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Winged Wonders

KENN KAUFMAN ON WHY WE NEED BIRDS NOW MORE THAN EVER

The pandemic has turned the human world upside down, but life goes on for SUMMER TANAGER and all the other birds on Earth. Page 14

DISCOVERING DRAGONFLIES

BIRD PHOTOGRAPHY ETHICS

GOATS AND THE KIRTLAND'S WARBLER

Vol. 34 • Issue 4

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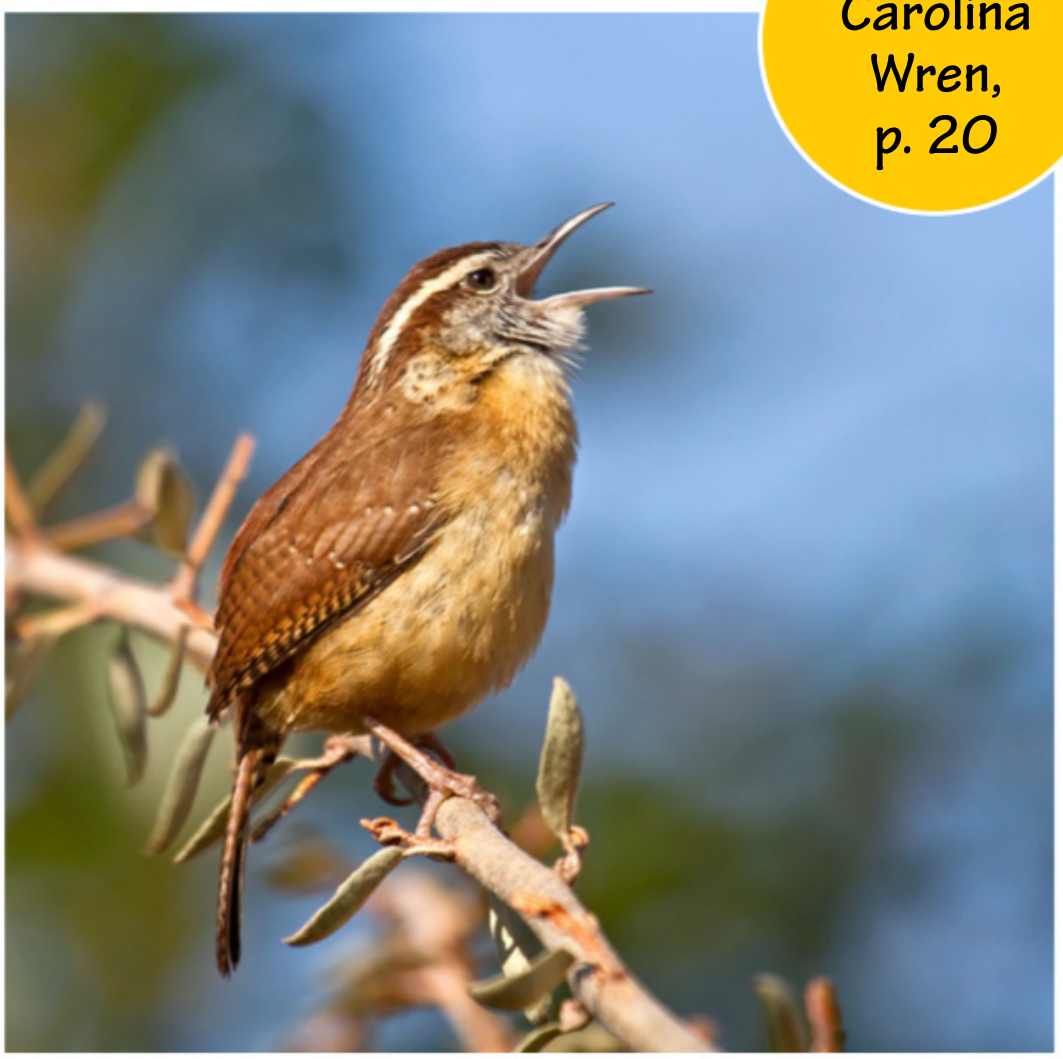
COVER STORY



Curious Carolina Wren, p. 20

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IN EVERY ISSUE

COVER PHOTO Summer Tanager
By Milan Zygmunt/Shutterstock

Starts and stops

I have a quick update on our editorial lineup for *BirdWatching*.

Given the widespread restrictions on travel and the need for social-distancing practices, we're putting "Hotspots Near You" and our regular photo gallery of rare-bird sightings on hold. They'll be back — soon, I hope. And we have discontinued our "Since You Asked" and "On the Move" columns. I sincerely thank Julie Craves and the eBird team, especially Garrett MacDonald, for their work on those columns over the years.

New this issue are columns about photographing birds (page 8) and one we're calling "Good Birders" (page 42). The photography column will feature a rotating roster of authors, so we can offer a variety of perspectives on the ever-popular activity of taking photos of birds. The first installment is from Marie Read, a professional bird photographer and longtime contributor to this magazine. She addresses the important topic of ethics in bird photography.

The name "Good Birders" is a play on the phrase that you often hear when birders are discussing others with superior skills in bird-finding and ID: "Oh, he's a good birder." It's often said with an aspirational tone. In our case, the column will be a series of profiles of birdwatchers who make a difference. They're people who devote their time, talent, and treasure to scientific or conservation efforts, public outreach, or the like. They may be "good birders" in the traditional sense, but that's not a requirement for being featured. We'll be introducing you to people who should make us all proud to be in the birding community. Now that is something to aspire to.

Matt Mendenhall, editor
mmendenhall@madavor.com

A NOTE TO OUR SUBSCRIBERS

We hope you and your loved ones are healthy and safe during this difficult time of the COVID-19 crisis.

All of us at *BirdWatching* are as committed as always to bringing you inspiring stories and top-notch bird photography. Amid the concerns about social distancing (including mail delivery) and possible printing disruptions, for the duration of the crisis we are moving *BirdWatching* to a digital format, to be delivered to your email inbox.

We have invested in a state-of-the-art technology platform that will make this digital experience incredibly robust — including the highest-quality images, the ability to "turn" pages, and a mobile optimized edition designed for comfortable reading when viewed on phones. We are confident you will enjoy this experience, and greatly appreciate your support as part of the *BirdWatching* community.

BirdWatching

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TIMING ADJUSTED: At the northern reaches of its breeding range, American Robin is migrating five days earlier per decade, scientists report.

Robin migration happening earlier

Other studies detail annual movements of Bobolink, Black-throated Blue Warbler

Scientists have published a number of notable papers in recent months that further enhance our understanding of bird migration. Here are three examples:

• In northern Alberta, American Robins are responding to climate change by migrating five days earlier per decade in spring than they did in the early 1990s, according to a study in *Environmental Research Letters*.

"It's not entirely surprising that robins appear to be migrating through boreal Canada earlier because other studies have found that many bird species are adjusting their migration timing," says lead author Ruth Oliver. "However, our study suggests that robins are able to adjust their migration timing by responding to environmental cues along the way, primarily snowmelt. This suggests that robins may be able to keep pace with the rapid environmental change occurring at high northern latitudes."

• A study of Bobolinks using light-level geolocators reinforced scientists' understanding of a migration corridor from the eastern U.S. to central South America. The northbound and southbound routes largely overlap, and the birds' departure dates and the duration of southbound migration vary by breeding population.

Rosalind Renfrew and her co-authors, writing in the *Wilson Journal of Ornithology*, also report that birds from all breeding areas arrive at a migratory stopover site — the Llanos grasslands of Venezuela and Colombia — within a few weeks of each other. They remain for three to six weeks before crossing the Amazon Basin to Bolivia, Paraguay, and northeastern Argentina.

• A study of 50 years of data on the Black-throated Blue Warbler shows that early spring migrants passed through sites about 1.1 days earlier per decade.

"Overall, we found that not only was the peak of spring migration occurring earlier, but the earliest individuals also migrated earlier," write Kristen M. Covino and colleagues in *The Auk*. "While the peak timing of fall migration has not changed, the earliest individuals are migrating earlier and the latest individuals are migrating later."

DELISTED: Kirtland's Warbler was removed from the federal Endangered Species List in October 2019.

Bahamian goat farmer helps Kirtland's Warbler

In many parts of the world, goats damage fragile bird habitat. With the right balance, though, animal husbandry can benefit threatened bird species. Case in point: Kirtland's Warblers on the Bahamian island of Eleuthera — one of the few places where the recently delisted, range-restricted songbird winters.

Edrin Symonette is a goat and sheep farmer, artist, and citrus grower on the island. "My father farmed when I was a kid," he says. "At the time, I hated farming. Then I had the opportunity to go to school on a scholarship and run track at Hampton University in Virginia. When I came home one holiday, I fell in love with goats and animal husbandry, and then later returned to farming."

One day 18 years ago, Symonette met two biologists who had tracked Kirtland's Warblers to his farm with radio telemetry. The birds had been tagged in Michigan and tracked down to their wintering grounds on Eleuthera. "I really first learned about the Kirtland's Warbler through Dave Ewert from ABC and Joe Wunderle from the U.S. Forest Service," Symonette says. He invited the biologists to set up mist nets and monitor the warblers on his properties. Students from the University of The Bahamas sometimes joined them; some of them now work for ABC's partner Bahamas National Trust (BNT).

Symonette mows pastures annually for two reasons: to keep vegetation low and lush for the goats, and so he and his livestock can easily spot intruding free-ranging dogs. This arrangement also provides fertile feeding grounds for wintering Kirtland's Warblers.

"The goats take the local vegetation they want — native grasses, legumes, etc. — and leave a lot of what the warbler feeds on: black torches, snowberry, and white sage bushes, which have the berries," says Symonette. He doesn't let his animals chew vegetation to the ground. Instead, Symonette closely monitors the weather and plants, moving the animals between pastures depending upon rainfall and the lushness of the vegetation.

"When I first learned about the birds, I said, 'It's nothing that I do,' but Dave and Joe told me that what I've been doing over the years, not even knowing it, helps the birds. I was just managing the land and food sources. But that helps the birds, which is very cool." Symonette continues to work with ABC, BNT, and others and mentors Bahamian ranchers on how to manage pastures as he does. — *Howard Youth*

American Bird Conservancy is a 501(c)(3), not-for-profit organization whose mission is to conserve native birds and their habitats throughout the Americas. You can learn more about its international programs at https://abcbirds.org/program-division/international.

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Border wall construction accelerates

Conservation groups sue administration in hopes of stopping wall

Construction of the southern border wall has accelerated across the borderlands despite the COVID-19 pandemic. Hundreds of miles of new construction have been announced in recent months, including through the remote Cabeza Prieta National Wildlife Refuge, Tinajas Altas Mountains, and Organ Pipe Cactus National Monument in southern Arizona.

The Trump administration's latest plan for the wall, which would wall off the last jaguar migration paths and bulldoze Arizona's Sky Island mountains, has drawn opposition from thousands of people across the country. The Center for Biological Diversity, Sierra Club, and Sky Island Alliance submitted more than 8,200 comments from people opposing President Trump's waiver of dozens of environmental and public health laws and calling for an immediate halt to wall construction.

And in mid-May, three conservation groups sued the administration for taking $7.2 billion from the Department of Defense for border wall construction without congressional approval. The lawsuit also challenges six waivers that sweep aside dozens of environmental and public health laws to fast-track wall construction in California, Arizona, New Mexico, and Texas. The suit was filed in U.S. District Court in Washington, D.C., by the Center for Biological Diversity, Defenders of Wildlife, and the Animal Legal Defense Fund.

"These walls will destroy Arizona's spectacular Sky Island mountains and be a death sentence for jaguars in the United States," said Laiken Jordahl, borderlands campaigner with the Center for Biological Diversity.

In September 2019, Jordahl wrote an article for *BirdWatching* that explains how border walls threaten birds.

"Thirty-foot-high walls in Organ Pipe Cactus National Monument will block movement of Cactus Ferruginous Pygmy-Owls, cutting off populations in Mexico from those in the United States," he wrote. "Biologists say the border wall will impede the path of the rare, low-flying birds and threaten their recovery in Arizona and Mexico."

Other borderland birds imperiled by walls include Yellow-billed Cuckoo, Southwestern Willow Flycatcher, Yuma Ridgway's Rail, Elf Owl, Coastal California Gnatcatcher, and Aplomado Falcon.

The administration is working on 74 miles of border walls in remote, mountainous terrain that corresponds with the remaining corridors jaguars use to move back and forth between the United States and a small breeding population of jaguars in Sonora, Mexico. Many other species use these remote areas to migrate across the landscape. A 2017 report identified 93 threatened and endangered species along the 2,000-mile border that would be harmed by Trump's wall.

Construction work on the wall may also contribute to the spread of COVID-19. In May, Jordahl and Gail Emrick, executive director of the Southeast Arizona Area Health Education Center, reported that 4,000 workers are building the wall. They live in tight quarters and are "ignoring the important public health practices we've all embraced to flatten the curve and save lives."

For up-to-date reports on wall construction, follow Jordahl on Twitter (@LaikenJordahl).

WALLED OFF: A recently completed section of border wall, photographed in April 2020, cuts through Cabeza Prieta National Wildlife Refuge in Arizona.

Center for Biological Diversity

READ MORE ONLINE

Sascha Sterijevski

YELLOW CARDINAL SIGHTING

In early April, two sisters from Boynton Beach, Florida, discovered a yellow male Northern Cardinal in their yard. The bird showed up a day after they put a new homemade feeder in the yard, and it stayed around for a few days.

By our count, it is at least the 17th yellow male cardinal reported in southern and eastern states since 2016. The bird's coloration is the result of a rare genetic mutation called xanthochroism — when yellow or orange plumage replaces a bird's normal colors. In cardinals, the mutation is exceptionally rare.

ENDANGERED VULTURE CHICK HATCHES

One of the zoos that is most famous for its work to prevent the extinction of the California Condor is celebrating the hatching of another endangered vulture in its care: a Lappet-faced Vulture. The chick's parents, an 18-year-old male and a 23-year-old female, a bonded pair, have resided at the San Diego Zoo Safari Park since 2018.

The pair produced an egg in late January, and it hatched on March 25. Afterward, the chick was moved to the Safari Park's condor breeding facility to be hand-raised by wildlife care specialists.

Q&A WITH NATIVE-PLANT EXPERT

In April, as lots of us were sheltering in place due to the pandemic, we wanted to know what birdwatchers should know about growing native plants at this time. We spoke with David Mizejewski of the National Wildlife Federation. He is a media personality, blogger, and the author of *Attracting Birds, Butterflies, and Other Backyard Wildlife*. You can read our Q&A on our website.

Read these stories and many more at www.birdwatchingdaily.com.

A record-setting Global Big Day

More than 50,000 people worldwide took part, submitting 121,000 checklists

Michael G. Mill/Shutterstock

BIG DEAL: A report of 250 Eastern Kingbirds in El Salvador on Global Big Day marked the day's high count for the species, according to eBird data.

Much has been written in recent months about the fact that more people than ever seem to be watching birds, largely because so many of us have been under stay-at-home orders and have been noticing the birds in our yards and neighborhoods.

The results of an annual event for birdwatchers — the Global Big Day on May 9 — further proves that the trend is real. This year, Global Big Day set a new world record for birds documented in a single day. Participants reported 2.1 million bird observations, recording 6,500 species. An all-time high of 50,000 participants submitted more than 121,000 checklists, shattering the previous single-day checklist total by 30 percent.

Sightings were submitted to eBird, which uses the data to power science, outreach, and conservation efforts around the world.

"Global Big Day," says eBird coordinator Ian Davies, "collected more information on birds than was submitted during the first 2.5 years of eBird's existence." Since the program launched in 2002, eBird has amassed more than 810 million observations of birds.

