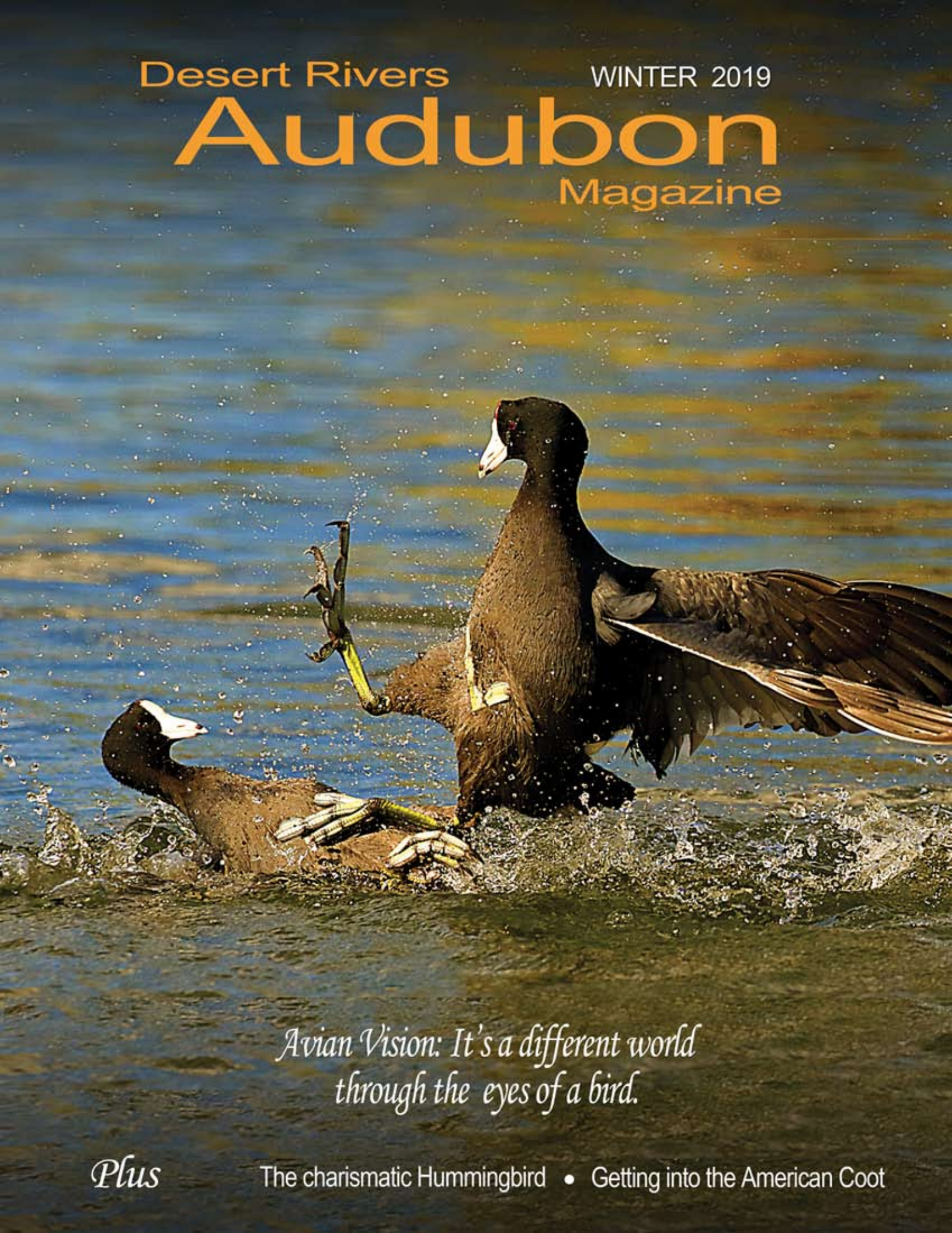
Desert Rivers Audubon Magazine

WINTER 2019



Avian Vision: It's a different world through the eyes of a bird.

Plus The charismatic Hummingbird • Getting into the American Coot

Presidents Message

By Krys Hammers, President

Our season is off to a great start, and I hope you have had time to participate in one of our activities. We've offered a lot: programs, field trips, birdwalks, owlwalks, the Young Birders Club and the Tour de Bird … all of them volunteer-run. To show our appreciation, each month we draw the name of one volunteer for a $25 gift certificate. I always say that we cherish our volunteers and I really mean it: we couldn't do any of this without their dedication.

For example, John Krick and Annette Broderick volunteer for practically everything, and they haul the Desert Rivers trailer to the location! Our trailer is where we store our traveling bookstore, loaner binoculars and other supplies for the events. John and Annette recently reorganized it, because it can get a little messy. Then there's Victor Peterson, who pretty much single-handedly organizes the Hummingbird Habitat at Desert Breeze Park, our demonstration garden through Chandler's Adopt-a-park program. Every month we schedule a work day there, but Victor drops by several times in between to take care of the plants.

Todd Yampol is our tech guy, who grooms the website and sends out the email messages. We couldn't survive without him. Cindy Marple helps run the computer during the monthly programs. She's one of a cheerful bunch of people who set up and take down the chairs and tables. Cindy is also one of our field trip leaders — the expert birders who plan, organize and lead groups of us to great birding spots where they help us find birds.

Lots of dedicated people help with our monthly Saturday birdwalks at the parks. These folks show up early to unload the trailer and set up tents, tables and books, and then they share their expertise. While that is going on, Anne Leight leads our Young Birders Club on adventures.

Our real unsung volunteers are our board members. The board spends a lot of time all year long planning and organizing, and then they volunteer at the events too. Liz Farquhar is our public relations director and magazine editor. While she does such a great job on the content of the magazine, Mike Rupp's eye for design makes it look so appealing. Mike Evans, our conservation director, works tirelessly to keep abreast of conservation events so he can be an advocate on our behalf. Lynnette Allison, our education director, works with schools and teachers so young people will be in the know about birds. Mary Moura, our treasurer, keeps us on track financially. Chris Thompson and Linda Hensley recently agreed to share the secretary position. Marion Saffell makes sure that we have great snacks at our programs. Theona Vyvial is our membership director and keeps us current on our dues. Gwen Grace schedules the field trips that take us all over in search of birds. Anne Koch is the volunteer coordinator. She recruits all those volunteers, for the birdwalks, the programs, the Hummingbird Habitat and the very volunteer-intensive Tour de Bird. Not to mention that she takes on the Owl Walks pretty much by herself!

