

THE QUARTERLY NEWS MAGAZINE OF TUCSON AUDUBON SOCIETY | TUCSONAUDUBON.ORG

Vermilion

FLYCATCHER

July–September 2014 | Volume 59, Number 3



Birding Economics

Patagonia's Ecotourism • Tucson Bird & Wildlife Festival

What's in a Name: Vermilion Flycatcher • Southeastern Arizona's Summer Sparrows



Tucson Audubon promotes the protection and stewardship of southern Arizona's biological diversity through the study and enjoyment of birds and the places they live. Founded in 1949, Tucson Audubon is southern Arizona's leading non-profit engaging people in the conservation of birds and their habitats.

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300 E University Blvd #120 ext 7015

Hours: 10 AM–4 PM, Mon–Sat

Agua Caliente Park, 12325 E Roger Rd 760-7881

Hours: Thu–Sat 10 AM–1:30 PM. *Please call to confirm hours.*

The shop opens earlier and closes later during certain months.

Vermilion Flycatcher is published quarterly. For address changes or subscription problems call 629-0510, or write to Membership Coordinator at the address above. Submissions are due 1st of the month, one month before issue date. Send submissions as Microsoft Word or RTF documents, or plain text files, to Matt Griffiths at mgriffiths@tucsonaudubon.org.

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FRONT COVER: Sulphur-bellied Flycatcher in Ramsey Canyon by Muriel Neddermeyer. Muriel is a marketing professional and mother of two teenagers. She loves watching and photographing birds in her spare time.

To have your photograph considered for use in the *Vermilion Flycatcher*, please contact Matt Griffiths at mgriffiths@tucsonaudubon.org.

Birding in Tucson and Southern Arizona The Sonoran Desert Takes to the Skies

Jessica Stephens, Director of Public Relations, Visit Tucson

Located along the migratory path between Canada and Mexico, Southern Arizona's lush desert is one of the best birdwatching areas in the United States. More than 500 species can be observed throughout the year, and hummingbirds are especially plentiful. Bird watching enthusiasts need only take a short drive through rolling grasslands, desert greenery and lofty mountain ranges to find Gray Hawks, Red-faced Warblers, Vermilion

Flycatchers, and many other species. Birding buffs might even catch a glimpse of more than 150 species in a single day during Southern Arizona's spectacular spring and fall migrations.

Visitors from around the world travel to Tucson and Southern Arizona for our unique desert setting and abundance of watchable wildlife. According to a study by Arizona Game & Fish Department, watchable wildlife activities, including birding, generated a \$1.4 billion economic impact in which 732,343 non-residents participated in related activities statewide. In 2013, the Tucson Audubon Society released a county-level analysis of birding in the region. Locally, the economic impact is \$300 million, where birding was the primary activity for approximately 77 percent of non-resident watchable wildlife participants.

Visit Tucson, the region's official destination marketing organization, values the importance of birding as a draw to our area. Working with local groups, including the Tucson Audubon Society, we promote various activities and itineraries to visitors, showcase the area's "birding hotspots" and highlight regional birding festivals throughout the year. For more information about visiting Tucson and Southern Arizona, go to visittucson.org.



RED-FACED WARBLER, CHARLES MILES / CCL



COMMENTARY

PAUL GREEN | EXECUTIVE DIRECTOR

Growing the PIE

Nearly 30,000 visitors travel each year to Tucson Audubon's newly acquired Paton Center for Hummingbirds to watch amazing birds. Our guests leave tokens of appreciation in the donation box and pick up a brochure informing them of other great birding sites in the area: Harshaw Canyon, the Patagonia Rest Stop, The Nature Conservancy's Patagonia-Sonoita Creek Preserve, and Patagonia Lake State Park. The brochure also offers tips for coffee, lunch, dinner, and lodging.

We're working with the Patagonia Town Manager's office and the local business association to develop a strategic approach to economic development linked to traveling birders. Businesses providing services for visitors benefit—as do birders. It's a win-win situation. Tucson Audubon is growing the **PIE** by working to protect the most important **Places** for birds, providing **Information** for traveling birders, and by developing **Events** to attract people to southeast Arizona.

Tucson Audubon is also collaborating with the City of Tucson and Pima County at a more preliminary stage on ideas and projects to develop an integrated local nature tourism strategy. We have recently received funding to develop birding trails within the City of Tucson. A great deal remains to be done, however—with a broad range of partners.

To paraphrase Ted Eubanks, Robert Ditton, and John Stoll from their 1998 River Platte Report¹: Wildlife watching, as a coordinated outdoor recreational industry, is still in its infancy. Although the nature resources are available, strategies by which communities and individuals take advantage of these resources and activities for the benefit of both residents and wildlife are not well developed. In a real sense, the wildlife watching industry has developed *ad hoc*, without significant planning or direction.

Dollars generated by birders, hunters, anglers, hikers, campers, and cyclists throughout our area have a tangible, measurable economic impact as communities make money by supplying goods and services to them. This provides hard evidence for the economic



Above left to right: Patagonia-Sonoita Creek Preserve; Magnificent Hummingbird

value of conserving natural resources in the region.

Management efforts to protect habitats for wildlife will safeguard the economic viability of the local nature tourism industry. However, our communities and decision makers must face a number of challenges before outdoor recreation and tourism can influence and contribute to our economy at their greatest potential.

Two Keys: Collaboration and Creative Planning

Without broader-level cooperation and planning, nature tourism destinations are bound to operate in isolation, each site competing—rather than collaborating—with its neighbors. Our region would benefit from a regional nature tourism strategy! And Tucson Audubon is poised to play a key role for the southeast corner of our state.

A great deal of the undeveloped land around Tucson, Patagonia, and the rest of southeast Arizona is teeming with birds and other wildlife. It is also controlled by private entities who realize few of the potential benefits of wildlife watching. As the demands for outdoor recreational opportunities increase, some of these landowners could increase income by diversifying their individual economic strategies and offering access to their lands for a fee. Providing viewing blinds and photographic opportunities could expand the economic incentives for these landholders.

The economic benefits of wildlife watching in southeast Arizona stem from the wildlife resources found here. Threats to wildlife therefore undermine the viability of nature tourism. Any strategy to promote nature tourism must be built upon a foundation of resource conservation. Economic sustainability may be achieved if our communities use their resources wisely without depleting them. Once these resources are depleted, the nature tourism business will fail.

Only by protecting our wildlife resources will southeast Arizona communities be assured of sustaining the economic opportunities associated with nature tourism into the future.

In our state, private property rights and the 1872 Mining Law include the right to destroy irreplaceable resources even as most of us strive to conserve our national treasures, their associated landscapes, and their ecological functions for future generations. Witness the Rosemont Mine and the Santa Ritas. Witness Wildcat Silver and Harshaw Canyon. Witness the Tribute housing development and the Lower San Pedro River. All destroy natural functioning ecosystems that provide ecological services, wildlife resources, and more besides.

Nature tourism planning based on wildlife-watching economics is very much a collaborative and collective enterprise. To work successfully it engages planners, politicians, businesses, chambers of commerce, and communities to understand the resources and ensure that it can deliver on its potential. And to be effective, the importance of outdoor recreationists as drivers of economic activity has to take its place as a part of the broader context of human and natural communities and their endeavors.

By developing the **Places, Information, and Events** that provide exciting nature experiences, we support a truly sustainable economy and environment. That is the win-win of birding economics.

Please support our work with your donation this summer. Thank you.

¹The Economic Impact of Wildlife Watching On the Platte River in Nebraska. Prepared by Fermata Inc. Ted Lee Eubanks, Jr., Robert B. Ditton, and John R. Stoll. February 15, 1998. Prepared for the U.S. Environmental Protection Agency Region VII.

TUCSON AUDUBON EVENTS AND CLASSES

Celebrate the Bird Days of Summer with Tucson Audubon



This summer why not deepen your connection with life in the Santa Ritas (above) and learn how to create desert-friendly gardens for birds such as Verdin (inset).

Bird & Naturalist Education Program: for the Sonoran Desert and Sky Islands

Become a birder or improve your birding skills and knowledge through a suite of courses offered at Tucson Audubon. Our courses are designed to take you through a natural progression that will transform you from a beginning to intermediate/advanced birder and transport you to some of the most beautiful locations throughout our region. Below, you will find our workshops listed by birding level.

Also listed below are the workshops we are offering at our Tucson Bird & Wildlife Festival in August, located at the Riverpark Inn. These workshops will introduce you to experts in the field of birding, as well as Tucson

Audubon's resident expert instructors, Homer Hansen and Lynn Hassler.

Regular cost for classes and workshops include a year membership to Friends of Tucson Audubon.

ALL LEVELS

Gardening to Attract Birds

Learn how to provide for birds the natural way by growing plants that offer seed, fruit, and nectar, as well as cover and shelter. Naturalist/writer/gardener Lynn Hassler will teach you how to create desert-friendly gardens that support birds and help make up for lost habitat. Lynn has recorded over 130 species in her Tucson backyard.

Instructor: Lynn Hassler

Date and Time: October 18; 10:00 AM–12:00 PM

Location: TAS Main Office, Historic Y Conference Room, University Blvd. and 5th Ave.

Cost: \$25

Birds, Beauty, and Biodiversity

Deepen your connection with life in the Santa Rita Mountains at this two-day retreat and workshop. Transformational Living activities will help you experience nature as a framework for personal, political, and spiritual inquiry. From birding and botting to story-telling and guided discussion—with nature journals in hand—you will observe and appreciate the sky island habitat. You will sharpen your art of seeing, draw connections between natural beauty and values, and articulate these insights into writing. While we seek a real depth of experience, contagious enthusiasm (a.k.a. fun) is also guaranteed. Trip includes professional instruction, all meals, and lodging.

Instructors: Lynn Hassler and Keith Ashley

Date and Time: November 8–9, 2014

Location: Santa Rita Experimental Range and Wildlife Area, Pima County, Arizona

Cost: \$360 / \$325 member discount

INTERMEDIATE

Warblers: August 21; 5:30 PM–8:30 PM & August 23; 7:00 AM–5:00 PM

Flycatchers: September 4; 5:30 PM–8:30 PM & September 6; 7:00 AM–5:00 PM

See our website for more detailed descriptions of the workshops.

Instructor: Homer Hansen

Location: TAS Main Office, Historic Y Conference Room, University Blvd. and 5th Ave.; Field trip destinations TBA.

Cost: \$145 / \$110 member discount

ADVANCED

Flight and Feathers

One of nature's wonders, the flight of birds is an amazing physiological feat. In this workshop you will take an in depth look into the how and why of bird flight, and how to use observation of flight patterns as an



TIM LINDENBAUM

identification aid. We will delve into the complexities of migration, skeletal structure, and anatomy, as well as flight behaviors. A one-day field trip will connect field observations with the topics discussed..

Instructor: Homer Hansen

Date and Time: October 30; 5:30 PM–8:30 PM & November 1, All day field trip

Location: TAS Main Office, Historic Y Conference Room, University Blvd. and 5th Ave.; Field Trip Destination TBA.

Cost: \$145 / \$110 member discount

Workshops at the Tucson Bird & Wildlife Festival: August 13–17

For New to Advanced Birders:

Flycatchers with Homer Hansen. August 14; 1:30 PM–3:00 PM. \$35

How to Use Your Flipping Field Guide with Steve N.G. Howell. August 14; 3:30 PM–5:30 PM. \$35

Got Molt? What is Molt and will you age better if you know something about it? with Steve N.G. Howell. August 15; 3:30 PM–5:30 PM. \$35

Go Batty Under the Bridge with Ronnie Sidner. August 15; 5:45–8:15 PM. \$25

Beginning Birding with Lynn Hassler. August 16; 10:00 AM–12:00 PM. \$35

Gardening to Attract Hummingbirds with Lynn Hassler. August 16; 1:30 PM–2:30 PM. \$25

Tucson Birds and Landscaping for Wildlife with Kendall Kroesen. August 17; 10:00 AM–11:00 AM. \$5

Visit the Festival website for details and to register: tucsonaudubon.org/festevents.html.

Register online today! Visit tucsonaudubon.org/education
Contact for all education activities: Bété Jones at bjones@tucsonaudubon.org, 520-629-0510 x7012

FOR MORE INFORMATION ON OUR SUITE OF EDUCATION CLASSES AND TO REGISTER ONLINE, PLEASE VISIT TUCSONAUDUBON.ORG/EDUCATION

Tucson Audubon's Living with Nature Lecture Series

JEFF WEBSTER



RICK FLETCHER

L to R: A well-attended Living With Nature lecture in Green Valley; Gary Nabhan talks to our Tucson audience.

Our lecture series is a monthly, free, public presentation that seeks to inform, educate, and entertain. We invite speakers who are experts in their fields to present on a variety of topics related to birds, including their biology and ecology; global, regional, and local birding hot spots; and conservation issues that affect birds, other wildlife, and their habitats.

We express our gratitude to our amazing line up of presenters during the 2013–2014 season, with whom we explored topics such as: the relationship of pollinators to plants and people, the role of fire in the health of North and South American forests, the unique avifauna of northwestern Mexico, the importance of migration stopovers in southeastern Arizona, the human dimension of wildlife conservation, and the effects of climate change on seasonal patterns of plants and animals.

