

# BOSQUE WATCH

WINTER 2019

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## ◆◆◆◆◆◆◆◆◆◆ FINDING REFUGE DURING THE SHUTDOWN ◆◆◆◆◆◆◆◆◆◆



*Bosque Sunrise on a field of geese and cranes. Photo by Robert Dennis*

Standing near the flight deck just before sunrise on day thirty-one of the partial federal government shutdown, I worry about how much longer this shutdown will last and how my US Fish & Wildlife Service (USFWS) colleagues are faring without pay. Then, I hear the geese begin to stir.

The sky brightens from deep purple to oranges and pinks and shines light on the field of snow geese and sandhill cranes in the wetlands. As my mind wanders to my worries and my to-do list for the day, the geese flutter their wings and my attention is drawn back to the scene before me. In the next few moments, the beating of thousands of wings is thunderous as the geese lift off. I feel the breeze they've created as they fly over my head, and I hear the wild cacophony as they cry out. Soon, the cranes call to one another in their unmistakable rattle, as they too prepare to head to

the fields for the day. They leave the wetlands in small groups now. I think about how this ritual has been occurring for millions of years, and I hope that it will unfold for millions more. For these magical moments, I find refuge from the worries of the world, and I feel renewed.

Many of us have had magical experiences at Bosque del Apache, but what we see and feel does not happen by magic. As we've detailed in various issues of *Bosque Watch*, refuge staff must now do the work previously done by the once wild Rio Grande. Prior to major dams and developments along the Rio Grande, the river naturally provided habitat to the migrating birds and other wildlife. Today, refuge employees grow crops, manage approximately 2,000 acres of wetlands, and move water within units on the refuge.

During the partial government shutdown, the refuge had only one-to-four employees working, so much of the behind-the-scenes work could not be fully accomplished. Bosque del Apache staff and volunteers perform many important tasks, including picking up trash, cleaning and stocking the bathrooms, ensuring public safety and keeping the roads clear and graded, managing the wetlands, growing crops and then strategically knocking down corn crops to feed migratory birds. They conduct scientific studies, and they educate the public.

During the shutdown, the refuge tour loop was open to vehicular traffic for all but six days. Snowstorms on December 28 and 31 made roads unsafe, and because of the shutdown, refuge staff were unable to grade the roads or offer services.



Our visitor center, associated Bosque del Apache Nature Store, and main restrooms were closed for sixteen days. This meant that no services were available to help visitors learn about our refuge, to fully enjoy their visit. This also meant that the refuge and our Nature Store lost important revenue during our high season (easily \$25,000 - \$40,000 was lost from the Nature Store closure) and Friends had to cancel their three-day Bosque Photo Intensive event (losing another \$3,000, rather than gaining \$10,000). Luckily, the Friends of Bosque del Apache (a nonprofit that supports the federal agency of USFWS) could post updates on their Facebook page and answer phone calls to offer information to potential visitors. Local businesses also lost revenue from cancelled hotel stays,

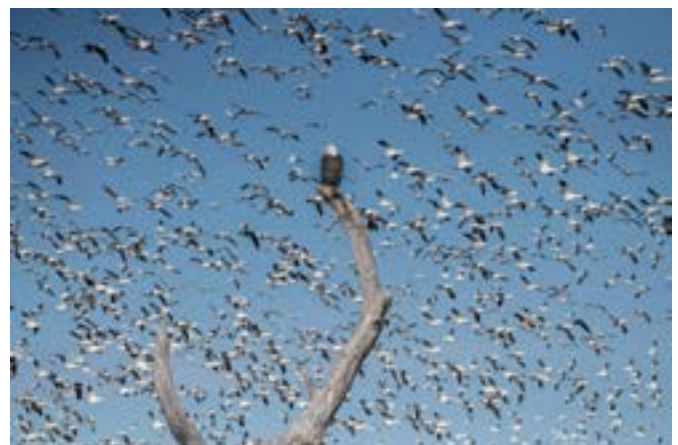


*Sandhill Cranes leaving wetlands just after sunrise. Photo by Charles Sterling*

empty restaurants, and other tourist services that could not be delivered.

On January 9, Bosque del Apache was one of thirty-eight refuges allowed to re-open for up to thirty days, with very limited staff and volunteers, using previously appropriated funds. As I write this, we know that, unless the shutdown ends, our visitor services and the Nature Store will close again on January 31, and refuge staffing will be minimal. The refuge has lost critical planning time for the coming season of crop production, maintenance, and new projects. The Friends has lost key time to work with refuge management to gather budget input and plan projects and events for the Friends to fund.

As I walk outside my office at the Friends House for a break from work, I see and hear the “Bosque Blizzard” taking place on the wetlands where an eagle has stirred up the snow geese, while looking for a meal. Likewise, this shutdown has further stirred my consciousness about the delicate balance of our democratic process and how profoundly the decisions we make affect



*Bald Eagle and Snow Geese. Photo by Nirmal Khandan*



people, wildlife, and wild places. I hope that the shutdown has reawakened in us all the need for partnerships, the critical importance of public lands and those who manage them, and the role that we each play as stewards for present and future generations.