Volunteers are what makes an all-volunteer run chapter tick. It's what keeps us going and allows us to do all that we do. Won't you join us?

Cover Photo: Jlim Burns

Desert Rivers Audubon Magazine

Educating and inspiring our community to protect and preserve birds, wildlife,

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Photo : Rare winter snow on Saguaros, Tucson

Conservation
Commentary

Mike Evans

The feral cat issue has raised its foul head again in Gilbert. Feral cat advocates have been trying to get the town council to schedule what would be a contentious public discussion about an ordinance that bans the feeding of feral cats on town property or in the town rights-of-way. An amendment to an existing ordinance, the measure addresses a problem in the residential areas of Gilbert's old downtown where feral cats were being fed on the sidewalks and in the area around the Senior Center. Feral cats were also being fed near the town maintenance yard at Freestone Park and outside of the Municipal Center, a practice now disallowed.

This is not a new controversy. The town's public policy position on feral cats was drafted after Desert Rivers Audubon and Maricopa Audubon worked hard to eliminate the feral cat problem at the Riparian Preserve at Water Ranch Park. The town had attempted to manage feral cats by using the trap, neuter, and release (TNR) technique, but the colony exploded, demonstrating that TNR is a failed policy. It also served to dramatically demonstrate the environmental destruction brought about by implementing TNR. Scientists estimate that free-roaming cats (owned, stray, and feral) kill hundreds of millions of birds and possibly more than a billion small mammals in the U.S. each year. The removal of 185 feral cats from the Riparian Preserve between November 2010 and August 2012 was a victory for wildlife.

It was a struggle, however. When our abatement program became public knowledge during the holidays in 2010, the feral cat advocates mobilized to stop us. They wanted to maintain the preserves' s feral cat colony, but with great effort we were able to block them.

The ugly facts about feral cats.

Now we may have to fight the battle again. Here's why it's so important that we do.

Not only are birds and other wildlife at risk, but cats who roam free often lead short and painful lives, living on average less than five years, whereas indoor cats often live 17 or more years.

Outdoor cats get hit by cars and attacked by dogs, other cats or wildlife, and can contract fatal diseases, such as rabies, feline distemper, or feline immunodeficiency virus. They can get lost, stolen or poisoned, or suffer during severe weather conditions. Free-roaming and feral cats also pose a health hazard to humans from the spread of diseases such as rabies, toxoplasmosis, and cat scratch fever. The feral cat colony that used to exist in the preserve received no veterinary care, nor had they been vaccinated. Rather than being released after capture and neutering, feral cats should be kept in enclosures, trapped and adopted to loving homes or euthanized.

In fact, all cats should be kept indoors. They are not an indigenous member of the wildlife community in the Americas. They are most definitely not a normal part of the environment. Scientists have documented that well-cared for, well-fed house cats will go outside and kill wildlife without eating it. The domestic house cat is a deadly and efficient killer. They kill for the enjoyment of the kill. No other animal will do that, except for humans.

Keeping cats indoors is the preferred remedy by the Arizona Game & Fish Department and the U.S. Fish & Wildlife Service. It is what the National Audubon Society advocates, and it is the policy endorsed by Desert Rivers Audubon Society. We will not compromise on an issue vital for the protection of birds and the native wildlife of the Americas.

The Glory of Spring and Challenges of Summer

Lynnette Allison

Historically, Arizonans have expected to find snow and ice only in our mountains during the winter, while sunshine floods the Valley. As winter fades and spring's freshness unfolds, we are accustomed to swirling dusty winds and rain in the state's lower elevations. Migrating birds arrive, searching grasslands, lakes and ponds for food and safe habitats. Bees, birds, and butterflies sip nectar from new-blooming flowers as they flitter daintily through the garden.

But climate change is bringing unpredictable, destructive weather that take a toll on yards landscaped with familiar but imported plants. Fortunately, Arizona is home to strong, beautiful plants that are adapted to grow and survive extreme heat and cold. These plants are key food sources and shelters for wide varieties of birds, insects, fish and animals … humans included. We can meet some of the coming weather challenges if we expand our use of water-wise plants in business and home landscapes. Here's how we can all help:

Gather information. Water, farm, and agriculture departments at the city, county and state level publish information guides explaining how and why to select and grow water-wise native plants. These guides provide plant lists with information on plant needs and tips on how to reap the benefits of native plants at home, around businesses and in city parks and wilderness areas.

Take a field trip. Visit public and neighborhood parks and gardens featuring Arizona-friendly water-wise plants. Make a list of your favorites and visit local growers. They are experts and can guide your efforts.

Edit your yard. Remove water-needy grass and non-native plants, and begin to substitute with native plantings, attractive brick patios and ceramic containers of native, low-water plants.
Talk to neighbors. Share your plant successes and failures and encourage them to join you.

Build your network. Find your local garden club and ask about which native plants and trees to include in your yard.

Here's your water-wise challenge: Take the first step! Bring in just two or three of Arizona's low-water plants or trees. Water-wise plants are sturdy and beautiful and grow in unique shapes and sizes that enable them to survive and thrive. Choose some to grow in attractive yet roomy ceramic pots or wooden boxes containing the proper soil base. Water more often at first, then decrease to once a week or even less. Most low-water plants will survive hot dry summer days and display amazingly lovely blooms in spring or early fall.

Grow-it-yourself is a great way to observe these unique heat-friendly plants settle in and enhance your patio or front yard area. I bet you will actually enjoy the results of this water-friendly "For the Birds" adventure!

A Bird's-Eye View

By Jerry Lang

There's a lot more to a "bird's-eye view" than seeing the world from above. Birds live in a whole different world of vision than we do, and researchers have only discovered this in the past 50 years or so.

From the standpoint of evolution, eyes and eye placement in birds is obviously very important since birds have the largest eyes relative to their size in the animal kingdom. On average, birds' eyes account for about 15 percent of the mass of their heads. Human eyes make up less than 2 percent of head mass. In fact, birds' eyes take up so much room within the bony sockets of their heads that there's very little room for muscles to move the eye. This is why birds must move their heads to significantly change their visual fields.

Although the basic structure of a bird's eye is similar to other vertebrates — particularly reptiles — bird eyes are flatter, allowing more of their visual field to be in focus. The lens of a bird eye is also pushed forward, increasing the size of the image on the retina.