We thank: Gary Paul Nabhan, Don Falk, Mauro Gonzalez, Paul Green, Charles Van Riper, George Divoky, Jennifer Koop, Ted Fleming, Trica Oshant Hawkins, Christopher Cokinos, LoriAnne Barnett, Doug Moore, Caleb Weaver, Pinau Merlin, David McKay, and John Millican.

Thank you to all our members who took the time to respond to the survey and provide us with feedback on the timing and location of the Tucson lecture series. We have already incorporated some of your ideas! Next season, we will offer two additional talks: one on the northwest side of town and one at Saddlebrook. Save the dates listed here for Tucson and Green Valley and stay tuned for additional talk times and dates.

Enjoy your summer and we'll see you in November!

TUCSON

All lectures will be held at the Pima Community College Downtown Campus, Amethyst Room, 1255 N. Stone Ave. Lectures are scheduled for the second Monday of each month at 7:00 PM, November through April.

2014: November 10; December 8 (*Member Holiday Potluck, St. Phillips Plaza*)

2015: January 12; February 16 (third Monday); March 9; April 13

GREEN VALLEY

All lectures will be held at the Green Valley Recreation's Desert Hills Social Center, 2980 S. Camino Del Sol. Lectures are scheduled for the first Saturday of the month at 10:00 AM, November to April.

2014: November 1; December 6

2015: January 3; February 7 March 7; April 4

Harvest is a State of Mind

Kendall Kroesen, Urban Program Manager

For the last three years, we have milled mesquite pods at the Mason Center in November. For the last two years, we have celebrated the year-round Sonoran Desert harvest at our Harvest Festival.

Whatever form our celebration takes this year, the harvest surrounds us. There are hundreds of edible wild plants and many desert-adapted crops that thrive in the Sonoran Desert. And beyond that is the larger biodiversity heritage that is ever-present: the

birds we enjoy so much, all the other animals and plants, and their ecological relations. Think of birding as the harvest of color, form and song!

You don't need Tucson Audubon in order to see this diversity, but we hope you will experience it and celebrate it alongside us—in classes and festivals, as volunteers at habitat restoration sites, and on birding field trips. Watch for opportunities to join in and participate in the stewardship of the Sonoran Desert.

Together, we can create more ways to be sustainable and bird-wise in the wonderful region in which we live, and in the "Bird City" that is Tucson.

Barbara Rose (left) of Bean Tree Farm and chiltepinos (inset) from Charles DeConcini's table at Tucson Audubon's 2013 Harvest and Mesquite Milling Festival



Visit tucsonaudubon.org for updates and more.

The Tucson Bird & Wildlife Festival offers activities galore for the birder and nature enthusiast, August 13–17. View the full schedule of field trips, workshops, evening programs, and Nature Expo activities online at tucsonaudubon.org/festival.

PAINTED REDSTART, JERMEY HAYES



TUCSON AUDUBON NEWS ROUNDUP

Tucson Bird Count— A Delicious Recipe for Urban Habitat

Jennie MacFarland, IBA Program Biologist

LANDSCAPING AT ORO VALLEY MARKETPLACE, KENDALL KROESEN



Data collected diligently by volunteers at more than 800 Tucson Bird Count locations over the last 14 years will be used to create "recipe cards" to guide Tucson residents on how to make their yards attractive to a certain bird species or a suite of birds.

The Tucson Bird Count (TBC) successfully completed its 14th spring count and is now moving into a new phase of the project. The main goal of this study from the very beginning was to determine the best recommendations for creating and enhancing urban bird habitat. After all of these years of volunteers diligently surveying over 800 locations in Tucson, we are using this data to find patterns in how various bird species use urban habitat in Tucson. This information will help us to understand what birds need and what changes Tucson residents can make to increase the area of urban bird habitat suitable for native birds. These components and directions will be distilled into "recipe cards" which will be produced for a variety of bird species. The cards will be available free to Tucson residents and will guide them in making their yard attractive to a certain bird species or suit of birds. In partnership with Saguaro National Park, an original supporter of the TBC,



Tucson Audubon has been awarded a Heritage Grant from Arizona Game and Fish to make and print the first batch of recipe cards. A new Tucson Bird Count website was created to accommodate this phase of the TBC. This project would not have been possible without all of the amazing volunteers who have helped over the years. Thank you!

PYRRHULOXIA, JOAN GELLATLY

Tucson Audubon's eNews Delivered to Your Inbox

Did you know that Tucson Audubon offers a range of specialized email updates on various topics, such as Volunteer News, Green City News, Conservation Alerts, Paton News, IBA News, Nest Boxes for Urban Birds, as well as a regular Weekly Update?

Thank You for Going Birding for the Birds during Birdation!

Kara Kaczmarzyk, Membership and Development Manager



MATT GRIFFITHS



JENNIE DUBERSTEIN



KENDALL KROESEN



KENDALL KROESEN

Top, left to right: The Wrenegades as they built up to their 160 species Big Day total. Team Waterfowl scopes Sweetwater Wetlands.

Bottom, left to right: First time Birdathoner Laura Diaz wins a pair of binoculars at the Birdy BBQ. Birdathoner-extraordinaire Maia Stark enjoys the Birdy BBQ.

Another amazing Birdathon season has concluded with nearly \$24,000 raised for bird conservation through the efforts of 51 outstanding Birdathoners bringing in 293 donations and counting! Throughout the month of April, Birdathoners went birding for the birds, raising support and awareness while spotting the spring specialties: the migrants, residents, and rarities that make southeastern Arizona such an outstanding birding destination. For the third year running, the Wrenegades surpassed their Birdathon record, this year seeing 160 species. Our star Birdathoners included Maia Stark and Kendall Kroesen, who each surpassed their funds raised over last year. Our thanks goes out to the expert leaders of Scott's Orioles, the Wrenegades,

and Birds of Fray: Scott Olmstead, Jennie MacFarland, and Richard Fray respectively. The Birdy BBQ was a blast at the Mason Center, where Birdathoners, friends, and family gathered to celebrate the achievements of the Birdathoners. The Birdy BBQ was made possible in part by Tucson Audubon's Board of Trustees who donated food for the evening, and by the outstanding musical styling of staffer Andy Bennett and the Bending Blades who set the mood with their five piece bluegrass ensemble. Thanks also goes to Sprouts, Thunder Canyon Brewery, Summit Hut, Tucson Audubon's Nature Shops, and our Birdathon sponsors Pima Federal Credit Union and Hughes Federal Credit Union. We'll see you next year!



ZONE-TAILED HAWK, SEARCHNET/MEDIA / CCL

Two New IBAs in Arizona

Arizona Important Bird Areas News

Jennie MacFarland, IBA Program Biologist

It has been a very busy and productive season for the Arizona Important Bird Areas Program and it isn't over yet! The amazing and dedicated volunteers that so generously give their time and experience have made possible many different survey efforts all over the state this spring and early summer. We counted Gilded Flickers in the lovely Sonoran Desert habitat on both the east and west side of Tucson in March, as well as Elf Owls in the same locations in April. Migrants along the Lower San Pedro River Global IBA were the main target during our spring surveys in San Manuel, an area of amazing significance to birds that we are focusing on this season. The breeding bird surveys of desert habitat, in partnership with the Tohono O'odham Nation, were only possible because of Tucson Audubon IBA volunteers. This collaborative effort is the first of its kind on the Tohono O'odham Nation. A huge amount of volunteer effort has also gone into the Elegant Trogon census surveys of 4 different sky islands as well as the lowland canyons in the Atascosa Highlands. This diverse and ambitious survey season would not have been possible without the talented and dedicated folks that make up the volunteer crew for this program. Thank you so much.

This leads to the big news of the moment: there are two new Important Bird Areas in Arizona, bringing the grand total up to 45. **Patagonia Mountains IBA** is an area that is great for birds and increasing in popularity as



a birding destination since a Blue Jay was found during an IBA survey here. This is an excellent place for Eastern "Azure" Bluebirds, Montezuma Quail and, as it turns out, Elegant Trogons. Many years of volunteer effort have gone into this mountain range and I am proud to announce that this area is now an IBA. **Joshua Tree IBA**, also known as the Chicken Springs BLM grazing allotment, is a beautiful mix of Mohave and Sonoran desert habitats. Data gathered by IBA volunteers has shown that the towering Joshua Trees make this excellent habitat for Bendire's Thrashers and this new IBA has already been nominated for Global IBA status for this species. This is where the hard work from all of you volunteers pays off: new IBAs for the birds!



EASTERN "AZURE" BLUEBIRD, LOIS MANOWITZ



ELEGANT TROGON, LAURENS HALSEY

For the second year, the Arizona IBA Program and Rick Taylor joined forces to census the Elegant Trogons in the four major Sky Islands in SE Arizona plus some of the major canyons in the Atascosa Highlands. The beautiful and mysterious species is a "most wanted" bird for visitors and residents alike and always a treat to see. Once considered rare, they are now locally dependable in the right habitat, and some even stay all winter.

Overall, Elegant Trogon numbers are good and it would appear that southeast Arizona has a stable nesting population. For the **Santa Ritas**, 24 volunteers surveyed in 12 territories within the Madera Canyon complex, and 6 counters checked 4 other canyons in the Santa Rita Mountains. Altogether 23 Elegant Trogons were found: 15 males

and 8 females. All females were in proximity to males with whom they were probably paired, yielding a total of 8 pairs. The **Patagonia Mountains** are a surprisingly good area for Elegant Trogons, and 18 volunteers surveyed in 10 territories in the Patagonia Mountains. Altogether 22 Elegant Trogons were found: 8 pairs, 4 males, and 2 females. The **Huachuca Mountains** were the big winners this year and 32 volunteers surveyed 16 canyons and 38 Elegant Trogons were found, 21 males and 10 females. All females were in proximity to males with whom they were probably paired, yielding a total of 10 pairs. Seven (7) trogons were not identified to gender. The **Chiricahua Mountains** are still showing low numbers of Elegant Trogons, most likely due to the major fire this range experienced a few years ago. Just 6 Elegant Trogons were actually seen by 26 volunteer counters who were surveying 24 contiguous riparian areas averaging approximately 0.4 mile in length in the South Fork-Cave Creek Canyon. A male and a trogon of unknown gender were found in Rucker Canyon. Including Rucker Canyon, the survey produced 4 males, 3 females, and 1 trogon of unknown gender.

Huge thanks to the many volunteers that made these surveys possible!



JOSHUA TREE IBA, DAVE KREUPER



BENDIRE'S THRASHER, DAVE KREUPER

Visit tucsonaudubon.org for updates and more.

Nest Boxes for Urban Birds

Kendall Kroesen, Urban Program Manager

Last winter, volunteers helped us build nest boxes for our pilot nest box project. The goals are to support cavity-nesting birds and to expand our outreach to the Tucson community. It is a “pilot” project because we wanted to test whether nest boxes can work reliably in the Sonoran Desert.

We decided on two nest box designs: a large box for American Kestrels and a medium box for Ash-throated Flycatchers. In the end we did not give all these boxes away (see below) but some other people built or purchased their own boxes. We now have about 40 boxes and 15 gourds that are part of the pilot program.

The first thing we learned is that although people are eager to help kestrels, it is challenging to find a good place for a kestrel box. Kestrels like their nests to be high off the ground and we thought a shady northern exposure would help mitigate heat. Few yards have such a location, so we did not distribute all the kestrel boxes. This fall we will look for more places for kestrel boxes or we will distribute

them to locations where they might support Western Screech-Owls.

The second thing we learned is that birds seem pretty picky about where they nest. Many of the boxes and gourds are not being used—some were explored (birds were seen going in and out) and rejected, though the specific cause is not known. It may be that next spring these same boxes and gourds will be used because birds will have grown more comfortable with them.

However, some boxes have become nest sites for birds. At least two of the large boxes are being used by screech-owls and one is being used by Ash-throated Flycatchers. We learned about another tiny box that successfully fledged a brood of Lucy’s Warblers (see photo and caption, right).

Finally, we have put temperature sensors in some of the boxes to measure temperatures inside the boxes. With generous support from project volunteers we purchased 25 iButton sensors. These are tracking temperatures hourly and will allow us to see if temperatures ever exceed critical threshold levels making nests fail. We will analyze the box usage and temperature information this fall and modify the program accordingly! Stay tuned.



LOIS MANOWITZ



Left: Lucy’s Warbler explores a gourd as a potential nest. Right three photos: Nest boxes installed at various locations around Tucson Audubon’s Mason Center.

The Science of Nestboxes

The interest in the Nest boxes for Urban Birds Pilot has been overwhelming! To further our capacity to turn it into an ongoing and widely successful program this summer, we’re undertaking a series of small but scientifically rigorous experiments to quantify the effects on internal box temperature of placement aspect (N/S/E/W exposure), shade type (solid/dappled/full sun), box size, and box shape. The first experiment will get underway at the Mason Center, just as soon as we finish building 20 identical nest boxes based on the model Lucy’s Warbler box that fledged two young this spring in Catalina (see photo on the right)! If you’d like to get involved in the scientific exploration of bird nesting with a conservation goal, please contact Jonathan Horst at jhorst@tucsonaudubon.org. To make a monetary contribution, go to the online donation page at www.tucsonaudubon.org and make a note in the “comments” box that it is for the nest box pilot program.