On my drive home, I see sandhill cranes flying in to rest overnight and find refuge on the Wetland Roost off Highway 1. I think of Wendell Berry's poem, "The Peace of Wild Things," and with it I'll close:

*When despair for the world grows in me  
and I wake in the night at the least sound  
in fear of what my life and my children's lives may be,  
I go and lie down where the wood drake  
rests in his beauty on the water, and the great heron feeds.  
I come into the peace of wild things  
who do not tax their lives with forethought  
of grief. I come into the presence of still water.  
And I feel above me the day-blind stars  
waiting with their light. For a time  
I rest in the grace of the world, and am free.*

- Deb Caldwell, Friends of Bosque del Apache Executive Director



Bosque Sunset on a field of geese and cranes. Photo by David Policansky



# KEVIN COBBLE RETIRES



*Christina Carnagey (administrative officer), Kevin Cobble (refuge manager, now retired) and Bernard Lujan (now acting refuge manager), sharing some laughs at the Bosque del Apache's Holiday Open House. Photo by Deb Caldwell*

On Friday, December 14, refuge staff and Friends hosted a retirement dinner for outgoing refuge manager Kevin Cobble. Attending were Kevin's family, refuge staff, Friends board and staff members, and many colleagues and friends from throughout Kevin's career. Effective December 21, Kevin retired from the US Fish & Wildlife Service (USFWS).

Kevin served thirty-nine years in USFWS, six of those at Bosque del Apache. When asked about his proudest accomplishments during his career, Kevin shared many stories. One success was bringing back Apache Trout from endangered status. His team collected eggs from the wild and started a hatchery strain with such success that the Apache Trout is now moving off the threatened species list. When Kevin was assigned to San Bernardino NWR near Douglas, Arizona, he worked with a team in Mexico to bring back three species of fish that had once been in the Rio Yaqui on both

sides of the border, and they successfully introduced them on the refuge. When stationed at San Andreas NWR near Las Cruces, NM, the refuge found only one bighorn sheep left in the once-thriving population; Kevin and his team worked with Arizona refuges and the New Mexico Game and Fish Department to reintroduce seventy bighorn sheep at San Andreas over two years. The project was so successful that the population is now close to 250, and similar projects are reintroducing bighorns to other areas, such as the Sacramento Mountains near Alamogordo. While at San Andreas NWR, Kevin also received the Green Energy Award for covering the refuge in solar and wind power; San Andreas has not had an electric bill for more than ten years.

Once at Bosque del Apache (BdA), Kevin had challenges of getting the refuge through sequestration and budget travails. He and his staff worked hard to

become even more strategic and efficient, remaking many processes along the way. Successes include clearing over 800 acres of salt cedar/tamarisk and taking back a failing farm program from outside farmers and giving it to refuge staff, who exceeded crop goals in the first year. The refuge grows crops for migratory cranes; in the last fourteen years, the yield had dwindled to only 100,000-200,000 pounds per year. Beginning two years ago, the refuge staff executed its own farm program; their goal was to grow 800,000 pounds, but they achieved 1.2 million pounds, which is the amount truly needed. Through all of the success stories that Kevin shared, he gave credit to his staff for whom he has the utmost respect. “I trusted my talented staff to do their jobs and gave advice and help where needed. They almost always exceeded my expectations – from excellent visitor services and research projects to wetlands management, farming programs, and maintenance projects. Honestly, my biggest challenge was having such excellent staff that great opportunities came up for them at other refuges or regional posts, and then I had to deal with turnover in letting them go to new jobs.”

Kevin also noted the strong relationship between the refuge and Friends, and he is proud of all that we accomplished together – making the refuge “greener” and almost entirely off the grid, installing Langemann gates and a steel bridge, adding water catchment tanks and pollinator plants to the Desert Arboretum, expanding environmental education and research via bus scholarships and interns, and most recently acquiring a \$120,000 grant to repair a collapsed well important to the wetlands. Deb Caldwell, Friends Executive Director, agrees: “Kevin was a terrific partner and champion for the Friends. I respect Kevin’s vision, collaborative nature, and leadership skill. I miss working with him daily, but he left behind a very capable staff so the partnership and important work between Friends and the refuge will certainly continue.”

“It was a great opportunity and privilege to be the manager of Bosque del Apache for six years,” said Kevin. “It was my toughest, most challenging and stressful job ever, but also the most rewarding. There is something about Bosque del Apache that touches a person to the core, forging a spiritual connection. Everyone who works here is passionate and committed to his or her work and to this magical place. Anytime, in any season, when I felt stressed, I could go out on the refuge and be rejuvenated.”