Just as in humans and other mammals, birds have two eyelids. In addition, birds also have a nictitating membrane, which moves horizontally over the eye to clean and lubricate it. This membrane acts as a "contact lens" for some aquatic birds when they are under water. When most birds close their eyes, it is the lower eyelid that moves up and over the eye. Birds can sleep with one eye open thereby resting one side of the brain at a time. Researchers have found some birds can even sleep this way in flight!

As in all vertebrates, rods and cones are the light receptors on the retina. Rods are more light sensitive but provide no color information to the brain. Cones are less sensitive to light but provide information on color. Visual acuity depends on the density of rods and cones on the retina, and light gathering under low light conditions depends on the distance between the lens and the retina. Small birds are forced to be mainly diurnal because their eyes are not large enough for adequate night vision. As you would expect, nocturnal birds have more rods than cones and vice versa for diurnal birds.

Human visual acuity comes nowhere near that of most birds. We have a density of approximately 200,000 rods and cones per square millimeter on our retinas. This compares to 400,000 for house sparrows and 1,000,000 for vultures.

We think we're doing well with 20/20 vision, but eagles have 20/4 or 20/5 vision. Birds have one or two foveae on their retinas. Foveae are depressions on the retina where rods and cones are the densest and vision is the sharpest. About fifty percent of birds have two foveae on each retina.

Possibly the most significant difference between bird vision and mammalian vision is that birds are tetrachromatic. Their cone cells can discriminate red, green and blue (trichromatic) like us, but they also see into the ultraviolet (UV) part of the spectrum. In addition, each cone cell in birds contains an oil droplet that further increases color discrimination and saturation.

The ability to see UV light provides birds with a world of color we cannot fully comprehend. They see each other as well as potential food resources and other environmental cues in a "totally different light." Many fruits, berries, and flowers appear much differently to birds than they do to us. With UV visual perception, raptors can apparently see urine-marked trails and runways of small rodents from distant perches.

In 2009, researchers used a spectrophotometer to scan the plumage of 139 museum songbird specimens of species, which to us, appear as having males and females that appear identical in coloration. Ninety percent of those scanned revealed males and females as diachromatic in the UV light range. As far as many birds are concerned, the illustrations in our field guides don't show the really important field marks when it comes to identifying members of the opposite sex!

Migratory birds may also use light perception to "see" magnetic fields. Researchers have found that the right eye of some migratory species contains photoreceptive proteins called cryptochromes. Light excites these molecules to produce unpaired electrons that interact with the Earth's magnetic field, thus providing directional information.

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Pulses of Water Bring Life to the Famished Colorado River

From National Audubon

Once a 1,450-mile-long force to be reckoned with, today's Colorado River is one of the most endangered rivers in the world. It flows from Colorado all the way to the Gulf of California, through nine states—seven in the United States and two in Mexico. And while it remains an integral source of water and livelihood, its delta is largely barren; the river stops 70 miles short of the sea. Altered by a century of overuse and climate change, the region is a shadow of the sanctuary of its former days, when it flourished with green marshes, migrating Red-winged Blackbirds, cottonwood trees, and willows.

In 2012, the U.S. and Mexico embarked on an unprecedented binational collaboration to revive the riverine landscape. They planned to deliver more than 340 billion gallons of water in two stages—one-third delivered as a constant low-level base flow and two-thirds delivered as a pulse-down the parched Colorado River. After years of fine-turning the details, the floodgates between Arizona and Mexico opened on March 23, 2014. Over the course of eight weeks, 224 billion gallons of pulse water flowed down the Colorado, flooding more than 5,000 acres of river corridors and floodplains. Then, for the first time since 1997, the river met the sea—albeit briefly.

Dr. Osvel Hinojosa Huerta

Now, two years after implementing what became known as the "pulse flow," a binational science team has published new findings on how the region is faring and what could be in store for the future. We spoke with Dr. Osvel Hinojosa Huerta, a Mexico-based scientist and member of the team that monitors vegetation and wildlife in the delta, to learn more.

Native plants grew back, and birds took notice.

Scientists recorded clear ecological benefits from delivering water to the delta. The water triggered springtime plant growth, and native plants like cottonwoods and willows germinated. One year later, scientists found that green vegetation throughout the riparian floodplain grew 16 percent denser.

In addition to more plants, scientists also saw greater bird abundance and diversity across the river floodplain and restoration sites. During the spring, the Colorado River corridor is an important stopover for migratory birds, but the increasingly dry patches didn't have the habitat to support them. Instead, the birds were forced to fly longer distances in search of food and suitable nesting grounds. Hinojosa Huerta reports that, after the pulse flow, surveyors reported a noticeable increase in the number of migratory birds in the corridor. He points to Yellow-Billed Cuckoos as an example. "We are going from not finding any, so from zero, to now we're finding five, eight, you know. There are still very low numbers, but at least they are showing up." While the overall trends appear to be positive, it is too early to say if they will persist.

Restoring the delta's habitat is a long-term process that will require continual upkeep. After the pulse flow, a coalition of conservation NGOs continued releasing small increments of water—known as base flows—to maintain the pulse flow's effects. "We suspect we are moving in the right direction," Hinojosa Huerta says.

More human intervention could make the pulse flow even more effective and efficient.

Historically, the Colorado River ran swiftly and powerfully through the delta, clearing large patches of old vegetation to make space for native plants, like cottonwoods and willows, to germinate and grow anew. It turns out the pulse flow was not powerful enough to mimic this effect. While some cottonwood and willow seeds did grow, "it was very local, not widespread," Hinojosa Huerta says. Next time, he says, they can improve new plant growth if they remove older, non-native vegetation manually before delivering the water. In restoration areas where non-native vegetation was removed before the pulse flow, native plants grew much better.

Almost all of the pulse flow water was delivered from one point—Morelos Dam on the Arizona-Mexico border—and some water was lost along the way due to evaporation and seepage. "We have learned that we can be more efficient with the environmental water," Hinojosa Huerta says, by taking advantage of existing water infrastructure in Mexico to deliver the water to restoration sites. In other words, delivering the water from multiple, closer delivery points can reduce water loss.

What could "Pulse Flow 2.0" look like?

Hinojosa Huerta envisions a more efficient and targeted water delivery. "Instead of doing one big pulse flow, we will probably do smaller pulses more strategic to the key sites."