Jonathan Horst,
Restoration Ecologist
Keith Ashley, Coordinator:
Paton Center for Hummingbirds



JOY REIMER

In what may be the first photographically documented occurrence of Lucy’s Warblers successfully nesting in a human-constructed nest box, two chicks fledged from this tiny wooden birdhouse in Joy Remer’s backyard in Catalina, Arizona. The box itself is 3”x3”x4-5” for an interior volume of less than 20in³ —that’s smaller than the volume of a 12oz soda can! We also have two previous reports from Tucson Audubon members that Lucy’s Warblers have successfully nested in small gourds or decorative boxes. Documentation of these exciting findings furthers scientific understanding which, to date, has said that Lucy’s Warblers have ‘not been reported to use nest boxes’ even though adequate nest sites are likely a limiting factor. Won’t you join us in the quest to determine what makes a nest box appropriate for Lucy’s Warblers?



MASON PHOTOS PAUL & ENGLI GREEN

The Paton Center for Hummingbirds

Keith Ashley, Coordinator: Tucson Audubon's Paton Center for Hummingbirds

What is a bird worth? Let's say, for instance, a Yellow-breasted Chat. Maybe you've been listening to his one-bird band of melodic chatter and wild whistles coming from a thicket. You're delighted long before you spot him, though you wish he'd pop out of that bush—if only for a moment. Suddenly the chat flies to a tray of orange halves set out near the back fence. He's dazzling in the full sun, with his olive back and golden breast. You feel that familiar thrill of having just witnessed a small miracle of backyard beauty.

On the one hand, birders know they cannot put a price on the beauty, excitement, and inspiration wild birds bring us. On the other hand, the birding community recently showed exactly what it was worth to them to save a beloved birding hotspot: the Paton house in Patagonia. It was worth years of struggle and focus to acquire the funds, not just to purchase the home and land, but also to obtain a budget for upkeep and needed site improvements.

Tucson Audubon's Paton Center for Hummingbirds is the birding community's gift to itself, to birders around the globe, and—of course—to the birds. Tucson Audubon knows the value of this jewel. While preserving the legacy of Wally and Marion Paton, we are investing in the Paton Center's future. Here is a sneak-peek into our developing vision.

RAINWATER HARVESTING DEMONSTRATION—In Arizona, water means survival, for people and birds. Tucson's rainwater harvesting expert Brad Lancaster visited the Paton Center to help design a site-specific water-harvesting program that supports the health of the local watershed. Brad and his brother, Rodd, Tucson Audubon's Restoration Field Crew Supervisor, annually harvest 100,000 gallons of rainwater on their 1/8 acre home lot in Tucson. They do so through simple means available to most homeowners: rain cisterns, earthworks, and graywater



systems. These are the methods the Paton Center will also be employing and demonstrating.

Large basins along the driveway and in front of the house will feed habitat-pollinator gardens. Catchment systems from building roofs will provide extra water for our food-rich landscaping for birds and people. Water that currently runs along or pools beside Blue Heaven Road will be directed onto the property to feed the paddock.

RESTORATION—An important step in the evolution of the Paton Center is the restoration of the "paddock"—the small lot adjacent to the home. Formerly used for livestock, this tree-lined patch of green will be transformed into a healthier ecosystem with a special emphasis on enticing and supporting birds—from rare migrants to local rarities and everyday old friends. The paddock is already home to key elements of the Patagonia riparian-scrub biotic community: elderberry, mulberry, mesquite, and plenty of Vermilion Flycatchers. Resident Caretaker Larry Morgan reports seeing Arizona glossy snakes, short-horned lizards, and Gray Flycatchers there as well. At the same time, the paddock has suffered an onslaught of invasive species: London rocket, sticky grass, and horehound, to name a few.

Tucson Audubon's restoration crew has improved hundreds of acres of southeast Arizona in support of local wildlife and wildlife watchers. They'll now be focusing some of those efforts on the little lot next door.

COMMUNITY—We are also striving to build deep and lasting ties with the local community. The preservation of the Paton Center—and its birds—is intimately linked to the health and survival of this entire corner of Arizona. We will work toward shared resource conservation and economic sustainability goals in partnership with the Hummingbird Monitoring Network, the Patagonia Area Resource Alliance, Borderlands Restoration, the Nature Conservancy's Patagonia-Sonoita Creek Preserve, and the town of Patagonia.

As we bring changes to the Paton Center, we are also taking care to preserve the best parts exactly as they are. Larry continues to fill the feeders every day—a couple of times a day now that the cowbirds are back in town. He continues to put out oranges for the orioles, and the Yellow-breasted Chats. We hope that you will continue to support the center as well, with your ideas, volunteer hours, and generous donations. Please support our summer appeal with your donation today.



(Upper left) Marcia Grand, major donor to the Paton project, reviews sketch of Paton Center plans with Keith Ashley.

(From above) (1) Yellow-breasted Chat. (2) Jonathan Horst and Larry Morgan remove invasive weeds before they go to seed in the paddock. (3) The shed before being removed by the restoration crew. (4) A new view of the leafy green paddock after removal of the shed.

WELCOME NEW MEMBERS

Stephanie Aguillon, Maria Altemus, Jill Barrett Johnson, Edward Berghausen, Debbie Harrison & Robert Blackett, Gary Bowerman, Marc Callis, Lonnie Calmes, Dennis Carlson, Sarah Carlson, Linda Root Cooper, Judy & Gordon Craig, Sharon Craig, Nancy Davis, David Dean, Rebecca Dickinson, Larry Bodine & Dorian Dvorak, Irene Edgett, William Edwards, Kreg Ellzey, Jane Erin, Kristin Everett, Charles Fears, Giovanna Fiori, Craig Fischer, Larry Fisk, Syrene Forsman, Siri Forsman-Sims, Robert Fouch, Jeffrey Patey & Holly Fredericks, Ana

Gonzalez, Marlesa Gray, Jeannie Greven, Marius Gutowski, Jeri Haklik, Joey Hiller & Robin Doshas, John & Isabella Hindman, Mary Howk-Hanley, John & Kathy Hughes, Barbara Johnson, Ken Kalina, C.J. Karamargin, Peter Kaune, Joanna Kirkwood, Natasha Kline, Paula Kulina, Geraldene Larrington, Robin Lenaker, Arthur & Jeanne Lewis, Mike & Mary McMinn, Andre McNulty, Jeffrey Middlekauff, Janice Mock, Duane Morse, Ken Murphy, Susan Neuman, David Niven, John O'Rourke, Dave & Linda Ott, Julie Pulliam, Diane Rand, Pam Rivers,

Andrew Roberts, Mark Sackett, Dan Sheahan, Penelope Shepard, Kathy & Jim Shurts, Bill Shuster, Ariel Olroyd & Marcia Slagle, Kenna Smith, Harvey Smith, Khrista & Jeremy Sohn, Janet Somerson, Estelle Stern-Eilers, Alan Stoddart, Mark Stromberg, Diana & Joel Strupp, Angela Terry, Rauny & Ron Thompson, Jane Tobin, Neil Travis, Frank Urban, Lloyd Vest, Judy Visty, Lisa & Frank Walter, Nancy Wesorick, Peggy White, Ana Zir.

Kara Kaczmarzyk, Membership & Development Manager



BROAD-BILLED HUMMINGBIRD, ALAN D. WILSON/NATURESPICSONLINE.COM

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Gifts in Honor/Memory:

In honor of Larry Abrams from Martin Karson
 In memory of Janet Glassman from Kathy Kuyper
 In honor of Dr. Connie Steele from Sherie Steele
 In memory of Kim Zonge from Mort Womack

Thank You to Our Frequent Flyers

Ardeh Barnhart, Myrna Beards, Brooke Bedrick, Melanie Builder, Andrea Cohen, Janet Cohn, Mich Coker, Christine Curtis, Sandy Elers, Margaret Ford, Marcy Gray, Mike Judd, John & Sarah Kennedy, Susan Kozacek, Erin Olmstead, Nancy Young Wright, Claire Zucker

Monthly giving through automatic credit card or bank withdrawals is convenient, secure, and simply one of the best ways you can support Tucson Audubon's programs. For more information, visit tucsonaudubon.org.

What Does Your Membership Cost?

Kara Kaczmarzyk, Membership & Development Manager

What does it mean to be sustainable? We each practice sustainability in our daily lives. Members sustain Tucson Audubon, and for Tucson Audubon to be sustainable in the community, we balance services, programs, and a variety of revenue sources.

As a Friend of Tucson Audubon you are the cornerstone of the organization. When Tucson Audubon advocates for the most pressing environmental issues to policy makers, businesses, and the public, our voice is only as strong as our membership. Tucson Audubon members make possible publication of the magazine you are now reading and so much more. In every outreach letter, in every comment letter, every

time we speak out for wildlife and open spaces, we speak on your behalf—on the behalf of Tucson Audubon members.

Recently we assessed the costs of servicing a Tucson Audubon membership for one year, and the figure came to around \$30. That figure includes such things as producing and mailing the *Vermilion Flycatcher*, member benefits, such as store discounts, and general administrative costs, but does not include any additional support for program work.

In order to streamline membership to be more sustainable and at least have it cover the costs, we will be reducing the number of member categories by eliminating the Student

and Senior categories at the end of 2014. Current Student and Senior members can still renew at the current levels through the end of this year. We'll also be encouraging members to pay their dues through automatic monthly payments, with a base of \$5 a month. It's easy to check that option on your renewal notice.

Tucson Audubon achieves its goals only through your support and we thank you for being a Friend of Tucson Audubon.



Call for Nominations

Kara Kaczmarzyk, Membership & Development Manager

Do you know someone whose passion for birding, education, or conservation has moved them to do extraordinary things in southeastern Arizona? Help us celebrate those achievements. The three awards seeking nominees are:

- **The Wally and Marion Paton Award for Outstanding Contributions to Birding.**
This award is defined by the example of the Patons'

dedication to birds and the birding community.

- **The Kenn Kaufman Award for Excellence in Education Relating to the Natural World.**
This award is for an individual, institution or corporation that provides ongoing nature education to adults or children.
- **The David Yetman Award for Exhibiting or Promoting**

Conservation in Southern Arizona. *This award is for conservation practices that promote sustainability.*

Nominations are being accepted through **Friday, August 22nd**. You may nominate as many people, or companies, as you would like. Our selection committee will choose the winners to be awarded at the next Tucson Audubon Gala and



The David Yetman Award for Exhibiting or Promoting Conservation in Southern Arizona was presented to Christina McVie at the 2013 Tucson Audubon gala.

recognized through Tucson Audubon and local media. To nominate, please complete a nomination form at www.tucsonaudubon.org/what-we-do/awards, pick up a form at our Nature Shops, or call 520-209-1809.

Volunteer Update

Julie Pulliam, Events & Volunteer Coordinator



Hello!

"When one tugs at a single thing in nature, one finds it attached to the rest of the world."

Conservationist, John Muir's words are at the heart of my life philosophy to genuinely connect with others and the world around me—with a deep awareness of how individuals contribute to the whole.

I am delighted to serve the Tucson Audubon Society as the new Events & Volunteer Coordinator! I joined the Tucson Audubon staff in April, 2014, and have a bachelor's degree in Communication from the University of Arizona. Over the last 16 years I have coordinated events in the education, arts, and non-profit sectors with a more recent focus on planning, creative design, public relations, and marketing.

I am a native Tucsonan and life-long learner with a passion for birds, sustainable living and conservation—it is a way of life for me. Growing up in rural Tucson, I began watching birds at early age, and have enjoyed many experiences with them over the years. I am continually inspired by the way they represent nature through their beauty and actions, and believe they are a wonderful way to connect with nature.

A Message to Our Volunteers

In addition to working with Tucson Audubon staff and volunteers to coordinate events; my role is to serve as your point-of-contact for volunteer opportunities and activities, to listen, and assist you in contributing your individual strengths as a volunteers. The goal is to collaborate together to create successful experiences and outcomes within our community.

Since I joined the Tucson Audubon staff I have met many of our dedicated volunteers, who have so many skills and interesting stories to share. I learn something new each day, and I appreciate the smiles they bring to me and others around them!

I am enjoying my journey with Tucson Audubon and our dedicated volunteer community. I look forward to meeting you, if I haven't already! Thank you to our volunteers for being an integral part of our successes and goals to "protect and steward Southern Arizona's protect and steward Southern Arizona's biological diversity through the study and enjoyment of birds." We truly appreciate what you do!

Interested in Volunteering?

Volunteers with the Tucson Audubon Society have the opportunity to learn new skills and meet new people through many exciting areas such as Restoration, Important Bird Area Surveys, our Nature Shop, Field Trips, Administration and Special Events and Projects. Attend our 4th Annual Tucson Bird & Wildlife Festival, August 13th–17th to see our enthusiastic volunteers in action. If you are interested in volunteering opportunities, please call or email me at 520-209-1811, volunteer@tucsonaudubon.org. I look forward to collaborating with you.

Warmest Welcome to our New Members of the Tucson Audubon Volunteer Team!

Prithi Avanavadi
Bob Bowers
Prudy Bowers
David Bygott
Linda Crouse
Laura Diaz
Michele Frisella
Stuart Lueders
Ken Murphy
Tracy Scheinkman
Taralynn Reynolds

Contact Julie about volunteering!

volunteer@tucsonaudubon.org
520-209-1811

tucsonaudubon.org/volunteer

Meet Lynn Hassler! Plant aficionado Lynn Hassler manages the habitat garden at our 5th and University office location and writes the garden plant profiles for the *Vermilion Flycatcher*.