Kevin says it was very difficult for him to retire and leave Bosque del Apache, but he trusts that it’s in good hands. He knows that the overall mission of USFWS will ensure that the refuge is taken care of into the future, and he also has great confidence in Bernard Lujan, who served as Kevin’s deputy for three years and is currently the acting refuge manager. Kevin says, “Bernard was a great deputy and we made a strong team. He has deep knowledge of the refuge and the entire Middle Rio Grande. The staff respects him. He’s pragmatic and also has a terrific sense of humor, which we often sorely need.” The respect between these two leaders is mutual. “I learned a lot from working with Kevin,” Bernard shared. “He is always professional, but also personable. His skill at strategic thinking meant that we had both efficient and effective workflow. He’s a great steward of government funds and public lands—he made the most of the available solar and wind power here to get us almost entirely off the grid. I learned from watching how Kevin remained level headed, even under pressure, and how he always listened to both sides of the story in conflicts. I wish him all the best in his new adventures.”

While we all congratulate Kevin and wish him the best in his retirement, we also hope that his travels will often bring him back to Bosque del Apache!

- Deb Caldwell, Friends of Bosque del Apache Executive Director





# BOARD NEWS



## Flocking to the 31st Annual Festival of the Cranes



*Sandhill Cranes leaving wetlands just after sunrise.  
Photo by Charles Sterling*

People flocked from around the world to attend this year's annual Festival of the Cranes, November 14-17, and to enjoy the magic of Bosque del Apache National Wildlife Refuge. We had visitors from across the United States, as well as Canada, England, and other countries. One of our Friends board members, Jonathan Manley, and his wife Tina, who are from England, were interviewed and featured in the local newspaper, *El Defensor Chieftain*. Jonathan shared that he first learned of Bosque del Apache in a book chapter, "Fifty Places to Go Birding Before You Die." He fell in love with Bosque del Apache on his initial visit fifteen years ago and has since returned five times. He was elected to the Friends board two years ago, and he is working to create transatlantic links between the Friends and other organizations that protect wetlands so we can share best practices and collaborate.

Over 800 registered attendees purchased seats in 143 workshops at this year's festival; others came just to enjoy the tour loop or free events. Every year, high-end programs, such as specialized photography workshops and specialized birding tours and intensives, strengthen the Friends' ability to subsidize low-cost and free programs (such as Wildlife Zone, Star Party, and some beginning birding workshops). Besides the many events held at Bosque del Apache, a few photography and birding workshops, hikes, tours or performances

were held at surrounding locations: New Mexico Tech, Very Large Array Radio Telescope, Water Canyon, Socorro landmarks, Abo Ruins National Monument, White Sands National Monument, and our sister national wildlife refuges, Sevilleta and Valle de Oro.



*Cranes entertaining photographers and birders with a dance. Photo by Douglas Maahs*

Our Expo Tent enjoyed its seventh year, with a maximum capacity of twenty-five booths. The tent is a fantastic resource for festival attendees, who can learn from a plethora of camera and optics companies, eco tour companies, and nonprofit conservation partners—all under one roof. Attendees can even try out high-end equipment. Many Expo Tent vendors return yearly to festival, and they sponsor top birding and photography professionals to lead our workshops, adding significant value to our festival.

The Friends Dinner on Thursday, November 15, and the Friends Social on Friday, November 16, were both well attended. At Thursday's dinner, Anne Lacy, crane researcher from International Crane Foundation in Baraboo Wisconsin, gave the keynote speech, "The Trumpet in the Orchestra of Evolution: The Story of the Sandhill Crane in North America." She told the story of the sandhills' struggle with near extinction and ultimate recovery. She also explored the many flyways that cranes take in North America, and the obstacles they face, including wind turbines and transmission towers.



*Anne Lacy, keynote speaker at Friends Dinner.  
Photo by David Policansky*

At Friday's social, Catherine Hamilton shared her recent adventures with the Amur Falcon migration in India, the story of a conservation crisis becoming a conservation miracle.

Free entertainment for the whole family was also very popular. On Saturday, family-friendly and cost-free Wildlife Zone, with twenty-four booths, had something for everyone – hawks, owls, archaeology, prairie dogs, reptiles, archery, atl atl spear throwing, bird banding, plants, telescopes, and even face painting. Live music in the Expo Tent on Saturday included The Cowboy Way (country western music by Doug Figgs and Marian Funke), Native American flute and drum music (by Ed Pias and Susie Welch), and Last Minute Trio (bluegrass and folk music by Jim Ruff, Francie Deters, and Roger Adams).



*Afternoon "fly-in" at Bosque del Apache's Willow Deck.  
Photo by John Olson*

As always, the migratory waterfowl put on a fantastic show for visitors. With very successful corn and native

plant crops this year, the refuge attracted great numbers of sandhill cranes and other migratory birds not only at festival, but also throughout the season. We in the Middle Rio Grande Valley are very blessed to have this beautiful gem in our own backyards! We are also very thankful to our many volunteers and sponsors, including the City of Socorro, who made festival a success again this year.