Participants birded where they could do so safely, presumably following social distancing guidelines. Checklists were contributed from every continent. Colombia had the most species (1,445) of any nation, and the United States had the most checklists — more than 68,200.

The record-breaking numbers are part of a larger trend that has become pronounced in recent months as birds and nature have become a welcome distraction for many.

During the first two weeks of April, for example, eBird checklist submissions jumped 46 percent compared with the same period the previous year. And contributions of photo and audio recordings to the Cornell Lab's Macaulay Library wildlife media archive and downloads of the Lab's free Merlin Bird ID app were all up by 50-100 percent.

Guard-birds

In Africa, oxpeckers serve as lookouts for black rhinos

In Swahili, Red-billed Oxpeckers are called *Askari wa kifaru*, or "the rhino's guard."

Now a Victoria University study suggests that this indigenous name rings true: Oxpeckers act as a sentinel-like first line of defense for critically endangered black rhinos by calling out when they detect advancing poachers.

By tracking black rhinos in South Africa, behavioral ecologist Roan Plotz found that rhinos carrying oxpeckers, which feed on the ticks and lesions on rhinos, were far better at sensing and avoiding humans than those without the hitchhiking bird.

Conservation efforts have helped boost numbers of black rhinos in recent years, but poaching remains a major threat.

"Black rhinos have large, rapier-like horns and a thick hide, but they're as blind as a bat," Plotz says. "Hunters approaching from downwind could walk within 5 meters and not be noticed."

He used an experimental human approach trial to show that oxpeckers made up for a rhino's poor eyesight by warning them of approaching humans. The birds allowed rhinos to detect humans much faster and from a farther distance.

His study found that rhinos without oxpeckers detected approaching humans only 23 percent of the time, but those carrying the alarm-sounding birds noticed them 100 percent of the time.

The more oxpeckers that a rhino carried, the farther the distance of detection. Those carrying the birds were able to detect humans at an average distance of 61 meters — nearly four times farther than rhinos without oxpeckers.

Once a rhino heard the oxpecker alarm call, it nearly always re-oriented itself to face downwind. This is its vulnerable sensory blind spot and the direction from which humans favor hunting big game like rhino.

"These results suggest that oxpeckers are effective companions that enable black rhinos to better detect and evade encounters with humans," Plotz says.

He adds that oxpeckers may have evolved this cooperative behavior with rhinos as a way to protect their own valuable food source. The birds eat ticks and parasites found on their rhino host, but the rhinos have been increasingly driven to the brink of extinction by human overkill.

Ironically, oxpecker populations have also significantly declined in recent years and are even locally extinct in some areas of Africa. This study suggests reintroducing the bird into rhino populations could bolster conservation efforts of both species.

The study was published in *Current Biology*.

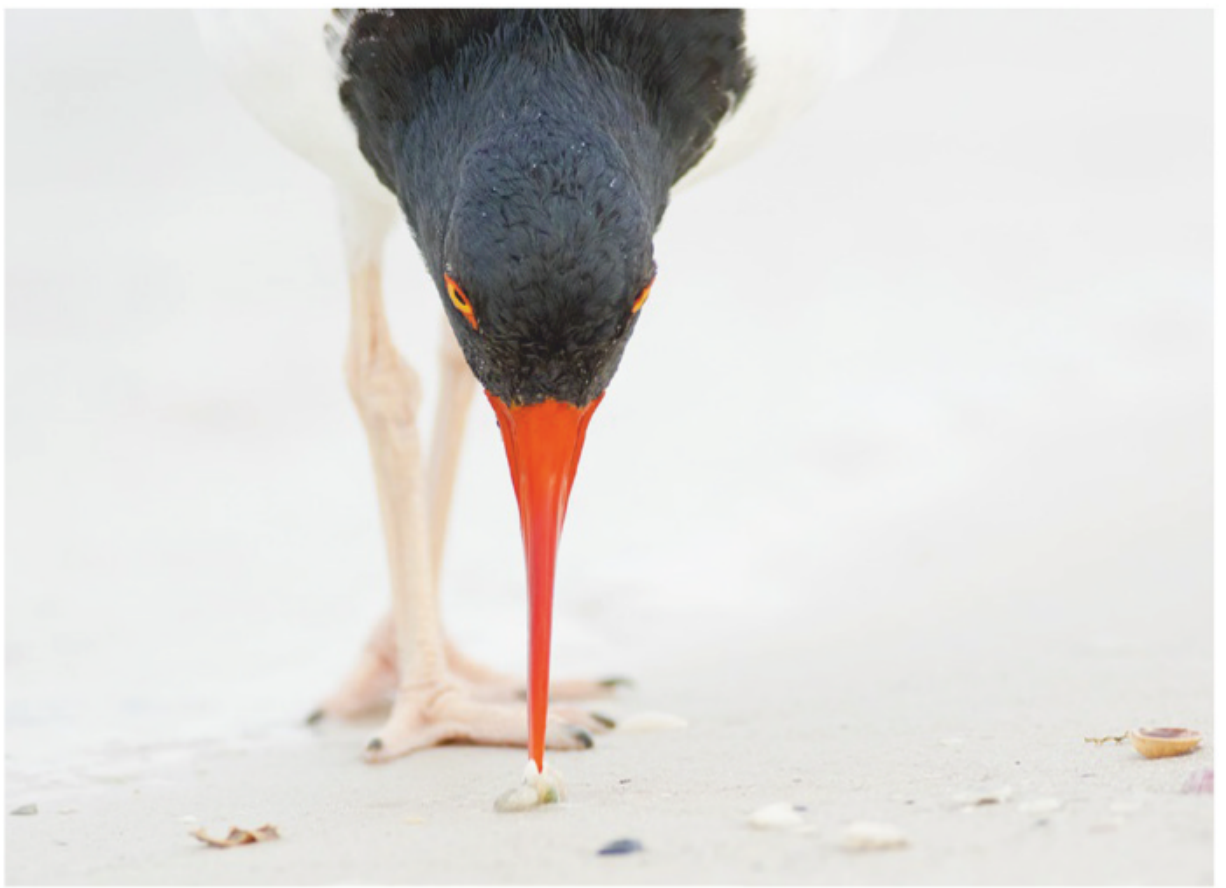
Rick Becker

CURLEW JOINS FLOCK OF LOST BIRDS

A 6-foot permanent sculpture of the Eskimo Curlew, a shorebird that is almost certainly extinct, was installed recently at Galveston Island State Park in Texas (pictured). Sculptor Todd McGrain created it as part of his Lost Bird Project. Previously, he created statues of the extinct Passenger Pigeon, Heath Hen, Carolina Parakeet, Labrador Duck, and Great Auk.

The curlew sculpture's installation follows McGrain's tradition of permanently placing his art near the last sighting of the bird. The last fully documented North American sighting of the Eskimo Curlew was in west Galveston in 1962.

In addition, an exhibit featuring all six Lost Bird sculptures is on view in the gardens at Galveston's Bryan Museum through March 2021.



UP CLOSE AND PERSONAL: Sit quietly and birds may eventually ignore you and approach closely, as did this American Oystercatcher photographed on a Florida beach.

Do no harm

An expert photographer's advice on the ethics of bird photography

Many birders now carry cameras on field trips in addition to — or sometimes instead of — binoculars and spotting scopes. As bird photography increases in popularity, it's more important than ever for photographers to consider our collective impact on the welfare of birds and to minimize disruption while pursuing our craft.

Capturing a close-up view of a wild bird going about its life certainly is a thrill, but achieving that with a wary, skittish subject involves more than using a long telephoto lens. Photographic lenses don't provide the extreme magnification of spotting scopes, and so photographers need to get physically closer to obtain a satisfactory subject size, either by approaching the bird or waiting for it to approach you. How do you do that safely and ethically?

THE LOW-DOWN ON STALKING

First, pick your location: Stalking birds is less disruptive where they are used to seeing people. But even with "tame" birds, closing the distance takes caution. Consider the birds' point of view: They view us as a threat, particularly when raising young. To appear less threatening, minimize your profile by getting down low, even crawling if necessary. Move slowly and quietly, taking an indirect path rather than straight toward the bird. Use existing cover (rocks in open areas or trees in the forest, for instance) to conceal your approach. Don't stare at the bird — that's predator behavior!

Watch for signs that your presence is creating anxiety. If the bird stops what it is doing, stands upright and stares at you, starts moving away, and/or gives alarm calls, stop. Remain still and let the bird relax before proceeding. Better yet, be satisfied with the subject size you have already. Either crop later or compose creatively by including the habitat. Once you're done, back away just as cautiously. Never flush a bird to get a flight shot — doing so wastes the bird's vital energy.

BE A BUMP ON A LOG

Far less intrusive than stalking is letting birds come to you. Act like part of the scenery, and birds may ignore you, going about their natural behavior, often coming surprisingly close. Find somewhere comfortable to sit or stand near where birds tend to gather, such as a source of food or nest material. Allow yourself plenty of time and keep still and quiet. Muted-color clothing or camouflage will help you blend in with the habitat. Support camera gear on a tripod at eye level to avoid needing to raise the camera up to your face, which may spook the bird.

USE A PHOTO BLIND

If you tend to fidget, you will disturb birds less by using a photography blind to conceal your human outline, especially for sensitive species or those not accustomed to seeing people. Choosing and using blinds will likely be the topic of a future column, but one important tip is to enter the blind before the bird arrives and remain inside until after it has departed to avoid frightening it away.

NEST PHOTOGRAPHY

Birds are at their most vulnerable when raising young, so photographers should be doubly cautious at these times. At roped-off tern and skimmer colonies on beaches or at wading bird rookeries, stay behind barriers or at posted minimum distances. Woodpeckers and cavity-nesting songbirds may be safely photographed from a distance, but open-cup nests hidden in shrubbery are best left alone. Never remove vegetation to get a better view: Doing so exposes vulnerable eggs and young to predation and the elements. Refrain from repeatedly visiting nests because you'll leave a scent trail, leading predators to a

MORE INFORMATION

Audubon's Guide to Ethical Bird Photography
www.audubon.org/get-outside/audubons-guide-ethical-bird-photography

North American Nature Photography Association Principles of Ethical Field Practices
www.nanpa.org/wp-content/uploads/Ethical-Field-Practices-Revised-3-2018.pdf

Flash Photography and the Visual System of Birds and Animals, by Dennis Olivero and Donald Cohen, Naturescapes, 2004
www.naturescapes.net/articles/health/flash-photography-and-the-visual-system-of-birds-and-animals/

FROM A ROOM WITH A VIEW: A photography blind is often needed to photograph wary species, such as this female Belted Kingfisher with her crayfish prey.

free lunch. Pay attention to distraction displays — evidence that you are too close to a nest and must move away.

ATTRACTING BIRDS FOR PHOTOGRAPHY

Enticing birds within camera range is commonly done using food. As before, birds' health and safety are paramount. Few people would argue against feeding backyard birds for photography (so long as feeders are kept clean) or spreading cracked corn to attract turkeys or quail. Don't feed bread to waterfowl though; studies show it damages their health.

Luring predatory birds for photography with live or dead bait is controversial. Should it be acceptable to stock ponds with live fish for kingfishers or Osprey? Provide dead fish to attract eagles or pelicans, or store-bought meat to entice hawks? There may be no clear-cut answers, but we should not condone practices that create dependency or through which birds learn to associate humans with food. This strongly applies to baiting wintering owls with live or fake mice, a practice now much frowned upon. Among many potential risks, baited owls may boldly approach people along roads, thereby getting perilously close to traffic or other hazards.

Also controversial is playing birds' songs or calls to bring them close, a technique that easily can be over-used by birders and photographers alike. Remember that the bird perceives the playback as an intruder. Its stress hormone levels rise, something that is physiologically costly, and by investigating, it expends precious energy needlessly. Have a heart and use playback sparingly — and not at all in the case of endangered species or near nests and obviously not where it is prohibited.

USING FLASH

Is electronic flash harmful to birds' health? Opinions vary, but it is thought that fill-flash (reduced-power flash used to supplement natural light) is not likely to harm birds' visual systems. Flash used when photographing nocturnal birds at night is likely to temporarily affect vision but not cause permanent damage. Safest is to err on the side of caution: Use natural light whenever possible, using flash only sparingly.

Finally, some things to reflect upon. Consider the challenges, both natural and human-made, that birds face throughout their lives in order to survive. Don't add to those challenges. No photo is worth causing harm to birds. Empathize with the bird: Know its life history and behavior, read its body language for signs of stress. By treating your subject with respect, you will be a responsible, ethical bird photographer who can rightly take pride in your work.

Marie Read is an award-winning bird photographer and author. Her photos and articles have appeared in *BirdWatching*, *Living Bird*, *Nature's Best*, and other magazines. Her latest book, *Mastering Bird Photography: The Art, Craft and Technique of Photographing Birds and Their Behavior* (Rocky Nook), was released in 2019.

Bird artist and birding-tour leader Catherine Hamilton birds with the new Victory SF 32 binocular from ZEISS.

Exceeding expectations

The new Victory SF 32 from ZEISS is a compact, lightweight premium binocular that offers an exceptionally wide field of view

High-quality optics are a must for Catherine Hamilton, a professional artist, bird-tour leader, and keynote and workshop presenter. She often spends full days in the field and requires top-end binoculars so she can see birds clearly and point them out to clients.

Catherine, whose bird art has been published in bird magazines, nature journals, and the authoritative 2013 book *The Warbler Guide*, has carried the ZEISS Victory SF 42 binocular for many years. Now, she's thrilled to add its smaller, lighter cousin, the Victory SF 32, to her repertoire.

"Like a lot of people, I had been anxiously awaiting the new ZEISS Victory SF 32s, and I am thrilled that they exceed my expectations," she says. "Lighter weight and compact size coupled with a wide field of view and premium optical quality enable top-notch and lightning-fast birding for those long days in the field."

Two models, 8x32 and 10x32, will be available later this summer. The 8x32 offers a field of view of 465 feet at 1,000 yards, which is about 42 feet wider than other competing 8x32 binoculars. The 10x32 presents a field

of view of 390 feet at 1,000 yards, which is about 30 feet wider than 10x32s from competing brands. This extended field of view provides a more relaxed viewing experience through the Victory SF 32 binocular.

Earlier this year, Catherine field tested the SF 32s in marshes and estuaries, along a coast for seabirds, and in riparian and woodland environments. "These might well be my new favorite binocular," she says. "Having that wide field of view gives you a little extra peripheral perception to pick up on small passerines in dense habitats, for example. For me, there was no learning curve or adjustment period with these bins; they were instantly a trusted partner in bird finding."

Catherine's SF 42 has been her go-to glass for a long time, "so I was uncertain that I ever needed anything else from a binocular. I could always use something that is more compact and lighter weight, but would the optics be good enough in a smaller binocular? It turns out, yes. Kudos to the designers of the lenses. To me it seems they have bent the laws of physics. These bins have the same back-weighted design that had proven so successful on the 42s for reducing arm and neck fatigue, the focusing is quick and crisp, and the lighter weight makes them so effortless on extended birding days."

Catherine predicts the new binocular will be quite popular among birders.

"I think the SF 32 is a perfect all-purpose top-end binocular for travel or for people who spend full days in the field. As a side bonus, its smaller size makes it suited for a wider range of hand and physical height sizes; everyone will appreciate its compactness and lighter weight, and it could be a true game changer for serious birders with smaller hands or who want to carry a premium binocular for extended hours without fatigue."

To learn more about the ZEISS Victory SF 32, visit zeiss.com/morediscoveries.

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ENTERTAINING: Male and female California Quail share a perch. The species occurs from British Columbia to Mexico's Baja Peninsula.