Despite how contentious water politics can get, local residents were key backers in the pulse flow effort. "We have learned that we can really have that support and collaboration with the water managers and water users in Mexico to move that water. They have been really supportive as long as it does not affect agriculture," Hinojosa Huerta says.

Beyond wildlife, the pulse flow inspired hope for the local residents.

"The social response—that was amazing," Hinojosa Huerta says. He recalls what happened in the border city of San Luis Río Colorado, where the namesake river had largely vanished. "When the river came back, it was like a party in town every day. Thousands of people were celebrating in the river. And especially to see the younger generations who had never seen the river before—that was amazing. The older generations, who had seen the river before, were in tears. I think many people… never thought they would see that in their life." In fact, the pulse flow is inspiring water rights advocates far beyond the continent.

Audubon's new Colorado River project director Jennifer Pitt, who played a key role in the negotiations and worked with NGOs to purchase water rights from willing locals including Mexican farmers, describes the agreement as "a model that can work between any jurisdiction that shares a water supply." She and Hinojosa Huerta say that groups involved in river restoration from as close to home as the Rio Grande to as far as Central and Eastern Asia have reached out to express interest in the water sharing concept.

Advice for future pulse flow-ers:

Designing and implementing the pulse flow required tremendous planning and careful coordination, so Hinojosa Huerta stresses the importance of perseverance and solid scientific data. He also says it is important to communicate and develop positive relationships with local residents, such as farmers who depend on the river to irrigate their crops and support their livelihoods. "It is really important to understand the other's needs, and also the socioeconomic, political framework of the particular [region]."

Yellow-billed Cuckoos remain uncommon, but they're visiting the region for the first time in years.

Photo: Mary Miguez Audubon Photography Awards

I've Seen Coots from Both Sides Now

Article and Photos by Jim Burns

It took me a long time to get into American Coots. I mean, really, what's to like about coots? They are one of the most widespread of North American birds so they are not a "high value" species for birdwatchers, they lack colorful plumage and beautiful song, they are feeble in the air and ungainly on land. Children observing them at local fishing ponds refer to them as "ugly ducklings," and my mother, a casual but keen observer of nature called them "dirty old coots" whenever we encountered them in my youth.

If you didn't know how old I am and I told you how many years went by between my first observation of coots and the first time I cared enough to research something about them, you'd figure I am now older than dirt. There were the odd times, of course, when I'd come across some peripheral reference to coots while researching other species. Like, did you know coots fly so slowly they are one of the few birds Bald Eagles can catch live?

I discovered that fun fact researching my very favorite American Coot story. It happened one autumn over at the Bosque in New Mexico. I had set up with my telephoto lens focused on an adult Bald Eagle atop a prominent, lone snag in the middle of the entrance pond. In the harsh light of midday I snapped a couple uninspiring images, the eagle left, and I picked up the tripod to leave. But wait, before I got very far I saw it returning. With something dangling from its talons.

Ensconced again on its favorite perch, the eagle began plucking that something, dark feathers flying on the breeze. A quick look with the binoculars confirmed the prey was an American Coot. I snapped off a couple more shots, then left the scene without even reviewing them on the back of the camera. Imagine my utter disbelief in checking the day's images that evening and discovering four coot legs with their distinctive lobately webbed toes dangling beneath the feeding raptor. The eagle had captured two birds, putting into graphic context the meaning of "one fell swoop!"

One day a couple years ago, out of boredom as I waited near a pond for Ospreys, I snapped off a couple frames of the local coots and had a moment--every avian species is unique and merits observation and understanding. My lenses began to see the stark beauty of the contrasting white on black color scheme with its two touches of red, the iris and the callus at the base of the frontal shield. Then I noticed something else. One of the coots was towing a loose reed into a bed of standing reeds.

Perhaps nesting material? I was hooked. As a photographer I evolved years ago to action and lifestyle. I forgot about the absent Ospreys, and began staking out the area of the reed bed, hoping to make up for my former indifference and delve into essence of cootdom. The reeds were too dense for me to observe the actual nest, typically a floating platform of vegetative debris anchored to vertical reeds, and I never witnessed copulation, but one morning I heard incessant peeping and discovered four babies scooting along the interface of reeds and water.

Here's your anthropomorphism alert—American Coot babies are precious. They are precocial and capable of swimming at six hours after hatching. Initially they are fed animal matter brought to the nest, but upon leaving the nest they begin picking at floating, filamentous plant material. Like grebes, fledgling coots will ride on parents' backs. The parents are attentive and protective, no surprise as ubiquitous as the species is. I was able to observe the youngsters through the dog days of summer as they grew and gradually lost their bright pinfeathers and scarlet-orange bills.

And then they were gone. Research shows that young coots are driven from their natal territories at about eighty days, typically dispersing to other ponds in the vicinity. I was still seeing juvenile Common Moorhens and Pied-billed Grebes that shared the coots' pond, but perhaps these were offspring from a second brood. American Coots are monogamous within a breeding season, but for warm weather "locals" who don't migrate it seems they would be monogamous over a lifetime, loyal to a providential territory. I was about to observe proof of this.

On the pond I had staked out I had seen multiple pairs of coots, each protective of their own patch of disjunctive reeds. Now these empty nesters began partial intermingling toward the center of the pond, roaming farther from their respective home patches. And as cooler autumn temperatures seemed to increase hormonal activity, I began to witness a completely different side of the American Coot "personality." It's not pretty.

American Coots have been described as querulous and quarrelsome. Indeed! The coot pairs, "mine" and their neighbors, increasingly began chasing intruders, particularly conspecifics, from the waters surrounding their territories. Initially when another pair encroached, one of the "home" pair, presumably the male, would lower its head to water level and torpedo directly toward the interlopers. I've labeled images of this aggressive behavior "territorial coot on a mission."

These missions typically ended in one of two ways: either the target bird would swim out of the "wrong neighborhood," frantically if the pursuant got too close, and then the aggressor would abandon the pursuit, returning to its mate, looking quite smug I thought; or the target bird would be late in recognizing its mistake and simply dive and disappear as the pursuant closed to within striking distance.

Striking distance? Yes, occasionally, whether due to the interloper being slow or maybe just as ill-tempered as the defendant, the former would turn and engage. Engage? Yes, first a face-off, then long-toed, needle-nosed talons bared, then both parties laying back on outstretched wings raking at one another's breast and belly trying to force the opponent backwards under the water.