Festival manager Julie-Anna Blomquist has begun preparation for our 32nd Festival of the Cranes, to be held Wednesday, November 20 through Saturday, November 23, 2019. Registration for workshops will begin on September 3. We have put out a call for our 2019 Cover Artist, and we will accept entries through March 17 at [Art@Friendsofbosquedelapache.org](mailto:Art@Friendsofbosquedelapache.org). We plan to contact the winner by April 5. For more information, visit [www.friendsofbosquedelapache.org/2019-cover-art-contest.aspx](http://www.friendsofbosquedelapache.org/2019-cover-art-contest.aspx)

## 2018 Martha Hatch Award

At the Friends' Dinner on November 15, 2018, during the Festival of the Cranes, the Friends announced the recipient of the 2018 Martha Hatch Award: Matt Mitchell. This award is given annually to the person(s) who exemplifies the characteristics of the ideal volunteer and has made outstanding contributions to the Friends and the refuge. The award is named in honor of Martha Hatch, who was the Friends first newsletter editor and gave six years of dedicated volunteer service.



*L to R: Matt Mitchell receives the Martha Hatch award from Friends board president Jack Lockridge.  
Photo by David Policansky*

Matt has served the refuge and the Friends of Bosque del Apache Board in many ways. He is part of the



Friends and many other organizations in the Middle Rio Grande area who stand for protection of habitat and wildlife, Save Our Bosque Task Force and Rio Grande area who stand for protection of habitat and wildlife, Save Our Bosque Task Force and Rio Grande Agricultural Land Trust, to name two. He served several terms on the Friends Board, and he has been both a board member at large and an officer. He has generously donated his time over the years to events that educate children, including Field Day at Bosque del Apache, Bosque Conservation Days in the Socorro Nature Area, and occasional school trips during the year. He is a very popular presenter at Festival of the Cranes, sharing his incredible knowledge of hawks and falcons, as well as giving live demonstrations with his raptors to the delight of everyone. He is a master falconer and serves as an officer for the New Mexico Falconer's Association, and he is a bird rehabilitator. Further, he and his wife Stephanie have run a small jewelry business for over forty years, and they sell their hand-crafted, nature-themed jewelry to the Bosque Nature Store at a discount; their jewelry is in high demand. We thank Matt Mitchell for his service to the refuge, the Friends, and to wildlife and wild places over many years!

### **Third Annual Holiday Open House on the Refuge**

The Friends and refuge staff collaborated to host our third annual Holiday Open House at Bosque del Apache, Friday, December 7, from 4:30-7:30 p.m. Many of our nearly 350 guests arrived on the refuge in the late afternoon to enjoy the spectacle of thousands



*Bosque del Apache Visitor Center entrance decorated for the holidays. Photo by David Policansky*

of cranes, geese, and ducks returning to their roosts for the night.

Then, guests gathered at the visitor center to begin their festive evening, winding along the luminaria-lined paths between the visitor center and Friends House to visit Blue Goose Santa, see illuminated cacti and trees, tour the historic Friends House, and enjoy traditional New Mexico holiday fare, including tamales, posole, and red chile.



*City of Socorro councilman, Peter Romero and Friends board treasurer, Mary Ruff, took their food-serving duties at the Friends House very seriously at the Friends House. Photo by Denny Dobbins*

On our plaza, many people stopped to have a fireside chat with refuge manager, Kevin Cobble, and to toast marshmallows. Guests then strolled back to the visitor center to enjoy cocoa and cookies, decorate our tree with Wildlife Wishes (construction paper decorations where they could write their wishes), enjoy hands-on crafts, enjoy Christmas music, and join in our Christmas carol sing-along. This year we thank musicians Doug Figgs, Amy Stevens, and the Good Sam Carolers (led by Jim Ruff) for their musical contributions. We also thank San Antonio Elementary students for performing many Christmas carols for us – including a rousing rendition of “The Twelve Days of Christmas.”



Many revelers also shopped in our Nature Store, and had their gifts wrapped by our elves at no cost. By all measures, our holiday event was a success and several people have asked about the date for next year's party (it's Friday, December 13). Many thanks to all who joined us and volunteered their efforts toward another successful and fun event. More pictures of this event are on our website photo gallery at <http://friendsofbosquedelapache.org>.



*San Antonio Elementary carolers at Bosque del Apache.  
Photo by David Hunter*

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## BIDDING THE SANDHILL CRANES FAREWELL



What would Bosque del Apache be without our iconic sandhill cranes filling the winter sky with their graceful flight and the air with their loud Krrraacks and Krrroors! As they begin to leave us for their summer breeding grounds and their own love rituals, we bid them a farewell made bearable only by knowing that come autumn they will return to us again. Like being separated from family, we have their pictures to remember them by until then.