The quail connection

A mutual appreciation for California's state bird cements an important relationship

Aside from my wife (his daughter), a passion for college football, and a vast amount of mutual respect, my father-in-law, Bob Ellis, and I have little in common. He's a retired engineer, rancher, and agricultural consultant who considers a creaky gate latch a challenge to be addressed.

Me? I regard a malfunctioning gate as an irritation to be avoided by using another gate if a shot of WD-40 can't fix the problem.

He's an avowed Trumper, I'm a registered Democrat who votes environment first. But every evening on a recent trip to California, Bob and I find common ground in the chairs beside the pool and sip an excellent Central Coast Chardonnay while we watch the local California Quail come in to roost in "Mer," the Boone and Crocket-class climbing rose bush mantling the hot tub. Sometimes Linda and her mother, Annie, join us, but most nights it's only Bob and me.

The evening ritual antedates Linda's and my arrival in December, but as long as the birds keep coming, we'll keep being entertained. And the curious thing is, my father-in-law is not a birder. He and Annie like birds and maintain an array of feeders, but Bob doesn't plot his day around birds as I do, just his evenings.

Sometime around sunset, he announces, "Well, I'm going out for the quail;" then, gesturing toward the bar, where my pool-side-approved plastic wine glass is waiting, he ambles out to the pool. Still sharp eyed at 90, Bob is an active participant in our evening vigil, although he allows me to keep score as the birds rocket in as singles, pairs, and groups of five to 30.

We have no need for binoculars; the birds are so close, some might be batted out of the air. Indeed, one evening, a bird got confused and landed in the pool, to be fished out by Linda. Once ensconced in the rose bush, the flock lets out a

Tim Zurowski/Shutterstock

gabble of sounds almost loud enough to drown out the whistled dirge of White-crowned Sparrow and the rambling incantation of California Thrasher. The show goes on until last light, but we're typically back at the bar for a refill before the Barn Owls stir.

"How many tonight?" Linda and Annie will want to know. The answer ranges from 18 to 118. Most nights, the birds come in out of the orchard and directly over the pool. Sometimes the flock is more scattered, and birds arrive from multiple directions. There are nights, too, when the pattern is disrupted by the local Cooper's Hawk, whose interest in the birds is purely gastronomic. This is also why, most nights, the birds arrive in bursts of 10 to 30. There's safety in numbers. Hunters are challenged to pick a single bird out of the flock, and only once did we see the hawk actually capture a bird.

BIRDS THE SIZE OF GRAPEFRUITS

California Quail is the state bird of California. They like arid, brushy areas and typically roost in bushes or trees in flocks of 10 to 200. Bob and Annie's 5-acre property, bordered by vineyards and pasture, is perfect, as our peak count of 118 birds attests.

They're about the size of grapefruits. Fitted with scale-like underparts. Black-faced males sport a rakish forward-drooping plume that is, in fact, comprised of several feathers; females show a more abbreviated plume, and both sexes engage in a duetting song so tightly choreographed it sounds like a single vocalization. Ranging from southern British Columbia to Baja and east to northern Utah, California Quail hybridize with the similar Gambel's Quail where their ranges overlap.

This isn't the first time Bob and I have bonded over quail. Shortly after Linda and I were married, he and I spent a morning hunting quail on the property of a friend. Shooting .410s and walking birds up without a bird dog, it was pretty sporting.

Bob proved to be an exceptional wing shot. Me? I held my own. And it marks the only time in my life that I've hunted quail of any species. Bobwhite were never common where I grew up in North Jersey and were pretty much gone by the time I arrived in South Jersey to direct the Cape May Bird Observatory. Ruffed Grouse was the bird I burned powder on in my teens, when my reflexes were good and the birds common. Neither condition applies today.

> Every evening, Bob and I find common ground in the chairs beside the pool and sip an excellent Central Coast Chardonnay while we watch the local California Quail come in to roost.

I'm sure some readers are surprised to learn that I was once a hunter and am unabashedly open about this. Fact is, many ornithologists and not a few birders are also hunters. Indeed, John James Audubon was immensely proud of his hunting skill.

Several years ago, I was asked by the editor of a well-known shooting journal to write an article explaining how hunting had made me a better birder. With apologies, I said I could not write such an article. In my case, I explained, it was bird study that made me a better hunter — by keeping my detection skills honed throughout the year. (Since my stroke in 2013, I have not fired a gun of any sort.)

It's funny, though — as the quail come rocketing in, I sometimes catch myself judging the angle and speed, then speculating, based upon reflexes that exist now only in memory, what my chances of dropping the bird might have been. Mostly I miss. But if the light is good and the wine has worked its magic, I find my aim improves. And I try never to miss an opportunity to watch the quail come in with Linda's dad. After all, our common ground is cemented by a mutual appreciation for the birds that are as native to California as he is.

Pete Dunne is the author or co-author of many books about birds, including *Birds of Prey*, *Gulls Simplified*, *Prairie Spring*, *The Feather Quest*, and *Tales of a Low-Rent Birder*.

BIRDS, NOW MORE THAN EVER

During this time of extreme uncertainty, birds have the power to lift us up

By Kenn Kaufman

Daniel Friend/Shutterstock

RETURNING HOME: White Ibises fly to their evening roost at sunset in Florida's Everglades. In 2018, the species produced more than 100,000 nests in South Florida.

LONG-HAUL WADER: A Pectoral Sandpiper walks along a wetland in Ontario. The bird makes epic migrations from breeding areas in Siberia, Alaska, and northern Canada to South America and, in smaller numbers, the South Pacific.

AS a child, I regarded wild birds as the ultimate symbols of freedom. I wasn't allowed to cross the street, but these feathered free spirits could pick up and fly to anywhere on Earth; they could fly to heaven and back, it seemed, soaring with the angels. Chafing against restrictions, I dreamed of the absolute liberty of flying away like a wild bird, never to return.

Once I grew up and started reading ornithology texts, I learned that that complete freedom was an illusion. Every bird species was bound by instincts, tied into predictable patterns of occurrence. In theory, this chickadee could leave its flock, that cardinal could leave its territory and just start flying in a new direction. In practice, they almost certainly would do nothing of the kind. Powerful instincts held every bird in place.

Later, traveling around the world to observe nature, I came to a startling realization: *Free as a bird? We humans are freer than birds. We're not so tied to instinct; we can decide to go wherever we choose.*

The irony of that claim struck me this spring. As the novel coronavirus that causes COVID-19 swept the planet, many governments had asked or ordered their citizens to stay home to slow the spread of the virus. For the first time in modern history, more than one-third of the world's human population was under some kind of lockdown. Any sense of unlimited freedom was suddenly gone.

As I write this in late April, working from home, I've hardly left my yard in five weeks. But I do have a yard, at least. Some of my friends are less fortunate, living in city apartments where it's more of a challenge to get outdoors. All of us, though, are watching whatever outdoors space we have — a small yard, a park, even a view through a window — to see what birds the season will bring.

FotoRequest/Shutterstock

The transformation of our lives occurred with stunning speed. As recently as late February, not one death from the coronavirus had been reported in the U.S., and nothing about daily life had changed. That was just two months ago. Now the virus is known to have killed 55,000 people in this country, more than 26 million are newly unemployed, and huge swaths of the nation are essentially shut down.

How much more will things have changed by the time this magazine reaches you, two months from now? It's unnerving even to speculate. But some impacts on birdwatching are apparent already.

EVENTS CANCELED, SCIENCE CURTAILED

Mandates against gatherings of people utterly changed the landscape of late spring and early summer birding. Practically every bird festival was canceled, from local celebrations to massive events like the Biggest Week in American Birding. Also canceled were thousands of bird club meetings and field trips, during what normally would be the busiest season. The World Series of Birding was set to continue in May but with drastic changes: Instead of coming to New Jersey, participants all over the eastern states would go birding within 10 miles of their homes. Looking farther out, decisions on some summer events were still pending, with others canceled already. The popular Festival of the Cranes in New Mexico, scheduled for November, was canceled in early April, as organizers took a clear-eyed look at how this fall season is likely to unfold.

Scientific research on wild birds has also taken a hit. Although some field projects can continue, a surprising number of these involve teams of people working in close quarters. Others present obstacles that aren't immediately obvious. One Canadian biologist told me he had canceled his whole summer field season in the Arctic because of the chance that he

STRIKING: The male Varied Bunting is reddish purple with a blue crown and rump and a red nape while the female is brown. It is primarily a Mexican species with a breeding range that extends into the southwestern United States.

RachelKolokoffHopper/Shutterstock

ON THE NEST: A female Anna's Hummingbird sits in her nest, which measures no more than 1.7 inches in diameter. The western species begins its breeding season at the onset of winter rains in November or December. Nesting concludes by May or early June, and the birds molt during the summer months.

might unwittingly carry the coronavirus to remote villages. One big event for sharing of science, too, is off the table. The North American Ornithological Conference, held once every four years, had been scheduled for this August in Puerto Rico. It has been shifted into an online event.

Birding tourism has come to almost a complete standstill, at least temporarily. This is a disappointment for people having to miss highly anticipated trips, but it's a serious problem for professional guides who rely on income from tours. It's especially dire for local guides living in developing countries. The current lack of travel also could cause long-term damage to parks and nature reserves in tropical nations, places that are sometimes given protection mainly because they bring in tourism dollars to local governments. If birders are absent for too long, the land might be turned to other uses.

The specific impacts to birding, ornithology, and bird conservation in the current pandemic might seem small compared to the larger issues affecting humans all over the globe. But for those of us who care deeply about the natural world, they add to the sense of calamity. When the stress of this time starts to feel overwhelming, I go to the window or go outdoors and try to focus my mind by watching birds.

What will be happening two months from now? In the human world, in terms of impacts on our health, economy, and national character, I have no idea. But I know what will be happening in the world of birds.

WELCOMING NEW BROODS

In late June and early July, across most of North America, the breeding season for most birds will be a little past peak. The dawn chorus of birdsong will be a little less robust than the joyous jumble of early June, but plenty of voices will still greet the sunrise. Many songbirds will be at the point of having raised a brood; as those youngsters leave their nests and start following their parents around, their insistent begging calls will be a constant background sound.

Recently independent young birds — of all kinds, from hawks to herons to hummingbirds — will be wandering, trying to figure things out. Colonies of Purple Martins will vibrate with even more bustle and sound as young ones begin to fledge and test their wings around the colony site. Gawky young robins, splay-legged and hesitant, will hop across lawns or peer in windows, looking perpetually lost.

Meanwhile, some hard-working pairs of adult birds will be well along in raising their second broods or starting over after a failed first attempt. They'll be carrying twigs or grass into thickets or tree cavities or birdhouses, or settling in to incubate, or gathering grubs to stuff into gaping mouths of nestlings. Some typically

sen yang/Shutterstock

WHEN THE STRESS OF THIS TIME STARTS TO FEEL OVERWHELMING, I GO TO THE WINDOW OR GO OUTDOORS AND TRY TO FOCUS MY MIND BY WATCHING BIRDS.

late-nesting species, like Cedar Waxwing or American Goldfinch, may just be getting started on their first broods. In desert grasslands of southern Arizona, some species, like Varied Bunting and Botteri's Sparrow, will be waiting for summer rains to begin; their nesting season may not peak until August.

In the midst of all this activity, other birds already will be in early stages of fall migration. Some western hummingbirds will be southbound before the end of June. So will some tundra-breeding shorebirds: In the brief, intense summer of the high Arctic, one member of a sandpiper pair often departs soon after the eggs hatch, migrating south and leaving its mate to tend the fast-growing young. Before the middle of July, throngs of adult shorebirds from the Arctic will trot across tidal flats and pond edges in the lower 48 states. Juveniles will follow a few weeks later.

Most birds don't migrate so early, but many will change their behavior. They may wander into different habitats. Forest birds, for example, may show up in overgrown fields or backyards. Some swallows will begin to gather in large flocks and roam the countryside. Male ducks, having abdicated all responsibility for tending to eggs and young, will start to become more secretive, moving to secluded marshes and starting to molt into drab "eclipse" plumage.

Paul Reeves Photography/Shutterstock

KEEPING WATCH: A male Purple Martin perches on a martin house in a Toronto park. The species relies almost entirely on human-made nest houses in eastern North America.

And all these doings in the avian world will be proceeding just as they should, just as they always do. I can say that with absolute confidence. Extremes of weather might shift schedules by a few days, but beyond that, the birds will faithfully follow nature's calendar, as they do every year. Somehow, just knowing that gives me an anchor in reality that is tremendously reassuring.

What will be happening in the human world? That is far less certain. Maybe we'll be cautiously resuming many elements of normal life. Maybe extreme lockdowns will still be in place. More likely we'll see a patchwork of local approaches, as we stumble toward solutions.

But wherever we are, birds will still have the power to lift us up. Even if we're just peering out the window at a patch of sky, we'll be listening for that burst of song, watching for that flash of color. Those winged wonders are still out there, living their lives as they should, giving hope that each of us, once again, can be as free as a bird after all.

Kenn Kaufman is a lifelong naturalist and one of the world's best-known bird experts. He writes "ID Tips" in each issue of BirdWatching*, and he is the author or co-author of eight books in the Kaufman Field Guides series, which includes volumes on birds, butterflies, mammals, and insects. He is also the author of the books* Kingbird Highway, Flights Against the Sunset, A Season on the Wind, *and* Lives of North American Birds. *The American Birding Association has honored Kaufman twice: in 1992 with the Ludlow Griscom Award for outstanding contributions in regional ornithology and in 2008 with the Roger Tory Peterson Award for promoting the cause of birding.*

UNMISTAKABLE: A Carolina Wren belts out its *tea-kettle, tea-kettle, tea-kettle* song. Only male Carolinas sing. They use songs to defend a year-round territory and to attract mates.

LorraineHudgins/Shutterstock

A year with Carolina Wrens

Through the seasons with the hardy, honey-voiced songbirds of the East

By Jo Ann Abell

Last winter, a bright spot in my day was watching a mated pair of Carolina Wrens fly in at dusk to roost on our porch. They had discovered the rusty can I hung the summer before to hold citronella candles, and after adding a bed of dried leaf skeletons, they moved in. Each evening just before dark, the male would appear. Except on the coldest nights, he sang a few bars of his *chirily-chirily-chirily* song before zipping into the can, followed by his mate.

It was comforting to know that something as simple as providing the pair a safe, dry place to spend the night helped them survive the brutally cold nights we can get in the Blue Ridge Mountains of southwest Virginia.

Carolina Wrens form lifelong pair bonds and stay together all year, defending a home territory of 1 to 15 acres, mainly against other wrens. In urban areas, their territory can be as small as a backyard. These

WIDESPREAD: Carolina Wren is most abundant in the Carolinas, Louisiana, Florida, Georgia, and Alabama. Certain populations in Mexico and Central America are known as White-browed Wren.

adaptable birds are common in open woods, overgrown farmland, and brushy suburban backyards in the eastern half of the United States, extreme southern Ontario, and northeastern Mexico, where they busily explore the underbrush and leaf litter for insects. Owing to their small size and rounded wings, wrens are quite agile, darting from place to place with the quickness of a mouse. Primarily ground foragers, they use their curved bills to lift up leaf litter and snatch prey.

You'll know if you have wrens around. They're usually heard before they are seen and are not afraid to make their presence known. Their boisterous song rings out at any time of the day. Perhaps driven by curiosity, they seem attracted to human activity. Whether we are working in the garden, tending the honeybees, or walking the dogs, the wrens will come for a closer look as long as we pretend not to notice them, but give these shy birds so much as a glance, and they dive into the nearest cover.