The engagements I witnessed lasted anywhere from sixty seconds in one place to five minutes over several sections of the pond. It was not uncommon in the longer battles for the mates of the initial combatants also to engage, and once I saw three pairs involved. I never saw blood, and the loser always emerged from the water. Research indicates, however, that very occasionally these engagements can end in a death.

I've seen American Coots from both sides now. To describe the cycle of coot behavior to others of my species I can only ascribe adjectives understood by all of us. I've seen coots act amiable and industrious, attentive and protective, combative and savage. Sounds sort of like, by turns, all of us. That's why I always give short shrift to biologically correct misgivings about anthropomorphism.

So, I'm finally into coots. Now that I'm really looking, I realize their unique beauty and the fascinating nuances of their behavioral life cycle. They're everywhere and they're down here at our level, unlike songbirds in the treetops and raptors in the ether. Next time you're bored with your birdwatching, watch coots for half an hour. What's not to like about them?

The High Cost of Being Cute: The Secret Lives of Hummingbirds

By Rebecca Stephenson

Few birds pack instant charisma quite like the hummingbird. Tiny, vibrantly colored, and with personalities far exceeding their petite size, even the most casual citizen delights in seeing one of nature's winged jewels. In fact, they may be in the running for one of the world's "cutest" animals. But never tell that to a hummingbird! The features that render them undeniably adorable to our eyes are weapons in an arsenal for their very tumultuous lives.

Unique to the Americas, hummingbirds baffled early Europeans with their erratic, buzzy flight and it was assumed that they must be insect-bird hybrids. These seemingly supernatural flight abilities are possible due to extremely flexible shoulder joints, which allow their wings to whip around in 80 figure-eights per minute. As a result, hummingbirds can fly in all directions, including upside down, at speeds of up to 60 miles per hour. Advanced flight abilities are key for survival, allowing these tiny birds to hover at flowers to sip nectar — their primary food source — escape predators, migrate shockingly long distances, snatch insects out of the air for a protein boost and perform elaborate aerial mating displays.

Seduction begins as it so often does with sharp attire and a confident attitude, and male hummingbirds excel at making their presence known with their striking hues and ferocious Napoleonic demeanors. All species exhibit notable iridescence concentrated on the throat gorget and crown. Hummingbird plumage is unique among birds, as coloration is not due strictly to pigmentation but rather is the result of an optical illusion created when light enters microscopic bubble-like structures in the feathers, becomes magnified, and reflects as a bright flash only visible at certain angles. This is why a hummingbird may initially appear drab, only to explode in color with a simple turn of its head. Males use this ability to "flash" rivals as well as dazzle potential mates, quickly turning their heads from side to side while perched.

Should a female venture into a male's territory to feed, an elaborate dance begins. Displays vary from species to species, but typically include aerial acrobatics with an accompanying soundtrack. Arizona's resident Anna's Hummingbird, for example, performs one of the most dramatic mating dances. The male will rocket himself up to 130 feet, orient his bright gorget towards the sun to product a pink flash at the apex, then plummet, unleashing a loud, high-pitched note as he passes the perched female. This note baffled biologists for many years, until a 2008 study by Christopher J. Clark of the University of California Riverside revealed that it was produced not by the voice of the male, but rather by the outer feathers of his tail. When these feathers were removed, males performed silent dives. And when the plucked feathers were placed in a wind tunnel, they vibrated like the reeds of a clarinet to produce the signature tone at around 50 mph – the exact velocity of the dive. Biologists believe that this is most likely a way for males to surmount their limited vocal abilities. While one of the strongest singers in the hummingbird world, the Anna's Hummingbird's volume is limited by a tiny syrinx, which is in turn limited by a small body. So, evolution, as always, devised a creative solution.

Higher pitches are also highly desirable to female hummingbirds, as evidenced by a recent 2018 study of Costa's Hummingbirds. Like the Anna's, male Costa's perform a dive display

Black-chinned Hummingbird

Anna's Hummingbird

with a loud squeak – also produced by the tail feathers. But male Costa's add a literal twist: they dive off to the side of the female, then flip their tails 90 degrees to produce the noise. Christopher Clark and his team found it exceptionally difficult to measure how fast a male was diving due to the confounding side dive and tail twist. They realized that if it was difficult for scientists, it must also be difficult for a female! It seems that males "trick" females in a sense, since females use pitch to gauge how fast a male dives and prefer to mate with faster, higher-pitched males. The ruse is twofold: the side dive minimizes the Doppler Effect, concealing speed, and the tail flip acts as a megaphone, aiming sound at the female.

Such subterfuge is necessary, as it is female sexual selection that dictates much of hummingbird biology. In fact, female preference for certain pitches led to variation in tail feather structure, which ultimately drove the evolution of so many different hummingbird species, each with a unique mating display.

Hummingbirds are solitary creatures, and males and females lead very different lives. Females spend their days constructing intricate nests of thistle down and lichen, glued together with spider silk. After mating, they rear the young as single parents, relying on their subtle coloration for camouflage during incubation. Mothers are just as ferocious as their

Cindy Marple

male counterparts, however, and have been known to attack snakes, hawks, and even people who threaten their nests.

Males, on the other hand, devote all energy to aggressive defense of food resources and intense mating displays. They will attempt to woo and mate with as many females as possible each season. While it may seem like the males have the sweeter deal, constant pursuit of passion is not without consequence. Fighting and displaying takes a large toll, and by the end of the breeding season, males have often lost up to 20 percent of their body weight and their once resplendent plumage is battered and dull. Females typically live way longer than males, despite single-handedly feeding both themselves and several broods of young per season.

While there are around 325 hummingbird species in the world, most reside in the tropics. Southern Arizona, however, is known as North America's hummingbird hot spot. Here in the Sonoran Desert, we are lucky as we can easily view the displays of several species. The Anna's Hummingbird is a year-round resident and begins displaying in November. Listen for the high-pitched, metallic song of the male, and of course the telltale tail squeak, then sit back and enjoy the show! In spring, the Costa's Hummingbird returns to the desert breed. Listen for the soft, rising and descending slurred whistle of the male's song and keep an eye out for the trickster's side dives. The Black-chinned Hummingbird also performs a pendulum-like swoop display in the spring. And don't forget to look for the Earth-toned female, inconspicuously perched nearby, as she is running the whole show!