*- Mary Katherine Ray*



# MOUNTAIN LION SURPRISE



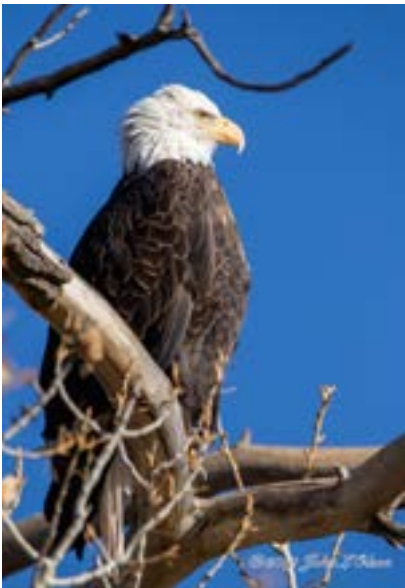
On January 10th, 2019, I shot the photo of a lifetime at Bosque del Apache. I arrived at Bosque del Apache early in the morning with a plan to look for and hopefully photograph some of the variety of mammals that inhabit the refuge along with the amazing birds that winter there. I started along the North Loop, driving very slowly and looking into the thick brush that borders the east side of the road. Just as I passed one of the old closed refuge roads that run into the brush, I spotted something sitting there and stopped my pickup. I thought to myself: That looked like mountain lions! I picked up my camera, rolled down the passenger side window, and slowly backed up, hoping they were still there. And they were! I stopped my pickup, turned it off, and started to get my photo. The brush made it a little difficult to focus on them, but the mama lion and her young one sat still for me for about a minute before turning and fading back into the brush. Mama

did pause and look back over her shoulder at me, but by that time my hands were shaking so much that the second photo was a blur! It wasn't until I reviewed the photos on the back of my camera that I saw the third lion hanging in the background. It was an amazing experience, and I am thankful to mama and her babies for the opportunity to view and photograph them.

- Lisa Phillips



# RAPTORS AT BOSQUE DEL APACHE



A thousand snow geese stand in a field fidgeting nervously as a bald eagle drifts in overhead at 500 feet. Every goose eye watches the raptor, anticipating from experience a deadly attack from above. As he circles, the eagle inadvertently dips a wing and every snow goose reflexively shudders, producing a rustling sound unlike any other on earth. The power and sheer dominance that raptors exert over their prey is awe inspiring.

Such raptor-prey confrontations are a daily occurrence on Bosque del Apache National Wildlife Refuge and offer the observant wildlife viewer or photographer unique opportunities to experience raptors in action. Patience is often a prerequisite, but you could be thrilled by extreme raptor behavior your first afternoon out. Or you might have to wait weeks or even months before you are lucky enough to witness it, but persistence is rewarded! Also important is knowing what to look for. I recall being on the refuge near the visitor center one fall day when I saw small feathers drifting down from a

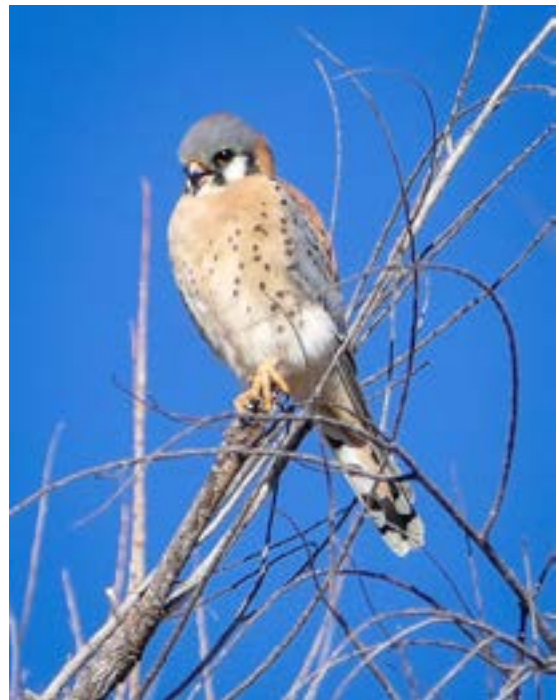


tree. Upon further inspection, I spotted a Cooper's hawk plucking a sparrow it had caught. In the ten or so minutes that I watched the hawk, dozens of visitors walked by but didn't make the connection between the falling feathers and the raptor. So, here are some things to know and to watch for when birding raptors on the refuge.

When conditions are breezy on the refuge, keep your eyes out for kestrels and northern harriers. If you spot a kestrel, the smallest of the falcons, you might get to see it go out on a hunting excursion and do its graceful hover over a field, especially if there is a breeze. If it spots prey, you might get to see it dive and pounce, emerging with a mouse in a moment or two. Another raptor that loves to hunt in breezy conditions is the northern harrier. You can watch one for long periods of time drifting from field to field barely flapping a wing. Although relatively slow in level flight, when northern harriers get the opportunity to pursue a vulnerable mouse or sparrow below, you can see them roll over and pounce with extreme speed over a few feet.

The most common large hawk on the refuge is the red-tailed hawk. Coming in many color phases from very dark to almost white, red-tails are genetically programmed to save vital energy. Saving energy can mean the difference between life and death in winter when starvation is a real possibility, so they spend much of their time sitting and watching any movement in their field of vision. Sometimes they soar when conditions are right, covering large areas with minimal energy. Eventually, if you are patient, you can get to see one hunt. You will know something is up when it raises its tail and defecates to lighten its load and then leaves its perch in a deadly downward glide toward hidden prey. Notice that it stays in a straight line from perch to prey so the prey will be less able to judge and dodge its approach. Red-tails are the masters of the crash into brush. They will often fold up their wings and drop the last eight feet or so into cover where a rabbit is hiding. They hit with such force that I have seen them break off branches the thickness of my thumb and miraculously not hurt themselves.