Carolina Wrens may "duet" at any season; the female engages in chattering while her mate sings his heart out. His fearlessness in erupting into song from an exposed, elevated perch, combined with his unmistakable *tea-kettle, tea-kettle, tea-kettle* song, makes him easy to spot and identify. As if he can't hold it in a moment longer, he energetically belts out his bubbly song. With a repertoire of 30 or so distinct songs, some appropriated from other species, males sing at different times of the year to attract a mate, strengthen the pair bond, and warn trespassers to stay out of their territory.

Carolina Wrens tend to use the same territory year after year, so it's a pretty safe bet that the pair that roosted on our porch the previous winter are the same birds that have raised their young around our house for the past three years.

By the time the warblers, Red-winged Blackbirds, and Ruby-throated Hummingbirds return from their wintering grounds, the resident wrens are already choosing a nest site and building a nest. They tend to use the same territory year after year, so it's a pretty safe bet that the pair that roosted on our porch the previous winter are the same birds that have raised their young around our house for the past three years.

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SPRING: NESTING ON OUR DOORSTEP

In the wild, Carolina Wrens nest in natural cavities like old woodpecker holes, the roots of upturned trees, or rotted tree stumps. But many have adopted a *mi casa es su casa* policy when it comes to nesting, choosing to build their nests close to human activity. Favorite places might be porch railings or windowsills, under shed overhangs, or in hanging planters, flowerpots, mailboxes, and the pockets of hanging coats. It's possible they choose to raise their young in human-dominated structures because fewer predators hang out near people.

About the only predators that bother the wrens that nest around our house are black rat snakes. Although wrens are aggressive nest defenders, their loud squawking and diving at a snake that crawled onto the porch and was threatening their five nestlings did not deter the reptile from its mission. Snakes are beneficial because they eat rats and mice, but we relocate the ones that turn up on the porch or in the chicken coop (they eat the eggs). This one got a free ride into the woods behind our house.

This spring, the wrens started a nest in a 15-inch length of PVC pipe that my husband had attached to the electric fence around our bee yard to hold a pollen substitute until natural pollen became available. Ignoring the bees, the pair began stuffing leaves, moss, and small stems into the pipe, all gathered from right around the nest site. After a couple of hours, the male's zeal seemed to flag, at which point he took frequent breaks to sing from a nearby limb, as if cheering his mate on.

A little later, trouble showed up in the form of a male House Wren, a notorious nest destroyer. In a matter of minutes, the contents of the wren nest lay strewn on the ground. A second attempt by the pair met the same fate. However, the third time the House Wren showed up, the male Carolina stood his ground, and there was a skirmish.

As if suddenly possessed, he repeatedly dove at and pursued his rival, issuing *scat* notes, until the interloper gave up on its mission and flew off. With that matter taken care of, the pair finished the nest, to which the female added a lining of dried grass, leaf skeletons, and chicken feathers. The nest was complete and ready for eggs, and unless something else went wrong, we would get to watch wrens fledge around our house for the fourth consecutive year.

About the time the female laid her eggs, we got a chilly spell, and she had to stay on the nest to keep the eggs warm. Her dutiful mate brought her food several times throughout the day. Once the weather warmed, she only left the nest long enough

BEAUTIFUL EGGS: Carolina Wrens lay 3-7 rufous-spotted eggs in open-cup nests in cavities such as trees, stumps, flowerpots, mailboxes, old boots, and various other locations.

Liz Weber/Shutterstock

DINNER TIME: A wren nabs a meal. The species eats a variety of insects, including caterpillars, beetles, grasshoppers, and ants, as well as spiders and seeds from poison ivy, sumac, and other plants.

to feed herself while her mate stayed close by, guarding his family and engaging in frequent outbursts of song. After the eggs hatched, the pair spent their entire day fetching food for their fast-growing brood.

SUMMER FLEDGLINGS

To provide the high-protein diet needed to nourish their young, the wrens tirelessly comb the yard, fields, and garden beds for insects. We only mow a small area around the house, leaving the fields to grow up to provide food and cover for wildlife. The abundant wildflowers, grasses, and shrubs lure in a cornucopia of insects. If you're a gardener, one of the great things about having nesting wrens is the joy of watching them bring in a steady stream of garden pests to feed their young. We sure won't miss the caterpillars, beetles, grasshoppers, snails, leafhoppers, and moths that round out the wren family's high-protein menu.

Baby wrens develop at an incredible rate and are capable of flying in 12 to 14 days. When it came time for the nestlings to fledge, mama stationed herself on a nearby limb and repeatedly issued a sharp, plaintive note to persuade them to leave the nest. The male sang with great fervor to help lure the nestlings out. Two nestlings came out to the edge of the tube but quickly retreated back inside. Dusk arrived, and all of the young were still in the nest. Early the following morning, with the encouragement of their parents, the chicks finally got up the nerve to leave. One by one, five chicks clumsily fluttered from the nest. Knowing the fledglings were vulnerable on the ground, the parents called frantically, and there was much confusion until all five were safely gathered in the trees.

The family remained in the tree cover near the nest for a couple of days, giving me the opportunity to watch the young chase each other around the yard in between learning basic survival skills. In a few weeks, the young birds would be ready to strike out on their own to find their own territory and be ready to breed and raise a family the following spring. In the northern parts of their range, wrens might only raise two broods, while here in Virginia, with the longer breeding season, they often raise three.

FALL TEAMWORK

At the end of the breeding season, many non-migratory birds, including jays, crows, nuthatches, and bluebirds, rejoin their flock mates as a winter survival tactic. By banding together, the birds have more eyes to find food and spot predators, which helps the entire flock. Flocking birds also take advantage of roosting together at night for warmth. Every winter, a half dozen or so bluebirds fly in at dusk and huddle together in a corner eave of

Danita Delmont/Shutterstock

Unusual winter roosts: hornet nests

It's well-known that warm winters spur Carolina Wrens to extend their breeding range northward; however, when colder years arrive, many birds are unable to survive, and populations plummet. On the whole, however, populations have been pushing slowly northward and westward over the past century with the rising average winter temperatures. The species has benefited from forest fragmentation in some areas and from reforestation in others — both processes create the tangled, shrubby habitat that the birds use.

In late 2017, father-and-son naturalists Doug and Todd Elliott of North Carolina reported on a little-known behavior that may help the wrens survive cold winters. They reported in *The Chat,* the official publication of the Carolina Bird Club, their observations of Carolina Wrens roosting inside hornet nests on winter nights (long after the year's hornets had died).

"Every year for the last ten years, we have collected one or more large Bald-faced Hornet nests and hung them under the roof of a porch," the Elliotts wrote. "We have yet to observe a winter during which one or more wrens have not roosted in the hornet nest. Although this roosting behavior appears to be common, at least in our region, it has seldom been reported in the literature."

They noted two descriptions of the behavior published in 1932 in *The Auk* but say otherwise it seems to have been unnoticed by researchers. The Elliotts contend the behavior "may play a vital role in the bird's ability to overwinter. Further research is needed to understand how widespread and important this roosting behavior is among Carolina Wrens and other related bird species."

our porch, using each other's body heat to survive the cold nights.

Rather than flocking, mated Carolina Wrens stay together year-round in their home territory searching for food, aggressively chasing off intruders, and raising their young. On my walks around the farm, I frequently hear the male chirping while the female squawks, rebuking me for disturbing them. The wren pair are totally dependent on each other for companionship and survival. Working as a team throughout their lives, they develop the exceptionally strong pair bonds they will need to get through the long, cold months of winter.

Unlike many other birds, they do not cache food. To maximize their foraging success, they eat a broad diet, including spiders, moths, and insects, as well as lizards, tree frogs, snails, and small snakes. The remaining part of their diet is vegetable matter such as seeds from bayberry, sweet gum, poison ivy, sumac, pine, and weeds, and they eat some fruits. Their varied diet makes it easier for the wrens to find food throughout the year. When wild food sources become scarce, they will come to feeding stations, especially if the feeders are placed near brush piles, thickets, or other cover.

WINTER SURVIVORS

Winter can be a dangerous time for Carolina Wrens. Belonging to a genus of tropical origin, they have a limited capacity to deal with cold weather and snow, and severe winters can take a toll on northern populations. Primarily ground feeders, they may struggle when heavy snow and ice cover their foraging areas, especially in the northern reaches of their range. Unmated or young birds that move farther north to find new territory often fall victim to cold winters. Those lucky enough to make it through long northern winters generally have access to bird feeders and sheltered places to roost. During very cold winters, Carolina Wrens will take shelter in nest or roost boxes.

Unlike flocking birds that roost together for warmth at night, the wren pair rely solely on each other to maintain body heat, and the loss of a roosting partner during the winter can spell disaster for the survivor. A severe cold snap at the end of December last year gave us concern for the wren pair roosting on our porch, but our concern was unfounded. They came through just fine.

It's important to keep the feeders filled in winter to provide wrens and other ground foragers with the fuel needed to produce body heat. And if you start feeding them, don't stop until spring! This can be a life saver in extreme cold or heavy snows. Wrens prefer peanuts from tube feeders and sunflower seed from platform feeders, and they'll regularly visit your suet feeder. They will also roost in nest boxes in winter, preferring the type with a slotted entrance over those with the traditional entrance hole.

Carolina Wrens are a favorite of backyard birders for their fidelity to their home territory, ebullient year-round song, boundless energy, and curiosity about everything going on around them. We keep the feeders stocked in winter and hope the handsome, honey-voiced birds continue to raise their young here, ensuring a yard full of music throughout the year.

Jo Ann Abell is a writer specializing in stories about birds and nature. She wrote about birds that nest near human structures in our July/August 2018 issue and about Belted Kingfisher in our September/October 2019 issue. She has also written for Bird Watcher's Digest *and* Virginia Wildlife.

SLIPPING OVER TO THE DARK SIDE

How a lifelong birder discovered the joys and challenges of dragonflies and damselflies

Story and photos by Jim Burns

Komleva/Shutterstock

IT was with a knowing smile that I read Brian Magnier's entertaining article, "A Birder Discovers Butterflies," in the May/June 2019 issue of *BirdWatching* because a few summers ago, I had traveled down a parallel path, only to arrive at a very different and unforeseen destination — odonata, the insect order comprising dragonflies and damselflies.

WIDESPREAD: Turquoise eyes are notable on the male Shadow Darner. The species is found along lakes, ponds, and streams across most of the United States and Canada.

SOUTHWESTERN SPECIALTY: The Tarascan Dancer is a damselfly found along riverbanks and streams from southeastern Arizona to Oaxaca, Mexico. The male, shown here, is bright blue and black with dark blue eyes. Males tend to perch on woody vegetation that hangs over pools.

I have been a lifelong adult birder, perhaps the more passionate because I had *not* been exposed to the wonder of birds as a child. For 40 years, I've relished the intellectual stimulation of studying birds, the physical activity of searching for them, and the adrenaline surge of actually finding new ones. Like Brian, I had covered most of North America, and I had even made a few forays out of the country, but I, too, missed the thrill of a potential lifer around any turn in the path. And, tired of the often-competitive aspects of listing, I had quit chasing rarities and was concentrating on bird photography.

One August morning, I was set up, telephoto lens on tripod, watching a Common Black Hawk nest, waiting for the parents to return with a frog or crayfish for two half-grown nestlings. Out of the corner of my eye, I noticed movement ahead on the path along the creek. I was a little bored, so I swung the lens downward, refocused closer, right at the minimum distance of the lens, and took a couple perfunctory frames of a large, wine-colored dragonfly that had landed on a weed stalk.

Always excited by the occasional glimpse of wild mammals, only casually attuned yet to the beauty of butterflies, I hadn't so much as glanced at a dragonfly since high school biology class. Fifty years and counting at that time. You've probably noticed dragonflies are smaller and faster than birds, mammals, and butterflies. That's my only excuse. Magnifying the image on the back of the camera, I saw a stunning and intriguing creature for which I wanted a label…and more information and knowledge.

When I returned home that evening, I sent the image to a good birding friend who had begun dragonflying several years previously. He identified it as a male Roseate Skimmer, warned me I was starting down a slippery slope, and recommended I get Dennis Paulson's guide, *Dragonflies and Damselflies of the West*. Perusing it upon its arrival, I was blown away by the detail, colors, and patterns of the tiny odonate packages. I immediately ordered Paulson's eastern book, too. I've come to refer to the combined set as "The Bible." I was headed, irrevocably, over to the "dark side."

More on that later. Although I'm now back into photographing birds whenever I encounter unique plumages or unusual behaviors, and in winter, of course (when odes aren't flying), I spent the two ensuing summers hardly looking at birds, pretty much observing only dragonflies with binoculars and camera.

About 6,000 species of odonates exist worldwide, and 450, give or take, can be found in the United States and Canada, climate change pushing the possibilities higher as Latin American dragonflies find their way to Florida, Texas, and other border states. Similarities and differences exist between birding and odeing, but one

THREE STUNNERS: Shown here are a male Roseate Skimmer (top left), a male Two-striped Forceptail (top right), and a female River Jewelwing (lower left). The skimmer is common and widespread across the southern states south to Costa Rica and Cuba. The forceptail occurs in the southeastern states, from Texas to Virginia. And the jewelwing is a damselfly that is found along streams in southern Canada and across the northern states.

of my first impressions has held true over the intervening years — dragonflies are harder than birds to find (smaller and faster, remember) but easier to photograph (they'll sit longer; they can't hear, so noise will not spook them; and they often return to the same perch).

SLOWER SEARCH METHODS

If 700 is the Holy Grail for birders who keep lists, 400 would be the comp for oders. For many of the challenges dragonflies present, there seem to be ameliorating factors, but birders getting into dragons will have one major hurdle to clear. Most find it difficult to bird and ode at the same time or on the same field trip. It seems to be a question of focus, both mental and visual. Looking for odonates requires much slower, more deliberate search methods lest tiny movements against more mottled backgrounds be missed, and ode seekers must learn to redirect their search from eye level, middle distance, and up to eye level, in close, and down. And yes, close-focus binoculars are highly recommended for positive identification purposes.

Odonate real estate, just like birding, is habitat, habitat, habitat. Dragons and damsels need water and food. Their larvae undergo several molts (average is perhaps a dozen) that, depending on latitude, may take as little as a month or up to several years, as they feed under the water, then emerge from the water, mate, and deposit their eggs back into the water. Food is critical in the adult stage, their flight season when you actually see them, because they are then near the end of their life cycle and have only a few days, perhaps up to a few months, to get the job of mating done. They are voracious predators, constantly feeding and on anything smaller than themselves, particularly flies and mosquitos, and they will take butterflies and other odonates, including those of their own species!

Birds are all around us. Dragonflies, not so much. Birds are migratory, different suites of species in a given place at different times of the year. Odonates compress and fragment those calendar paradigms. There are few, if any, in winter; their flight seasons are often very short; and some are highly localized, present at one boat ramp but absent at the next one half a mile down the river. Only a handful are considered migratory, a term that, in their case, applies to generations rather than individuals. So,

RESOURCES FOR ODONATE SEEKERS

BOOKS

- *Dragonflies and Damselflies of the West* and its companion volume for the east, by Dennis Paulson, published in 2009 and 2012. They provide a thorough discussion of identification features, habitat, flight season, and distribution of every North American species.
- *Dragonflies and Damselflies: A Natural History*, by Dennis Paulson, 2019. Paulson's latest book isn't a field guide but a lavishly illustrated introduction to the world's dragonflies and damselflies.
- *A Field Guide to the Damselflies & Dragonflies of Arizona and Sonora*, by Rich Bailowitz, Doug Danforth, and Sandy Upson, 2015.
- *Dragonflies of California and the Greater Southwest: A Beginner's Guide*, by Kathy Biggs, 2019, e-book.
- *Dragonflies of Texas* by John Abbott, 2015.