She first became involved with Tucson Audubon in 1987, serving on the board of directors for two years. Early in 2012 she and Cynthia Pruett (current board president, fellow gardener and book club member) decided to tackle the Tucson Audubon garden, which was overgrown, under-watered, and over-taken by Bermuda grass. Lynn offered her gardening expertise on a volunteer basis and recruited three fellow Tucson Audubon volunteers to help. "Marcia, Julia, and Keith are the crème de la crème," says Lynn. You will often find Lynn nurturing the garden each Wednesday morning.

Lynn, a long-time gardener, worked at the Tucson Botanical Gardens for 14 years as Nursery Manager, Volunteer Coordinator, Newsletter Editor, Director of Education, and Director of Horticulture. She has written several books—*Birds of the American Southwest*; *Gambel's Quail*; *Roadrunners*; *Hummingbirds of the American West*; *The Raven: Soaring Through History, Legend & Lore*; and *Hot Pots: Container Gardening in the Arid Southwest*. For the past 12 years she has written a bird gardening column for *Birdwatcher's Digest*. She has previously served on the board of directors of the Arizona Native Plant Society and the Southern Arizona Volunteer Management Association. Lynn is currently a member of the Garden



Writers Association, and teaches classes and leads trips for Tucson Audubon, Tohono Chul Park, and Desert Botanical Garden in Phoenix.

Lynn's favorite bird? "Impossible to say," but there are some names she likes from her many trips abroad (she has been to every continent). "Paltry Tyrannulet has always been a favorite, along with Screaming Piha, Guttulated Foliage-Gleaner, Coppersmith Barbet, Noisy Miner, Bornean Whistler, Zitting Cisticola... well, you get the idea."

The species that inspired Lynn to begin birding some 40 years ago was a Spotted Towhee double scratching in the leaf litter in her front yard in Palo Alto, California—"... something about the behavior, the juxtaposition of the rufous flanks with the black hood, and those gleaming red eyes," she said.

Besides birding and gardening, Lynn is an avid photographer, bibliophile, and movie addict. In her former life, she served as the Finance & Personnel Manager for the Sleep Disorders Center at Stanford University.



L to R: Nature Shop Attendant Jim Watts enjoying his favorite area of the Nature Shop; Volunteers Michele Frisella and Bryon Lichtenhan representing Tucson Audubon Society at 2014 EarthFest in Patagonia.

Interesting stories about birds with interesting names

Vermilion Flycatcher

LARRY LIESE

Well readers, all good things must come to an end, and with me running out of ideas on the column's theme I've decided to wind it up with two key species. This issue's focus is on none other than our namesake mascot species—Vermilion Flycatcher (how could I *not* cover this one!). For the next issue, I'll wrap up the series with the very interesting story of Crissal Thrasher, its name, and something called the Law of Priority—a key rule by which birds names are held to, regardless of changes in taxonomy.

Back to Vermilion Flycatcher: I must quickly remind readers of a nice article written by Bob Bowers six or so issues ago titled “Tucson Audubon, Meet your Mascot,” in which he told interesting stories and some of the history of our mascot and how it came to be so. Like Bob, I had no luck finding direct evidence on why this species was chosen. All I have to add to Bob's account is that I'd heard from a long-time Nature Shop staffer that it might have been that it was Vermilion Flycatcher that was the most asked-about bird by

visiting birders who were itching to see one.

Early on my journey into birding, I heard the story of how male Northern Cardinals were chosen by females by the deepness of their red color (famously indicating their ability to find and provide food for a family). Later I read that because of this, the males suffered an added twenty percent risk of predation. It made me wonder just how the more vividly-colored birds evaded predation, especially this issue's species which seems to really push the limit on being visible. Although the vermilion color would have that short-term selection advantage, what about the longer term issue of predators finding them first? I pondered this for some time, then had a sighting of a male directly from the rear and had a hard time identifying it. The bird then turned its head and ... “Holy Cow,” look at that color! Since then I've noticed a number of bird species that



FEMALE (ON LEFT) AND MALE VERMILION FLYCATCHER, LEN BLUMIN / CCL

have plumages that are decidedly more striking from the front and sides, but give a muted pattern from directly behind. A similar coloration strategy exists in our local lizard populations when in breeding colors (hidden on their underparts, mostly). Just goes to show—Nature finds a way!

Besides being a showy species, the Vermilion Flycatcher male's display flight is a wonder to see. They fly from a prominent perch up into the air at an angle, flapping their wings like mad (but not really travelling fast). A song composed of a number of rapid notes rising and then falling accompanies the flight. When you notice this, be sure to look for the female nearby that he's displaying for—there will always be one in view. Here are some comments on identifying females that might come in handy. Next time you're looking at either male or females, take a close look at the shape of the bill. I find this to be a sure-fire trigger when I see a female in poor light. Combined with the species' preference for semi-open habitat and its sit-and-wait hunting style, I find that I don't need to see the females' streaks or flank color to be pretty sure of the ID. Though most field guides now show the young female having yellow flanks before they mature into that salmon color, it used to befuddle birders when first seeing that!

So next time you're seeing a “Ruby Fire-head” (this is what the scientific name *Pyrocephalus rubinus* means), think back all those years ago to when our Society's founders chose this little guy as our mascot. Little did they know how it would hold the focus of what Tucson Audubon has done and become through the years. Way to go, little flycatcher! ■

VERMILION FLYCATCHER ILLUSTRATION BY GEORGE WEST



Southeastern Arizona's Summer Sparrows

RICH HOYER

If winter is a great time for sparrows here, summer is a fabulous time for sparrows. It's a different suite of species during our monsoon, many of them regional specialties, and finding them is less up to the chance encounter with a winter flock—they are more predictable in their habitat choices, and their lovely songs make them a cinch to identify.

Rather than having to know specific plants to find these birds, you need to train yourself to recognize the shape of their habitats—the general type of plants, their density and height, and the general topography. These are probably the same cues the birds themselves use when deciding what works for their particular biology, as long as they are able to find food and a place to nest.

Let's start with Black-throated Sparrow—perhaps our most familiar lowland sparrow. But they are not everywhere—they definitely need real desert scrub with native acacias, creosote bush, and cacti for example, avoiding lush riparian areas, mesquite bosques, and especially suburban sprawl; in the Tucson metro area they are virtually absent south of the Rillito River and east of I-10 until you get east of Houghton where desert begins again.

At another extreme in habitat is our resident breeding Grasshopper Sparrow. For this one you need large expanses of native grassland—low or high-elevation—with as few trees or shrubs as possible, but still with some structure for them to use as singing perches—a lone small mesquite or a tall thistle will do.

Botteri's and Cassin's Sparrows need a lot of native grass and prefer more small trees and shrubs than Grasshopper, but they occur in so many places together, it's difficult to tell how their exact requirements differ. Cassin's may be a little less choosy, occurring in drier and sparser grasslands, with Botteri's probably needing it a bit more rank, with taller grasses of more subtropical origin and lush mesquites in draws.

This is where it gets interesting, with Rufous-winged Sparrow being more

particular in requiring these more tropical grasses. But first note that they like it rather flat, not hilly or sloped, though even a rather small flat area on the shoulder of a narrow river valley will do. They definitely like their grasslands to be very shrubby, with mesquite of almost any size, along with cactus, acacia, mimosa and others, but remember these have to be the grasslands with tropical affinities, not those with Great Plains affinities. Thankfully, this doesn't mean you need to recognize grass species; you merely need to know that the higher grasslands of the San Raphael Valley, Sonoita Grasslands, and much of Cochise County lack Rufous-winged Sparrows—they are present only in the lower elevation areas of those counties, such as Las Cienegas NCA and the lower San Pedro (with a few sometimes south to Hereford). But the species is especially abundant in the Santa Cruz and Altar Valleys, as well as most places between. Get too far north or west, you start getting into desert scrub that lacks summer grasses altogether, and you find no Rufous-winged Sparrows there.

The shockingly sedentary Rufous-crowned Sparrow likes rocky slopes where there are at least a few shrubs and bunchgrasses. I don't know if there are particular species of plants they prefer, but there is almost always an open oak woodland present where these features co-occur. However, you can find isolated Rufous-crowned Sparrow populations in the higher canyons of the Tucson Mountains and even in the Waterman and Silverbell Mountains, far from any oaks.

Finally, we have the very interesting Five-striped Sparrow, the only regularly breeding species in Arizona that has never occurred in any other US state. It requires our most subtropical habitats, not because they like the mild weather, but because they seem to prefer a very high diversity of mid-size shrubs on slopes. This is where you could benefit from honing your botany skills. Anywhere you can find the fascinating composite Doll's Head (*Lagascea desciapiens*), Goodding's

KENDALL KROESEN



JOHN HOFFMAN



JAMES PRUDENTE



While you don't need to recognize grass species, it helps to know that Rufous-winged Sparrows are present only in lower elevation grasslands such as at Las Cienegas NCA (top). Telling a Rufous-crowned Sparrow (middle) from a Rufous-winged Sparrow (bottom) is easy when you know their habitat preferences.

Ash (*Fraxinus gooddingi*), Kidneywood (*Eysenhardtia orthocarpa*), and Hopbush (*Dodonaea viscosa*) growing together, you'll probably notice a dozen other small trees and shrubs, and there you will probably also find Five-striped Sparrow. A small stretch of California Gulch is the best known and most accessible place for this species, but there are certainly other places with the right botanical characteristics awaiting discovery. **W**

Rich Hoyer is a Senior Leader for WINGS Birding Tours Worldwide, wingsbirds.com/leaders/rich-hoyer.

Hold That Note

PAUL GREEN | EXECUTIVE DIRECTOR

We have had information on how much birders spend on their avocation since at least 1982, with the publication by the U.S. Department of the Interior of *The 1980 National Survey of Fishing, Hunting and Wildlife-associated Recreation*. At that time, spending was \$20 billion nationally. In the 1980s, BirdLife International (then the International Council of Bird Preservation) took the lead, sponsoring symposia and publications—for example, *The Value of Birds*, ICBP Tech. Publ. No. 6, edited by Anthony Diamond and Fern Filion in 1987.

Shortly after, other authors began writing about the economic force of birders: David Weidner and Paul Kerlinger published a seminal article in *American Birds*. They argued then as we argue now that conservation organizations should make powerful economic arguments to legislators and planning boards to consider alternatives to development, preserving and managing open land for a variety of wildlife-associated recreation, and so realize a sustained economic benefit without the tax burden associated with home development.

Implementation of infrastructure to realize the potential of birding economics came about in the early 1990s when its spiritual leader, Ted Eubanks, sold his haulage business and established Fermata Inc. (www.fermatainc.com) in 1992 as a “cause-based corporation.”

Ted believed that by connecting people to special places, they would see value in their protection.

In 1993, Ted served on a task force for nature tourism created by Texas Governor Ann Richards. Out of that experience sprung the idea for the Great Texas Coastal Birding Trail, a series of trails that wind through 308 distinct wildlife-viewing sites, encompassing the entire Texas coastal region. Completed in 1995, the idea has spread across all regions of the state with attractive printed maps for sale. It is the spiritual antecedent to one of our new projects: A Bird Trail Map for the City of Tucson, featured on page 19.

Ted said in a 2003 interview that “For me it’s all about what’s indigenous, what’s authentic, what’s real, what’s rooted in that area. We only work with those goods and services that reflect the nature, culture and history of the area.” Some would call what Ted has started part of a broader geotourism trend, defined as tourism that sustains or enhances the geographical character of the place being visited—its environment, culture, aesthetics, heritage and residents’ well-being.

Ted says he often feels like the odd man out in various situations. Environmental groups sometimes are suspicious of Fermata’s corporate designation, he says, and the business world is scared of his environmental agenda.



DAN SIDLE

A prime example of an outcome of Ted’s work we can use is Canadian, Texas, “a tired, down-on-its-luck Panhandle town.” Canadian has Lesser Prairie Chickens. The city contacted Ted, and Fermata drew up a strategic plan that included marketing the Lesser Prairie Chickens to birdwatchers and harvesting little blue stem grass seeds. That promotion has helped put Canadian on the ecotourism map.

Part of Fermata’s plan to revitalize rural economies is establishing a “brand” for a town. Ted says 40 percent of what Fermata does falls under the category of “product development.”

Fermata helps towns take an inventory of their natural resources and figure out how best to market them. Although he’s happy with the improved economy in Canadian, Ted resists taking full credit for the city’s success.

“I’d like to say our little nature tourism plan is what saved the community, but I don’t believe that. It was a catalyst,” Ted says. “Certainly, the people started to look at their community a little differently, so suddenly they do a Main Street program and suddenly somebody invests in the theater, and now you have a quality of life in the community that makes it the cultural center of the Panhandle.”

I suggest that we should adopt Ted’s philosophy of tourism. “Tourism for me is more of a means to an end, not an end,” he says. “I’m not strictly a tourism promoter; I like tourism as a tool. It’s a way that I move markets to products, since most communities can’t do it the other way around.”

I also suggest that there’s a great opportunity for southeast Arizona to work with a catalyst like Fermata to develop the strategic focus for wildlife tourism mentioned on p3. Who would take the lead to set the agenda, and raise the funds? ■

<http://www.bizjournals.com/austin/stories/2003/09/22/smallb1.html?page=all>

Wiedner, D. S. and P. Kerlinger. 1990.

Economics of birding: a national survey of active birders. *American Birds* 44: 209-213.



