaf-nosed Bat; a year-round resident of Arizona

(e.g., insects) to areas with greater food availability and suitable habitat. Other species, such as the California Leaf-nosed Bat, do not migrate and are active year-round in southern Arizona. Because they are not adapted to migrating to new areas when food availability is limited, they could be affected by climate change.

Insect abundance and flower-blooming cycles are changing significantly from season-to-season in many regions on earth. These seasonal changes are directly associated with climate change. Some regions on earth are getting warmer; some are getting colder; and more precipitation, later snowmelt, and violent storms occur in regions where such weather has rarely been reported before. A surge in research on how climate change will affect plants and animals is underway. Changes in climate patterns are predicted to have serious effects on species inhabiting ecosystems in North America, especially in the western US. Flower blooms are easy to observe and are highly predictable; however, with recent changes in precipitation and temperature the timing of these blooms has become unpredictable relative to the past. Some plants in the Sonoran Desert now flower two weeks earlier than previously. Shrub specimens collected in the Sonoran Desert of the southwestern US and northwestern Mexico and biological models suggest that the spring bloom of shrubs may have advanced by 20 to 41 days between 1894 and 2004 (Bowers, 2007). If flowers are blooming earlier or later because of changes in climate patterns, insects attracted to these flowers may be emerging earlier or later; thus, many bat species that

rely on insects or flowers as food sources may be negatively affected unless they are able to adjust their seasonal activity patterns in response to the timing of food availability.

Future research on seasonal activity of bats in Arizona, and details of recent behavior are necessary to determine the possible effects that climate change may have on their ecology. Therefore, my colleagues and I have begun the initial research to try to answer this question by studying bats in their native habitat and collecting data on which species are present or absent during different seasons. This will be a long-term study and may take several years to complete; however, I remain optimistic, and I am guardedly hopeful that most bat species will have the behavioral flexibility to cope with these changes. And I couldn't imagine a more wonderful place to study mammals than right here in Arizona.

Hans Otto is the nephew of long-time Maricopa Audubon member Tom Gatz (see page 16). In 1994, Hans and Tom discovered a female Smooth Green Snake with a clutch of eggs in the mountains of Colorado when Hans was just seven years old. To this day Tom still remains a biological hero in the eyes of Hans.



Pallid Bat: a face only a mother could love

Reference:

Bowers, J. E., 2007. Has climatic warming altered spring flowering date of Sonoran Desert shrubs? *The Southwestern Naturalist*, 52(3): 347-355.

To learn more about phenology such as the timing of flower blooms, agricultural crop stages, insect activity, and animal migration, visit: <http://www.southwestclimatechange.org/impacts/land/phenology>



science corner

Nature through the Artist's Eye: Mona Houle



Mona Houle is a wildlife watercolor artist. From New England, Mona is a graduate of Hallmark Institute of Photography in Massachusetts. After enjoying many years as a professional photographer, she began painting. She knew that her subject matter had to be nature.

Mona has traveled to 11 countries and 37 states, always with her camera, sketch pad, and binoculars at the ready. All of this hiking and nature watching has led to some precarious situations. She has been chased by a moose, nearly trampled by bison (twice), stalked by a bobcat, and bitten by a particularly frisky Brown Pelican.

All of her wildlife encounters are why Mona creates art. Beginning her paintings with the eyes, she feels the character introduces itself. Mona explains: "I try to capture the intimate connection I feel with wildlife in my watercolors." Birds have become her primary focus, and with almost 10,000 bird species, she has an endless supply of subjects.

While living in Florida, Mona volunteered weekly at a wild bird hospital and sanctuary. Here, she learned the anatomy and personalities of birds. It was hard work, smelly, hot, and not at all glamorous. But, she loved helping in the hospital, hand-feeding dozens of bird species, and aiding in their rehabilitation. Release days were the best: hand-carrying the birds down to the beach and letting them fly free.

Mona says: "There are so many places I have yet to see and so many more birds I wish to meet and paint." The artist can be found taking photographs, sketching, and painting all around the Valley. Mona posts photos of her travels, bird sightings, inspirations, and paintings regularly on Instagram @monahoule. She lives in Phoenix with her husband, four dogs, four birds, and a cat. 🐾

Contact Mona at mona@monahoule.com and see more of her work at [www. MonaHoule.com](http://www.MonaHoule.com)



Early Spring – Costa's

Who doesn't love hummingbirds? These daredevil flyers visit my yard daily, so I could paint them all day long!



Morning Cuddles

I love to watch birds preen and allopreen. It feels like I'm watching a silent conversation



They Call Me Big Red

Fast and drippy field sketches are my favorite thing to do. Birds in the wild are very quick, so I've got to get what I see down on paper in a hurry.



Clown in the Canopy

I told the naturalist I hired in Costa Rica that I wanted to see toucan in the wild. Within moments I was covered in goose bumps with a dozen Keel-billed Toucan and Yellow-throated Toucan overhead. It was one of my most thrilling bird-watching experiences.



Spike

In the dark jungles of Costa Rica, I shone my flashlight into the tree next to where I was standing. I came face-to-face, at eye level, with this five to six foot long Green Iguana. Yes, I screamed like a girl! I think I captured the beauty I saw in this guy, after I caught my breath.



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Non-Profit Organization

U.S. Postage

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Phoenix, AZ

Permit No. 419



Time-dated material; do not delay!

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:
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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.

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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

Unless stated explicitly in the article, material in *The Cactus Wren*•dition may be reprinted on other newsletters as long as the material is credited to the original author and to *The Cactus Wren*•dition.

This publication is printed on recycled paper.

Layout and design by Ben Franklin Press Inc., Tempe, AZ

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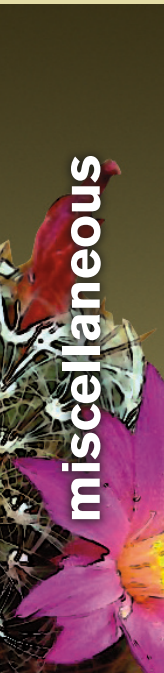
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