WEBSITES

- Dragonfly Society of the Americas. News, notes, events, publications, and membership info at www.dragonflysocietyamericas.org
- Odonata Central. Comparable to eBird. Members of the DSA are encouraged to record their own sightings by county with dates, photographs, and map coordinates. www.odonatacentral.org

DRAGONFLY PHOTOGRAPHERS

- Jim Burns, www.jimburnsphotos.com/pages/odonata.html
- Pierre Deviche, www.azdragonfly.org
- Terry Hibbitts, www.thehibbitts.net/terry/Dragonflies&Damselflies/Dragonflies&Damselflies.htm
- Troy Hibbitts, www.thehibbitts.net/troy/photo/odonata.htm
- Greg Lasley, www.greglasley.com/dragonnoramerix.html

yes, they're harder to find than birds.

There are positives to being an oder, though. You don't have to get up early because sunshine to warm up the dragons' flight muscles is a higher priority than even water and food, and, although one of the joys cited by many dragonflyers is splashing down a creek in old tennis shoes, you don't have to get wet. Many species feed mostly over meadows, along forest trails, and on streamside vegetation. And there's no reason to endure cold weather to look for them. Odes don't do winter or cold.

For birders who like ID challenges, there is a family of damsels called dancers comprised of 33 species, most of the males blue, the females blueish or brown, all about 1.2 inches long. Did I mention close-focus binoculars? For birders who like to travel, you can aspire to search for an eye-catching family of dragons called clubtails comprised of 100 species, from the two-striped forceptail in Florida to the grappletail in the Pacific Northwest, most of them 2 to 3 inches in length with spectacular appendages at the ends of their abdomen. One clubtail species has been found *only* in five counties in Tennessee. Did I mention highly localized?

Among my personal favorites are the darners, large, showy dragons that fly continuously as they prowl for flying insects; the emeralds, so named for the glowing green eyes of the adult males; and the snaketails, uncommon residents of pristine, rocky wilderness streams loved for their habitat and the ethereal green color of their thoraxes. Although not well understood or appreciated by the uninitiated, odonates, like birds, come in an amazing variety of colors, shapes, and sizes, and, like birds, they rock some dramatic physical features evolved for their unique lifestyle.

Which brings us to that "dark side" reference. Up close and personal, through a macro camera lens or actually in hand, the "beauty" of odonates can best be modified with the adjective "gothic." Their most prominent feature is the huge, compound eyes, which in some species wrap around the entire head and provide 360-degree vision, the best in the insect world. At the other end, at the tip of the male abdomen, is a set of appendages called claspers, with which he grabs a female in flight to mate, attaching the claspers to the back of her head to secure her. These appendages come in various forms, some resembling medieval torture devices (remember the species called forceptails?).

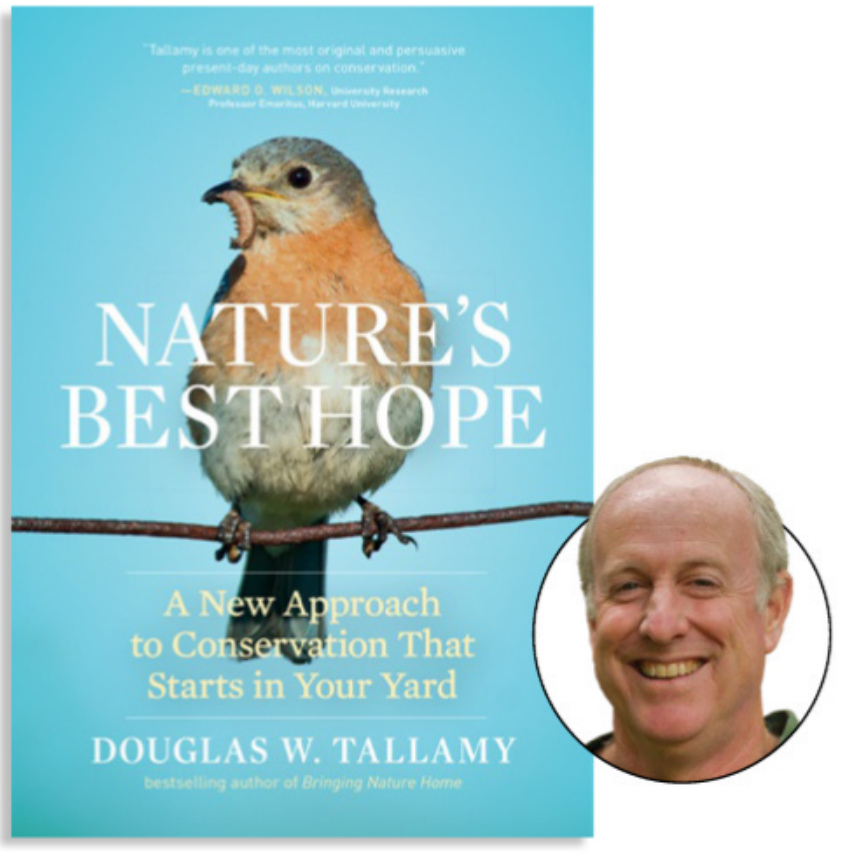
If you're a longtime birder and "kicks just keep gettin' harder to find," or if you simply want to broaden/deepen your love affair with nature in all its beauty and complexity, head for water, narrow your focus, and discover a fascinating world that you've probably been overlooking. It's much closer than you realize, and the slide down into the dark side will be a wonderful outdoor adventure.

Jim Burns is an outdoor writer and photographer and the author of five books illustrated with his photos. In past issues of BirdWatching*, he has written about birding hotspots, a close encounter with an Elegant Trogon, Costa Rica's toucans and barbets, and Greater Roadrunners. You can view more of his work at www.jimburnsphotos.com.*

Nature's bird feeders

To create productive landscapes for birds, grow native plants and trees that provide the largest number of edible insects

By Douglas W. Tallamy



In the introduction to his new book, *Nature's Best Hope,* Douglas W. Tallamy, a professor of entomology and wildlife ecology, says that curing what ails our environment "will require small efforts by many people but that will deliver enormous physical, psychological, and environmental benefits to us all." The book, as its subtitle says, offers "a new approach to conservation that starts in your yard." Essentially, Tallamy lays out a vision for a grassroots method for conservation — one that is practical, easy, and effective. The text on the following pages — an excerpt from chapter 8, "Restoring Insects, the Little Things that Run the World" — dives into the details of producing caterpillars, critical food for nesting birds, and why oak trees are important to North American landscapes. — *the editor*

Illustration by Olga Korneeva/Shutterstock

IT is clear that if we want to landscape a yard to accommodate as many caterpillars as possible, we need to use plants that serve as hosts for the most caterpillar species. But which plants are those? Assembling this information is not a trivial task. There are some 2,137 native plant genera in the lower 48 states, and most of them contain species that serve as host plants for one or more species of caterpillars. Records of these host associations have been made over the past century by naturalists, ecologists, and particularly by Lepidoptera taxonomists, and these are scattered in their writings throughout thousands of papers and books. Needless to say, finding and categorizing this information requires a combination of old-fashioned library work plus the handy search tools of the digital age.

But that's just the beginning. All of the information in these records has to be regionalized. A caterpillar species that eats persimmons in Union County, New Jersey, for example, may not occur in St. Louis County, Missouri, even though persimmons grow in that Midwestern county. We need to create a match between the plants and caterpillars that occur in each county of each state, which is another monumental task of data manipulation, with 3,007 counties in the conterminous United States. Fortunately, my steadfast research assistant, Kimberley Shropshire, who has helped me with all aspects of my research since 1992, was up to this task. With financial support from the U.S. Forest Service, she created a mammoth database in a little more than a year, which has become the basis of a search tool developed by the National Wildlife Federation, the Native Plant Finder (look for it at www.nwf.org/NativePlantFinder). She has ranked plant genera that occur in every county of the United States in terms of their ability to host caterpillars. Now, simply by entering your postal code, you can find out which woody and herbaceous plant genera native to your area are best at serving as host plants for caterpillars. Audubon has created a similar website, Plants for Birds (at www.audubon.org/plantsforbirds), based on her work. These two sites have removed one of the biggest obstacles to

MUST LOVE BUGS: It is hard to imagine how many insects are required to support thriving populations of the cardinals, bluebirds, and other birds that breed in our yards every year.

Photos courtesy Timber Press

DON'T TOUCH: The spun glass slug caterpillar is one of the 557 species of caterpillars in the Mid-Atlantic states that develop successfully on oaks.

homeowner restorations: we no longer have to wonder what plants we should add to our landscapes.

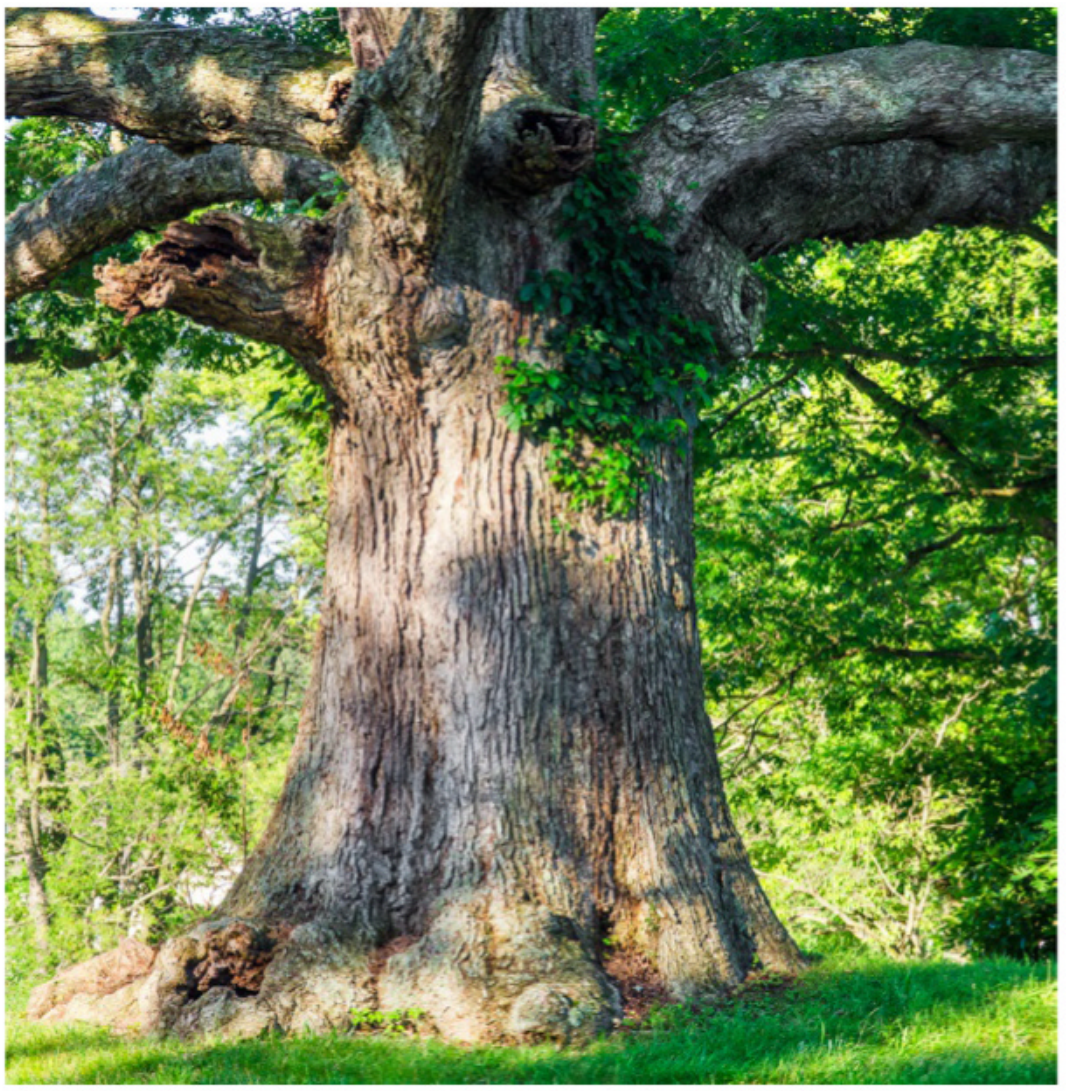
KEYSTONE PLANTS

In addition to providing a valuable resource for people nationwide who are interested in raising the carrying capacity of their property, Shropshire's work revealed a striking pattern: wherever one looks — be it in north, south, east, or west, or the plains, deserts, forests, or mountains — just a few plant genera are providing sustenance for most of the *Lepidoptera* so important to our food webs. We knew from our previous work in the Mid-Atlantic states that not only were native plants far superior to introduced species in their ability to sustain caterpillars, but native plants themselves varied by orders of magnitude in their ability to host caterpillars. We know that some genera, such as *Quercus* (oak), *Prunus* (cherry), and *Salix* (willow), host hundreds of caterpillar species, while for others, such as *Cladrastis* (yellowwood) and *Empetrum* (crowberry), there are no records at all of caterpillars using them. This is interesting in itself, but when Shropshire assembled data for each county, we saw that this pattern held everywhere and we could quantify it: wherever we looked, about 5 percent of the local plant genera hosted 70 to 75 percent of the local Lepidoptera species!

I refer to these hyperproductive plants as keystone plants, because they so closely fit the meaning of Robert Paine's classical terminology. While studying predator-prey interactions in West Coast tidal pools, Paine found that keystone species had a disproportionately large effect on the abundance and diversity of other species in an ecosystem. He likened such species to keystones, because, like the center stone in an ancient Roman arch supports the other stones that make up the arch, keystone species support other species in their ecosystem and help them coexist. Remove the keystone and the arch, or ecosystem, falls down. Keystone plants are unique components of local food webs that are essential to the participation of most other taxa in those food webs. Without keystone plants, the food web all but falls apart. And without some minimal number of keystone genera in a landscape, the diversity and abundance of the many insectivores — the birds and bats, for example, that depend on caterpillars and moths for food — are predicted to suffer.

The implications of this phenomenon for homeowners, land managers, restoration ecologists, and conservation biologists are enormous: to create the

VARIED DIET: Common Yellowthroat feeds on caterpillars, spiders, flies, beetles, grasshoppers, and other prey.



SUPERIOR TREES: White oaks and their relatives are the very best trees you can plant in your yard for wildlife in 84 percent of U.S. counties.

FURTHER READING

Narango, D. L., Tallamy, D. W., & Marra, P. P. (2018). Non-native plants reduce population growth of an insectivorous bird. *Proceedings of the National Academy of Sciences*, 115(45), 11549-11554.

Paine, R. T. (1969). The Pisaster-Tegula interaction: prey patches, predator food preference, and intertidal community structure. *Ecology*, 50(6), 950-961.

Tallamy, D.W. and Shropshire, K.J. (2009), Ranking Lepidopteran use of native versus introduced plants. *Conservation Biology*, 23: 941-947.

most productive landscapes possible — that is, landscapes in which the plant matter provides for the largest number of edible insects — we have to include species that belong to keystone plants. This is a nuanced but incredibly important extension of our knowledge about how native plants contribute to ecosystem function. Before discovering the existence of keystone plants, we overestimated the degree to which most native plants contribute to food webs and assumed that if a plant was native, it contributed a lot. We now know that a few native genera contribute much more than most others, and we cannot ignore them if we are to produce complex, stable food webs. A landscape without keystone genera will support 70 to 75 percent fewer caterpillar species than a landscape with keystone genera, even though the keystone-less landscape may contain 95 percent of the native plant genera in the area. This runs contrary to the age-old maxim that the more diverse a planting is, the more productive it will be. On one level, this is certainly true, because a diverse plant community will support more caterpillar species than a monoculture. But now we know that to be richly productive, plant communities must contain at least some keystone plants.