Another Important Step in Patagonia's Ecotourism Efforts

DAVID TEEL

Ecotourism? What's that? Consider the definition articulated by the World Conservation Union (IUCN): "Environmentally responsible travel to natural areas, in order to enjoy and appreciate nature (and accompanying cultural features, both past and present) that promote conservation, have a low visitor impact and provide for beneficially active socio-economic involvement of local peoples".

Ancient tribes and modern peoples have been gathering around the Patagonia mountains for at least 12,000 years, drawn by the water and the good growing climate. Incorporated in 1948, the Town of Patagonia has roots deep in its history as a mining and cattle community, once of sufficient magnitude to merit its own rail station. For over half a century those were the engines that drove its economy.

Now the mines are gone, at least for the moment. Ranching is a shadow of its former self, and the only remaining vestiges of the railroad are the mile-long park through the heart of town and the handsome town hall, restored and relocated from its former role as the rail station. Scenic Route 82 and the Arizona Trail have replaced the rails as the pathways of choice for Patagonia visitors. Struggling back from near extinction, the Town now has two new economic engines: art and ecotourism.

How important an economic engine is eco-tourism? A 2011 study by the Arizona Game and Fish Department projected direct and indirect economic benefit for Patagonia's home county, Santa Cruz, at 21.2 million dollars, including 6.7 million dollars in salaries and wages. Although Patagonia has only a small share of the county population, it has a large share of its eco-tourism.

The community has always been blessed with natural attributes in climate, location, elevation, vegetation and topography that made it a suitable habitat for an incredible diversity of wildlife. Patagonia is considered by many to have



(Left) Paton Center Resident Caretaker, Larry Morgan, with his bike in downtown Patagonia. (Upper right) Southeast Arizona specialty, the Gray Hawk nests in the Cottonwoods around town and can be seen soaring over on any given day. (Lower right, from left) Paul Green, Executive Director of Tucson Audubon; David Teel, Town Manager of Patagonia; Marcia Grand, major donor to the Paton project. All are standing in front of the Patagonia Town Hall, which was historically the Patagonia Train Depot.

possibly the greatest diversity of species in the United States.

In recent decades, Americans have become increasingly interested in seeing and sharing their outdoor environment. Patagonia and its residents have reaped the benefits. One of the pioneering efforts grew out of the desire of residents Wally and Marion Paton to watch and enjoy the myriad of hummingbirds that passed by their home on the banks of the Sonoita Creek and next to the Nature Conservancy's Patagonia-Sonoita Creek Preserve. Enhancing the habitat that their property provided for hummingbirds with planting and feeders, they created a place that soon was attracting both birds and bird watchers in increasing numbers. Over the years it became a favorite attraction for the town, expanding those already provided by the birding opportunities around the Patagonia Mountains and southern Arizona's sky islands. Over 200 bird species have been identified on the Paton property.

After the Patons passed on, their children were not able to maintain the property as a birding hotspot. Patagonians were very concerned about the possible loss of this important asset. Fortunately a solution was found. The Tucson Audubon Society, in partnership with the American Bird Conservancy and

Victor Emanuel Nature Tours, stepped in, raising the \$300,000 necessary to acquire the property and committing to preserve it for the benefit and enjoyment of birds and birders in perpetuity. Now Tucson Audubon Society is moving forward with its program to further enhance the bird-watching experience the property affords.

It takes only a brief visit to the town's business association website <http://www.patagoniaaz.com/> or a stroll up its main street to see the importance of ecotourism in Patagonia. Tour busses for birders, bikers and other nature enthusiasts are regularly visible in front of hotels and restaurants, while hikers coming off the Arizona Trail set their packs outside the Gathering Grounds coffee shop as they refuel for the next leg of their journey. Guides for nature tours outnumber medical practitioners on the roster of town businesses. Humans and hummingbirds have found a truly symbiotic relationship in Patagonia's ecotourism. ■

David Teel is currently the town manager of Patagonia. He has previously been engaged as the professional city manager for 7 other cities in 5 states--including Cape May, New Jersey, another birding hotspot. Tourism and local ecology have played an important role in all of the cities he has managed.



GRAY HAWK, AXEL ELFNER

It's the Fourth!

PAUL GREEN | EXECUTIVE DIRECTOR

It's Year Four for the Festival Fan! The fourth annual Tucson Bird & Wildlife Festival showcases our region's unique wildlife and highlights the economic impact of birding and nature tourism.

The festival was created in part to demonstrate to those in local government and business that traveling birdwatchers have significant economic impact in Arizona, and the natural habitats upon which our birds depend have value in their undeveloped state. We want to show that without incurring the costs that arise from development, natural spaces are economically viable—very viable. Wildlife-related recreation is worth \$1.4 bn each year to Arizona.

The other reason, of course, to host the Tucson Bird & Wildlife Festival is to celebrate the astounding diversity of birds in our region! Of the 914 species of birds found in North America, around 525 have been seen in Arizona, and 400 are seen here each year. Thirty six species of birds are not regularly found elsewhere in US and around 40 are found *only* in the US/Mexico border area. In southeast Arizona, bird diversity is at its highest when hotel occupancy is at its lowest, in August. Arizona is third in the nation, only below the coastal states of California and Texas in terms of bird species to be seen. This is a very special part of the continent for birders.

Each year at the Tucson Bird & Wildlife Festival, through a variety of surveys and feedback methods, we begin to draw a picture of the representative *Tucson Bird & Wildlife Festival Fan*. This watchable wildlife enthusiast is a powerful driver of the local economy.

Last year, the festival fan stayed in hotels for four or five nights, generating a total of 127 "Tucson bed-nights" and around \$1200 in City of Tucson Bed Taxes. This festival fan is one of about 800, coming from one of about 25 states, 43 Arizona zip codes, or a number of overseas countries.

Our festival fan is a passionate and responsible naturalist. An overwhelming majority of festival attendees, about 9 out of 10, told us they would be prepared to pay for an Arizona Watchable Wildlife User Fee to fund the management of non-game wildlife.

This festival fan repeats their business. More than one third of attendees had participated in the previous year's event, and more than three quarters said they were very likely to attend again.

What makes the festival fan most excited about the event? The variety of species, the chance to see rare and migrant birds, other taxa (butterflies, herps, mammals), and organized trips with expert leaders ranked high on their lists. Hummingbirds, owls, hawks and Elegant Trogon were most popular.

This festival fan is most interested in a general enjoyment of watching birds,



HARRIS'S HAWK, GATOR GRAY

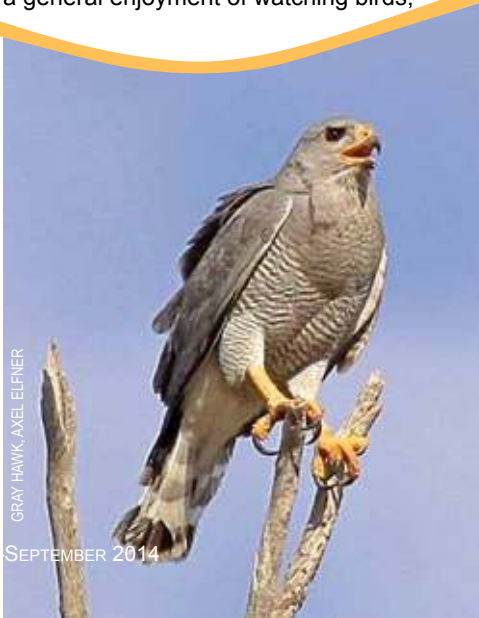
bird behavior, and the relaxation of being out in nature. Secondary on their list is visiting a new area, and then somewhat less important is learning to identify new species and adding new species to a list.

This festival fan may remind you of others in the field. Their demographic profile is largely representative of the watchable wildlife traveler majority. They are older, mainly Caucasian males, of higher income, and well educated.

The excitement and the challenge becomes: how can we harness the power of the birding community as an economic driver while expanding the reach of watchable wildlife activities like the Tucson Bird & Wildlife Festival? How can we engage more people from all backgrounds to become part of this economic driver, so more people can share their love of birds and wildlife, learn about the threats to our birds and the places they live, and discover what they can do to protect and enhance our region for wildlife? Festivals around the world have this opportunity. The British Birdwatching Fair in the UK, for example, attracts 22,000 visitors and 3500 companies, and has raised more than \$5 million for conservation in 25 years. As the Tucson Bird & Wildlife Festival grows and improves each year, can we count on you as a fan to help bring the message that Birders Mean Business? 



MATT GRIFFITHS



GRAY HAWK, AXEL ELFNER



ALAN SCHMIERER

The Grass is Always Greener... in Southeastern Arizona?

JOHN YERGER

It's hard to forget your first Montezuma Quail. For me, it was while driving south and east of Tucson on State Route 83, an Arizona byway filled with scintillating scenery (and delightfully devoid of open-pit copper mines). It was late July. Spectacular thunderstorms had soaked the San Rafael Valley, rinsing away the golden straw color of summer to reveal a deep green sea of grasslands in monsoon. I was traveling at solid highway speed when suddenly, at the edge of the road, I spied a stunning little sphere of feathers—striking white polka dots spattered across dark sides and flanks, bizarre black polygons on a white face, and every shade of earth tones everywhere else. A regal male Montezuma Quail!

I screeched to a halt as quickly as I could, but by the time I had pulled off the road, I spun out of the driver's door only to catch this pleasant surprise slinking off into the tall grass on the opposite side of the road. Despite the fact that I had marked precisely where it disappeared into the grass, and with no traffic to impede me from sprinting to that point, I never glimpsed it again...

This, to me, is the essence of birding southeastern Arizona during the monsoon: a paradoxically lush and verdant desert, with exciting birds of every stripe taking advantage of this "second spring." It's a critical time for summer residents: several sparrow species do not breed until the monsoon, and many other species nest for a second or even a third time. But many migrant species have also incorporated this season into their life cycle, learning over the millennia to travel south to Arizona for the rainy season—arriving significantly

earlier than those same species appear in neighboring regions, because of the abundant resources available here. Hummingbirds take sustenance from the myriad blooming flowers, as well as from the proliferation of miniscule insects. So, too, do many species of flycatchers and warblers return. Shorebirds taking an inland route find ephemeral oases scattered across these typically arid lands. Of course, the rains are also essential to reptiles, amphibians, mammals, fish—basically every taxon imaginable!

Our birds and other wildlife face a litany of threats: overdraft of groundwater reserves, urban sprawl, countless impacts from climate change—the list alone could comprise this entire article. That's why I personally feel that it's important to support events like the **Sky Islands Birding Cup, part of our Tucson Bird and Wildlife Festival**. We should endeavor to bring broader regional attention to this fundraising event, which challenges teams not only to find as many bird species as possible in 24 hours, but also to raise as much money as possible to help conserve those same species. Funds raised this year will benefit Tucson Audubon's Paton Center for Hummingbirds. Such funding can make a positive impact on conservation of our natural resources in a very tangible way. For details, visit www.tucsonaudubon.org/cup.

I'll look forward to seeing you out there, where the bunchgrasses are greenest! 🍷

John Yerger lives in Portal, AZ at the base of the Chiricahua Mountains, where he leads tours for Adventure Birding Company (adventurebirding.com).



MONTEZUMA QUAIL, JOHN HOFFMAN

Make monsoon memories at the Tucson Bird & Wildlife Festival, August 13th–17th, 2014!



EVENT SCHEDULE:

Riverpark Inn, 350 S. Freeway,
Tucson, AZ 85745

- **FREE NATURE EXPO Friday & Saturday Aug 15–16, 10 AM–6 PM; Sunday Aug 17 10 AM–2 PM** for engaging *free talks*, exciting live animal presentations, and vendors and exhibitors offering an array of nature-themed arts, crafts, and activities.
- **Sky Islands Birding Cup, Wednesday Aug 13.** Compete and collect pledges! Winning teams will be announced at the Nightlife Social!
- **Optics Day, Friday Aug 15.** Try out Optics at Sweetwater Field Trip and attend demonstrations at the Nature Expo.
- **Fun Family Weekend Saturday & Sunday, Aug 16–17** with kids' activities and youth birders' field trip.
- **Advocacy Station Friday, Saturday, & Sunday, Aug 15–17.** Learn about local conservation issues and how you can get involved.
- **Workshops Thursday, Aug 14–Sunday, Aug 17.** Learn new skills in educational workshops hosted by Steve N. G. Howell, Lynn Hassler, Ronnie Sidner, Homer Hansen and Kendall Kroesen.
- **Keynote Dinners with Presentations Friday & Saturday, Aug 15–16** by speakers **Robert Mesta**, director of national and international reintroduction programs of Condors in California and the Grand Canyon, and **Steve N. G. Howell**, festival keynote, international bird tour leader and author.
- **Offsite Expert-Led Fieldtrips Friday Aug 15–Sunday Aug 17 (nearly sold out)** with our friendly leaders to track down your favorite birds at nearby birding hotspots.
- For more information about the Festival please visit www.tucsonaudubon.org/festival, or call 520-209-1811.



Visit tucsonaudubon.org for updates and more.



ELF OWL, JEREMY HAYES

CONSERVATION AND EDUCATION NEWS

CHRIS MCVIE, MATT CLARK, PAUL GREEN, KENDALL KROESEN, BÉTÉ JONES, AND JENNIE MACFARLAND

Water for River, Trees, and Wildlife, or 7000 Homes Instead?