A Bird's Eye View

Continued from page 5

Birds can resolve rapid movement better than humans because birds have a higher flicker fusion frequency. Any light pulsing at more than 50 pulses per second appears steady to us, which is why a fluorescent bulb flickering at 60 cycles per second appears steady. Many birds can detect movement over 100 cycles per second. This ability allows raptors like Cooper's hawks and owls to fly through tree branches and avoid other obstacles at speeds that would be a blur to us.

Eye placement on the head determines a bird's visual field. Typical species like starlings with lateral placement of the eyes have a fairly large area of binocular vision directly in front of their beaks, which allows them to manipulate food items. Species like mallards, with peripheral placement of eyes on both sides of their heads, have almost 360-degree peripheral vision, but vision at the end of their beaks isn't sharp. However, this doesn't matter much since they are filter feeders. Raptors like owls have focused and peripheral vision much like humans, with a relatively large are of sharp vision directly in front of them, limited peripheral vision and a large area behind the head of no vision.

Raptor vision is remarkable in many ways. These birds of prey have an average eye size of about one and one-half times greater than that of comparably sized birds. They also have more tubular-shaped eyes, which can produce a larger image on the retina, and their forward-facing eye placement is assisted with double foveae. Many birds of prey spiral in their dives, which allows them to alternate between retinal foveae giving them the sharpest vision. Without spiraling they would need to turn their heads to maintain sharp focus, which would increase wind resistance and slow their dives.

Several commercial products have been proposed or are currently available based on birds' UV perception. These products range from duck decoys with UV-reflective paint, to UV-reflecting cat collars, and camouflage clothing for birders.

So next time you're out birding, remember that the birds aren't necessarily seeing things (including you) like you do. The general consensus among birders to avoid white and bright colors is probably good advice. Dressing like duck hunters would probably be the way to go, but leave the dogs at home.

Photos : Cindy Marple

Downtown Owls at Rio Salado

Imperiled Burrowing Owls bring education and citizen science to Phoenix

Education, science, and on-the-ground bird conservation all come together at the Nina Mason Pulliam Rio Salado Audubon Center in downtown Phoenix.

A central focus of the center's work is the Burrowing Owl, a popular but declining species that uses mammal burrows for its homes. Together with Toyota TogetherGreen and local partner Wild At Heart, the center has led an effort to build hundreds of artificial burrows for the owls in nearby open land along the Salt River. The work has been done by volunteers, including a number of high school clubs, corporate volunteer groups, and individuals and families from the community. Birds at risk from land development elsewhere in Arizona were captured and released in the area, and have taken up residence in the constructed burrows.

In addition to all the learning that has taken place during the work projects, teachers can connect online to a powerful mapping program that lets their students explore current data about the range, habitat requirements, and life history of Burrowing Owls. They can even use the maps to predict how the distribution of Burrowing Owls might respond to climate change, and to suggest ways that humans can help the species survive.

The results of the Downtown Owls project: more owls, expanded research, and a lot of students who care about the birds, understand them more fully, and are invested in their future.

Photos : Cindy Marple

Arizona Sightings

Rose-throated Becard (Pachyramphus aglaiae), Rancho Santa Cruz, Santa Cruz County. This Rose-throated Becard was found by Chris Benesh and Holly Bern on 16November 2018 and photographed by Bob Starks on 23 November 2018. Once a regular breeding species in a few locations, Rose-throated Becard had almost disappeared from Arizona and was placed on the review list. Recently multiple individuals have been found along the Santa Cruz River, including at least three nesting pairs in 2018.

Reddish Egret (Egretta rufescens), Katherine Landing, Lake Mead NRA, Mohave County. This Reddish Egret was found and photographed by Cory Shaw on 09 November 2018. Casual summer/fall visitor in Arizona. Nearly all records pertain to juveniles and are likely from nesting areas along the Sea of Cortez (Gulf of California) in Mexico. This has been a good year for the species in Arizona with at least 11 documented.

Iceland Gull (Larus glaucoides), Lake Pleasant, Maricopa County. This Iceland Gull was found and photographed by Melanie Herring on 13 November 2018 and photographed by Ryan O'Donnell on 14 November 2018, and by Chris Rohrer on 18 November 2018. Casual in Arizona with 18 accepted records. Majority are from the lower Colorado River Valley with one prior record from Maricopa County.

Parasitic Jaeger (Stercorarius parasiticus), Havasu Springs Resort, La Paz County. This Parasitic Jaeger was found and photographed by John West on 10 November 2018.Casual in Arizona, if accepted by the ABC this would represent the 20th state record.

Tufted Flycatcher (Mitrephanes phaeocercus), Upper Ramsey Canyon, Cochise County. This Tufted Flycatcher was photographed by Rob Woodward on 11 May 2018. There are eight accepted records (plus two pending ABC vote) of Tufted Flycatcher in Arizona.

Least Flycatcher (Empidonax minimus), Pasture Canyon, Coconino County. This Least Flycatcher was found by Chuck LaRue on 22 October 2018 and photographed by Jason Wilder on 23 October 2018. Casual visitor with 11 prior accepted records, most from fall. Empidonax flycatchers are a difficult group to identify.

Wood Thrush (Hylocichla mustelina), Whitetail Canyon, Chiricahua Mountains, Cochise County. This Wood Thrush was found and photographed by Rick Taylor on 14 October 2018.Casual primarily late fall migrant with 20 prior accepted records and one other pending from this fall. This is the first from the Chiricahua Mountains since 2005.

Ringed Kingfisher (Megaceryle torquata), Roper Lake and Dankworth Pond State Parks, Graham County. This Ringed Kingfisher was found and photographed by Kelly Wright on 04 October 2018 at Roper Lake. , and was also photographed by Gary Rosenberg on 12 October 2018 at Roper Lake. If accepted this would be the first record for the state. Not known from adjacent states. Primarily a tropical species which occurs on the Pacific Coast of Mexico as far north as southern Sinaloa. On the east coast occurs north to south-central Texas.

Red Phalarope (Phalaropus fulicarius), Saddlebrook Ranch , Pinal County. This Red Phalarope was found and photographed by Jon Swanson on 01 October 2018. Red Phalaropes are casual transients in Arizona. Although they have occurred in nearly every month of the year, they are mostly found in the late fall and early winter. Less than 5 records for Pinal County.

Blue-footed Booby (Sula nebouxii), Lake Havasu, Mohave County. This Blue-footed Booby was found and photographed by Lauren Harter on 12 September 2018 and photographed by Matthew Grube on 16 September 2018. If accepted by the ABC, this would be the 12th state record.