LET IT BE AN OAK

I don't remember the day I decided that *Quercus alba*, the white oak, was my favorite tree, nor do I remember why I thought so. I was an impressionable preteen very much into tree-climbing, so maybe I was simply excited by the majestic spread of a mature field-grown white oak with branches low enough to tackle safely. Or it could have been the immense size or great age often attained by these trees — superlatives impressed me then, as they do now. Serendipitous or not, I had no idea when I boldly declared the oak to be the king of deciduous trees that 55 years later, my research would show that, in many respects, I was right: oaks are ranked number one among temperate zone species in several measures of performance.

Derived from the Celtic *quer*, meaning fine, and *cuez*, meaning tree, *Quercus* species are fine trees indeed, with hundreds of species globally (taxonomists argue about the exact number, with

Photos courtesy Timber Press

estimates ranging from 400 to 600 species). More than 90 species of oaks occur in the United States and often dominate all forest ecosystems in North America except the great coniferous forests of the North and the driest deserts of the Southwest. Ecologically, oaks are superior plants, and it would be easy to make a convincing case that they deliver more ecosystem services than any other tree genus. Many species are massive and sequester tons of carbon in their wood and roots, and they pump tons more into the soil. They are long-lived as well, with some species achieving 900 years, including periods of growth, stasis, and decline. Thus, the carbon they pull from the atmosphere is locked within their tissues for nearly 1,000 years.

In many ecosystems, oaks are also superior at stalling rainfall's rush to the sea. Their huge canopies break the force of pounding rain before it can compact soil, and their massive root systems, some extending more than three times the width of the canopy from the main trunk, prevent soil erosion and create underground channels that encourage rainwater infiltration instead of runoff. Lignin-rich oak leaves are slow to break down once they fall from the tree, and they create excellent resilient leaf litter habitat for hundreds of species of soil arthropods, nematodes, and other invertebrates. For me, though, all of these contributions to ecosystem function pale before the contribution oaks make to food webs.

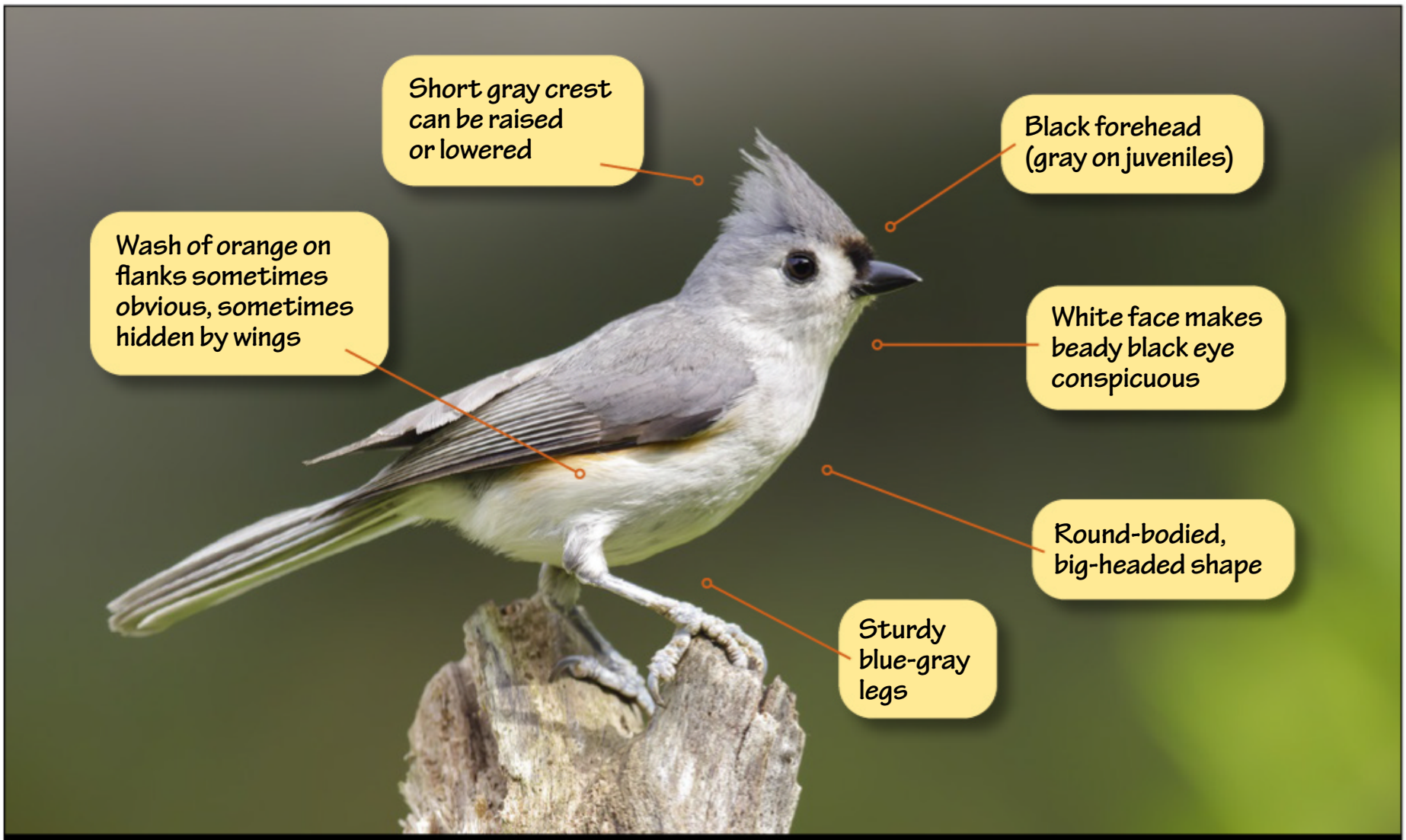
Our early work showed that oaks in the Mid-Atlantic region supported hundreds of caterpillar species — 557 to be exact — and at least 934 species nationwide, making oaks by far the best plants to include at home if you want to support food webs. If you think of a plant as a bird feeder, which is exactly what it is, then in most regions, the oak makes the most food. To put this level of productivity in perspective, most other common trees in the Eastern deciduous forest are slackers in comparison. Tulip poplar (*Liriodendron tulipifera*), for example, supports only 21 caterpillar species, black gum (*Nyssa sylvatica*) supports 26, sycamores (*Planatus occidentalis*) support 45, persimmon (*Diospyros virginiana*) supports 46, hemlock (*Tsuga canadensis*) supports 92, and sweetgum (*Liquidambar styraciflua*) supports 35. Like oaks, native willows and cherries are also highly productive, but they surpass oaks only in a few counties. In fact, oaks are ranked either number one or two in their support of the food web in 84 percent of all U.S. counties in which they occur.

For those who study plant-insect interactions, determining why the genus *Quercus* supports so many more species than other plant genera is a worthy undertaking, and a number of hypotheses have been advanced. Perhaps the large size or geographic range of the genus contributes to the number of caterpillar species supported. Or maybe the degree to which oaks are related to other North American plant genera — that is, their phylogenetic isolation or lack thereof — could help determine their productivity. Or perhaps their ecological apparency — their abundance, great physical size, and extended lifespan — in the landscape is a factor. Equally suspect is the type of chemical defense employed by oaks, which protects their leaves primarily with tannins that may be easier for insect herbivores to circumvent. The most likely explanation of all is that each of these factors contributes in some way to oak caterpillar productivity. But we don't need to understand precisely why oaks help food webs better than other plants; we just need to know that they do and that we should use them accordingly in our landscapes and restorations.

SEASONAL VARIATION: During its breeding season, Indigo Bunting eats caterpillars, small beetles, grasshoppers, aphids, and other bugs. In winter, it relies more on seeds.

BY KENN KAUFMAN • PHOTOGRAPHS BY BRIAN E. SMALL

The titmouse team



Tufted Titmouse, adult **April in Harris County, Texas**

What to look for

Size and shape. Small, round-bodied songbirds, with short crests and short, stout bills.

Behavior. Foraging actively from twigs to major limbs to trunks of trees, and sometimes on the ground.

Face and crest pattern. Varies from ornate on Bridled Titmouse to very plain on Oak and Juniper Titmice.

Distribution. Because there is very little overlap among the five species, in most cases they can be identified by range.

Voice. Where Oak and Juniper Titmice meet in northeast California, differences in song are the best way to identify them.

Members of the titmouse family are among the most familiar and popular backyard birds across North America. The best known undoubtedly are the chickadees, a handful of dark-capped sprites that flock to feeders over most of the U.S. and Canada. The crested titmice of the genus *Baeolophus* are not quite so numerous or widespread, but they are welcome backyard visitors over much of the lower 48 states and southeastern Canada.

The five species form a distinct group within the family. All have short crests they can raise or lower at will. One species, Bridled Titmouse, is about the size of a chickadee, but the other four all average larger. Bridled often forms flocks of more than half a dozen in the non-breeding season, as chickadees do, but the other four crested titmice are more often seen in groups of only two or three. All of

the birds nest in cavities, but chickadees in general seem more likely to excavate or enlarge holes for use, while titmice are more likely to use unmodified holes.

Tufted Titmouse is the member of this group that's familiar to the largest number of people. Most abundant in the southeastern states, it extends north to the Great Lakes and New England and locally into southeastern Canada; it's a regular visitor to millions of bird feeders. With its perky facial expression and cheery *peeto-peeto-peeto* whistles, it's a perennial favorite for many backyard birders.

A related bird, Black-crested Titmouse, is common over much of Texas and northeastern Mexico, extending into southwestern Oklahoma. Where its range meets that of Tufted Titmouse, in a narrow zone through east-central Texas, they often hybridize. For that reason, the birds were "lumped" into one species in 1976. After further studies, the two were split again in 2002 because the interbreeding between them is limited, and there are genetic and vocal differences. But for observers in the field, the similarities between the two species are obvious.

An even closer species pair involves Oak Titmouse and Juniper Titmouse of the West. Historically, the two always had been treated as just one species, under the name Plain Titmouse. They were not recognized as separate species until 1997. Oak Titmouse is practically a California specialty, extending north into Oregon and south into Baja. Common in oak woods, it's also a regular visitor to backyards with good tree cover. Juniper Titmouse is widespread in the interior of the West, but it's generally uncommon, living out in sparse woodlands of juniper and pinyon pine.

Finally, the most distinctive member of the group is Bridled Titmouse. Mainly a bird of Mexico, it's locally common in Arizona and New Mexico, and it regularly visits feeders in wooded canyons of the foothills. Smaller in overall size and forming larger flocks than the other crested titmice, it seems in some ways to be intermediate between those birds and the chickadees.

Kenn Kaufman (www.kaufmanfieldguides.com) has written several books on birds and nature. Brian E. Small (www.briansmallphoto.com) is a nature photographer whose photos illustrate many books.

Black-crested Titmouse, adult **November in Starr County, Texas**

In overall appearance and behavior, the Black-crested Titmouse is very similar to Tufted Titmouse, replacing it across much of Texas and a bit of southwest Oklahoma, and south into Mexico. The adult's black crest (often raised high) and white forehead are clearly different from the gray crest and black forehead of the Tufted. On juvenile Black-crested Titmice, the crest is dark gray at first. In the narrow zone where the two species meet, they interbreed fairly often; adult hybrids usually have dark gray crests, but the forehead color is often an odd shade of brown. The voices of the two species are quite similar, but the song of the Black-crested averages a little faster and higher-pitched.

Bridled Titmouse, adult **April in Pima County, Arizona**

In its limited range north of the border in Arizona and New Mexico, the Bridled Titmouse is very common in oak woodlands or mixtures of oaks and pines at middle elevations, extending to lowland rivers in some places. Smaller, more sharply marked, and more sociable than the other crested titmice in North America, it is easily distinguished from them, although at a glance it might be mistaken for a chickadee or for some species of warbler. Travelers will note that it looks similar to the Crested Tit of Europe and western Asia. Although the two are not close relatives, they may share some evolutionary history, as noted in the sidebar on the next page.

Oak Titmouse, adult **January in Kern County, California**

Drab but personable, this lively titmouse visits backyards well-supplied with oaks or other trees over much of California and a bit of southwestern Oregon. Until 1997, Oak and Juniper Titmice were combined in one species under the name Plain Titmouse — an apt description. Aside from their short crests, these birds seem utterly devoid of field marks. Visually, the two are almost identical. Oak Titmouse averages browner, Juniper Titmouse paler and grayer, but even slight shifts in lighting can make the difference moot. Although ranges of the two species approach each other closely in eastern California, overlap between them has been studied mainly in Modoc County in the state's northeastern corner, where they are best identified by voice.

Juniper Titmouse, adult **December in Socorro County, New Mexico**

Widespread in the western interior from eastern California to the Oklahoma panhandle, the Juniper Titmouse is usually uncommon in open juniper woods. No one had suspected it might be a distinct species from Oak Titmouse until biologist Carla Cicero studied the birds in the 1990s. In most places, the two can be separated most reliably by range. In extreme eastern and northeastern California, their songs are the best distinction. Oak Titmouse has a "sweeter"-sounding song, a whistled *peta-peta-peta* with alternating high and low notes. Juniper Titmouse usually has a faster song with a "drier" sound, closer to a trill on one pitch. Songs of both species vary, however, and a few can't be identified by sound.

Titmouse history

Scientists have examined practically everything about members of the titmouse family, including their evolutionary history. One study, published in 2005, offered a possible timeline for how North America's species evolved.

It said the ancestors of the crested titmice (genus *Baeolophus*) may have entered North America from Asia about 4 million years ago (half a million years before the ancestors of the chickadees). The original colonizer might have been something like Europe's Crested Tit or our Bridled Titmouse. Based on genetics, the first ancestor of the current four species without strong face patterns probably split off from the Bridled Titmouse line relatively early in their occupation of this continent. Later, in the mid- to late Pliocene (or a little more than 2.6 million years ago), the Tufted/Black-crested Titmouse complex diverged from the western Oak/Juniper Titmouse complex.

The further divisions in these groups apparently were more recent. Tufted and Black-crested Titmice may have separated from each other only about 250,000 years ago. And Juniper Titmouse is thought to have diverged from Oak Titmouse around the end of the Pleistocene, or only about 12,000 years ago.

Notably, the results, based on genetics, match what we might expect from observation: Bridled is most distinctive, Tufted and Black-crested seem more closely related, while the distinctions between Oak and Juniper Titmice are very slight.

NO PLACE LIKE HOME: A leucistic White-throated Sparrow visited Laura's backyard in April.

Pandemic birding

When we're hunkering down, backyard birding can do the heart good

This year, a lot of birders have come to realize that when we have no place to go, we might as well pay closer attention to the place we're at. I normally spend spring and summer traveling and, when home, visiting wonderful birding spots in my own area. But during this year of hunkering down, sad as it was to cancel travel plans and miss some of my favorite birding experiences, I set new goals: seeing, photographing, and making sound recordings of as many birds as possible in my own backyard.

Instead of maximizing the number of species I'm seeing week after week, I'm trying to maximize the quality experiences I'm having with individual birds right here at home. I've heard from many other people who are doing the same thing. We all seem to be discovering that connecting with the natural world in our own backyard is soul enriching.

I've lived in the same house in northern Minnesota for 39 years now, and over that time I have amassed a yard list of 166 species. At this point, it's pretty hard to add new ones, but as fun as bulking up my yard list is, I take far more pleasure in the non-listing elements of backyard birding. Even though I've seen all the likely (and some unlikely) Minnesota thrushes in my yard, excitement surges in me any time I spot a migrant skulking in the leaf litter in the back of my yard.