On June 10, a huge 7,000-unit development in Sierra Vista entered legal limbo. Maricopa County Superior Court Judge Crane McClennen ruled that the Arizona Department of Water Resources (ADWR) erred in concluding that the developer of the Tribute project has adequate water through a water company. The water department found in April 2013 that the Pueblo del Sol Water Co. of Sierra Vista has a legally available supply. Such a finding is necessary for a new Cochise County development.

The Bureau of Land Management, Dr. Robin Silver (Co-founder of the Center for Biological Diversity), and Patricia Gerrodette (President of Huachuca Audubon) sued to prevent the project from pumping groundwater out of concern that it would dry up the San Pedro River, the best remaining cottonwood-willow-tree riparian area in the Southwest, and a Globally Important Bird Area.

The key issue in the case is whether the state must limit pumping in the San Pedro area to protect the river's congressionally mandated federal water rights.

During the hearing, the Judge asked a Pueblo del Sol attorney what would happen if in 20 years it was determined that the development's pumping interfered with federal rights. The attorney replied that the water company "would have to make up the difference from some other source, such as trucking it in," the ruling said.

The consultant for the developer, California-based Castle & Cooke Associates, says its computer model found that pumping for Tribute would not lower the water table more than 1,200 feet over 100 years. That typically meets the legal definition of an adequate water supply, but is death to the trees and bird habitat. A mature cottonwood might exceptionally have



Cottonwoods along the San Pedro River.

CHARLES MILES

roots that reach 16 feet beneath the surface, and to thrive must be within two feet of water. So any water table lower than 18 feet below the surface will begin to kill mature trees after younger trees have long since succumbed to lack of water.

Patricia Gerrodette said she hopes the state does an analysis of the

project's impacts on the river rather than spend tax dollars to fight the case further.

The judge just said ADWR should do an analysis which, if it is done, will likely show that the river will be impacted and therefore the water is not 100% legally available for 100 years.

Conservation Bonds Update

The County-appointed citizens' Bond Advisory Committee (BAC), of which I am the Vice-Chair, continues its work toward the development of a bond package to present to Pima County voters for funding worthwhile projects. Although originally scheduled for November 2008, factors have delayed this election year by year! For one, the 2008 economic downturn, with the associated loss of property values,

has left county forecasters reluctant to ask property owners to approve close to \$1 billion in new debt.

With this 7-year delay in a bond election, Pima County's BAC has been presented with hundreds of proposals totaling close to \$2 billion, and even more projects with requests for bond funds are being formulated and proposed.

The County-appointed citizen Conservation Acquisition Commission (CAC), tasked with developing open space bond priorities, has identified over 600,000 acres of private and state trust land that are important for protection through acquisition, based on the science-based Sonoran Desert Conservation Plan priority mapping. This includes a variety of diminishing Sonoran Desert habitat types throughout the region, including specific parcels that would expand local preserves; connect vital protected areas that are in danger of becoming isolated; preserve important riparian areas; and conserve lands such as Rosemont Ranch, where our watershed continues to be threatened because of mining interests.

Currently, the funding amount tentatively recommended by the BAC is only \$110 million, with which the

county could acquire only a fraction of these increasingly threatened habitats. This is significantly lower than the \$174.3 million amount voters enthusiastically supported over 10 years ago, which, though well spent, has now been depleted.

The BAC will resume deliberations this September to finalize funding recommendations to the Board of Supervisors, who will ultimately decide on an overall bond package to present to the voters in November of 2015. When these deliberations take place, open space will need all the friends it can get! So stay informed and please plan to show up, speak out, and help us continue the process we began over a decade ago!

*Carolyn Campbell,
Executive Director, Coalition for
Sonoran Desert Protection*

EDGAR CANYON, AT SIX BAR RANCH (COUNTY-OWNED OPEN SPACE), BRIAN POWELL



Artificial Bat Roosts in Bridges in an Extreme Climate

FIGS. 1-3: COURTESY, JANINE SPENCER, TOWN OF MARANA



L to R: **Figure 1.** Ina Road Bridge over the Santa Cruz River, Marana AZ. **Figure 2.** MODERNBAT modular boxes by RD Wildlife Management © April 2014. **Figure 3.** Installation of MODERNBAT © box under Cortaro Rd. Bridge.

The Ina Road Bridge over the Santa Cruz River is one of many bridges in Tucson that provide significant roosts for bats and is home to 10,000 to 15,000 thousand bats: cave myotis (*Myotis velifer*) and Mexican free-tailed bats (*Tadarida brasiliensis*) during the summer, and less than 1,000 Mexican free-tailed bats present in the winter. Recently, Joel Diamond (Arizona Game & Fish Department—AzGFD), Sandy Wolf (Bat Research and Consulting), Justin Stevenson and Holly Smith (RD Wildlife Management), and Janine Spencer (Town of Marana) met to discuss creating bat boxes to fit under local bridges being

built or repaired, to mitigate for the disturbance and displacement of bats during construction. Thanks to just over \$80,000 recommended by the Regional Transportation Authority Wildlife Linkages Working Group (RTA WLWG), of which Tucson Audubon and Marana are members, a new type of bat box of molded light-weight concrete that provides a high insulation value is being incorporated on at least three separate roadway projects. Microclimatic data loggers will provide baseline data for comparison to post-construction conditions. Comparisons will allow the RTA, the Arizona Department of Transportation (ADOT) and AzGFD

to determine the effectiveness of the new design in recreating existing bat roost conditions. AzGFD and Sandy Wolf will monitor bats for one year prior to construction and for two years post-construction. While older bridge designs provided crevices for bats to roost, they are being replaced with new, flat-bottomed bridges. Bat roosting habitat is being lost at an accelerating rate and we hope these projects will be successful models for future bridge replacements so that habitat continues to be available for roosting bats in the Sonoran Desert.

Janine Spencer
Environmental Projects Manager
Town of Marana

On a related note...

Researchers want the public's help in understanding how bats use swimming pools. A nationwide survey is now available online, so if you own, use, or manage a swimming pool, you can provide valuable information. Even if you have never seen a bat near your pool, that's important, researchers say.

http://www.sciencedaily.com/releases/2014/06/140616203945.htm?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+sciencedaily%2Fearth_climate+%28Earth+%26+Climate+News+-+ScienceDaily%29

MEXICAN FREE-TAILED BAT, RON GROVES / CCL

BLACK-THROATED SPARROW, MURIEL NEDDERMEYER



Mapping Tucson Birds

Do you want to know more about places to go birding in or near Tucson? Do you know somebody coming into town that has just a couple hours one morning to go birding? Are you tied down by a busy schedule or mobility issues and can only bird locally? Do you have a neighbor that is interested in birding but wants to start someplace easy?

For all these reasons, and more, Tucson Audubon is starting work on the Tucson Birding Trail Map. We collaborated with Tucson Parks and Recreation Department on a Heritage Grant to provide some basic funding for putting together this resource, and we are looking for ongoing support to

fund development and maintenance of this resource.

Tucson Audubon's book, *Finding Birds in Southeast Arizona*, describes the principle places to go birding in southeast Arizona, including several in or near Tucson. However, if you ask birders where they actually go birding around Tucson, there are many more places our book does not have room for. There are well over 100 eBird "hotspots" in and around Tucson.

All of these locations are very useful for local residents or visitors with limited time, even if they don't rise to the level of inclusion in *Finding Birds in Southeast Arizona*.

The map will be printed on paper and will be akin to the Southeast

Arizona Birding Trail Map, but will cover only the Tucson area, albeit in more depth. There will also be an online version of the map. Each birding location will be described on the printed map and in more detail in the online version. We hope to have an initial product in the spring of 2015.

We are also beginning the process of editing *Finding Birds in Southeast Arizona* in order to print the next updated edition. Production of the book and the Tucson map will go hand in hand in order to give birders in the Tucson area two world-class products to help them get the most out of birding here.

Kendall Kroesen
Urban Program Manager

Threats to Bird Habitats in Southeast Arizona

Proposed Rosemont Copper Mine

The Forest Service's Record of Decision (ROD) for the proposed Rosemont Copper mine was delayed to provide sufficient time to adequately consider and respond to the over 600 individual objections within the 101 substantive public comments received regarding the Final Environmental Impact Statement (FEIS). Responses were posted last week: <http://rosemonteis.us/objection-responses>. While certain errata will be corrected and clarifications made, the Regional Forester has determined that the Forest Service has adequately complied with all relevant and applicable environmental laws, regulations, policies, and the Coronado Forest Plan. Nevertheless, the US Fish & Wildlife Service (FWS) has requested re-initiation of formal Endangered Species Act (ESA) consultation with the FS, which will further delay final decisions on this project. The FWS made the request for additional consultation because of:

- The recent photographic observation of an endangered ocelot in the proposal vicinity;
- New information about the proposed mine's potential dewatering of critical surface and ground water resources, including Outstanding Arizona Waters (OAWs), that indicate that

the project's impacts on water-dependent endangered species is much more serious than previously anticipated; and

- Two pending listings of the Mexican garter snake and the Yellow-billed cuckoo as endangered.

A local community organization, Save the Scenic Santa Ritas (SSSR), retired EPA air quality expert Dr. Joel Fisher, and Vail resident Roy Zeagler have all filed lawsuits appealing the issuance of an air quality permit by the Arizona Department of Environmental Quality (ADEQ). Filing in Maricopa County, SSSR is concerned that the computer model used by Rosemont in its application process was not analyzed properly and that effects of the mining operation could adversely impact the viewsheds of Saguaro National Park East, cause Pima County to violate federal air quality standards, and potentially jeopardize public health and safety. Mr. Zeagler filed in Pima County, arguing that the air permit was faulty due to the ADEQ's failure to consider scientific factual errors and omissions presented by the public. Dr. Fisher, a resident of Green Valley, filed in Pima County and is represented by Vince Rabago, a former Assistant Arizona Attorney General. Rabago, based on previously concealed state emails that were discovered last year, alleges that it was the Governor's Office

which illegally made the decision to take away the air permit from Pima County on the purported basis of a non-existent Arizona regulatory policy of "regulatory certainty." Rabago contends that "Arizona law simply does not allow the Governor's Office to reach down and interject her office to make internal state agency decisions on any specific permit or issue, as that is a legal statutory duty residing solely with the Director of the ADEQ." Rabago further argues that ADEQ also illegally and prematurely commenced its formal application review process more than 7 months prior to ADEQ legally taking jurisdiction over the permitting process in the fall of 2011, after Pima County had denied Rosemont an Air Quality Permit. ADEQ then issued the initial draft permit to Rosemont within three days of taking legal jurisdiction based on the illegal work that it had done for the prior 7 months. In addition, Dr. Fisher's appeal has raised numerous scientific deficiencies in the permit and data supporting the agency decision, contending the permit does not account for hazardous air pollutants that the mine operation would potentially emit which would endanger public health in violation of the Clean Air Act and Arizona law. Dr. Fisher contends the permit was issued while essentially turning a blind eye to scientific facts and comments presented by the public, holding the public to standards which were not published beforehand, and rushing the permit, most likely due to pressure resulting from the Governor's involvement at the outset.

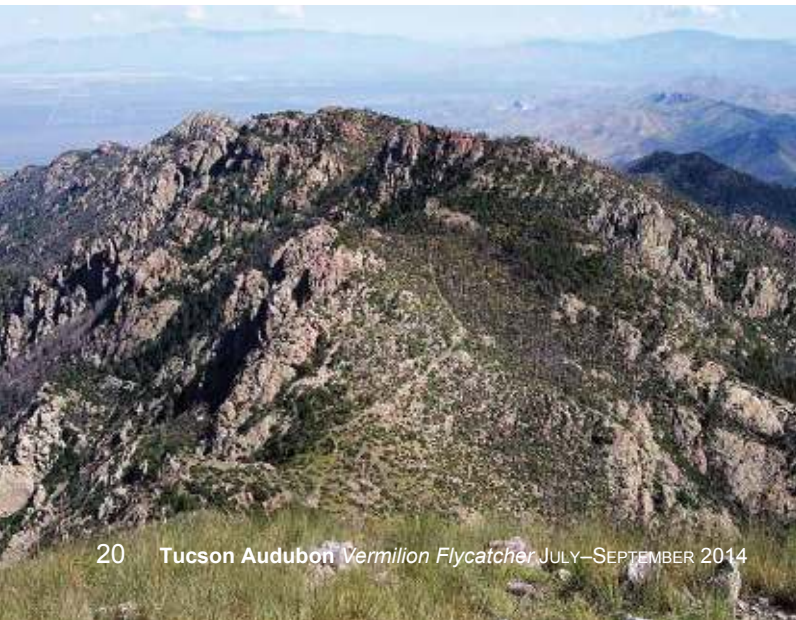
Despite a recent hostile takeover by Hudbay Minerals Inc., a well-funded, Toronto-based Canadian mining company, and numerous permitting difficulties which remain to be resolved, Rosemont has vowed to continue to pursue its proposed mining operation. That Augusta accepted the bid calls into question their claim to be invested in the future economy of our region. As demonstrated by the short film "Cyanide Beach" <http://www.investigativemedia.com/>, documenting the history of a gold mine in Sardinia, Italy, Augusta's top officers have a history of walking away from their promises.