Arguably the most difficult raptors to see in action on the refuge are the large falcons, the peregrine and prairie falcons. When you do get to see one in pursuit, it is the experience of a lifetime. They attack at great speed, giving them a significant advantage over their prey. Prairies tend to attack horizontally, peregrines vertically, but both approach from great distance so you rarely



*American Kestrel Male. Photo by Lynne Braden*

see them coming. You often hear the wind rushing over their wings before you see them. Flocks of birds quietly feeding will suddenly explode into panicked flight and a streak will flash across the sky. A small bird will disappear from the flock as if sucked into a vacuum cleaner. Away the falcon goes with the bird leaving only a trail of small floating feathers behind. A well-known Bosque photographer, Ed MacKerrow, experienced just such an instance on the refuge with a photography class of his, and generously shared some of the photos they captured. A killdeer was foraging among some sandhill cranes and started making a distressed vocalization. It bolted into the sky and tried to evade the incoming prairie falcon by darting through a flock of feeding sandhill cranes. With a few moves hewed from uncountable hunting attempts, the prairie falcon was able to snatch the killdeer in one foot and reach down with its beak and break the killdeer's neck without missing a wing beat. What a thrill it must have been to witness that!

Raptor watching at Bosque del Apache can be time-consuming and sometimes even troubling for the faint of heart, but to see nature play out in front of you as it has for millions of years is life changing. Our jewel of a refuge in the heart of New Mexico offers us so much, and the opportunity to see raptors wild and fierce and uninhibited is something every visitor should try to experience.

*- Matt Mitchell, former Friends of Bosque del Apache  
Board Member & 2018 Volunteer of the Year*

# THE NAME GAME



Naming is one of the most basic human habits. We like to classify and organize things. The first thing that we do when we meet someone new is learn his or her name. It's the same with plants and birds, in part because naming something is the first step to knowing what it is and how it operates, sings, or grows. What happens if we don't agree on a name? That was the state of the scientific world in the early eighteenth century. Scientists, or as they were called then, natural philosophers, were exploring every corner of the earth and discovering new species at a feverish rate. Those brilliant scholars were faced with a very simple but perplexing problem: how to classify this new thing and then what to name it? Taxonomy was the emerging science of classification that provided a structure and organization, a standardized system to ensure that every new discovery was named using the same set of rules. Carl Linnaeus is the founder of the modern classification system that we all use.

Before a standardized naming system was in use, scientific names were long and arduous. A polynomial cactus example from *The Gardener's Dictionary* of 1768 was named *Cactus (Mamillaris) fubrotundus tectus tuberculis ovatis barbatis*. This demonstrates just how cumbersome a polynomial, multiple-part naming system could be. Many systems were in use in the 1700s, but the man who invented the system that we still use was a Swedish botanist named Carl Linnaeus. He actually had three great ideas, all still in use today. The first is binomial nomenclature consisting of a two-name system for each species. The second is the general classification scheme beginning with kingdom (animal, plant, fungi, protozoan, bacteria), then phylum, class, order, family, genus, and finally species. He used more than just morphology; he also used physical form, structure, and traits to help classify and develop the system. Finally, Linnaeus based his classification system in Latin, a language not spoken long before his lifetime. This was important because languages that are spoken and used change over time. No longer spoken, Latin would remain frozen and unchanging, making it the perfect language for international scientific communication. In his career, Carl Linnaeus classified over 10,000 plants and animals.

How does a new species get a name? Taxonomy begins with the observation and collection of an organism that may be something new and never seen before. The collector then begins working through every available guidebook, key, and reference available to see if the organism already has a name. Today this even includes DNA testing. If no match is made, the specimen may be a new species. The next step for the taxonomist is to write a detailed description including habitat, anatomy, and, most importantly, how the new species can be distinguished from other similar species. The new species needs a proposed name in Latin binomial format, and lastly, the entire documented process must be published so that other experts can identify the species for themselves. The entire process may take up to two years to complete. The actual naming of a new discovery is left to the finder but is governed by a set of rules known as the International Code of Nomenclature (ICN) for algae, fungi, and plants.

Taxonomy operates in the background of the life sciences, so its importance may not be readily apparent. Taxonomy gives us a description of organisms both living and extinct. It also provides a species-specific name that everyone can agree on and makes possible discussion of behavior, appearance, distribution, and the evolutionary relationships and trends among organisms. In the past 250 years, taxonomists have named over 1.6 million species. Estimates range widely, but the best guess is that there remain somewhere between five and thirty million species to identify and name.