And I'm thrilled whenever a warbler visits my water feature. The first Red-eyed Vireo of spring fills my heart with gladness, and having the leisure to track my birds, figuring out where they're nesting, is even more satisfying. And as far as the greatest backyard delights go, the joy of a chickadee alighting on my hand for mealworms can't be beaten.

We all seem to be discovering that connecting with the natural world in our own backyard is soul enriching.

We can sometimes make unusual and interesting observations in our own yards. Last summer, a young male American Redstart spent several days in mid-June singing in the back of my yard. I finally went out on June 21 and made a recording of his song. I was lucky to get it; he disappeared, or at least stopped singing, by the next day. I didn't see him succeed in attracting a mate, but I'm glad I got to witness him trying.

This year, starting at the end of April, I began bringing my sound recorder with stereo microphones out to my yard when I wake up each day and letting it capture an hour or two of early morning sounds. I'm also going out two or three times a day with my camera to take photos of whatever is out there. No rare species have turned up so far, and I don't expect they will, but in April, I did get photos of a leucistic White-throated Sparrow in the back of my yard and lots of pictures of my favorite bird, the Black-capped Chickadee, right outside my office window, where they come for mealworms. As much as I love to travel, I've come to see that Dorothy Gale was right: there's no place like home.

Laura Erickson, the 2014 recipient of the American Birding Association's highest honor, the Roger Tory Peterson Award, has written 11 books about birds and hosts the long-running radio program and podcast "For the Birds."

Katherine Arntzen/Georgia Southern University

Corina Newsome

One of birding's social media stars found her way thanks to a mentor who took her under her wing

Corina Newsome is a graduate student at Georgia Southern University who studies the MacGillivray's Seaside Sparrow, a bird found in coastal marshes of the Carolinas, Georgia, and Florida. She came to my attention more than a year ago through her Twitter account, where she frequently posts about her field work with birds, her past experience as a zookeeper, and other topics. She has more than 48,000 followers, plus an additional 3,300 on Instagram. On both platforms, her handle is @hood_naturalist.

Newsome wrote a chapter about birds in the book *Rooted & Rising: Voices of Courage in a Time of Climate Crisis*, published in 2019 by Rowman & Littlefield, and this year, her university presented her with an award for excellence in graduate research. She has also been featured by NPR, Grist, *BBC Wildlife, Diversity in Action* magazine, and other media.

I recently asked her about her work with birds, how she got into studying wildlife, and her efforts to teach young people about nature.

Which species do you study? What projects are you working on? And what are the goals of your research?
I study the MacGillivray's Seaside Sparrow, a subspecies of the Seaside Sparrow that is found along the coasts of North Carolina, South Carolina, Georgia, and Florida in salt marshes. This species has been listed as "climate endangered" by the National Audubon Society (may lose more than 50 percent of current range by 2050; for this species, the cause is sea level rise).

The Seaside Sparrow is in a tough spot. If a nest gets flooded and they lose their offspring, they will immediately build another nest, but higher. However, when they elevate their nests, the nest is more visible to predators; they are essentially caught between a rock and a hard place.

My project focuses on understanding

CLIMATE ENDANGERED: Newsome studies Seaside Sparrow, a resident of eastern coastal marshes.

the predictability of nest predation threat for Seaside Sparrows. I want to know if predator activity/abundance changes predictably along certain habitat gradients (specifically distance from human structures and water bodies). Are predators in the marsh more abundant as you get closer to human structures, such as roads, and/or closer to water bodies, such as rivers? And in areas with more predators, do we see a higher instance of nest predation?

I ask these questions because as the salt marsh habitat of the sparrow gets reduced and fragmented by sea level rise, wildlife managers may be able to reduce predation threat in the most sensitive areas, thus relaxing the constraint that predation places on the bird's ability to respond to nest flooding. If wildlife managers can target the fragments that are most at risk from predation, an effort that requires the information my research can provide, they can be maximally effective and efficient in such initiatives.

My goal is to provide useful information to wildlife managers regarding where the threat of predation is likely to be highest for Seaside Sparrows and therefore contribute to the conservation efforts of this imperiled coastal species.

What sparked your interest in nature and/or birds specifically? And how did you decide to pursue this passion academically?

I have always been fascinated by wildlife around the world, but as a child, I was not exposed to any such careers. One day, a zookeeper who was an African American woman, Michelle Jamison, reached out to me to shadow her behind the scenes. After that single exposure, my career trajectory was set on wildlife conservation. However, despite subsequently interning at my local zoo in Philadelphia, I had very little exposure to native wildlife. I grew up in the inner city and never encountered many native species.

It was not until I took ornithology in college (as part of my zoo and wildlife biology major at Malone University) that I even noticed native birds. On the first day of lab, my professor, Jason Courter, was introducing us to the 10 most common birds in our region (northeast Ohio), and the first one was a Blue Jay. I had never seen one before and was smitten by its beauty. Since then, I've been hooked. After graduating, I continued to pursue birding recreationally, attended my local bird banding site, and cared for birds as part of my job as a zookeeper. Birds were my favorite taxa, by far. I decided to leave my job and return to school because I wanted to learn and develop my skills in in situ conservation research for birds. I am now at Georgia Southern University doing just that!

You're very open and honest about your life and work on social media. Do you consider yourself a role model for younger people of color or other marginalized communities to pursue studies or careers in zoology or STEM (science, technology, engineering, and mathematics)?

I am cautious to self-identify as a role model, but I take as many opportunities as I can to expose younger people of color to someone like them in the field of wildlife conservation. Had Michelle Jamison not done that for me, this would absolutely not be my career today. Because I have firsthand experience with the power of having exposure to this career field and seeing reflections of myself within it, I know that such experiences can also change the lives of other young people.

I have been fortunate enough to have people in my professional circle — allies — who support my vision and have supported my efforts to design formal programming to accomplish those very goals. As a result, I've been able to design and lead programs that reach out to local students from underrepresented demographics in the field of wildlife science. These programs include the Wildlife Careers program at Malone University in Canton, Ohio, and the Pathway to Animal Care Careers program at Nashville Zoo in Nashville, Tennessee.

You're also part of the Brown-headed Nuthatch Project at Georgia Southern. What is it, and how is it going?

The Brown-headed Nuthatch (BHNU) Project was funded by a Sustainability Grant at Georgia Southern, and I was the graduate student leading the project along with my advisor, Elizabeth Hunter. We purchased 20 BHNU nest boxes from Atlanta Audubon and placed them around campus with temperature data loggers inside to see if there was a pattern to the nuthatch's preferred nest box temperature. However, no Brown-headed Nuthatches selected our nest boxes, but Carolina Chickadees did! So, we set up a video camera on the nest and watched the whole process, from egg incubation to fledging, which took about a month in total. The project ended up focusing on public outreach education about the process of bird offspring development in the nest. I made a series of videos of all the nesting stages, and they can be seen on YouTube.

Go to https://youtu.be/YaULYf2C5jk to view the chickadee videos. Or you can find the link from the online version of this article at www.BirdWatchingDaily.com.

Ray Hennessy/Shutterstock

BRAINS AND BEAUTY: The Kea, the world's only alpine parrot, is considered New Zealand's smartest bird.

Those brainy birds

Why science misunderstood birds' brains for a century — and what we now know

The bird brain has been an enigma for years. We now know that avian neurobiology got off on the wrong foot in the late 1800s, making some incorrect assumptions that remained basically unchanged for about 100 years.

Led by Germany's Ludwig Edinger, early biologists were greatly influenced by Darwin's theory of evolution and Aristotle's *Scala Naturae*. They expected each vertebrate group to retain parts of the primitive brain and add more complex structures. Brain complexity would increase in a step-wise, linear fashion from the primitive fish brain to amphibians, reptiles, birds, and mammals, peaking with primates and humans. They were surprised to find the bird brain so different from the mammalian brain.

The structured cortex in the mammalian cerebrum (now called pallium) was laminar, arranged in six layers with nerve cells (neurons) and fibers running in the same direction. The pallium of the bird brain lacked structure, consisting of clusters of neurons (called nuclei) that were randomly arranged. Both bird and mammal brains had cell masses below the pallia called basal ganglia, with a variety of functions including instinctive behavior.

Now comes the early anatomists' biggest error. They said that the brain cells of the avian pallium were actually hypertrophied basal ganglia that were pushed up and into the pallium region. If the pallium could only function with instinctive behavior, the brain could never perform cognitive functions. Ouch!

For the last 50 years or so, avian neuroanatomists have discovered that the work of Edinger and colleagues contained many errors. After years of communicating about these inaccuracies, the Avian Brain Nomenclature Forum gathered at

Luibellare/Shutterstock

Duke University in 2002. This was a massive undertaking that resulted in a consensus on the understanding of avian neuroanatomy.

One of the major results of the forum was the correction of Edinger's views on the avian pallium. It was not filled with basal ganglia cells but with brain cells (neurons) that provided cognitive function like the neurons in the mammalian neocortex. The bottom line: Birds and mammals have similar brain cell neurons but different brain structure and arrangement. What's going on?

Remember when Edinger and his colleagues were stymied because the avian brain looked so different from the mammalian brain? They expected direct, linear, and stepwise changes between the vertebrate groups, as opposed to more dramatic events like the splitting of an evolutionary branch or where intermediate stages might form. Well, evolution threw them a curveball.

Early vertebrate evolution was fairly straightforward. Fish lived in the water; amphibians ventured onto land but returned to water to lay their eggs. Reptiles, birds, and mammals wanted to make a permanent break from water, but where would they lay their eggs?

Rather than give rise directly to reptiles, amphibians gave rise to an intermediate group called "stem amniotes" that solved the egg problem by creating a "land egg." Think turtle or chicken eggs. The embryos developed membranes that surrounded them and aided in development, and the mother secreted a shell to keep it all together. The innermost membrane (amnion) surrounding the embryo is fluid-filled and protects the embryo. Some mammals (monotremes) feature the land egg, but most mammals utilize placentas with live birth. This includes marsupials and all other mammals, but their methods are very different. All are called amniotes.

The most intelligent bird groups, songbirds and parrots, have twice as many neurons as primate brains of the same mass.

The now-extinct stem amniotes were the curveball. Rather than simply giving rise to reptiles, the amniotes made a major split: One branch went to reptiles and birds (sauropsids) and the other branch to mammals (synapsids).

Ever since the mammal branch separated from the reptile/bird branch, about 315 million years ago, birds and mammals have evolved independently, each responding to its own natural-selection pressures leading to their current differences. Not surprisingly, they are quite different.

DIFFERENT PATHS, SIMILAR FUNCTIONS

We now know that the brain cells (neurons) in the avian pallium are nearly identical to the neurons in the mammalian neocortex, and they go back to their last common ancestor, the stem amniotes. The avian pallium and mammalian neocortex are the centers of cognitive function and learning. By following different evolutionary pathways, leading to different brain anatomy, both birds and mammals developed similar cognitive brain function, an example of convergent evolution.

New studies show that birds have more brain cells (neurons) in their pallia than mammals do in theirs. The most intelligent bird groups, songbirds and parrots, have twice as many neurons as primate brains of the same mass. Corvids and large-brained parrots have even more. It is suggested that the large numbers of neurons concentrated in high densities in the pallium substantially contribute to the neural basis of avian intelligence.

After a century of being misunderstood and kept in the dark, birds are finally being recognized for having brains with significant cognitive function that rivals or surpasses some primates. Never doubt the attributes and abilities of those amazing birds.

MENU PLANNER: Studies have shown that California Scrub-Jays plan what kind of food they'll want for breakfast the next morning, how much, and where they will get it.

Hayley Crews/Shutterstock

Eldon Greij is professor emeritus at Hope College, located in Holland, Michigan, where he taught ornithology and ecology for many years. He is the founder of *Birder's World* magazine. You can find an archive of his "Amazing Birds" columns on our website at www.BirdWatchingDaily.com/news/science.

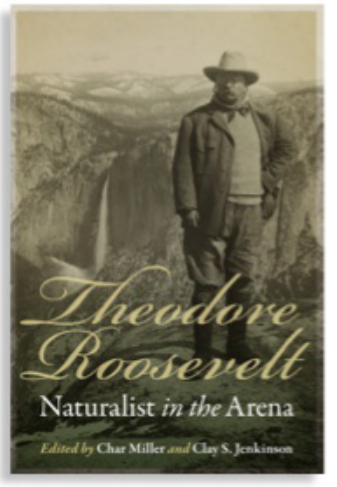
Bird books for the lockdown

Stories of owls, eagles, the ornithologist who inspired a spy novelist, and more

Vesper Flights, *by Helen Macdonald, Grove Atlantic, 2020, hardcover, 272 pages, $27.*

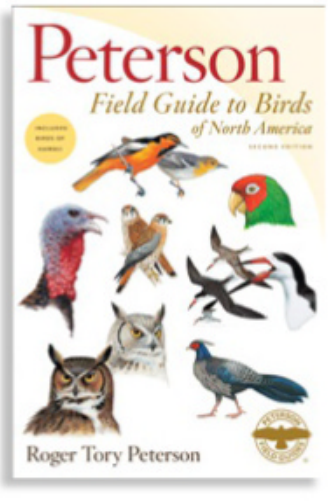
Helen Macdonald, author of the widely acclaimed *H is for Hawk,* says the subject that underlies everything she writes is a "love for the glittering world of non-human life around us." This new collection of her essays proves her right. She explores topics such as captivity, freedom, and flight while describing, for example, her observations of the massive migrations of songbirds from the top of the Empire State Building, the strangeness of birds' nests, and the unexpected guidance and comfort we find when watching wildlife.

Theodore Roosevelt: Naturalist in the Arena, *Edited by Char Miller and Clay S. Jenkinson, University of Nebraska Press, 2020, paperback, 264 pages, $24.95.*



The April 2003 issue of this magazine included the story "A Life with Birds," a profile of Theodore Roosevelt, our nation's first green president and one of the only birdwatchers ever to occupy the Oval Office. This book, a collection of essays about Roosevelt's many encounters with the great outdoors, argues that in the history of American birding, TR is as important a figure as John James Audubon and Roger Tory Peterson.

Peterson Field Guide to Birds of North America, Second Edition, *by Roger Tory Peterson, Houghton Mifflin Harcourt, 2020, hardcover, 520 pages, $29.99.*

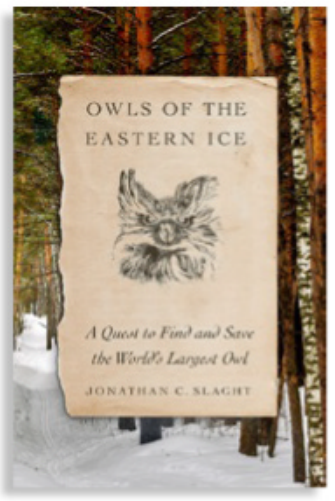


Generations of birdwatchers have relied on Roger Tory Peterson's field guides, so it is great to see his work carry on, long after his passing. This new edition of his bird guide updates the text and range maps, and much of the art has been touched up to reflect current knowledge. Most notable is that for the first time, the guide includes the birds of Hawai'i. No fewer than 50 pages of the book are devoted to the birds of the 50th state, including its endemic, introduced, and extinct species.

Unflappable: A Novel, *by Suzie Gilbert, Perch Press, 2020, paperback, 328 pages, $19.99.*

If you like well-told fiction that is grounded in the real world — especially the world of birds, wildlife refuges, and wildlife rehabbers — then you'll enjoy Suzie Gilbert's debut novel. She takes readers on a wild, comic, and sweet ride. The story follows 25-year-old Luna Burke, who is licensed to take care of injured and orphaned wildlife, as she smuggles a live Bald Eagle from her billionaire husband's private zoo in Florida to an eagle sanctuary in Canada. The situations she encounters along the way will keep you flipping the pages.