<http://rosemonteis.us/>

Kinder Morgan Sierrita Gas Pipeline

The Federal Energy Regulatory Commission (FERC) has approved the 60 mile line from the southwestern end of the Tucson Mountains to Mexico and issued a Certificate of Public Convenience and Necessity June 6th. This, despite Pima County's Board of Supervisors (BOS) filing numerous memos for the administrative record outlining other stakeholder's and the County's serious concerns regarding the probable adverse cultural, environmental and financial impacts of the project, such as: inadequate assessment, monitoring of, and mitigation for any disturbance to cultural and historic resources; creating new routes for undocumented migrants and drug traffickers, requiring increased law enforcement activities; significant erosion and flood control issues; loss of, and lack of adequate mitigation for, Conservation Lands System (CLS) acreage and parcel integrity; and a lack of a life-of-the-project monitoring and remediation program with assured financing. The pipeline will impact approximately 220 jurisdictional washes in the Altar Valley, each for a minimum of 150 linear feet, and create a series of access roads in addition to the linear disturbance of the cleared right of way.

Subsequent to a stakeholder meeting between representatives of the Tohono O'odham Nation, Pima County, Kinder Morgan (KM), local landowners, members of the Altar Valley Conservation Alliance (AVCA), and the Coalition for Sonoran Desert Protection (including Tucson Audubon), AVCA issued a press release June 2nd stating they had agreed to withdraw opposition to the Project in exchange for Sierrita providing AVCA "with significant financial resources to aid in valley-wide projects, including direct support



MT WRIGHTSON IN THE SANTA RITAS, KEVIN SCHRAER / CCL

of watershed-wide restoration of the Altar Wash floodplain and its tributary system” despite believing “the FEIS {Final Environmental Impact Statement} does not sufficiently recognize the Project’s adverse environmental impacts, does not fully evaluate alternative routes, does not prescribe sufficient construction, operation and ongoing maintenance and restoration conditions and requirements to prevent or adequately mitigate the Project’s impacts, and fails to recognize the significance of the expected impacts.” AVCA does not represent all the potentially impacted landowners or stakeholders.

Left with few options and little leverage, the BOS approved the KM Pipeline at their June 17th meeting, setting the stage for the County to issue permits required for construction to begin, after KM stipulated to a one time in-lieu fee payment to the Pima County Regional Flood Control District of \$3 million for riparian losses in the project area and \$1 million to compensate for the loss of, and impacts to, the CLS. Reimbursement for actual CLS losses and impacts were valued at \$4.9+ million.

KM has agreed to a 20 year commitment to photo-monitor re-vegetation efforts, erosion along the pipeline right-of-way and associated washes, and any impacts of illegal trafficking and drug smuggling in the area.

KM also agreed to the request of Tohono O’odham Nation Chairman Ned Norris to pay for an archaeologist to monitor the status of cultural resources at 32 sites every two years, within and adjacent to the right-of-way, to identify and address any adverse impacts to those resources.

<http://elibrary.ferc.gov/idmws/search/results.asp>

Proposed SunZia Southwest Transmission Line

At the end of May, a compromise was announced by the Department of Defense that will allow the Record of Decision to be issued for the SunZia Project as routed if SunZia agrees to bury their cable over five miles of New

Mexico’s White Sands Missile Range call-up area.

“To mitigate mission impacts ... I have determined that a total of five miles of the power line needs to be buried, in up to three separate segments, so that some low-altitude flight operations can occur,” Defense Secretary Chuck Hagel wrote in a letter to Interior Secretary Sally Jewell.

The new requirements will significantly increase the time and expense for SunZia, according to a report by our colleagues from the Cascabel Working Group (CWG) <http://www.cascabelworkinggroup.org/SZnews.html>. CWG, Pima County, Tucson Audubon, the Tohono O’odham Nation, the Coalition for Sonoran Desert Protection, the Sierra Club, and numerous other groups have opposed the proposed route for the transmission line due, in part, to significant adverse impacts to the lower San Pedro River Valley watershed and Pima County’s Conservation Lands System, the Department of Defense’s Fort Huachuca Electronic Proving Ground, regional wildlife linkages, and migratory bird species and Important Bird Areas (IBAs) in Arizona. Though SunZia has initially accepted the proposed compromise, it remains to be seen who will foot the bill for the considerable extra expense

[http://www.blm.gov/nm/st/en/prog/more/lands_realty/sunzia_southwest_transmission/sunzia_news_and_announcements.html](http://www.blm.gov/nm/st/en/prog/more/lands_realty/southline_transmission/sunzia_southwest_transmission/sunzia_news_and_announcements.html)

Proposed Southline Transmission Line

This proposal differs from SunZia in that it would primarily rely on existent Rights of Way and upgrade capacity while allowing for improved access and service to local markets. Concerns include impacts to: Pima County’s Conservation Lands System, especially in the vicinity of Cienega and Davidson Canyon Creeks; regional wildlife movement corridors; migratory bird species and Important Bird Areas (IBAs) in Arizona, especially the Willcox Playa; the Department of Defense’s Fort Huachuca Electronic Proving Ground; and the Tumamoc Hill Research



One of two wildlife crossing underpasses along State Route 86 on the Tohono O’odham Nation.

Station, the oldest continuously studied plot of land in the nation. Comments on the Draft Environmental Impact Statement (DEIS) are in process.

http://www.blm.gov/nm/st/en/prog/more/lands_realty/southline_transmission.html

Pima Association of Governments (PAG) Regional Transportation Authority (RTA) Sponsored Wildlife Linkage Crossing Structures

Tucson Audubon was instrumental in advocating for the voter-approved \$45 million funding restricted to wildlife mitigation for regional transportation projects and has had a seat on the RTA Wildlife Linkages Working Group Subcommittee since its inception. I am pleased to report that approximately two years of construction have finally begun to widen State Route 77 (SR77/Oracle Road), from Tangerine Road to the Pima/Pinal County line. The Arizona Department of Transportation’s (ADOT) project will add an additional 12 foot wide travel lane in either direction for a total of six travel lanes with 10 foot wide shoulders (7 foot wide with curbs in Catalina) to facilitate bicycle use. Two wildlife crossing structures (one overpass and one underpass) will

enable over 20 target species of wildlife to migrate safely between the Tortolita Mountains and the Santa Catalina Mountains, as modeled by Dr. Paul Beier of Northern Arizona University <http://corridordesign.org/linkages/arizona>. Wildlife fencing will eventually extend from the Canada Del Oro wash to Wild’s Road, funneling wildlife appropriately while improving public health and safety by reducing the incidence of livestock and wildlife-vehicle collisions.

In addition, construction of two wildlife crossing underpasses is well under way in conjunction with the widening of State Route 86 (SR86/Ajo Way) on the Tohono O’odham Nation. An overpass structure and a total of eight miles of wildlife fencing is proposed for the second phase of the project. These structures and the associated fencing will significantly reduce deadly livestock and wildlife-vehicle collisions and connect the Quinlan, Baboquivari and Coyote Mountains to the south with the Comobabi, Roskruge, and Waterman Mountains, to the Ironwood Forest National Monument to the north, providing safe passage for 14 target species such as mountain lion, desert bighorn sheep, jaguar and others as modeled in Pima County’s Wildlife Connectivity Assessment http://www.azgfd.gov/w_c/conn_Pima.shtml.

<http://rtamobility.com/RTAPlan/RTAProjectLinks/WildlifeLinkages.aspx>

Restoration perspectives from the Simpson Farm Site

Economics of Restoration

Cost-benefit analysis—results evaluation incorporating implementation costs, a.k.a. “bang for your buck”

Invasive tumbleweed removal

Before we can begin planting native plants, we frequently have to remove the established non-native invasive plants that have colonized the areas where we work. Many invasives specifically target disturbed ground—sunlight preferentially helps their seeds germinate and establish better than many of the native plants, especially those perennials that usually grow in the shade of a nurse plant. Removing the invasives can be done by hand, which is very labor intensive but minimizes soil disturbance. Alternately, one can use a front-end loader to push all the plants out very quickly, on the right terrain, but with high levels of soil disturbance: faster and cheaper with

high disturbance vs. slower and more expensive with minimal disturbance. We pitted the two processes against each other in a replicated block experiment for removing Russian thistle (tumbleweed). After germination the next season, there was no visible difference between the two treatments: a good start! Randomized and replicated germination counts in 1m² quadrats revealed no statistical difference between the two processes. With no difference in germination density the following season, the faster/cheaper removal method wins the day.

Drip-irrigated, direct seeding

We are also conducting a series of trials looking at establishment and



TUMBLEWEED REMOVAL, JONATHAN HORST

growth rates of a variety of differing perennial trees, shrubs, and grasses. Over the years we have developed a good sense for how much mortality to expect when transplanting nursery-grown stock—whether from transplant shock, failed irrigation emitters, or herbivory. Even with spending time to cage plants to protect them from the voracious cottontails, javelina, and jackrabbits, we have yet to discover a good way to prevent a ground squirrel from tunneling under a cage

and eating the expensive healthy young plants from the bottom up (think *Caddyshack!*). Might it be more cost effective (and potentially even lead to healthier plants) to drip-irrigate direct-seeded plants (seeding by hand in specifically chosen locations as one would do transplanting nursery stock)? A few key species have already sprouted (desert willow, creosote, blue palo verde, mesquite, Arizona cottontop). We'll let you know how they're doing once we know!

Restoration Brings the Birds

Our Restoration Crew has been restoring bird habitat on the Simpson Farm in Marana for over a decade. After all of this work, the site certainly looks different, and we decided that it was time to analyze whether the ongoing work has been successful, and to what degree. Shrubs and small trees abound, where before there was either bare dirt or fields of invasive tumbleweed and blue panicgrass. But have these changes substantially altered the quality of the habitat for birds in the area? Has the diversity of species changed? Has the density of birds utilizing this 187 acre area changed since we've been working?

We utilized two survey transects that were set up when the project was first initiated—one north of and one south of the Santa Cruz River. Both surveys went through retired agricultural fields which had been fallow for the same duration (since the late 1970s) and neither survey included the gallery forest along the river which has been outside the restoration area. While the north and south sides of the river were not completely identical in original conditions, they're about as similar as can be found. South of the river served as the control—no restoration work has been done there. To the north

Species	% increase
Brewer's Sparrow	267
Eastern Meadowlark	108
Gambel's Quail	1100
Ladder-backed Woodpecker	700
Lincoln Sparrow	400
Verdin	500
Vesper Sparrow	100
White-crowned Sparrow	517

of the river, we have been working constantly; planting trees, shrubs, grasses and annuals to improve habitat value. We synchronously surveyed both transects on a number of occasions through the winter (October 03, 2012–April 05, 2013)—one pair of surveyors on the north, one pair on the south. Our methodology minimized differences between the two areas, making the results of the surveys more clearly contrast the habitat value for birds.

What did we find?

Over the course of the surveys we recorded an average of 14.6 species at each survey point south of the river

Sciencey Stats

Overall, points South had fewer species than points North
 North : 24.9±5.0
 South : 14.6±4.2
 Mann-Whitney U test, *P*<0.01

At each survey time, more species seen on North than on South
 Paired Wilcoxon Signed Rank test, *P*=0.01

Native individuals per survey day
 Overall, South supporting fewer native birds than North
 North : 393.6±266.0
 South : 182.3±149.7
 Mann-Whitney U test, *P*<0.037

while in the restored area to the north we recorded an average of 24.9: a whopping 70.6% increase!

We also looked at the density of native birds utilizing the habitat. More than 2.2x as many native individuals utilized the restored area than were recorded to the south. A decade of hard work is paying off for the birds in a big way.

Jonathan Horst,
 Restoration Ecologist

GAMBEL'S QUAIL FAMILY, JEREMY HAYES



Wildlife Garden Plant Profile

Lynn Hassler, Garden Volunteer Captain

This series profiles the plants that grow in the Tucson Audubon Wildlife Garden at University Boulevard and 5th Avenue. Stop by to see this plant and others up close and personal.

Yellow Bells, Yellow Trumpet Flower

Scientific Name: *Tecoma stans*

Family: Bignoniaceae (Bignonia)

Native range: Southeastern Arizona, southern New Mexico, western Texas, Florida, Mexico, Central and South America, 2000-5000 feet, typically on rocky slopes and gravelly plains and along arroyos

Wildlife value: Flowers attract hummingbirds and large bees

The Spanish name lluvia de oro, rain of gold, says it all about this showy shrub with its cascading clusters of brilliant yellow flowers. Another apt Spanish name is trompetilla, referring to the shape of the flowers which resemble little trumpets, ideally formed to attract

passing hummingbirds. The 2" long corollas are very wide mouthed, however, and instead of feeding front first as they do at other more slender tubular flowers, hummers are more likely to pierce the bases of the blooms in order to garner the nectar. Bumblebees (*Bombus* species) buzz in head first and are important pollinators. Carpenter bees (*Xylocopa* species) are also frequent visitors.

In addition to the handsome flowers which bloom continuously from late spring into fall, yellow bells sport lush-looking bright green leaves, making it a popular ornamental. Plants suffer cold damage at about 28 degrees and can freeze to the ground when temps reach the low 20s. Plants recover quickly, however, and new growth looks better and produces more flowers. In the absence of a freeze, cut plants to the ground in late winter to stimulate new foliage and blossoms. Plants can grow 4–5 feet high and 3–4 feet wide in one season! Plant in full sun in well-drained soil.