Ruby-throated Hummingbird (Archilochus colubris), Hassayampa River Preserve, Maricopa County. This Ruby-throated Hummingbird was found and photographed by Mary McSparen on 12 July 2018. Casual in Arizona with seven previously accepted records.

Tropical Parula (Setophaga pitiayumi), Ramsey Canyon, Cochise County. This Tropical Parula was found by Michael and Corinne Schall on 9 June 2018 and photographed by Michael Schall on the same date, by Andrew Core on 11 June 2018 and by Ryan O'Donnell on 23 June 2018. Seven previous state records all between late May and early July.

ANNOUNCEMENTS

See DRAS website calendar for ***more comprehensive information.*** *Register for field trips by emailing our Field Trip Director Gwen Grace at gwengellen@gmail.com , or the trip leader.*

Monthly Speaker Series

Monthly Speaker Series programs are held at the Southeast Regional Library at the southeast corner of Greenfield and Guadalupe Roads in Gilbert. Browse our book table for the latest birding guides and more! Doors open at 6:30 p.m. and the program starts at 7 p.m. Watch the DRAS calendar on our website for announcements of future speakers

Tue, February 12, 2019, 7pm – 9pm. Cindy Marple - Birds (and Kangaroos) of South Australia.
Long separated from other continents, Australia is home to a unique variety of plants, animals and birds. Almost half of the 842 bird species are endemic. In this program, we'll look at birds and other wildlife from the southern part of the country including Tasmania. Cindy Marple is a Nature Photographer whose favorite subject is birds. Her interest in birds and birding has grown as she spends time observing and learning more about her subjects. She now teaches an Intermediate Birding class through the City of Chandler Recreation department, and presents slide shows at local camera clubs and Audubon Societies.

Tue, March 12, 2019, 7pm – 9pm. Liberty Wildlife - Live Raptor Show! Bring the kids and grandkids and join us for a live raptor presentation by Liberty Wildlife Rehab Foundation. This is always a special program, visually exciting and enjoyed by all ages. All your questions will be answered about each of the beautiful creatures our Liberty Wildlife handlers bring to us. Liberty is an award-winning rehabilitation center, caring for injured, sick, and orphaned wildlife located in the Phoenix area. While they care for avian, reptile, amphibian and small mammal species, they specialize in endangered species such as the California Condor, and raptors.

Tue, April 9, 2019, 7pm – 9pm. Adam Stein - Coloration in Birds
Colorful plumage is often the first thing that draws people to birds. The theories for bright, showy plumage have been well developed for well over a century but this talk will look further into the topic of bright showy plumage – Why are certain bright colors favored overs in the bird world? This will draw on information Adam collected for his doctoral work. Adam received his PhD from Syracuse University researching plumage color in a group of neo-tropical birds called Bearded Manakins. Since then, Adam has been working on various conservation and biology projects in Russia, Africa and Central America.

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Field Trips

Please check out all field trips on the DRAS Calendar page on the DRAS website: desertriversaudubon.org/calendar

Sunday, Jan 13, 2019 - Riparian Preserve at Water Ranch with Kathe Anderson. Regular monthly bird walk with Kathe Anderson. Meet at 8 am. Flat and easy walk. Limited so email-may be wait list. Kathe.coot@cox.net

Sunday, Jan 13, 2019 - Santa Cruz Flats with Claudia Kischer. Santa Cruz Flats, is known for wintering raptors including Ferruginous Hawk, Northern Harrier, various morphs of Red-tailed Hawk, Harlan's Hawk, and 5 species of falcons including Crested Caracara. Trip is limited to 8 participants in 2 vehicles. We will plan to return to the meeting site by 3:00-4:00. Reservations can be made at antclaudia@hotmail.com Full with wait list 11/7

Monday, Jan 14, 2019 - Aqua Fria National Monument with Kathe Anderson. We'll start about 7am, from No. Phoenix, and explore two exits off the I-17 leading into the Monument (south of Camp Verde) for 3+ hours. Limit 8. Reservations required. Difficulty 2. Meeting place and carpooling logistics to be determined a few days before the trip. Please register with Kathe at kathe.coot@cox.net

Sunday, Feb 3, 2019 - Arlington ponds with Claudia Kirscher. Wintering migrants abound in the west-side areas of Arlington, Palo Verde, and Buckeye due to the varied habitats We will plan to return to the carpool site by around 2:00-3:00 p.m. Meeting time TBA. Meeting site TBA. Limit 8 participants (in 2 vehicles). Reservations at antclaudia@hotmail.com

Thursday, Feb 21, 2019 - Prescott Lakes with Kathe Anderson. We'll leave the Scottsdale area about 6am. Wrap up in Prescott about noon. Lunch plans to be decided. Limit 8. Difficulty 2. Please register with Kathe at kathe.coot@cox.net.

March18 – 19, 2019 - Rio Rico overnight with Kathe Anderson. This trip will include two full days of birding and will concentrate on areas around Rio Rico, with a night at a reasonably priced hotel. Costs include hotel, a couple of meals in restaurants, gas donations to the drivers and small entrance fees. Limited to 8 participants. Reservations required. Difficulty 1-2. Meeting place and carpooling logistics will be determined a few days before the trip. Please register with Kathe at kathe.coot@cox.net

February 13, 2019 - Field Trip: Neely Ranch/Freestone Park with Kathe Anderson. This Trip ON HOLD. Let's see what's happening at Neely Ranch, a once-reliable site for all sorts of waterfowl, waders, desert birds and occasional rarity. We'll meet in the Gilbert area about 7:30am, check out the Ranch, then wander over to nearby Freestone Park to see if the lovebirds and winter waterfowl show up. Wrap up about 10ish. Limit 8. Difficulty 1. Please register with Kathe at kathe.coot@cox.net.

New Members

Deborah Buchanan
Jerry Bisgard
John Fawcett
Joanne Chauvin
Cindy & Jim Dickert
Anne Till
Bruce & Nancy Johnson
Terry Welsh
Nancy Martin
Caryn Shoemaker

What's the Best Field Guide for Birders?

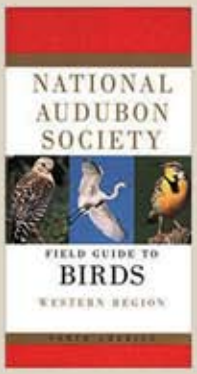
Elizabeth Farquhar

My first field guide was Birds of Southeastern Arizona by Richard C. Taylor, a casual purchase from a hotel gift shop. Our visit to Portal, Arizona coincided with the hummingbird migration. Avian obsession followed, and field guides — including my mother's 1961 edition of Peterson's A Field Guide to the Birds — now occupy most of a shelf in my office.