Owls of the Eastern Ice: A Quest to Find and Save the World's Largest Owl, *by Jonathan C. Slaght, Farrar, Straus & Giroux, 2020, hardcover, 368 pages, $28.*

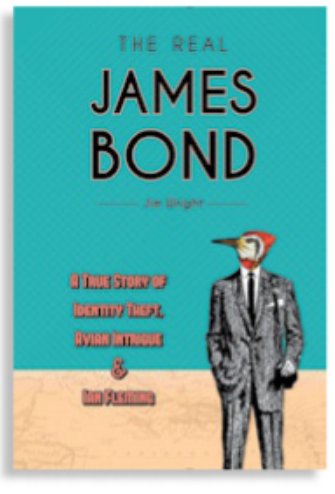


After a chance encounter with a Blakiston's Fish-Owl, the world's largest owl, Jonathan C. Slaght soon began a five-year journey, searching for the enormous, enigmatic creature in the lush, remote forests of eastern Russia. Despite a wingspan of 6 feet and a height of over 2 feet, the fish-owl is highly elusive. Slaght's story celebrates the owl and highlights the everyday work of field science and conservation in an unforgiving landscape.

In Search of Meadowlarks: Birds, Farms, and Food in Harmony with the Land *by John M. Marzluff, Yale University Press, 2020, hardcover, 352 pages, $28.*

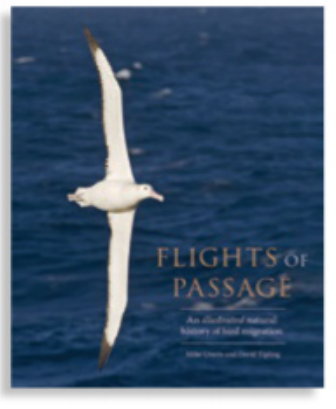
Feeding Earth's ever-growing human population has vast implications for wildlife conservation. In this new book, wildlife biologist John M. Marzluff takes a personal approach to sustainable agriculture by traveling to farms and ranches from Montana to Costa Rica. He argues that agriculture and wildlife can coexist if we reward farmers for conservation action, cut back on meat consumption, and improve food production.

The Real James Bond: A True Story of Identity Theft, Avian Intrigue, and Ian Fleming, *by Jim Wright, Schiffer Publishing, 2020, hardcover, 144 pages, $24.99.*



The whole world knows that James Bond is 007, the fictional British spy. The real James Bond, however, was an ornithologist and an expert on the birds of the Caribbean. In this biography, Jim Wright tells the real Bond's story, from his privileged yet tragic childhood to his early interest in birds to his travels throughout the West Indies. And we meet Ian Fleming, the novelist who appropriated Bond's name for his iconic character.

Flights of Passage: An Illustrated Natural History of Bird Migration, *by Mike Unwin and David Tipling, Yale University Press, 2020, hardcover, 288 pages, $40.*



Before the late 19th century, humans could not conceive of birds' migratory journeys. People believed birds hibernated in crevices or in the mud of ponds — or changed into other species. We know better now, and in this gorgeous book, celebrated nature writer Mike Unwin and award-winning photographer David Tipling share the latest science and capture the absolute wonder of the phenomenon. The authors focus on 67 bird species and how they make their way in the world.

From our readers!

Kaleidoscopic

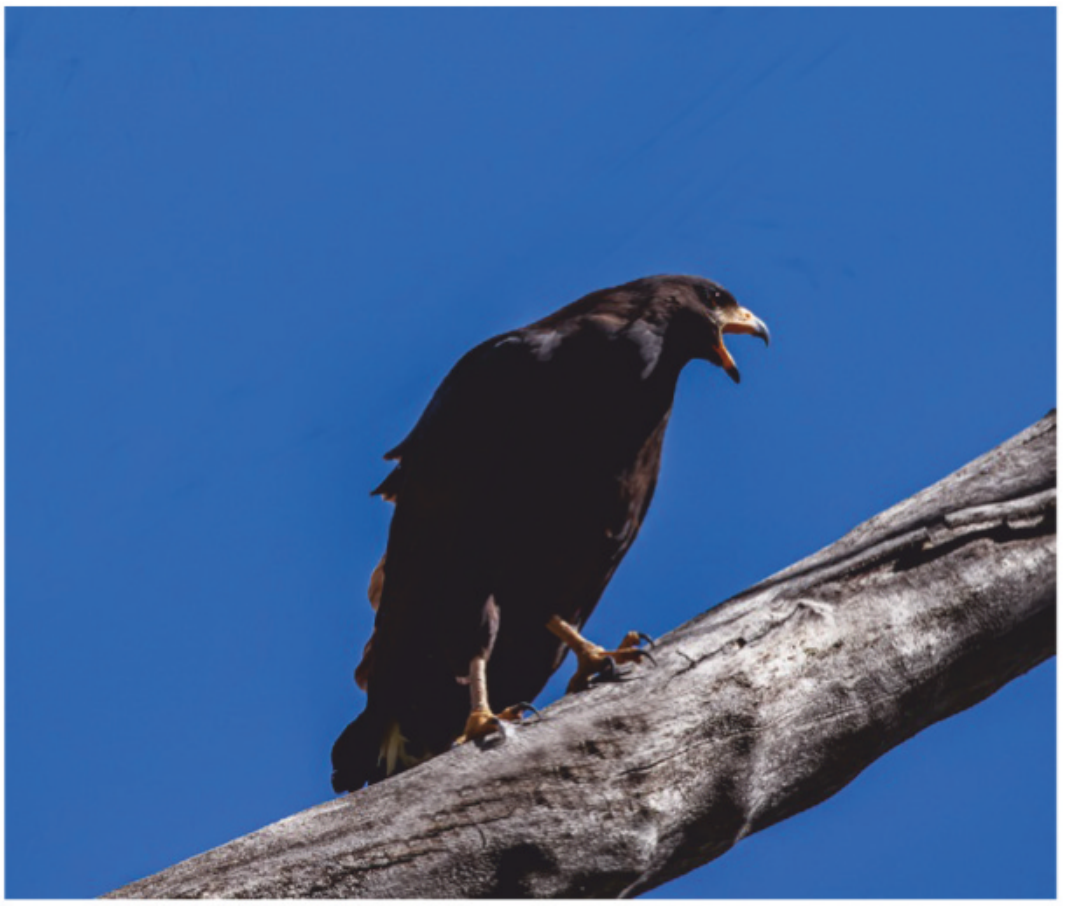
▲ **BIG RED:** A Northern Cardinal pauses amid of latticework of branches in Woburn, Massachusetts. Michael Rossacci took the photo with a Canon 1DX Mark II, a 300mm 2.8 L IS lens, and a 2x teleconverter.

▲ **LEMON YELLOW:** Pierre Deguire found this Yellow-breasted Chat at Lakes Park in Fort Myers, Florida. The bird flew back and forth from a bush to a dirt road to pick up berries.

▶ **MR. BLUEBIRD:** An Eastern Bluebird stops with a meal on its way to a nest box in Raleigh, North Carolina. Kimberly Miskiewicz took the photo with a Sony a6500 camera and a 200-600mm lens.

▲ **SPECTACULAR COURTSHIP BEHAVIOR:** Bald Eagles link talons and cartwheel through the sky at Lundrigan's Marsh in St. John's, Newfoundland. Geoff Smith took the photo with a Canon 80D and a Sigma 150-600mm lens.

▶ **PIECES OF ART:** A Hooded Oriole perches on an iron sculpture in Sedona, Arizona. Jeff Thill used an Olympus E-M1 Mark II camera with a 300mm lens.



◀ **CLAIMING TERRITORY:** A Common Black Hawk calls from a branch. Dennis Lane says a pair has nested along a perennial stream in Silver City, New Mexico, for the last 10 years. He used a Canon 7D Mark II and a 100-400mm lens.

▼ **YARD BIRD:** Kim Mickalishen took this picture of a Red-tailed Hawk in her backyard in Kamloops, British Columbia, in the autumn of 2018. She used a Canon PowerShot SX60 HS.

DISTINCT: Janet Pellegrini of Chicago took this image of a Cozumel Golden Warbler on January 27, 2020, on Cozumel Island, Mexico. The bird is one of the many subspecies of Yellow Warbler. Pellegrini took the photo with a Nixon P-900.

THE ORIGINAL BIG BIRD: Kevin McCarthy photographed this young Harpy Eagle in the deep rainforest of the Darién Gap of Panama. He used a Nikon D3S with a 500mm lens and a 1.7x teleconverter.

▲ **UNCOMMON DELIGHT:** Steve Remley of Mays Landing, New Jersey, took this shot of a Red-headed Woodpecker at his backyard feeding station. This is the second year in a row that a pair of the woodpeckers have nested in the area. The photo was taken from a portable blind using a Nikon D850 and a 500mm f/4 lens.

▶ **BRILLIANT:** Harrison Ponn of Newark, Ohio, found this Pine Warbler in mid-March at Lake Hope State Park in Vinton County. He used a Nikon D500 with a 200-500mm lens.

PORTRAIT MODE: Anthony Louviere photographed this Summer Tanager early one summer in Galveston, Texas. He used a Canon 5D IV with a 500mm F4 lens and a 1.4x extender.

Let's hear from you!

Submit photos as full-resolution, high-quality JPG files via email (no TIFFs, please). Include a short description of the photo; include the bird name, the equipment used, and the location. Please include your name, address, phone number, and email address. If we publish a story or photo of yours, we'll send you a complimentary copy of the issue in which it appears. There's no payment for use of text or photos in "Your View."

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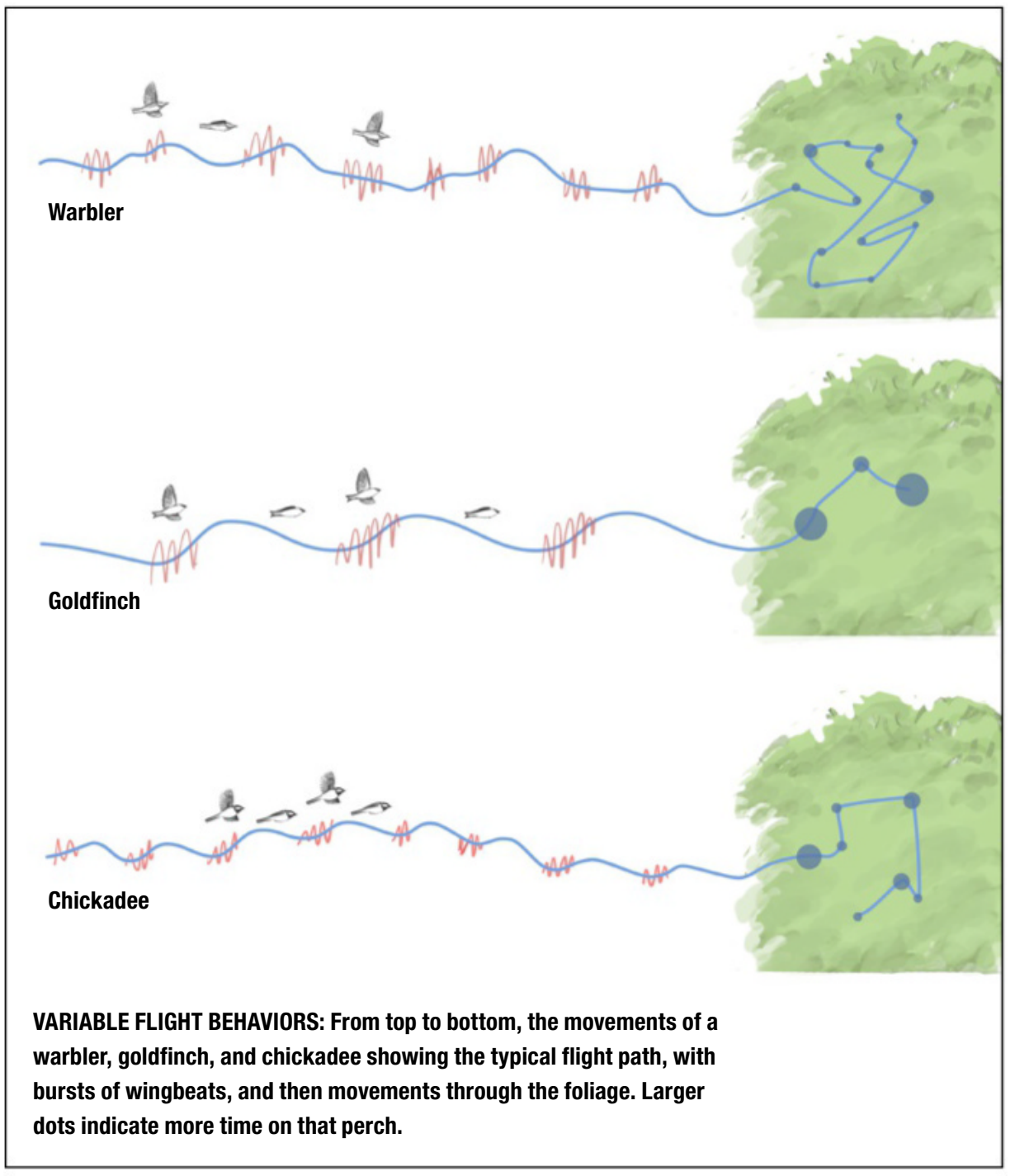

VARIABLE FLIGHT BEHAVIORS: From top to bottom, the movements of a warbler, goldfinch, and chickadee showing the typical flight path, with bursts of wingbeats, and then movements through the foliage. Larger dots indicate more time on that perch.

Flight clues

How a bird flies and moves in foliage can help you identify it

Identifying small songbirds is always challenging, so any clue that helps narrow the possibilities can be valuable. One very common experience is seeing a small bird fly across an opening and then into a tree or shrub, where it is hidden by leaves. Is it just another chickadee, or is it worth following to try for a better view? The way the bird flies and the way it moves in the foliage offer some subtle but simple clues that can help answer those questions and put you on the path to identifying it more quickly.

How does it fly? All small songbirds fly with alternating short bursts of rapid wingbeats and very brief glides with the wings closed against the body. This is the same pattern that gives woodpeckers and finches their strongly undulating flight path, and all small songbirds have more or less undulating flight. In woodpeckers and finches, the "glide" phase is relatively long, so they descend more, and the pause in flapping is more noticeable. In other songbirds, the glide phase is shorter, so they have quicker and shallower undulations. Warblers tend to swerve from side to side as they fly.

Once a bird lands, how it moves in the next minute or two can be a clue to its identity.

What is it doing in the foliage? Once a bird lands, how it moves in the next minute or two can be a clue to its identity. Insectivores like warblers and kinglets are very active, and generally don't sit still for more than a few seconds at a time. Even when they stay on the same perch, they are flicking their wings or tail, or turning from side to side. Seed-eating birds like sparrows, or gleaners like chickadees and vireos, tend to sit still for longer periods, and they are less "jumpy" when they sit.

These are subtle differences, and they depend on weather conditions, the bird's motivation, and other variables, so your identifications based on these clues will never be certain. But as a quick assessment to put a bird in a general group, it can be useful, and watching for these differences will reveal other subtle clues and increase your understanding of variations in bird flight and behavior.

David Allen Sibley is the author of *The Sibley Guide to Birds, Second Edition*, *Sibley's Birding Basics*, and field guides to the birds of eastern and western North America. In our last issue, he described variations in the Northern Flicker.

BirdWatching magazine

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Northern Gannet by Rajesh Mohan, 1st place, 2019 *BirdWatching* Bird Portrait Contest

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