LYNN HASSLER

There are two varieties: *Tecoma stans* var. *stans* is from subtropical and tropical regions of the Americas, has larger, lusher leaves, and is less hardy than the narrow-leaved *Tecoma stans* var. *angustata*, which is native to southern Arizona, Texas, and northern Mexico.

Arizona Field Ornithologists (AZFO) Annual Meeting



The 8th Annual AZFO Meeting is just around the corner this 3–5 October in Globe/Miami with a theme of Arizona's Changing Avifauna. The Saturday meeting will be full of interesting presentations and research on Arizona's bird life, including reports from Gale Monson Research Grant recipients, updates on AZFO activities, and the always fun and challenging audio and photo ID quizzes. There will be a social hour after the meeting, followed by a banquet dinner with a yet-to-be-announced keynote speaker. Sunday morning will bring more mini-field expeditions to the Sierra Ancha, Pinal Mountains, San Carlos Reservoir, and Wastewater Ponds and Haunted Canyon. Meeting registration is free to AZFO members and \$10 for non-members; however, the full amount will be applied toward a one-year membership should you decide to join. Visit the AZFO website at azfo.org/annual_meetings/annual_meetings.html to learn more about the meeting and how youth can apply for an AZFO Youth Scholarship.

Conservation Corner!

At Tucson Audubon we are sometimes asked how to get rid of "pigeons." Rock Pigeons—native to Europe, North Africa and parts of Asia—are feral and invasive in much of North America. Given their big messy poops and their propensity to flock together, people often want to discourage them from their yards.

Pigeons like open areas where they can look for food on the ground. Below is some advice on how to discourage pigeons and encourage native birds.

- If you feed birds, don't spread seed on the ground.
- Use seed feeders that are less likely to drop seed on the ground.
- Switch to black oil sunflower seed rather than the grains pigeons prefer.

- Use fewer seed feeders and more hummingbird feeders and suet cake feeders.
- Elevate your water dish off the ground and keep it small.
- Eliminate architectural elements where pigeons can perch (use netting, mesh or spikes).
- Most importantly, reduce open ground by planting native trees, shrubs and grasses.

Pigeons are often not found in places where the ground is covered with native vegetation. Fortunately, dense native vegetation is what many of our desert birds like the best! Read more about appropriate landscaping in our *Guide to Food-rich Landscapes for Bird and People*, available at www.tucsonaudubon.org/urban.



ROCK PIGEON, KENDALL KROESEN

In the front yard of the University Blvd. Nature Shop we sometimes get one or two Rock Pigeons, but because of the landscaping we never get flocks.

On the Tucson Audubon Web site there are answers to many other "frequently asked questions." Read

them at www.tucsonaudubon.org/faq.

Kendall Kroesen
Urban Program Manager

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Madagascar Highlights II: Tour dates: 24th Sept–8 Oct 2014. Tour Prices: US\$5,350 per person sharing. <http://www.rockjumperbirding.com/tourinfo/madagascar-highlights-ii-2014?crumb=birding-tours-africa-and-madagascar>.

For our Madagascar Highlights tour we have cherry-picked the very best of Madagascar and are offering it as a shorter package. This tour still produces all 5 endemic bird families, plus an exciting selection of lemurs and other representative wildlife.



Mexican Sheartail

PETER BONO / CCL

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www.solipaso.com

Baja Birds and Wine: October 15–22, 2014.

\$2600. Leader: David MacKay. This fun trip is a winning combination of birds, fine Mexican wines, gourmet food and the rugged beauty of northern Baja! The Valle de Guadalupe wine country is becoming well-known for its high quality wines and is also on the cutting edge of innovative gourmet cuisine in Mexico. Birds of interest are Gray and California Thrasher, Clark's Nutcracker and Black Oystercatcher. We visit the wine region, Ensenada, the valley of San Quintin, Bahia de San Quintin and San Pedro Martir, starting and ending in San Diego.

Yucatan: January 5–13, 2015. \$3200.

Leader: David MacKay. The cultural, historical and natural diversity of the Yucatan Peninsula makes for a great trip. Our itinerary takes us to a myriad of different habitats for seeing most of the regional endemics. We also visit some of the magnificent archeological ruins, enjoy unique regional cuisine and explore the world of the Mayan culture, which is still thriving. Bird highlights include Yucatan Flycatcher, Vireo, Woodpecker, Bobwhite, Jay, White-bellied Wren, Orange Oriole, Ruddy Crane, Rose-throated Tanager, Mexican Sheartail and Gray-throated Chat. Starts in Cancun and ends in Merida. ■



Germain's Peacock Pheasant

SILVAIN DE MUNCK

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MATT GRIFFITHS | INTERIM FIELD TRIP COORDINATOR

Tucson Audubon Field Trips Listings Are Now Online Only

For a full listing of trips and details, visit tucsonaudubon.org/fieldtrips, call the trip hotline at 520-629-0510 x4, or pick up a printout at our Nature Shops.

FEATURED FIELD TRIP

August 26—Tuesday 8 AM

Benson and Willcox Ponds

Let's see what shorebirds, gulls and terns are headed south. Meet at 8 a.m. on west side of Houghton Road north of I-10 or at 8:45 AM at the Benson Treatment Ponds. Back by 1 PM. It will be warm! Carpooling recommended (200 mile round trip). No limit. You must register online at tucsonaudubon.org/fieldtrips.

Leader: Contact John Higgins with questions, 520-578-1830, jghiggins@comcast.net



BLACK TERN, MURIEL NEDDERMEYER

Weekly bird walks are listed at tucsonaudubon.org/fieldtrips

General Information Tucson Audubon field trips are offered at no charge and are led by expert volunteers. Bring money to cover your share of the carpooling and any required entry fees (e.g. for state parks). For specific information about a trip, contact the leader of that trip. Please dress appropriately for your field trip. Always wear sturdy shoes, a hat, and sun protection. Bring plenty of snacks and water for yourself. Always bring binoculars and a field guide. For most trips a scope can be useful.

Arrival Times Arrive *before* listed departure times. Trips will leave promptly at the time given.

Carpooling Sites Tucson Audubon strongly encourages carpooling and for some trips it may be required. Check our website for frequently used carpooling sites. You are expected to reimburse the driver for the actual cost of fuel. Drivers and trip leaders are not expected to contribute.

Rare Bird Alert Listen to the latest rare bird alert at 520-629-0510 x3. Report rare birds at 520-629-0510 or rarebirdalert@tucsonaudubon.org.

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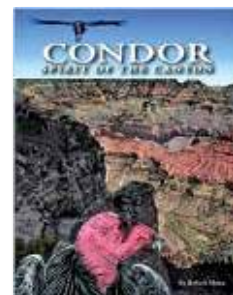
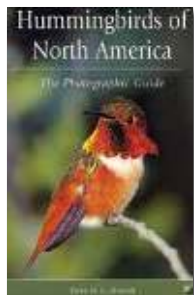
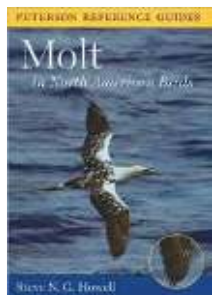
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Keynote speaker Steve N.G. Howell will be leading field trips and workshops related to some of the subjects of the books he has authored. Strengthen your knowledge on Hummingbirds prior to the Hummingbird Safari for Beginners field trip with Howell's *Hummingbirds of North America: The Photographic Guide*. Or develop your interest in molt and come prepared to Howell's Got Molt? workshop with the *Peterson Reference Guide to Molt in North American Birds*, a guide covering the basics of the under-regarded subject of molt!



Lynn Hassler, author of *Hummingbirds of the American West*, not only describes in detail field marks, behavioral characteristics and habitat requirements for hummingbirds, the birding authority also explains how to create a hummingbird garden with native plants to attract hummingbirds. This title makes an excellent supplement for anyone planning to attend Lynn Hassler's workshop, *Gardening to Attract Hummingbirds*.

Also available in the Nature Shops is *Condor Spirit of the Canyon*, by **Robert Mesta**. Mesta will be hosting Friday's feature presentation on the Endangered Species Act, in which he will tell and illustrate the story of the Condor and other high-profile endangered birds with ties to the American Southwest.

Staff Changes at the Nature Shops

Sara Pike, Operations Manager

It is with both sadness and excitement I must announce that our Operations & Retail Coordinator, Kelly DiGiacomo, will be leaving us at the beginning of August. I am excited for Kelly in her new adventure with her husband in New Mexico, but am sad to see her go. She's been wonderful to work with and has definitely brought organization to the Nature Shop space, along with assisting with many here-and-there projects for the Operations of Tucson Audubon. Please wish Kelly the best of luck should you see her before she leaves on her new adventure!

Welcome to new staff member Sarah Whelan (pictured right)! Sarah will be taking over as Operations & Retail Coordinator. She has a creative background, and her most recent employment was with Bookman's right here in Tucson, where she wore multiple hats in all areas of retail. Sarah has an interest in conservation and is a very beginning birder. She began her training with us in June and will take over fully when Kelly leaves us in August. Please welcome Sarah next time you're in the Shop at the Historic!



Rare Birds of North America

Howell, S., I. Lewington, and W. Russell. 2014. Princeton: Princeton UP. 428 pages. \$35.00 — hardcover.

"The great hope of every field man," wrote Roger Tory Peterson, "is to see rare birds." Eighty years later, men and women in search of rarities have a secret weapon in the new *Rare Birds*, one of the best and most important bird books published this year. In more than 350 pages of detailed species accounts—illustrated by breathtaking and instructive paintings by Ian Lewington—we learn how to identify some 260 birds that average five or fewer records each year in the US and Canada.

That arbitrary but sensible cutoff—which defines rarity not by abundance but by frequency of detection—means that any number of southeast Arizona's "specialty" birds are not covered: no Five-striped Sparrow, no Ruddy Ground-dove, no Black-capped Gnatcatcher here. A few more frequently encountered birds whose identification can pose problems are included—among them the Streak-backed Oriole, Berylline Hummingbird, and Plain-capped Starthroat. And Arizona birders in search of unexcelled discussions of the identification of such genuine vagrants as the Baikal Teal, Brown-chested Martin, or Mexican Tufted Flycatcher are absolutely in the right place.

Invaluable as it is as an identification text, the truly significant contribution made by *Rare Birds* is its theoretical investigation of the sources of avian vagrancy, a discussion that begins in the first 32 pages of the Introduction with a survey of six possible causes of displacement in migratory birds and a detailed tabular analysis of the seasonality and geographic origins of vagrants to the US and Canada. That discussion continues, fascinatingly, through nearly all of the species accounts, which

are rich in argument, conjecture, and even outright speculation. It is suggested, for example, that the occurrence of Plain-capped Starthroats in Arizona is part of a regular molt migration, and that the late summer records of Aztec Thrushes from our area involve, at least in part, birds in search of breeding sites at the northern edge of their range. Simply opening the book at random and reading the "comments" section for any species is a thought-provoking way to prepare for your next encounter with rarity.

For all its wealth of information, the book is not always easy to use. Rather than follow any of the currently accepted and familiar taxonomic sequences, it adopts the would-be intuitive arrangement set forth by Howell and Lewington several years ago. Reasonable minds can differ about the utility of that system in traditional field guides, but here, in a book intended as a reference work, the Howell sequence continually sends me scurrying to the index. My annoyance is compounded by the authors' decision to separate larger groups of birds into species of Old World origin and species of New World origin. There are places in the US and Canada that "attract" vagrants from both hemispheres, including such vastly disparate species as, say, Baikal Teal and Streak-backed Oriole. Adherence to the sequence propounded by the AOU, familiar from its use in checklists and the better field guides, would have made browsing this book an even greater pleasure than it already is.

Arizona birders will not want to be without *Rare Birds*. Not only does the book prepare us to identify the next vagrant that wafts our way, but it provides the reader with new ways to think about where our birds come from and why. And the only thing more fun than birding is thinking about it all.

Rick Wright



Field Guide to Birds of Colorado.

Floyd, T. 2014. American Birding Association New York: Scott & Nix, Inc. 281 pages. \$24.95 — softcover.

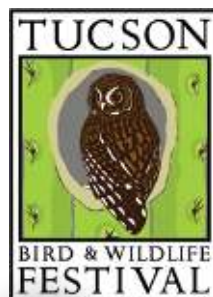
It's a question to stymie Euclid himself: Do Arizona and Colorado share a border? Fortunately, it doesn't matter one way or the other to the birds of northern and central Arizona, many of whose ranges spill across all four of those famous corners. New and casual birders from Phoenix north now have an excellent resource in Ted Floyd's *American Birding Association Field Guide to Birds of Colorado*, which presents nearly 300 species of the American Southwest in stunning photographs and richly informative texts. Southeast Arizona observers will find too many of our specialties missing and too many locally rare birds included, but even so we can profit enormously from the stories and strategies in this book, which reads like an informative morning afield with a patient expert. Arizona's own volume is coming in a couple of years, but for now, *ABA Colorado* is a great choice for the new birder in the Southwest.

Rick Wright

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Vermilion Flycatcher

Volume 59, Number 3, July–September 2014

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The *Vermilion Flycatcher* is the news magazine of the Tucson Audubon Society, a chapter of the National Audubon Society. National Audubon Society members and members of other chapters may receive the *Flycatcher* by becoming a Friend of Tucson Audubon. See membership at tucsonaudubon.org.



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JOAN GELLATLY