Bosque del Apache National Wildlife Refuge is home to many familiar species of birds, cacti, trees, and mammals. How many? The current bird list has just reached 402. The plant inventory, still in use but certainly outdated, lists over 500 species, but there are surely more. Mammals are relatively easy to count, but not insects. The insect list total is easily 2,000 species but could be twice that many. Here are some interesting taxonomy examples from our own backyard. The Desert Arboretum is home to a cactus that we commonly call the New Mexico rainbow cactus. It earned that name because the trunk is banded in various shades of red and white. Like almost every





*Echinocereus viridiflorus*. Photo by Tom Hyden

other cactus, it has several other common names, but the name that we are interested in is its Latin binomial: *Echinocereus viridiflorus*. Here is how that translates in English. Echino is a Latin prefix that refers to the small spiny mammal found in England; cereus means candle-shaped; and viridiflorus means green-flowered. Strung together, *Echinocereus viridiflorus* means hedgehog-like candles with green flowers. The life sciences also have a long tradition of naming a newly discovered organism after an esteemed colleague or teacher. John Torrey (1796-1873) was such a man. He was the first professional botanist in North America and became a professor at Columbia University, where his best student and future collaborator, Asa Gray, was a student. In 1872, Torrey stood at the base of a Colorado mountain peak named for him by another student of his, Charles Parry (Parry's Agave). Today the side-by-side peaks are simply known as Gray's and

Torrey's. The very tall, long-leaved yuccas in the Desert Arboretum, commonly called Torrey's Yuccas, now have a new binomial: *Yucca treculiana*, named after the French botanist, August Trécul – but that's a story for another time.

The goal of taxonomy, as annoying as the name changing and lumping and splitting can be, is really to create an increasingly accurate description of life on earth. Modern taxonomy uses systematics, cladistics, and phylogenetics, assisted by DNA analysis, to create an evolutionary history for each organism and its relationships to other organisms. Surely, Carl Linnaeus would be quite happy about how this has worked out.

- Tom Hyden,  
Friends Member and Volunteer Master Gardener  
- Danielle Gallegos,  
Nature Store Manager & Desert Arboretum Gardener

# SAVE THE DATES



- **APRIL 13: DESERT ARBORETUM STROLL, 10AM-2PM**
- **NOVEMBER 23: WILDLIFEZONE (AT FESTIVAL OF THE CRANES)**
- **NOVEMBER 20-23: 32ND ANNUAL FESTIVAL OF THE CRANES**
- **DECEMBER 13: 4TH ANNUAL HOLIDAY OPEN HOUSE, 4:30-7:30 PM**



*Bosque Sunset. Photo by Ed MacKerrow*



# How Can You Help The Refuge?



The partial government shutdown adversely affected all national wildlife refuges, and will have lasting effects. Many of you have asked how you can help due to this event and in general. Here are a few ways:

1. Post comments of support and thanks for our friends in the US Fish & Wildlife Service, who work tirelessly to make visiting Bosque del Apache a magical experience for all of us. Post your comments on the Friends Facebook page at <https://www.facebook.com/friendsofthebosque/>.

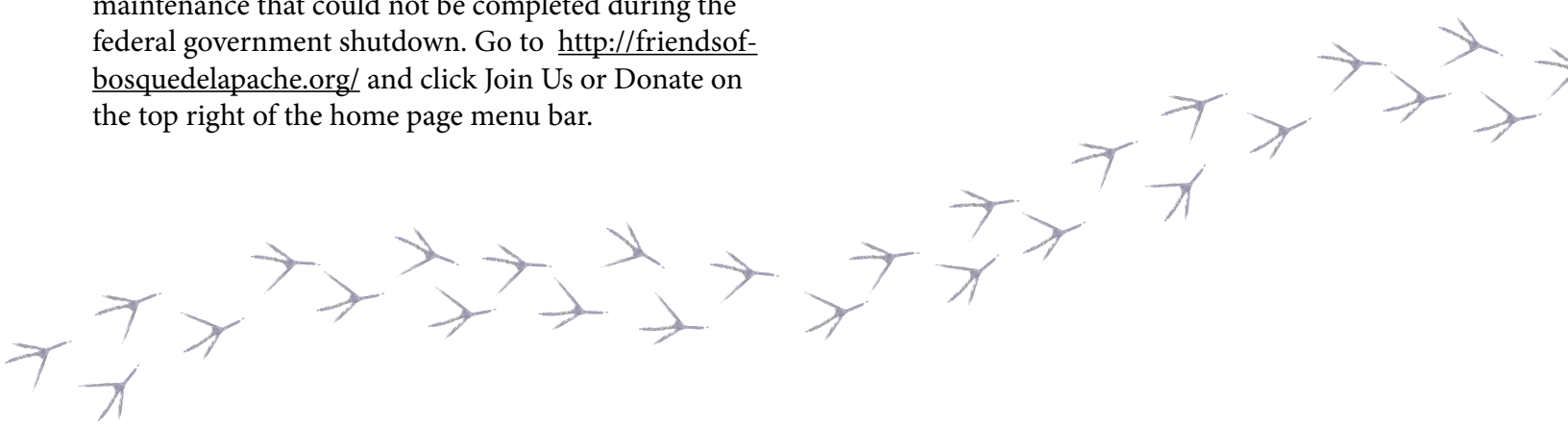
2. Take a few moments to contact your elected officials and express your thoughts about their obligation to faithfully steward our public lands for present and future generations.