The first field guide for birds may have been Florence Merriam's 1890 Birds Through an Opera Glass. A search for bird field guides on Amazon yields more than 10,000 results, and that's not counting the birding apps that offer sound as well as visuals and text. That made me wonder which guides our most active and knowledgeable bird walk leaders favor. Here's what Kathe Anderson, Krys Hammers, John Krick and Cindy Marple had to say.

Which field guide is the best overall? Why?

Anderson: My choice is the national edition of the Sibley Guide to Birds, because it covers all species — most both in juvenile and adult plumage, and in



Marple: When I carry one in the field, I usually take the National Geographic Field Guide to Birds of North America. It's compact, the illustrations are good, and it covers the whole country in one book. I sometimes carry the Sibley Birds West: it's a bit smaller and has a few more plumage variations in the illustrations.

Krick: The best overall field guide is Sibley. It has the best pictures, best notations for specific field marks and best range maps.

What was your first field guide and when did you get it?

Anderson: That was too long ago to remember! But perhaps it was the Golden Guide to Birds, which I gave away a long time ago.

Marple: My first guide was a Peterson's 1990 edition, probably acquired in the late '90's. It was the best at the time because it pointed out key field marks to look for, but had a major drawback: the range maps were at the back of the book instead of with the plates.

Krick: The first field guide I used was the Peterson Field Guide to Birds at the high school library. But it was hard to compare the book to subjects, because it was a library copy, not to lend. The first field guide I bought was National Geographic, in the early 80's.

Which one is best for raw beginners?

Anderson: I recommend Birds of Arizona Field Guide by Stan Tekiela. Organized by color as well as interesting text, it is helpful and inspirational for beginners. Also, by narrowing the choices to the most common Arizona birds, it makes the identification a little less daunting. The drawback is when odd birds show up, the book doesn't cover them.

Hammers: In my class I use Kaufman Field Guide to Birds of North America because it has an easy-to-use, one-page, color-coded index in the back that allows you to get to the page with the birds quickly.

Marple: A guide that's specific to your state/region might be easier to start.

Krick: Raw beginners often find the small format Birds of Phoenix as good as any.

Do you use more than one? What makes the secondary one valuable?

Anderson: Yes. I like to compare descriptions of vocalizations, and some books explain behavior and habitat better.

Marple: I own multiple field guides for North America. The illustrations are slightly different, and it can be useful to look at all of the books for the same bird. No one book is better all the time. I also own multiple specialty guides for different bird families.

Those go into much more detail and are a great learning resource.

Krick: I've bought guide books specific to families of birds, for variations and more in-depth natural history.

App or book?

Anderson: Book. I'm a computer dinosaur! Also, for guiding, showing a book to several people at a time is a lot easier than a small screen with glare.

Marple: At this point in the field I tend to use apps more than a book — a phone is just easier to carry. I'm using iBird pro but plan to download the Sibley app, which is very good.

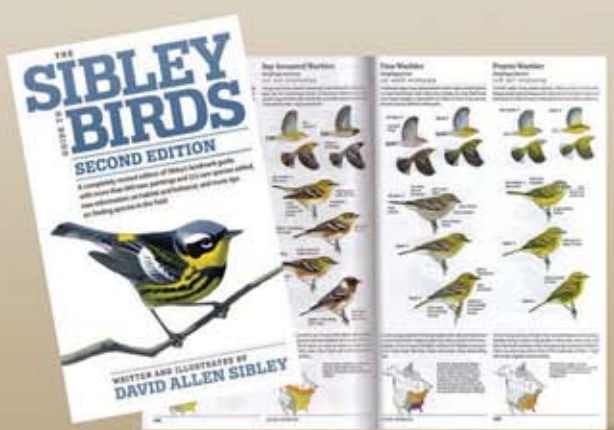
Are there books that might be considered indispensable references for birders?

Anderson: I probably use my hawk book the most (A Photographic Guide to North American Raptors, Wheeler and Clark), but also the Sibley Guide to Bird Life and Behavior, and the Birdwatcher's Companion - An Encyclopedia of North American Birdlife (Leahy), among others. But then, I'm kinda crazy about birds!

Marple: The "Big" Sibley is number one. It's much too big for the field but it has so many more examples of plumage variations: juvenile vs adult, color morphs, etc. National Geographic's Birding Essentials is a guide to learning the skills to make you a better birder. Also helpful are family-specific guides: Peterson's Birding by Impression and Kaufman's Field Guide to Advanced Birding will help with confusing families like Cooper's vs Sharp-shinned Hawk.

Find one that works for you, something light for your pack, perhaps, and an assortment of reference works to augment Google. And don't forget that ornithology is a dynamic field. Every year species are lumped or split, so you will need to update your guide periodically. Desert Rivers Audubon has a nice selection of field guides for sale at every meeting and most events.

Now, to quote John Krick: "Get out and look at the birds."



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Hatching the Next Generation of Birders

Ameya Thatte went birding for the first time at age eight. "I loved being outside in nature, and I was amazed to see how sophisticated birds really are," says the Westwood High School student. He's been donning binoculars ever since and is now a veteran of the Young Birder, Desert Rivers Audubon's program for kids.

"The most important thing is patience," he says. "Start out by focusing on the birds you see every day in your backyard. Once you master the basic skills, you can focus on the less common birds." His favorite birds to watch are ducks and his current "nemesis bird" is the Western Bluebird.

desertriversaudubon.org/kids-club

How to Join Desert Rivers

Membership in Desert Rivers Audubon Society helps support our chapter's outreach activities and operating costs. Annual membership entitles you to our quarterly magazine, priority status for field trips and events, and discounts on products and services. See desertriversaudubon.org/membership.

Students/Senior (65+)	$25	Individual	$30
Senior Couples	$40	Family	$50
Corporate	$300+		

The National Audubon Society and local Audubon chapters are separate entities. All Desert Rivers Audubon dues are dedicated to local programs. You may hold concurrent memberships in National Audubon and any number of local chapters. If you are a National Audubon member, you may assist this chapter by designating Desert Rivers (Chapter B08) as your assigned chapter by emailing

audubon@emailcustomerservce.com

Winter desert