3. Donate to Friends of Bosque del Apache or become a Friends member today. Funds raised by Friends of Bosque del Apache support important refuge projects, and these financial resources will be needed now, more than ever, to recover from the backlog of work and maintenance that could not be completed during the federal government shutdown. Go to <http://friendsof-bosquedelapache.org/> and click Join Us or Donate on the top right of the home page menu bar.

4. Give a lasting gift by adding Friends to your will or make an IRA required minimum distribution (RMD) to save on your taxes. To make the RMD gift, you must be 70 ½ years old; have the gift sent directly from your IRA trustee to Friends of Bosque del Apache; and ask your broker to send all or some of your RMD to the Friends (our tax ID number is 85-0415878 and our mailing address is PO Box 340, San Antonio, NM 87832, Attention Deb Caldwell).

5. Shop in the Bosque Nature Store – in person, at our Visitor Center, or online at <http://shop.friendsofbosquedelapache.org/>. Every purchase provides funds to help the refuge.

6. When you visit Bosque del Apache, be the great stewards we have come to expect. Pack out your trash, stay out of closed areas, take only photographs, and leave only footprints.



## **EDITORS' CORRECTION FOR BOSQUE WATCH OCTOBER 2018:**

Captions in our article “401 Species of Birds” on pages 10 and 11 got accidentally swapped. The bird on page 10 is the Great Crested Flycatcher and the bird on page 11 is the Cape May Warbler.



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e-mail: [Execdirector@friendsofbosquedelapache.org](mailto:Execdirector@friendsofbosquedelapache.org)  
[www.friendsofbosquedelapache.org](http://www.friendsofbosquedelapache.org)

PO Box 340  
San Antonio, NM 87832

**FOLLOW US ON  
FACEBOOK & INSTAGRAM!**



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@friendsofbosquedelapache

### YOUR STORY MATTERS!

For more information on sharing your story  
about Bosque del Apache with decision  
makers, please contact the Friends at  
[Execdirector@friendsofbosquedelapache.org](mailto:Execdirector@friendsofbosquedelapache.org)

#### **PRESIDENT DONALD J. TRUMP**

The White House, Washington D.C.  
202/456-1111 [President@WhiteHouse.gov](mailto:President@WhiteHouse.gov)

#### **Amy Lueders**

US Fish & Wildlife Regional Director  
500 Gold Avenue SW  
Albuquerque, NM 87102  
505/346-2545

#### **Hon. David Bernhardt**

Acting Secretary of the Interior  
18th & C Streets NW, Rm. 6151  
Washington D.C. 20240  
202/208-7351

#### **NEW MEXICO SENATORS**

##### **Hon. Martin Heinrich**

US Senate, Washington D.C. 20510  
202/224-5521  
website: [heinrich.senate.gov](http://heinrich.senate.gov)

##### **Hon. Tom Udall**

US Senate, Washington D.C. 20510  
202/224-6621  
website: [tomudall.senate.gov](http://tomudall.senate.gov)

#### **NEW MEXICO REPRESENTATIVES**

##### **Hon. Deb Haaland**

House of Representatives  
Washington D.C. 20515

##### **Hon. Ben Ray Lujan, Jr.**

House of Representatives  
Washington D.C. 20515  
202/225-6190  
website: [lujan.house.gov](http://lujan.house.gov)

##### **Hon. Xochitl Torres Small**

House of Representatives  
Washington D.C. 20515

## FRIENDS OF BOSQUE DEL APACHE MEMBERSHIP APPLICATION

Name \_\_\_\_\_

Family Members (for Family Membership) OR Business Name (for Business Sponsors) \_\_\_\_\_

Street \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone \_\_\_\_\_

Email \_\_\_\_\_

☐ I also want to donate \_\_\_ \$25 \_\_\_ \$50 \_\_\_ \$100 \_\_\_ Other

Credit Card Number \_\_\_\_\_

Exp. Date \_\_\_\_\_ Sec. Code \_\_\_\_\_

Signature \_\_\_\_\_

☐ Please contact me about planned giving.

#### 2019 Membership Levels:

- ☐ Snow Goose (Individual) \$25
- ☐ Northern Harrier (Family) \$50
- ☐ Sandhill Crane \$120
- ☐ Peregrine Falcon \$250
- ☐ Golden Eagle \$1000
- ☐ Business Sponsor \$350
- ☐ Corporate Sponsor \$500

**Join or donate online at [www.friendsofbosquedelapache.org](http://www.friendsofbosquedelapache.org)**

**or send your contribution to:**

**Friends of Bosque del Apache**

**PO Box 340**

**San Antonio, NM 87832**